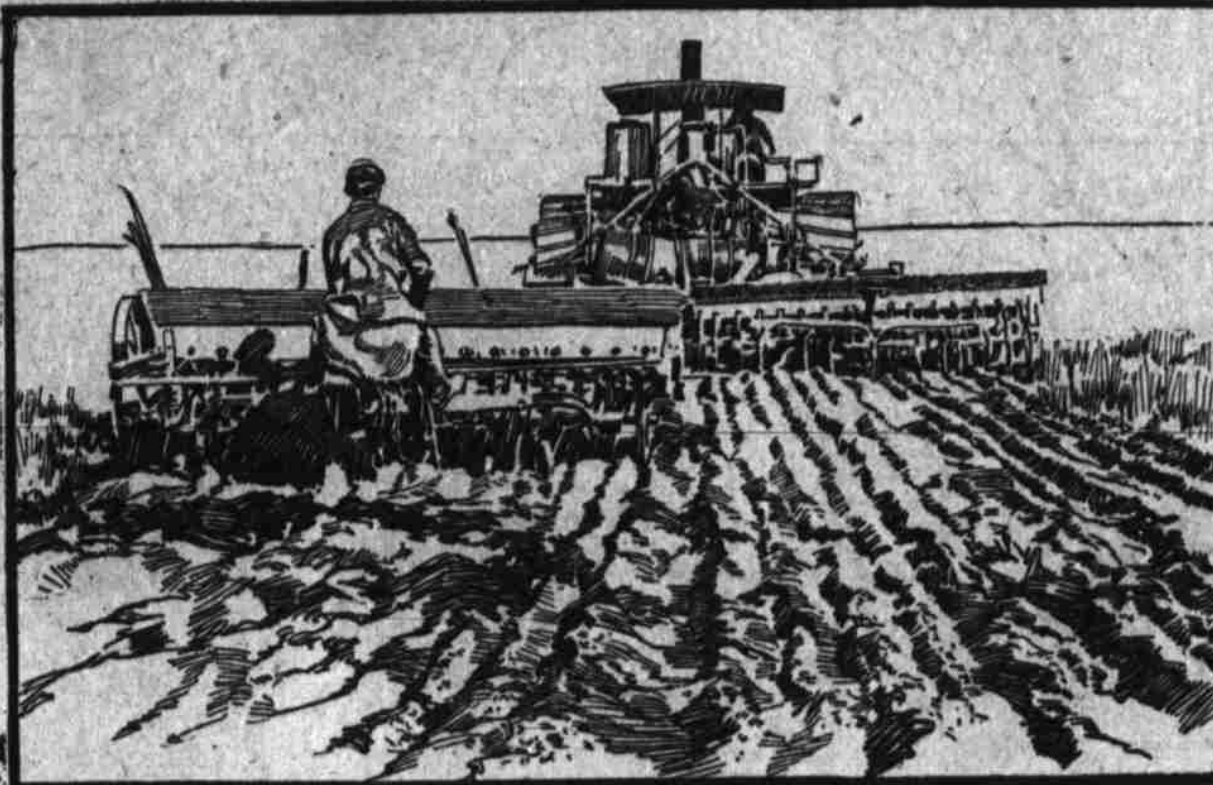


Farming Without The Hired Man

Machines that Decrease the Demand for Agricultural Labor



Plows Harrows, and Seeds Grain at one Operation.

Reading while Cows are Being Milked by Compressed Air.

CAN the hired man be supplanted on the farm by machinery?

A glance at some of the ingenious devices that have been perfected for performing almost all agricultural tasks, from milking cows to sowing a field with grain, suggests the possibility that he can.

Where a little army of men toiled, with breaking backs, in a potato field, under the vanishing system, now two boys and a driver plant 30,000 potato eyes a day by machinery, and are not a bit tired after it. The milk-maid—or man—may now read the morning paper while compressed air rapidly, thoroughly does the milking. And the cows like it better than the old way, at that.

Machinery weeds alfalfa fields without injuring the roots of the delicate little plants. It picks corn and cotton. At one operation it harvests and threshes grain and ties it up in sacks. A machine harvests hay on swamp land where horses could not go.

In fact, given a man or two to direct its mechanical hands, machinery seems able to take care of the farmer's interests in any emergency.

"HOW to keep the boy on the farm" is a question that has been bothering agricultural America for many years. Now the answer seems to be found in the device, "Let him go, and substitute an iron man for him."

That is practically how the farming of a great portion of the country is being done today—by the iron man, the machine.

He is a most faithful hand—never strikes for more pay, never leaves you in the lurch at harvest time; in fact, is dutiful and cheerful under any and all circumstances.

If it were not for this unselfish metal employe, your farmer of today would have a sorry enough time of it. We should have real difficulty in supplying our larders, and prices would soar amazingly.

Few lines of progress in recent years has such striking development been manifested as in the evolution of farm machinery. It is unnecessary to draw comparison for any one who was brought up on a farm a score or so years ago. The terrible monotony and grind of tilling the ground with hoe and plow, and working with scythes and sickles, rakes and pitchforks—who cares to recall it, except to be thankful that it is past?

Milking is not the most onerous duty on a farm. There are many girls, and men, too, who say they like to milk the cows better than any other work they have to do. Still, it takes time.

And, then, the duty becomes harder in proportion to the number of cows one is expected to milk in succession. When you have milked, say, twelve or fifteen cows, without stopping, your wrists become paralyzed and you feel like taking a long rest.

That is why no fewer than 127 patents on milking machines have been taken out in the last thirty-five years in this country alone.

A PRACTICAL MILKING MACHINE

At last the milking machine is a reality. It has reached such a stage that the government, wary as it is about fathering any innovation that might result in disappointment to users, has given approval of the idea.

For the purposes of the Department of Agriculture, C. R. Lane, B. S., assistant chief of the dairy division, has made an exhaustive study of the practical side of the milking machine. At the close of his investigations, Mr. Lane announced that, "while no milking machine yet invented has shown a practical value in a way that has led to its general use, recent improvements in machines of this type have resulted in greater simplicity of operation, and consequently they are of practical use in a limited number of the large dairies."

Not only is there a milker run by machinery, which will milk a large number of cows at a time, but there is a foot-power device which enables a man to sit astride a bench between two cows and milk both of them at one time.

It consists of a suction pump worked by foot power, two pieces of rubber hose and eight suction cups. You simply attach the cups to the cow's udder, work the pedal with your foot, open a spigot and the milk flows into a pail.

This does more than enable one man to milk two cows at the same time—he can milk them in less than one-fourth the time that he could do it by hand. Besides, it keeps the milk running in a steady flow, whereas by hand it comes in intermittent streams, and then only while the milker keeps pressing with his fingers.

But the real saving of time and labor is observed in the power system. So efficient is this device that one man may, it is said, operate it to milk forty cows, and even then he may sit and read his newspaper while the machine is doing the work.

Primarily, the thing required is to create in the body of the milking machine a vacuum, for it is the air suction that draws the milk. This means that compressed air must be had for the operation.

To compress air you must have power. Whether

you compress it by water, electricity, gasoline, alcohol, kerosene or steam power doesn't matter, just so the power is uniform.

Why uniform? Any one who has milked by hand will readily see. Should you milk while, then rest awhile, then go to milking again, the yield would be lessened and the quality of the milk would be poorer. So it is with the machine unless there is uniform power.

In addition to the milking machines—one machine will milk at one time eight or ten cows—the requirements include a vacuum pump, a vacuum tank resembling the hot-water tank on the ordinary kitchen range, an engine, or some power with which to drive the machine, and tubing and valves, the number depending upon the amount of milking to be done.

A careful man can operate four machines, each milking eight or ten cows simultaneously, and another can take care of the milk after it reaches the pails.

Well, but how do the cows like it? This is no unimportant side of the matter. For, if bossy should become dissatisfied with the feel of the new-fangled thing grasping her udder with its cold touch, she might decide to kick tubing and machine out of the way.

Most gratifying have been the observations on this score. The cows like it. Even the young animals that often object to hand manipulation take readily to this method.

KICKING COWS LOSE THEIR TERRORS

In one herd used by Mr. Lane in his experiments only one cow made any objection at all, and this was held excusable later, when it was remembered that the machine was fastened from the opposite side to that on which she was accustomed to being milked.

But the machines must be delicately, considerably adjusted, else the cows, especially the nervous ones, will refuse to give down all of their milk. As for kicking cows, the terror of almost every farm, it is found that they are more tractable when being milked with the machines than when milked by hand.

Considerably more than a thousand such machines are reported to be in use.

Realizing the importance of farm machinery investigations, Secretary of Agriculture Wilson has frequently laid stress upon the government's need of a farm-mechanics expert, a laboratory and facilities for studying requirements, to point out faults in present machinery and to furnish hints to inventors and manufacturers.

What might be expected of such a system may be seen when it is stated that a crop worth \$75,000,000 a year—the cottonseed crop—has never been developed to anything like its possibilities, because there was no method of separating the light and heavy seed and removing the fuzz.

Few people appreciate the importance of cottonseed. Chemical analysis has shown it to be as suitable as olive oil for many of the purposes for which olive oil is used. In fact, thousands of gallons of the oil every year are shipped to Europe from this country and come back bearing an olive oil label. Physicians say it is not injurious to health. There are many thousands of persons in the United States, it is thought, who would like to use it instead of lard if it should be sold at a fair price.

That this might be done when the right machine should be perfected has long been agreed. Now, after two years' experimenting, experts, working in collaboration with the Department of Agriculture, have devised such a machine.

An official of the Department of Agriculture said the other day: "We now need a satisfactory cotton picker more than anything else. The cotton crop is worth in this country \$750,000,000 a year, and it is very hard to gather on account of the scarcity of labor."

So serious is the situation that Southern planters have recently installed great numbers of Italians to take the place of the negro or to supplement the negro's work. "Aside from the difficulty of getting labor, there is the likelihood of making cotton goods and cottonseed oil very much lower in price. Some cotton-picking machines have been invented, but none has been generally accepted."

It was stated that the cottonseed product which may be utilized by means of a satisfactory separating machine is 10 per cent. of the total value of the cotton crop.

Intended for removing the ears from the stalks as they stand in the field, several corn pickers are just now claiming the attention of agriculturists. It has not been possible to construct a picker that will not to some extent break down the stalks, but remarkable advancement has been made.

The principal advantage of the machine, aside from economy in cost of picking, is that it enables quicker picking of the corn, so that the cattle may be more quickly turned in to make use of the roughage.

The corn picker as now constructed resembles the corn cutter common on the farm. It passes along a row of corn, which is straddled by the "dividers," and

the stalks, after being got into right position by means of points, chains and other devices, pass between a pair of inclined, corrugated rollers that snap or strip off the ears.

Falling naturally into a trough, the ears are carried back by a traveling conveyor to be delivered to a set of husking rolls, or else, without being husked, are carried by an elevator and delivered into a wagon, which is driven alongside the machine.

The average corn yield on 800 farms where inquiries were made is about forty-four bushels to the acre. The average cost of picking corn there by hand is stated to be 3½ cents a bushel. The average man, by hand, picks fifty-nine bushels of corn a day.

A machine under the same circumstances would, according to estimate by an expert, cover seven or eight acres a day, and would pick 341 bushels. It

is a most faithful hand—never strikes for more pay, never leaves you in the lurch at harvest time; in fact, is dutiful and cheerful under any and all circumstances.

If it were not for this unselfish metal employe, your farmer of today would have a sorry enough time of it. We should have real difficulty in supplying our larders, and prices would soar amazingly.

Few lines of progress in recent years has such striking development been manifested as in the evolution of farm machinery. It is unnecessary to draw comparison for any one who was brought up on a farm a score or so years ago. The terrible monotony and grind of tilling the ground with hoe and plow, and working with scythes and sickles, rakes and pitchforks—who cares to recall it, except to be thankful that it is past?

Milking is not the most onerous duty on a farm. There are many girls, and men, too, who say they like to milk the cows better than any other work they have to do. Still, it takes time.

And, then, the duty becomes harder in proportion to the number of cows one is expected to milk in succession. When you have milked, say, twelve or fifteen cows, without stopping, your wrists become paralyzed and you feel like taking a long rest.

That is why no fewer than 127 patents on milking machines have been taken out in the last thirty-five years in this country alone.

How Animals Predict the Weather



When the Cat Batches Herself It's a Sign of Rain.

SUPPOSE you wish to go out shopping or calling and are undecided about taking an umbrella. You realize that during April the weather is a capricious thing, and little to be depended upon. You don't wish to be bothered with an umbrella if the sun continues to shine, yet you object to being caught in the rain.

Do you have any animals about your home? If you live in the country, no doubt you do; if in the city, perhaps you possess a pet cat or parrot or canary. Well, watch them for a few minutes; most animals and birds are good barometers.

PERHAPS, if you live in an apartment house, your neighbor possesses a Tabby.

"I wish to go out walking," you murmur politely. "May I watch your cat a few minutes?"

While you sit watching the soft-eyed kitten your friend will regard you with perplexity and some amusement. But you see the cat washing her face energetically. You go to your room and get an umbrella. Your friend goes out walking without observing her cat, and she gets wet.

When you return home you can tell her that if she will notice the cat before going out, she need not fear the weather.

Before a rainstorm the cat nearly always washes her face. Why? Some claim that the atmosphere ex-



The Ass Brays when Clouds Gather.

changes the electricity in the cat's fur, irritating her, and to overcome the tingling sensations she sets to washing herself.

Or, if there is no cat in the house, a maiden lady next door may possess a loquacious parrot. If the bird sits and makes a sort of hissing noise, you may be sure there will be rain before night.

If you have an aquarium of goldfish, you may observe that they will become unusually active some sunny afternoon. They will dart about in the water and flap their little tails. This is a sign of rain.

One seldom need fear getting wet if he lives in the country. Horses, cows, sheep, hogs, dogs, peacocks—all evince certain peculiarities before a storm.

Suppose you are master of a skye terrier, or any other dog. No doubt you have often seen him baying home; yet you never took notice of the fact that he did this shortly before it rained.

In the days when man wandered through the forests, a savage creature, clothed principally with sun shine and smiles, he took little care of the dog. It required all the efforts of the tribal ancestor to take care of himself. So the dog had to be on the lookout for "a rainy day."

When the dog is on the lookout for "a rainy day," he is on the lookout for "a rainy day."



Machine that Harvests, Threshes, Cleans and Sacks Grain.

the stalks, after being got into right position by means of points, chains and other devices, pass between a pair of inclined, corrugated rollers that snap or strip off the ears.

Falling naturally into a trough, the ears are carried back by a traveling conveyor to be delivered to a set of husking rolls, or else, without being husked, are carried by an elevator and delivered into a wagon, which is driven alongside the machine.

The average corn yield on 800 farms where inquiries were made is about forty-four bushels to the acre. The average cost of picking corn there by hand is stated to be 3½ cents a bushel. The average man, by hand, picks fifty-nine bushels of corn a day.

A machine under the same circumstances would, according to estimate by an expert, cover seven or eight acres a day, and would pick 341 bushels. It

is a most faithful hand—never strikes for more pay, never leaves you in the lurch at harvest time; in fact, is dutiful and cheerful under any and all circumstances.

If it were not for this unselfish metal employe, your farmer of today would have a sorry enough time of it. We should have real difficulty in supplying our larders, and prices would soar amazingly.

Few lines of progress in recent years has such striking development been manifested as in the evolution of farm machinery. It is unnecessary to draw comparison for any one who was brought up on a farm a score or so years ago. The terrible monotony and grind of tilling the ground with hoe and plow, and working with scythes and sickles, rakes and pitchforks—who cares to recall it, except to be thankful that it is past?

Milking is not the most onerous duty on a farm. There are many girls, and men, too, who say they like to milk the cows better than any other work they have to do. Still, it takes time.

And, then, the duty becomes harder in proportion to the number of cows one is expected to milk in succession. When you have milked, say, twelve or fifteen cows, without stopping, your wrists become paralyzed and you feel like taking a long rest.

That is why no fewer than 127 patents on milking machines have been taken out in the last thirty-five years in this country alone.

If it were not for this unselfish metal employe, your farmer of today would have a sorry enough time of it. We should have real difficulty in supplying our larders, and prices would soar amazingly.

Few lines of progress in recent years has such striking development been manifested as in the evolution of farm machinery. It is unnecessary to draw comparison for any one who was brought up on a farm a score or so years ago. The terrible monotony and grind of tilling the ground with hoe and plow, and working with scythes and sickles, rakes and pitchforks—who cares to recall it, except to be thankful that it is past?

Milking is not the most onerous duty on a farm. There are many girls, and men, too, who say they like to milk the cows better than any other work they have to do. Still, it takes time.

And, then, the duty becomes harder in proportion to the number of cows one is expected to milk in succession. When you have milked, say, twelve or fifteen cows, without stopping, your wrists become paralyzed and you feel like taking a long rest.

That is why no fewer than 127 patents on milking machines have been taken out in the last thirty-five years in this country alone.

If it were not for this unselfish metal employe, your farmer of today would have a sorry enough time of it. We should have real difficulty in supplying our larders, and prices would soar amazingly.

Few lines of progress in recent years has such striking development been manifested as in the evolution of farm machinery. It is unnecessary to draw comparison for any one who was brought up on a farm a score or so years ago. The terrible monotony and grind of tilling the ground with hoe and plow, and working with scythes and sickles, rakes and pitchforks—who cares to recall it, except to be thankful that it is past?

ods to do this—the plowing by horsepower, the pulverizing of the soil, the laborious drilling of the seed, and the other phases of the operation, passing through the threshing machinery, separating the grain from the chaff, cleaning the grain, dropping it out on the other side into bags, tying the bags up and placing them side by side on a platform.

If this isn't pretty nearly getting rid of the hired man, what is? The machine has a capacity of from 60 to 125 acres a day, or from 100 to 200 bushels, according to size and other conditions.

To the average person, one other farm machine will seem just as wonderful. It is the combined plow, cultivator and seeder.

Imagine a stretch of virgin prairie which it is desired to turn to account in the raising of wheat. You can easily surmise what manner of task would confront the hired men who would attempt by old meth-

ods to do this—the plowing by horsepower, the pulverizing of the soil, the laborious drilling of the seed, and the other phases of the operation, passing through the threshing machinery, separating the grain from the chaff, cleaning the grain, dropping it out on the other side into bags, tying the bags up and placing them side by side on a platform.

If this isn't pretty nearly getting rid of the hired man, what is? The machine has a capacity of from 60 to 125 acres a day, or from 100 to 200 bushels, according to size and other conditions.

To the average person, one other farm machine will seem just as wonderful. It is the combined plow, cultivator and seeder.

Imagine a stretch of virgin prairie which it is desired to turn to account in the raising of wheat. You can easily surmise what manner of task would confront the hired men who would attempt by old meth-

ods to do this—the plowing by horsepower, the pulverizing of the soil, the laborious drilling of the seed, and the other phases of the operation, passing through the threshing machinery, separating the grain from the chaff, cleaning the grain, dropping it out on the other side into bags, tying the bags up and placing them side by side on a platform.

If this isn't pretty nearly getting rid of the hired man, what is? The machine has a capacity of from 60 to 125 acres a day, or from 100 to 200 bushels, according to size and other conditions.

To the average person, one other farm machine will seem just as wonderful. It is the combined plow, cultivator and seeder.

Imagine a stretch of virgin prairie which it is desired to turn to account in the raising of wheat. You can easily surmise what manner of task would confront the hired men who would attempt by old meth-

ods to do this—the plowing by horsepower, the pulverizing of the soil, the laborious drilling of the seed, and the other phases of the operation, passing through the threshing machinery, separating the grain from the chaff, cleaning the grain, dropping it out on the other side into bags, tying the bags up and placing them side by side on a platform.

If this isn't pretty nearly getting rid of the hired man, what is? The machine has a capacity of from 60 to 125 acres a day, or from 100 to 200 bushels, according to size and other conditions.

To the average person, one other farm machine will seem just as wonderful. It is the combined plow, cultivator and seeder.

Imagine a stretch of virgin prairie which it is desired to turn to account in the raising of wheat. You can easily surmise what manner of task would confront the hired men who would attempt by old meth-

ods to do this—the plowing by horsepower, the pulverizing of the soil, the laborious drilling of the seed, and the other phases of the operation, passing through the threshing machinery, separating the grain from the chaff, cleaning the grain, dropping it out on the other side into bags, tying the bags up and placing them side by side on a platform.

If this isn't pretty nearly getting rid of the hired man, what is? The machine has a capacity of from 60 to 125 acres a day, or from 100 to 200 bushels, according to size and other conditions.

To the average person, one other farm machine will seem just as wonderful. It is the combined plow, cultivator and seeder.

Imagine a stretch of virgin prairie which it is desired to turn to account in the raising of wheat. You can easily surmise what manner of task would confront the hired men who would attempt by old meth-

SCIENTIFIC SOWING

There is, also, an ingenious drill for sowing alfalfa. The seed is placed in a box and dropped from it through shoes into the soil in such a manner that every individual seed has a fighting chance to grow. The older way was to sow the seed broadcast, letting those grains that would do so take root. It is said that by means of this machine the amount of alfalfa seed that may be sown with advantage on a field may be increased by one-half, thus greatly increasing the crop.

It is said that a practicable machine for retting hemp has been devised at last. It is believed that if a proper method of treating hemp shall be adopted in the United States, that material will come into much more common use in the manufacture of rope and fabric.

In Kentucky, where the hemp crop is most prolific, the negroes cut it by hand and crush it or ret it later in a primitive way. What has been needed is a machine to crush the hemp, and here comes the difficulty that the machinery became so gummy from the work that it was found utterly impracticable.

Now a machine which will ret the hemp without gumming is said to have been perfected.

Another invention is of great moment to the cultivators of money "trees." Land-land money will not grow on such land in various parts of the United States, where yield grasses used more or less as feed for cattle. The difficulty has been in reaping them, because the reaping machines sank into the muck.

This was partly circumvented by a machine with wheels so wide that they could bear the tremendous weight. But how comes a further improvement in the shape of a machine which lays its own track, while reaping?

It has four wheels, and over the front and back wheels on each side, exactly after the manner of a pair of rollers on a propelling wheel, is a set of rollers working as an endless chain. So the wheels do not sink into the ground at all—slip simply over it and the machine is ready to go.

In this day of progressive farming, and the increasing number of machines which are being used on the farm, the hired man is becoming a thing of the past.

Imagine a stretch of virgin prairie which it is desired to turn to account in the raising of wheat. You can easily surmise what manner of task would confront the hired men who would attempt by old meth-

ods to do this—the plowing by horsepower, the pulverizing of the soil, the laborious drilling of the seed, and the other phases of the operation, passing through the threshing machinery, separating the grain from the chaff, cleaning the grain, dropping it out on the other side into bags, tying the bags up and placing them side by side on a platform.

If this isn't pretty nearly getting rid of the hired man, what is? The machine has a capacity of from 60 to 125 acres a day, or from 100 to 200 bushels, according to size and other conditions.

To the average person, one other farm machine will seem just as wonderful. It is the combined plow, cultivator and seeder.