From Fair

INLAND STEEL
AND THE CENTRAL
WEST HAVE PROGRESSED TOGETHER

1893 - 1933
STEP BY STEP

A business enterprise prospers only as it contributes to community progress. And a community prospers only as it applies the tools of progress which business enterprises make available.

The founders (and present management) of the Inland Steel Company attended the World's Columbian Exposition in 1893. They saw the youthful Central West impatient for growth, but hampered by lack of materials with which to grow —lack of convenient supply of steel particularly, for it was the dawn of the present steel-made World. They saw in the Central West a partner for progress, an opportunity to contribute an essential service profitable to both.

The following is the step-by-step story of how Inland Steel has made itself "Able Servant of the Central West."

INLAND INCORPORATES... RAIL RE-ROLLING MILL AT CHICAGO HEIGHTS

A crying need of the Central West was bars and small shapes for farm implements, bedsteads, and kindred steel consuming products. To serve this need, the newly incorporated Inland Steel Company began to re-roll rails into bars and small shapes at Chicago Heights. Now this plant has a capacity of 100,000 tons yearly. Here the well known Red Top Fence Posts are produced. And many of the original personnel are still important factors in the company.
SMALL PLANT AT INDIANA HARBOR
—Inland begins to produce steel

Needs for steel were increasing rapidly, diversifying. Inland prepared to serve. A site for a steel producing plant was selected on the shores of Lake Michigan at Indiana Harbor, combining the advantages of lake and railroad transportation—vital advantages for economical service. A production of 20,000 gross tons was the small beginning of the largest independent producer in the Central West.

CONTROL OF RAW MATERIALS BEGUN
First Iron Ore Mine

Inland learned early that the best guarantee of quality, of satisfying service was control of raw-material quality. In 1906 this conviction was put into practice by the purchase of iron ore properties in Minnesota notable for uniformly high grade ore.
INLAND BEGINS TO PRODUCE PIG IRON

Almost simultaneously with the acquisition of ore properties came the construction of Inland’s first blast furnace, making possible the production of pig iron of controlled quality from raw materials of controlled quality. Another important incentive to this step was control of the time element—providing the service the hustling Central West deserved.

INLAND STEAMSHIP COMPANY

Transportation is an important factor in the kind of service Inland has prepared to give. Inland service is adequately protected by the Inland Steamship Company—a subsidiary incorporated in 1911. (Today Inland freighters carry the Inland ore, coal and limestone to the Inland furnaces).
BY-PRODUCT COKE PLANT

Every element is important in the production of steel to Inland standards of quality. As a safeguard to quality and service Inland began to produce coke for its own blast furnaces, and coke by-products for its customers, in 1913.

INLAND CAPACITY DOUBLED

As the Central West developed and learned the advantages of Inland as a source of supply, capacity steadily grew. In 1916, the Central West and Inland Steel faced the problem of doing their part in a national crisis—the World War. Inland prepared to supply 1,000,000 gross tons of steel per year, secured additional adjacent property, built many new furnaces and mills for rolling a wide variety of products.
FIRST INLAND RAILS

As part of its policy of serving every need of the Central West, Inland started to produce rails in 1922. During the last eleven years every road entering Chicago has laid many miles of Inland Rails and Track Accessories.

MILWAUKEE ROLLING MILLS

The better to serve certain portions of the Central West, Inland purchased the Milwaukee Rolling Mill Company's steel sheet rolling plant in 1924.
INLAND LIME AND STONE COMPANY
—completing control of raw materials

Of vital importance to the quality of pig iron and steel is the uniform quality of the limestone used in the furnaces. To assure an adequate supply of high quality stone for the present and the future, Inland purchased properties at Manistique, Michigan, in 1928, thus completing its control of raw material quality. (Coal mining had already been added to the company’s activities.)

2,000,000 GROSS TONS PER ANNUM CAPACITY

The 100-fold growth of the Inland Steel Company in twenty-seven years is a measure of its contribution to the progress of the Central West, a measure of its acceptance by the Central West as the "Able Servant." Over 22,000,000 tons of steel have been produced by Inland during these twenty-seven years. In 1929, its present steel making capacity was attained.
1932

○ MOST MODERN CONTINUOUS STRIP AND SHEET MILL

For three decades Inland has provided for the Central West a convenient source of supply of sheet steel in the forms best adapted to modern production methods. The Inland continuous strip and sheet plant is the highest development in sheet steel rolling equipment. It produces hot and cold rolled steel strip and sheets.

INLAND • LARGEST
1933
A CENTURY OF PROGRESS

From Fair to Fair, the development of the partners—Inland Steel and the Central West—has been inseparably interwoven.

Inland has widened its list of products in accord with the needs of the Central West. It has cooperated with neighbor industries in realizing progressive ideas, has aided the Central West to become the leader in the World in agriculture and one of the leaders in manufacturing.

And in return for its contribution, the Inland Steel Company—the district's largest independent producer of steel—has become "The Able Servant of the Central West."
INLAND QUALITY BEGINS AT THE MINE

If you should visit the Inland Steel Plant—and we hope you will have that opportunity—the production of steel would probably seem rather complicated. It would seem complicated for two reasons: the number of steps required from the blast furnace to the finished form; and the large size of the Inland plant—hundreds of acres in area. The following pages are devoted to the simplification and condensation of the process of making Inland Steel.

Should you make this visit you could not see the whole process, could not see all of the guarantees for quality that Inland has set up. You would have to visit iron ore mines, see the variation in quality of ore produced on different properties—see why Inland has purchased mines carefully selected for the high, uniform quality of ore produced. You would have to do likewise with coal mines—because the quality of coke, and the coal from which it is produced, is vital. And limestone, as well. Many years ago, Inland saw that quality must begin with the raw materials—begin with ownership of mines and quarries.

LABORATORY
WORK INTERWOVEN WITH EVERY INLAND PROCESS

Making steel to Inland standards is far more than merely keeping fires burning and wheels turning. Laboratory work governs every operation. Inland chemists and metallurgists are the final authorities, and at every step their approval is required.

Typical of how deep down into the most minute details Inland laboratory work goes, is the analysis of raw materials. Not only is every lot tested and analyzed; it is thoroughly dried before analysis, because even a drop of water in a sample of ore, limestone, or coke might be enough to throw proportions off.

The view shown is of one section of the central laboratory. There are many others through the plant. No furnace is more than a few steps away from testing equipment.

LABORATORY
MAKING PIG IRON

After preparation of the raw materials, melting iron ore into pig iron in a blast furnace is the first step in making steel. The raw materials—iron ore, limestone, and coke—are deposited from the top by traveling dump cars. The ore is melted by the burning coke, and by a blast of hot air from which the blast furnace gets its name.

The blast furnace runs continuously until repairs are necessary—usually to the lining of fire brick. Every few hours the furnace is tapped—a hole drilled in the lining to permit the iron to flow out. The slag—(limestone, combined with ash and ore impurities)—is drained off at a higher opening.

The hot iron is transported in huge ladles either to a large container where it is kept molten for the steel-making furnaces, or to a machine which molds it into "pigs"—blocks of about 100 pounds each.

LEFT:
Tapping a blast furnace.

BELOW:
Two Inland blast furnaces. Lined up between them are stoves in which the blasts of air are heated before entering the furnaces.

INLAND BLAST FURNACES
**OPEN HEARTH STEEL**

Iron is refined into steel at the Inland plant in open-hearth furnaces, the type from which open-hearth steel derives its name. There are 27 of them with capacities up to almost 200 tons per melt each. They are huge steel rooms, with basin-shaped floors, and lined with fire brick.

They are "charged" with pig iron, limestone, steel scrap, and small quantities of various other materials according to the grade of steel required. Open hearths are fired with oil, tar, or gas to a temperature of over 3000° Fahrenheit.

A "heat" of steel is watched as carefully as the food you eat. And for controlling the quality and characteristics of steel, tests are not enough. The skill of long experience goes farther than any tests yet developed.

For example, the metallurgist seen at the right of the photo below can determine by sight some essential qualities of the steel which tests cannot show.

The melter (in charge of open hearths) shown in the small photo above, must also be a man of long, experienced skill. He ladles out a sample of the "heat" every half hour, cools it, inspects it. He checks himself, makes doubly sure, by sending samples (usually every third one) to the laboratory, but his practiced eye makes possible prompt action which detailed laboratory analysis does not always permit.

Thus the skill of Inland men is a vital part of Inland service to the Central West.
BRINGING STEEL TO CONVENIENT SIZE FOR ROLLING

Ten or twelve hours is required for the open hearth refining process. Then the furnace is tapped and the molten steel drained into a huge, steel ladle. The slag (impurities) rises to the top and runs over into a catch basin.

Then the ladle of steel is carried away by crane to the ingot molding department. The process of filling the ingot molds is shown at the upper left. Ingots weigh from three to seven tons each.

When the ingots have cooled sufficiently, the molds are lifted off, and the ingots taken to the soaking pits. Here they are reheated so that their temperatures will be uniform throughout before they go to the blooming mill for rolling.

The blooming mill reduces the ingots to suitable size for handling at the rolling mills. At this stage, the steel is in the form of blooms, billets, or slabs—named according to the size and shape required for speedy handling by the rolling mills producing the various rolled steel products. For example, bars are rolled from billets, strip from slabs, and rails from blooms.

The blooming mill which reduces ingots to suitable size for the finishing mills.
ROLLING SHEETS • THE OLD AND THE NEW

Inland has constantly prepared itself to more ably serve the Central West. This ability is particularly marked in the production of steel sheets and strip.

The old method of rolling sheets by passing them by hand back and forth through the roll stands was slow. It was a sweltering job—perhaps the hardest in a steel plant. Only occasionally, when the order is very small and special, is it now necessary to use this old method.

The new Inland Continuous Sheet and Strip Mill is one of the marvels of engineering, of this Century of Progress.

The equipment comprising the hot mill stretches for approximately 1600 feet. The slabs are thoroughly heated and slide down the incline seen at the extreme left of the photo. At this point they are approximately three feet by eight feet by four inches in size. By the time they go through the five roughing stands and the six finishing stands the slabs have stretched to a strip of steel sheet five or six hundred feet long and as thin as one-sixteenth of an inch. They are traveling eight to ten hundred feet a minute. A hundred tons an hour can be produced.

The strip is then coiled, or cut into sheets. Those strips intended for further rolling into cold rolled, high finished sheets are then taken to the cold rolling mill. There they are slowly passed through mill stands which represent the present high peak of cold rolling equipment, receiving the perfection of finish and accuracy of size and thickness so necessary for the complete realization of the possibilities for beauty and utility in sheet steel.

ROLLING PROCESSES

Most rolled steel products—sheets, rails, bars, plates, structural shapes, etc.—require special rolling mills, separate rolling departments for their production.

All rolling mills are alike in these respects: They consist of a pair or more of steel rolls through which the reheated steel is passed back and forth to be reduced in size and altered in shape, or of a series of stands of rolls through which the steel passes continuously in one direction; they are driven by electric motors, under constant control of long experienced operators.

The various Inland rolling mills differ in form and size according to the finished steel product.

For lack of space, we will describe here only the sheet rolling and the bar rolling mills as typical of the modern rolling methods used at Inland.

EXTREME HEAT AND MANUAL LABOR
NEW METHOD

ABOVE
Panoramic view of the new Inland hot rolled strip and sheet mill.

ABOVE
View in the new Inland cold rolled strip and sheet mill.

LEFT
One of the six finishing roll stands comprising a section of the hot continuous strip and sheet mill shown above.
ROLLING BARS AT NEARLY HALF A MILE PER MINUTE

The bar and small shape department is another in which Inland has prepared to better serve the Central West. Built in 1930, the Inland Continuous Bar Mill is an important reason why Inland is the "Able Servant."

At the beginning of the production line, the bar billets are thoroughly heated in furnaces designed for speed and thoroughness. Slowly at first, the red hot billets start through the series of 15 stands of rolls, steadily speed up as they are reduced in size and stretched in length until they are a red streak traveling nearly half a mile a minute.

After sufficient cooling they are coiled or cut as required, minutely inspected, and are ready to do their part in the development of the Central West. Their shape may be round, square, rectangular, angular, or any one of a multitude of special sections such as the modern automobile bumper.

EVERY INLAND WORKER AN INSPECTOR

No machine, no system is perfect. Hence the final safeguard of quality is the experienced skill and vigilance of the Inland organization.

We have already seen how Inland processes are constantly under minute control by Inland chemists and metallurgists. Inland inspection is equally continuous, all inclusive. For every Inland worker feels a personal responsibility for maintaining quality and service.

He knows the fundamentals of good steel. As the steel passes him on the production line he throws out any misshaped piece or any piece that his experience tells him is sub-standard in any way. Thus every movement of Inland steel past an Inland worker amounts to an inspection.

Those workers whose job is specific inspection—and there are many—are still more cautious, and sharp-eyed. They are trained and experienced in catching defects so minor that the average worker would miss them as the steel hurries by him.

The conscientious thoroughness of the Inland organization is a vital factor in the maintenance of Inland quality.
INLAND'S DEMONSTRATION OF STEEL AT "A CENTURY OF PROGRESS" EXPOSITION

To demonstrate how beauty and utility can be combined by using steel, to exhibit Inland products, to visualize the process of steel making—these are the three aims of the Inland Exhibit at "A Century of Progress."

The exhibit is of steel—in execution as well as in purpose. Only a few incidentals like display case tops are of any other material than steel. Raw steel—no paint.

Views of steel-making processes are carved on the enormous steel sheets used for the walls of the exhibit room. Colored spotlights play over these carved-on-steel views, bringing out the fiery beauty of steel in the making, animating and motivating the pictures.

A motion picture of the new continuous strip and sheet mill, the largest in the world, is shown.

Another educational, as well as historical, display is the progressive steps in the development of the railroad rail from its early days to the heavy rails of the present;... virtually a "Century of Progress" in rails.

The furniture is especially designed to demonstrate the beauty possible with steel, when traditional standards of design develop for other materials are not allowed to hamper steel's possibilities for beauty.

The ceiling and other portions of the Exhibit are also designed to show the utility of steel—to visualize the rewards of tradition-breaking design.

The floor is a demonstration of Inland 4-Way Floor Plates—how appearance and safety can at last be combined at an economical cost.

Another portion of the Inland demonstration will be of particular interest to those not completely familiar with skyscraper construction. This is uniquely presented with very unusual lighting effects.

Another demonstrates the decorative and serviceable possibilities of Red Top Fence Posts. In short, the Inland Exhibit visualizes "A Century of Progress" in the development and application of steel.

The Inland Exhibit is in Booths 8 and 9, Group D in the General Exhibits Building; the attendants there are at your service.
In executing the plans of "A Century of Progress" officials and individual exhibitors—in bringing to a reality the ideal of trend-setting architecture—in accomplishing feats of construction and architecture which never have been done before, the Inland Steel Company is proud to have been helpful.

The accompanying photographs portraying a few of the elements of the Fair in which Inland Steel is used, are indications of the part Inland has played in creating "A Century of Progress" Exposition for your enjoyment.

RIGHT • Indian Refining Company's thermometer.

BELOW • Agricultural Building.
Horticultural Building.

Section of steel sheet fence surrounding the grounds.

Italian Building.

One tower of Skyride.

BELOW • Electrical Group.

CENTURY OF PROGRESS EXPOSITION
INLAND

LOGICAL SOURCE FOR
THE CENTRAL WEST

Because of location, diversity of products, and the high quality of those products, Inland is the logical source of rolled steel products for the Central West.

An important factor in Inland's growth to the Largest Independent in the Central West, is its ability and willingness to cooperate with neighbor industries in making new applications of steel, in finding the best steel for a particular purpose. Such help is part of Inland's "Able Service."

The following pages visualize the products of Inland Steel, and the vital importance of Inland Steel Products in the present development of the Central West. Truly, Inland-made steel is seldom out of sight, wherever one may look, in Chicago and the Central West.
FROM PAILS TO THE SHEET STEEL WORK IN WORLD'S LARGEST BUILDING—INLAND STRIP AND SHEETS

For thirty years, Inland has supplied a leading proportion of the steel sheets used in the Central West. These have been used for a multitude of products—including the sheet metal work in the World’s largest building, the Merchandise Mart.

Inland Sheet and Strip Steel includes the following grades, all of open-hearth steel produced to Inland standards: Hot Rolled, Hot Rolled Annealed, Cold Rolled, Auto Body, Furniture, Vitreous Enameling, Galvanized, Roofing and Siding, Hot and Cold Rolled Strip, and Gal-Van-Alloy—a coated sheet which will not flake under severe forming.

The new Inland continuous sheet and strip mill will produce wider and longer sheet steel than can be secured elsewhere.

STRIP AND SHEETS
INLAND COLD ROLLED SHEETS
HAVE HELPED REALIZE THE BEAUTY
POSSIBILITIES IN STEEL

Since the first Inland Cold Rolled Steel Sheets were produced early in 1932, they have already become widely used. They have helped manufacturers realize the full possibilities of beauty in sheet steel—possibilities which can best be realized when the traditional designs keyed to other materials are left behind and new designs-for-steel created.

For the Central West, the convenient, logical source of supply of cold rolled strip, furniture sheets, auto body sheets, vitreous enameling sheets, any other grades of cold rolled, high finished sheets, is Inland Steel.
INLAND BARS . . . YOU MEET THEM EVERYWHERE

Forty years ago, Inland began to produce bars and small shapes rolled from railroad rails at its first small mill at Chicago Heights, Ill. Since that time Inland Rail Steel Bars and Open Hearth Steel Bars have played an ever increasing part in the development of the Central West. From bolts to harvesting machinery, from automobile springs to concrete roads, you meet Inland Bars and Small Shapes everywhere.

They are made in all standard sizes and shapes from open hearth or rail steel.
TRADITIONS BROKEN WITH INLAND STRUCTURALS

The largest steel roofing beams in the World are of Inland Steel—the Chicago Stadium. Inland Steel was used for the first hollow-type columns and girders, the first battledeck floor construction in an industrial building—A. O. Smith Corporation, Engineering Research Building, Milwaukee. The first battledeck floor and roof in a private residence, saving 20% of the cubic space, was of Inland Steel—residence of Henry Dubin, architect, Highland Park, Ill. A new principle of suspension bridge construction was carried out with Inland Steel—the Skyride, A Century of Progress Exposition. These are a few of the tradition-breaking applications of Inland Structural.

Inland Structural are available in all standard sizes, shapes, and grades of open-hearth steel, and Inland Copper-Alloy Steel.
THE WIDESPREAD USE OF INLAND STEEL PLATES

Inland Plates have made an important contribution to the development of the Central West. Railroad cars, ships, heavy machinery, gas holders, oil tanks, among other applications, illustrate the widespread use of Inland Plates.

Not only in these massive structures but also in safes, drums, boilers, cranes and many other such products the application and superiority of Inland plates is evident.
INLAND 4-WAY FLOOR PLATE HAS SPEEDED THE PROGRESS OF SAFETY

An important manifestation of progress has been the widespread application of safety measures. Inland has contributed to this movement a floor plate of superior safety. The exclusive pattern design of Inland 4-Way Floor Plate provides 4-Way safety—equal traction in whichever direction a foot or wheel may strike it. It also matches 4-ways, drains and sweeps readily, is stronger, yet lighter per square foot than other floor plates.

It has been used for the stairways in the new Field Building, Chicago, the Skyride at "A Century of Progress," for bridge treads, for numerous factory floors, for walk-ways and steps on leading heavy equipment for use indoors and out.
THE FREIGHT OF THE NATION RIDES ON INLAND RAILS

Chicago has become the largest railway center in the World because it was founded where the crossroads of the Nation would inevitably be. And every railroad leading into this hub of the Nation's traffic uses many miles of Inland Rails and Track Accessories—Angle Splice Bars, Tie Plates, Spikes, Bolts.

Inland quality, transportation facilities, cooperation is unsurpassed—Able Servant of Central Western Railroads.
WATER AND LAND IS HELD IN CHECK BY INLAND STEEL SHEET PILING

In 1931, Inland gave to the Central West a convenient source of supply for steel sheet piling. Since then, Inland Steel Sheet Piling has been used on many of the outstanding projects of the country, by leading contractors—not only in the Central West but in all sections of the Nation.

While breakwaters, docks, sewers, building foundations, dams, and the like, are being constructed (and often permanently) water and land is held in check by Inland Steel Sheet Piling. It is made in sections adaptable for all purposes.
PROGRESS MADE MORE ENDURING WITH INLAND COPPER-ALLOY STEEL

Satisfying human wants with products is part of progress, but only part of it. Products must have reasonable life; only then can man satisfy additional wants, instead of eternally replacing the possessions he already has.

Inland Copper-Alloy Steel helps hold progressive gains, for scientific authorities have proved that copper-bearing steel withstands corrosion longer—endures longer wherever there is moist air. For use indoors or out it deserves preference.

Inland Copper-Alloy Steel is supplied as sheets, strip, bars, plates, structural, any rolled steel product—at only a slight additional cost over ordinary commercial grades.
MILLIONS OF FARMERS GUARD THEIR FIELDS WITH RED TOP STEEL POSTS

Fencing has been one of the most persistent problems of agriculture. The Red Top Steel Fence Post Company has made an important contribution to the progress of agriculture by providing the solution.

Fencing costs were too high—replacement was so quickly necessary. The labor was back-breaking, and it never seemed to end. There was high loss of crops due to ineffective fences, and high loss of livestock from lightning.

Red Top Steel Fence Posts are economical in first cost—last for many years. They are easily, quickly driven into place; temporary fences permitting efficient forage of crops are now practical. They have a wide margin of strength to turn any livestock. And they prevent loss from lightning.

Millions of farmers use Red Tops. They are made in sizes and styles for every service.
SERVING THE CENTRAL WEST WITH COKE BY-PRODUCTS

Many of the principal users of coke by-products in the Central West have come to depend on Inland as their source of supply. Inland standards of production—infinite care at every turn—assures uniform quality—always. And Inland's location, at the crossroads of the Nation, assures dependable service.

Inland Coke By-Products include creosote oil, benzol, toluol, ammonium sulphate, and solvent naphtha.
INLAND PRODUCTS

LIMESTONE • PIG IRON
ELKHORN COAL • COKE

COKE BY-PRODUCTS

BASIC OPEN HEARTH STEEL

SEMI-FINISHED

STRUCTURAL SHAPES

PLATES

BAR MILL PRODUCTS

SHEET AND STRIP STEEL

HEAVY TEE RAILS

TRACK ACCESSORIES

STEEL SHEET PILING

RIVETS • SILO RODS

COPPER-ALLOY STEEL

RAIL STEEL

BARS

SHAPES

RED TOP STEEL FENCE POSTS

INLAND STEEL COMPANY

38 South Dearborn Street • Chicago, Illinois

WORKS • INDIANA HARBOR, IND.  • CHICAGO HEIGHTS, ILL.  • MILWAUKEE, WIS.

BRANCH OFFICES •  • ST. LOUIS  • ST. PAUL  • DETROIT  • MILWAUKEE  • KANSAS CITY

THIRTY-TWO