FURTHER ATTEMPTS TO GROW CHILOMONAS PARAMECIUM IN INORGANIC MEDIA

Chilomonas paramecium, although one of the cryptomonad flagellates, has generally been considered saprozoic in nutrition, and thus dependent upon organic sources of nitrogen. This belief has been supported by the investigations of Pringsheim[1] and Loefer.[2] Mast and Pace,[3] however, have stated that this flagellate is able to synthesize protoplasm from inorganic substances alone. In view of this apparent contradiction, the earlier experiments of Loefer have been repeated, using some of the media of Mast and Pace and following their technique as well as that previously developed in our own laboratory. The strain of *Chilomonas paramecium,* the one used previously by Loefer, was isolated at Woods Hole in 1932 and has since been maintained in bacteria-free cultures.

"Solution D" of Mast and Pace and a similar solution, with NH_4NO_3 substituted for NH_4Cl, were used as inorganic media in the depression-slide technique of Mast and Pace and the culture-tube technique of Loefer. Growth was always obtained in the first transfer from a peptone stock culture, and sometimes in the succeeding second and third transfers. In further transfers, however, our strain of *C. paramecium* failed to grow in the inorganic media. Even the addition of glycocoll, as used by Mast and Pace ("Solution B"), sometimes failed to prolong growth of the flagellates beyond the fourth transfer. It would seem, therefore, that our strain of *Chilomonas paramecium* is unable to synthesize protoplasm from ammonium compounds and other inorganic salts, and is thus quite different in this respect from the strain used by Mast and Pace.

J. B. LOEFER
R. P. HALL

NEW YORK UNIVERSITY

SHALL SMOKY CITIES GO TREELESS?

THE severe limitations imposed by city air pollution on decorative and ornamental vegetation has been brought to our attention by Mr. Kenneth Soergel, landscape gardener, State Capitol Park, Harrisburg, Pa. The base plantings at the Capitol building are described by him as being largely evergreens, consisting of Taxus, Juniper, Cryptomeria, Pine, Spruce and Rhododendron. Only the Taxus is said to be doing well; all others are "low in vitality, with many dying or beyond recovery." It is added that uncontrolled railroad smoke and the city heating plant are three blocks east of the Capitol and that large hotels facing the park also have heating plants. The result stated is "excess of smoke."

As a result of our own experiments in helping to protect some evergreens against damage by air pollution, we have recommended to the state gardener a process of mechanical spraying, employing soap, water and a chemically neutral detergent. Cohen and Ruston, in "Smoke, a Study in Town Air," report on tests of the efficacy of actual solid deposits to lower the rate of assimilation of CO_2 by plants. They found that cleaning of the leaves raised plant efficiency by about 65 per cent., but still left the plant far short of the rate of assimilation it would have had in rural air.

Posed, therefore, is the question: If smoke remains unabated and the most widely used evergreens can not live in polluted air, can substitutes be found, and if not, are we not faced with a problem for scientists generally, a problem that goes beyond the bounds of botany?

H. B. MELLER
L. B. SISSON

MELLON INSTITUTE

THE WILLIAM HERBERT CENTENNIAL

IN recognition of the lasting influence of William Herbert's "Amaryllidaceae,"[1] which appeared in 1837, the American Amaryllis Society has voted to observe the William Herbert Centennial in 1937. The society will dedicate its Year Book in that year to Herbert and his work. A comprehensive biography of the divine, scholar and scientist will be published together with a reprint of his stimulating essay, "On Crosses and Hybrid Intermixtures in Vegetables," which apparently has been obscured because it is appended to the "Amaryllidaceae."[1] This essay is a most remarkable one, considering the date when it appeared. Reference is made to only one passage to serve as an illustration.

Herbert crossed each of two turnip varieties with hairy leaves and straw-colored flowers on the Swede or ruta-baga with smooth leaves and bright yellow flowers. The first generation plants had leaves like the male parent. He does not indicate the color of the flowers. The greater part of the second generation individuals secured by selfing the first generation hybrids had bright yellow and a smaller part had straw-colored flowers. He observes that these colors were not blended nor did they modify each other. He does not give information about the leaf characters in the second generation. Herbert's own words as they appear on page 370 are as follows:

> I impregnated in 1834 with great care the Swedish turnip (ruta-baga) with pollen of the white, and another branch thereof with that of the red rooted turnip. . . . The seed was sown immediately, and the plants of both

1 E. G. Pringsheim, *Beitr. allg. Bot.,* 2: 88–137, 1921.
2 J. B. Loefer, *Biol. Bull.,* 66: 1–6, 1934.
3 S. O. Mast and D. M. Pace, *Protoplasma,* 20: 326–358, 1933.

1 "Amaryllidaceae; preceded by an attempt to arrange the Monocotyledonous Orders, and followed by a Treatise on Cross-bred Vegetables and a Supplement." London: James Ridgeway and Sons. 1837.