

These preliminary results have indicated the suspicion to be correct. It is proposed, therefore, to repeat this experiment on *rahar* and extend it to other crop-plants during the ensuing season.

I am much indebted to Rao Bahadur Viswanath (Imperial Chemist, Imperial Institute of Agricultural Research, Pusa) for certain useful suggestions.

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June 29, 1935.

¹ Singh, T. C. N., *Jour. Ind. Bot. Soc.*, 1930, 9, (4), 250.

² Singh, T. C. N., *Plant Breeding Abstracts*, 1933, 4, (3), 180.

³ Anandan, M. and Krishnaswami, V., *Curr. Sci.*, 1934, 3, (1), 21-23.

A New Variety of Black Gram or *Urid* (*Phaseolus mungo*, Linn.).

TWENTY-FIVE types of black gram (*Urid*) have been described by R. D. Bose.¹ In the course of the examination of certain pulses at the Millets Breeding Station, Coimbatore, a new type from Malabar not described by Bose was met with. It is classifiable under "Section 2.—Black seeded types, sub-variety Niger (Bose)". The following is a detailed description of this type.

Habit: Semi-erect, profuse branching, stem furrowed, covered with long brownish hairs pointed downwards, stems green with purple splashes here and there. **Leaves:** Trifoliate, small, ovate, acuminate, leaflets ovate, entire, light green, petioles—long, hairy, channelled, sometimes purple streaked. **Flowers:** In axile racemes, peduncle purplish. Flowers lemon-yellow, back of standard purple tinged at the top, calyx purple tinged. **Pods:** Erect to sub-erect, cylindrical, unripe pods dark purple with a green tinge at the tip. Pods covered by brownish hairs pointed upwards. Dry pods dark brown in colour. **Seeds:** Oblong, small about $\frac{1}{8}$ of an inch long, flattened at both ends, black, dull, (grey back-ground with heavy black marbling).

It will be noticed that this type is characterised by its purple pods. Purple colouring on the pods of pulses is common. Some red grams have this whole or in bands. Similarly in *Dolichos lablab* this colour is whole or localised in the periphery of pods. In green gram, purple along the suture line is noted. In cowpea purple podded varieties

are common especially from Malabar. These manifestations of pod purple are mendelian in behaviour. It is therefore interesting to record this new purple podded variety in black gram of potential use in hybridisation.

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¹ *The Indian J. of Agr. Sci.*, 1932, 2, 625.

A Rare Instance of Poly-Embryony in *Arachis hypogaea*, Willd.

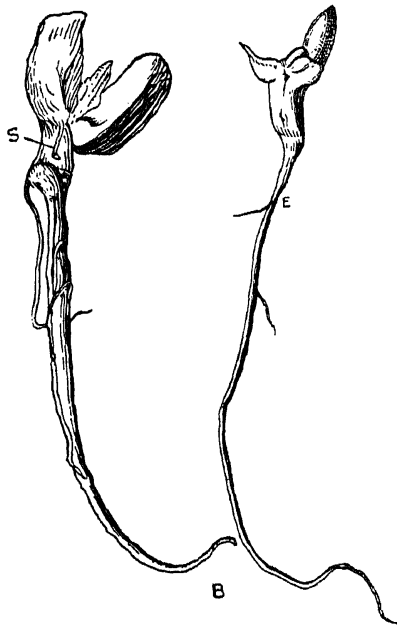
THE occurrence of more than one embryo in a seed has been recorded by various authors from as early as 1719. Many species of various families in both Dicotyledons and Mono-cotyledons have been known to exhibit the phenomenon. It is prevalent among the common species like *Syzigium jambolanum* (*Myrtaceae*), *Syzigium* spp. (Tiwary, 1926), *Citrus aurantium* (*Rutaceae*) and *Mangifera indica* (*Anacardiaceae*). In *Papilionaceae*, poly-embryony has been noted in *glycine hispida* (Owen, 1928). But it has



A. Germinating groundnut seed showing two main roots.

not been noticed, till now, in the groundnut, even though about a million groundnut plants have been examined during the last five years. Earnst (1918), Coulter, Barnes, Cowles (*Text-Book of Botany*) recorded a number of instances of poly-embryony.

While germinating a number of varieties of groundnut for root-tips, the authors observed that one seed of the variety "Bassi" was found to produce two radicals (Fig. A). Dissection of the seed revealed two seedlings. The bigger one was quite normal and the smaller had two thin, unequal cotyledons and a normal plumule. In the seed, the cotyledons of the smaller seedling were enclosed in between those of the bigger



B. Two seedlings separated. E. Extra seedling. $\times 2$
S. Stalk by which the additional seedling is attached. $\times 2$

one. At the top of the hypocotyl where the two cotyledons meet, there was a funicle-like structure connecting the hypocotyl of the extra seedling (Fig. B). Besides this, no other structure connecting the two seedlings was found.

The sources of the additional embryo or embryos are many and the correct origin could be determined best in the embryo-sac stage, which, in this instance, was not available.

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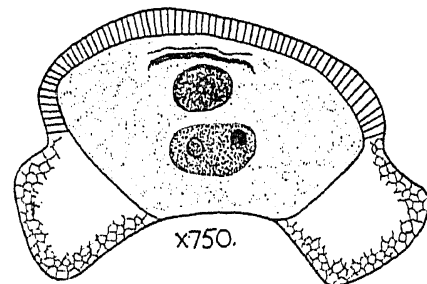
A Note on the Shedding Condition of the Pollen Grains of *Pinus longifolia* Roxb.

POLLEN grains of all the species of *Pinus* so far investigated show two prothallial cells, one generative cell and one tube nucleus at the time of shedding (Schnarf,¹ p. 25). The only exception so far recorded is that of *Pinus longifolia* where Sethi² (see

p. 133) reports that "Two prothallial cells are cut off while the pollen grain is still within the sporangium. These cells are more evanescent perhaps than in the other species of *Pinus* because they disorganise very soon and the pollen at the time of shedding stage shows no indications of them."

From this statement one would conclude that the development to form the tube and generative nuclei does not occur in the male cones. On further enquiry Dr. Sethi wrote that the mature pollen is only three-nucleate at the time of shedding and that the division to form the tube and generative nuclei occurred on the nucellus. As there are several cultivated trees of *P. longifolia* at Agra, it was suggested by Dr. P. Maheshwari that I should section some material to ascertain this point more definitely.

The first two divisions of the microspore nucleus result in the cutting off of two prothallial cells. As stated by Sethi these become flattened and disorganised very early. *The nucleus of the pollen grain divides*



A mature pollen grain of *P. longifolia*.

once again producing the tube and generative nuclei. The generative nucleus is smaller than the tube nucleus and takes a very dark stain with hæmatoxylin. It organises into a definite cell by gathering some cytoplasm around it. In spite of the ephemeral nature of the prothallial cells I could still find some favourable preparations in which all four nuclei were clearly distinguishable (see Fig.). I feel inclined to think that the material sectioned by Dr. Sethi was a little too young. The tube nucleus assumes an irregular shape at maturity.

I am indebted to Dr. P. Maheshwari for his kindly examining my preparations and confirming these observations.

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¹ *Embryologie der Gymnospermen*, 1933, Berlin.

² *Jour. Indian Bot. Soc.*, 1928, 7, 105.