Alsike

ment is necessary in order to handle the hay crop successfully.

The introduction of modern machinery has wrought almost the same change in the harvesting of the hay crop as harvesting machinery has in the harvesting of the small grain crop. The labor involved under present conditions in cutting, curing and storing a ton of hay is but a small fraction of what it was under hand methods. In the year book of the Department of Agriculture of the United States for 1909, we find when hand methods prevailed that the scythe, hand rake and fork required eleven hours of man labor to cut and cure one ton of hay. Now by means of modern machinery this time has been reduced to 1 hour 39 minutes.

This introduction of machinery into the handling of the hay crop means much to the average farmer. It not only means a saving in time, but it means a saving of considerable hay as well, for when it comes to curing tame grasses, it is wholly and solely a case of "making hay while the sun shines," and every possible advantage must be taken of good weather; otherwise the entire hay crop may be ruined or damaged to such an extent that it is not marketable.

MOWERS: The first operation in the handling of the hay crop is that of cutting the grass, and for this purpose the mower is provided. As we see it today there are two types on the market, the side cut mower and the direct cut mower. In the case of the former the cutter bar is placed at the side of the drive wheels, while in the latter it is placed directly in front of the drivers.

The direct cut mower is not used to any extent as it makes it necessary for one horse to travel in the uncut grass, which is very tiresome on the horse and if the ground be soft a great deal of the hay is trampled down to such an extent that the cutter bar is not able able to get at it and considerable grass is wasted.

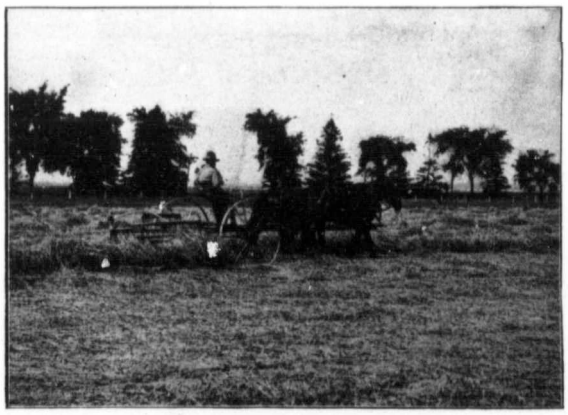
Timothy

Mowers today are made in a wide range of sizes; some small machines of 3½ ft. and 4 ft. cut are made for one horse and these machines are used principally for the mowing of lawns and small plots such as are found on experimental farms. The field machine, however, requires two horses and is usually 4½, 5 or 6 ft. cut. Machines have been built with a 7 ft. cutter bar, but in heavy hay there is so much side draft as to make this almost impracticable.

The mower of today and the mower of a few years ago are considerably different. In the first place most manufacturers build the wheels as high as possible in order to lighten the draft.

"Buck" and "Bright" and the rake helping to lay up a food supply for winter.

Roller bearings are also used and where any gearing is necessary it generally runs in oil, the principle exception to this being the main spur gears which transmit the power from the wheels to the smaller gearing. A mower is called upon to do more or less heavy work and this is augmented by the fact that a rotary motion must be transmitted into a rectilinear motion, which causes considerable jar. It is, therefore, necessary that all gearing be of ample proportions, that it run in oil and that all journals and boxes be so constructed that the wearing surface is large and at the same time permits of being readily oiled.



An I. H. C. side delivery rake making ready for the loader.

The mower is a very simple machine and may be said to consists of the following parts: the frame, crank shaft, main gears, wheels, pitman, cutter bar, grass board and such levers as are necessary for the operation of the machine. Ordinarily it causes very little trouble, but the following may be found of considerable use.

If the mower fails to cut the grass and leave the stubble clean, there may be several things wrong. First, the knife or sickle may be dull. Second, it may not fit well over the ledger plates. thus losing the advantage of a sheer cut. Third, the knife may not register, or in other words, it travels too far in one direction and not far enough in the other.

The first of these troubles may be remedied by grinding, the second by adjusting the clips on the top of the knife. There should be but a very slight clearance under these clips and the exact amount has been given as 1-100 of an inch. To make the knife register in some makes, the pitman must be adjusted, while in others the yoke must be adjusted. If the mower leaves a narrow strip of grass uncut, it indicates that one of the guards has been bent down, a common thing to happen to mowers in stony fields. Mower guards are now universally made of malleable iron and may be hammered into line by a few sharp blows with a hammer. The guards may be lined up by raising the cutter bar, sighting over the ledger plates and along the points of the guards. In cutting on stony land or ground that contains a large amount of hummocks, it is well to tilt the cutter bar pretty well up, as this will allow the bar to ride over the stones and over the hummocks, rather than cutting through the latter. When the cutter bar goes through a hummock it collects considerable grit which tends to wear the edges of the sections and at the same time round off the ledger plates.

RAKES come next into service as a hay machine and form the standpoint of saving labor, it certainly does its share. With the old hand rake it was a killing proposition to rake up an acre of hay, while with the ordinary sulky rake, which is generally drawn by one horse, it is but the matter of a few minutes.

One of the first horse rakes that came into use was what was known as the old spike tooth rake. This consisted of a bar of wood with long prongs on either edge of it. This bar was set in a suitable frame and a man walked along behind tilted the bar up so that the teeth stuck in the ground and hence dumped the hay. While this saved considerable time, it was a killing job, one which no boy could handle. Most of the rakes today are made of the self dump type and there is really no reason why any farmer should purchase any other kind. The mechanism is very simple and throws the labor of dumping on to the horse, where it should be. Most self dumping rakes are made so that they can be dumped by hand if necessary and occasion often requires that this be done.

The sulky rake must be selected to suit different conditions. The spacing of the teeth varies from 3½ to 5 inches and their size may be either ⅜, $^{7}/_{16}$ or ½ inches in diameter. The teeth may have one or two coils at the top, giving them more or less flexibility. For light hay the teeth must be closely spaced but not necessarily heavy. Heavy hay must have heavy teeth. For the general purpose rake that with heavy teeth is the one most desired as it will answer the purpose for light hay just as well as a light toothed rake.

A special rake is now manufactured for alfalfa and where this crop is raised, should be purchased. In buying a rake, the width of the mower should be taken into consideration for a rake should take two swaths of the mower. If the swath is split the hay has a tendency to cling together; consequently, a very uneven and unclean job is the result.

With regard to the construction of a rake. It should have a heavy rake bar, with a minimum of holes or slots punched in it and this in turn strengthened by a truss rod. The wheels should also come in for a certain amount of consideration as these are parts which give out most rapidly. Until the advent of the steel wheeled rake considerable trouble was experienced through the falling apart of the wheels in dry weather. Interchangeable wheel boxes which can be replaced when worn, are also recommended.

The side delivery rake is also another type and was brought about by the introduction of the hay loader, the loader creating a demand for a machine which would place the hay in a light windrow. Practically all of these machines consist of a cylinder mounted obliquely to the