COMPLETING THE EMPIRE CHAIN

Ford

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Ford Motor Company of New Zealand
LIMITED

Lower Hutt, Wellington


ENGLAND
CANADA
AUSTRALIA
SOUTH AFRICA
INDIA
MALAYA
NEW ZEALAND

FOREWORD

THIS publication has been produced to mark the inception of the Ford Motor Company of New Zealand Limited. To the Ford Industry of the British Empire, and to New Zealand particularly, this is an event of great importance. It marks the forging of another link in the chain of British Empire Ford Factories. From Canada, the foundation of British Empire Ford activities, right round both Eastern and Western Hemispheres to New Zealand, a chain of Empire Ford Factories now links up every major British territory.

From this book some idea may be gained of the magnitude of the Ford industry in the British Empire, with particular reference to the undertaking in New Zealand; and also of its importance to the economic and social welfare of the Dominion.

The New Zealand Ford Factory rises upon the site of the old-time Maori village of Ohiti. The above scene of Ohiti is taken from an early print.

This photograph, taken on May 9th, 1936, shows the Factory foundations taking shape.

On the left is shown the huge structure nearing completion, as at 9th October, 1936.

Why New Zealand has its own Ford Factory

THE building and operation of this Ford Factory coincides with the emphasised desire of the Government and people of New Zealand to develop industries for the employment of New Zealand labour. Ford cars and trucks are being built in New Zealand, for New Zealanders, employing New Zealand labour, and using as widely as economically possible, New Zealand materials. This development allows Ford to give effect in New Zealand to its fundamental policy of building "on-the-spot" with a minimum of waste, both of materials and of human effort, and then of prompt and efficient distribution to the buyer. It must be remembered, too, that the Ford activities do not cease with the building of cars and trucks at the new Factory. The product of the combined efforts of all the staff employed is relayed throughout the length and breadth of the Dominion, there to be distributed to the buyers through scores of Ford Dealers, all employing large staffs both on Sales and Service.

Everyone in New Zealand who is connected with Ford—either as a worker, buyer of the product, or supplier of local materials—is the better for the existence of the New Zealand Ford Factory.

Some New Zealand Ford Factory Facts

SITUATED at Lower Hutt, and looking towards the hill-encircled Harbour and City of Wellington, is the New Zealand Ford Factory, one of the largest industrial buildings in the Dominion. It is magnificently situated on an historic site, its foundations being deeply rooted in ground steeped in ancient Maori history. It literally rises upon the ashes of the old stockaded Maori village of Ohiti, on the east bank of the Waiwhetu Stream where it enters Port Nicholson. Many years ago, and within a stone's throw of the Factory, some fierce tribal battles were fought. Now an industrial peace has taken possession of the spot. Where once man forced his way through thick bush or paddled his canoe on rushing waters, a modern concrete highway now runs, to start the products of this new Factory on their way to every corner of New Zealand.

Thanks to the great work done by the first white settlers who landed close to the spot, hundreds of New Zealanders are now working and enjoying the benefit of good wages, under ideal working conditions. It is hard to realise the great changes that have taken place, and only a tour through the Factory provides a realisation of the work that is being accomplished in it.

Portion of the spacious foyer showing New Zealand-built Ford Cars on display.

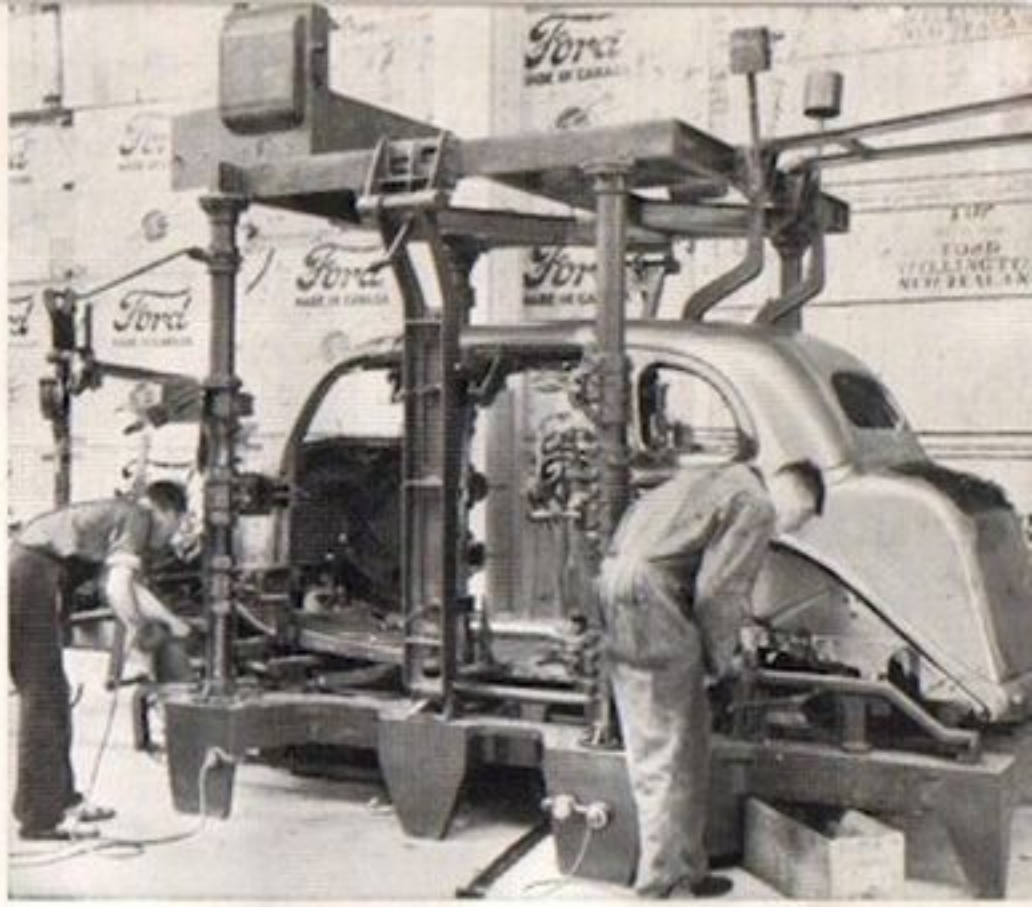
Dignity, Beauty and Utility

THE magnitude of the undertaking is at once apparent. The building combines impressive dignity and exterior beauty with the strictly utilitarian. Yet here is a modern Factory that is an architectural asset, without efficiency being attained at the expense of attractive appearance.

Sweeping driveways and spacious green lawns afford a pleasing foreground to the spick-and-span exterior of the Factory, and provide a foretaste of the order and cleanliness that prevail within.

Surmounting the imposing facade is the single word "Ford" in gigantic electrically-illuminated letters. This is the largest Neon sign in the Southern Hemisphere and a landmark visible from many miles distance.

Through wide glass doors the foyer is entered. Flanked on either side are gleaming new cars—built in the Factory by the very men presently to be seen at work. On either side of the foyer are the executive and general offices. Beyond them is the Factory itself, and entering it one is wafted into an atmosphere of organisation and enthusiasm which is amazing in its reality.



A giant with a score of hands—this master buck holds the steel body sections accurately in position, where they are welded into a single amazingly strong unit.

To thoroughly grasp the magnitude of the operations carried out in this vast building, the actual construction of a new vehicle must be followed as nearly as possible. But a tour cannot be started without an appreciation of the building itself. Size, spaciousness and natural light are the predominating impressions.

Perfect Natural Lighting

THE Factory is built in keeping with Ford Factory traditions the world over. The design is entirely new to New Zealand, so that some facts regarding the construction wil be interesting. The building —of steel, concrete, brick and glass—covers an area of over 3 acres, and with the exception of a high crane bay at the north end, is of single-storey type. A glance at the roof and around the walls explains the extraordinary volume of interior light. Over an acre of glass is in fact used. In addition, all interior steel framework, which has the appearance of intricate lacework, is aluminium painted, which reflects the light. Ford engineers will technically describe the unusual ups and downs of the roof as an "M. and A." roof, which, by the way, is partly covered with asbestos—for coolness and fire-prevention. But no expert knowledge is required to appreciate the amazing and evenly-spread light which is shed over the entire building.

Hand in hand with light is ventilation, a most important item. In this building it is instantly controlled. Huge sections of glass can be opened or closed at the touch of an

Special jigs hold the all-steel floor in position while it is welded into one piece amid a shower of sparks.

electric switch. Racks of clothing suspended in the air present an unusual sight. Each morning, workers' coats, lunch bags and effects are run up to the roof on specially designed racks so that they will be clear of danger and away from dust. A sprinkler system for fire-prevention is arranged in the roof.

Gigantic Crane Bay

BUT this fascinating panorama of steel and glass must be left behind and a start made on the tour. It is fitting to set off from the crane bay, for here are stacked serried ranks of cases containing the parts from Canada and England from which complete units are built up. This is the highest section of the building with a capacity of 624,000 cubic feet—400 feet long and extending the full length of the north side. Overhead is a three-way travel crane built by the company that erected the famous St. Lawrence Bridge at Quebec. This crane can traverse the whole length of the building and at the same time move the load up, down, or from side to side. Railway wagons can be shunted right into the bay for loading and unloading. From the crane bay one moves to the "metal finish" or body-building line.

(At right) Doors being burnished, an important hand operation.

(Below) Teams of skilled men carry out a co-ordinated series of operations as the bodies advance on the moving slat conveyors.

to stand confronted with an amazing array of "bucks" or fixtures. Like giants with a score of hands, these incredible machines hold the body parts together while they are welded amid a shower of sparks by batteries of arc welders, gun welders and bar welders.

Steel—and Still More Steel

STEEL front ends, steel floors, steel sides, steel reinforcing, are all made up from scores of smaller parts. Finally, after a series of most interesting operations there emerges from the main "buck" a completely welded all-steel, reinforced-with-steel Ford body. The bodies are now placed on a moving slat conveyor for the finishing touches, then after travelling about 130 feet are transferred to an overhead mono-rail conveyor, there to commence a long and interesting journey through the paint division.

After leaving the metal finish line the body is transferred to the overhead conveyor to start its journey through the paint shop.

Where Cleanliness is a Fetish

SPECIAL permission is required to enter this portion of the plant. Partitioned off from the factory where cleanliness is almost a fetish, the paint division sets even greater standards of cleanliness. Entering through an air-tight door one notes that a draught blows **outwards.** The explanation is that in the whole paint section a pressure of 5lbs. of air is maintained so that when outside doors are opened any particles of dust in the outside air are kept out.

The route through the painting section winds in and out of huge booths, sanding decks and ovens. First the body goes

into an oven where every particle of moisture is dried out, then through one booth after another, where coat after coat of primer and body-covering are applied. Between each set of operations the bodies are smoothed in huge wet-sanding decks, until they go to the enamel booths, where in case the slightest dust rises ,the floors are oil covered. The final operation is in the enamelling oven, where the lustrous enamel finish is baked on. In this section all air used for ventilation, spray guns and oven heat, is filtered and dried. The huge fans for distributing the conditioned air are located in the roof monitors.

A Machine that Never Stops

OF all the interesting machines, perhaps the paint-mixer is most notable. This ingenious device is kept at work 24 hours a day 7 days a week, so that the enamel is always in perfect condition, free from sludge, skin or lumps. The various paint ovens and booths can be heated by steam coil or air to 400° Fahrenheit. A huge oil-fired boiler provides the steam. The mono-rail conveyor which carries bodies throughout the entire painting operation is of the endless chain type, 850 feet long. All booths have steam coils let into the floors—completely insulated with magnesium. In all, 5 body-coat booths, 3 fender booths, 1 Latex booth and 6 ovens are installed.

(Above) Sections of the paint division showing bodies and cabs on the overhead mono-rail conveyor undergoing various painting operations.

(Right) Body being steam sprayed under great pressure to ensure that the metal will be entirely free from impurities prior to painting.

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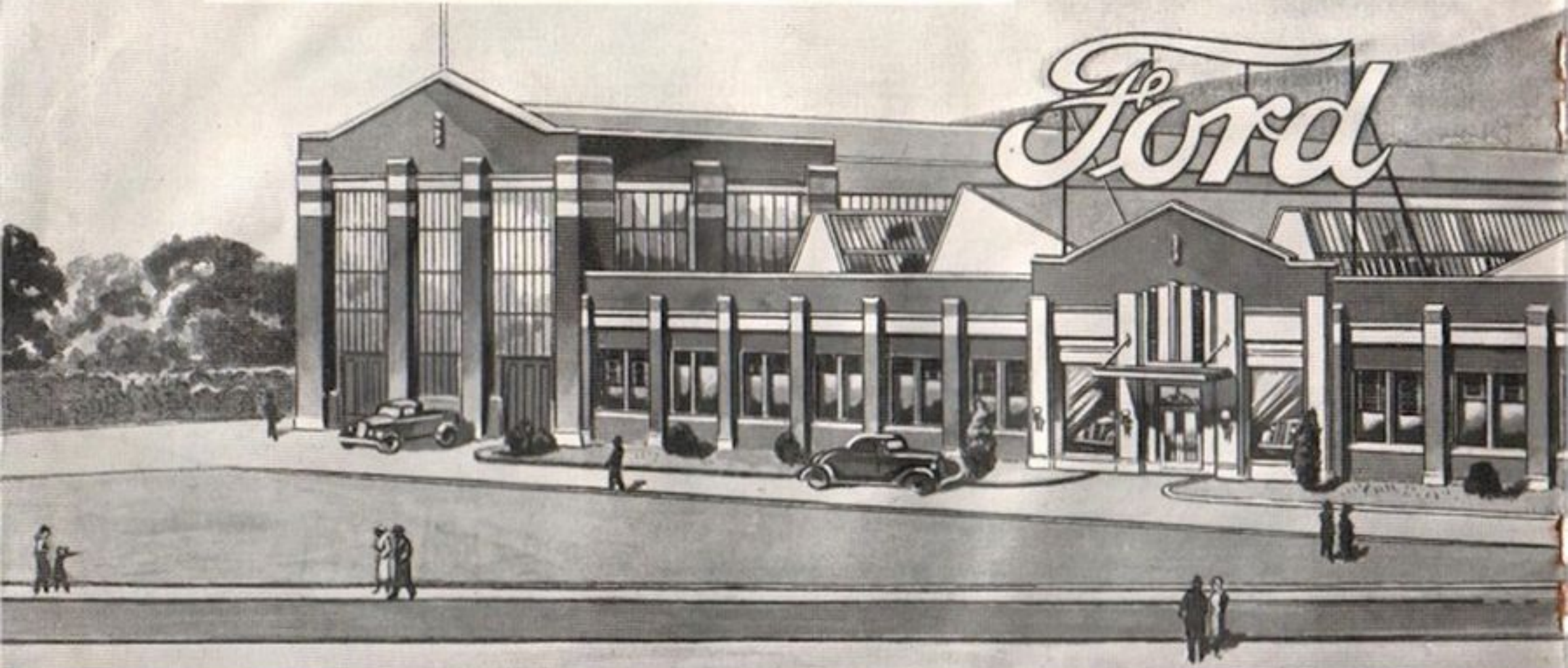
LOWER HUTT



(Above) The Fender oven and overhead conveyor where wheels, hubs, fenders and all other small parts are enamelled and baked.

(Right) As the bodies emerge from the oven they are thoroughly wet-sanded in preparation for further colour coats.

A Hive of Sewing Machines

LEAVING the "Paint," the body moves to the Upholstery or Trim Division. Ladies especially will marvel at the manner in which these bodies are now tailored. Fifteen sewing machines, every one of a different type and each electrically driven by its own motor, whirr and hum. Behind them is a 45 foot cutting table where rolls of material are spread layer on layer, to be cut up by electric cutters with consummate ease. The pieces are then sewn, and the final assemblies handed over to the trimmers. In another section seats and squabs are made up, ingenious jigs again being used to hold them in place, whilst springs, padding and upholstery are added.

On moving conveyors the bodies continue, trimmers fitting the completed upholstery to sides, roof and rear quarters. Seats and backs are put in and the bodies, now complete, are ready to be fitted to the chassis.

The Final Assembly Line

LEAVING the Trim division we cross over to the final assembly line running the whole length of the east wall. Converging on to the main assembly conveyor are sub-assembly lines. Here back axle, front axle and frame assemblies are to be seen being built up, later to be taken up by the chassis assemblers and gradually formed into the com-

plete chassis. The engine is now placed, and then the body drops on to the frame. Mudguards and wheels are added, and at the very end of the conveyor petrol is pumped into the tank, and the radiator filled. At the press of a button the engine awakes to life and, under its own power, the car we have actually seen built up drives off the line to take its place in a long row of vehicles awaiting test, final inspection and delivery.

(Above) Door and window fittings, the safety glass, locks, dash and other appointments are added at the end of the trim line conveyor. The body is now ready to be fitted to the Chassis.

Perfected Organisation

(At Left) Upholstering a squab on a special fixture.

THE outstanding thought, now that the building of a complete vehicle has been followed from start to finish, is that everywhere the men work in an organised, logical way. It is at once apparent that every man knows his job, and does it so as to synchronise with all the other operations, assuring above all things thorough workmanship.

The moving slat conveyors, the overhead mono-rail conveyor, the machines and the men move constantly but steadily. So is production attained—never at the expense of quality or men's ability.

To get good results men must have good conditions, the best equipment and good pay. All these they have in full measure at the Ford Factory.

Many Unusual Features

The assembly trip completed, there are yet to be noted—

The Spare Parts Store with its rows of green painted steel bins, 50 feet long (each part tabulated and numbered), and the packing room adjacent where goods are despatched.

The two great Ingersoll-Rand Compressors, each driven by 125 h.p. motors and each capable of delivering 663 cubic feet of air per minute. This air before being actually used is, as the case demands, compressed, heated, chilled or conditioned.

The four huge Transformers, situated outside, to break down the power needed to supply the factory and machines.

The entire absence of overhead shafting or belt-drives. This is accounted for by the fact that every machine needing power has its own motor—an absolute

(At top) An hydraulic cramp compresses the seat springs whilst the upholstery is fitted.

(In circle) An electric cutter under skilled guidance shears through many thicknesses of upholstery material.

(Left) To tailor the luxurious upholstery used on Ford products, a battery of high speed electric sewing machines is used—some of them unique in New Zealand.

assurance of safety as well as of efficiency. More than 70 English electric motors are in operation.

The Water Tower in one corner of the grounds, a landmark familiar to Wellington. This 20,000 gallon reservoir provides water at great pressure for the sprinkler fire extinguisher system, and all other needs of the factory.

Additional points of interest can still be discovered overhead. Movable window-cleaning platforms are built on to rails under the glass sections of the roof. Here, in safety, cleaners can do their work. There is a similar platform outside for the glass in the walls.

Drinking fountains are dotted about the Factory. In a separate building is the lunch room and canteen for the Factory staff.

The main offices attract attention by their neatness and equipment. All are air-conditioned and insulated against noise. Specially equipped rooms are devoted to Sales and Service Schools. In the Service School is demonstrated the very latest methods of servicing Ford vehicles with modern service equipment. Refresher courses are also held for Service-men from the Ford Dealer organisation throughout the Dominion.

And so ends the visit to the New Zealand Ford Factory, which surely symbolises the wonderful acceptance of a worthy product, the fruit of an admirable inventive genius, a thing rightly made, honestly marketed, and built by well-paid workmen enjoying ideal working conditions.

(Above) Converging on this focal point —Body and chassis finally complete the last stage of their journey. The multitudinous operations carried out in every portion of this vast modern factory culminate on the final assembly line. From this line vehicles are driven off under their own power ready for delivery.

(Left) Lowering a V8 engine into the chassis on the final assembly line.

Every protection is provided for the workers throughout the factory as witness the operator of an electric sander shown above.

An Epoch-Making Policy

THE New Zealand Ford Factory and the whole history of Ford behind it are more than a recital of productive activity and commercial progress; they provide a story of industrial adventure. It is fitting, therefore, to state here Ford policy, which may be adequately summed up as the endeavour:

1. To produce from the best materials obtainable low-priced yet highly serviceable and efficient motor vehicles for the bulk of the people.
2. To provide congenial, healthy, and well-paid work for the greatest number that can be usefully employed.
3. To re-absorb into the business the profits produced by the business, thereby providing still more work.

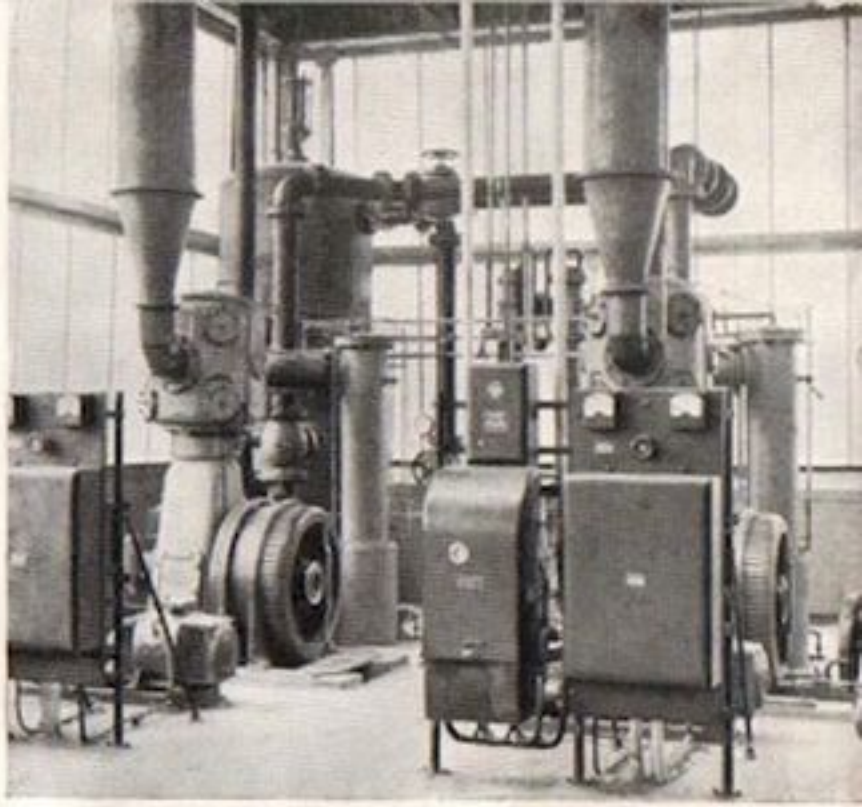
N.Z. Workers to the Fore

IT is a tribute to the workers of New Zealand that with an organisation of the magnitude of the new Ford Factory at Lower Hutt, created to build Ford Cars and Trucks, there has been no necessity to import skilled labour from Canada and England. The objective of the Ford Organisation in New Zealand is to employ New Zealand labour to produce Ford Cars and Trucks, and build quality into the product second to none in the world.

Adjacent to the two main assembly lines, separate units are completed ready for final assembly. The picture below shows V8 engine units being fitted with electrical equipment, carburettor and fuel pump, gear shift lever, and other components.

40-hour 5-Day Week

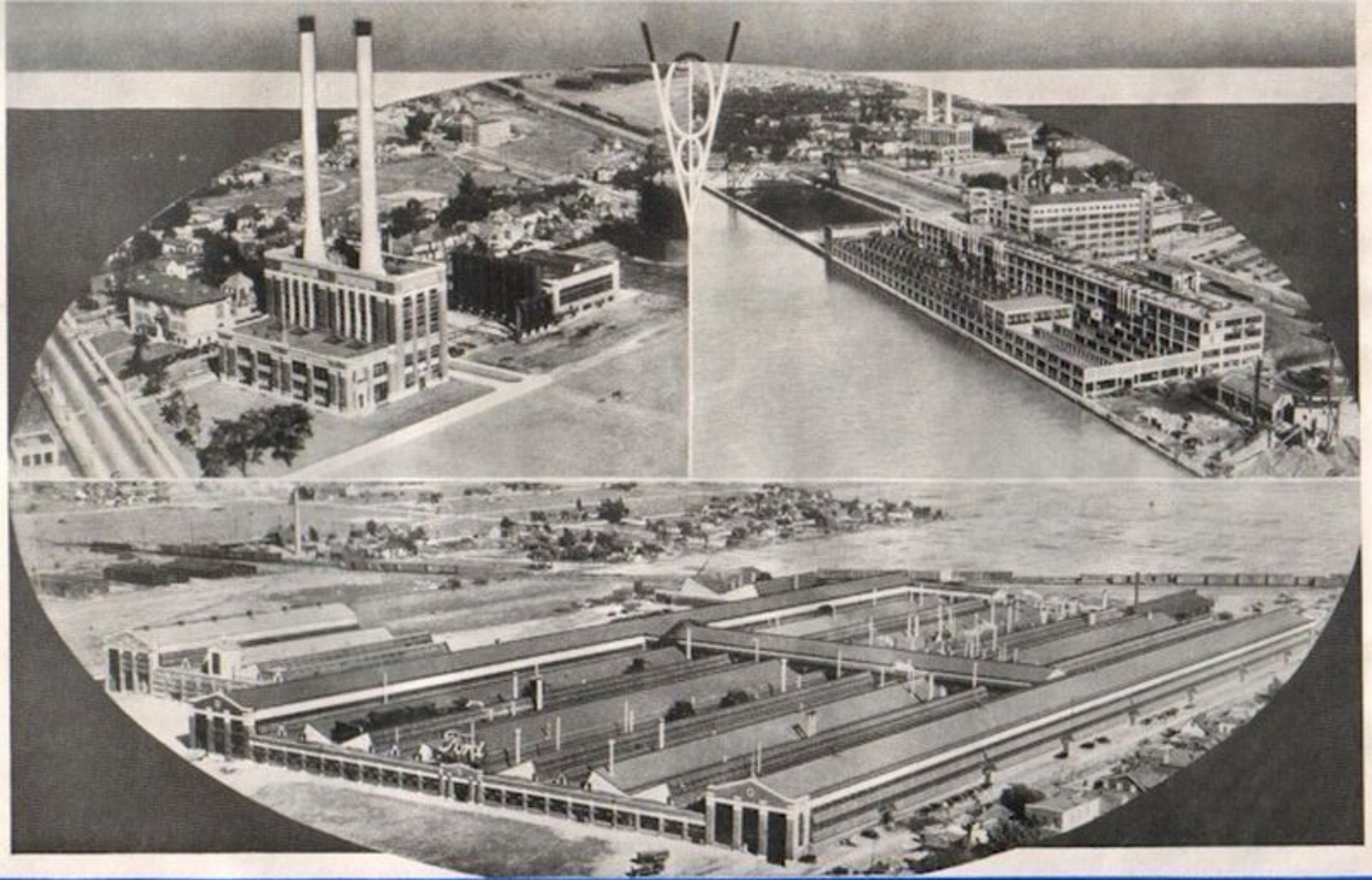
LABOUR in the Ford Factory is provided with good wages, ideal working conditions, and a forty-hour five-day week. Wherever possible, men are employed in the class of work for which they are best suited. But the guiding principle of all Ford employees is one of responsibility to the purchaser. Given the right tools, methods and conditions, quality is assured, and unnecessary labour and time saved. This saving is reflected in the value given in all Ford products.



These two huge compressors, together with all other equipment and tools, are the most modern of their type in New Zealand.

What the Ford Industry Means to N.Z.

EACH Ford car or truck completed at the Ford Factory at Lower Hutt results in a large percentage of its total price starting to circulate through the hands of people in all parts of the Dominion. Most of this money is expended for wages, services, and local materials wherever possible; and much of it becomes eventually wages paid to people in no way directly connected with the Ford industry. For example, the workers on the wharves, who handle the shipment of Ford vehicles to all parts of New Zealand, take part of that money home. It is soon redistributed for food, clothing, rent, etc. It is quickly passed on to the storekeeper, the factory worker, the carpenter, the clerk, the school teacher, the farmer and the miner. It carries the benefits of the Ford industry into every community in New Zealand. New Zealand-built, when applied to Ford products, assumes a new significance in its far-reaching effects. In buying traditional Ford value the New Zealand purchaser has always helped Empire industry. Now he helps New Zealand industry to a greater extent than ever, with resultant benefit to himself.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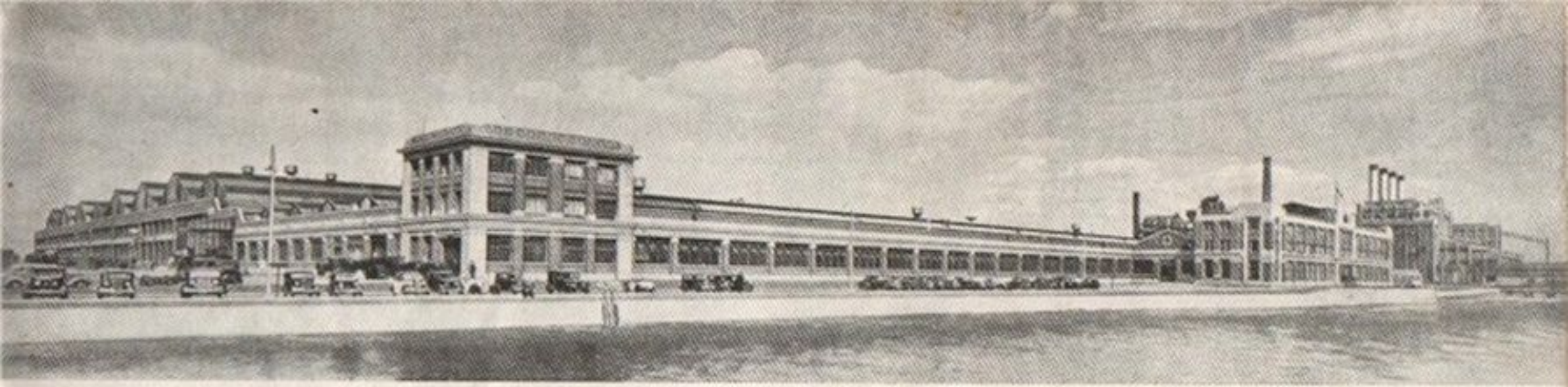

The Largest Motor Organisation in the British Empire

(Above) A view from across the River Thames, of the huge English Ford Factory at Dagenham, 12 miles from London.

(On opposite page) Three views of the enormous Ford Plant at Windsor, Ontario, Canada.

THE widespread extent of the Ford activities throughout the British Empire is in conformity with the great Ford policy of service, which can best be fulfilled by building close to the point of sale. With Ford Cars and Commercial Vehicles now being built in England, Canada, Australia, New Zealand and every other British Dominion, the Ford Organisation has provided facilities for sales and service to adequately care for the investor in Ford Products.

CANADA. The Ford Motor Company of Canada Ltd. is the "Mother" of the British Empire Ford Plants: Founded in 1904 by a Scotsman—Gordon MacGregor—who secured the rights for all time to manufacture Ford Products for all parts of the British Empire with the exception of the United Kingdom.

This shrewd Scotsman realised the tremendous possibilities of the Ford Industry in Canada and overseas, and to-day nine Ford Plants are

(Left) The modern Ford Factory recently completed at Sydney, N.S.W.

(Below) The great Ford manufacturing and assembly plants at Geelong, Victoria.

established in Canada alone. His foresight was further rewarded when, during the years of 1924-26, Ford Factories were built and operated in South Africa, India, Australia and Malaya. The original Factory in Canada, with a staff of sixteen and buildings which covered only one acre of land, produced but one hundred and fourteen vehicles in its first year. Now, the main Ford plant at Windsor, Ontario, Canada, with its buildings covering over a square mile of land, employs 7,000 men and produces over 80,000 new units annually.

(Above) South Africa's Ford Factory at Port Elizabeth.

DAGENHAM, ENGLAND. At Dagenham, in Essex, only 12 miles from London, is the largest and most modern motor works in Europe. This vast industrial centre, covering 71 acres, has facilities for producing 200,000 units per year. It has its own Blast Furnace and Coking Plant and was planned as a complete entity for rapid, smooth-flowing production, from iron ore to the final assembly. From Dagenham, the New Zealand Company will obtain Ford products which are 100% English.

The following Empire Ford enterprises are affiliated with the Canadian Ford Company:

AUSTRALIA. In the Commonwealth of Australia there are five Ford Plants located at Geelong (2), Sydney, Brisbane, Perth and Adelaide.

SOUTH AFRICA. At Port Elizabeth.

INDIA, which maintains four complete assembly plants at Bombay, Calcutta, Madras and Colombo (Ceylon).

MALAYA. Straits Settlements and East Indies are served by the Ford Plant at Singapore.

Dealer organisation also spreads along the Gold Coast of West Africa, through Nigeria, Rhodesia, East Africa, Madagascar, Mauritius and Newfoundland.

Visitors Always Welcome

We would like every man and woman, every boy and girl in the Dominion to visit the New Zealand Ford Factory. Only by a personal inspection can one hope to get a real idea of the size of the plant, the wonderful equipment, the planning and organisation that are evinced, and the attractive working conditions that obtain. Special guides have been appointed to conduct visitors round the plant on a tour that embraces each phase in the building of Ford Vehicles. We feel certain that everyone who comes to "see the wheels go round" in this modern motor-car Factory will find the experience a memorable one.

A Word About Ford Service

No description of Ford activities is complete without a reference to Ford service, which is such an integral part of the Ford idea of the relationship between car-seller and buyer. Briefly, the distinguishing facts about Ford Service are:—

1. Interchangeability of parts with the consequent standardisation of those parts has simplified the Ford Service problem to a point unparalleled in any other industry.
2. In New Zealand there are more than 70 authorised Ford Dealers ready to advise about Ford Products. Each carries a large stock of Ford Parts, and is competent to effect speedy and efficient repairs.
3. Ford is the best understood motor vehicle, mechanically, in New Zealand.
4. The motorist knows in advance what Ford service will cost him.
5. Charges for Ford service work are the lowest possible, being based on a time study of all operations.
6. Genuine Ford Parts are available at such low prices that they are beyond comparison.

The words "You help New Zealand when you buy Ford" are no mere slogan, but a definite statement of fact and a sure guide to economy, quality and satisfaction.

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