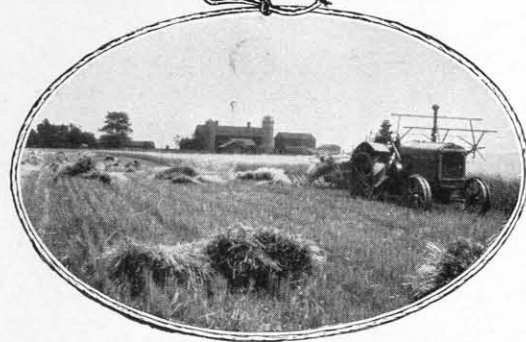


*The Story of*  
**TWINE**





*From*  
Tropical  
Plants  
*To*  
Strands  
of Twine





THE WORLD'S supply of bread literally "hangs by a thread"—a thread of binder twine. In spite of the increasing popularity of the harvester-thresher in the exclusive wheat-raising countries, the greater part of the world's wheat crop is cut and bound with the grain binder. Without twine a binder would be merely a mowing machine, and our wheat crops could not be harvested quickly, efficiently, and at as low cost as they are at the present time.



## Introductory



**WHEN**

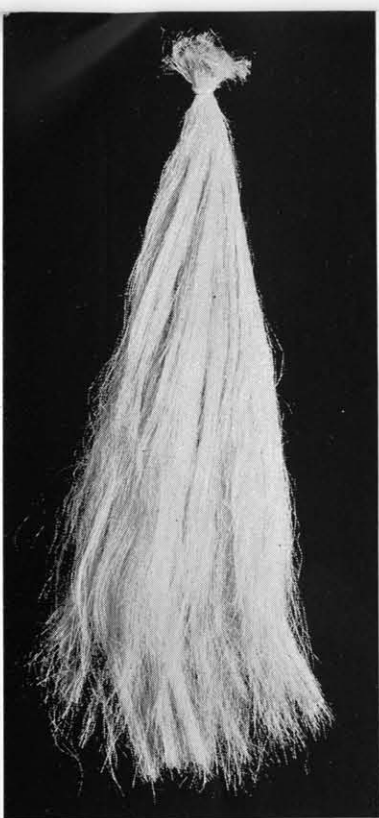
the grain grower places a ball of twine in the twine can of his binder, he seldom stops to think of the thousands of miles it already has traveled or the many hands through which it has passed before it reaches his. Seldom does he appreciate

that the first hands that touched the fibers from which his twine is made were those of dark-skinned natives of other lands.

Sisal and manila fibers from which all satisfactory binder twine is made cannot be grown successfully in the United States or Canada but are taken from tropical plants cultivated in Mexico, Philippine Islands, Cuba, Java, and East Africa. If it was not for the industry of these far-off lands where big-scale farming is unknown, the grain growers of the world would be seriously handicapped in their efforts to harvest their crops.

The expenditure of fortunes in money and years of experimenting with twine made of grass, hemp, flax, straw, and paper have failed to produce a fiber that is satisfactory.

On the following pages a brief description of the fiber production and the manufacture of twine is presented in the hope that a better understanding of the value of binder twine to the farmer will be realized.



A hank of sisal fiber.

## Where Sisal Grows

Directly south of New Orleans, about 600 miles across the Gulf of Mexico, is the tiny state of Yucatan. It is a political division of old Mexico with an area of 15,939 square miles. Merida is its capital and Progreso, the principal seaport. Small though it may be in extent, the importance of Yucatan to the grain growers of the world can scarcely be overestimated. It produces a large proportion of the sisal fiber that is used for binder twine the world over.

## A Broad, Level Plain

The topography of Yucatan is a vast plain almost wholly devoid of mountains or high altitudes. The climate is tropical, and the surface of the country is drained by subterranean streams flowing into the Gulf of Mexico. Rainfall is fairly heavy during the rainy season beginning in July and ending in October or November. All other months are dry.

## Limestone and Coral Soil Formation

Yucatan rests on an immense limestone bed of coral formation and the soil is not suitable to general cultivation. There is only a limited amount of soil covering the surface of this lime rock, but the climate is such that the country was covered originally with a jungle growth of tropical woods and plants ranging in height from twenty to thirty feet. It is necessary to clear this jungle and burn the vegetation in order to prepare the land for planting. The combination of tropical climate and soil formation produces a condition that seems to be exactly suited to the growth and production of commercial sisal fiber.

Other sources of acceptable sisal fiber are found in Cuba, Java, Sumatra, and East Africa. It will be observed that all these places are located in the tropics where grain is not grown in marketable quantities.

Nursery where the young henequen plants are started. They look very much like the century plants with which we are familiar.



## What Sisal Is

The plant from which sisal fiber is produced is known as henequen (hen'-ne-ken). It is similar in some respects to the "century plant," which is grown occasionally in our northern conservatories. All these plants are varieties of agave (a-gah'-vee), which is found in different forms in all tropical countries. All agave plants contain fiber, but only a few are suitable for commercial cultivation and use.

Henequen plants are started in nurseries, where they remain two years. They are then set out four feet apart in rows eight feet apart providing from 1,200 to 1,400 plants to the acre. It requires four to seven years to mature the plants, depending on location.



Another view of the nursery just before the plants are set out in the permanent fields. They do not require much cultivation because the soil is not suitable to weed growth.



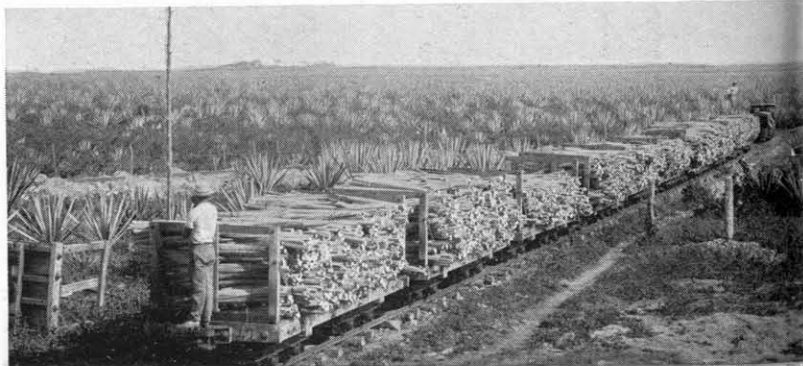


Natives of Yucatan cutting leaves from henequen plants. Ten or twelve mature leaves are cut from the lower part of the plant twice each year.

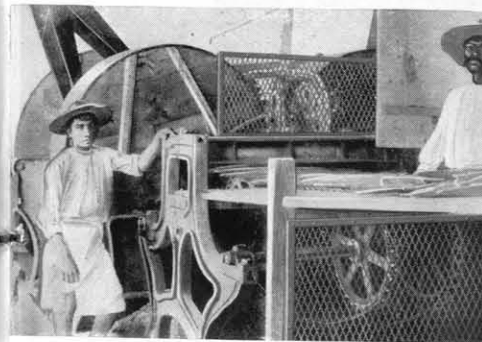
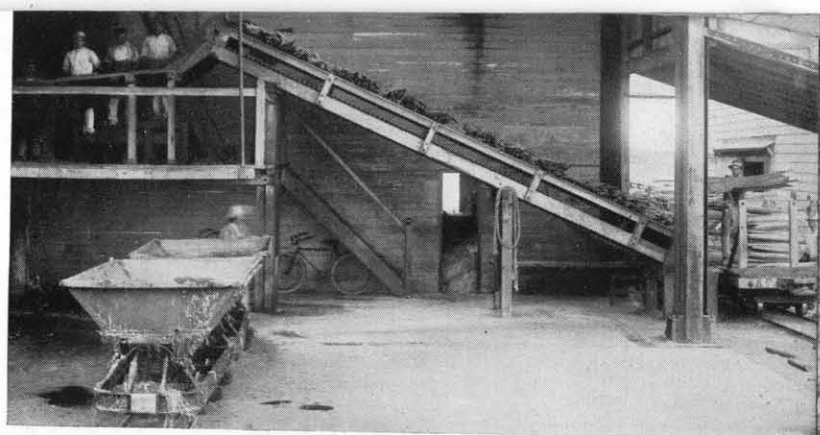
## Cutting the Leaves

When the plants are matured the cutting of leaves begins. Only the lower or mature leaves are selected, and usually ten or twelve leaves are all that should be taken from a plant at one time. Cutting takes place two to four times a year, which means that a single plant will yield from twenty to sixty leaves annually. Leaves average nearly two pounds each but yield only about three per cent of marketable fiber; so it will be seen that there is a tremendous amount of waste material that must be handled. This adds considerably to the cost of production. An acre of henequen plants will yield from 1,500 to 2,000 pounds of fiber.

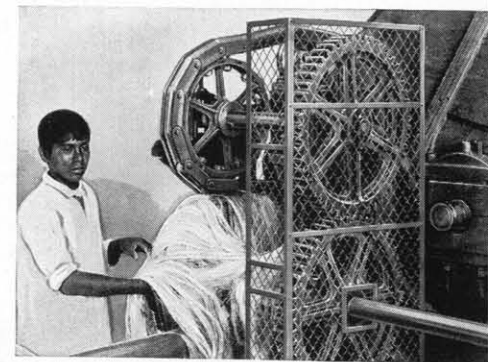
Narrow-gauge tramways are used to haul the leaves to the decortiating mill where the fiber is removed.



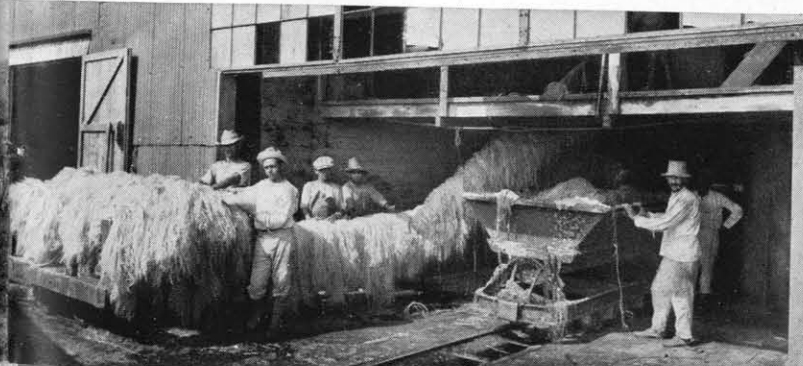
Unloading trains at the decortiating mill. Bundles of leaves are elevated to the machines where the fiber is pressed out. One of these machines is shown below in two views.



The fiber is gathered and transported to the drying racks. The pulp is caught in steel cars which carry it to a disposal dump. Modern methods have been introduced on the Yucatan and Cuban plantations to a surprising extent.



Tram cars are unloaded onto an endless chain which carries the bundles of leaves upward to the decortiating machine. The process consists of crushing the pulp from the leaves and delivering the cleaned fiber at the other side of the machine.



Wet fiber just as it comes from the decortiating machine is shown above. The steel dump cars catch the refuse and waste matter, of which there is a large proportion, and convey it away.

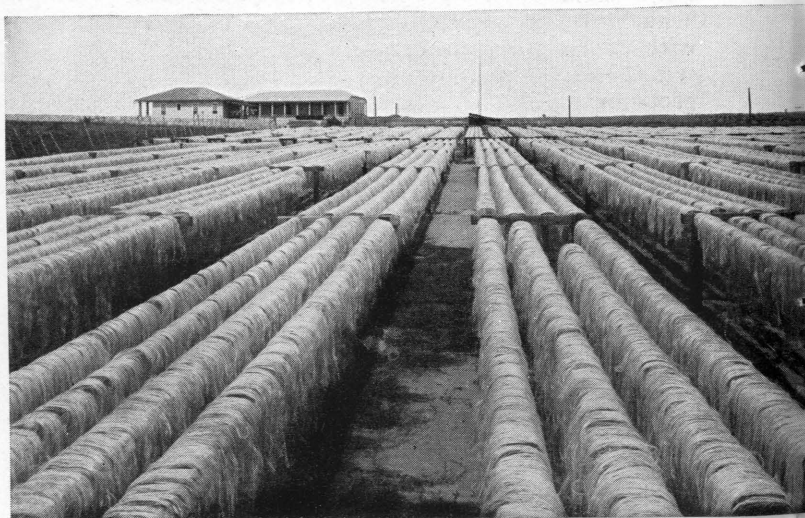


Native women in Yucatan are adept at spreading the sisal fiber over the racks erected for that purpose.

## A Continuous Harvest

The climate of Yucatan is so nearly uniform during the entire year that the harvest of leaves can be carried on continuously. The fields are set out in such a way and the work so timed that some leaves are always maturing, ready for cutting. This system makes it possible for the plantation owner to balance his work and maintain about the same force of native employees throughout the year.

It has been pointed out that Yucatan and Cuba possess the necessary combination of soil and climate to promote the growth of commercially satisfactory henequen. Experiments carried on extensively in other parts of the world have developed a particularly superior grade of fiber in British East Africa and Java. The sisal fiber produced in Africa is used almost exclusively in the manufacture of Canadian binder twine.



It is a beautiful sight to see the long racks of sisal fiber shimmering and bleaching in the hot sun. The spreading of fiber to dry, and gathering it again constitute a large part of the operations required to produce sisal.

This is the baling room at the mill. Large compressors crowd the dried fiber into smooth bales weighing 400 pounds each. They are securely bound and stored in a dry place until they can be shipped to the Harvester mills in the United States, Canada, and Europe.



Modern methods are in effect on the docks. A McCormick-Deering industrial tractor pulls a long train of bales from the warehouse to the ship.



The people who make up the laboring element of Yucatan are Maya Indians and are descendants of an ancient race which left behind it the proofs of a high type of civilization. Yucatan abounds with the remains of ruined cities which are thought to be at least two thousand years old. The remnants of this ancient race are the people who produce the one important product of Yucatan, namely, sisal fiber, which is used in the manufacture of binder twine.



At the left is a view of the dock at Progreso, the principal seaport of Yucatan. It is equipped so that bales of fiber can be brought to the ships by tram running on narrow-gauge rails or by tractor-drawn trains as shown above.





What looks like a dense jungle is a typical manila forest. The plants grow from 12 to 20 feet high, although the leafy portion is of no value for fiber. The manila plant is almost identical in appearance with the banana palm.

Imagine dissecting a stalk of celery several inches in diameter. That is what a manila plant looks like when it is cut down. The fiber is found in the layers which make up the stalk. The abaca is as large as a small tree, but its structure defines it as a true plant.



## The Source of Manila

The manila plant grows principally in the Philippine Islands, and there the marketable fiber is found only on a limited area. The best fiber comes from plants growing nearest the equator, especially along the eastern shores where the soil is of volcanic origin. There are twelve active volcanoes on the islands.

The Philippine Islands have a total land area of 115,000 square miles. Of this, only a part is suitable for any kind of agriculture. Manila is the largest city, with a population of about 300,000.

Because of the lack of modern transportation in the Philippines, much of the fiber is hauled from the plantations to the nearest port on bull carts. The roads in the interior are not yet suitable to motor transport. Many of the small ocean ports are served only by small vessels which, in turn, must carry the baled fiber to some larger port where ocean-going steamers can dock. From this point it is conveyed to the American, Canadian, and European mills.

Below: The manila plant yields long, strong fibers from 8 to 12 feet in length, depending on the length of the original stalk.

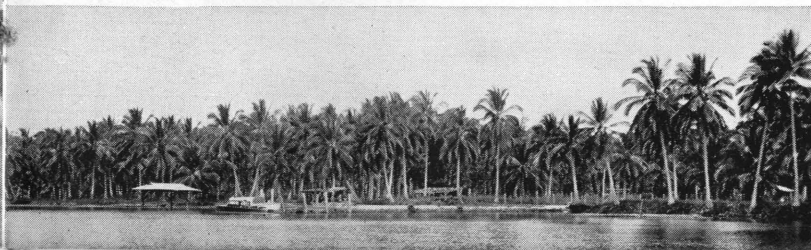


## What is Manila?

Manila fiber is taken from a plant called abaca (a-bah'-kah) by the Filipinos. Soil composed principally of volcanic ash is the natural home of the abaca plant, and many botanists believe that it will never be adapted successfully elsewhere. It is evident, therefore, that we must continue to look to the far-off Philippine Islands, and to a lesser extent, Sumatra, for the supply of manila fiber that is required for the manufacture of binder twine.

If you can imagine a huge stalk of celery from 12 to 20 feet in height, you may gain some idea of the appearance of the abaca plant. The trunk of the plant is made up of thick, overlapping layers like celery, and it is from these layers that the fiber is taken. The top leaves have no value so far as twine-making is concerned.

From 18 to 24 months are required to mature a full-grown abaca plant. New shoots keep coming up to replace the ones that are cut down, which makes the plant self-sustaining.

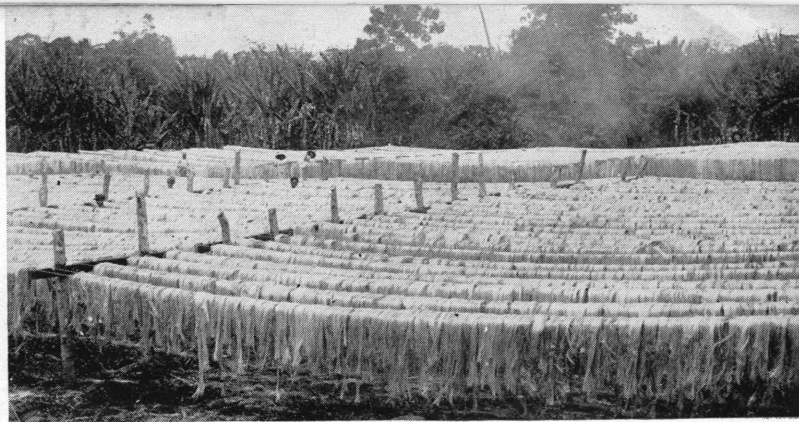


Much of the 11,000-mile shore line of the Philippines has this tropical aspect. Palms, coral reefs, and hot weather abound.



Building which houses the decorticator and power plants to operate it. The equipment used in the production of manila is not so modern as we find in Yucatan.

Long racks of manila fiber drying and bleaching in the sunshine. Natives of both sexes are engaged in this work.

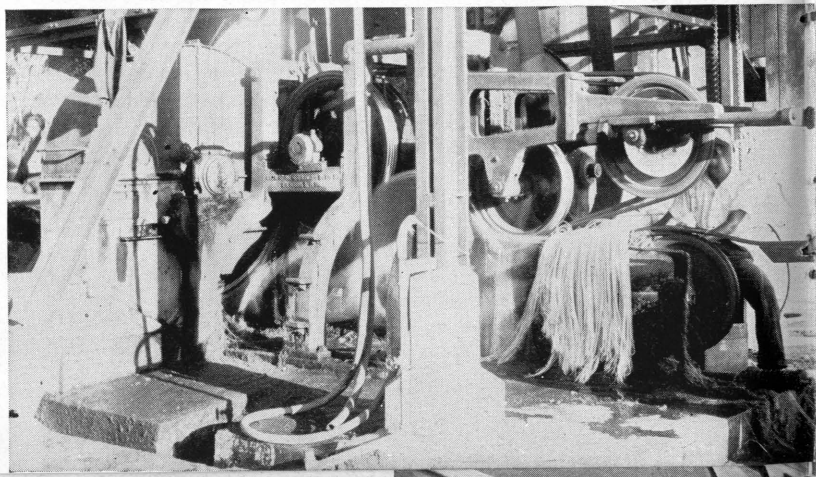


## Manila Production

The conditions under which manila is grown for commercial use differ considerably from the production of sisal. Whereas sisal plantations usually are large and well equipped with modern machinery, the bulk of manila fiber comes from thousands of small plots. There are a few large plantations that are equipped with modern machinery, but most of the parcels of ground where manila grows contain five or six acres and are tended by single families. The plants are not started in nurseries as in the case with sisal but are planted and mature in one spot. The growth is rapid, due to the unusually favorable conditions.

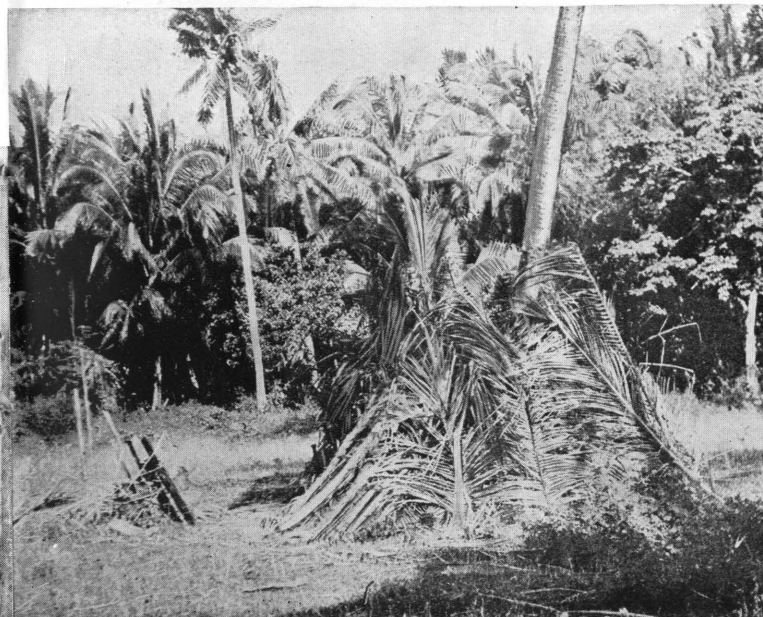
At maturity the plants are cut down, the useless tops removed and the various layers which make up the plant stalk are stripped apart. During recent years some attempts have been made to install more modern equipment for stripping the fiber, and experiments have proved that it is possible and practicable to extract the fiber with large power-operated decorticators.

Close-up view of the decorticator machine which removes the fiber from the stalks. This machine is housed in the building shown above and is operated by a heavy-duty, internal-combustion engine.



## Drying and Bleaching

As the cleaned fiber comes from the decortivating machines, it is carried to the drying field where it is hung on long racks similar to those used in Yucatan for sisal fiber. Here it rapidly dries and bleaches in the sunshine. When the fiber is thoroughly dry, it is gathered and twisted into hanks of convenient size and placed under cover until it can be pressed into bales weighing approximately 270 pounds. These bales are later transported by various methods of conveyance to the seaport.



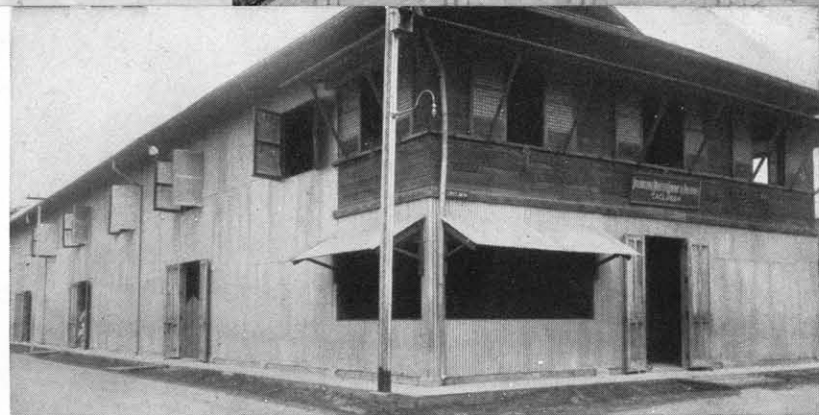
When the Filipino and his family are working quite a distance from home they do not bother to return each night. They simply erect a palm-thatched hut and put up where they are.





The bales of fiber are centralized and stored in this warehouse at Manila, P. I., to await shipment to the twine mills in the United States, Canada, and Europe.

The Harvester Company maintains warehouses for the storage of manila fiber at various points on the islands adjacent to the principal sources of supply. This building is located at Tacloban, Leyte.



## An Important Tropical Industry

It is an interesting fact to consider that very few of the Filipinos who cultivate and produce the manila fiber used for binder twine in every grain-growing country of the globe have ever seen a field of wheat, yet if it were not for the industry of these dark-skinned people, the farmers who purchase twine for their binders each season, and think nothing of it, would be confronted with a major problem at harvest. The blend of sisal and manila fibers in the correct proportions produces a quality of twine that cannot be equalled with any other known materials.

The natives who do most of the preliminary work live in groups or small communities like villages. Sometimes they can go to their work in the morning and return at night, but if they are working at too great a distance, they improvise temporary shelter and live quite comfortably for several days, much as we might "camp out" during a holiday.

Homes on one of the large plantations. Note that each structure is elevated above the surface to permit better ventilation.



## Filipino Family Life

The life of the Filipino is extremely simple; his wants are few. As a rule he is kindly and cheerful. He marries and raises a family among whom is a strong family affection.

Food consists principally of fish, which is abundant and costs little or nothing. Fruit is always at hand and is eaten in quantities. Pork and chicken provide the meat that is eaten, but these are classed as luxuries. Clothing consists of cotton cloth which is procured at low cost and fashioned into serviceable garments by the women of the family.

## From Tropics to Twine Mills

From the out-of-the-way corners of the Islands the dried and baled fiber is brought to the big warehouses located at strategic points accessible to shipping. From these places the fiber takes leave of the tropics and the dark-skinned natives who produced it, and it is carried to the northern hemisphere where it enters the various twine mills of the Harvester Company, later to emerge as the twine without which the grain grower would find himself hopelessly handicapped.



Storage warehouse at Santa Ana, Davao, which is used for fiber and machinery storage. The offices are at the right.



McCormick Twine Mill at Chicago has an annual capacity of 30,000 tons of binder twine. This quantity, if spun into a single strand, would encircle the earth at the equator 180 times. The production of binder twine when turned into weights and measures also results in astonishing figures.

McCormick-Deering "Made-in-Canada" twine represents an important industry in Ontario, where it provides employment for a large force of workers in Hamilton.

In the United States there are two large mills which turn out McCormick-Deering twine in tremendous quantities. The largest of these is at Chicago in connection with McCormick Works. The McCormick Twine Mill has an annual capacity of 30,000 tons of high-grade, finished twine. If this huge quantity were spun into a single strand of twine, it could encircle the world at the equator 180 times.

New Orleans, Louisiana, is located directly north of the raw sisal fiber supply in Yucatan. Because of this fact, New Orleans was chosen in 1922 as the site of a large Harvester twine mill. The advantages of such a location are plain. The raw fiber is shipped across the gulf, and finished twine is carried up the Mississippi River on barges which can be unloaded at suitable rail points for shipment to the grain fields.

The strategic location of these three International Harvester twine mills is sufficient guarantee to the grain growers of the North American continent of an adequate and promptly available supply of high-quality McCormick-Deering twine.

Fibers from Yucatan, the Philippines, and other points in the world are shipped by boat and rail to three North American twine mills of the International Harvester Company, located at Chicago, Illinois; New Orleans, Louisiana; and Hamilton, Ontario.

The machine equipment and production methods at each mill are the same in principle. Twine-making has been reduced to an exact science by the Harvester Company, and through a system of searching inspection and expert combing and spinning the twine turned out of any International Harvester twine mill is uniformly excellent and is guaranteed for length, strength, and weight.

The huge mill which is shown at the right is the latest one to be established. It is located in Hamilton, Ontario, to provide Canadian-made twine for the grain growers of the Dominion. The mill is situated on Lake Ontario, and large steamships transport millions of pounds of twine to Fort William at the head of Lake Superior, where it is sent by rail to all parts of western Canada.

Hamilton Twine Mill at Hamilton, Canada, is favorably located on Lake Ontario. The finished twine is loaded onto barges which convey it to Fort William, Ontario, at the head of the lakes, where it is carried by rail to the great wheat provinces in the West.



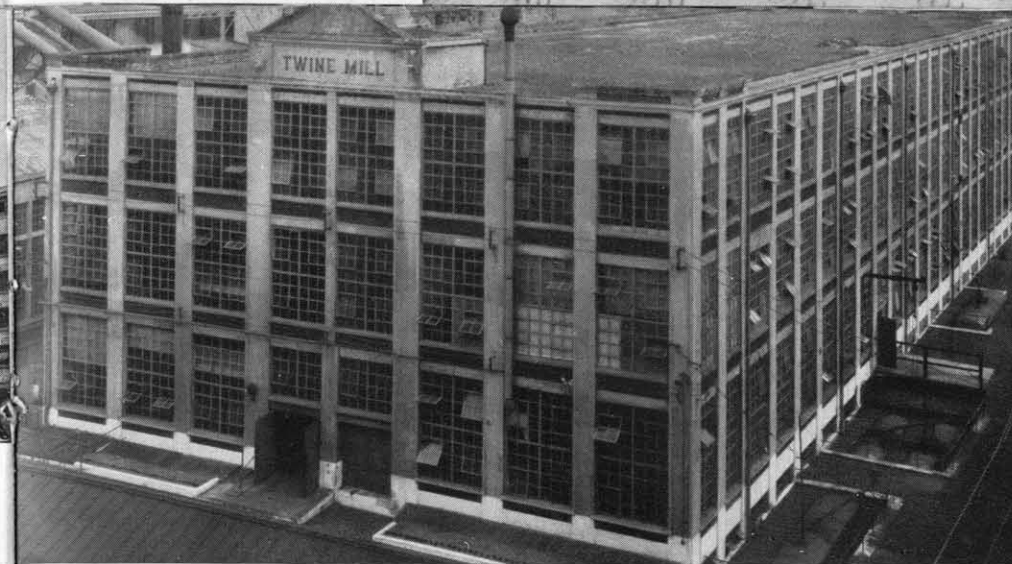




The advantages of New Orleans as a location for a twine mill are self-evident. The city is directly across the Gulf of Mexico from the source of fiber supply at Yucatan. It is also situated at the confluence of the Mississippi River and the Inner-Harbor Industrial Navigation Canal. Barges convey the finished product up the Mississippi River and through the canal to rail points, from whence it is conveyed northward and westward to the grain fields.



International Harvester Twine Mill at Norrköping, Sweden. The yearly capacity of this mill is 4,000 tons, which is used to supply grain growers in northern Europe.



This large twine mill is operated in connection with the great Croix Works of the International Harvester Company at Croix, France. The annual capacity in finished twine is 24,000 tons. The product is used to supply the grain fields of western Europe. This French mill is thoroughly equipped with the most modern machinery. The same high-grade methods obtain that are found in the United States.



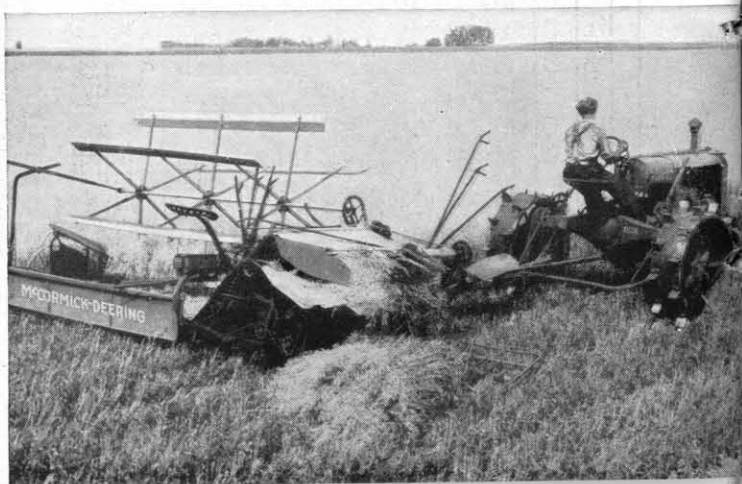
This clean-looking building is devoted to the manufacture of International Harvester binder twine at Neuss, Germany. A yearly capacity of 11,000 tons goes to supply Germany and central Europe.

## From Fiber to Twine

The floor plan on the opposite page, showing the movement of the fiber from the time it enters the mill until it leaves as finished balls of twine, illustrates the method employed at all Harvester twine mills. Minor differences due to physical structure of buildings do not alter the general plan of the movement, which follows the same procedure in all cases.

There are three principal processes in the manufacture of binder twine, namely: (1) preparation of fiber, (2) spinning of twine, (3) balling and sacking. These three divisions can be followed very easily if the reader will compare the text with the diagram on the opposite page. The making of twine is fascinating to watch because there is action, color, and precision. A flow of fiber several inches in diameter and weighing more than half a pound to the foot starts at one end of the system and emerges at the other end as a strand of twine one-twelfth of an inch in diameter and running from 500 to 650 feet to the pound. The process which accomplishes this attenuation is a continuous operation of slow and fast-moving combs.

How is it done? How is it controlled? How is it possible to deliver a strand of twine that will average 500, 550, 600, or 650 feet to the pound, as desired? These questions are easily asked, but in the limited space provided by this book it is difficult to answer them in nontechnical language. By following the floor diagram while reading the text on the following pages, we think you can gain a clear idea of the method.



Looking straight ahead, with full confidence that every bundle will be tied tightly, this tractor operator is cutting and binding 25 to 30 acres a day.

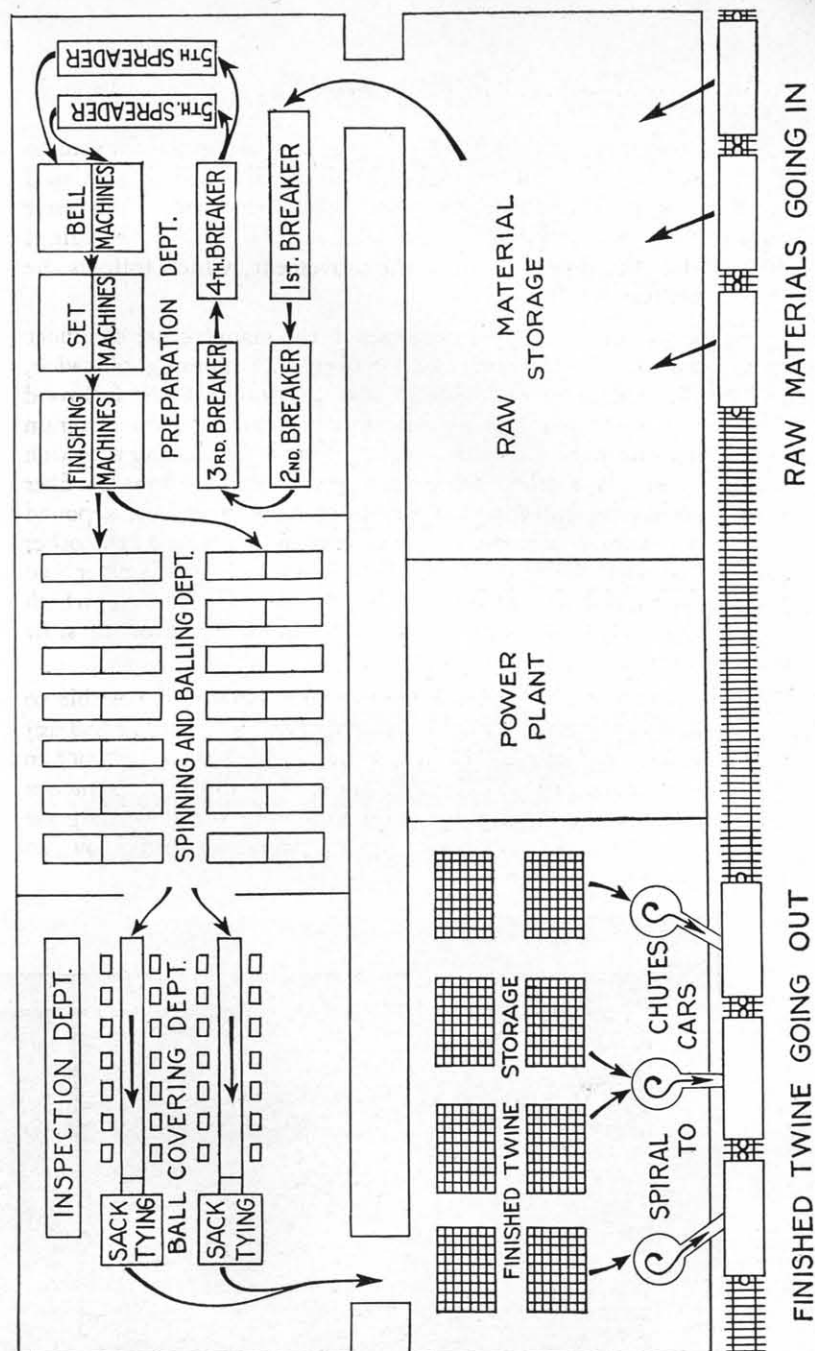


Diagram showing the route of the fiber through the mill. This route is known in the factory as the "system."





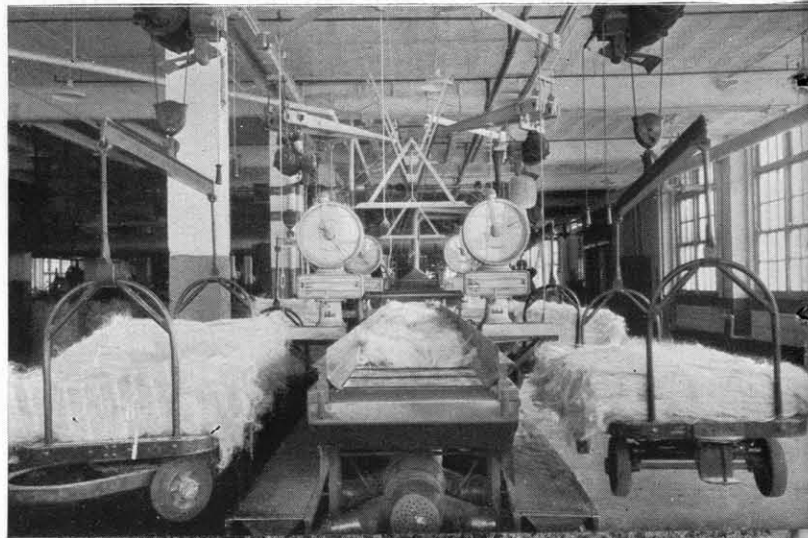
Every bale of fiber is opened and inspected by a trained expert before it is permitted to go into the mill. The fiber must pass rigid specifications before being accepted. First-quality binder twine starts with this preliminary but searching inspection.

## Inspection and Preparation

After the fiber has passed inspection it enters the first "breaker," where both sisal and manila fibers are expertly blended, oiled, made flexible, and treated against destruction by insects.

All machines in the twine mill system are alike in principle in that they comb and straighten the fiber so that it can be spun into strong, flexible, uniform twine. The combing process by means of slow and fast moving combs described on page 24, not only straightens the fibers but reduces the size of the whole stream of fiber, or as it is called in the twine mill—"sliver." Hereafter in referring to the fiber as it passes through the combing machines we shall use the technical factory term, "sliver."

Here is where the raw fiber starts on its journey through the combing machines where it is straightened out, softened, and made ready for spinning. This machine is called the first "breaker".



Newly formed "sliver" from the first breaker is coiled and weighed before being passed to the next machine shown below. All the way through the mill the weight is constantly checked.

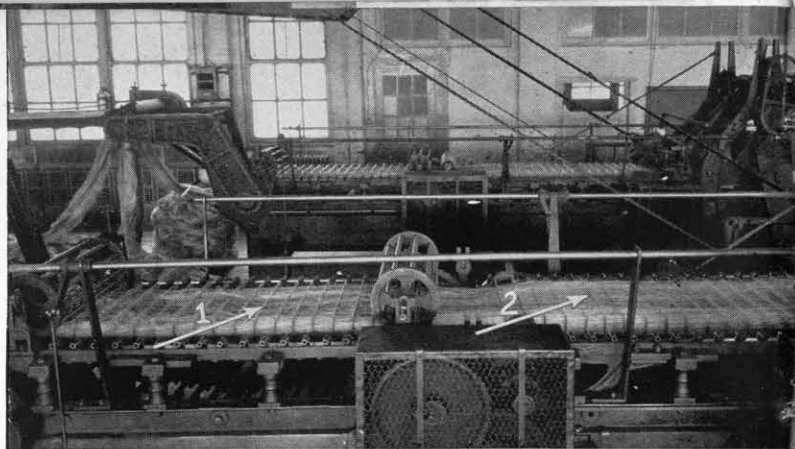
## A Continuous Process

The first machine in the system, called the "breaker," is the only one that requires hand feeding. Beginning with the next machine and continuing throughout the system, the feeding is automatic and perfectly controlled. Eight "slivers" made on the first machine are fed into the second machine, and a single "sliver" emerges at the delivery end, weighing  $2\frac{1}{2}$  pounds to the foot.



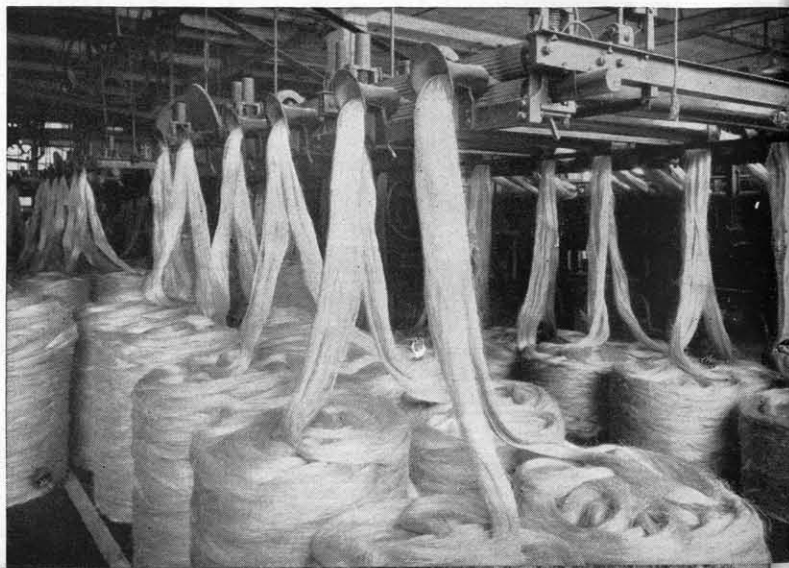
Second machine in the system which takes eight "slivers" of sisal and manila from the breakers and continues the combing process. Mirrors show the inspector what is taking place on the opposite side of the machine.

One of the combing machines is shown at the right. Arrow 1 points to the slow-moving section. Arrow 2 points to the fast-moving section. The operation is explained in detail below.



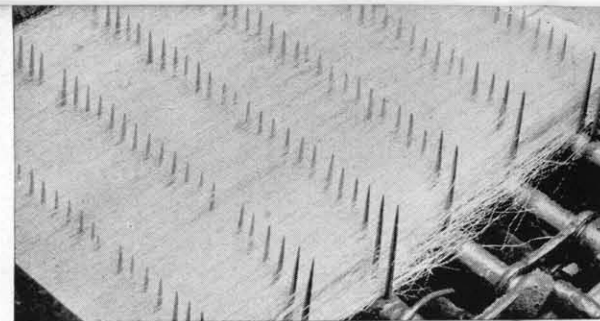
## Slow and Fast Combs

Each machine in the combing system has two sets of steel pins or combs, the second set running several times faster than the first. The fiber is carried forward by the slow-moving combs to the center of the machine, where it is caught by the fast-moving combs and pulled rapidly forward. A reel between the two sections keeps the fiber under control. You can readily see what happens. It is like pulling candy or brushing a woman's long hair. Tangled strands are straightened, and the size of the "sliver" becomes smaller, due to the fact that the fiber leaves the machine several times as fast as it entered.



The blending of sisal and manila in the correct proportions to form the desired quality of twine is done in this manner. Frequent inspections are made, and the weight of the "sliver" is constantly being checked.

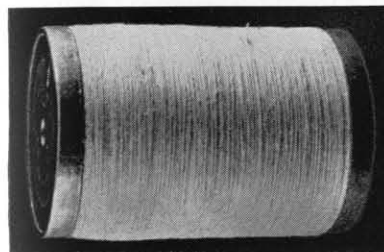
Like molasses candy that is being pulled, the long "slivers" or streams of fiber continue to get smaller and straighter and smoother as they pass from one to the other of the combing machines in the system. One section of a combing machine is shown at the right.



## Spinning the Twine

The ninth machine in the twine-making system is the spinner. A battery of these spinners is shown below. By the time the "sliver" reaches the spinning machines it has been reduced to the small size seen emerging from the piles below. Every fiber has been straightened and the blending of manila and sisal has been perfected.

On the spinning machine the fiber receives its final combing, which reduces the "sliver" to approximately seventy-five strands of fiber. Without stopping, it is twisted fourteen and one-half times to the foot and formed into a single strand of binder twine which is wound onto a large bobbin as shown in the illustration at the left. Every operation in the system from start to finish must be closely watched and checked.

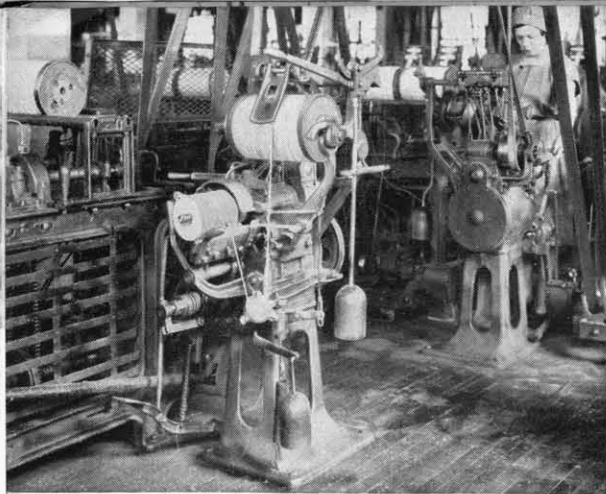


Left: Filled bobbin of newly spun twine.



Spinning machines where the actual binder twine is made. These machines are built in units, each consisting of two separate spinners. The "slivers" shown in the piles are small, but they are reduced still further as the finished twine is spun.



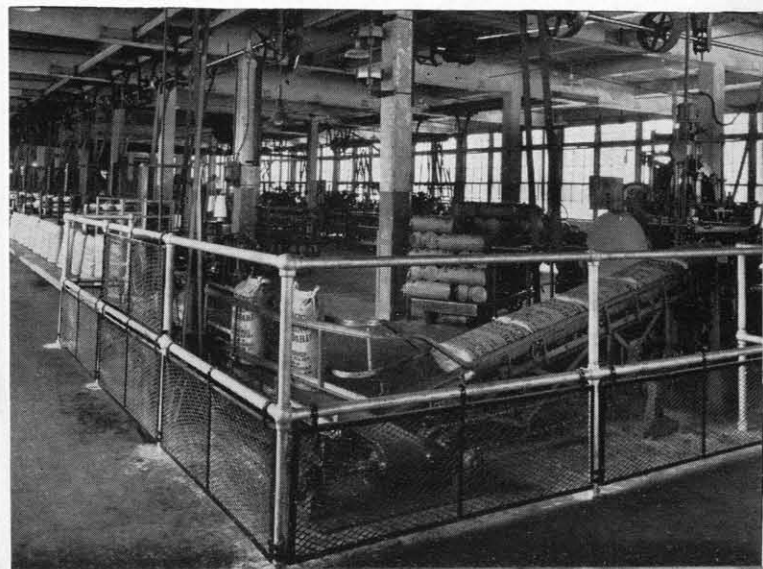


Left: Bobbins of newly spun twine are mounted in the balling machines, where the twine is wound tightly into the famous "Big Balls" known wherever grain is cut and bound.

After the ball is wound the patented crisscross cover is added on another special machine. This cover acts as a protection against collapsing or tangling.



Above: The patented crisscross cover which identifies genuine McCormick-Deering twine is applied on the machine shown above.



Left: The machine that sews the sacks is interesting to everyone who visits the twine mill. After the balls are packed six to a bag, the sacks move forward on a conveyor to the sewing machine which rapidly closes the top of the bag.

Piling the bales by machinery in the huge warehouses devoted to the storage of McCormick-Deering twine. The elevator is on rollers so that it can be moved from place to place.

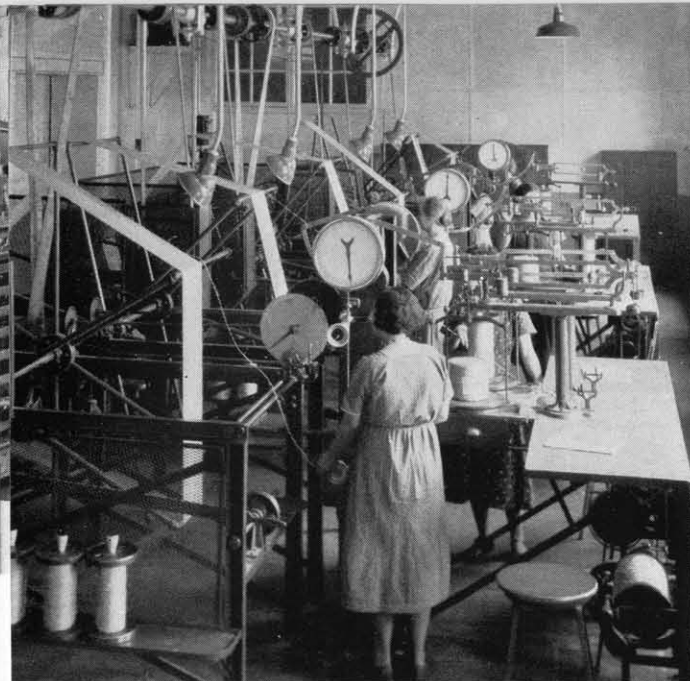


## Finishing the Job

The finished balls are packed in large, strong sacks—six Big Balls to the bale. The open tops of the bags are closed tightly on a sewing machine through which they pass on a moving belt that carries them along to the men who rope and tie the bales with fourteen feet of serviceable rope. Each bale is then given a final weighing to prove that it contains the required weight. Any bale that fails to register the necessary poundage is rejected.



Miles of twine bales! At two to three pounds of twine to the acre, it requires a tremendous stock of twine to bind the millions of bundles as they come from the knotters in the grain fields of the world. This aisle is bounded on both sides by several trainloads of twine bales.



Visitors at the twine mills are immediately impressed by the unusual and painstaking inspection that safeguards the quality of the product. Every operation from start to finish is constantly checked and re-checked. At the left is shown the super-inspection department which operates as a separate organization.

## Importance of Inspection

Constant and conscientious inspection attends the manufacture of McCormick-Deering twine from start to finish. When the bales of fiber are first opened the first inspection takes place. Fiber that is below standard never reaches the combing machines.

As the fiber is combed from one machine to another all through the various steps in the system, it is inspected and weighed frequently to keep the "sliver" up to correct length and weight. Each ball of twine is weighed individually and is inspected for quality.

Added to the inspection that attends the manufacture throughout, there is still another check on the quality of the product. A separate inspection department is maintained for the sole purpose of making tests after the other inspectors have finished.

Bobbins, balls, and bales are selected at random and taken to this department. The twine is unwound and spread on large reels where every foot can be seen and defects detected instantly. The inspector picks out the weakest looking spots and tests them for strength on a special machine. If either an operator or a machine is not up to standard, the condition must be remedied.

This painstaking method of manufacture, plus the best raw fiber available, results in twine that represents the best that can be had.

## Industrial Relations

The definite belief that it requires satisfied workers to produce quality merchandise is an International Harvester tradition of long standing. The Company's desire and purpose always has been to keep its relations with its employees on a definite and durable basis of mutual understanding and good will. From the beginning of International Harvester history the industrial relations between Company and employees have been conspicuously peaceful and harmonious.

An outstanding result of the Company's activities along these lines has been the remarkable development of employee interest in such constructive matters as increased production, lower manufacturing costs, reduction of spoiled work, improved quality of the product, elimination of waste, and the reduction of accidents to a surprising minimum.

The selection, placement, and dismissal of all employees is handled by a competent employment manager. Each applicant is given a private interview and, if accepted, is told briefly of the major policies and rules of the Company. Emphasis is placed on the necessity for working safely, working regularly, and producing a high-quality product. Physical examinations of all likely candidates are made to assist the employment department in realizing these aims.

An Employees' Benefit Association was organized in 1908. The members contribute to a fund whereby they are assured of a definite income when disabled on account of sickness or injury received even while off duty and provides immediate funds to the family in case of death.

Competent and expert surgical and medical service is available to employees at all factories. Irrespective of any legal limitation provided through state compensation laws, the policy of the Company has always been to care for its injured employees to the full extent of their needs.



Twine mill employees of both sexes are provided with comfortable recreation rooms where they can rest and relax after working hours.





Left: McCormick-Deering binder twine is packed six balls to the bale. The sack used is of a large capacity and serviceable for other purposes after the twine has been removed. Fourteen feet of good rope is used to tie the bale.

## The Quality is There

Those who have watched the making of McCormick-Deering twine are impressed by the painstaking inspection that attends every step of its manufacture. They have observed the expert operators who do the work and will have little hesitation in declaring that real quality has been spun into the strands.

Superior quality in binder twine is something you cannot see in the completed ball. Several balls of binder twine, each made

by a different manufacturer, look very much alike. It would be hard to prove that any one was better than the others without exhaustive tests, which cannot be made outside of a factory inspection department. Therefore, the buyer of binder twine must rely largely on the reputation of the maker.

For the very reason that you *must* buy twine quality on faith to a large extent, we suggest that you place your order with the company that has built up an unparalleled reputation for quality. If you decide on that basis, we have every confidence you will select McCormick-Deering.

## Patented Crisscross Cover

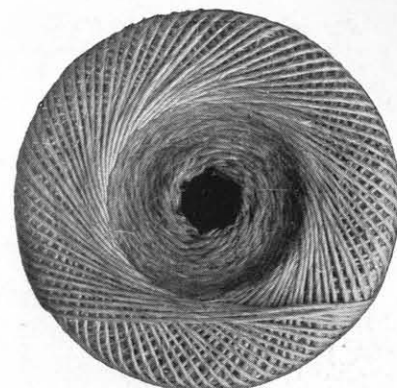
McCormick-Deering twine in eight-pound balls can always be identified by the hammock-like cover which protects the inner core, keeps the ball in shape during shipping, and prevents snarling as the last of the twine is drawn from the can. This cover is part of the ball and is used to tie bundles after the core is exhausted.



You can identify genuine McCormick-Deering twine by the patented protective cover which is a part of the ball and which is the last to be withdrawn from the twine can as the twine is used in the field.

## The BIG BALL is Popular and Practical

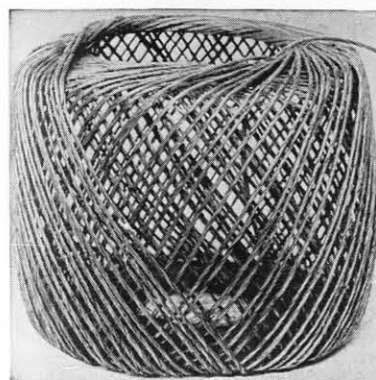
When the Harvester Company originated the Big Ball several years ago it met with immediate approval everywhere. It enables the grain grower to carry nearly twice as much twine in the can and reduces the number of stops for refilling. The ball is more solid and resists the shocks encountered in shipping without losing its shape. This is due in part to the patented crisscross cover which is an exclusive feature of McCormick-Deering twine. There is no raveling of the ball and no snarling in the twine can as the last few feet are being drawn out. The lower illustration shows how the cover stands up and protects the inner ball until it has been entirely withdrawn.



The BIG BALL dressed up in the patented cover which identifies the genuine McCormick-Deering.

## The Best is the Cheapest

Every year you have a chance to buy twine at lower prices than those charged for McCormick-Deering. The saving rarely amounts to more than half a cent a pound, and you have no assurance that this saving will not be more than offset by short weight, short length, or lost time due to breaks in the binder. It does not pay to take chances with a valuable crop for the possible saving of a penny or two an acre which later may turn out to be an actual loss.

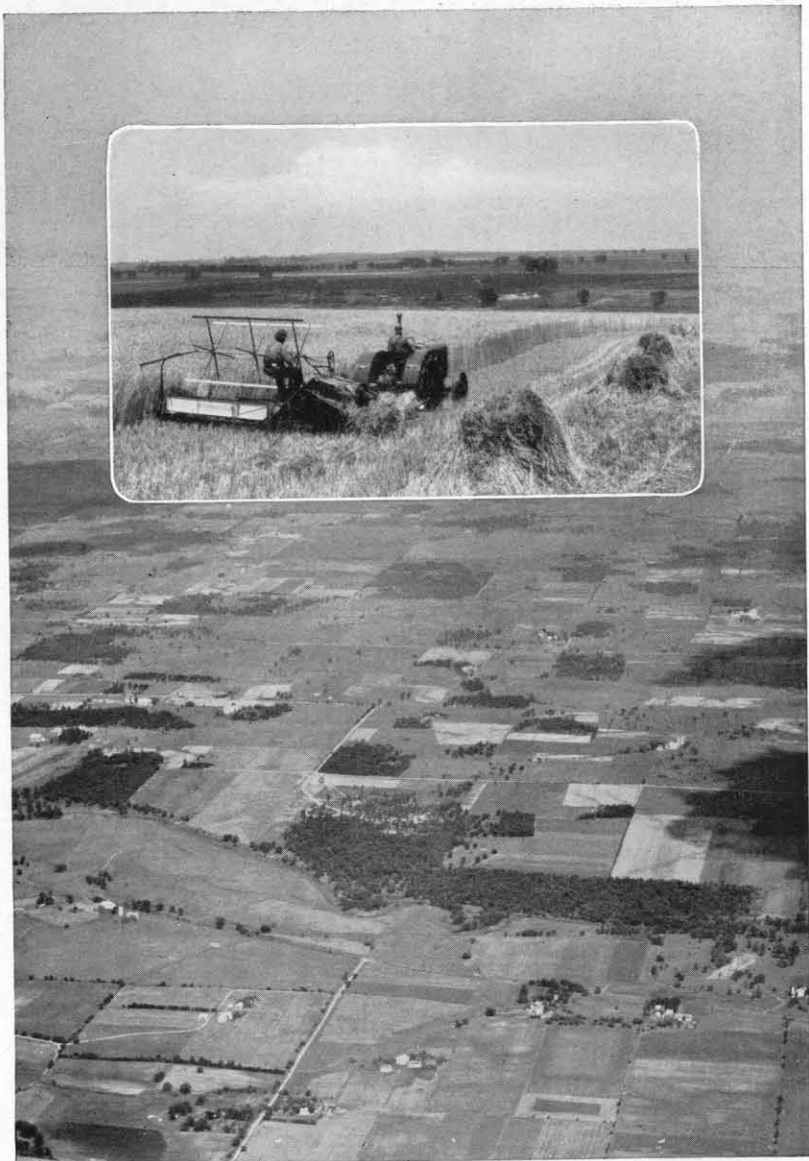


The non-tangling cover which is a part of the ball protects the inner core and stands up to the last.

## Brands and Lengths

Brands	Length Per Lb., Ft.
Sisal .....	500
Standard .....	500
Manila .....	600
Superior Manila .....	650
Pure Manila .....	650

All brands are packed in 50-pound bales, 48 pounds net.



The hum of McCormick-Deering harvesting machines is heard throughout the grain-growing sections of the world, and the billions of feet of McCormick-Deering and International binder twine are running out of the twine cans, securely tying billions of bundles of grain and corn. The harvest season in the Northern hemisphere is followed six months later in the Southern hemisphere, when it is summer to the south of the equator.





**INTERNATIONAL HARVESTER COMPANY**  
(INCORPORATED)

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CHICAGO, U. S. A.