TABLE II.

Cross No.	Parents		F_1 Population	Expectation %
A.S. CCIII	A.S. CXLIX	A.S. 2528	QqBb — 12	50
	(QqBb)	(qqBB)	qqBB — 10	50
„ CCIV	Do.	A.S. 817	QqBb — 13	50
		(QQbb)	QQbb — 12	50
„ CCVII	A.S. 1641	A.S. CXLIX	Qqbb — 5	50
	(qqbb)	(QqBb)	qqBb — 5	50
„ CCV	Do.	A.S. 817		
		(QQbb)	Qqbb — 33	All
„ CCVI	Do.	A.S. 2528		
		(qqBB)	qqBb — 1	All

To sum up ; Most of the African races of sorghum have a blackish-purple leaf-sheath and glume, brown colour in the dry anther and a brown wash on their grain (qqBB). The Asiatic races are predominantly characterised by having a reddish purple leaf-sheath and glume, no brown colour in the dry anther and no brown wash on their grains (QQbb). There is a complete linkage between Qq (factors for leaf-sheath and glume colour) and Bb (factors for brown colour in dry anther and grain). This has been established in both the repulsion and coupling phases by suitable crosses.

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June 16, 1938.

[1] *Ind. J. Agric. Sci.*, 1934, **4**, 90.

A New Phanerogamic Parasite of *Andropogon Sorghum (Jowar)*.

Andropogon Sorghum (*Jowar*) is extensively cultivated in Central and Peninsular India and parts of North India for its grain and stalk. It is a staple food crop in some parts of India and an important source of fodder to cattle wherever cultivated. Sorghum, besides being subjected to severe attack by fungi and insect pests, is also often considerably damaged due to attack by phanerogamic parasites. The only parasitic flowering plant so far recorded as attacking Sorghum belongs to the genus *Striga*. Three species of this genus all of which are root parasites are found to attack Sorghum in India. To this will now be added another of a different genus mentioned below.

Two years back the writer while collecting seeds of *Striga* species on Sorghum from different places came across a large patch of unirrigated Sorghum in a cultivator's field thickly infested with *Sopubia delphinifolia*. This field was near a village called Sutharwadi about 19 miles from Poona. It was at first thought that *S. delphinifolia* was present on the grass which had invaded the Sorghum plot. The following year *S. delphinifolia* was again observed in a Sorghum plot near a village called Aundh about five miles from Poona in a different direction to Sutharwadi. Careful examination of the root-system showed that *S. delphinifolia* was definitely attacking Sorghum by its roots establishing connection with the roots of Sorghum (Figs. 1 and 2). It was found that a single parasitic plant had its roots connected with the roots of three or four host plants. In Fig. 1 the parasite is shown attacking two Sorghum plants. At both places where *S. delphinifolia* was found on Sorghum the attack was severe and in consequence the host plants were very much dwarfed in growth.

Fyson[1] alone refers to *S. delphinifolia* as a root parasite on grass occurring usually in the open. Hooker[2] and Cooke[3] merely give the number of species belonging to the genus *Sopubia* and their distribution. Whether *S. delphinifolia* attacked plants other than uncultivated grasses was

FIG. 1.

Roots of *Sopubia delphinifolia* (B) attached to roots of *Andropogon Sorghum* (A).

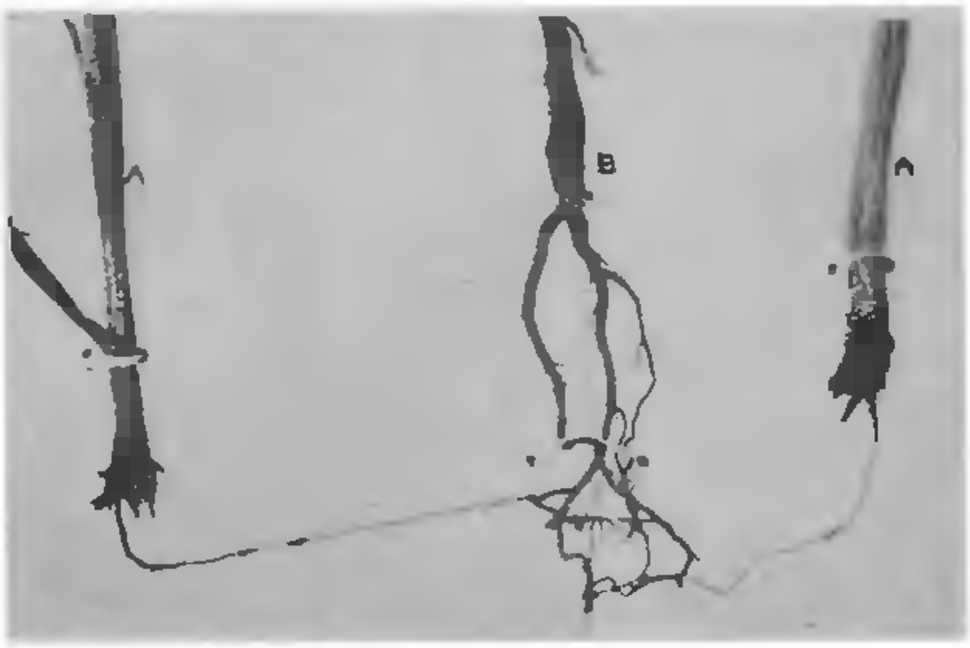

FIG. 2.

Enlargement showing the roots of *S. delphinifolia* (B) attached to roots of *Andropogon Sorghum* (A).

uncertain until it was observed to attack Sorghum.

The writer has not been able to find any reference to previous report of *S. delphinifolia* attacking Sorghum and this is the first instance of its being placed on record.

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June 21, 1938.

[1] Fyson, P. F., *Flora of the Nilgiri and Pulney Hill-tops*, 1915, **1**.
[2] Hooker, J. D., *The Flora of British India*, 1885, **4**.
[3] Cooke, Theodore, *Flora of the Presidency of Bombay*, 1903, **2**, Part II.

The Occurrence of Root-Hairs on Aerial Roots in Sorghum.

DURING 1937–38, the Type-1 Sorghum (*S. cernuum*, Host.) crop on the Station was very much stunted due to deficient rainfall. To understand the effect of drought on the development of the plant, root-studies were undertaken. When the plants were two months old (Nov.–Dec.), the aerial adventitious roots arising from the bottom nodes were found to be trailing along the ground instead of penetrating it as a result of a very hard top layer of soil. These had a silvery, woolly look instead of being green. Microscopic examination showed this to be due to light reflected by innumerable, transparent root-hairs jutting from the epidermis. The root-hairs were distributed *all over the surface* of the aerial root. Normally in the Sorghum plant, the aerial adventitious roots are devoid of root-hairs. Root-hairs develop only when these aerial roots pierce the ground and come into contact with the moist particles of soil. Even when the root-hairs are present they are usually confined to a short distance behind the root tip in the tender undifferentiated tissues. The occurrence of numerous root-hairs all over the root, which is entirely aerial, in the natural field environment is, so far as we are aware, rare. Further, the root-haris on these roots were healthy and full of protoplasmic contents. At the time of observation (Nov.–Dec.) the atmosphere was very dry except for a small amount of dew in the early hours of the morning. As these aerial adventitious roots could not penetrate the hard layer but remained trailing along the surface without coming into contact with moist soil, the only logical explanation for the occurrence of root-hairs on the surfaces of these aerial roots seems to be that they were developed there in response to the dew. The nature of root-hairs themselves, *viz.*, their perpendicular disposition with straight cell walls lends further support for the suggestion that they were developed in response to moisture.[1]

This unusual development of root-hairs strongly suggests the extreme efforts on the part of the plant at obtaining water which it so badly needed during this particularly dry season.

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May 20, 1938.

[1] F. Schwarz, *Untersuch. Bot. Inst. Tübingen*, 1883, **1**, 135–88.