

although this could easily be done on another card with a column for each horse.

The time-cards consist simply of plain card-board, about 8 x 11 inches, ruled out and written in by hand. In the horse-card it will be observed that there are four horizontal spaces for each weekday in which to specify various jobs. We find, as a matter of experience, that this is about the right number. It is very seldom that any or all of our horses are working at more than four different jobs on any one day.

At the end of the week, or the first of the ensuing one, these cards are handed in to the manager of the farm, who takes them to the office and has the figures transferred into a stiff-backed book kept for that purpose. In this book every account has a page of its own, and on it is entered from week to week the total number of hours and the estimated value of the time spent on that particular job. In the case of such accounts as that for the corn crop, separate items are made for before-planting cultivation, after-planting cultivation, cutting corn, silo-filling, etc. The weekly entries are summarized at the end of the year into some such form as shown in the accompanying table.

The value of the time is computed on a basis of so much per hour, this basis being struck according to monthly, weekly or daily wages paid to each respective man, with a reasonable margin to allow for lost time and the services of the foreman directing the work. Thus, if a man receives thirty-five dollars a month, counting board, and works an average of twelve hours a day for 26 days, with six hours' chores every alternate Sunday, his working time amounts to 324 hours, which stand us nearly 11 cents an hour. Adding a margin makes it 12 or 13 cents, according to the amount of margin allowed. Probably it would be better to charge different rates for fair-weather and rainy-weather jobs, but we have not done so as yet. Horse-time was calculated at 10 cents per horse per hour until winter closed in; since then it is figured at 5 cents.

In our system of bookkeeping, all money paid out for wages is charged directly to wages account, and all money paid out or feed used for the horses is charged to the horse account. At the end of the farm-account year, in April, the various other accounts will be debited to the value of the men's and horses' time expended upon the several crops, classes of live stock, or the improvements, as shown by the totals in the time-book. The wages and horse accounts will be credited with the value of time charged against these other accounts. The horse account will also be debited to the value of men's time spent as chores in the horse stable. The aim is so to adjust matters that the wages account will practically balance even. It is expected and hoped that the horse account will show some profit.

QUESTIONS ANSWERED BY THESE RECORDS
As illustrating the information obtained by means of these records, it will suffice to submit certain figures arrived at.

The cost of mowing, raking, coiling, hauling in and mowing away an estimated forty-five tons of hay cured from thirty-two acres was \$1.20 per ton, or \$1.70 per acre.

The cost of putting in 22 acres of spring grain, including the plowing of 13 acres of sod, was \$63.10, less than three dollars per acre. The total labor (except threshing) involved in growing and harvesting the crop from 25 acres of spring grain, yielding 563 bushels, besides some green feed and unthreshed fodder, was 370½ hours of men's labor, costing \$61.89, and 485 hours of horse-time, valued at \$48.58—a total cost of \$110.47. This does not include the cost of preparing land for three acres of barley sown thinly as a nurse crop for alfalfa.

The harvesting and storing of 150 bushels of fall wheat, grown on about six acres, involved 50½ hours of men's and boys' labor, valued at \$7.53, and 36 hours of horse time, valued at \$3.60—making a total of \$11.13.

The spring preparation of about ten acres of fall-plowed land for alfalfa (including the seeding of six acres where no nurse crop was used, also treating of the seed with nitro-culture, etc.), took 57½ hours of men's time, worth \$9.82, and 134 hours of horse time, worth \$13.40, or a total of \$23.22.

Threshing 715 bushels of grain cost \$14.56 in labor, and, of course, board, which is always allowed for in these statements, besides the threshermen's bill of \$15.80, making a total of \$30.36, exclusive of fuel and such items. This works out to about 4½ cents per bushel.

To produce and harvest some eight hundred bushels of roots on spring-plowed new ground required, exclusive of clearing and breaking, 318 hours of men's labor and 121½ hours of horse time, at a combined cost of \$55.71, or nearly 7 cents per bushel. Late seeding, drouth and growing trees cut down the yield and made the bushel cost high.

Details as to cost of growing corn and filling silo, the accompanying tabular summary will supply.

SPECIMEN PAGE FROM SUMMARY IN TIME-BOOK.

Corn Account.

Operation.	Men's time.		Horses' Time.	
	Hrs.	Value.	Hrs.	Value.
Plowing and cultivation (before planting).....	156½	\$28.02	428	\$42.80
Planting	32	5.34	37	3.70
Cultivation (after planting)	124	20.79	173	17.30
Hoeing	73	18.45		
Shelling	8	1.20		
Protecting seeds from birds	5	.75		
Harrowing	9½	1.58	12	1.20
Cutting 16 acres hill corn with hoes	81½	15.21		
Shocking	20	3.85		
Hauling ear corn and some of the stalks	5½	.83	9	.80
Husking 82 bushels		5.00		
Silo-filling	286	51.00	201	22.35
	801	\$152.02	860	\$88.15
		23.00		
		\$175.02		

Total cost of cutting 15 acres and filling silo twice, \$111.56.

Cost per acre of cutting and ensiling corn, \$7.43.

Cost per ton of silo capacity (estimated), 74c. Total labor cost (men and horses) of growing 16 acres hill corn, ensiling about 15 1-3 acres, and husking the balance, \$263.17.

Total labor cost per acre of growing and harvesting corn crop, \$16.44.

Total labor cost per ton of growing and storing silage on about 15 1-3 acres (estimated), \$1.65.

[Note.—The cost of filling our silo, while lower than many authorities have calculated, was, nevertheless, higher than it might have been, for several reasons. Some time was lost through refilling, through bad weather at the second filling, through the stalks having been badly bent by an August gale, and through having six teams the first day, whereas four were found plenty to keep the outfit going. The corn was cut in three quarter inch lengths.

Crop Production.

It matters not what line of farming you are following, or choose to follow, there is no getting away from the fact that crop production is the foundation upon which all the many phases of agriculture rests. The live-stock or dairy farmer must, to be most economical, produce as much as he can of the feed which his stock consumes. It stands to reason that the grower can produce the feed at less cost than if it goes through the hands of one or more feed warehouses, each adding its commission. The fruit farmer and market gardener are, like the grain farmer, entirely dependent upon the crop in which they are specializing, and so must pay particular attention to all the details, that the crop may be a good one. All the produce of the farm must come from the soil, and upon the condition of the soil, the kind of seed sown, and care given to the crop while growing, depends to a large extent the amount and quality of the yield. True, the weather conditions and amount of rainfall play an important part, but if the greatest precaution is taken, by thorough fertilization, cultivation and good seed, to guard against loss from unfavorable conditions of heat and drought, these banes of the poor farmer are not so severely felt. One must always be prepared for a bad season, and if the preparation is sufficiently thorough, little fear need be entertained about the outcome. The farm which is in a poor state of cultivation, and is seeded to poor, shrunken, light, dirty seed, scratched in on the surface with worn-out implements, and receives poor care during growth, is usually harvested in a slipshod manner, and the stream of grain which runs from the spout of the threshing machine is usually a short and small one, composed of an inferior quality of seed which sells for a low price on the market, or, if used for feed, is of such poor quality as to require larger quantities, which are often not given, and thin stock or short milk and more careless, and as a result his crops become lighter and lighter from year to year, until a bad season arrives and puts a stop to the process. Failure or success depends on the crops, and crop production depends largely upon the man in charge.

What can be done at this season, when the frozen ground is covered with snow, to insure

heavier crops next summer? There are several little things which can be attended to, and a few of them are "big" when the results are noted. What better time is there than now to select the seed for the coming spring? Everyone agrees that there is no time like the present, but many do not avail themselves of the opportunity. Selection in the field would be a better beginning, but where this has not been done, a selection of the best seed in the best bin from the best field cannot help making a difference in the stand of the coming crop. Get the fanning mill going before the grain has dwindled to a small amount, scarcely more than is required for seed. Clean and reclean, and, where possible, for small acreage, even hand picking may be profitable. Is seed selection profitable? Would you consider anything which can be done with so little labor, and at a time when other work is not pressing, and which will add to your crop yield twenty per cent., profitable? Experiments have proven this. Why not take advantage of it? It stands to reason that plump, heavy, uniform seed will insure a better germination and, with the better germination, stronger plants, resulting in a more uniform stand and ultimately a larger yield. It is the large yield you are endeavoring to produce, and what easier and more effective method can you conceive than the cleaning the worthless, shrunken, weak-germed seeds out of the seed grain. Use the screen and plenty of wind. Blow out all the light kernels, and screen out all the medium to undersized, leaving only the large, plump seed.

While doing this, think of how you can improve your rotation next spring. The winter offers an opportunity for thinking and studying, and the summer for trying out the plans. Only a small percentage of our farms are handled under a rotation system, and when it is known that such a system has actually increased the returns from some farms fifty, sixty, and even one hundred per cent., such a practice is surely worth a trial. Make an effort so to lay out your crops as to start a suitable rotation for your farm. Three or four-year cycles have proven the best, with one hoed crop, one cereal and one clover crop, or, in the longer period, two hay crops, or one hay and one pasture. Think about this now. Try it in the spring.

The farmyard manure is a great boon to your crops, and the treatment of it is a matter which concerns all farmers at the present time. If there isn't too much snow in your district, a good plan is to draw it green and spread it over the land as fast as it is made. Where the snow is deep it should be piled, if drawn on the land, in fair-sized heaps, to be spread as soon as the snow goes. The drawing of a large portion of this material in the winter is a labor-saving practice, and gives good results in following crops. If the manure is to be held, place it in a shed where the cattle can run over it and keep it tramped. This will prevent it from becoming fire-fanged. Many farms do not even have a shed. In such cases, less loss from run-off and leaching will follow the application of the manure in the green state; but where this is not done, take the precaution to carefully pile the manure in the yard in a place where it will be removed from the cave soilage, and where there is least likelihood of leaching. If it is impossible to haul the manure in the winter, a shed for storing it would be a profitable investment.

These are only a few of the main points which are now seasonable in regard to the growing of heavier crops. There are many other so-called "little things" which can be attended to at this time of snow and ice, and when all are combined, it is generally shown that the winter is a big consideration in crop production, when properly employed.