HISTORY AND DEVELOPMENT OF International Harvester
Introduction

The annals of American business reveal a no more colorful nor inspiring story than that of the growth and development of International Harvester. Although in its present form it has been in existence only since 1902, the Company's antecedent history reaches back to 1831, when Cyrus Hall McCormick demonstrated his first reaper to a skeptical gathering at his father's farm near Steele's Tavern, Virginia. Few corporations of similar size and importance can lay claim to such a background of tradition and continuous operation.

The farm equipment industry, exemplified by the Harvester Company, is a distinctively American enterprise. It is doubtful that its phenomenal growth and development over the past century could have been nurtured in any but the vigorous, pioneering soil of the United States. The Company has grown with the nation and helped the nation grow. Certainly it could have reached its present stage only under the peculiarly American system of free enterprise. It is equally obvious that our present industrial civilization would have arrived much more slowly without the invention and perfection of farm machinery. This identification with history is possible only in a business with a background of tradition and service in complete accord with that of the nation in which it was founded.

Many of the fundamental concepts initiated by Cyrus Hall McCormick—absolute honesty in all dealings, the building of a quality product at prices his customers could afford to pay, and a safeguarding of that product with service that protects the customer—are still the living roots of Harvester policy. Today's Harvester spirit is based on McCormick's fighting determination to progress in his field and build machines which would best serve the customer and the nation.

Breaking the Bottleneck

The invention of the reaper broke a "bottleneck on the highway of progress. As much as any other single factor, it was responsible for the conversion of the United States from an almost purely agrarian nation in 1830 to its present position as the world's greatest industrial power. By releasing manpower from the soil to be deployed into other channels of activity, Cyrus Hall McCormick applied a spur to an industrial revolution in America which led to the greatest era of invention and mechanical progress the world had ever known.

In order to understand fully the implications of the reaper, it is necessary to examine briefly the conditions under which the farmer of 1830 operated. Then, as now, the search for food was man's first consideration. Until that search was successful, he had no time for any other activity. Only such time as was left over after he had produced enough food to satisfy his hunger could he devote to other occupations. In the centuries preceding 1831, 95 percent of the population of the world was forced by the need for food and shelter to work on the land.

Until the invention of the reaper, advances in farming methods were so slow as to be almost imperceptible. In spite of its status as humanity's basic industry, agriculture failed to progress or even to undergo much study in ancient times. It was still a laborious, unrewarding pursuit in 1830—one offering little promise of leisure or security to anyone engaged in it. The farmer was completely at the mercy of the soil and the elements. If circumstances caused him to fail to produce, he and his fellow men were confronted with the specter of famine. It was an economy of scarcity, a world in which the overwhelming majority of the population toiled unceasingly to supply its merely physical needs.

Of all problems of the farmer, the harvesting of grain was the most stubborn, having throughout all history resisted every effort to apply any but human power to its solution. Horses and oxen had been used to pull plows, harrows and carts but were of no avail at harvesttime, when only countless hours of backbreaking toil could cut and bind the grain before it rotted on the ground. Since there were usually no more than ten days in which to harvest, the least delay caused by the weather or a lack of manpower made for a loss of at least part of the crop. At best, this created shortages and uncertainty; in extreme cases it would result in actual famine.
This farmer is using the sickle, the earliest known harvesting implement, with which he could harvest a half acre a day.

Farmers of 1831 used the cradle to harvest standing grain. With this tool, one man could cut efficiently about two acres a day.

The principal implement of the harvest in the earliest recorded days of history was the sickle, a curved knife with which a strong man could cut a half acre in the course of a day. In 1830, the sickle was still in general use under certain crop conditions. Wielding a sickle is grueling labor; each bunch of grain must be grasped in one hand and cut by a sweep of the blade.

The scythe, practical only for cutting standing grain, was introduced some time in antiquity and made it possible for a man to cut two acres a day. During the eighteenth century, the scythe was improved by the addition of wooden fingers. With this implement, called a "cradle," grain could be cut and at the same time gathered and thrown into swaths, making it simpler for others following to bind it into sheaves.

The first reaper started the transition to the highly mechanized farming of today and at the same time opened the door to other improvements, proving to the world that long hours of drudgery are not necessary to supply its population with food. After the reaper had solved the problem of the grain harvest, new uses for animal power on the farm were discovered. Since that time there has been no hunger in the United States brought on by man's inability to produce sufficient food. The only scarcity has been the result of faults in our distributive system. It seemed that civilization had been accustomed to scarcity for so many centuries that it occasionally found abundance too strange a phenomenon to cope with effectively.

Almost as far-reaching as the removal of the threat of famine from this country was the trend started by the
reaper toward releasing men from the farm. If, as in 1831, it were still necessary for 19 men on the farm to produce enough to feed one man in town, there would be no large cities, little industry, none but the mostly highly essential professions—in fact, civilization would be in much the same spot it occupied 115 years ago. Since the reaper was introduced to the farmers of America, the population has been flowing gradually but steadily from rural into urban areas, until now three men in the city are amply fed by what one man on the farm is able to produce.

The invention of the steam engine by James Watt in the latter part of the eighteenth century is generally credited with beginning the Industrial Revolution in England. By providing man for the first time with a source of power other than that which he derived from his own efforts or that of domestic animals, the steam engine made possible modern transportation and industrial power. However, it is significant that its benefits were not completely realized until Cyrus Hall McCormick provided a means of releasing manpower to operate steamboats, railroads and factories. Not until man had time to turn from the unceasing task of satisfying his hunger could our industrial system reach its fullest flower.

The reaper, working hand in hand with new methods of steam transportation, was one of the prime factors in the rapid westward movement of our civilization. As pioneers pushed to the West at the rate of 30 miles a year, farmers, aided by new machinery, were putting land into productive use as fast as it was won. The various new inventions had a tendency to be mutually dependent. There would have been fewer railroads if farms had not produced more for them to carry and released men to help build and run them. At the same time, the rapid extension of land put under cultivation was assisted by the railroads, which were able to deliver the produce of the farm almost as rapidly as it was harvested. Each did its part in breaking the bottleneck between the vast, fertile areas of the West and the people in the East waiting to be fed.

The achievement of farm equipment in supplying men and food to industry is matched by what it has done for the farmer himself, since it fulfilled the purpose of all labor-saving machinery—to enable men to produce more and more with less and less effort. The first reaper could harvest as much grain as 20 men with sickles or five with cradles, and opened man's eyes to the possibilities of leisure by making it possible for him to obtain the necessities of life without expending every last ounce of energy. Every subsequent improvement in farm equipment has raised his standard of living by increasing the yield from land and decreasing the amount of time which must be spent on it.

This model of the McCormick reaper shows its distinctive features: reel, reciprocating knife, platform, and ground drive wheel.

In this one-room blacksmith shop near Steele's Tavern, Virginia, Cyrus Hall McCormick built the first successful mechanical reaper.
Development of Farm Machinery
After the Invention of the Reaper

The introduction of the reaper ushered in an extraordinarily productive era of invention in all lines of farm equipment. Stimulated by the impressive success of McCormick's machine, other inventors attacked the problems of the farmer with equal vigor. During the period between 1830 and 1850, every phase of agriculture underwent rapid development. The steel plow, which made it possible for the first time to turn the rich, sticky soil of the prairies, was introduced to replace the inefficient wood and cast iron implements which had been used for centuries. In 1834, the first threshing machine appeared, doing away with the laborious custom of flailing grain from chaff. Hand sowing of seed started to become obsolete when the grain drill, which permitted rapid, accurate planting, was invented. Harrows and cultivators in vastly improved form were developed—to be eagerly accepted by the pioneers who were opening the great American West.

All these new machines were designed to utilize animal power to the fullest possible extent and make it forever unnecessary for the farmer to engage in ceaseless backbreaking toil simply to earn a bare subsistence. Between 1830 and 1840, the time required to harvest an acre of wheat was reduced from about 37 hours to an estimated 11½ hours, with an even greater decrease in the amount of physical labor demanded of the farmer. Such developments had a profound effect upon the farmer's way of life; he could now look forward to the prospect of greater security, profits and leisure for himself and his family. Moreover, the faster he was able to acquire mechanical aids, the more land he could put into productive use. This had the tendency to uproot him, make him spread out toward the West, where millions of acres of fertile land waited to be put under cultivation. He became one of the driving forces behind the nation's rapid expansion and development.

By 1846 the acceptance of the reaper in the great farming areas of the Middle West was complete enough to justify the building of a factory to manufacture reapers in quantity. Cyrus Hall McCormick moved his business to Chicago, the logical shipping center of the new grain territory. His first factory was established on the north bank of the Chicago River near Lake Michigan, becoming one of the first of Chicago's pioneer industries. As his original contracts with outside manufacturers expired, McCormick refused to renew them, preferring, once he had the facilities, to have all his machines built under his personal supervision.

During this period, while McCormick was concentrating on the production of his reaper, he was also developing methods of selling, advertising and distributing it. Upon the expiration of his original patents, which in spite of litigation were not renewed, he met a sudden increase in competition simply by outselling his rivals and sending his agents throughout the United States to convince farmers in even the more remote sections of the merits of his reaper.

The interests of the farmer were always uppermost in McCormick's mind. Leaving the manufacturing details of his business in the hands of his brothers, he spent most of his time designing and testing improvements on his machine and, during the harvest season, studying the reaper in operation. Trips to the harvest areas each year enabled him to keep in close touch with the problems of the farmer and to learn his views on possible improvements. The most popular method of advertising and selling in those days was to stage contests with competing manufacturers before the farmers themselves. McCormick supervised many of these field trials himself, keeping a watchful eye for weaknesses in the performance of his reaper. Because of his insistence upon the highest possible standards of quality and workmanship, McCormick's machines usually came out ahead in such contests. He had, however, the courage and integrity to recognize flaws in his machines and never hesitated to accept advice he considered sound.

The first major improvement in the reaper was adopted in 1852, when a self-rake device was added to sweep the grain from the platform. Through this move, the man who cleared the platform with a hand rake was released to other work. A further change resulted from prolonged experimentation by the Marsh brothers of De Kalb, Illinois, which culminated in 1858 in the Marsh harvester, an idea whose worth was quickly recognized by McCormick and applied to his reaper. This machine employed continuous canvas aprons to raise the grain to a table, where two men riding on the reaper could bind it as fast as it collected and throw the bundles over the side. When, in 1872, McCormick began production on a wire binder, hand labor was virtually eliminated from the process of harvesting. During the next decade, wire binders were manufactured in large quantities but were never accepted as entirely satisfactory
by the farmers, who claimed that the wire injured their livestock.

The wire binder's brief day of supremacy ended with the invention of the twine binder, finally perfected by John F. Appleby of Wisconsin in 1879. McCormick, realizing its value almost immediately as an adaptation to his own machine, procured the rights to manufacture the twine binder and commenced to produce it in quantity. Soon the Appleby binding attachment, mounted on the Marsh type of harvester, was being manufactured by nearly all the harvesting machine manufacturers in the country. These machines, in spite of small variations in detail, were based on the frame and reciprocal knife cutting mechanism of McCormick's original reaper. Subsequent binders were essentially refined versions of the same machine.

The advent of the Civil War lent tremendous impetus to the development and production of farm machinery by draining more than a million men from the farms of the Middle West and placing an increased demand upon the farmers who remained to produce more food. Largely because of the reaper, the Union was able not only to feed a huge civilian and army population but also to ship large quantities of food to Europe.

Without McCormick's invention, according to a contemporary estimate, half the crops would have been left standing in the fields for lack of labor to harvest them. Lincoln's secretary of war, Edwin M. Stanton, recognized the Union's debt to the reaper in an address in 1861. "Without McCormick's invention," he said, "I fear the North could not win, and the Union would be dismembered." The impressive war record of the reaper served to convince even the most hesitant farmers of the advantages of farm machinery. Their reluctance to change to new ideas vanished when they saw a possibility of losing nearly all their crops through a lack of hand labor to harvest them. Final, universal acceptance of mechanical farming was an end result of the war.

The harvesting machinery business first began to assume its world-wide character in 1851, when McCormick entered his reaper in the exhibition of industries of all nations at the Crystal Palace in London. There, the reaper performed so efficiently in a series of field tests under all conditions that it received the highest award of the fair, the Council Medal. English writers, at first inclined to scoff at the new machine, finally were forced to admit that the McCormick reaper alone was worth more to England than the cost of the entire exhibition. The spectacular success of this experience led McCormick to make arrangements with a British firm to manufacture his reaper. Throughout the next decade, the use of the reaper spread rapidly through all Europe. McCormick had tapped a great potential market.
During the latter part of the nineteenth century, the farm equipment industry, influenced by the rapid expansion of agriculture for which it was so largely responsible, grew into one of the most highly competitive businesses in America. This period of severe competition had a restricting effect — so many companies entered this market that no single enterprise could muster up enough capital to engage in normal development or expansion. At one time, it was estimated, more than 2,000 concerns were manufacturing one or more lines of equipment. Most were barely able to keep abreast of the times — much less anticipate the farmer's needs. Meanwhile, the foreign market, which had first been opened by Cyrus Hall McCormick in 1851, remained a fertile and virtually untouched field of operations. Few companies had either the capital or the expert organization necessary to develop a satisfactory export business.

The two leading manufacturers of harvesting machinery at the turn of the century were McCormick's organization and the Deering Harvester Company, also located in Chicago. This company had been founded in 1869 by William Deering, another pioneer in the development and perfection of agricultural implements. In 1902, the two companies combined with three smaller concerns — the Milwaukee Harvester Company, Warder, Bushnell and Glessner Company and the Plano Manufacturing Company — to form the International Harvester Company. The prime reasons behind the organization of the new company were to develop new products, to bring about a more diversified line, and to give more attention to the foreign market. Cyrus H. McCormick, son of the man who had perfected the reaper and head of the McCormick Harvesting Machine Company at that time, became the first president of the Harvester Company the day after its formation.

With the exception of the Warder, Bushnell and Glessner plant at Springfield, Ohio, now Springfield Works; that of the Milwaukee Harvester Company, the present Milwaukee Works; and a Deering factory at Hamilton, Ontario, all the manufacturing properties
acquired by the consolidation were located in or around Chicago. The plant of the Piano Manufacturing Company on Chicago's south side became the Company's West Pullman Works. The Company also established its General Offices in Chicago, where they have remained ever since. In addition, the Deering Company, which had reached the forefront in its field largely through its manufacturing sagacity, contributed to the corporation coal, iron and timber lands and a steel mill in South Chicago, now Wisconsin Steel Works, giving the Company a source of raw materials sufficient to provide for expansion and product diversification.

The effect of the merger upon foreign trade became apparent almost immediately. Spurred on by new capital, new resources and a larger organization, the Company's foreign business doubled within five years and within ten had increased fivefold, with the extension of trade particularly effective in Great Britain, Western and Central Europe, Russia, South America and Australia. By 1909 factories had been established in several European countries, and sales outlets had been set up in most of the civilized countries of the world. The Harvester Company's world-wide character had become firmly established.

All the companies entering into the original combination were engaged in the manufacture of grain harvesting equipment: binders, hay and corn harvesting machines, and twine, but it was soon realized that the industry's tradition of service to the farmer and the nation, which had begun with the invention of the reaper, could not be maintained solely by further development of these machines but must include expansion into all lines of agricultural implements and excursions into types of machinery which were then merely in the planning stage. Ever sensitive to the needs of the farmer, the directors of the new corporation made plans to incorporate into the Harvester line implements which would serve every purpose of the farm — many of which had not even been dreamed of a few years before. It was felt, too, that a more diversified line of products would remove the seasonal character from the harvesting machine business and provide employment on a year-round basis to the thousands of Harvester factory employees and dealers. The addition of new products would require production at a plant during the periods it was not ordinarily manufacturing harvesting equipment.

The first step in the development of a complete line was the acquisition of the D. M. Osborne Company, at Auburn, New York, which manufactured a line of harvesting and tillage implements designed to meet the eastern trade. Because of its location near the eastern seaboard the addition of that plant was also in line with the Company's desire to expand its foreign trade. In 1904, the purchase of the Keystone Company at Rock Falls, Illinois, added an historic line of tillage and haying tools. This factory, subsequently sold, became known as Rock Falls Works. About this time the Weber Wagon Works of Chicago became a Harvester property. The Company's line of farm implements became complete with the acquisition in 1918 of steel and chilled plows through the purchase of companies which operated the present Canton Works at Canton, Illinois, and a plant at Chattanooga, Tennessee, and the addition of a line of seeding machines manufactured at Richmond, Indiana.

During these years, the Company had been rapidly developing and putting into production new lines at its original plants. By 1912, corn binders, ensilage cutters, seeding machinery, harrows and manure spreaders had been added to the catalog of implements offered to Harvester dealers. The pioneer light harvester-thresher was introduced in 1914; the stationary thresher four years later.

Throughout this period there was a general tendency to simplify the various lines of traditional harvesting machinery inherited by the Company, resulting finally in the Company's dropping entirely the Champion, Osborne and Milwaukee lines of harvesters. Later the two remaining lines were merged into one — the McCormick-Deering — with the best features of each pioneer machine retained. Consequently, work was simplified for dealers and the Company's sales and servicing departments. This change also served to concentrate experimentation and attempts at improvement upon one identifying line of machinery.

The gradual broadening of the Company's manufacturing field has been in complete accord with Cyrus Hall McCormick's original desire to anticipate and meet the farmer's needs. Every new machine developed has been a response to definite needs of agriculture. This has resulted not only in a constant bettering of the farmer's standard of living but has also redounded to the advantage of the Company by giving its employees more regular employment and its dealers something to sell at every season of the year.

The Company was identified by the "I.H.C." monogram until adoption, in 1945, of the modern IH symbol.
The Growth of Power Farming

The key to all progress in agriculture is power. As long as there was only human energy, supplemented by the limited use of animal power, to perform the multiple operations required by farming, progress was necessarily slow. When Cyrus Hall McCormick perfected the reaper, he brought to the farmer a broader application of animal power by demonstrating its practical use in the harvest. From that point, farming methods leaped forward to the greatest period of development the world had ever witnessed.

As this development accelerated, however, it became apparent that there were definite limitations to the use of animal power in farming. Not only was the horse limited in strength and endurance, but it was also expensive to maintain. A considerable amount of the farmer's time had to be devoted exclusively to its care; much of the produce of the farm had to be used as feed; and at least part of its acreage was necessarily reserved for pasture. By its very nature, the routine year-to-year operation of a farm is not perfectly suited to animal power, since so much of the work is done in fits and starts. During periods such as the harvest, labor must be highly concentrated, but during many weeks power is not required at all. Animals are a source of expense whether working or idle — and they are idle too many days in the year. Farmers urgently needed a source of power with sustained endurance and reliability, in which the factor of expense was limited to working time.

The development of agricultural machinery was inhibited as long as animals were the only available source of power. By the end of the nineteenth century, most implements had reached their maximum capacity for use with work animals, yet they were capable of further improvement and economies. Designers were forced to gear their machines to the speed of the horse and make their draft no heavier than an ordinary team could pull. The grain binder, for example, had by 1900 been perfected to the point where only additional power could increase its efficiency. With animals as the motive power, no higher speed could be attained, nor could the machine be made heavy enough to increase the width of its cut. Some kind of power more efficient than that which animals were able to provide was clearly indicated if industry was to continue its service to the farmer by giving him machines which would allow him to get the most out of his land with the least effort.

It was only natural that after the invention of the steam engine there should be experimentation with the use of this mighty new source of power on the farm. The first, and what was to be the only really practical country-wide application of the steam engine, was in threshing, during which power was transmitted by a belt to the threshing machine. Throughout the last century, many attempts were made to apply the steam tractor to plowing, the farmer's most difficult job. There was no question but that the steam engine was a lift in pulling a plow, but its use was extremely limited. Because of its prohibitive cost, its size and general unwieldiness, it could be employed profitably only on the immense acreages of the West. Farmers of quarter and half sections never seriously considered the steam tractor.

The real importance of the steam driven tractor lay in the fact that it was a step in the right direction. Its existence gave rise to the first efforts to design and manufacture a tractor which would employ the internal combustion engine, beginning to be a seriously considered development about 1900. As the internal combustion tractor emerged from its experimental stages, the steam tractor was doomed, although it continued to be used in threshing for many years. The farmer was only too glad to substitute the new tractor for an engine suitable only for heavy duty and requiring much more expert care and attention than he was capable of giving.

The first internal combustion tractors built near the beginning of this century were patterned after the steam tractor. Often their building simply involved the replacing of the steam unit with an internal combustion engine. Consequently, the pioneer tractors embodied many of the same faults: they were still too heavy; they were unreliable to the point that they broke down about as often as they ran — and nearly all of them had an alarming tendency to dig themselves into mud holes whenever the going was at all bad. During those first years, designers were convinced that there could be neither power nor traction without great weight. The efforts of all progressive farm tractor manufacturers have since been directed toward constantly decreasing the tractor's size and lessening its weight per horsepower.

As might be expected in an organization so sensitive to the needs of the farmer, Harvester was one of the first companies to explore the possibilities of this new kind of power. The demand from the farm for a more efficient power was not lost upon its predecessor companies, particularly since their designers had long since admitted the limitations imposed upon their implements by animal power. As early as 1889, the Deering Harvester Company began to experiment with a gas engine and, by the time of the formation of International Harvester, was producing
almost 50 stationary engines a day which could be mounted on various Deering implements. In 1900, E. A. Johnston of the McCormick Harvesting Machine Company designed an auto mower, the outgrowth of several years of experimentation with the internal combustion engine.

Experimental work on the first International Harvester tractor began in 1905 at the former Rock Falls Works under the supervision of Mr. Johnston. This was a cumbersome, three-wheeled machine with a single wide wheel in front. The following year, the Company put its first tractors on the market. These were built under an arrangement with the Ohio Manufacturing Company of Sandusky, Ohio, which supplied the truck and transmission on which an International engine made at Milwaukee Works was mounted.

Meanwhile the Company proceeded with its experimental work at Akron and McCormick Works, producing the first all-International tractors at Akron in 1908. In 1909, one of these tractors crossed the ocean to Amiens, France, where in a memorable contest it received the medal of honor for plowing for two days without a breakdown. By 1910, Harvester’s Mogul and Titan tractors represented a third of the nation’s production, and Tractor Works in Chicago had been built for their exclusive manufacture.

In 1906, the Company started regular production on tractors like this one, built under an arrangement with the Ohio Manufacturing Co.

One of the Mogul line of tractors built about 1910. This popular model developed 45 horsepower and weighed almost 11 tons.
Just as the Civil War hastened the final, unequivocal acceptance of the reaper, World War I gave a tremendous impetus to the use of tractors on the farm. Confronted by an unprecedented demand for food, both in this country and in Europe, and war's inevitable drainage of manpower from normal pursuits, farmers turned to tractors in increasing numbers as the only solution to their problems. Here they found the answer to both labor and power shortages.

In spite of considerable loss of farm animals to the Army, there was a marked increase in farm production. Moreover, the fact that tractors did not use up feed as did farm animals allowed that much more grain to be channeled to a hungry world. During the war years, tractor production at International Harvester more than doubled. This clear demonstration of the efficiency of tractor power on the farm started a decline in the use of animal power which has been steady ever since.

Up to and during the first World War, tractor manufacture continued to be characterized by the building of huge, unwieldy machines, strongly influenced in design by the steam engine. This emphasis upon the production of large tractors was caused largely by the urgent need of the large farmer, who was the first to feel the inadequacy of animal power. A small farm could still be operated profitably with animal power, but the volume of work in the large acreages of the West was more than horses and mules were capable of handling efficiently.

The incentive provided by the huge wartime demand for tractors led many automobile manufacturers into the farm power field. The influence of automotive design led to many changes in the farm tractor and began a trend toward a smaller machine, one which would be suitable for use on the ordinary small farm of the Middle West. Some of these manufacturers, failing to grasp the essential differences, tried unsuccessfully to convert the automobile into a tractor. There was a middle group, however, which was fully aware of these differences but saw a possibility of applying many of the principles of automobile manufacture to the tractor without sacrificing any of its simplicity or necessary ruggedness. In this category was the Harvester Company, which gradually altered the design of its tractors, making them lighter and embodying in them more precision construction.

Harvester engineers had been working for many years on a tractor, which, unlike the standard four-wheeled machine, could be used effectively for cultivating row crops. The first such attempt was a motor cultivator, produced experimentally in 1915. Because of its high manufacturing cost and limited utility, this machine was dropped from production in 1919 in favor of concentrated experimentation on an all-purpose tractor. Up to this time, it had been felt in many quarters that two tractors would be necessary to the efficient operation of a farm without animal power: a conventional, four-wheeled model for all duties except cultivating and a motor cultivator of some type.

This kerosene tractor, produced in 1915, was one of the Company's first attempts to design a machine suitable for the smaller farm.

By 1921 Harvester tractors were beginning to resemble the wheel tractors of today. This is a McCormick-Deering 15-30 of that year.
The Farmall was the first successful attempt at building a genuine all-purpose tractor. Its advent in 1922 revolutionized the tractor industry. During that year, 20 of the experimental Farmall tractors were sent to the field for testing and careful observation by Harvester experts; in 1923, 26 more were sent out for trial after further field-tested refinements had been made. The following year regular production on a limited schedule was begun at Tractor Works.

A landmark in tractor production was reached in October, 1926, when production of Farmall tractors was begun at the newly equipped Farmall Works in Rock Island, Illinois. The Farmall tractor has undergone many changes in power and utility since the day it started rolling off the assembly line at the new works which had been built solely for its production. Though each year has seen important refinements, the essential features have remained the same: the high rear-wheel drive for maximum clearance under the rear axle; the small, narrow front wheels designed to run between row crops; and the means of mounting implements and other attachments to either the front or the rear. Through its ability to perform not only the belt and drawbar functions of the standard four-wheeled tractor but also to work in row crops efficiently, the Farmall tractor made possible for the first time the horseless farm. Since its introduction, all tractor manufacturers have followed the Harvester example with machines of similar design.

Even before the introduction of the Farmall tractor, the Harvester Company pioneered in the development of the power take-off, which, when it appeared in 1918, finally eliminated the necessity for the ground drive wheel. This feature permitted direct transmission of power from the tractor to the drawn machine, minimizing the loss of power and opening the way to the design of lighter, more compact implements. By 1934, the power take-off had been built into nearly every tractor on the market.

Since the development of the power take-off and the successful entry of the Farmall into the farm tractor field, revolutionary changes took place in the design of all farm machinery. Equipment was designed to be mounted directly upon the tractor, easily detachable and removable by one man. Thus an implement became an integral part of the tractor itself, permitting a lighter, less expensive construction, yet much higher speeds than could be attained with animal power. The use of a tractor equipped with a power take-off allowed all harvesting machinery to employ a wider cut and high-speed gearing.

A further improvement was the introduction of pneumatic-tired tractors in 1933. Although they increased the original cost of the tractor, rubber tires had many advantages, the most important of which was the lessened rolling resistance and consequent reduction in fuel costs. Rubber tires for the first time admitted the tractor to the paved highway, an invaluable aid in moving equipment from one field to another on farms crossed by important roads. Their cushioning action added greatly to the life of the tractor and the comfort of the driver. Since their adoption, manufacturers have been able to build higher speeds into tractors and design heavier, more versatile equipment.

The success of the Farmall design induced manufacturers to give more attention to the needs of the small farmer. Harvester led the way in this direction with its introduction in 1933 of the Farmall 12, the first of the one-plow tractors. This was followed in 1939 by the Farmalls A and B, even smaller and less expensive machines. The Farmall Cub was finalized for production in 1945 — ready to serve all the purposes of the nation's smallest farms. These small tractors brought with them, as collateral developments, equipment also adapted to the farm of limited acreage. This equipment could be mounted on the tractor or used with the power take-off in the same manner as the larger machines.

World War II brought about many changes in the Company's farm equipment business. These are described in the section entitled "Postwar Decision," beginning on page 18.
Growth of the International Motor Truck Business

The Harvester Company's entry into the field of motor transportation was inspired by a recognized need of the farmer. By the end of the last century, rural America had become so spread out and farm production had increased so enormously that transportation threatened to become a bottleneck. Farmers who were not located near a railroad were finding the horse and wagon an utterly inadequate, time-consuming means of hauling their produce to the market. Trips to town were necessarily infrequent when they involved an expenditure of long hours or days of indispensable horse and manpower. America's farmers needed a method of transporting themselves and their produce with speed and dependability. The first gropings in the direction of a gasoline-powered horseless carriage seemed to indicate the solution to this problem.

At the same time that it began to experiment with its first tractors, Harvester became interested in the development of a farm truck. For many years before management was officially committed to the idea, the Company's engineers had been testing versions of a vehicle suited to the needs of the farmer. As early as 1898, E. A. Johnston of the Engineering Department had installed a gas engine in a wagon-type chassis and driven it successfully between his home and McCormick Works for many months.

In 1905, after several more years of experimentation, Mr. Johnston designed and developed an Auto Buggy at Keystone, the former Rock Falls Works. This was a two-cylinder, air-cooled engine mounted on a high-wheeled chassis, designed to look as much as possible like the traditional horse-drawn buggy. It was to serve the same purpose — to haul moderate amounts of produce to and from the market and take the farmer and his family to church on Sundays.

In the early spring of 1907, 100 of these Auto Buggies were put into production in a part of McCormick Works which had been set aside for the purpose. The quick acceptance of the Auto Buggy and the subsequently developed Auto Wagon appeared to justify their production on a regular basis, so the assembly line was moved later that same year to Akron Works, where more adequate facilities existed. This was the first of the Company's motor truck plants.

One of the first high-wheeled International Auto Wagons, built at Akron Works about 1907.

This picture of an Auto Wagon built a few years later shows its use on the farm.
Here also the Company made a brief venture into the manufacture of passenger automobiles, when, in 1908, Mr. Johnston designed a roadster and a touring car, both equipped with four-cylinder, vertical engines, the first in automotive history to use overhead chain-driven camshafts. After approximately 1,500 of these models had been produced in 1910 and 1911, the Company decided to abandon the manufacture and sale of automobiles. Trucks, it was felt, would be more nearly in keeping with the Harvester policy of meeting the nation’s transportation needs.

During the years which followed, the design of the International truck was gradually weaned away from the original high-wheeled Auto Buggy and began to conform to the lines of the conventional truck. Just as was the case with the tractor, the heavy demand for motor transport created by the first World War stimulated the manufacture of all models of trucks. From 1915 on, the Company developed the prototype of the present International truck and the demand from urban consumers began to outstrip that from the farm.

By 1921, it became apparent that facilities at Akron Works would soon become inadequate to handle the increased volume of truck production in all models. Accordingly, motor truck manufacture was instituted at Springfield Works, home of the old Champion line of farm equipment which had only recently been discontinued.

At the same time, the Company determined to build a modern plant suitable to modern mass production methods to house the manufacture of its line of heavy-duty trucks. After careful deliberation, Fort Wayne, Indiana, was selected as the site, and construction began in 1922. By 1923, Fort Wayne Works, a thoroughly modern factory in every respect, produced its first vehicle. Akron Works was closed in 1925. By that time, International had become the country’s largest manufacturer of a complete line of trucks and was producing a vehicle for every important agricultural and commercial need, with the latter predominating.
The volume of motor truck production had reached a point by 1937 which justified the erection of a plant to be devoted exclusively to the production of truck engines. Indianapolis was chosen as the location for this plant because of its position approximately 150 miles from both Springfield and Fort Wayne. It is the most modern of the Harvester Company motor truck factories. The first heat was poured in the foundry in July, 1939. Since that time production of truck engines of all types has steadily increased.

International trucks have long been famed for their ability to stand up under any conditions. The high-wheeled construction of the original Auto Buggies and Auto Wagons was designed to allow these vehicles to traverse the muddy, rutted country roads the average farmer was forced to cope with. Only after improvement had been made in the nation’s highways was the diameter of the wheel reduced.

At Fort Wayne Works, a proving ground containing a severe twist course and roads studded with Belgian paving blocks was completed in 1929 to assure that all models received a thorough scientific testing under the most arduous conditions possible before being offered to the customer. Modern Internationals have always been designed under the assumption that operating conditions will be poor; they have been built to stand up under conditions far removed from the normal. For this reason, the International 4 x 4, 6 x 6 and half-track vehicles were chosen by the Army, Navy and Marine Corps for use throughout World War II. The story of International trucks in subsequent years is described in the section "Postwar Decision," beginning on page 18.

The old C line motor trucks were introduced for the first time in 1934.

The D line, also introduced in the thirties, was suited to all types of commercial use.

During World War II, International 6 x 6 trucks were used extensively by the Navy and Marine Corps. Here one emerges from an LST.
A natural outgrowth of the Harvester Company's efforts in the direction of providing power for the farm was the development of power for many kinds of non-farm purposes. It was only logical that the tractor which had been perfected by the Company should find its way into other uses, where the need for power was just as acute. Records indicate that, as early as 1912, an International Harvester Titan tractor was designed to be convertible into a road roller by the removal of the front wheels and insertion of four 15-inch rollers.

Tractors became really practical for industrial use, however, when the regular McCormick-Deering 10-20 farm tractor was equipped with solid rubber tires in 1924 to make the tractor suitable for use on paved highways and within factory buildings. Five years later, the large McCormick-Deering 15-30 was similarly equipped to give industrial users the benefit of added power. In 1928, the 10-20 was modified by the addition of a tracklaying device to make the first International crawler-type tractor. Later International crawler tractors were built with more and more horsepower to meet the needs of heavy construction and logging work, and also to satisfy the demand from farmers who needed the extra power and traction of the crawler type tractor to pull heavy combines and gang plows over the immense, hilly acreages of the West. By 1933, the first diesel engine was installed in an International crawler tractor, the TD-40. This was the first American-made diesel engine that started on gasoline and after a minute or less shifted to full diesel operation. The diesel-powered tractor also gave the farmer and industrial user the advantage of more economical operation in heavy-duty jobs.

By the time pneumatic tractor tires had been introduced, Harvester was manufacturing a greatly broadened line of tractors for industrial use. This innovation gave the industrial tractor greater mobility and a wider variety of uses — particularly in airports, large factories and enterprises in which there is a problem of handling heavy materials. At this time, too, International truck and tractor engines were being adapted to industrial use as power units for machines made by other manufacturers. In 1938, Harvester produced the TD-18, its first tractor designed for exclusive industrial use. No longer were industrial tractors simply modifications of farm tractors; an entirely new field had been opened with its own distinctive characteristics and demands. The further development of Harvester's construction equipment business is described in the following sections.

The application of International power to industrial use is nothing new. In this photograph, taken about 1908, two of our early tractors are shown providing the power for road building equipment in Chicago.
This 1912 Titan tractor was convertible into a road-roller by removing the front wheels and inserting rollers.

The Model 10-20 farm tractor was modified for industrial use by the addition of solid rubber-tired wheels in 1924.

The International crawler tractor in 1928 was a Model 10-20 farm tractor to which had been added a track-laying device.

In 1933, the first International tractor with a diesel engine was introduced. This model was called the TD-40 TracTracTor.
Producing for Victory

World War II focused attention on Harvester’s mass production plants as vital sources of war material. In earlier wars the Company’s principal war effort had centered in the production of farm equipment needed to replace hand labor. In the early years of World War II, by government order, the manufacture of farm equipment was drastically reduced; however, large quantities of farm equipment parts were made to keep existing machines in operation. Many of Harvester’s factories were converted to the production of military trucks and tractors, aircraft torpedoes, guns and gun parts, artillery shells, and other tools of war. The Company contracted to operate government-owned factories and parts depots. The materiel of motorized warfare replaced tools and power for food production.

As the war continued, the great need for farm tractors and machines was again realized by government authorities and Harvester was permitted to produce units for distribution where needed most. Thus, Harvester built and shipped equipment for both the fighting front and the home front.

Postwar Decision

Restrictions on the manufacture of civilian goods during the early years of World War II produced an unprecedented postwar demand for motor trucks, construction equipment and farm equipment. Also, many thousands of young men who had operated Harvester’s motorized equipment in military service came home determined to let power and machines do more and more of their work.

Matched against this demand were Harvester manufacturing facilities grown greater and greater to meet military needs. The decision had to be made whether the Company would scale down to prewar needs or reconvert for greater civilian production than ever before. When this decision faced the Company, Fowler McCormick, grandson of the man who perfected the reaper, was president. He and his associates reasoned that the Company’s responsibilities to customers, employees, and stockholders could best be served by developing new markets for new products and those already in the line. In this way, places could be found for returning veterans without displacing those who had carried on in their absence at war. The Company could further diversify its operations, increasing its usefulness to the nation and protecting stockholders’ investments. The Company could continue to progress.

The expansion program decided upon was a bold one. It involved a huge investment for new factories, new product designs, and new machine tools. Thousands of men had to be trained for new responsibilities and new performance. The new factories had to be purchased or constructed, then tooled up and brought into production. Sweeping changes had to be made in the location of major manufacturing operations to produce each machine with maximum efficiency.

Smallest of the International line of motor trucks is the Scout, a versatile low-cost vehicle for both passenger and cargo transport. It’s available with two-wheel or four-wheel drive, detachable top and five-foot pickup body. A full-length Travel-Top is also available.

Designed for easy and convenient operation, International Models like this Metro-Mite provide economical mobility for innumerable consumer-service businesses.
Formation of Harvester divisions. Early in the Forties, the Company's management recognized the need for major reorganization of a corporate structure that had remained virtually unchanged since the time of the merger in 1902. To make sure that proper attention would be given to the design, manufacture and sale of each of the product lines, it was decided that separate divisions, each responsible for a single group of products, should be established. The five divisions — Construction Equipment, Farm Equipment, Fiber and Twine, Motor Truck, and Steel — that are now responsible for the Company's nation-wide operations — are the result of this decision.

New products and manufacturing facilities. For the Motor Truck Division, the postwar years were a period of continuous development. In 1946, the Company acquired a plant at Emeryville, California, for producing giant specialized motor trucks for the Western trade; to provide facilities for supplying these trucks for nation-wide use, Harvester subsequently acquired an additional factory at Fort Wayne, Indiana, in 1960. In 1948, it acquired, as a subsidiary, the Metropolitan Body Company at Bridgeport, Connecticut, which for several years had manufactured bodies for Harvester's popular multi-stop Metro delivery trucks. And in 1958, it acquired the Metropolitan Stamping Company in Shadyside, Ohio, as a subsidiary for the manufacture of sheet metal parts. As an additional facility at Fort Wayne, IH established in 1959 a new Truck Sales Processing Center; at this operation, the Company makes modifications and installs accessories on new trucks to customer demand.

International Harvester, largest producer of a full line of motor trucks, continued to expand its line, making it by far the most specialized of any manufacturer in the world. Smallest in the line were the Scout, a completely new general purpose vehicle of only 2,800 pounds and powered by the new four-cylinder Comanche engine, and the Metro-Mite, a small multi-stop truck with a wheelbase of only 96 inches and a gross vehicle weight of only 3,800 pounds. In the light truck class, Harvester introduced several new models, including the Travelall, a popular vehicle of station wagon type, and a new truck with six-man Travel-Crew cab and pickup body. In the heavy-duty class it introduced a new Sightliner series with cabs measuring only 48 inches from front of bumper to back of cab, and additional floor-level windshields to assure greater safety of operation. It expanded the extra-heavy-duty class to include trucks of up to 127,000 pounds gross combination weight for use both on the highways and over severe off-highway terrain.

Harvester likewise made available an increasing variety of features for use with the many basic models. It now offered a choice of six and eight-cylinder engines in various sizes and equipped for liquid petroleum gas as well as gasoline or diesel fuel, and it had an ever-widening selection as to wheelbase and body design, and types of axles, transmissions, and other major parts. Notable among features made available during the postwar period were vehicles with four-wheel and six-wheel drive, and refinements such as automatic transmissions, power brakes, power steering and tubeless tires.

Introduction of these and many other new models was in keeping with Harvester's long-established policy of meeting each customer's requirements down to the minutest detail. Instead of mass-producing a limited number of standardized models and then adapting them to specific uses, Harvester continued to build "from the ground up." As before, every International motor truck was designed and built to the precise requirements of the job it should do and the specific conditions under which it would operate.
International's Travelette has a six-man cab with a pickup body. It's available in four-wheel drive.

This International medium-duty unit is designed for economical pickup and delivery work and other short-haul, light-load applications.

Here is an International light-duty model equipped with factory-mounted low-loading dump body.

This International speeds a load of timber on its way to a sawmill in the Pacific Northwest, where it will be cut into top-grade lumber for new homes and construction.

This International diesel-powered tractor features a one-piece reinforced fiberglass hood and fender assembly; the entire assembly tilts forward 90 degrees for servicing.
This International makes interplant steel deliveries in northern Indiana's steel mill area.

This large International is designed for hauling maximum cargo loads over long-distance routes. Several models are available with horsepower ranges from 180 to 335; the bigger ones are used on toll roads to pull tandem trailers.

The Company continued with unabated vigor in the introduction of new and improved farm tractors and implements. It brought out complete new lines of Farmall tractors designed for the requirements of postwar American farming. Many new features were made available for these new tractors. The Fast-Hitch device provided for rapid attachment and detachment of a wide variety of direct-mounted and semi-mounted implements. The Torque-Amplifier made it possible to double the number of tractor speeds and instantly change gear ratios without shifting gears or stopping the tractor.

In addition to the Farmall line, Harvester introduced its International Utility line, low-slung, four-wheel tractors built for a variety of uses for both farm and off-the-farm work. For work with both International Utility and Farmall tractors, Harvester made available a variety of new tractor-mounted equipment for both industrial and farm use, including loaders, backhoes, blades, scarifiers, and mowers. The International Cub Cadet, smallest of IH tractors, was introduced for lawn and garden work, snow removal, and similar uses; it weighs only 500 pounds and has a seven-horsepower engine with a three-speed transmission. Most recently introduced was the giant 4WD-3, a four-wheel tractor of 180 drawbar horsepower for large farms and ranches in the western states. It was made available with four-wheel steering and with torque proportioning to control the spinning of wheels in muddy ground.

The Company underwent a major reshaping in the postwar years. Early in its history, farm machines were largely animal-powered and were built in factories adapted to smaller units. Having in mind the rapidly developing changes in number and size of American farms and their need for equipment of ever-increasing capacity, the Company relocated its production in modern and efficient plants.

For the manufacture of the newly introduced cotton picker and other farm machines IH built a large, wholly new plant at Memphis, Tennessee, in 1947. In 1946, the Company bought an aircraft plant at Louisville, Kentucky, as the new home for its smaller sizes of Farmall tractors. In 1946, it enlarged its facilities for the production of malleable iron by the purchase of a foundry at Waukesha, Wisconsin. And to provide for expansion of its line of heavy plows, subsoilers, and tillage implements, popular among West Coast ranchers and fruit growers, Harvester purchased a plant at Stockton, California, in 1947. In due course, Harvester disposed of its older plants, most of them multi-story structures. Plants were sold at Chattanooga, Tennessee, and at Huntington Park, California, in 1947; at Auburn, New York, in 1951; and at Richmond, Indiana, in 1957. The Company's oldest and largest factory, the historic McCormick Works, built in Chicago in 1872, and a small factory at Rock Falls, Illinois, the last of the old-style plants, were closed in 1961.

The International heavy-duty tractor-trailer is powered by a V-8 engine. The cab-over-engine design provides maximum loadspace and features easy engine accessibility for servicing.

The Farm Equipment Division, the oldest part of the Company, underwent a major reshaping in the postwar years. Early in its history, farm machines were largely animal-powered and were built in factories adapted to smaller units. Having in mind the rapidly developing changes in number and size of American farms and their need for equipment of ever-increasing capacity, the Company relocated its production in modern and efficient plants.
Two self-propelled combines work together in a Western wheat field. An International truck prepares to receive grain from the rear combine.

This Farmall, with direct-connected moldboard plow, makes the job easier in plowing under tough sod.

The McCormick self-propelled cotton picker has been a revolutionary factor in our country’s cotton economy.

Here’s an International utility tractor with four-row corn planter. Fertilizer is discharged from the large forward hoppers.

Postwar development of Harvester’s farm implements offered the farmer a greatly increased variety of new and more efficient machines, many of them of larger, multi-row design. Among the many machines introduced were new plows, tillage equipment, planters, cotton pickers, hay balers, and combines. New types of machines included field harvesters for making hay and corn silage, hay conditioners, and windrowers. Notable additions to the combine line were units for the field shelling of corn; these units, mounted directly on the basic grain machine, offered the owner additional speed and economy of operation.

In 1952, the Fiber and Twine Division moved its manufacturing operations to a newly built modern plant in New Orleans, and the old McCormick Twine Mill, in Chicago, was disposed of. The new location made possible important economies in the transportation of raw fiber to the mill and in the distribution of the finished twine.

The Construction Equipment Division was created in 1944 and embarked on its program of expansion with the purchase, in 1946, of a former airplane engine plant in Melrose Park, Illinois. Its 2,348,000 square feet of manufacturing area were assigned to the production of heavy diesel engines and a new 35,000 pound diesel crawler. Two other plants, Tractor Works and Milwaukee Works, came under the jurisdiction of the division. The modern administration building at the Melrose Park location became the headquarters of the division. Here were
established central facilities for the design of Construction Equipment products and the home office for a new divisional sales organization.

In the postwar period, the Construction Equipment Division greatly expanded the number and variety of its products. It enlarged its line of diesel crawler tractors to six sizes, ranging up to 230 net horsepower and available with numerous types of bulldozers, bullgraders and other matched equipment; also included were two carbureted crawlers in sizes up to 55 net horsepower. A notable addition was a small crawler of 31 drawbar horsepower for both farm and construction equipment users. IH made available five sizes of crawler loaders, and Four-in-One skid shovels with rated capacities up to three cubic yards. It had 32 models of diesel and carbureted power units, the largest unit developing 385 horsepower.

New to the line were three 375-horsepower rubber-tired earthmovers, called PAY Scrapers and PAY Wagons, and two off-highway trucks of 19 and 27-ton capacity, called PAY Haulers.

This man cultivates eight rows of soybeans at a time. The cultivator, hydraulically controlled, is direct-mounted on the Farmall tractor.

Here’s an International utility tractor with high-speed mower.
This Farmall-mounted two-row corn picker picks, husks, and loads ear corn in a single, fast-moving operation.

A Farmall tractor with front-end loader makes fast work of filling a self-unloading wagon for its next trip to the feed lot.

International crawlers in tandem load an International PAY Scraper on a highway relocation job in Alabama. Working like this, the crawlers can load the PAY Scraper to a full 34-yard capacity in 30 seconds.

The International Cub Cadet lawn and garden tractor finds a variety of uses throughout the country. Here, one pulls a golf ball retriever on a driving range in Arizona.

A 3,500-pound load of fish, fresh out of the Atlantic, is taken in on the Boston Fish Pier. The International utility tractor provides a modern, fast, and efficient mover.
In 1952, Harvester acquired, as a subsidiary, The Frank G. Hough Company, of Libertyville, Illinois. Hough had for many years been a manufacturer of a full line of rubber-tired integral tractor loaders, known as PAY Loaders. After it was purchased by IH, Hough enlarged its line to include rubber-tired dozers and pushers; among them were three models of PAY Movers, four-wheel towing tractors, designed especially for towing large aircraft.

Dairy and refrigeration equipment had for many years been an important sector of Harvester's farm equipment line. In 1907 the Company had introduced a quality line of cream separators, and milking machines in 1929. In 1935 it began the production of farm milk coolers and large walk-in coolers for the preservation of all perishable products of the farm.

In 1945, the Company established the Refrigeration Division as a separate unit that would take over the production of these older lines and embark on the production of freezer chests and household refrigerators for both farm and city use. In 1946 IH purchased a large plant at Evansville, Indiana, and rapidly expanded the division's product line to include several sizes of refrigerators, freezers, air conditioners, and dehumidifiers.

After several years of production it became clear to IH management that Harvester would either need to invest large sums of capital to develop a competitive line of other household appliances or abandon this phase of its business. It chose the latter course and, in 1955, sold its Evansville Works.

International PAY Scrapers do an efficient grading job for a new jet runway at an airport near Denver.

Two International PAY Haulers are loaded up with rock to be crushed for road base material for an interstate highway in Texas. These off-highway giants can haul up to 13 1/2 cubic yards or 22 tons.
An International PAY Wagon helps in widening the Cal-Sag Canal southwest of Chicago. This giant earthmover, powered by a turbocharged diesel engine, carries up to 40½ cubic yards at a time.

In the forefront of planning for the postwar period was the Company's program for large-scale expansion of engineering and research activities. To carry on the tradition of designers who had developed radical innovations such as the reaper, the Farmall tractor, and the cotton picker, Harvester management made plans that would be in keeping with the fast-moving pace of technological change in mid-century America.

In 1946, Harvester purchased a plant where manufacturing research, previously conducted at individual plants, was consolidated on a Company-wide basis in a single department. In the new Chicago location, providing some 216,000 square feet of floor space, laboratories conduct programs of continuous basic and applied research to develop new processes and materials and lead to reduced manufacturing costs. Here, too, Harvester established an engineering research unit, which has made studies of all likely future sources of power. These include gas turbines, free piston engines, fuel cells, and nuclear energy; and power systems such as hydrostatic power transmissions and other forms of infinitely variable drives.

More extensive, by far, was the Company's expansion of facilities in the field of engineering — the design of products for the customer. With the rapid development of product lines that was to follow formation of separate Company divisions, it was recognized that engineering facilities located at individual manufacturing plants would be quite inadequate and that centralized engineering should be the goal of each division. With the purchase of the Melrose Park plant, it became possible for the Construction Equipment Division to consolidate its engineering activities in a research and engineering facility of 196,000 square feet. In 1952, the Motor Truck Division centralized its engineering in a newly built laboratory of 235,000 square feet at Fort Wayne, Indiana. And in 1959, the Company completed the Farm Equipment Research and Engineering Center at Hinsdale, Illinois; containing approximately 455,000 square feet under roof and employing more than 1,500 persons, it became the largest engineering and research facility in the world devoted exclusively to farm equipment. In addition to the engineering personnel of the Farm Equipment Division, the Center also became the home for Engineering Materials Research, a staff group serving all the operating divisions.

With the completion of the Hinsdale establishment, the Company had expanded its engineering and research facilities, including those of the Construction Equipment, Farm Equipment and Motor Truck Divisions, Manufacturing Research and Engineering Research to a total of approximately 1,314,000 square feet of floor space.

In addition to the plant facilities for engineering and research developed during the postwar period, the Company acquired extensive proving ground facilities at
Phoenix, Arizona, and Huntsville, Missouri, for year-round testing of machines under all kinds of conditions of weather, terrain, and climate.

In 1960, Harvester acquired the Solar Aircraft Company, of San Diego, California. This company has been engaged in scientific and engineering development that promises to be of great benefit in many of Harvester's activities. Of particular interest are the gas turbine engines developed and produced by Solar and its progress in certain areas of metallurgy, coatings, electronics, and manufacturing techniques.

Sales and distribution. Harvester's sales and distribution facilities were established early in the Company's history and its sales district offices were so located as to be within convenient reach of every community served by its dealers. With the advent of hard-surfaced roads and trucking facilities throughout the country, the time had come for developing new and more efficient methods of distribution. Immediately after World War II, Harvester launched the development of a nationwide network of 12 large depots for distribution of service parts made by all of the Company's divisions. Customer service was greatly improved and it became possible for any service part to be delivered anywhere in the United States within 24 hours.

Facilities of Harvester's independent dealers were also included in the Company's postwar planning. At the suggestion of Company specialists in up-to-date store design, many dealers modernized their establishments. The attractive new dealer structures with typical Harvester red pylon now seen throughout the country are the result of postwar cooperation between the Company and its dealers.

International Harvester Overseas. International Harvester is one of the oldest American companies engaging in foreign business; it has been a truly "international" company with antecedents going back more than 110 years. In 1851 Cyrus Hall McCormick took his reaper overseas to the Crystal Palace Exhibition in London and brought home the gold Council Medal — the highest award of the Fair. From that point on business outside the United States has been of real significance to International Harvester and its predecessor companies. Its magnitude is evidenced by the fact that overseas sales, which include exports from the United States as well as products manufactured in our factories abroad, approximate a half billion dollars and involve the employment of about 33,000 people.

At first the McCormick Harvesting Company and the other predecessors of International Harvester Company limited themselves to exporting products from factories in the United States. However, it was found that local competition, import restrictions, and the need for special implements to fit local agricultural requirements necessitated the establishment of facilities abroad in certain areas.

The year after its incorporation, International Harvester established its first factory outside the United States — Hamilton Works in Hamilton, Ontario, Canada. In 1904, IH organized its first overseas subsidiary company — in Sweden. The next year it acquired its first European plant there, in Norrkoping.

Today, International Harvester products are handled outside the United States by 20 subsidiary companies. One of these is the International Harvester Company of Canada, which has three manufacturing plants and a complete sales and distribution organization. Houghco Products Ltd. was organized in Candiac, Quebec, near Montreal, as a wholly-owned subsidiary of the Canadian company to manufacture the products made in this country by the Frank G. Hough Company, Libertyville, Illinois, a subsidiary of the parent Company.
The Overseas Division of International Harvester Company, located in Chicago, assists and advises the subsidiaries located overseas as well as those in Mexico and Latin America. Eight of those subsidiaries operate in the European area, two in the African-Middle East area, six in the Latin American area, and three in the Pacific area.

Seven of these overseas subsidiaries manufacture and sell IH products; the others have been organized for sales development and distribution. The manufacturing subsidiaries have a total of 16 manufacturing plants in these locations:

- **Australia**: Dandenong (Dandenong Works) — motor trucks. Geelong (Geelong Works) — farm implements, wheel tractors. Melbourne (Port Melbourne Works) — construction equipment.
- **Brazil**: Santo Andre (Santo Andre Works) — motor truck cabs, miscellaneous service parts.
- **England**: Bradford (Bradford Works) — wheel tractors. Doncaster (Doncaster Works) — crawler tractors, wheel tractors, farm implements. Liverpool (Liverpool Works) — farm implements.
- **France**: Croix (Croix Works) — farm implements; (Croix Twine Mills) — baler and binder twine. Montataire (Montataire Works) — farm implements. St. Dizier (St. Dizier Works) — wheel tractors.
- **Germany**: Heidelberg (Heidelberg Works) — farm implements. Neuss (Neuss Works) — wheel tractors, farm implements.
- **Mexico**: Saltillo (Saltillo Works) — farm implements, motor truck assemblies.
- **Sweden**: Norrkoping (Norrkoping Works) — farm implements; (Norrkoping Twine Mills) — binder twine.

It is interesting to note that one of these plants — St. Dizier Works, in France — is located just a stone's throw from where the Statue of Liberty was cast.

Each subsidiary operates autonomously as a part of a world-wide organization, supplying International Harvester customers around the world with IH products. A customer visiting a showroom in Peru, for example, may purchase International Harvester equipment made in the United States, Australia, Europe, or Latin America. Company products are sold and serviced in more than 143 countries around the globe, through 20 subsidiaries having 73 district offices and several thousand dealers.

Exports of the parent company and subsidiary companies are sold in world markets through the facilities of another subsidiary, International Harvester Export Company, which has 38 resident representatives located at strategic points around the world, working through more than 400 independent distributors and their dealers.

An International power unit near Tyre, Lebanon, lifts water 300 feet to provide higher yields from citrus groves and vegetable farms.

Harvester's products and its sales and service organization are well known throughout the free world.