

The results summarised above show that dry plant materials exchange moisture with the air layers surrounding them just as the soils do.

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February 6, 1938.

¹ Ramdas, L. A., *Curr. Sci.*, 1934.

² — and Katti, M. S., *Ind. Jour. Agric. Sci.*, 1934 (1), 4, 923.

³ — —, *Curr. Sci.*, 1934, 3, 24.

⁴ — —, *ibid.*, 1935, 3, 612-13.

⁵ Katti, M. S., *ibid.*, 1935, 4, 419.

⁶ Ramdas, L. A., and Katti, M. S., *Ind. Jour. Agric. Sci.*, 1936, 6, 1163.

Indian *Tephrosia* sp. as a Source of Rotenone.

It is a matter of satisfaction to put on record, the occurrence of rotenone in *Tephrosia candida* DC.; and following the usual method of extraction we have been able to isolate 0.35 per cent. from root bark and 0.5 per cent. from the seeds. The leaves also contain rotenone or allied bodies and give the usual colour reaction,¹ though we have not been able to isolate rotenone in pure state. The root bark extract of *Tephrosia purpurea* also has given the rotenone colour reaction but the amount of rotenone per cent. is perhaps much less than 0.3 and hence our inability to isolate it.

Some of the foreign species, *Caracca* (*Tephrosia*) *Virginiana*² of U. S. America and the East African *T. macropoda*³ have been reported to contain rotenone and have been declared as insecticide. Indian *Tephrosia* occur in great abundance, as a common weed in some of our forests and the fact that such plants of uncertain age contain 0.3-0.5 per cent. rotenone is a matter of considerable importance and economic value.

Rotenone in the seeds is extracted along with the fatty oil with sulphuric ether and from the ether-free residue rotenone resins are precipitated by repeated washings with cold petroleum ether. The rotenone resins are then worked up in the usual manner. It appears that rotenone is concentrated in the root bark and seeds and is practically absent in the stem or debarked root which

explains our failure to isolate it on previous occasion.⁴

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March 3, 1938.

¹ Rogers and Calamari, *Ind. Eng. Chem. Anal. Edition*, 1936, 8, 135.

² *Scientific American*, 1933, p. 231.

³ *Nature*, 1936, vol. 1075.

⁴ *Forest Research in India*, 1934-35, Part I.

A White Flowered Type of *Arachis* *hypogaea* Lin.

IN 1934 a single plant, bearing flowers almost white in colour, appeared in the control line in an experimental culture of the local groundnut variety the seed of which was obtained from the market. The plant was a weakling due to attack by cut worms. With great care and by enclosing the plant in a muslin cage a few self-fertilized pods were obtained. In 1935 sixteen plants were raised from the selfed seeds. Out of these 14 had white flowers like their parent's and two bore orange-yellow flowers characteristic of the local variety. All the sixteen plants were selfed by enclosing the entire plant in muslin cages. In the following year (1936) the progeny were grown in plant to row cultures and it was observed that they behaved true to their parental character for flower colour. The white flowered plants giving rise to white flowered progeny and the yellow flowered plants to yellow flowered progeny (Figs. 1 and 2).

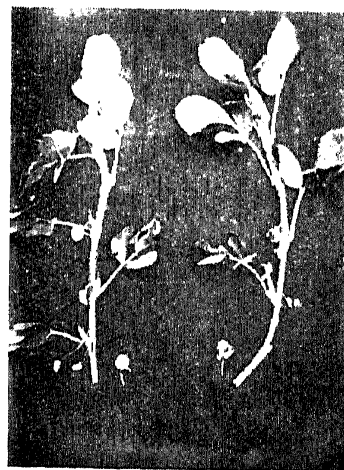


Fig. 1.

Branches with Flowers, left: white flowered type,
right: orange-yellow flowered local variety.

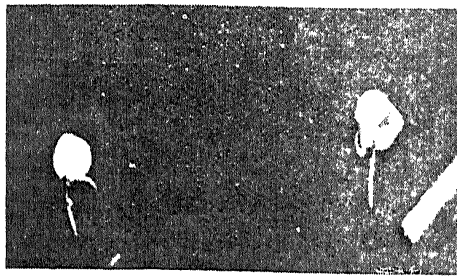


Fig. 2.

Individual flowers enlarged showing the white colour of the new type in contrast to orange-yellow of the local variety.

A specimen of the local variety of the groundnut from which the white flowered type arose has been identified by Dr. J. S. Patel, as belonging to Loureiro's *Arachis asiatica*, a synonym of *Arachis hypogaea* Lin. The white flowered type resembles the parent material from which it arose in all the plant characters except the flower colour. The following table gives the petal colours based on Ridgway's colour standard:—

Petals	White flowered plant	Local variety
Standard	Marguerite yellow	Ochraceous orange
Wing	Naphthalene yellow	Primuline yellow

The white flowered type which has been bred for three generations continues to breed true for the white colour of its flower.

It is difficult to explain at present why the two orange flowered progenies appeared from the white flowered plant or why all the progenies of that plant, white and orange, continue to breed true for their respective flower colour without any of them segregating for that character. In order to explain the possible origin of the white flowered type, crosses between the true breeding white and orange flowered progenies have been made during 1936 and are at present under investigation.

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Tadpoles of a Genus not Recorded from India.

IN 1918 the late Dr. N. Annandale described certain tadpoles obtained from the Cochin forests, which were provisionally referred by him to the family *Cystignathidae*. The pectoral girdle of a nearly adult tadpole was dissected and its resemblance to that of *Leptodactylus* was used for identifying the tadpoles with this genus. It was also pointed out that they resemble closely the tadpoles of *Heleophryne natalensis* which had been described by J. Hewitt in 1913. During the last few years, the same tadpoles were collected in the forests of the Anamalai Hills by my colleagues, and I have had an opportunity of re-examining the collection of the Cochin tadpoles through the courtesy of Dr. Baini Prashad. We have in our collection a young frog which has nearly completed its metamorphosis, though an exceedingly small stump of tail and larval mouth are still retained. I. S. Ramaswami has studied the cranial osteology of these tadpoles, and has dissected the pectoral girdle of the young frog. I am appending below a figure of this pectoral girdle and for purposes of comparison, figures of the pectoral girdles of *Hemisus* and *Breviceps* of the family *Tengystomatidae* are also reproduced from Gadow.

After re-examination of my material and comparison with the collection in the Indian Museum, I am certain that these tadpoles do not belong to the family *Cystignathidae*. The members of the latter group possess an arciferous type of pectoral girdle and *Leptodactylus* has a metasternum with a bony style. Fig. 1 is undoubtedly an example of firmisternia. Both omosternum and metasternum are wanting. The sacral diapophyses are cylindrical and not dilated into wing-like expansions. The position of these tadpoles is obviously among the firmisternia, and they are referable to the family *Ranidae* on the basis of diapophyses. This view is further supported by the osteological characters of the cranium of the tadpole which, according to Ramaswami, resemble those of *Rana hexadactyla*, *R. tigrina* and *R. fusca*. There are, however, a few features peculiar to the Anamalai tadpoles, such as the union of the infrarostral with Meckel's cartilage, the presence of a groove for the passage of a branch of the hyomandibular VII ventrally to the quaorato-cranial commissure and the absence of a pseudopterygoid process.