embryo sac. The polar nuclei fuse as usual and the development of the embryo and endosperm is comparable to other species of *Leptomeria*, although there is complete absence of pollen grains in the microsporangia and even on the stigma. The divisional stages leading to megaspore formation were not observed. It seems quite likely that this species is an apomict and the diplosporous embryo sac is diploid.

Whether the transformation of microspore mother cells into 'embryo sacs' is controlled by genes or due to physiological causes or both, is difficult to say. I should be most grateful if anyone could inform me of any similar cases.

I am indebted to Dr. B. M. Johri and Prof. P. Maheshwari for valuable suggestions, and to Dr. T. E. Burns and Mr. C. P. Roots of Launceston, Tasmania who very kindly supplied the *L. billardierii* material.

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Antibacterial Substances of Coniferous Seedlings at Different Stages of their Development

IT is well known, that the damping off of coniferous seedlings causes serious damage and in many cases complete destruction up to the appearance of the foliage. Once the cotyledons are fully developed and foliage leaves have failed to appear, complete destruction may be expected. Following the appearance of the foliage leaves the percentage of the damping off is greatly reduced or totally stopped. Nor does the disease appear when it could be expected in the presence of suitable conditions (high temperature, abundant moisture and excessive decomposing organic substances[1,2,3,4]). Consequently it may be assumed that in these two developmental phases there must exist such a difference in the plant substance which is closely connected with the cause of damping off.

Seedlings of pines (*Pinus silvestris* and *P. nigra*) were examined before and after the appearance on the foliage leaves and at the age of one year. Studies of antibiotical substances were made with the diffusion method. The substance was extracted with alcohol and chloroform and was examined on bouillon and glucose agar media. Test organisms were: *Micrococcus pyogenes* var. *aureus*, *Bac. cereus* var. *mycoides*, *Bac. megatherium*, *Proteus vulgaris*, *Serratia marcescens*, *Pseudomonas syringæ* var. *capsici*, *Escherichia coli*, *Fusarium oxysporum* var. *aurantianum*, *F. moniliforme*, *Cladosporium herbarum*, *Botrytis cinerea*, *Rhizoctonia solani*, *Penicillium crustaceum* and *Gibberella fujikuroi*. The experiments were repeated with the *Fusarium oxysporum* and other fungi and bacteria isolated from dead seedlings.

On the basis of the results it is concluded that:

(1) The seedlings contain no antimicrobiotic substances before the appearance of the foliage leaves.

(2) The substance extracted from seedlings after appearance of foliage leaves, like the one-year plants, inhibits the Gram-positive bacteria.

(3) This substance has no antifungal effect, consequently offers no defence against the damping off fungi.

(4) In the case of Gram-negative bacteria there is no clear zone left.

The failure of the disease after the formation of the antibacterial substance suggests that the Gram-positive soil bacteria must have a certain role in the damping off of coniferous seedlings.

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ENTOMOLOGY

Effect of Insecticides on the Bodies of Nissl and Neurofibrillæ of the Locust, *Schistocerca gregaria*

IN a previous paper we demonstrated the Nissl bodies in the various developmental stages of *Schistocerca gregaria* as granules which are evenly distributed throughout the cytoplasm of the motor neurones of the thoracic ganglia.

In locusts treated with insecticides, the Nissl bodies tend to migrate towards the cell periphery and at the same time they are gradually reduced in number, until at the point of death only a few are left. The behaviour of the Nissl bodies differs from one insecticide to another.

Treatment with insecticides was carried out as follows[2,3]. The insects were placed in a convenient glass container in which they were dusted (with a hand duster) or sprayed (with a small sprayer) and then left for 3-5 minutes, after which they were transferred to clean cages with normal conditions of moisture, temperature and food. Locusts treated with BHC (2·4 per cent), DDT (10 per cent) and pyrethrum (10 per cent) survived for about 16, 28 and 72 hours respectively. These concentrations were obtained by adding kerosine to the insecticide extract in the liquid form, or mixing the powdered form with calcium phosphate. The sodium arsenate powder (spread evenly and in small amounts on the foliage) allowed locusts to live for 15–24 hours.

In BHC-treated locusts the Nissl bodies of small neurones tend to accumulate into small groups distributed throughout the cytoplasm (Fig. 2). In larger neurones, the Nissl bodies decrease in number and migrate towards the outer region. (Compare Fig. 1 with Figs. 3 and 4.) They showed also a considerable accumulation in the region of the axon-hillock. In the largest neurones, the Nissl bodies are greatly reduced in number (Fig. 5).

The effect of DDT on the Nissl bodies is similar to that of BHC. In pyrethrum-treated insects the changes were less obvious: the nissl bodies showed less tendency to accumulate, and their size was slightly reduced.

In locusts poisoned with sodium arsenate, the Nissl bodies are greatly reduced in number (Fig. 6). In a few cells no trace of Nissl bodies could be seen.

We do not know why the Nissl bodies migrate, under the effect of insecticides, to the cortical part of the cytoplasm, but Young[3], working on the effect of normal sea-water and anærobic conditions on molluscan neurones, concluded that it was the lack of