

has a natural taste for dairying, though dairying was not formerly followed. This boy was encouraged to start while quite young on a small scale; though the profits were common property in the family he felt it was his venture, and taking an interest in it, it is easy to lead him to learn all he can about dairying, and if he looks forward to having full charge of an up-to-date dairy plant on his father's farm he is not likely to wish or to plan to leave the farm for anything else. As soon as his work is enough to occupy all his time he should be released from other occupations and allowed to devote himself to his chosen line and given every chance to perfect it. If in the course of time his plant becomes large enough to need an assistant he should be given such help as far as possible under his own direction without complication with other farm activities.

Or it may be a hog business is preferred, or poultry, or horse breeding, or grain growing, or possibly he wishes to combine two or more of them, or where there are several boys in a family they are likely to select different departments, and a little judicious suggestion and leading by the father during his sons' boyhood will mean that in a few years he will have an expert at the head of each department of his farm work, each assuming the care of the routine while the father, as general manager, keeps an oversight over all.

The term mixed farming is dangerous. What we want is departmental farming. The term "general store" suggests a little one horse affair run on the lines of the

business of 50 years ago. A "department house" suggests something larger, but more particularly up to date. Our farms should not lag behind. While our boys see with the instinct of youth, which perceives but does not analyze, that the town is ahead of the country, they want to go to town. When, however, the boy has a chance to become a partner and a department manager in a farm business more strictly up to the minute than any other business he knows of, you could not chase him from the farm with a club.

No farmer can excel equally in all departments of his business. If each son goes farming for himself each may excel along one line, but none of them in all. Even in the same family they are more likely to excel along different lines than for all to have the same preference. If among three brothers one is pre-eminently a grain farmer, one a dairyman and the third a hog raiser, how much more economical would their production be if they combined, and each took charge of that part for which he had most talent, and let others look after what was less congenial to him but important to them.

Alta.

S. NICHOLSON.

### A Good Investment.

On a trip through the country one day recently we passed a farmstead where three calves were tethered to trees in an old orchard. It was early in the morning, just about the time the average farm calf is fed, and

we were pleasantly surprised at seeing three quite small children, two boys and a girl, busy feeding the calves. Each had a pail, and to all appearances each had his or her own calf. Up bright and early, dressed and ready for the day, the first job was tending to the calves. These were the children's own calves. They were as interested in them as the farmer himself was in his well-kept farm. They were competing one with the other in an effort to produce the best calf and win a premium of \$5 which their father had promised the one of the three who succeeded in having the best grown and thriftiest calf in the fall. The father knew and understood the child mind. He had not forgotten the days of his boyhood when a five-cent piece looked like \$100 to him. He understood also that defeat might bring discouragement, so he made prizes of \$3 and \$2 respectively, as second and third premiums for good work. And besides each child was to permanently possess the heifer calves so raised. It was not to be a case of Johnnie's calf and father's cow. The children knew their father would allow them to keep their calves until mature, and after if they wished, or if they chose to sell to have the money their very own. The father called it a good investment. For three calves he had built up an interest in cows, dairying and general agriculture in three young minds. He figured that it was well-spent money. He advises the children to hang on to their heifer calves. They are learning as they go. Is he right?

## Automobiles, Farm Machinery and Farm Motors.

### Controlling the Power.

Even the veriest tyro knows that momentum is secured from an automobile by power developed through the engine and transmitted to the wheels which, in spinning, push the machine along; but perhaps it is not a matter of common information that a power plant cannot be started under a load without disastrous results. It is, therefore, necessary that in order to move your automobile, the engine should first be started, and having been gotten in operation, connected by a simple system, with the rear wheels, at a time when it has given sufficient energy to undertake the responsibility attached to moving the car and its contents. Hence it is necessary to have what is known as a clutch, and for the purpose of this article, we shall refer to the cone type of clutch which is usually built with a leather facing that operates against a conical surface in the fly wheel. The mechanism is under the guidance of the driver through a pedal projecting through the foot board. The cone of the clutch is equipped with small springs around its face, and these press the leather out at their respective points by the use of coil springs. The clutch is brought into contact with the flywheel, and when they have been properly engaged the clutch and flywheel turn as if integral, or, in other words, as a unit operating in such a manner that they send the power to the rear axle and through it to the wheels. You can now see that by engaging the clutch you connect up the force of the engine and that by slipping the clutch you break what might be called the circuit. It is well, when you are driving your car, to always keep your foot upon the clutch pedal in order that in a case of emergency there may be no inaccuracy about your movements or any clumsy work. A good cone clutch does not demand a great deal of attention, but we would strongly urge you to bear this in mind constantly that no oil or grease should be put into the clutch housing. There is nothing there that requires lubrication, and as a matter of fact, both oil and grease cause a clutch to slip. Should you make this mistake, however, a little Fuller's Earth will remedy the difficulty. It is also well to remember that when the clutch leather becomes stiff and dry, some Neats foot oil will soften it and add greatly to its gripping qualities.

The transmission is vitally associated with the clutch, because it is through the change gears of the former that the latter is able to work. Before going any farther, we should make it plain that an internal combustion engine develops power in direct ratio to its speed. This may be made very clear by stating that if a power plant gives five horse-power at two hundred and fifty revolutions, it will give double the amount at five-hundred revolutions. Such a condition means that the harder you speed up your engine the more power you are going to develop up to a certain point. Of course, you will understand that you cannot go on indefinitely increasing the number of revolutions, because if the speed became terrific the construction of the engine would not stand the strain for any considerable length of time. Manufacturers usually state, if asked to do so, the limit which their output can attain. The perplexing problem, in connection with an engine, rests upon the fact that sometimes a great deal of power is required to get a high speed, and upon other occasions, just as much to move very slowly. You can easily grasp the idea that asphalt is much preferable to a deep, rutty mud hole. In order to be able to deliver the power of the machine to the rear wheels in such a manner that great power can be given for low speed or for high momentum, it is essential that there be change speed gears built on what is called a transmission. This word transmission comes from two Latin words, "trans"—across, and "mitto"—to send. By these change speed gears, the power is regulated in its delivery. In the selective sliding type transmission, there are usually two shafts, one above the other, in an oil-tight casing. The lower, or counter shaft, contains four gears and the upper two, the lower

ones revolving as a unit and upper ones working independently. With these two shafts and gears it is possible to develop the three speeds ahead and the reverse. The transmission gears are made of the very strongest alloy steel known to the automobile business and the teeth are beveled. Both these precautions have been taken in order that the gears may be able to mesh readily and noiselessly. It is essential, for easy operation of the gears, that the clutch be handled with precision. You can easily believe that it is going to be dangerous to have the edges of the teeth grind each other before becoming engaged.

AUTO.

### Mower Troubles.

Heavy draft may be caused by: (1) poor lubrication; (2) dull knife; (3) non-alignment.

The first two are easily understood, but the third is often overlooked. The sickle and pitman should work in a straight line. If the outer end of the cutter bar has dropped back, power is consumed by increased friction. Non-alignment is caused by wear in the hinge joints between the cutter bar and the mower frame. Some mowers now carry special aligning adjustments so that they change the position of either the inside shoe in relation to the yoke or the yoke in respect to the drag or push bars. Such adjustments change the angle between the cutter bar and the pitman at the hinge joint; if they do not change this angle they are not true adjustments.

### Uneven Stubble and Side Draft.

Such troubles are very common and are due to poorly adjusted cutter bar parts. Think of a pair of scissors. If the blades are held close together they cut well and a

clean cut is easily made. Loose shears will allow the material to wedge with the result that it is chewed off. The same thing applies to the cutter bar parts of the mower. When the sickle sections are held down close to the ledger plates of the guards, the stalks are easily cut, but the moment the sickle is forced away from the ledger plates the grass begins to wedge and trouble results. Bend the blind section up to hold the knife down against the ledger plates. Failure to do this causes extra draft as well as side draft, because the cutter bar is kept dragging. The remedy is up to the farmer when necessary to replace badly worn clips.

Causes for uneven stubble and side draft are: (1) guards out of alignment; (2) badly worn clips; (3) loose sickle sections; (4) sickle not centering (not "timed").

If a guard is bent down, its ledger plate is carried away from the sickle, if it is bent up, it forces the sickle off the adjacent guards and the shearing action is affected. The guards are malleable and will not break when hit with a hammer. If a clip has been hammered down too far, it can be easily brought back with a cold chisel. New clips are the surest method of clip repair. If the sections of a sickle have become grooved by the clips, it may be necessary to bend down new clips after they have been placed. Of course, this cannot be done on cutter bars using both old and new sickles, they have to be adjusted for the newest sickle. Emphasis must be placed on the necessity of preventing binding. The extra draft due to the sickle binding may very easily become more objectionable than side draft.

Uneven stubble and side draft resulting from a loose sickle or guard, can be detected easily by long and ragged stubble left at any particular point along the bar or by the rattle of the loose parts. The remedy is obvious.

The sickle not centering is a cause of uneven stubble which is often misunderstood or overlooked. At the end of the sickle's "out" and "in" stroke, the points of the



Soldiers Do Harvesting in Europe.