OPERATOR'S CONTROL OF SOIL-CONDITIONING IMPLEMENTS
ARNOLD P. YERKES

Since the original conception of mechanical farm operating equipment, a most important desideratum from an operator's point of view has been that of proper control over the implement. By that is meant the facilities supplied by the manufacturer whereby the essential working part of the machine or implement, as distinct from the frame-work or draft means, can be readily adjusted to meet the ever-changing conditions encountered in the field.

Usually this is a matter of maintaining a constant relationship between the plow bottom, cultivator shovel, or drill marker, and the surface of the ground. The ground surface, be it ever so carefully tilled and prepared, is never actually level in an engineering sense and it will be easily realized that the correct working relation of the tool to the ground surface, whether plowing, tilling, planting, fertilizing, digging, or harvesting, is probably the most important of all factors if good and satisfactory work is to be done.

It is our understanding that soil scientists have determined that there is an optimum plowing depth for each type of soil under given conditions. Plowing deeper than the optimum depth not only increases wear and tear on the tractor and plow and consumes more fuel, but has the still greater objection of decreasing the crop yield. Plowing shallower than the optimum depth, while reducing wear and tear and fuel consumption, also reduces the crop yield.

Accurate maintenance of a desired plowing depth, therefore, is essential if maximum returns are to be obtained. It is also our understanding that your profession has proved that yields of many crops are materially affected by the depth of planting. In this operation accurate control within relatively close limits is necessary if the crop is to get a good start. A half inch above or below the optimum depth may result in partial or even complete failure in the case of some seeds.

In cultivating, depth is not so critical, although there are frequently crusted soil conditions that demand some means of forcing the shovels into the ground and maintaining a minimum depth if a worthwhile job is to be accomplished.

In harvesting a root or tuber crop, ability to maintain sufficient depth of cut is essential if excessive damage to the crop is to be avoided. At the same time, too great a depth wastes power and results in poorer quality of work. It would seem to be the function of the implement industry to provide equipment which will enable farmers to carry out practices that your profession has found to be necessary to obtain the best results.

for changes being made in the line of draft. We are familiar with the sight of a plowman with the handles of a plow, trying to cut a furrow and maintain an even depth of work varying conditions of the soil. Our forefathers were pastmasters in the art of dodging stumps and in newly cleared land, but "Time makes ancient uncouth" and equipment that was quite satisfactory for a past generation can not be tolerated for conditions, let alone for those of tomorrow.

Many of the adjustments on the original Chalmers and McCormick reaper were made by changing bolts and clamped-on parts by slow and tedious means.

Unfortunately, it is only too true that some implements sold today still include some of these primitive arrangements, but happily the advent of the tractor not only ushered in a new era of farm power; it can now be seen that the way was laid open for a same time for improved means of implement control with a consequent improvement in quality of work. However, these improvements were very slow in development at first and it is only quite recently that the farmer has begun to really benefit by the adoption of the modern tractor, for a long time, was simply a four-wheeled horse-powered vehicle showing a decided family resemblance to the old steam gargantuanas which crept across our virgin prairies, pulling behind a serried ranks of plow bottoms with long, many-levered which had to be manipulated by main strength at the end of every furrow.

You all know that the general conception of a tractor, for a long time, was simply a four-wheeled motor vehicle showing a decided family resemblance to the old steam gargantuanas which crept across our virgin prairies, pulling behind a serried ranks of plow bottoms with long, many-levered which had to be manipulated by main strength at the end of every furrow.

As time went on the newly developed automobile exerted somewhat of a refreshing influence on the design of farm tractors, and bit by bit the idea of mechanical farm power was evolved. Single-cylinder tractors soon gave way to two-cylinder jobs; and, as time marched on, the demand for power, less weight, and smooth running brought modern four-cylinder engines into the picture. Mobile type transmissions and steering devices were adopted, and eventually pneumatic tires became a parcel of the modern tractor.

However, it is now well known that what is generally termed the "conventional" arrangement of a wheeled tractor, built strictly along automobile lines, has great drawbacks for numerous farm operations, especially due to lack of proper visibility of the working elements, non-adaptability to mounted equipment, and general lack of operator's control over the necessary working adjustments of the drawn machines.

In cultivating, depth is not so critical, although there are frequently crusted soil conditions that demand some means of forcing the shovels into the ground and maintaining a minimum depth if a worthwhile job is to be accomplished.