served for the first time in India, a brief description of the symptoms and etiology of the causal organism are presented here for ready reference.

Symptoms (Figs. 1 and 2).—Symptoms were noticed on leaves of different ages. In the earlier stages of infection, the spots were circular, the necrotic area being white to grey. In the severely affected leaves, the spots were circular to irregular with distinct concentric rings. In the advanced stages the necrotic spots coalesce appearing as patches. Sometimes major portion of the leaf is affected and such leaves easily fall down. Severe defoliation was the marked symptom in the advanced stages of infection. No symptoms on twigs.

Figs. 1-3. Fig. 1. Diseased leaves showing spots of different developmental stages. Fig. 2. Enlarged view of single infection spot—note concentric rings. Fig. 3. Conidia in chain obtained from culture.

Pathogenicity.—The pathogenicity of Corynespora cassicola, isolated from the infection spots, was proved by artificial inoculation of healthy leaves with the culture.

Etiology.—Mycelium sub-hyaline to brown, septate, 4-6 μ broad. Conidiophores simple, come out of epidermal cells, septate, dark brown, 50-300 μ long and 4-6 μ broad. Conidia produced singly at the tip of conidiophore, broader at the base and tapering at the tip, sometimes cylindrical, sub-hyaline to brown, pheo-phragmoid, 4-18-celled, 36-240 μ long and 6-18 μ broad.

The fungus was easily brought in culture on potato dextrose agar medium, at the room temperature (27-28° C.). The fungus produced conidiophores and conidia typical of Corynespora cassicola without much variation in dimensions. The interesting feature observed in the culture was the production of conidia in chains (Fig. 3) although production of single conidium at the tip of each conidiosphere was not uncommon, thus agreeing with the results of Olive et al. (1945).

The material of the above fungus is deposited at Herb. Orientalis, New Delhi, under No. 30044.

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SWOLLEN ROOTS OF CYCAS CIRCINALIS L.

Ripe seeds of Cycaes circinalis were sown in the soil and allowed to germinate. A number of them grew to seedling stages. They were examined periodically, with the idea of working out their anatomy. Seedlings of about three years showed some peculiar rootlets which arise on the tap-root but above the lateral apogeotropic coralloid roots and below the first pair of leaf-bases. Thus, their position appears to be adventitious. They vary in number from one to six per seedling. Though lateral in position they looked like Raphanus sativus root in appearance without its two vertical rows of lateral rootlets. Everything about these fleshy swollen roots appeared to be quite peculiar, deserving a detail description.
The seedling of 3-4 years old has a tuberous stem having 10-12 thick leaf-bases arranged in a spiral manner—some of them belong to the non-green and others to green functional leaves. All of them become thick with reserve which act as propagula (Fig. 2 B). Down below, these seedlings send a tap-root into the soil which tapers to a point. The tap-root is long and tough and lateral rootlets sparingly produced on it. The previous workers, Chamberlain (1935), Schuster (1932) and Worsdell (1906), doubt the existence of the tap-root in the old plants of Cycads. In the seedling stage upto 5-6 years, the tap-root exists and functions normally. We can naturally expect the tap-root to exist even in older plants. In fact, no extensive work on the roots of Cycads has been done (Chamberlain, 1919).

The tap-roots of seedlings produce peculiar fleshy swollen roots 1-6 per plant. They are white or pearly white in colour. They bear few lateral rootlets or none at all. Their position is also adventitious arising on the hypocotyledonerary region (Figs. 1, 2). The fleshy swollen roots are thin at the point of emergence from the main root and become suddenly swollen and gradually taper to a point. The largest diameter of the swollen root is 27 mm. and the length 200 mm, on an average, while the corresponding values for the tap-root are 14 mm. and 180 mm. respectively. The diameter of the tuberous stem varies from 50 mm. to 70 mm. There is no previous reference to such roots of Cycas circinalis. However, Byran (1936) has described fascicled roots of Cycas revoluta, where thin adventitious roots are produced in large numbers from the main root and they are in bundles of fascicles. They are not swollen as those of C. circinalis. The anatomy of the swollen root of C. circinalis is different from that of the tap-root. Further, there is structural evidence to show that these roots though swollen with water and soluble salts normally, can take up a function like that of a contracting root under dry condition and pull down the stem into the soil.

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