Ford Factory Facts

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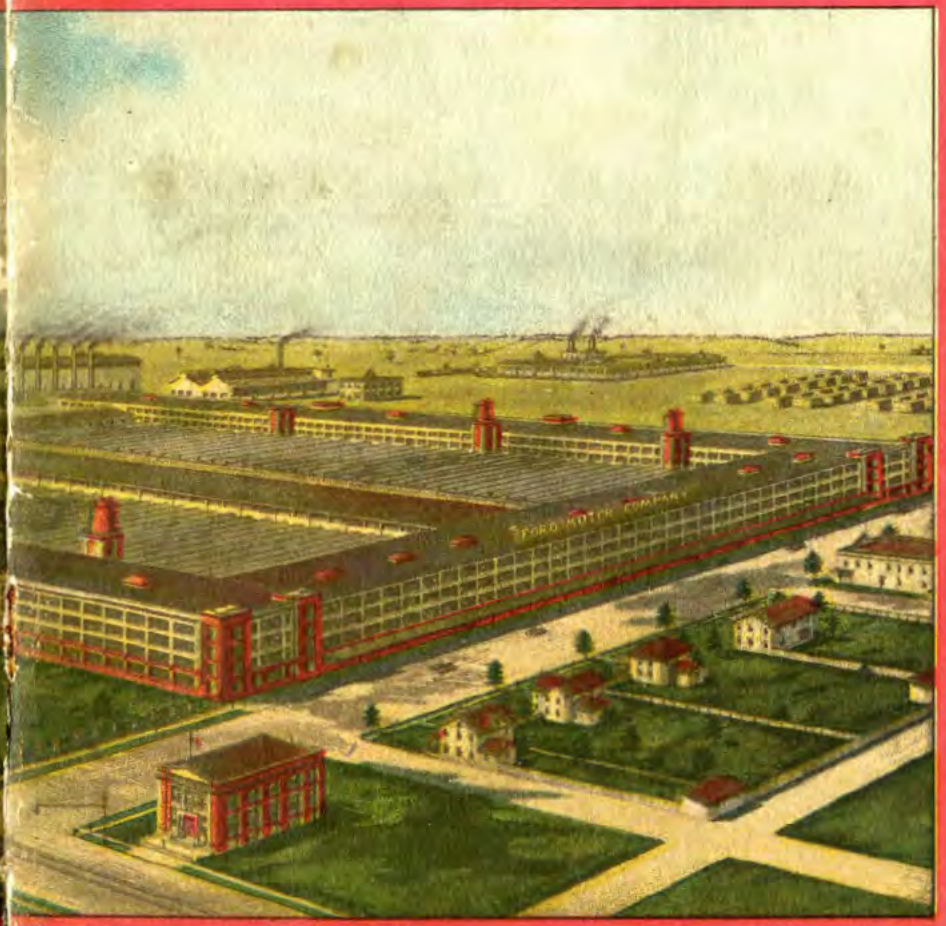


Ford Factory Facts

First Edition
January, 1912

HENRY FORD
President

Ford Factory Facts

Ford Motor Company
Detroit, Michigan, U. S. A.

Compliments of
Ford Motor Co. of Canada, Ltd.
Walkerville, Ont.

JAMES COUZENS

Secretary and Treasurer

PREFACE

EVERY BOOK which is written with a definite object in view, is far more interesting and valuable if its purpose is clearly understood before you read it. This is not a catalogue—it is, rather, in the nature of a souvenir volume, a profusely illustrated trip through the great Ford plant, that you may see and be convinced that the Ford automobile is both the best and the most economically made car in the world. We present you this copy with our compliments and with the hope that you will find in it much that is entertaining and instructive, and that you may deem it worthy of a permanent place in your library.

As a contribution to motor car literature, in one particular at least, this volume is a distinct departure, for it has been written, not as an appeal for further patronage, but in recognition of that confidence and splendid support which has achieved for Ford cars, in eight short years, a success that has no parallel in automobile history.

This company has no monopoly of the automobile industry; its cars have been sold in the open market, purely on their merits, in direct competition with, and entirely independent of all others, and the people have bought nearly 100,000 of them, not because they were cheaper, but because they were better value than any other.

Pride in the knowledge that Ford success is honestly deserved will never lessen our profound appreciation of the people's constant faith in the

Ford car and its builders, of their steady encouragement and their magnificent patronage, representing, as it does, the investment of over sixty millions of dollars in Ford cars since this Company was organized.

You will understand, therefore, the deep satisfaction we have found in writing this preface to "Ford Factory Facts," and as our motive has been one of sentiment rather than commercialism, we trust that you will read this book with as much pleasure as its preparation has afforded us.

Ford Motor Company

Main Stairway in the beautiful foyer of the Administration building

RETROSPECTIVE

The Birthplace of the Ford Motor Company
Shop where Henry Ford built his first Automobile

ON June 16, 1903, the Ford Motor Company was organized with a capital of $100,000. Henry Ford represented the Company as President, General Superintendent, Engineer and Designer. James Couzens assumed the responsibilities of Secretary and Treasurer, Cashier, Office Manager and Sales Manager. The office force consisted of one one-armed stenographer. The factory was a one-story frame building on Mack Avenue.

This was the small beginning from which has developed the greatest business of its kind in the world. Two men, very limited financial resources, a little factory far from modern, and a crude model of one of the first horseless carriages; only two men—but the inventor of the Ford automobile has come to be known as one of the world's great mechanical geniuses, and his co-worker, Mr. Couzens, who has handled the funds of the Ford Motor Company from the beginning, is classed among the great financiers of this country.

In those pioneer days of the automobile no one could possibly foretell, and very few believed, that it would ever become a serious competitor of the horse, or a possible substitute for street cars and trains. It did not seem prob-

1903-1904

The First Factory of the Ford Motor Company
Mack Avenue, Detroit

able that anyone but an experienced engineer could run one safely and successfully, and that any except the wealthy, could enjoy the novelty of owning one.

In the beginning, therefore, the founders of the Ford Motor Company received little if any encouragement from the public; on the contrary, they found the people only mildly interested, decidedly skeptical, and many openly antagonistic to what seemed to them a menace to life and limb. This attitude will not seem unreasonable if we remember that the prototypes of the beautiful, noiseless, luxurious motor cars of today were far from attractive in appearance, anything but noiseless, slow and uncertain of gait, bad smelling, and apparently liable to explode or run amuck at any moment.

These, in brief, were the conditions which confronted the Ford Motor Company, and its early history is practically identical with that of nearly every other great American industrial concern, whose origin may be traced back to one or two fearless men, who, with little or no capital, an untried and unknown product, and a doubtful and unresponsive market, overcame all seemingly unsurmountable obstacles, and laid the foundation for a great commercial success.

Henry Ford believed that the motor car would become in time one of the world's greatest utilities, an indispensable factor in the lives of the people, and he also had the hard common sense to foresee that an unlimited market awaited the manufacturer who could produce a high-grade, thoroughly efficient car at a price that every modest home

1905-1910

The Second Home of the Ford—outgrown in six years—
Piquette and Beaubien, Detroit

could afford. There were others, no doubt, who also saw the possibilities of this splendid opportunity—a motor car for every home—but it remains a fact and also a splendid tribute to Henry Ford, that he alone has carried the idea to a successful conclusion.

Here then was the problem which confronted the founders of the Ford Motor Company—to build a motor car of the highest quality in design, workmanship, material and efficiency, and to sell it at a price within the reach of all. There was only one possible solution of this problem—the manufacture of one standard model in immense quantities. How this was to be accomplished, and how long it would take, these men could not know with any certainty, but they believed it could be done, and that they were capable of doing it. Though it meant years of hard work, the concentration of every effort upon the one fixed purpose—to improve the quality and lower the price—they "rolled up their sleeves" and began the task. Every car they sold, sold others; their sales multiplied like compound interest, and as the output increased, the manufacturing costs decreased and the price to the people was lowered.

We need seek no further for the secret of Ford success; the same men who began this struggle for recognition and achievement, and the same policies which governed their first efforts, still continue to guide and control the tremendous organization which now supplies the world with Ford Motor Cars.

An addition to the first little factory on Mack Avenue became necessary within a year, and as business steadily

increased, the need of greater facilities became urgent. At the end of a year and a half the Ford Motor Company moved into a splendid new plant on Piquette Avenue, at that time one of the finest, best equipped automobile factories in the country. The manufacturing possibilities of this new establishment seemed adequate to supply any possible demand for Ford cars for several decades to come.

At the Piquette plant economies of such importance were put into effect that they resulted in the production of the first low-priced runabout and the first low-priced touring car. Here Mr. Ford designed and built the first six-cylinder automobile. But Ford sales continued to increase; the people had found the Ford an indispensable factor in their home life and in business, a useful, profitable, enjoyable commodity, reasonable in price and inexpensive to maintain.

The need of even a greater factory soon became evident and finally an imperative necessity. With the prompt and effective action which has always been characteristic of Ford development, a sixty acre tract on North Woodward Avenue was purchased, and the erection of the present magnificent Ford plant was begun. Today the home of the Ford Model T stands pre-eminent as the most complete manufacturing establishment in the world, devoted to the production of one motor car—a profoundly impressive monument to the creative and constructive genius of Henry Ford and his associates.

As it is impossible, or at least inconvenient, for most of our readers to honor us by a visit to the new factory, we have written the accompanying story of how a Ford car is made, that you may join us in a descriptive tour through the various departments of the great Ford plant. By the aid of numerous photographs and an interesting, readable text, we believe the story will prove almost as entertaining and instructive as if you were our actual guest.

We hope that when you have finished this book you will feel the same satisfaction that the thousands of visitors who go through the factory express before they bid us goodbye. They tell us: "Regardless of its reputation and your claims that the Ford is the best made car on the market, we could scarcely believe it because of the price. Now we understand how you do it and we are glad to get this motor car question settled. You'll hear from us when we get home."

A trip through the great Ford plant

THE decoration at the head of this page is a picture of our front door, the main entrance to the Administration Building. Here our guests enter, and here let us welcome you, with the genuine hope that at some time not far distant, this imaginary reception may be followed by a real one and that we may greet you with a cordial hand clasp, and a hearty "Come right in."

Although you have come to see how Ford cars are made, to trace their construction from the first operation to the last finishing touch, your visit would not be complete without a brief survey of the beautiful Administration Building which houses the general offices of the Company. It is generally conceded the largest and most perfectly appointed private office building in this country.

Before we enter upon our descriptive tour of the big Ford plant, let us again call your attention to the illustrations which accompany the text. If you will study the pictures as you follow the story from page to page,

MAGNIFICENT FOYER of the Administration Building. Here all visitors receive prompt and courteous attention

you will find it very easy to imagine that you are in reality on a sight-seeing trip through the home of Ford Model T. The photographs lend realism to our comments and descriptions, and furthermore, if we appear to be drawing the long bow in some of our statements, any doubts of their absolute accuracy will be dispelled by the pictures. The photographs are arranged in consecutive order to conform to the text, but it has been impractical to place them, in every instance, above the descriptive matter they illustrate; the page number of each picture is therefore inserted that you may refer to it readily.

The Administration Building

The Administration Building stands in the center of a vast sweep of lawn which stretches a thousand feet along Woodward Avenue, Detroit's finest street. It is separated by a driveway from the factory proper and at the same time is joined to it by a glass-enclosed bridge at

A STUDY IN PERSPECTIVE—Main corridor, on second floor, 300 feet long. Its glass partitions admit perfect light to all the offices

the second floor. It is a superb structure, two stories in height, and basement, 300 feet long and 60 feet deep. The exterior is of red brick and cut stone, harmonizing in design and materials with the other splendid buildings which flank it on three sides (pp. 32, 33).

The magnificent foyer resembles the lobby of a great hotel. Here all visitors are received and their wants are assured prompt and courteous attention by a corps of attendants who conduct them to the party they wish to see, or on a trip through the factory if they desire.

To the left as you enter the foyer are located the offices of the Factory Manager, General Superintendent, and other officials; across the corridor is the Purchasing Department; and the big room occupying the north end is devoted to the Manufacturing, Time-keeping and Stock Departments (p. 14).

The southern half of the lower floor is divided into offices for other important departments, including Repairs, Parts, Claims, Traffic (p. 15) and Engineering. The latter

A CORNER of the big room occupied by the Manufacturing, Time-keeping and Stock Departments. A splendid example of modern office equipment

is especially important as its duties include the furnishing of designs and specifications for the construction of buildings, power plant and equipment.

Right here will be found an explanation for the absolute *harmony* which is apparent in every detail of the construction and operation of the great Ford factory. Ford engineers furnish the ideas, Ford draftsmen put them on paper and Ford mechanics build from their specifications.

The men who direct the affairs of each Ford department are unsurpassed in experience and ability and the same is equally true of the entire Ford force, resulting in an organization whose remarkable efficiency could hardly be improved in any way by outside counsel or assistance.

Now we will return to the foyer and ascend to the second floor. A handsomely furnished reception room separates the offices on the upper floor as the foyer does those on the one below. To the right are the offices of the Cashier and the Accounting Department. Beyond

OFFICES of the Repairs, Parts and Claims Departments. Typical of all the offices, perfectly lighted, heated and ventilated

is Mr. Ford's private office, and its furnishings are typical of Mr. Ford's taste, simple, dignified, practical, and the best obtainable.

Across the corridor from the private office is a room which theoretically may perhaps be considered the most important of all. Here Mr. Ford is usually found, deep in some mechanical problem. The ideas which originate here, when developed and perfected, are steadily revolutionizing the motor car industry. The Ford car is being constantly refined and its price reduced; others must do likewise or be denied recognition.

Adjoining Mr. Ford's experimental room are the Stenographic and Follow-up Departments (p. 16). To the immediate left of the reception room is the Commercial Department (p. 18), obviously of paramount importance, as Ford sales are dependent upon its effectiveness. The scope of the work in this office is enormous, reaching to the remotest corners of the globe and resulting in the sale of Ford cars in every civilized country in the world.

STENOGRAPHIC and Follow-up Departments. Expert operators and a perfect system handle effectively the immense daily correspondence

Next comes the Directors' room (p. 19); a splendid rug of superb coloring, massive oak furniture, and beautiful fixtures and decorations are all in perfect harmony. Mr. Couzens' private office occupies the southwest corner of the building and equals Mr. Ford's in its harmonious appointments.

The remaining offices are classified as the Telephone and Telegraph, Mail and Filing Departments (p. 17). If time permitted we should like to show you the perfect and wonderfully complete system which exists in the filing department, but you will understand its efficiency when we explain that its enormous volume of correspondence and records of every description are so arranged and indexed that any item may be instantly located and delivered on an order from any department.

In this brief description of the Administration Building and its offices we must devote a word more to the systems which are employed to insure the best lighting, heating and sanitary conditions possible. The vital necessity of perfect ventilation, an even temperature, the maximum

FILING DEPARTMENT.—The thousands of letters and records of all kinds are so indexed that any item may be located instantly

of pure air and the minimum of poisonous gases and dust, is too well known to need argument. The Ford Motor Company spares no effort or expense to supply its employes with everything that will add to their comfort and health.

In the basement of the Administration Building are two immense fans which draw in the fresh air from the outside, through a screen of water, composed of thousands of fine sprays, which cleans it thoroughly, and thence it passes into a huge heater (p. 20). This automatically keeps the temperature throughout the building at 70 degrees, as the air from the heater, now pure and of the exact temperature and humidity required, is forced through great ventilating pipes all over the entire building, being admitted to each room through ornamental registers in the walls, thus doing away with the unsightly steam or hot water radiators commonly used. These conditions not only mean health and comfort, but have a most beneficial effect upon the executives and all the office people who must of necessity

COMMERCIAL DEPARTMENT—Of paramount importance, as Ford sales are dependent upon its efficiency. Its activities cover the world

work indoors. All dust and dirt is effectively removed by the Tuec vacuum cleaning system.

An almost continuous row of windows admits the light from all sides and glass office partitions offer no obstruction, resulting in a soft, diffused light throughout. An ample number of electric fixtures of beautiful design supply artificial light when required. The best of modern furniture harmonizes with the natural oak woodwork and everything from the handsome tile and rug covered floors to the ceiling is always spotlessly clean.

And now that you have had a glimpse of the offices of the Ford Motor Company and the perfect conditions which surround the clerical branch of the business, we believe you will be better prepared to understand and appreciate the same perfection and completeness which apply to every detail in the great buildings where the Ford Model T is manufactured. Therefore let us return to the reception room that you may rest a few moments, as we have a long walk ahead of us, but we think we can promise it will be

DIRECTORS' ROOM—Spacious, dignified, and every detail of its superb furniture and decorations are in perfect harmony

one of the most interesting and enjoyable you have ever experienced.

How the Tremendous Motive Power is Made and Distributed

We'll show you first how the energy in that train load of coal just backing in on the siding will be converted into the electricity that supplies the entire plant with power and light. Therefore, let us take a short cut through the north end of the factory to the big Gas Producers, which are something new to most of our visitors and therefore of unusual interest.

Before we describe the process of making the gas, let us explain that it forms the fuel which operates a mammoth gas engine, which in turn drives an equally huge dynamo, generating a powerful electric current that is distributed by cables all over the entire plant: to the motors which drive the machinery in each department and to the thousands of arc and incandescent lights.

HUGE VENTILATING FAN—Two of these supply fresh air, purified through a water spray and heated to a uniform temperature, to each room

The two big cylinders in the center of the picture (p. 21) are the producers in which the gas is generated. The process is comparatively simple. A coal fire is built in the bottom of the producer, just as you build one in your parlor stove, but here the similarity ceases. When the fire is under good headway, the massive lid is covered with two inches of water to keep it cool. The huge steel saucer under the producer is also filled with water, which covers the lower rim of the latter, but does not reach to the fire within, which rests on a bed of ashes.

If you were to hold an inverted tumbler in a saucer of water and imagine a fire inside it, you would have an excellent example of the principle involved. Sealed with water at top and bottom, the producer is air tight, and to supply sufficient oxygen a stream of air is forced in by a jet of steam which also smothers the fire to a proper degree. The coal does not burn fiercely, as in a boiler, but is kept a glowing, incandescent mass, which liberates the gas without reducing it to coke.

MAKING THE FUEL GAS for the great engine in the power building. The capacity of these huge tanks would supply the needs of a small city

Fresh coal is supplied from the top at regular intervals by means of a charging chamber that allows no air to get in nor gas to escape, and as the producer is started revolving slowly, this motion together with an automatic device inside, thoroughly stirs and mixes the fire.

The producer is now in full operation, and may be kept going indefinitely by supplying fresh coal and removing the ashes. The latter gradually settle into the water and are raked out to the rim of the big saucer and carried away.

The fire reduces the coal to gas and ashes and the former is carried into a big vertical pipe that runs to the roof, back into the ground to the tunnel, and continues 700 feet west to the big engine, whose enormous lungs inhale it at the rate of 2,125 cubic feet a minute. After the gas leaves the producer it passes through a screen of water which cools the gas and washes out the impurities and this residue is piped into a vat outside in the form of a thick, black tar.

POWER BUILDING—A mammoth glass case with windows from floor to ceiling. Floor and walls are of tile and everything is kept spotlessly clean

We will now follow the big 24-inch gas main to the power house (p. 22). The building which houses the power plant is in reality a giant glass case with windows on all four sides from floor to ceiling. The interior is one big, square room, its floor and walls of tile (p. 23). Immaculate cleanliness prevails throughout. A traveling crane, capable of lifting 25 tons, spans the room from wall to wall, and is indispensable for raising any of the huge parts of the engine or generator which may require repairs.

As you enter, the immense engine centers your attention, and holds you spellbound until you have comprehended to some extent its immense proportions (p. 24). To describe it very briefly, it is a gas engine, identical in principle with the one in an automobile. The gas which we have just seen made at the producer plant is taken into its cylinders, compressed and exploded by electric sparks, precisely as is done in a motor car engine.

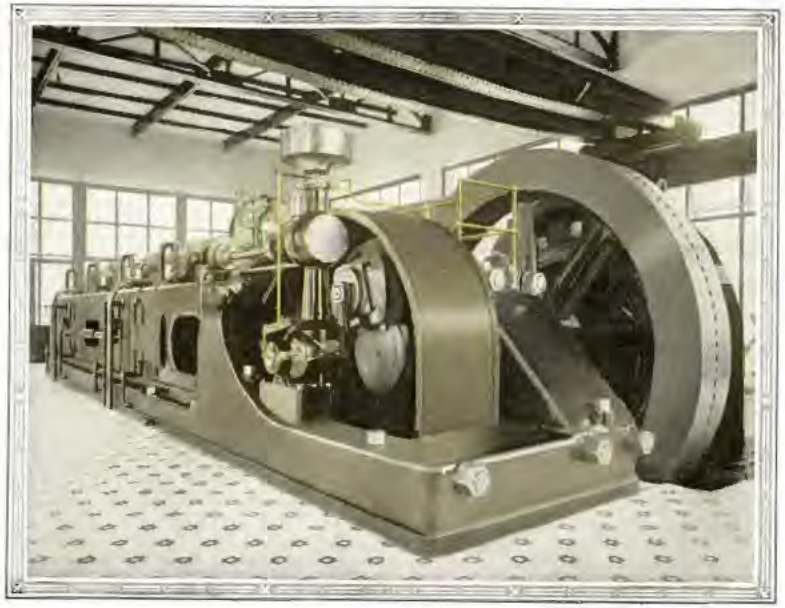
As it was designed expressly for the Ford plant, there is no other engine exactly like it, and this fact makes it

ENGINE ROOM—At the right is the great engine, then its 40 ton flywheel, the generator, air compressor and the switchboard

doubly interesting, even to engineers of wide experience. It is known as a four-cycle, double acting tandem type, and develops fifteen hundred horsepower. It has the largest cylinders of any engine operated by producer gas, and as another Ford engine, similar in design, but of five thousand horsepower, is now in process of construction, the Ford factory will soon have the distinction of operating the largest gas engine in the world, of any type.

A detailed, technical description of the big engine would be out of place in this book, but a few items are worth remembering. It is 58 feet long and 25 feet wide. Through the two double acting cylinders, each of which measures 35x48 inches, travels the great horizontal piston rod, 8½ inches in diameter and 36 feet long.

It is fascinating to note the absolute precision with which each cylinder explodes its charge, one, two, three, four—one, two, three, four—each impulse timed so exactly that there isn't a jar or tremor throughout the monster frame. The main valve-seat is 14 inches in diameter.

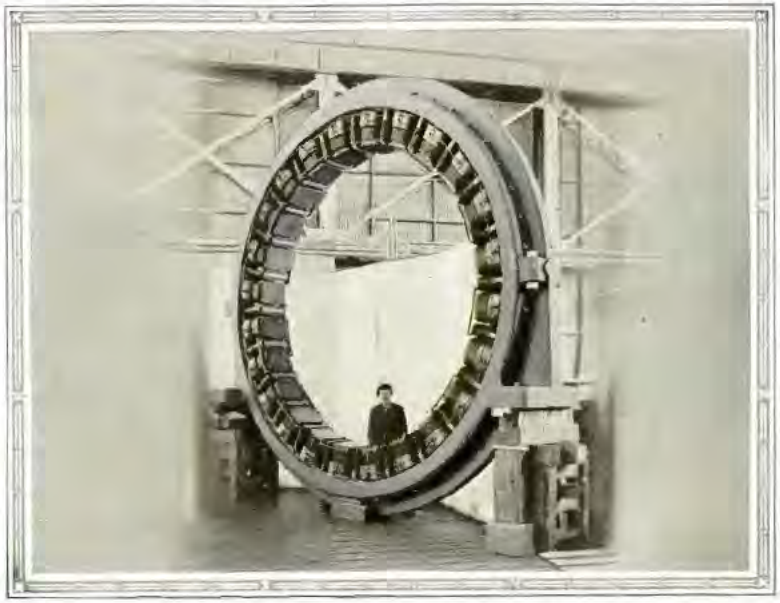


THE GIANT GAS ENGINE—Although of 1500 h. p., it's inadequate for the immense plant and another of 5000 h. p. is nearing completion

Forty-five gallons of oil are needed to lubricate the main bearings every hour. This oil is circulating continually through a system of tubes, draining it from the various bearings, black and dirty, into a filter below the engine, where it is cleaned and forced back to do its duty over again.

The main shaft on which the 42-ton flywheel and armature of the generator are mounted, is 24 inches in diameter and 19 feet long. Through this main shaft the engine transforms its power into electricity. The huge generator or dynamo develops a 240 volt current, which is carried by heavy copper cables to the switch-board, where, by the use of bus bars and switches it is gradually separated into circuits, that are led off through their respective cables to all parts of the plant, to the motors that drive the machinery, and to supply the net work of lighting circuits.

The new engine now building will be magnificent in its proportions. Of the twin-tandem, double acting type, it will be 73 feet long and 32 feet wide. Each of its four



THE NEW GENERATOR nearing completion. 2500 K. W., 25% overload, diameter of frame 20 feet. The largest 240 volt dynamo ever built

cylinders will be 42 x 72 inches. The crankshaft will be 32 inches in diameter, 25 feet long, and will support an 80-ton flywheel; her connecting rods will weigh 10,300 lbs. each. Truly a titanic machine.

Direct connected to the new engine will be an electric generator, having a normal capacity of 2500 kilowatts and capable of carrying a 25 per cent overload. It is the largest 240 volt dynamo ever built, its immense circular frame being 20 feet in diameter. It's nearly completed and we include a picture of the frame with its magnets on this page.

From experience we have learned that our guests not only want to see, but they want to understand what each important machine is and what it does, and why it does it; therefore, that you may be sure to understand at the outset, where the power comes from, how it is transformed from coal to electricity, let us reverse our explanation—if it's worth knowing at all, it's worth knowing well.

Suppose we are at the south end of the big machine shop, watching a boring mill drilling holes in an engine

THE GREAT FOUNDRY'S main room. Three hundred cylinder moulds ready for the molten iron. Fans remove all dust and smoke

frame. A small electric motor, mounted on the frame of the boring mill and driving it, receives its current from two small wires which may be traced to their connection with larger cables on the ceiling. These in turn tap off from still larger ones perhaps two hundred feet away, and, if we persevere, we can trace each set, continually growing larger, until we are finally back to the switchboard in the engine room. Then it's a simple matter to follow the big conductors to the generator, to see that it is dependent upon the big engine, that the engine is powerless without the gas from the producer, and thus we are back to the coal which makes the gas.

It seems a long, roundabout process from the coal bin to the boring mill, but in reality it is the most economical, practical and efficient method of generating and distributing power so far devised.

To avoid confusing you with too many details we have considered the compressed air system as a separate unit, which in fact it is, except that it also depends upon the

MOULDS receiving the finishing touches. Their interiors are dusted with graphite, insuring smooth, clean surfaces on all Ford castings

big gas engine for its power. In the picture on page 23 you will see the big compressor at the left, opposite the engine. Its capacity is 2,000 cubic feet and its duty is to supply air under heavy pressure, to all parts of the plant for operating pneumatic tools of various kinds, hammers, drills, riveters, blowers and sand blasts for cleaning castings.

An enormous elevated water tank is in process of construction to be erected between the power building and the main plant. It will be the largest one of its type in the country, having a capacity of 300,000 gallons. The tank is 41 feet in diameter and rests on six steel columns 140 feet high. On the ground beneath the water tank will be a storage gas tank of 35,000 cubic feet from which the big engine will draw its fuel, always at a uniform pressure.

The Underground Tunnel

Original ideas are to be found upon every hand at the Ford plant. The big gas main which supplies fuel to the

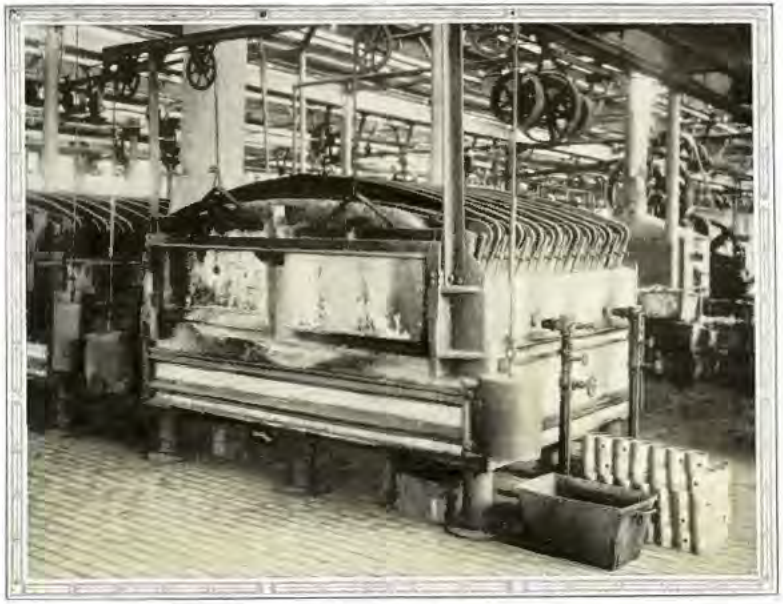
CORE ROOM—The cores are made of adhesive sand, baked hard and are used to form the "holes" in hollow castings

engine, the electric cables, water pipes and those for compressed air, are all carried underground in cement tunnels.

From the basement of the power house the main tunnel runs due east a quarter mile to the foundry, and from this other sections branch off to the Administration Building, main factory, gas producers, etc. This subterranean system protects its various wires, pipes and conduits from accidents, moisture, snow and ice, and any leak or break can be promptly located and repaired.

Foundry

Now that we have seen how the power which drives all these countless machines is produced and applied, we are ready for a demonstration of the greatest of all manufacturing problems—the production of an article of superior quality, most economically—and let us add, that high quality and low cost have never been combined more successfully than in the Ford car.



THE TYPE OF FURNACE used in the Heat Treating and Carbonizing Departments. Heated by two blazing jets of oil

We have said that we would show you how a Model T motor car is made, but in reality you will see 250 Ford cars being built simultaneously as this is the average daily output of the plant. As the manufacture of each part of the Ford car must start with the raw material, and as the Model T is principally built of steel and iron, we will first visit the foundry where the pig iron is made into Ford castings.

The accompanying pictures of the foundry afford such an excellent idea of its magnitude, general construction and equipment, that only a brief explanation of details is necessary. It has been built to incorporate everything that is efficient and economical, and to omit all those features which past experience has proven undesirable.

It is safe to say that there is nowhere a more modern, convenient and complete plant of its kind. Designed by men of long and practical experience, the construction of the main building and the arrangement and equipment of the various subordinate departments, facilitate the

THE CRANEWAY, where incoming material is stored temporarily. Visitors never tire of watching the powerful electric crane at work

handling of materials and the turning out of the work to the best possible advantage.

It does not seem possible that a foundry can be neat, clean and orderly, but this is one of the exceptions. An extremely effective system of exhaust fans removes all the dust and smoke, which explains why it was possible to take such sharp, clear interior photographs.

About 250 cylinder castings are turned out daily; in the forenoon, the moulds of sand are prepared and placed in long symmetrical rows on the floor of the main room ready for the molten metal (p. 26). When everything is in readiness for the pour, about two o'clock, the two big cupolas filled with tons of melted iron, are tapped, and for the next half hour the visitor may enjoy a very interesting and decidedly exciting spectacle.

The big room which a moment before was quiet and orderly, becomes a roaring inferno. The men rush back and forth from the furnaces to the moulds with ladles of blazing metal, each ladle hung in the center of a long iron

CRANE AT WORK—The ponderous screw machine suspended above the cars, weighs two tons. The crane has just raised it from the platform

handle, to protect the men who carry it from the fearful heat and bursting sparks. When one ladle is filled from the fiercely spouting stream at the furnace, it is rushed away and another takes its place, and as the ladles are emptied into the moulds, the men come back on the run for a fresh supply.

The lurid glare from the ladles and the dazzling, scintillating blaze from the furnaces, the roar and hiss of steam and cooling iron, and the shouts of the men, convince the onlooker that some one will be fearfully burned in the confusion. But nobody gets in the way of anyone else, every man is calmly doing his allotted work, and although everyone is hurrying to the utmost, there is no confusion.

When the pour is over, the fresh castings are drawn from their sand moulds and sent to the cleaning room, where all adhering sand is removed, rough edges are chipped or ground off, and if free from flaws, are ready to be sent to the machine shop. The smaller castings are

A PANORAMIC VIEW OF THE FORD MOTOR COMPANY'S MAGNIFICENT NEW HOME
The Administration Building in the Center—the Great Factory Buildings Behind it—and the Power Building at the Left

thrown into tumblers—big revolving barrels—where they are cleaned and polished by the constant friction of one against the other.

Core Room

A careful look at the picture of the core room (p. 28) will afford a clear idea of the work in this department. The cores are made of sand, moistened with a sticky substance, and when baked are almost as hard as iron. They are used in the making of hollow castings, in fact represent the "holes" in them and crumble up and are knocked out of the finished castings, leaving the cavity the exact shape of the core.

The percentage of loss in most foundries from imperfect castings is a serious one, but although a gas engine casting for a motor car is extremely complicated and difficult to make, the Ford foundry is so perfectly equipped for the work, is in charge of such competent men, and the workmen are so skilled in their duties, that the number of bad castings is very small indeed. The next logical step will be a visit to the Heat Treating Plant, as the unfinished steel parts and forgings must first be tempered before they go to the machine shop along with the castings.

Heat Treating Plant

The importance of the Heat Treating Plant will be better understood when we explain briefly the remarkable work it accomplishes. Just as an excellent batch of bread may be spoiled in the baking, either underdone or baked

THE BIG FORD FOUNDRY—A model of efficiency, convenience, perfect lighting and ventilation

HEAT TREATING DEPARTMENT'S new buildings; first section completed. Note the long battery of furnaces

HUNDREDS OF TONS of Ford parts on their way to the assembling departments. The view is across the south end of the machine shop

to a crisp, so a forging of splendid steel may be improperly tempered and ruined for the special purpose for which it was intended.

The fame of Ford Vanadium steel is hardly less than that of the Ford car itself, as no one can be familiar with the latter without knowing that its marvelous strength of construction is principally due to the Vanadium steel of which all of its metal parts are made that are subject to stress.

The value of this remarkable material, however, would be largely wasted if it were not for the scientific tempering it receives in the heat treating plant. It is obvious that the steel of which a spring is made must be flexible and resilient; that a gear must be very hard and rigid, needing no springy quality whatever, while an axle must be tough and hard, but flexible to a limited degree.

Taking these three parts as an illustration, we will explain how each is so made that it is exactly suited for the work it has to do.

THE GREAT MACHINE SHOP—A view down the main aisle, it is 840 feet to the far end. The most unusual and impressive sight at the plant

First a special steel is made for each, the formula for making the spring steel varying materially from the other two, especially in the amount of Vanadium introduced; then the three batches of steel go to the heat treating plant and each is tempered under distinctly different formulas. This explains why each steel part of the Ford car is exactly adapted for its particular duty.

The rolling mills which supply the enormous demands of the Ford plant, make the steel under the supervision and from specifications furnished by Ford engineers. Each steel billet is subjected to a minute analysis at the mill by Ford inspectors and promptly rejected if not up to the Ford standard of perfection.

Years of ceaseless, concentrated study and experimenting, and the expenditure of several hundred thousand dollars were needed to determine the accuracy of these formulas for making and tempering Ford steel. The vast amount of time and money expended has been fully worth while, however, as they have made possible the remarkable

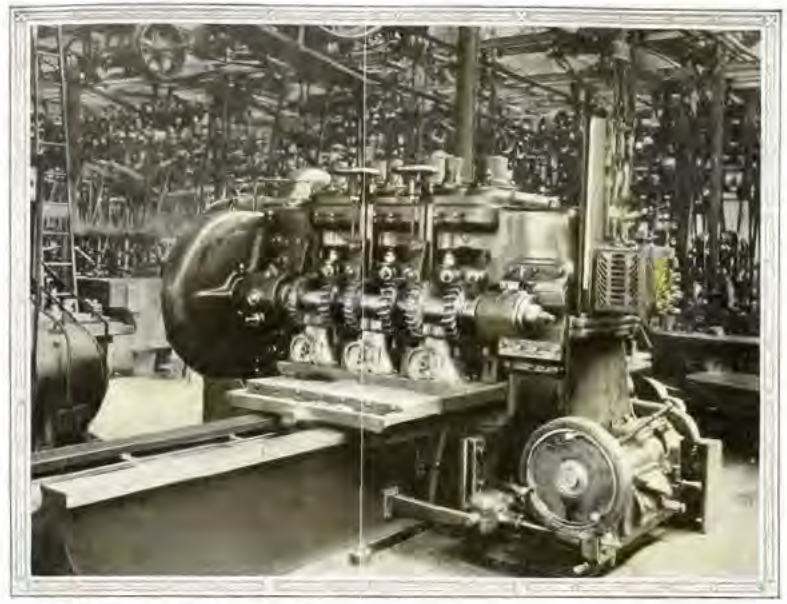
ASSEMBLING AND TESTING Ford motors. The most important unit of the car, they are put together as carefully and perfectly as a watch

strength of construction and reliability which have made Ford cars famous the world over.

Long rows of big ovens, or furnaces (p. 29), form the principal equipment of the heat treating plant. Their fuel is crude oil sprayed in from horizontal jets by powerful air pressure, and, when required, a temperature of incredible intensity can be produced.

There is no guess work in the handling of these furnaces. The man in charge of one receives a truck load of steel forgings, with orders to temper them to the exact specification attached. He regulates the heat of his oven to a definite point, and as the parts must not be left in the fire too long nor too short a time, he relies on his heat gauge to tell him the exact moment to withdraw them. Then comes the cooling or quenching, which is as definite and scientific a process as the heating.

Steel for one purpose must be cooled quickly, for another, slowly; one is quenched in a special solution, another in oil, and various other baths are used for the



A MONSTER MILLING MACHINE, milling 12 cylinder castings at one operation. The massive cutters eat through the solid iron as if it were cheese

special needs of other steels. If required, the workman can take a bar of steel, heat it and cool it, and make it nearly as brittle as a rod of glass, snapping with the least bending strain, or he can temper this same bar so that it may be twisted and bent as readily as a lead pipe, and this heating and cooling process has been worked out to such a definite science that the operator can temper this bar to any intermediate degree between the brittleness of glass and the flexibility of lead-pipe.

The foregoing facts will convince you that every steel part of a Ford car is made with infinite care to fulfill to the utmost the work demanded of it, and this matter is so fundamentally important that a word more is justified.

When you examine a Ford car, the rear axle, for example, remember that it is made of special *axle* steel, from Ford specifications. From the steel mill the bar goes to the heat treating plant, where it is tempered to conform to a special Ford formula, and thence to the machine shop, from which it emerges, after passing through various opera-

A BATTERY OF DRILLS—Each bores eight holes simultaneously, obtaining both absolute precision and great economy in time and labor

tions, a perfect axle. It is amply strong and still not unnecessarily strong; not too light and yet without an ounce of superfluous weight; sufficiently rigid but not brittle, springy enough to stand severe jolts, and dense enough to afford a hard polished surface for its bearings.

The same perfection applies to all the various Ford parts. There would be a tremendous manufacturing economy if one good grade of carbon steel were used for all of them and the one simple tempering process employed, that is generally considered sufficient, but in so doing, the wonderful strength, light weight and enduring qualities of Ford construction, which have been such a vital feature in Ford success, would be sacrificed.

Thus, Ford Vanadium steel, the best and most expensive of any steel known, will continue to be used in the Ford Model T for all strain and load-bearing parts. The steel for each part will be specially made, specially heat treated, and developed into final perfection, as long as the public continues to appreciate as they have in the past,

A CHARACTERISTIC PICTURE OF MR. FORD—Discussing a mechanical problem in the Experimental Room. Mr. Ford at the right

that this policy results in the maximum of safety and durability, and in the elimination of repairs and other expenses, because of the Ford's light weight and great strength.

Forge Room and Carbonizing Department

The Carbonizing Department, which occupies the east end of the big Forge Room, is still another process for perfecting the steel in Ford parts. Carbon is an important element in nearly all steel and the work that each part has to perform determines the amount of carbon that its steel must contain. The more carbon that is introduced in a piece of steel the harder it may be tempered.

A gear, for example, should be harder on its surface than at the core. A batch is sent in from the machine shop, placed in cast iron boxes, covered with a coarsely granulated material, rich in carbon, the lids are sealed with fire clay and then the boxes are put into furnaces similar to those in the heat treating plant.

TOOL ROOM—This big shop is employed solely in making tools, jigs, dies and special parts for the mammoth machine shop

The fierce heat reduces the carbon to a gas which gradually penetrates the steel gears, just as a stain enters the pores of a board, and the important feature of this process is to withdraw the parts from the oven at the proper moment before the carbon has gone too deeply into the steel. When the gears are tempered their surface is sufficiently hard to withstand the extreme grind and wear, without the brittleness which would result if they had been carbonized equally throughout. The cost of operating the Carbonizing Department for twelve months is a big item, but it saves the Ford owner many a stripped gear or other broken part.

The building which houses the Carbonizing and Forge Departments is 80 x 240 feet and about 250 men are employed within its walls. Along the south side 75 men are at work grinding and polishing parts on emery wheels, each a dazzling pin-wheel of brilliant sparks. Another gang is brazing rear axle housings and other parts. Others are babbitting bearings and another group is making the

PATTERN SHOP that furnishes the wood patterns from which the foundry makes its castings. Note the individual motors for each machine

V-shaped magnets for the famous Ford magneto. The long rods, red hot, are fed into a powerful machine which bites off an eight inch piece, bends it to the proper shape and a finishing stamp straightens and trues it to exact uniformity with all the others.

Craneway

The forge room stands out at right angles from the craneway, an immense brick, steel and glass shed, and, as a pleasant respite from the heat and noise which have been very much in evidence in the foregoing departments, we will go up to the north end of the craneway and devote a few moments to watching the big crane at work.

The craneway never fails to draw forth an enthusiastic comment of some kind from every visitor. A sixth of a mile long and fifty-seven feet wide, with little to obstruct a good view of its entire length, it is a splendid example of modern factory construction (p. 30). Here

TOOL DRAFTING ROOM—Devoted solely to designing, and furnishing plans and specifications for special Ford tools and machinery

materials are received and stored temporarily until they are required by the various departments. Everyone seems to take a special delight in watching the mammoth electric crane, lifting, carrying, and depositing its enormous loads with apparently no effort whatever. At first you do not notice the man in the cage suspended from one end of its massive frame, but like every other machine it is powerless without human hands to guide it.

When the crane has a busy day, you will frequently see it performing three different operations at once. The hoisting motor, which you will see in the picture now resting in the center of the crane, can be run back and forth toward either wall; therefore, when a load has been lifted clear of the floor, the operator can start the crane down the shed, while the hoisting motor continues to raise its load, and is itself moving toward one end of the crane. This all saves time, as when the crane is stopped, its load is suspended directly over the spot it is to occupy and needs only to be lowered.

A SECTION of the General Drafting Room where the working drawings of Ford parts are made for the manufacturing departments

Freight cars run under the north end of the craneway, as shown in the picture (p. 31), are unloaded on the receiving platforms, and the crane picks up a big machine or several tons of steel forgings and carries them inside.

Machine Shop

Now then, as we are impatient to show you the great machine shop, the largest and most important department of all, we will walk down the length of the craneway and into the machine shop from the south end. We have included quite a number of views of this department as no printed explanation will give you an adequate idea of its immensity, nor of the wonderful machinery which it contains.

The first picture is the scene as you enter the shop, across the south end (p. 34); the next, a view looking north down the main aisle (p. 35)—and a long look, at that. To be exact, the machine shop from wall to wall is 840 feet long

SHIPPING DEPARTMENT, where parts, accessories, supplies for dealers, etc., are packed and boxed for shipment

and 180 feet wide. Of all the unusual and impressive sights at the Ford plant this view is the most imposing.

Apparently you are looking into a hopeless tangle of machinery, shafting and belts. It seems incredible that a thousand men are working calmly and effectively among this maze of whirring, groaning, grinding wheels and gears, but as you walk along the main aisle and study each section carefully, the impression of confusion is dispelled and is replaced by amazement at the perfect system that prevails.

The space occupied by the machinery is over one hundred and thirty thousand square feet; not an inch of room is wasted and yet neither men nor machinery are crowded. Passageways at frequent intervals connect the two main side aisles like the rungs of a ladder and give ready access to the machines in the interior of the room. When a casting, for example, comes into the machine shop it may require nine different operations before it is finished and passes on to the assembling room.

ASSEMBLING ROOM NO. 1—Here the bare chassis frames receive their preliminary equipment of fender irons, springs, brake levers, etc.

An absolute system determines its progress. It goes direct to the first machine, then to the second, the third, and so on to the ninth, with no superfluous handling, no delays. This economy in handling the work is due to the manner in which the shop has been laid out, and is a splendid tribute to the ability and experience of the men responsible for it.

As we have said before, the machine shop is the largest department with regard to the number of men employed, cost of equipment, and in the value and importance of the work it turns out. Here are made nearly all the important metal parts for the Ford Model T. All the castings and forgings, and steel rods and bars, we have seen in the foundry, heating plant and forge room, eventually reach the machine shop and are converted into perfect working parts.

Thus are brought into use the grinding and polishing machines, planers, lathes, shapers, milling machines, boring mills, machines for punching, drilling and shearing,

ASSEMBLING ROOM NO. 2—Perfect workmanship and the exact uniformity of all parts, explain the rapidity and precision in assembling

machines that make screws and bolts, and others that cut threads in the holes that receive them. In fact, somewhere in this vast room will be found the latest model of almost every type of metal working machinery.

The special machines however, which have been designed by the Ford experts to meet special conditions, are marvels of economy and efficiency, not only representing an enormous saving in time and labor but obtaining a mechanical perfection in the machining of Ford parts that is one of the principal explanations for Ford superiority of construction.

It would require several days to show you all the different machines in this enormous shop and explain their operation, and therefore, we can describe only a few of the most interesting and important, with the aid of several photographs.

One monster boring mill machines the interiors of the four cylinders in each engine casting at one operation, securing absolute uniformity and alignment in the four

FORD MOTORS—A day's output. Every day adds to their victories on the speedway, in hill climbing contests and endurance trials

bores. An equally ponderous machine accommodates twelve cylinder castings on its massive bed and mills their bottoms to a perfect surface at one operation (p. 37).

Another wonderfully efficient and time-saving machine drills forty-five holes at one operation, five drills entering the casting from the back, six from the front, fifteen from the top and nineteen from the bottom. When the machine work on each engine casting is completed, the casting goes to the assembling benches (p. 36) where all its working parts and fittings are put in place, piece by piece, until the complete engine is ready to be sent to the assembling department proper, to be bolted onto its chassis.

The machine shop proper furnishes the best illustration of the absolute system which governs all Ford work and results in the greatest possible economy of time and labor. Every man and every machine is working to his or its full capacity, but is never overworked. Neither has to stand idle for lack of material due to congestion or inadequate facilities elsewhere in the shop.

RADIATOR DEPARTMENT—Three hundred men are needed to make Ford radiators as fast as they are required—250 per day

Everything moves with wonderful precision, every detail having been worked out to fit in perfectly with all others, with the result that this immense shop suffers no loss or waste whatever because it is big and complex, but to the contrary, it is so perfectly organized, that Ford parts represent a higher quality of material and workmanship and a lower manufacturing cost than those of any other automobile.

The Ford plant offers ideal conditions for the application of piece-work methods, and the cost of manufacturing Ford cars would be reduced materially by so doing, but the present high standard of construction would be sacrificed thereby. The piece-work operator naturally turns out as many pieces in a day as he can; it's quantity, not quality, that counts with him. Ford employes turn out the most perfect work of which they are capable, and as rapidly as this condition will permit. Economies which might depreciate the high quality of Ford material or workmanship are never permitted at the Ford factory.

AN INGENIOUS MACHINE in the radiator department. It is typical of Ford methods, doing the work of ten men by the pressure of a lever

The Ford policy of standardizing every part of the Model T is of fundamental importance. All Ford crankshafts, for example, are absolutely identical. You might travel round the world in a Model T and exchange crankshafts with any other Model T you met enroute, and both engines would work as perfectly after the exchange as before. The finest of materials—such as Ford Vanadium steel—the finest workmanship, and infinite care, are necessary that such a statement can be made and verified.

The value of this standardizing to the Ford owner is apparent. If a new part is sent him to replace a broken one, he can install it without the need of any filing, grinding or hammering to make it fit. All Ford parts of the same kind are perfectly interchangeable.

A system of inspection has been developed and perfected, so minute and so thorough, that it is impossible for a piece of inferior material or an imperfect part to escape detection and become a part of a Ford car. In every department of the great plant this policy is rigidly enforced. All raw

TINNING RADIATOR PARTS—Making them rust proof, leak proof and generally dependable for a long term of years

material is tested, or analyzed, and if not up to the exacting Ford standard it is promptly rejected. Each part is examined and measured after each operation, and micrometers and calipers gauged to ten-thousandths of an inch are used on all important parts.

If we are to visit the other departments and follow the building of the Model T, step by step, until it is ready for the final shipping tag—a perfect car—we must end our tour of the machine shop abruptly (although reluctantly, as it is the heart of the great Ford plant), and turn to the next chapter in Ford construction.

As we have made a complete circuit of the shop, up the west aisle, across the north end and down the east aisle, we are back at the south end again and directly under several important departments in the south building; therefore, we will break the thread of our story while we show you how the Ford Motor Company protects its customers, by investigating and proving the definite value of every suggested improvement before adopting or

VARNISHING FORD WHEELS—Each machine varnishes two wheels per minute—1200 daily—and more perfectly than by hand

rejecting it. To be explicit, we refer to the Experimental Laboratory, and as it is on the top floor we will let the elevator take us up.

One section of the Experimental Room is shown on page 39. Its equipment includes many extremely delicate and complicated machines and special apparatus for making and testing all kinds of electrical and mechanical devices, which are considered worthy of investigation in the constant effort to improve the Ford car.

The cost of the equipment and maintenance of this department is a very large item, representing an outlay of many thousands of dollars yearly, but the results obtained are so vitally important that they fully justify the expenditure. A corps of men highly specialized in this work, devote their attention to the solution of the problems which they are constantly originating or that Mr. Ford directs them to investigate. One after another, these ideas for the betterment of the Model T are carefully and thoroughly tested until their value is absolutely

A THOUSAND Ford bodies, formed out of pressed sheet steel. It looks like a year's supply but they will all be used up in three days

determined. If found to promise sufficient merit, a device is installed on a stock car and given a long and practical trial under the severest conditions, frequently lasting a year or longer. If adopted, the new part is submitted to experts, who plan its manufacture most economically.

This means that the Ford Motor Company bears the expense of its experimental work, not the Ford owner, and every new feature that is added to the Ford Model T is always advantageous, never detrimental.

Directly beneath the experimental laboratory is the Tool Room (p. 40), where all the special tools, jigs, dies, etc., are made for use in the big machine shop, and for other machinery throughout the plant.

On the second floor is the Pattern Shop (p. 41). Here the wooden patterns are made, from which the foundry makes its castings. Many of the patterns, especially those for most of the cores, are quite simple, but some from which an irregular shaped or complicated casting is made, are extremely difficult to build. After they have been covered

EQUIPPING THE BODIES with upholstery, cushions, tops, water tanks and fittings. It's always just as clean and orderly as it looks now

with the moist sand, they must of course be withdrawn to leave the hollow mold which is to be filled with the molten iron, and only the most expert workmen can design and make these difficult ones.

This floor of the south building is also occupied by the two big drafting rooms, classified as Tools (p. 42) and General (p. 43). The first supplies the plans and specifications for all the special tools and the latter makes the drawings and blue prints of Ford parts for the manufacturing departments. The most modern apparatus is employed for making the blue prints and the volume of work turned out is only equaled in the largest architects' offices.

And now after this diversion from the logical sequence of our story, we will go back to the north end of the machine shop, and follow the truckloads of finished parts on their way to the assembling department.

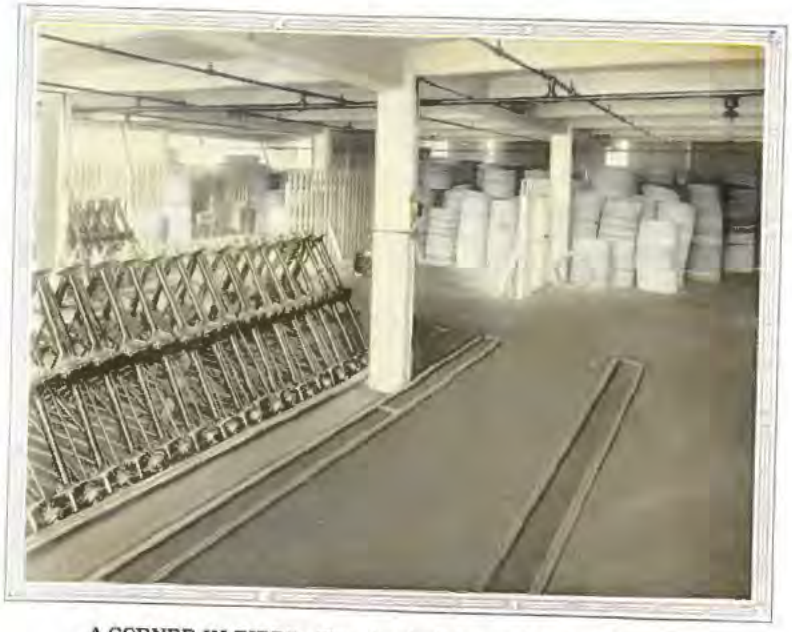
In doing so, we must pass through the room devoted to boxing and shipping repair parts, supplies for dealers, etc.,

LACQUERING FENDERS, hoods, fuel tanks and other parts. Each is dipped in a big vat, hung up to drip and then baked hard and glossy

and also where materials of certain kinds are received (p. 44). The same neat, thoroughly systematized conditions prevail here that we have seen throughout the plant.

Three big rooms, each 285 feet long, comprise the Assembling Department, where the products of practically all other departments converge for assembling. As we enter the north end of the first room (p. 45), we are confronted with a huge pile of chassis frames, absolutely free of all attachments. The first operation is the fastening on of the brace rods for the fenders, with a pneumatic riveter, one of the hundreds of air pressure tools operated by the big air compressor in the power house.

From this machine the frames are placed on wooden horses, and other minor fittings are bolted or riveted into place, and from this point the Model T begins to grow and take form with remarkable rapidity. As the frames are moved along, new parts are being constantly added, axles, springs, motors, transmissions, wheels, bodies, windshields, lamps, etc., until, at the south end of room No. 3 (p. 47),



A CORNER IN TIRES—Three hundred thousand tires will be used to equip Ford Model T's in 1912

the last nut is tightened up and another new Ford, complete to the last detail, and beautiful in her glossy paint and polished brass, is ready for a final test under her own power.

The south end of the craneway makes an ideal testing room, with its abundance of light and smooth cement floor, and the photograph (p. 60) shows eighty brand new Model T's, receiving their final grooming. Each is also given a last trial spin, before it is sent out into the world to uphold the honor and prestige of the name it bears. It may find a home in Detroit, in the jungles of India, or in frozen Siberia, but wherever it goes, it is sure to be a credit to its makers.

Before we go over to the testing-room, we must visit the important departments on the remaining floors of the main building, even if we stop for only a moment, as we started out on a tour of the Ford plant and to see a Model T made from start to finish, and we have yet thirty minutes until the factory closes for the night.

FORD STOCK ROOMS require several acres of floor space. In this room are stored thousands of windshields and steering wheels

We will not attempt a description of the Radiator Department on the second floor, as it would require several hours to go through it properly, and gather a clear idea of how the noted Ford radiator is made. We must be content with a careful look at the pictures, one of the main room (p. 48), an excellent cut (p. 49) of the big machine which forces 95 quarter-inch tubes through 74 copper fins at one operation, and the Tinning and Soldering Room (p. 50).

This department employs 300 men, requires 15,000 square feet of floor space, and produces 250 complete radiators per day. Just as we have seen in all preceding departments, a thorough system, and the absolute precision and wonderful rapidity of each operation explain the uniform perfection of each radiator, and the tremendous volume of work accomplished.

A little arithmetic will suffice to show the demands which must be met by the department which paints and varnishes Ford wheels. Over 35,000 Model T's were made

SOME ROOF—The glass saw tooth roof is over the machine shop; the craneway at the right

and sold in 1911, which multiplied by four makes the total number of wheels handled by this department for last year 140,000. As arrangements are perfected to build 75,000 Ford cars in 1912, it will require 300,000 wheels for the coming year's output.

A nearly identical process is employed for both painting and varnishing. Each wheel is fastened to a vertical shaft, dipped in the paint or varnish, raised and revolved rapidly in a big metal pan (p. 51). These ingenious machines will handle two wheels per minute, and do the work more perfectly than is possible by hand, the daily output being 1200 or over. When thoroughly dried, they are fitted with tires, and sent down to the assembling room.

On page 52 is a view of 1000 Ford bodies, stamped out of sheet steel. It would appear that there are enough here for a year's supply, but in three days they will all be gone, and others stacked in the space which they vacated.

The room beyond (p. 53) supplies them with tops, trimmings, tanks, etc., and then they too, go down on the

LOOKING SOUTH—Most of the houses you can see over the roof of the craneway are the homes of Ford people

big elevators to be mounted on their chassis. Another big room (p. 54) takes care of the lacquering of hoods, fenders, fuel tanks and other trimmings. A fender is dipped in a big vat, hung up to drip, and then is placed in a huge oven, which bakes the lacquer to a hard glossy surface.

The men in the background are sandpapering and polishing the parts before lacquering, and those in front are striping some finished hoods. The rest of the main building is occupied by stockrooms for parts and accessories of all kinds, tires (p. 55), windshields (p. 56), steering wheels, fenders, and so on, tier after tier, row upon row, until you wonder how they can ever be used up.

We are now on the top floor of the main building, and as this is a perfect day, with no wind, we will go up on the roof, and treat you to a birdseye view of the great plant that will more than repay us for the climb.

As you stand at the southwest corner of the vast expanse of roof (p. 57), the panorama which spreads out to the north and east is an imposing one. The flag pole on the

THE FORD PLANT IS GROWING—Monster new shop nearing completion. Designed by Ford engineers. 750 x 315 feet

north end of the main building, is one-sixth of a mile away. The immense glass roof, of saw-tooth construction, is over the machine shop, and affords perfect light and ventilation for the men below.

The big craneway comes next, and the roof to the right is that of the south building. Above the craneway may be seen the six stacks of the boiler house, and behind them the gas producer building. To the right are the roofs of the heat treating plant, and in the far distance the foundry.

In the second picture (p. 58), the view is toward the southeast, and shows a portion of what might be called the town of Ford, as most of the houses are occupied by people employed at the Ford plant.

Over the craneway you can make out the new shipping platform, 500 feet long, and the structure to the left, in process of construction, will be another immense shop 750 feet long and 315 feet wide. When completed, the walls of the craneway will be removed and then the present machine shop, craneway and the new shop will form one enormous

EIGHTY MODEL T's receiving their final test. The rear wheels are jacked up and the engine and all working parts are given a thorough trial

room. The same system of heating and ventilating now used in the Administration Building, which we have described on page 17, and which is superior to all other methods, will be installed, which will make this the largest and most perfectly equipped machine shop under one roof in this country, undoubtedly the world's greatest workshop. We have been able to include, at the last moment, a picture of the new shop (p. 59), nearing completion, and one of the immense loading platform, just finished (p. 61).

The two top floors of the south building, in the center of the picture, show the continuous windows which admit the maximum of light and air.

While we are enjoying this magnificent view, together with the warm sun and clear air, and the relief from the roar of the machinery in the shops beneath us, let us tell you about the men who work here, what they do, and what is done for them, that you may know why there has never been and never will be any serious labor troubles at the Ford plant.

THE GREAT SHIPPING PLATFORM, 500 feet long. 185 Model T's ready to be loaded. 100 miles of freight cars will be needed for 1912

In the Ford factory and administration offices, 4,500 people are at work. If we include all other Ford employes and representatives throughout the country, the total number of people steadily employed will exceed 11,000.

Let us digress a moment to explain that branch factories, or assembling plants, are maintained at Walkerville, Ont., Kansas City, Mo., Cambridge, Mass., Long Island City, N. Y., and Manchester, England, all big, modern establishments. Their purpose is to supplement and assist the main factory in maintaining a service to Ford owners and dealers that is too famous to need explanation here, and to secure the greatest economy and promptness in the delivery of Model T's to purchasers at distant points.

Ford employes work 12 months in every year. There are no periods when the plant is closed down for lack of work, for stock taking, or for any other causes, which means that a competent workman is assured steady employment the year round.

THE TIME CLOCKS with which the men register their time to and from work. Each stamps his individual card and racks it "In" or "Out"

Nothing is omitted which will add to the comfort, health, and safety of the men. Splendid light, perfect ventilation, immaculate cleanliness, and the most modern and complete protection against fire, applies to every room in every building throughout the plant. Pure drinking water, individual clothes lockers, and roomy, sanitary washrooms, are important features.

A thoroughly equipped hospital, in charge of competent physicians, ensures prompt and efficient treatment of any injury, and as evidence of the care used in protecting all dangerous machinery, let us add that the Ford plant has never had a serious accident.

You must have seen in our trip through the shops and the offices, as well, unmistakable evidence of the interest the Company takes in its employes. Everyone is busy, interested in the work, satisfied with his surroundings, ambitious to do his share in the great organization of which he is a part, and, therefore, he is doing himself and the Company's work full justice.

AN INSPIRING SIGHT—The army of Ford employes. A splendid body of workmen, healthy, happy, competent and well paid

Many of the workmen are buying modern little homes, in the attractive suburbs surrounding the Ford plant, which is just north of one of the finest residential sections of Detroit.

The Ford Motor Company has done everything in its power to encourage, protect and satisfy the people it employs, and in return it enjoys their confidence, the benefits of their best efforts, and their loyal support and good will.

And now, we must bring our trip of inspection to a close. In five minutes the men will quit for the day, and it will be a fitting climax to watch them stamp their time cards and hurry to their homes and suppers—and as they file out, a laughing, jostling army of well-paid, high-grade workmen, of all nationalities, the sight inspires a feeling of profound admiration for the splendid plant that gives them work, and for the wonderful country whose people and resources have made the Ford factory the greatest of a great American industry.

Ford Motor Company of Canada Ltd.
Walkerville Ont.

The Canadian factory is ideally situated on the banks of the Detroit River, directly opposite the City of Detroit and under the direct daily supervision of Mr. Ford and the parent concern.

The Canadian plant is conceded by experts to have the finest machine shop in Canada and the details of the plant and various machine operations are similar to the illustrations and descriptions contained in this booklet describing the Detroit factory.

In addition to the great Detroit and Walkerville plants, the Ford Motor Company maintains assembling plants at Kansas City, Mo., Cambridge, Mass., Long Island City, N.Y., and Manchester, England.

Canadian Factory
Capacity 10,000 Automobiles Per Annum

BRANCH HOUSES

Atlanta	Denver	London	Omaha
Boston	Detroit	Long Island City	Paris
Buffalo	Fargo	Los Angeles	Philadelphia
Cambridge	Hamburg	Louisville	Pittsburgh
Chicago	Houston	Manchester	St. Louis
Cincinnati	Indianapolis	Memphis	San Francisco
Cleveland	Kansas City	New York	Seattle
Dallas			

Foreign Department—18 Broadway, New York

CANADIAN BRANCH HOUSES

Toronto Montreal Winnipeg Hamilton Vancouver

Melbourne, Australia

Large Distributors and Dealers in all other Principal Towns and Cities