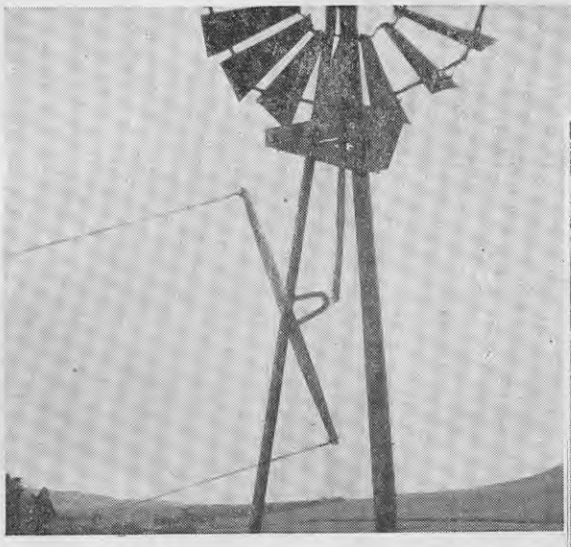
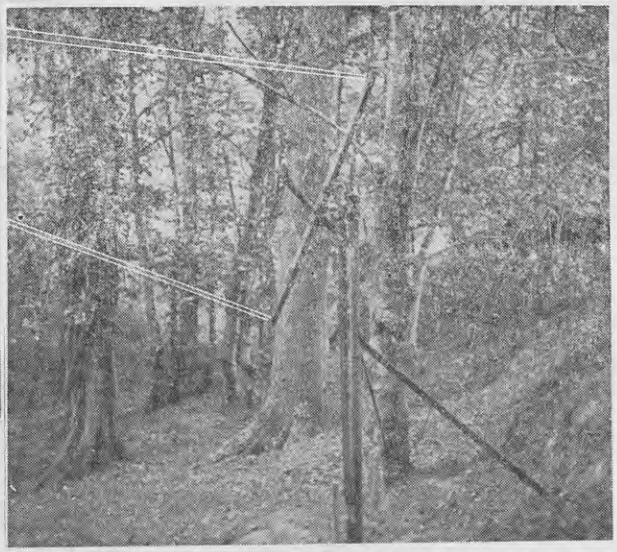
Pumping Water by Windmill From a Gully





Above.—The windmill erected on a rise beside the plantation, showing the mechanism used. *Right.*—The pumping end of the apparatus installed in the plantation.

HOW can a windmill be made to pump water when the source of supply is in a gully and surrounded by a well-grown plantation? This is the question that some years ago confronted a farmer in the Palmerston district (South Island).

The difficulty was overcome by placing the pump over the well and connecting it by wires to the windmill, which was erected on a rise on the southern side of the plantation.

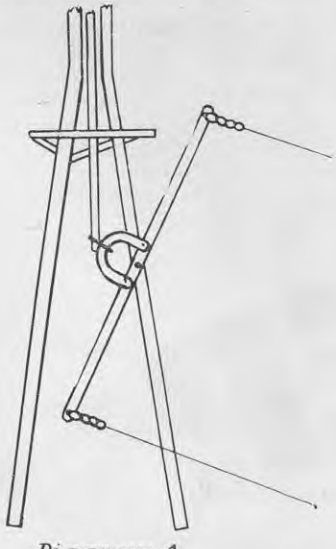


Diagram A: The layout of the various attachments on the windmill end of the apparatus.

The accompanying photographs and diagrams show clearly how the transfer of power from the windmill to the pump was rigged up. The following brief description will explain how the work was carried out.

Starting from the windmill end (Diagram A) it may be seen that the lower end of the connecting rod is pivoted on to the centre of a semi-circular piece of iron, which is in turn attached firmly to the centre of a wooden arm. The centre of this wooden arm is, in turn, pivoted on to a rigid support (in this case one of the windmill legs). It will be realised that this arrangement transforms the customary vertical movement into a horizontal reciprocating action.

To both ends of the arm are attached wires, which are taken through the plantation, where they are attached to a similar arm and fittings (Diagram B), thus converting the horizontal action into a reciprocating vertical movement to work the pump. This arrangement allows considerable variation to suit the nature of the constructional material available.

In this particular instance the arm on the pump end is 5ft. 2in. long, and the semi-circular piece of arm has a radius of 8½in., which works a pump stroke of 2½in. These measurements may, of course, be varied considerably. Care should be taken, however, to ensure that the relative lengths of the arm are such that the maximum pumping stroke is obtained without forcing the plunger beyond either of

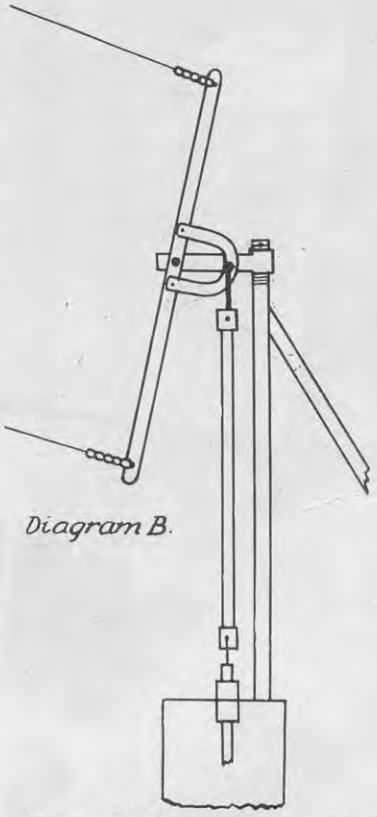


Diagram B: The attachments on the pump end of the apparatus.