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Farming will never be a success unless the farmer had more voice in the disposal of his produce—P. Morrel.

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THE H—M GUNTAKA

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This implement is an improvement upon and is intended to replace that most admirable indigenous implement known in one form as a 'guntaka' and in another as a 'danti.'

Admirable models of simplicity as these indigenous implements are, they yet possess certain features which allow of room for improvement.

In the first place, the arms which carry the blade and the shaft-pole or poles are fixed in the beam and the position of the one in relation to the other cannot be altered at will. The methods of adjusting the depth to which the blade will work are therefore limited to altering the distance between the beam and the point at which the shaft-pole is attached to the yoke-pole, placing the shaft-pole on top of or underneath the yoke-pole, and placing a weight on the beam e.g. by the driver standing on it.

In the case of the guntaka the chief defect of this limited range of adjustability, is that when it is desired to set the implement to do shallow work, the beam must be brought close to the heels of the bullocks and therefore to avoid damage to the animals by the blade they have to be yoked wide apart. Wide yoking has two disadvantages, one is that there is more scope for movement of the yoke on the neck of the bullock and the other is that one animal must always walk on the land that has been worked and therefore leaves hoof marks which are not obliterated at the next turn of the implement. When seed is being covered this is a distinct disadvantage as these uncovered hoof marks lead to blanks in the crop, either because the compacted earth becomes hardened by the sun or because it enables the hoof mark to act as a cup in which rain water collects and remains for some time.

In the case of the *danti*, it is difficult when five or six implements are attached to one yoke-pole to arrange for the coolies to work without interfering with one another and at the same time have all the implements working at the same depth. This may not be a serious defect, but it is a defect, for if one implement is set to work at the correct depth the one next to it must be set to work either deeper or shallower and it is left to the agency behind the implement to apply the necessary amount of correction.

Secondly, the length of the arms is such that when working the implement to remove stubble, the beam is so close to the ground that it collects the stubble in front of it which eventually causes the implement to choke. It is therefore necessary to make frequent stoppages to clear the obstruction.

Thirdly, the blade is fastened to the arms by turning back the ends of the blade and fixing them to the arms. It is therefore not possible to vary the length of the blade used without altering the position of the arms. If therefore different lengths of blade are required for different purposes a separate implement has to be made for each such purpose.

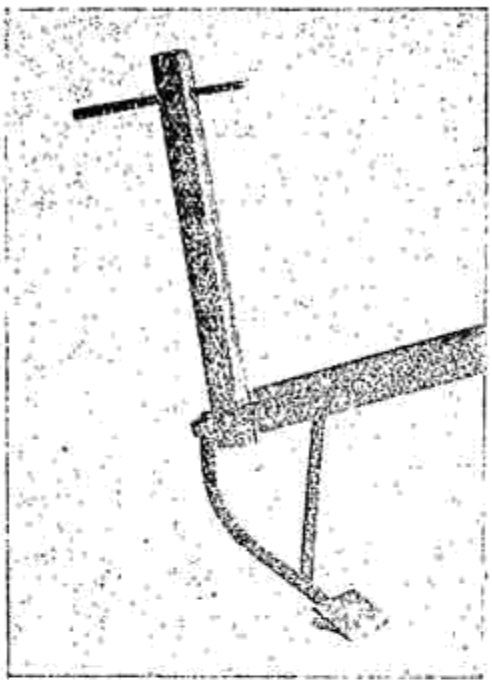
Fourthly, the arms, generally, the beam, the handle and the shaft-pole always, are made of wood, not always well seasoned. The arms, the handle, and the shaft-pole are all attached to the beam by passing them through the beam and fixing a pin in the part projecting. Breakages are common, particularly if heavy work is done. Much time is therefore wasted in repairing the implement, usually at a time when the need for the implement is greatest.

Fifthly, two poles are frequently used for the shaft. In this case a long rope about 20 feet long is required to attach the implement to the yoke-pole. With a long rope time is wasted in getting the implement set properly to begin with, and as the rope stretches under the strain frequent adjustment is necessary.

Sixthly, the initial cost of the implement is moderate, but the need for one implement for each different type of work, the continual meeting of charges for repairs and the waste of time when time is important make it an expensive implement in the end.

The H–M guntaka has been designed to avoid these defects and in addition to do work which the indigenous implement does not do. It is made in three forms which have been numbered respectively No. O, No. 1 and No. 2.

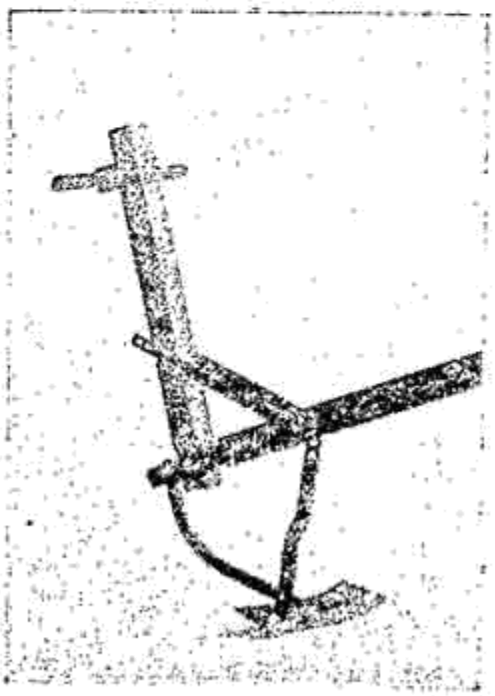
Model No. O. This is the lightest of the three models and is intended to take the place of the danti for intercultivation work. It consists of a curved arm to one end of which the frame is permanently attached. The frame is formed of two pieces of flat iron placed one on each side of the arm and between which the handle and the rear end of the shaft-pole are fixed. The free end of the arm carries the blade, which can be any length up to a foot and is readily removable. Near the blade, on the arm, an adjusting link is permanently attached. The free end of this link is suitably bored and can be attached to the frame. By means of this arrangement the position of the arm relative to the frame can be altered and the depth of working of the blade varied. Between the arm and the bottom of the handle and between the handle and the end of the pole a space is left. The angle between the handle and the frame can therefore be altered and by putting a wooden wedge between the handle and the end of the pole the desired position can be maintained.



No. O

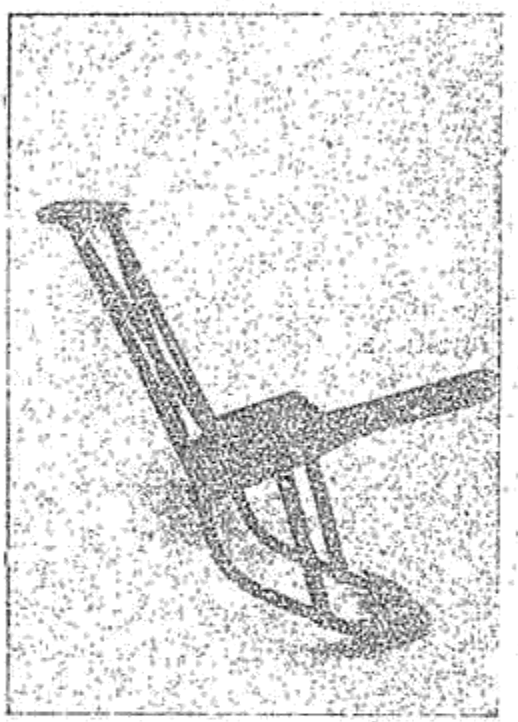
Like the *danti*, 4 to 6 of these implements can be attached to one yoke-pole and worked at one time, but with this implement owing to the adjustability of the handle and of the arm it is possible to arrange for all the implements to work to the same depth without the workers interfering with one another.

As the blade is easily detachable, it is not necessary to have an entirely new implement for each differently spaced crop. All that is necessary is to change the blade.



No. 1

Model No. 1. This model is very similar to the No. O model but is more sturdily built. The main differences apart from strength are that the adjustability of the handle is greater and is achieved by two adjusting links lying between the frame and the handle and that the cross piece of the handle is removable and can be fitted as desired for use with one hand only or with two hands. This model can be used for intercultivation and also for ordinary cultivation work, removing stubbles etc. Owing to the greater strength of this model the length of blade used can be increased to 18 inches. Moreover with a curved blade this implement can be used for harvesting groundnuts, uprooting strong growing weeds and the stalks of cotton plants after the crop has been harvested. The draft is not heavy and a small pair of bullocks can do the work perfectly well.



No 2.

Model No. 2. This is the heaviest and strongest model of all. It differs from the other two models in that the frame is wider and stronger, it has two arms which are carried on the outside of the frame at a distance of 18 inches apart and in the arrangement for the handle which consists of an iron frame with a wooden cross bar. The arms as before are adjustable. The blade is supported at two points and if a straight blade is used, the length may vary from 22 inches to 4 feet. Except that this model cannot be used for intercultivating crops sown in lines spaced closer than 2 feet apart, it can be used for the same kind of work as the No. 1 model. As however the blades are longer a greater area can be covered in the same time.

For shallow work, covering seed or working the soil to a depth of 1 to 2½ inches, this implement can be drawn by a poor pair of bullocks. For the former work, a 4 foot blade can be used and in order that there should be no projections on the side of the blade next to the soil the blade can be turned upside down.

For deeper work, harvesting groundnuts in light soil and working the soil to a depth of 3 to 4 inches, this model can be drawn by a medium pair of bullocks. It is however intended also to be used for heavier work, stirring hard soil to a depth of 5 to 6 inches and at the same time uprooting cotton stubble. For this kind of work a pair of good bullocks is necessary, and the implement should be fitted with a curved blade. A curved blade should also be used when harvesting groundnuts.

This model has the added advantage that the back bar of the frame acts as a clod crusher when the implement is worked in a field in which the soil has been turned up in clods.

Each of these models is fitted with a single shaft-pole only. They are therefore very quickly set and a short length of rope or chain is all that is needed to attach the shaft-pole to the yoke. Except for the pole, which in the No. O model may be a bamboo, and the handles, these implements are made of iron or steel. They therefore stand up to their work and are not in continual need of repair. In actual weight they are no heavier than the indigenous implements, the heaviest can easily be carried by one man. Their strong construction, durability, adaptability to different uses, the efficiency of their work and their freedom from the need for frequent repair mark these implements out as being a distinct advance on the indigenous implement.

A word of warning is necessary in regard to the use made of the adjusting arrangements. When the soil conditions are unfavourable, there is for example a lack of moisture, the soil is hard and it is difficult to get the blade to penetrate the soil, the adjustment should not be altered but instead, pressure should be applied or the implement should be weighted by means of a stone or some other readily removable weight. If the adjustment is altered and the angle between the pole and the arm is increased, the implement will either not run smoothly or it will tend to penetrate the soil to a greater depth than is desired and cause unnecessary trouble to the bullocks pulling the implement.

The prices of these implements are No. O, Rs. 7–12, with handle but no pole, No. 1, Rs. 11–8, with handle but no pole, No. 2, Rs. 18–8, without either handle or pole. These prices are for cases of 10, 10 and 5 respectively and are all f.o.r. nearest railway station.