

ago the old horse power was used in elevators for handling grain, but to-day the gasoline engine has completely outclassed it. From the progress the tractor is making it would appear that when ten years more have elapsed it will not be a stranger in any good district in Manitoba or Saskatchewan.

All accurate experiments and continued operation show that land can be broken much cheaper with internal combustion engines than with horses. The average of over twenty results produces the fact that it requires nearly two horses to break one acre or, as the figures indicate, fifty-two to average twenty-seven acres; while as many experiments with gasoline engines proves that an average of one acre per horse power is not uncommon.

The man with a tractor can go out into a new district and the next day should be ready to commence work while the one with a large outfit of horses must provide shelter and feed, both of which are often expensive and not convenient to obtain.

The advantages of engines upon improved farms are increasing each year as more "getting down" and

Repairs (average)	2.00
Depreciation (life estimate at eight 60-day years) .	6.50
Interest on cost (\$3400 at 7 per cent.), divided into 60 working days	4.00

\$31.50

This outfit averaged 22½ acres per day at an average cost of \$1.40 per acre.

The horses used as power cost—52 horses, eating 5 gals. each per day=32½ bus. at 30c..\$	9.75
Hay, 728 lbs. at \$12 per ton.	4.30
Each man drives 5 horses, 10 men at \$1.50	15.00
Board for above	5.00
Depreciation in harness ..	2.00
Depreciation in horses, taking 9 years' work as an average, 200 days per year, and \$180 value per horse.	5.00
Int. at 7 per cent. on capital, considering 200 workings days per horse.	3.25

\$44.36

This outfit averages 27 acres per day, or \$1.64 per acre and, considering the life as stated before of the engine as 480 days, plow-

etc., while the horses would be standing in the stable commencing their period of total expense to the owner.

Up here at the Agricultural College where young men from almost every good district of Manitoba, and several from Sasatchewan, are thrown together so much, such questions as the practicability of tractors are certainly thoroughly discussed, yet, presumably from the fact mentioned before, that the tractor can yet, and soon will be, improved upon we hear a great variation of opinion.

Not many days since I heard one practical, ingenious man say: "Well, boys, I am never going to depend on horses for sole power to draw my binders any more. Last year we cut with a gasoline engine and it didn't sweat or have to stop at short days. Horses may be able to work when they are cool but there is a little fortune in it for the man who can get his crop harvested as soon after it is ripe as possible, and the weather is, generally too hot to push horses."

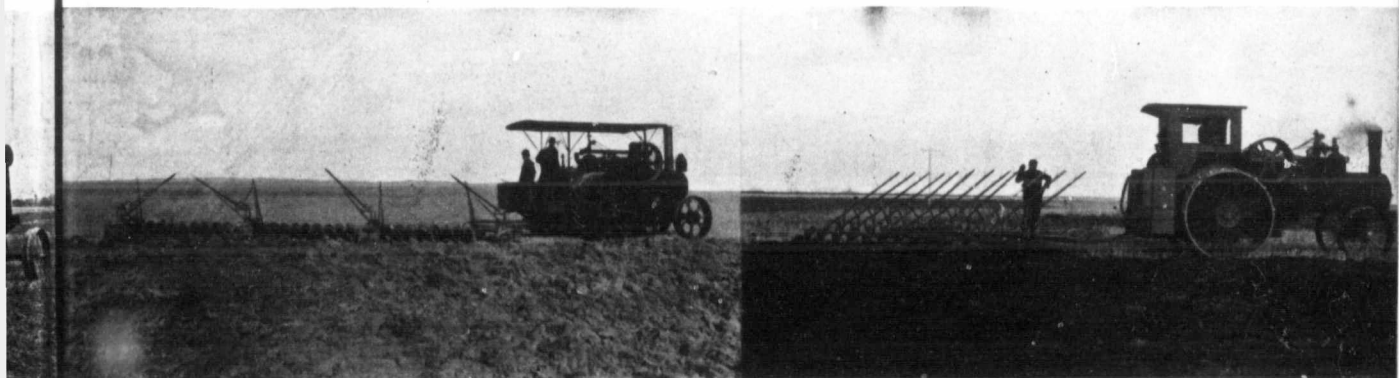
Another will say: "Gasoline en-

year. Such incidents and conditions answer to a great extent for their divided popularity.



It is yet unproven which—gasoline or kerosene—will predominate as fuel, but at present prices kerosene is less expensive per horse power generated, works fully as well after the engine is warmed up, and shows less signs of the supply ever being diminished.

The importance or usefulness of the importance or usefulness of the individual tractor may be divided into the following heads: Price, power developed in the belt, hauling test, economical and practical for work required to be done, accessibility, speed, manipulation, design and construction. Each of the former points should be taken into deep consideration when purchasing and the engine complying closest in the aggregate should be the best engine for farm use.



A Buffalo Pitts Steam Tractor Pulling a 27 Disc Emmerson Engine Gang in Saskatchewan.

A Case 32 h.p. Steam Tractor Pulling a 12 Bottom 14 in. Cockshutt Engine Gang. Outfit of R. Pele, Dominion City, Man.

more thorough cultivation are required, thus necessitating a greater amount of power. If this additional power, which our older farms are now demanding, is to be supplied by horses, an enormous amount of feed will be required which in turn will necessitate a large acreage for the growing of cereals and grasses for that purpose. Our land is becoming too valuable to have a large percentage set aside every year for the growing of fodder, and horses are so high in price that if one or two die the whole profit derived from the crop or the work of the others is lost.

A farm tractor costs less than the number of horses required to perform the same amount of work in the same time. The cost per unit of labor, too, is less as the following accurate example will show:

Internal combustion engine costs in operation, per day—	
42 gals. kerosene at 26c. . .	\$11.00
Lubricating oil and gasoline for starting	1.00
Labor—engineer and steersman	6.00
Board for above	1.00

ing 22½ acres, saving the difference between \$1.64 and \$1.40=24c. on every acre, amounts to \$2563.20 which is saved over horse power while it is completing its life history of actual work.

The foregoing table provides only for the food and care during the two hundred working days and from the cost of Sunday and winter feeding another large feature in favor of the iron horse must be credited.

We who have used horses for power know the time, expense and trouble required fitting them for spring work and the slowness with which they should be driven when the seeding should be rushed. Generally speaking, an engine can be operated upon a field as soon as it is in proper condition to receive seed. Nearly all operations are successfully done by engine power but the principal are plowing, packing, discing, seeding, harrowing and threshing.

The engine performing the foregoing operations is a practical machine, during the entire summer and in the late fall may be used to crush grain, saw wood, cut feed,

gines are no good. Just when their services are most required they wouldn't move for a farm. They are just a bill of expense. The first cost is only a small consideration." Yet his neighbor across the road plowed three hundred acres of stubble land with his engine without the least break, and all after he had finished his threshing. However, the same rule applies where horses are used, for I am acquainted with men who have farmed for more than twenty years, keeping as many horses, yet have lost practically none, while other men lose on an average five or six each year. We will find when the engines in use become numerous, that generally speaking the man who is successful with horses will be successful with an engine.

A large majority of the failures with tractors are due to inexperienced or careless men doing the operating. No engine is so perfect that it will oil and care for itself, as one would almost imagine was expected of them, judging from the worn condition of some engines only having been used one

Most of the present-day farm motors, with reasonable care, will do favorable work. They have without a doubt been misrepresented, misused and abused the most of any farm machine. Cheap, yet expensive engines, were purchased and through rendering poor satisfaction put a damper for a while upon the general use of the better kind. However, the old maxim—"You can't keep a good man down," is true and, gasoline or kerosene tractors, whichever it may be, are going to greatly increase in numbers for general farm use within a very short time.

Wherever internal combustion engines are general they have shown that they are not only more practical than steam but also more practical than horses, especially for several of the heavy departments of crop growing and have earned, fulfilled, and will maintain a high place in the agricultural welfare of this our bounteous heritage. "The Canadian West."

