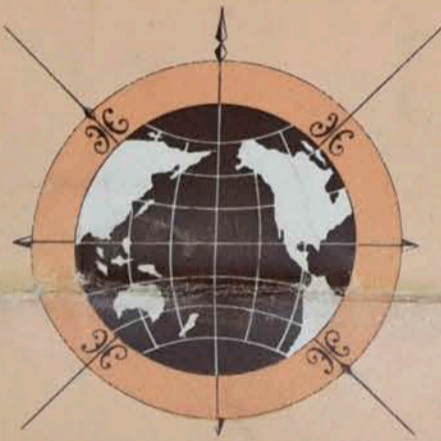


*Mamoru Inouye*

# FORD

AT THE CALIFORNIA-PACIFIC INTERNATIONAL EXPOSITION

• SAN DIEGO • 1935 •



## From Earth to Automobile



“OUT of the Earth come the materials that make the modern automobile. Man takes the basic materials from the soil, and his ingenuity transforms them into fabricated products.”

FORD manufacturing follows this whole cycle; it begins with the taking of raw materials from the Earth. Much of the car today is made from various ores.

Henry Ford believes a greater proportion of tomorrow's automobile will be produced on the farm. He has been long at work in developing methods for processing ordinary farm products to make automobile parts.

The Ford exhibits in the California Pacific International Exposition center about a double theme. One set of exhibits pictures present day Ford methods of processing materials from Earth to automobile. The other outlines important steps

already taken by the Ford Motor Company to utilize a greater proportion of agricultural products in making automobiles.



HENRY FORD and his first automobile completed in 1893. The car is shown at the Ford exhibit.

The Ford Motor Company annually uses vast amounts of products derived from cotton, sheep, cows, pigs, corn, honey bees, goats and various types of trees. For some time the Edison Institute, maintained by Ford at Dearborn, has engaged in a search for ways of increasing industry's use of such common products as cabbage, oats, turnips, sunflowers, potatoes, pumpkins, beans, peas, wheat, rye and a score of others. Large experimental farms at Dearborn supply the raw materials. Much has been accomplished, and the Ford-San Diego exhibits outline some of the results.

Henry Ford has said repeatedly that "With one foot on the land and one in industry America is safe." He believes that a larger use of farm products by industry of all types will solve many problems that now vex both farm and factory.

He also believes that producers on the land can spend a part of the year at profitable employment in industry, and that industrial workers can add to their income by taking the time to help raise the products they will later process for industry.

*"Industry is Mind using Nature to make Commerce and Civilization" — Henry Ford*

## Bringing the Story of Gigantic Ford Rouge Plant to San Diego Fair

THE FORD Rouge Plant at Dearborn is a breath-taking spectacle. It is so huge that the simple facts about it must seem exaggerated. Still, words fail to convey a picture of its immensity, the amazing order and smoothness of its functioning.

It is situated almost midway between the iron mines of Michigan and Minnesota and the coal mines of West Virginia and Kentucky. Its grounds cover 1,096 acres, and the plant has a total of 7,250,000 square feet of floor space.

At the Rouge this spring nearly 80,000 workers were employed—following almost every industrial trade known to man. This number of wage earners ordinarily would support a city one-and-a-half times the size of San Diego.

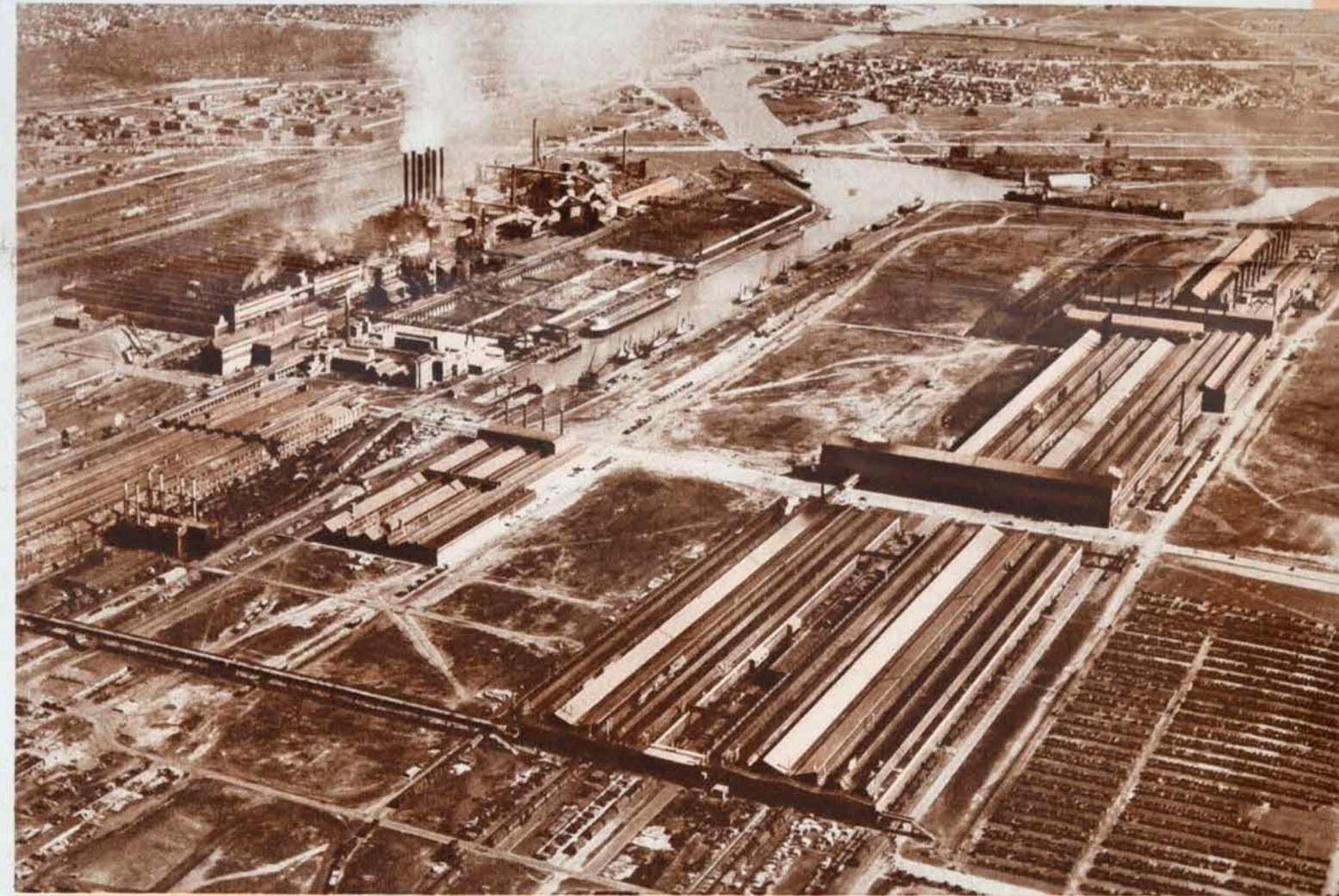
More than 5,000 men are employed in keeping the plant clean—sweeping the floors, cleaning the thousands of machines and washing its 333 acres of window glass.

The Rouge Plant is the largest single industrial works in the world, and is one of the cleanest, best ventilated and safest. It uses some 538,000,000 gallons of water a day—more than the cities of Washington, Detroit and Cincinnati combined. Each month 16,000 gallons of paint go on its walls and machinery; 5,000 mops and 3,000 brooms are worn out, and 86 tons of soap are used in the drive for cleanliness.

The Rouge docks, a mile-and-a-third in length, can accommodate ocean going ships, of which the Ford Motor Company owns seven. There also is a large fleet of Ford lake and canal vessels, tug boats, ore boats and barges.

Huge dippers at the Rouge docks unload material from the ships, taking 12 to 17 tons at a time. So efficient is the Rouge Plant that less than 30 hours after iron ore leaves a ship's hold to be processed, it may emerge from an assembly line as part of a finished Ford V-8.

During those busy hours there is no

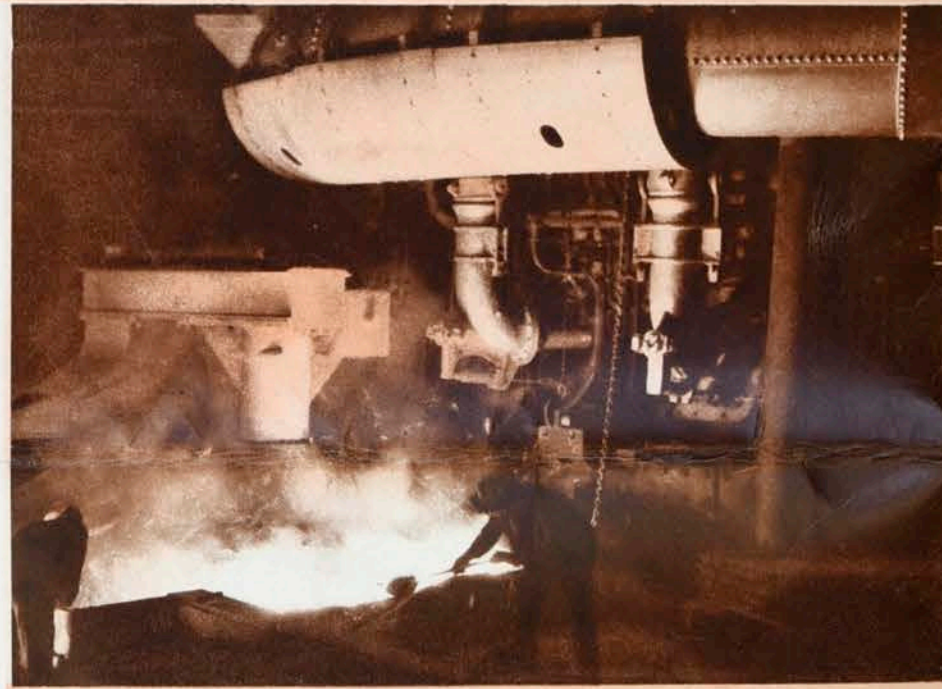


THE FORD ROUGE PLANT at Dearborn, Michigan, covering 1096 acres, and with 7,000,000 square feet of floorspace. Additions under way will add 250,000 square feet to the floor area. The plant is the largest industrial works in the world.

confusion, no lost motion, no waste of energy. The Rouge Foundry, largest in the world, covers 30 acres.

No less than 36 kinds of steel are used in the 1935 Ford V-8 car, and all of them can be made in the Rouge Plant. Under skilled hands Ford parts progress from their rough state to finished products. Great overhead conveyor systems move from one department to the next and from building to building. The main trunk-line conveyor is more than five miles long.

At the Rouge, only enough cars to supply Michigan and a few counties in Ohio and Indiana are assembled. There are 34 Ford branches in the United States the majority of which are equipped to assemble cars from parts

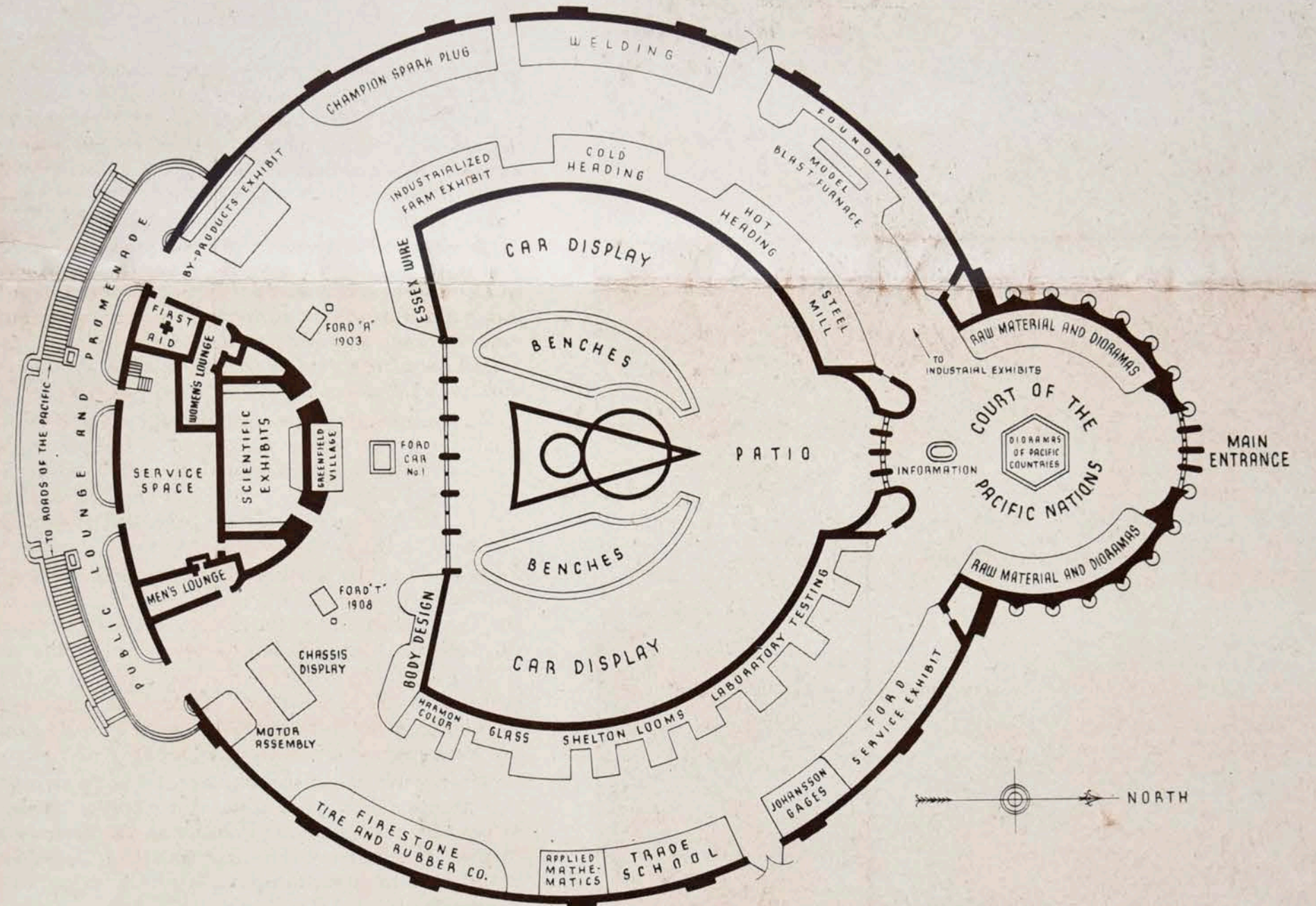


TAPPING A BLAST FURNACE at the Rouge. The first step from earth to auto. Ford furnaces have a daily capacity of 1500 tons of iron.

shipped from the Rouge. A basic Ford method is to manufacture near the source of raw materials and assemble near the market.

Ford plants dot the world. In nearly every foreign land a large Ford manufacturing, assembly or service plant is in operation. At Windsor, Canada; Dagenham, England; Cologne, Germany; Copenhagen, Denmark; Asnières, France, near Paris; Istanbul, Turkey; Buenos Aires, Argentina; Mexico City; Athens, Greece; Yokohama, Japan; Cristobal, Canal Zone; Santiago de Chile; Barcelona, Spain; Antwerp, Belgium; Vancouver, Canada; and many other cities of the world.

## A GUIDE TO THE FORD EXHIBITS



Bleaching bones will recall to the guest the days of '49 when a gold-hungry horde swept across American prairies to perish under the rigors of the Oregon Trail or meet death at the hands of hostile Indians. Each road has some bit of scenery suggestive of the country through which it passes.

By contrast the visitor will see the broad, smooth surfaces of modern American highways—all constructed for automobile traffic. He will traverse the famous Santa Fe Trail of earlier days and rattle over the planks laid on desert sand to make the Yuma road.

The visitor will picture the heavy wheels of ox-cart and prairie schooner to be followed by the rubber tires of automobiles, until today the United States boasts the finest highway system in the world.

Mr. Ford believes that commerce follows modern highways—but that civilization, education and peace also march along the roadways of today. With the highways, thinks Mr. Ford, go understanding, neighborliness and cooperation toward mutual prosperity.

Thus the study and comparison of ancient highways with our modern roads takes on added importance. It makes doubly clear the significance of Mr. Ford's ideal of easy, low-cost automobile transportation for all the people.

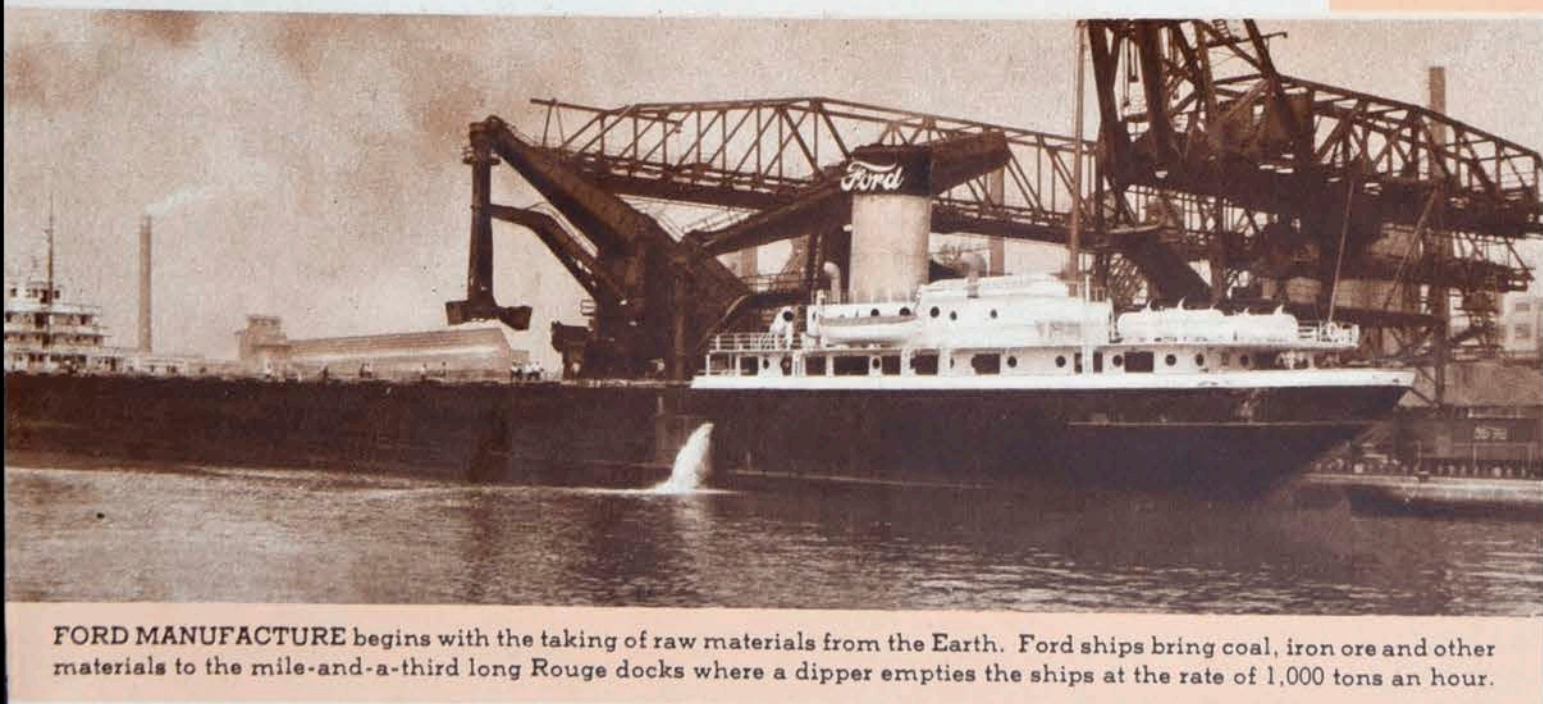
This ideal was behind the organization of the Ford Motor Company more than 30 years ago. It is an ideal that has never been abandoned.



YUMA ROAD, U. S. A.—This highway, first built of plank laid on desert sand, is reproduced as a part of the Ford roadway exhibit. The Yuma Road runs from El Centro, California, to Yuma, Arizona. It now is a modern, paved highway. It crosses desert country that is beautiful and picturesque and accommodates much traffic the year 'round.



A MODERNIZED INCA ROAD—Centuries ago patient llamas carried packs of merchandise over this route in Peru which today is a level, wide, expanse of concrete pavement. The Incas did not know how to utilize wheels, and all of their traffic was on foot or pack animals. The llama was their only beast of burden.



FORD MANUFACTURE begins with the taking of raw materials from the Earth. Ford ships bring coal, iron ore and other materials to the mile-and-a-third long Rouge docks where a dipper empties the ships at the rate of 1,000 tons an hour.

"It is not good Business unless Buyer and Seller both Profit . . ." Henry Ford

# The FORD V-8 for 1935 Still The Universal Car

## Fine Car Comfort . . .



Ford Center-Poise leaves nothing to be desired in relaxed, comfortable riding. Each passenger is poised between front and rear axles—and back seat passengers ride as comfortably as those in front.

The V-8 engine has been moved forward virtually equalizing weight distribution on all four wheels. This makes for easy riding and permits the placing of front and rear seats farther forward, with more leg room and wider seats.

Springs are wider, longer and easier riding. A springbase of 123½ inches allows for big car interiors; the 112-inch wheelbase retains a short turning radius, ease of control, Ford stability. Wider tires, smaller wheels and double-acting hydraulic shock absorbers complete 1935 Ford V-8 comfort.

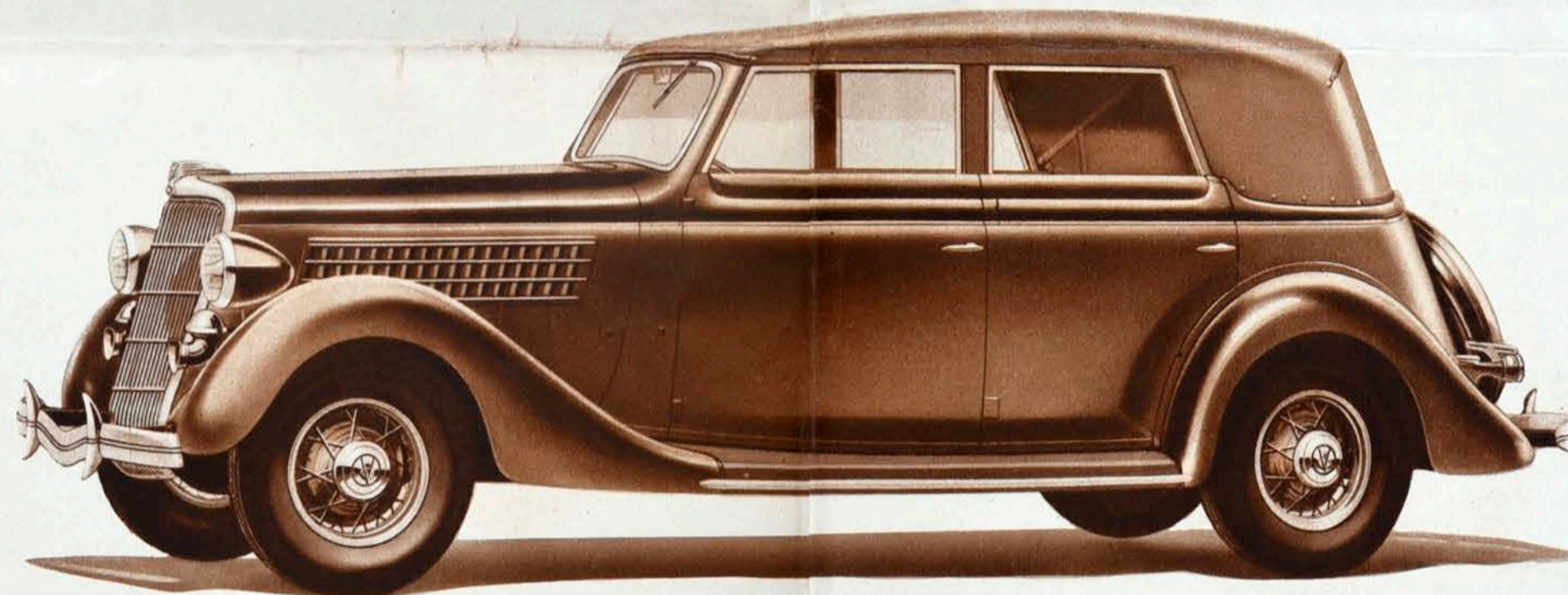
## Fine Car Beauty . . .



An air of distinction is combined with practical utility in 1935 Ford V-8 interiors. Upholstery in piping and pillow design lends attractiveness. In de luxe models window moulding, hardware, instrument panel and steering wheel are finished in harmonizing taupe.

Instruments on the dash center about an attractive pattern in chromium stripes. De luxe instrument panels include a fuel and oil gauge, ammeter, engine temperature indicator, speedometer, revolving ash tray and glove compartment.

In exterior design the 1935 Ford is a study in balanced beauty. Each unit of the car makes a perfect contribution to the whole.



## Good Companions—for Every Road

**T**HE 1935 Ford V-8 Convertible Sedan, and the Cabriolet with rumble seat, lend themselves admirably to the modern spirit of freedom, adaptability and the urge to be up-and-doing. They are full of life and vigor.

Either car can be converted quickly from an open car to a fully sheltered closed one—or vice versa. Definitely on the sporting side, they are substantial and dependable, and offer a good deal of luggage and parcel space. Ideal for carrying sports equipment.

Each car is available in a number of attractive exterior color combinations, with de luxe equipment throughout. The driver's seat in the Cabriolet is

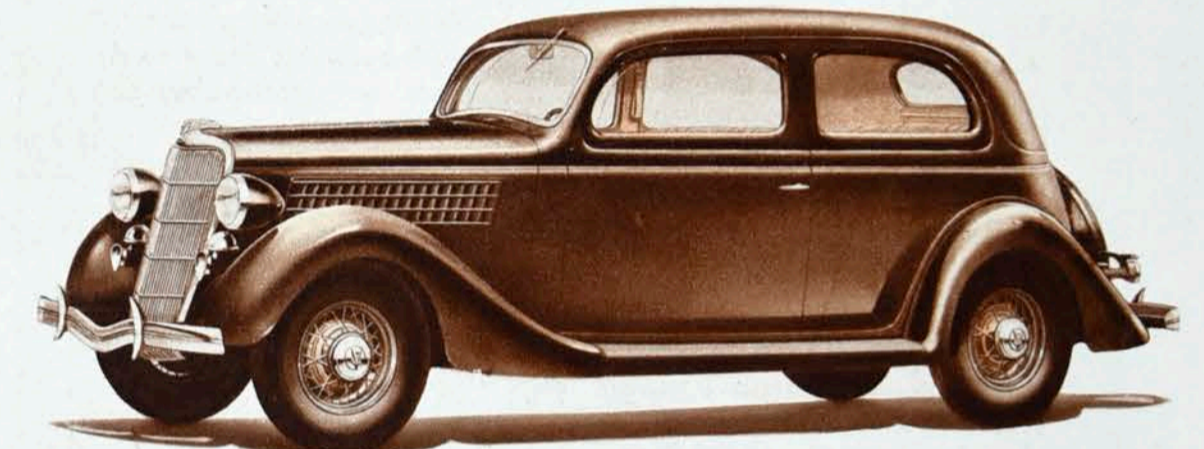
available in genuine leather or Bedford cord upholstery. Convertible Sedan seats are upholstered in the same appropriate and long-lasting materials. Both front seats hold three comfortably.

Powered by the famous V-8 engine, these good companions never belie their appearance of fleetness and fine performance. Lively, responsive, eager to be off, the V-8 responds to the lightest touch with a surge of power. It is completely equal to every occasion. It never lets you down.

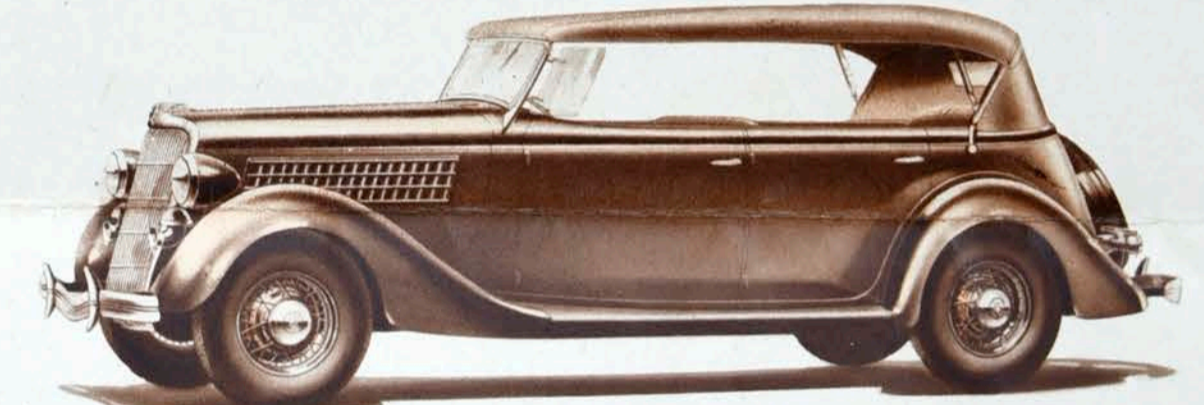
Both cars are on display in the Ford exhibit at the San Diego Fair, or they can be seen at your dealer's showroom in your own neighborhood.



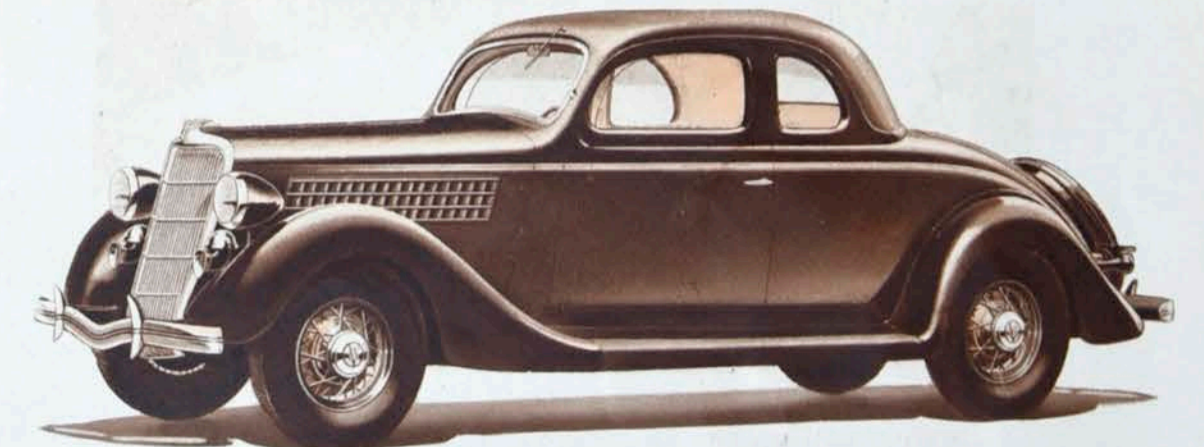
**THE TOURING FORDOR SEDAN**—A spacious de luxe model with large rear trunk. Available also in the Tudor body style. Both offer the answer to the problems of large families, or owners who like to travel without having baggage under foot. The trunk is weatherproof and can be securely locked.



**THE DE LUXE TUDOR SEDAN**—A roomy, comfortable sedan in which ample luggage space is disclosed when a light pull tilts the back of the rear seat forward. Available also in the Fordor body style which seats six in comfort. Safety glass throughout at no extra cost as in all 1935 Ford cars.



**THE PHAETON**—For sun worshippers this striking open car furnishes an ideal way to contentment. Seats are upholstered in genuine leather, and an easily folded top and side curtains quickly make things shipshape through a passing storm. A companion roadster, with rumble seat and disappearing top is available in several optional color combinations.



**DE LUXE COUPE (5 windows)**—An ideal automobile for personal or business use. It has a long rear deck with ample room for luggage and parcels. A wide shelf behind the seat accommodates even more duffel. Plenty of room for three on the wide adjustable seat. Available without de luxe equipment at lower cost. There is also a de luxe three-window coupe.

*The Auto made roads—and roads made human life more free . . .” Henry Ford*

## “ROADS OF THE PACIFIC”



**SANTA FE TRAIL, U. S. A.**—This historic highway played an important part in the settling of the Western United States, sharing the traffic with the more Northerly Oregon Trail. Both trails left Independence, Missouri, the Oregon swinging west and northward to Portland, and the Santa Fe southward to California and New Mexico.



**OLD SPANISH ROAD, MEXICO**—A section from a typical old highway built long ago across Mexico from San Blas on the Pacific to Vera Cruz on the Gulf of Mexico. This road was used by Indian civilizations such as the Toltec and Aztec for centuries before the Spanish conquest. Much of the highway has been modernized for auto traffic.



**EL CAMINO REAL, U. S. A.**—This highway is reproduced in modern form as one section of the Ford Pacific roads exhibit. One of the nation's finest and most beautiful highways, its course was first established toward the middle of the eighteenth century by missionary priests who established the first California Missions along the way.

**M**AN'S history lies written in the roadways he has built. The hurrying feet of conquerors; the stately tread of rulers followed by a long train of servants and retainers; the weary plodding of men and beasts loaded down with burdens of commerce, the coming of the automobile—these things are written on the roads, and they tell a fascinating story.

Almost without exception great roads of antiquity were first built as military arteries. Over their surfaces a conquering force often made its way to bring a populace into subjection. Again, a strong and potent ruler built wide, smooth roads into every corner of his realm so his soldiers might keep order, strike quickly to repel an alien force, or subdue a rebellion before it gained headway.

In contrast, the wide, smooth highways of modern days push their way across nations in answer to the insistent need of traffic—automobile traffic. It is commerce—not war—that builds today's roads. It was this fact that gave rise to Henry Ford's comment that "Progress comes from prosperity built by work—done in peace."

A study of the great roads of Pacific nations—both old and new—makes this point doubly clear, and a feature of the Ford exhibition at San Diego is a series of road reproductions totaling 2800 feet to demonstrate this fact.

The roads, 12 feet in width, are made up of 14 highway sections, each of which reproduces in surface and surroundings a famous road of some Pacific Nation. Guests are taken over the highways in an automobile.

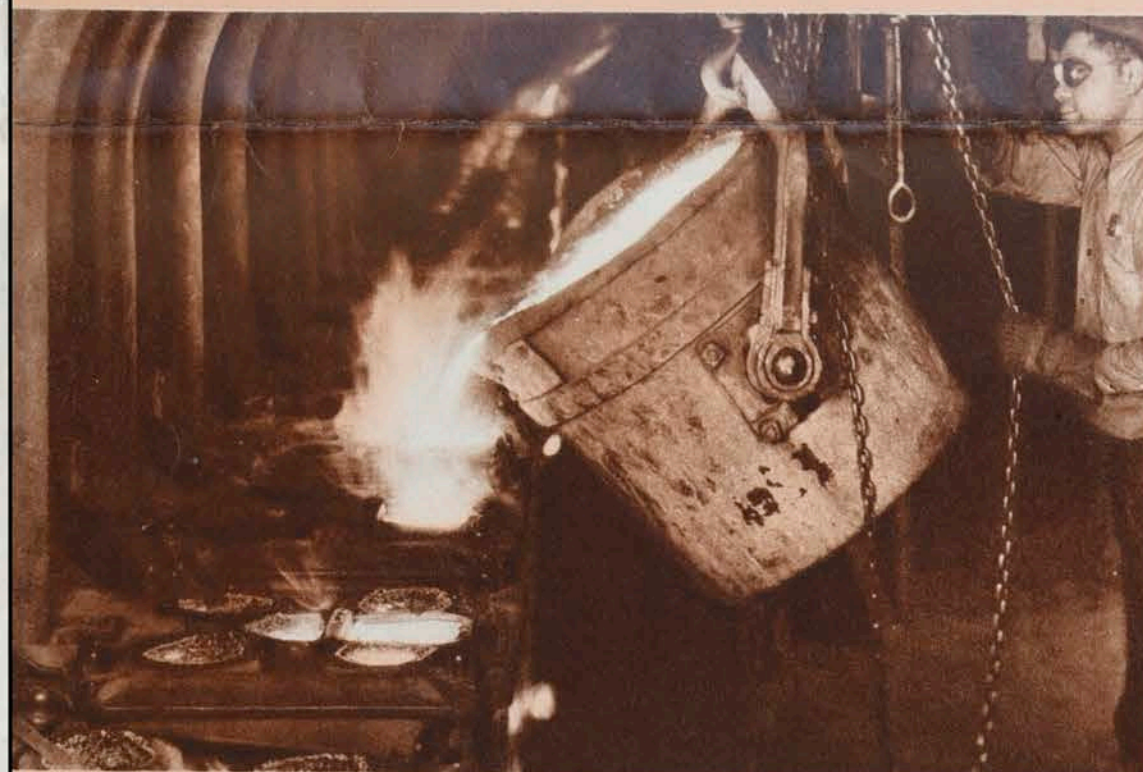
On the Roads of the Pacific one may swing back in imagination through a thousand years or more. Riding at ease in a 1935 car, the visitor in fancy may hear the hurried tread of an Inca runner's feet, speeding over a broad road in mountainous Peru with some message for his master.

Again, the mission bells of El Camino Real may recall the measured tread and chanted orisons of holy men who more than a century ago carried Cross and Bible through trackless California, building missions and roadways as they went.



**CARIBOO HIGHWAY, CANADA**—Traffic into the gold country around Barkerville caused the building of this road. Originally it extended from Vancouver to Yale. It forms a link in the proposed international highway from Seattle to Fairbanks, Alaska.

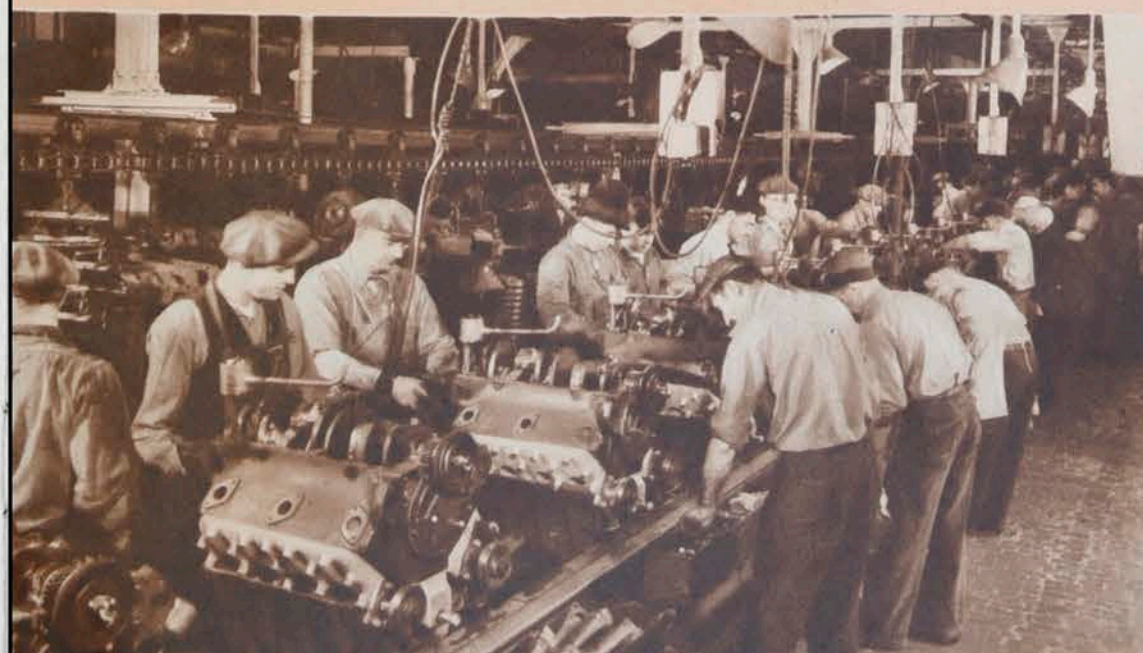
## Fascinating Methods in Ford Manufacturing Depicted at Exposition



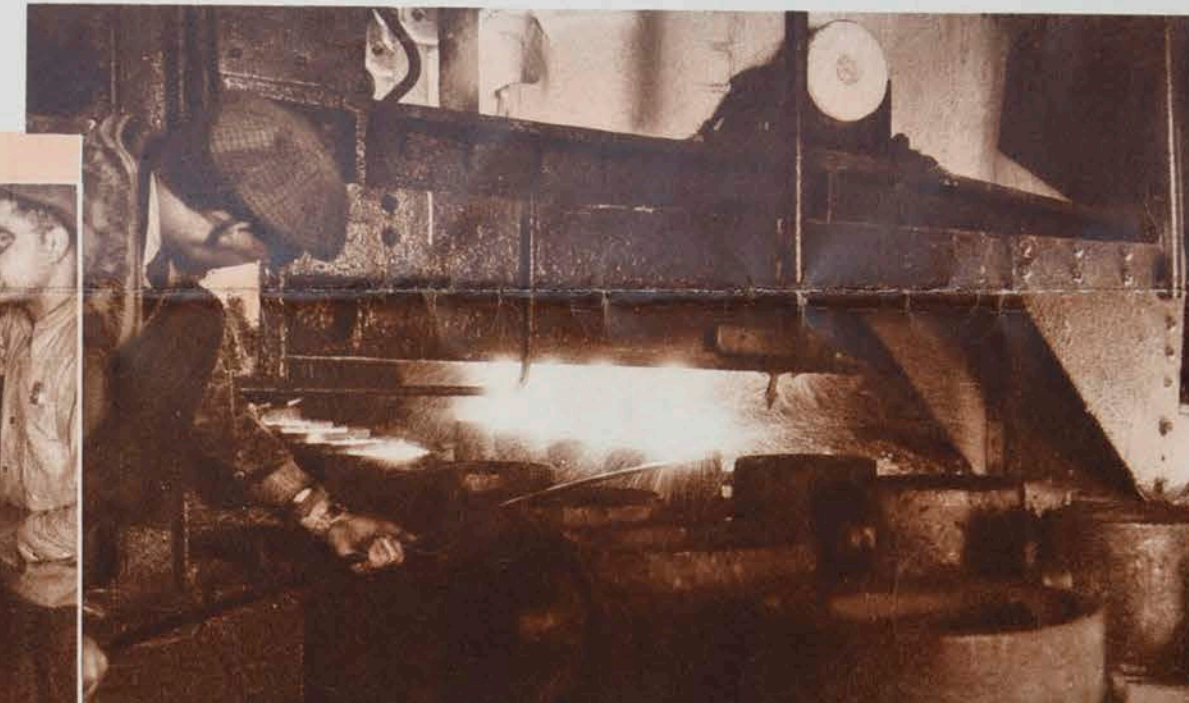
**THE FORD FOUNDRY** at Dearborn, largest in the world. Hot metal is poured to produce castings in an exhibit at the Ford building at the San Diego fair.



**FORD WELDING** has been developed to a high state of efficiency at Dearborn. Three types of welding processes are shown in exhibits at San Diego.



**V-8 ENGINES** are assembled at the Ford plant by many men on a moving assembly line. At San Diego, two men completely assemble one engine in less than 15 minutes.



**FORD STEEL MILLS** at Dearborn are among the largest of their type in the world. Steel bars are rolled and shaped to a finished part in one Ford exhibit at the Fair.

**M**ORE than a score of industrial exhibits at the San Diego Fair tell the story of Ford manufacture. In all the exhibits actual processes are shown in accurate detail.

The making of iron and steel castings, the rolling and shaping of steel, modern electric welding, body designing, the making of Ford safety glass, a V-8 engine assembly—and many other fascinating processes are depicted.

A number of elaborate working models, complete to the smallest detail, built to exact scale, show how iron ore is handled at the Rouge, how a blast furnace operates, how coke is made and how iron ore begins its long journey to foundry, shop and finished car. Tiny moving trains, flashing lights, locomotive whistles, steam from quenched coke, ships floating in water at miniature docks—all these things make the model exhibits an outstanding feature of the exposition. All are correct to the fraction of an inch.

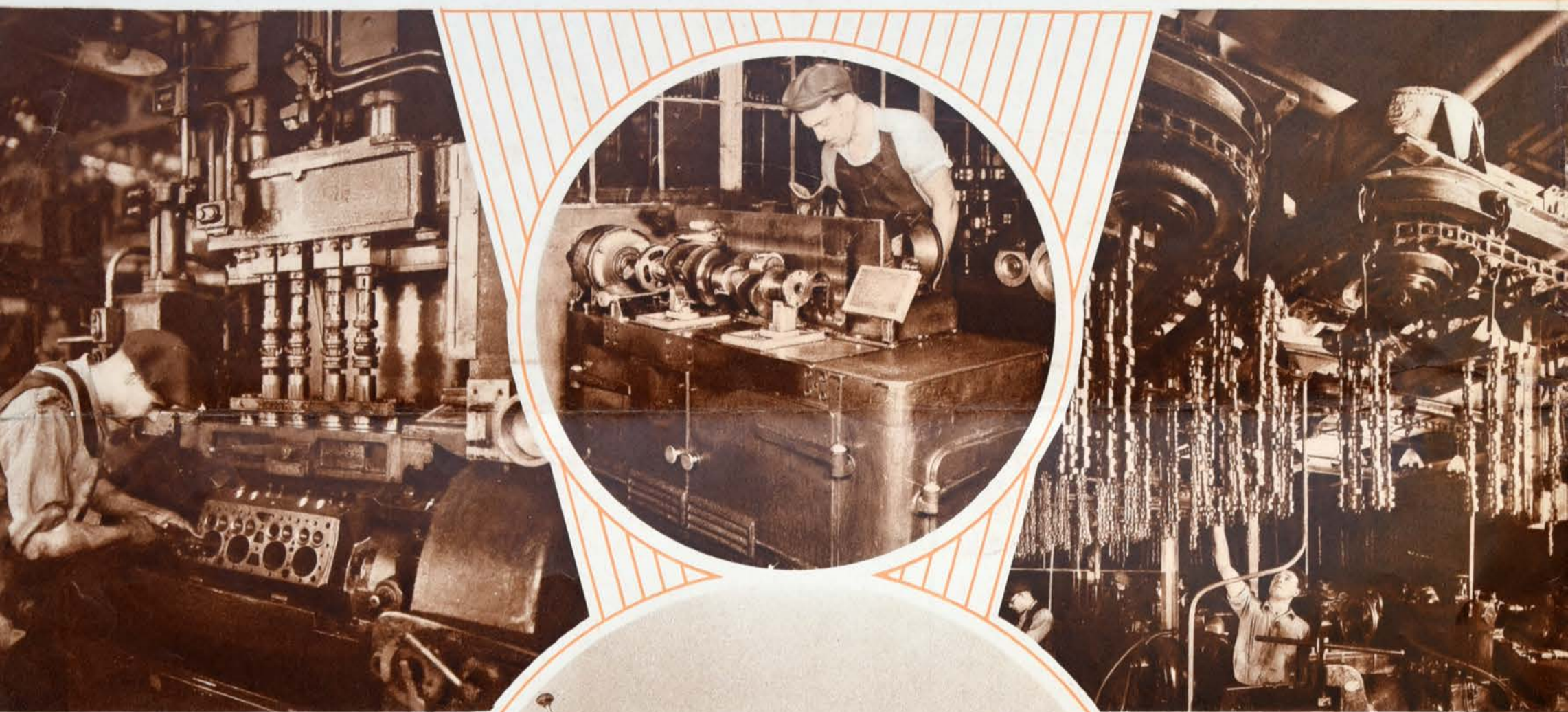


**150,000 SQUARE FEET** of glass can be made at the Rouge plant in 24 hours. At the San Diego fair a small glass plant produces sheets of Ford safety glass every day.

The electric eye, the stroboscope, Johansson gages and scores of other aids to modern industry are displayed. A diorama presents three-dimensional sculpture pictures of scenes in Pacific nations, while gigantic photo-murals follow the Rouge Plant industrial cycle in graphic detail.

The visitor who views each of the Ford exhibits at San Diego takes away with him a comprehensive picture of a modern industrial plant. He has witnessed in condensed form, the more important steps in building a modern automobile.

*"High wages and best materials — The only Road to Low Prices . . ." Henry Ford*

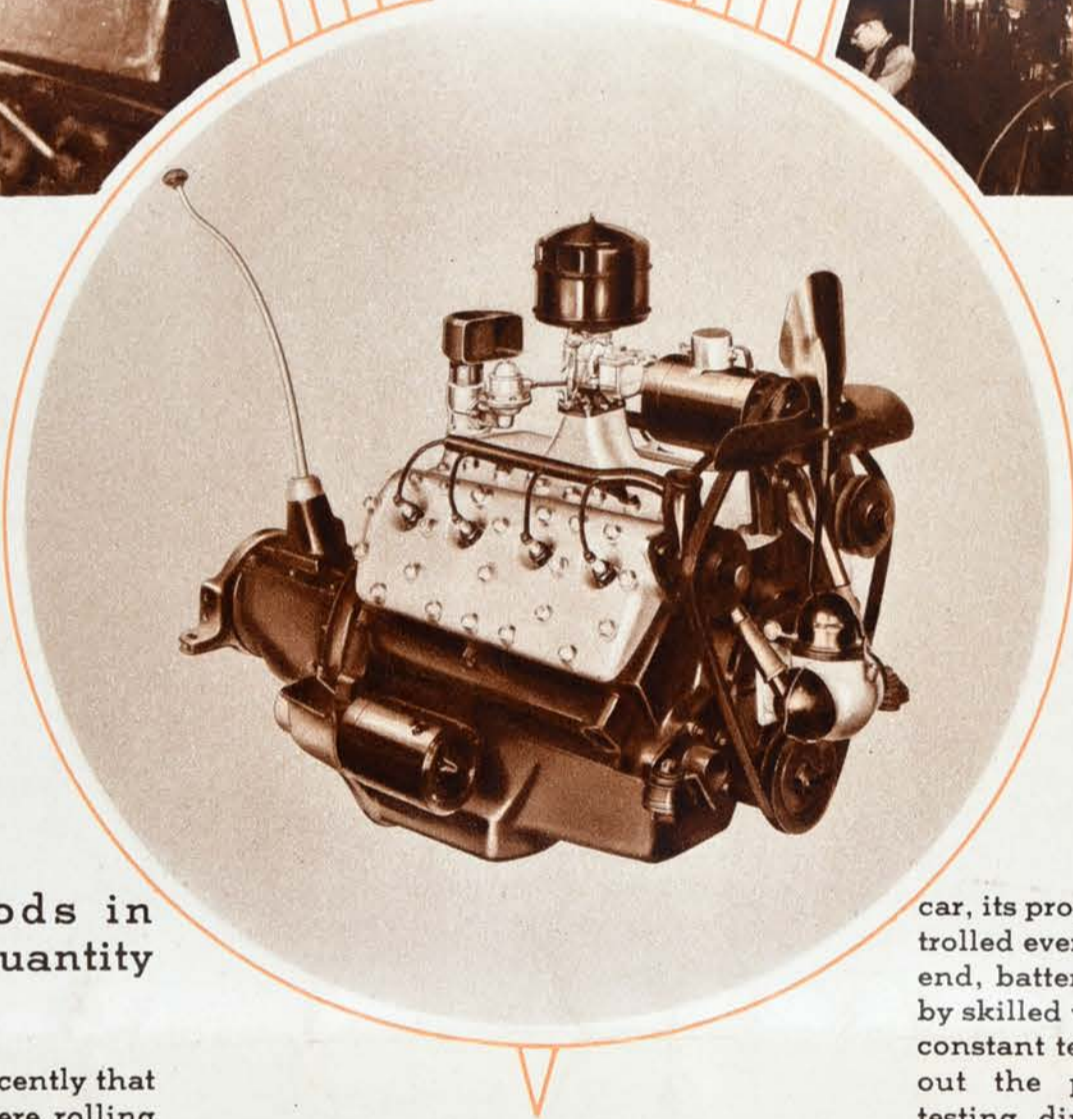


Above—Ford V-8 engine cylinder walls are so accurately bored and so smooth that their surfaces have a perfect mirror finish. The size of the bore is held to variations measured in ten-thousandths of an inch. This is one of many rigorous tests imposed on Ford units and parts.

Center, above—Ford V-8 crankshafts are tested for running as well as static balance. Any "un-balance" is corrected by this Ford machine so that the shaft always remains in perfect balance during operation.

Above—An overhead conveyor line at the Ford plant. This system keeps an adequate supply of parts at hand for workmen on assembly lines. The overhead conveyors total many miles in length, and travel throughout the Rouge Plant.

Left—The 1935 Ford V-8 engine. A triumph in fine car engineering. It combines long life, operating economy and simplicity with its outstanding qualities of smooth, powerful performance. Two million of these engines have been built and sold.



● "Precision methods in manufacture make quantity production possible."

**W**HEN the news was flashed recently that every day over 6,000 cars were rolling off the assembly lines of the Ford Motor Company, few people realized the full significance of the statement.

Automobiles can be produced rapidly and in large numbers only if every part fits exactly into the place it was made to fit.

If a workman on an assembly line had to try six or seven crankshafts before he found one to fit the engine passing his station, his department would not produce many finished engines in a day. There are more than 14,000 parts in every Ford V-8. Each one must be held to dimensions so accurate that it will slip into place without the slightest difficulty. In order to build parts with such exactness two things are necessary:

First, machinery must be on hand to produce parts with variations in size less than

one-thousandth of an inch. In many cases, variations must be held to less than two ten-thousandths of an inch—a dimension about one-fifteenth the thickness of a human hair.

Second, in order to hold parts to such microscopic limits the very best materials obtainable must be used. Materials which contain flaws or which vary in hardness or texture cannot be used successfully in such fine work. That is why 36 kinds of steel—each produced to meet a specific use—are used in making the Ford car. That is why hundreds of metals of all types are catalogued by Ford metallurgists together with a careful list of their qualities.

From the time iron ore reaches the Rouge Plant until it emerges refined and processed some thirty hours later in a completed Ford

car, its progress must be supervised and controlled every step of the way. To achieve this end, batteries of testing machines manned by skilled workers subject every Ford part to constant test and measurement. Throughout the plant, complicated devices for testing dimensions have been placed to supplement the work in the laboratories.

The testing machines and production gages themselves are checked constantly by master gages accurate to dimensions expressed in millionths of an inch. In underground rooms, in a temperature carefully kept at 68 degrees Fahrenheit, Johansson gages, the world's standard for industrial measurement are produced by their inventor, C. E. Johansson, in the plants of the Ford Motor Company.

All these tests for accuracy and wearing qualities are significant to the owner of an automobile. The precision necessary to quantity production means accurately fitted parts and long life. The high quality necessary to precision manufacture means dependability and low maintenance cost.

Souvenir of  
**THE CALIFORNIA-PACIFIC INTERNATIONAL EXPOSITION**  
**SAN DIEGO . . . 1935**

COMPLIMENTS OF THE FORD MOTOR COMPANY . DEARBORN, MICHIGAN