SMALL-GRAIN NURSERY EQUIPMENT
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CHANGES in the size, shape, arrangement, and replication of small plats have necessitated changes in the methods used in the planting, harvesting, and threshing of the grain grown on such plats. Features of five machines now in use on the plant breeding plats at East Lansing and developed under a cooperative project between the sections of Farm Crops and Agricultural Engineering of the Michigan Agricultural Experiment Station are discussed in this article with the hope that they may be helpful to other workers.

Whenever a change has been made, it has been judged on the basis of (1) maintenance of purity, that is, freedom from mechanical mixture; (2) simplicity of operation; (3) efficient use of man power; (4) simplicity of construction; and (5) increase in speed of operation. The first requirement is the most essential and its importance is recognized by all. The other requirements are making themselves felt more and more as experiments are becoming more extensive and refined and expense is becoming more of a factor in planting, harvesting, and threshing.

MACHINES NOW IN USE

Planter.—Four planters, with force feed, were built in 1930 following some of the suggestions of Wiebe. Three were built with small hoppers and one with a large hopper. The former require only 10 grams of seed to fill each machine so that it will begin to plant and are used for planting single rows or replicated plats of a few rows each. The large-hoppered machine is used for planting larger plats. The gears, shown at the right in Fig. 1, mesh as the head is dropped into place. A lever on the handle, within easy reach of the left hand, enables the head to be raised sufficiently to disengage the gears.

Seeds of wheat, barley, oats, rye, sugar beets, and kidney and pea beans have been planted satisfactorily with these drills. Some idea of the rapidity of planting may be gained from the fact that the 7,000 18-foot rows of the barley and oat nurseries of 1935 were planted in 16 to 17 hours, and the 1935 pea bean nursery of 1,350 30-foot rows was laid off, marked out, and planted in a 9-hour day, using these machines.

Cutter.—The present cutter, a one-wheeled garden tractor, was obtained in 1930. One of its regular attachments was a 39-inch oscillating cutter bar using standard sickle knives. A special hood was built over a modification of this regular bar so that it would allow one or two rows of grain to be cut per trip. Fig. 2 gives a side view of the assembly. Practice in the field proved that oats and barley which were standing well could be cut two rows at a time very nicely,

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