ported agrees very well with what is known about the effect of auxin on root formation. The induction of roots on cuttings by basal application of indole acetic acid requires at least 100 times higher concentration than does apical application.

F. W. WENT

CALIFORNIA INSTITUTE OF TECHNOLOGY

THE GREEN MUSCARDINE FUNGUS ON THE PERIODICAL CICADA

IN connection with special work by the senior writer in the Department of Entomology, University of Maryland, on the periodical cicada, *Magicicada septendecim* (L.), it is of especial interest to note that the green muscardine fungus (*Metarrhizium anisopliae* (Metsch.) Sorokin) was found on this insect in the spring of 1936.

On May 22, 1936, Mrs. P. W. Wetmore, Takoma Park, Md., brought to the senior writer two live nymphs of the periodical cicada, both of which proved to be attacked by a fungus. The nymphs were sluggish and had failed to molt. Otherwise they appeared normal with no evidence of infection. When examined microscopically, however, abundant mycelium of a fungus with septate mycelium was found in them. Later, other similar specimens were collected on the ground from the same location. Four dead nymphs also were found in the tunnels. These latter were covered with fairly abundant creamy-white mycelium. This mycelium was transferred to potato-dextrose agar and to nutrient beef agar on which the fungus grew readily and subsequently sporulated abundantly. It also sporulated readily on rice kernels. The fungus on diseased nymphs placed in Petri dish moistchambers also sporulated abundantly in 5 to 19 days. The sporulating fungus was olive-green in color. From the microscopical characters of the spores and sporophores from these various sources, it was evident that the fungus was *Metarrhizium anisopliae* (Metsch.) Sorokin. The spores measured 1.8–4.5 × 7.8–12.8 μ, chiefly 3–3.8 × 9.7–11.3 μ. On the basis of these measurements, apparently the fungus is the long-spored form referred to by Delacroix,[1] Friederichs[2] and Johnston,[3] and named *f. major* by Johnston.

Apparently the short-spored form of *M. anisopliae* was found in Java on large singing cicadas by v. Höhnel,[4] who described the fungus as a distinct species, *Penicillium cicadinum*. Petch[5] transferred this species to the genus *Metarrhizium*, making the combination *M. cicadinum* (v. Höhnel) Petch. However, Petch, who also gives a literature summary, prefers to consider *M. cicadinum* as a synonym of *M. anisopliae*. This view seems tenable. The Java fungus, however, apparently represents the short-spored form of *M. anisopliae*, as its spores are described as 1.5–2 × 5–6 μ, rarely 7 μ.

Healthy nymphs and healthy adults were artificially inoculated with spores from the pure cultures of *M. anisopliae* kept in moist Erlenmeyer flasks, and both nymphs and adults became diseased, the nymphs being more susceptible than the adults. The fungus was readily reisolated. However, the fungus did not sporulate on the adults. Later, newly hatched nymphs also were inoculated in Petri dishes and these young nymphs proved to be unusually susceptible.

SABURO K. KATSURA
A. G. JOHNSON

BUREAU OF PLANT INDUSTRY
U. S. DEPARTMENT OF AGRICULTURE

THE EFFECT OF REPEATED CORTIN INJECTIONS UPON RENAL EXCRETION IN THE NORMAL ORGANISM[1]

IT has been reported[2] that large amounts of cortin produce a differential effect upon the excretion of electrolytes in normal human beings. A further study of these effects has been made in normal dogs.

Normal adult female dogs were fed a constant diet consisting of a mixture of beef heart, Purina chow and 2 g of NaCl daily. The dogs were fed at the same time every day, which was nine hours before the beginning of the test period. They were allowed as much water as they desired, except on the test days. During the tests the dogs were kept in metabolism cages and at three-hour intervals were catheterized and given 100

TABLE I

RENAL EXCRETION IN A DOG DURING THE FIRST SIX HOURS FOLLOWING THE INTRAVENOUS INJECTION OF CORTIN*

Date	Injection	*Vol.* cc	*Na* m.Eq.	*Cl* m.Eq.	*K* m.Eq.
1–21–37	Control	194	10.17	12.57	4.34
1–23–37	Control	184	6.18	9.39	3.95
1–25–37	Cortin	**130**	**1.24**	**4.83**	**6.25**
1–27–37	Cortin	**90**	**3.84**	**6.45**	**6.82**
1–29–37	Control	256	10.18	15.28	4.92
2– 3–37	Cortin	**132**	**5.67**	**9.87**	**7.22**
2– 5–37	Control	172	7.72	11.59	5.05
2–15–37	Cortin	**222**	**7.15**	**13.42**	**6.22**
2–26–37	Control	206	9.66	9.38	6.04
3– 4–37	Control	147	8.37	12.40	6.35
3– 9–37	Cortin	**243**	**13.46**	**18.52**	**6.07**

* Heavy-faced type, after cortin; light faced type, control. (20 cat units in 0.5 cc.)

[1] From the department of physiology, the Ohio State University, Columbus. Aided by a grant from the Rockefeller Foundation.

[2] G. W. Thorn, Helen R. Garbutt, F. A. Hitchcock and F. A. Hartman, *Proc. Exp. Biol. and Med.*, 35: 247, 1936.

[1] G. Delacroix, *Bull. Soc. Myc. France*, 9: 260–268, 1893.

[2] K. Friederichs, *Centbl. Bakt.* [etc.], Bd. 50, Abt. 2, (13/19): 335–356, 1920.

[3] J. R. Johnston, *Puerto Rico Bd. Commrs. Agr. Bul.* 10, 33 pp., 1915.

[4] F. v. Höhnel, *Sitzber. Akad. Wiss. Wien*, Math. Naturw. Kl. Bd. 118, Abt. 1: (1–178 in reprint), 1909.

[5] T. Petch, *Brit. Mycol. Soc. Trans.*, 16: 55–75, 1931.