

A NEW PLOUGH FOR INDIAN CULTIVATORS

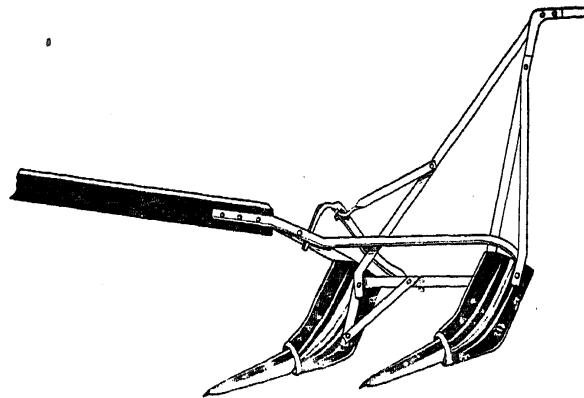
A new plough, which may well go a long way towards solving the important function of heavy cultivation in the field of agriculture has been designed by the Agricultural Engineering Division of the Indian Agricultural Research Institute, New Delhi.

In the course of experimental work it was discovered that the draught of two similar country ploughs coupled together in a certain way fell considerably short of that required for a single plough of the same design. As a result of this factor it was immediately decided to investigate the possibility of designing a double Desi plough capable of operation by a single draught pair of bullocks.

The new plough as finally designed is simple in construction and consists of the bottoms only of standard Desi ploughs, suitably coupled together by means of an iron frame work and pulled by a single central beam. The ploughs are so placed in relation to each other that identical furrows are cut and carry out in one operation similar work as would be formed in two operations by a single standard plough.

This new plough is comparatively light, the weight being approximately 50% lighter than a single plough; thus an average ploughman can easily lift and carry it as required for ordinary operational purposes. The draft is, as already noted, tolerable, as instanced by trials in hard dry land, ploughing 4½"–5" deep, using local Delhi plough bottoms the draft did not exceed 260 lbs. The draft of a single similar plough under identical conditions was 155 lbs. It may be of interest to note that the draft of a single 'VICTORY' bullock drawn soil turning plough under average conditions varies between 320–400 lbs.

The merits of the new plough are obvious. Bullocks, in many instances and so long as ploughing is concerned are underworked and based on observations made on bullocks when operating 'Victory' plough against a single Desi plough there is considered no doubt that this plough is capable of being operated by a single pair over considerable area in this country without undue extra effort and its daily output will be practically double. Taking an extreme case due either to soil conditions or



capacity of bullocks it is only possible to operate for 3 or 4 hours instead of 6 or 8, that is for only half of the usual daily working period, the out-turn of work will be similar as for a full day and the cultivator given extra time for relaxation or alternative work. In the case of a further extreme when soil conditions make the operation of the new plough impossible, this could be done as before with a single plough and subsequent second and third operations done in half the time with the new plough.

Quality and regularity of ploughing must automatically be improved.

Seasoned ploughmen who have used the new plough are enthusiastic about it and state that in operation it is easier and less tiresome to handle due to its 'stability' when in work or simply—it works itself.

When in production it is estimated that its cost will not exceed that of a single plough by more than 50%. Thus it will be cheap. It is simple in construction and easily repaired or even constructed by the village blacksmith or carpenter and may well prove to be of great value in the effort being made to-day to increase food production and at the same time ease and improve the work of the Indian cultivator.

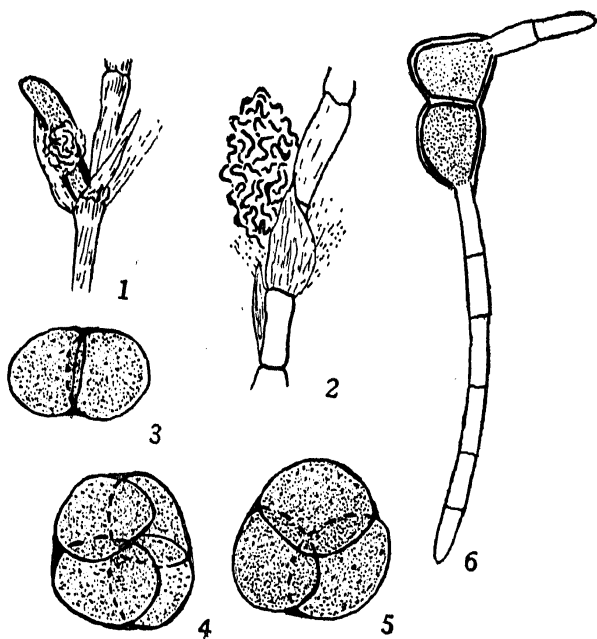
I.A.R.I.,
New Delhi,
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CEREBELLA ON SUGARCANE

DURING the course of taxonomic studies of the sugarcane flower in the material collected in Hebbal, Bangalore, large numbers of spikelets were seen parasitised by a *Claviceps* species, which was similar to that reported by Thirumalachar² from Mysore.

A *Cerebella* species closely agreeing with the descriptions of *Cerebella andropogonis* Ceasti. was found to inhabit sclerotial development of *Claviceps* on sugarcane and convert them into greenish-black cerebriform stromata (Figs. 1 & 2). The conidia (Figs. 3, 4 & 5) of the *Cerebella* were present in large numbers.



FIGS. 1 & 2. Showing the *Cerebella* on ergotised spikelets ($\times 5$ & $\times 7$ respectively).

FIGS. 3, 4 & 5. Conidia. $\times 1800$.

FIG. 6. Germination of conidium. $\times 1,800$.]

Langdon¹ gives a good discussive account of the biologic status and use of *Cerebella* species studied by him in Australia. Even so in the present study, the *Cerebella* was noticed to be making saprophytic growth on the spahacial stage of the sugarcane ergot, partially suppressing the sclerotial stage that would follow in normal development. Venkatarayan³ reports the presence of a sooty mould inciting the folded, cerebriform type of development in the ergotised spikelet of sugarcane in Mysore. The fungus which was identified by him as *Coniothecium* species may be only *Cerebella*. The presence of *Cerebella* is a good field indicator of the ergot.

The conidia of *Cerebella* readily germinated in water developing septate germ tubes (Fig. 6). The fungus was not grown in pure culture, but Langdon¹ reports dark cerebriform stromatic growth of the fungus on potato-dextrose agar.

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1. Langdon, R. F., *Phytopathology*, 1942, 32, 613-17. 2. Thirumalachar, M. J., *Curr. Sci.*, 1943, 12, 330. 3. Venkatarayan, S. V., *Mys. Agri. Jour.*, 1947, 22, No. 3, 75-76.

NOTE ON A "SCHORLITE-PENNINITE" ROCK FROM SHIMOGA DISTRICT, MYSORE STATE

DURING the course of a visit to some parts of Shimoga district, an interesting variety of Tourmaline-Chlorite rock has been noticed at Kagehalla dam site near the sixth mile stone along Bhadravati-Chennagiri road. On detailed examination the Tourmaline is seen to be Schorlite, and the chlorite, Penninite. Further, since it showed an interesting mode of occurrence a detailed mineralogical study of the rock has been made.

The P.W.D. channel section from the dam site reveals the relationship of the rock types of the area. At the fourth furlong of the fourth mile, the country rock—namely serpentinised Dunites (ultra-basic member of the Dharwars) are seen enclosing lenticular xenoliths of Hornblende Schist of various sizes. A large number of pegmatite veins of the associated Shimoga granites are also seen showing intrusive relationship with these Serpentinised rocks. It is along the contact of these Pegmatities and the serpentinised rock that the Schorlite-Penninite rock has been noticed. It has developed in a vertical zone parallel to the pegmatities and invariably bordering them oftentimes showing a width of a foot or two, like dark felted masses.

The rock is brittle, compact, fairly hard, heavy, with a specific gravity of 3.2. It is made up of coal black Schorlite and pale green Penninite. Schorlite constitutes the major bulk of the rock occurring in radiating and sheaf-like aggregations of rods and needles varying from 0.1 cm. to 1 to 1.5 cm. in length and 0.1 cm. to 0.3 cm. in width. Penninite occurs as fibrous aggregates in between Schorlite crystals.

Under the microscope, the rock shows only Schorlite and Penninite without any grains of Quartz or scales of Mica. Schorlite