

light brown, straight or curved, 3 to 5-septate usually 4-septate, third cell from the base larger, central cells concolorous, the end cells light coloured, rough epispore over the central cells, end cells with smooth epispore,  $19.9-34.3 \times 6.0-13.2 \mu$ , average  $27.2-10.6 \mu$ .

Isolated from soil in November, 1970 from Jabalpur, M.P., India.

The type culture has been deposited in the herbarium I.M.I. No. 155724.

We express our grateful thanks to Dr. M. B. Ellis and Dr. G. P. Agarwal for kindly examining the culture, to Mr. N. D. Sharma for helping in Latin translation and to the Principal for laboratory facilities.

Department of Botany, D. P. TIWARI.  
Government Science College, P. D. AGARWAL.  
Jabalpur, M.P.,  
December 16, 1971.

1. Agarwal, G. P. and Sahni, V. P., *Curr. Sci.*, 1963, 32, 276.

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## SHORT SCIENTIFIC NOTES

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### A New Record of a Rust on Groundnut (*Arachis hypogaea* L.) in India

In course of studies on groundnut, a rust was observed in plants grown in pots in the green house of State Agricultural Research Institute, Calcutta. The appearance of sori was first noticed on the leaflets in November 1971, when the plants were about forty-five days old.

The infection was confined to the leaves, the lower leaves being the first to be infected. Rarely sori were observed on the petioles. Uredia were mostly hypophyllous, sometimes epiphyllous. The upper surface of leaflets might present a grey appearance due to the formation of flecks which correspond to the position of the sori below. Uredia were minute to 1 mm in diameter and deep brown in colour. They were either isolated or in groups and were formed subepidermally on compact stromata but soon burst through the epidermis and become exposed.

Uredospores were borne on short, hyaline pedicels. The uredospores were spherical or oval with 2, occasionally 3 or 4 equatorial germ pores, yellowish in colour, echinulate, measuring  $19.80-33.00 \mu \times 18.50-26.40 \mu$ ; paraphyses were lacking. Telia were not observed.

The samples sent to the Commonwealth Mycological Institute, Kew, England (Accession Number IMI 163530) were identified as *Puccinia arachidis* Speg.

A comprehensive list of fungi recorded in India by Vasudeva<sup>1</sup> and subsequent supplements<sup>2,3</sup> does not include the rust of groundnut. Further literature survey indicated that

this rust is apparently unrecorded from India, hence this report constitutes its first record.

Our sincere thanks are due to Dr. Mulder, C.M.I., England, for identifying the organism.

State Agricultural Research Institute, B. D. SHARMA,  
Calcutta-40, February 22, 1972. S. K. MUKHERJI.

1. Vasudeva, R. S., *Fungi of India*, Indian Council of Agricultural Research, New Delhi, 1960.
2. —, *Fungi of India Supplement-I*, Indian Council of Agricultural Research, New Delhi, 1962.
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### A Note on the Preorbital Spine in *Danio* Species

Three *Danio* species, *D. devario* (Ham.), *D. aequipinnatus* (McClell) and *D. rerio* (Ham.) are common in rivers and tanks around Jabalpur, Madhya Pradesh. Apart from other diagnostic characters, the presence of a small backward projecting spine on the anterior orbital rim has been used by Smith<sup>1</sup> as the main character in identifying *D. regina* Fowler and *D. aequipinnatus*. In the case of the former species from Thailand he observed the posteriorly directed preorbital spine, but regarding the latter species he mentions that "It was first pointed out by Vinciguerra (1889-90, p. 304) and later confirmed by Myers (in Herre and Myers, 1937, p. 57) that in this species there is a preorbital spinous process as in (*D. regina*)"<sup>1</sup>.

Our observations on the three *Danio* species mentioned above, however, reveal that no preorbital spine is present in *D. rerio*, but an

anteriorly directed blunt spine is present in front of upper anterior margin of orbit in the remaining two species. This spine does not project outside freely but is covered by skin forming the hinder margin of the posterior nostril and is visible only on removing a part of skin. This is perhaps one of the reasons why it is not mentioned in the earlier descriptions of these species<sup>2-3</sup>.

Central Regional Station,  
Zoological Survey of India,  
Jabalpur (M.P.), February 15, 1972.

V. VISWESWARA RAO.  
H. S. SHARMA.

1. Hugh, M. Smith. *U.S. Nat. Mus. Bull.*, **188**, 1945, p. 95.
2. Day, F., *The Fauna of British India Fishes*, 1889, **1**, 353.
3. Weber, M. and de Beaufort, L. F., *The Fishes of the Indo-Australian Archipelago*, 1916, **3**.

### Increase in Crop Yield Through Solar Radiation

It is well known that radiant energy falling on a black body is fully absorbed. Absorption coefficient of black paint for sun rays is 0.97 to 0.99. Experiments were conducted in 1970 and 1971 with paddy and wheat in pots (two plants per pot) to find the effect of this black absorption on crop yields.

Each pot contained 5 kg of soil with 0.5 g N and 0.2 g each of P and K. Water soluble black color (Poster colour) was sprayed on the plants five times during the crop growth period. Very dilute solution was sprayed so as not to clog the stomata. Plants were only light black in color with black spots on the leaves and stems. Plants were not sprayed in control treatment. The black color was analysed for N, P and K content and they were found to be absent. Grain yield was recorded after harvest.

		Grain yield (g/pot)		
		Paddy (IR 8) <i>Kharif</i>	Wheat (Kalyan Sona) <i>Rabi</i>	Paddy (Basmati) <i>Kharif</i>
		1970	1970	1971
Control	..	17.5	12.4	7.4
Black color sprayed on leaves and stems		32.5	19.9	13.1
*Soil application	..	..	..	16.7

\* Included in *Kharif* 1971 only so that color can be absorbed by the roots and translocated in the body of the plants.

Data show that there is an increase in grain yield due to spraying of black color. This may be attributed to increased absorption of solar radiation.

Central Soil Salinity Research Institute,  
Karnal (Haryana) India,  
February 7, 1972.

A. K. BANDYOPADHYA.

### On the Occurrence of Fossil Alga from the Syringothyris Limestone Near Kotsu, Anantnag District, Kashmir

The note places on record the occurrence of a fossil alga (Rhodophyceae) from the Syringothyris Limestone exposed in the hill near Kotsu (33° 51' 30" : 75° 18' 00") in the Lider valley, Anantnag District, Kashmir, where well-developed sequence of fossiliferous Palaeozoic rocks is exposed. Syringothyris Limestone is principally composed of calcareous rocks which are at places interbedded with shales and quartzites. This richly fossiliferous limestone is pale to dark grey in colour and contains several species of brachiopods, pelecypods, corals and crinoids.

The alga recorded here shows a thallus with a single layer of vertically elongated rectangular cells but in places the filaments appear to become multicellular and there the cells are generally of polygonal shape. Branching of the filament is another important feature. The width of the cells is very variable. The filaments are generally undulating. The form strongly resembles the red algal genus *Eolithoporella* belonging to the family Solenoporaceae? described by Johnson<sup>1</sup> from the Mississippian (Osagian) rocks in the Wildhay River, Rock Lake area, Alberta, Canada.

Centre of Advanced Study in Geology,  
Punjab University,  
Chandigarh, February 28, 1972.

V. J. GUPTA.  
P. C. DIXIT.

1. Johnson, J. H., *Journ. Pal.*, 1966, **40**, 1385.

### A New Potentiometric Method for the Determination of Lanthanum

A new procedure has been developed for the direct titration of lanthanum using sodium fluoride as a titrant, the end point being indicated by potentiometry. Lanthanum is quantitatively precipitated as fluoride<sup>1,2</sup> in 50% alcoholic medium at pH 2.5-3.5. We have now



found that Fe(III)/Fe(II) system could be conveniently used as an indicator solution, and lanthanum could be determined at room temperature itself.

**Procedure:** A known volume of lanthanum nitrate containing 40–120 mg. of lanthanum was taken in a 100 ml pyrex beaker and treated with 0.1 ml of ferric chloride (0.01 M) and 0.1 ml of ferrous ammonium sulphate (0.1 M) solutions. 5 ml of the buffer solution were added and the pH was adjusted between 2.5 to 3.0. Requisite quantity of rectified spirit was added to bring the overall concentration of alcohol in the solution to 50% by volume, and diluted the mixture to 40 ml. A saturated calomel electrode and a bright platinum indicator-electrode (prepared by heating in alcohol flame and dipping repeatedly in concentrated nitric acid) were introduced into the solution. The mixture was stirred electromagnetically during the titration and the e.m.f. of the cell was measured. The end point was obtained from the maximum of  $\Delta E/\Delta V$  and corresponded to the general formula  $LaF_3$ . The lanthanum nitrate (0.05 M) and sodium fluoride (0.5 M) solutions used in the investigation were prepared from A.R. grade samples and standardised by the oxinate<sup>3</sup> and lead chlorofluoride<sup>4</sup> methods respectively. A buffer solution needed for this work was prepared from N. hydrochloric acid and 5% sodium acetate. Some typical determinations of lanthanum by this method are as follows:

	Taken	Found	Error %
Lanthanum (mg)	43.32	43.34	+0.046
	74.26	73.79	-0.635
	123.80	124.20	+0.323

The authors wish to express their thanks to Dr. S. Brahmaji Rao for his interest in the work.

Department of Chemistry, R. C. HUSSAIN,  
Sri Venkateswara University, N. APPALA RAJU.  
Tirupati, Chittoor Dist.,  
(Andhra Pradesh), February 10, 1972.

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2. Masaoyamashita, *Nagoya Kogyo Gijyutu Shikensho Hokoku*, 1956, 5, 334.
3. Hollingshead, R. G. W., *Oxine and Its Derivatives*, Part I, Oxine, Butterworths Scientific Publications, London, 1954, 1, 294.
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# **A New Phytophthora Disease of Cardamom [*Elettaria cardamomum* (L.) Maton]**

A new disease of cardamom caused by a species of *Phytophthora* was observed in Kerala during 1970. With the onset of south-west monsoon the symptoms of this disease appeared as small water-soaked lesions on any part of the lamina which later spread and formed patches of dead areas surrounded by yellow halo. At a later stage, the infected areas dried up and the leaves shredded along the veins. In severe cases, the inflorescence and capsules were also infected resulting in the rotting and decay of the tender capsules. High incidence of the disease was noted when there was continuous and heavy rainfall. The pathogen grew well and sporulated abundantly on lima bean agar medium. Sexual stage of the fungus was not observed both in culture and in naturally infected plant tissues.

Division of Plant Pathology,  
Agric. College Research Institute,  
Vellayani, Kerala State,  
February 4, 1972.

M. RAMANATHA MENON.  
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L. REMA DEVI.

## ANNOUNCEMENTS

### Symposium on "Legume Inoculants—Science and Technology"

It is proposed to hold a Symposium on "Legume Inoculants—Science and Technology" under the auspices of the Indian National Science Academy at the Division of Microbiology, Indian Agricultural Research Institute, New Delhi-12, India, on 23rd, 24th and 25th October, 1972. The Symposium will immediately precede the 13th Annual Conference of Association of Microbiologists of India scheduled to be held in Ludhiana on 26th to 28th October, 1972.

The Symposium will have two types of materials to be presented: (1) Original unpublished research articles in the field of *Rhizobium*, legume root nodulation and inoculants (2) Invitational review articles. The Indian National Science Academy will consider the publication of the proceedings in its journal. Intending participants may kindly correspond to Dr. N. S. Subba Rao, Head of the Division of Microbiology, Indian Agricultural Research Institute, New Delhi-12.