

Grafting of Apple on *Eriobotrya Japonica* Stocks

CONSIDERABLE attention has been devoted to apple root-stock problem in many Fruit Research Stations in Europe, and especially, in the East Malling Research Station in England. Various root-stocks such as the 'Northern Spy', 'Paradise' and others have been used for grafting apples. There has been very little work done in India, to find out a root-stock for apples suitable for the prevailing conditions. It is usual in this country to import from Australia, apple plants grafted on Northern Spy root-stock. From experience in the Mysore State, these plants have been found to be susceptible to root disease (*Rhizoctonia*) and deteriorate after a few years of bearing.

In the search for a hardy root-stock, a few buddings of apple were made during May 1936



FIG. 1

on *Eriobotrya Japonica*, which, though successful, did not make much headway.

Eriobotrya Japonica (Loquat) is a medium-sized tree belonging to the order *Rosaceae*, introduced in India from Japan. It grows well in gardens and is able to resist drought conditions owing to its vigorous root-system.

Cleft grafts made with the 'Jonathan' and 'Rome Beauty' as scions, began to put forth shoots in 18 to 20 days. The accompanying

photograph was taken when the graft was six weeks old. Though these grafts have shown promising signs of growth, the compatibility between the stock and scion can be ascertained only during the next season's growth. The further development of these grafts will be reported later.

M. J. THIRUMALACHAR.

Department of Botany,
Central College,
Bangalore,
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A Terrestrial Species of *Oedogonium*

THIS is a preliminary note on a terrestrial species of *Oedogonium* collected by the author from Tanda and Fyzabad from August to October, 1938. So far no terrestrial species of *Oedogonium* has been described, and as compared with genus *Oedocladium*, some of whose species are terrestrial, *Oedogonium* is supposed to be a purely aquatic genus.

This species which appears in the form of green felt-like patches was found growing throughout the monsoon season in lawns, and compounds of houses. When the oospores ripen, the patches become orange-coloured. Ripe cospores are found in all the months, a few days of sunshine being enough to ripen the spores.

Vegetative cells are 6-8 μ broad and 26-70 μ long, are hyaline and unbranched with a rhizoidal function in the subterranean part, while the subaerial cells are 14-17 μ broad and 24-32 μ long. The alga is monoecious macrandrous. Oogonia are found singly, are globose, 30-42 μ in diameter and are operculate. Oospores are globose, do not fill the oogonia, have smooth chocolate-brown spore-wall and are 26-32 μ broad. Antheridia are 4-6 in number each containing one sperm, and are 11-14 μ broad and 6-10 μ long.

This is obviously a new species and has been named as *Oedogonium terrestris* sp. nov. The author is thankful to Dr. L. H. Tiffani of North Western University, Evanston, Illinois, U.S.A.,

for examining the material and communicating his views.

M. S. RANDUAWA.

Fyzabad,
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A Note on the Gametophyte of *Botrychium virginianum* var. *lanuginosum*, SW.

OUR knowledge of the prothalli, the germination and growth of spores of *Botrychium*, though scanty, is derived from the researches of Douglas Campbell¹ and Edward Jeffrey² who have described the American forms of the species *Botrychium virginianum*. The occurrence of this species of *B. virginianum* var. *lanuginosum* is reported from various places in India, but till now no account of its developmental history has been made known. The purpose of this note is to record a preliminary account of the gametophytes of the Indian variety *B. virginianum* var. *lanuginosum*, which in certain respects differs from the published accounts.

Kodaikanal and in the subsequent year several younger stages were collected. The material which is under investigation has a number of peculiarities well worth reporting. As Campbell working on old prothalli has described them as flattened tubers, covered with root hairs, with folded margins and with reproductive organs buried on the superior surface. Regarding colouration, they were brown externally, though white in sections. Jeffrey working on fresh material has described the prothalli as flat and oval with root hairs. According to him the growing point is at the narrow anterior end, the hinder part becoming thicker and wider. The antheridial ridge on the dorsal surface widens out in the older prothalli. The gametophytes of other species of *Botrychium* such as *B. lunaria*, *B. obliquum* and *B. simplex* have been described as being flat and dorsiventral bodies of varying shape, with an antheridial ridge on the superior surface. The prothalli of the Indian variety show essential differences. They are not flat



FIG. 1

Gametophytes of *Botrychium virginianum* var. *lanuginosum*, of different ages. Note the diversity of form and shape. At the left upper corner the first leaf of a sporophyte with its circinate venation can be seen. (x 6.)



FIG. 2

Young prothallus with rhizoids. (x 10.)

In 1937, I obtained a large number of gametophytes of the variety *lanuginosum* from

dorsiventral bodies, but are spherical in shape, white in colour, having a number of irregular