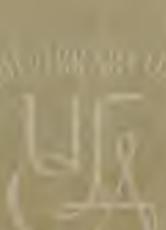
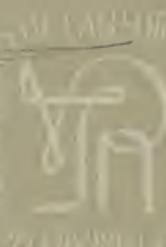


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HENRY FORD

*His Life—His Work—His Genius*



HENRY FORD

# HENRY FORD

*His Life—*

*His Work—*

*His Genius*

BY

WILLIAM ADAMS SIMONDS

To

WILLIAM ADAMS III

ROBERT BRUCE

MARJORY CHARLOTTE

KLUANE JUNE

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FLOYD CLYMER

PUBLISHER

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## ANNOUNCEMENT

Through exclusive arrangement with the Bobbs-Merrill Company I have taken over the publication of HENRY FORD, HIS LIFE, HIS WORK, HIS GENIUS. In my desire to include in the list of books I publish on the history of the automotive industry, I selected this book as the one offering the most complete and accurate story of the life and activities of a great American.

The original text of the book remains unchanged with the exception of some revision necessary to bring the events in the life of Henry Ford and the history of the Ford Motor Company up to date. This has been done by Mr. Simonds, the author. Some additional illustrations have been added in the form of a Supplement by me as publisher.

Mr. Simonds was associated with Mr. Ford for nearly 20 years, during which time he had the opportunity of not only knowing Mr. Ford intimately but gathering the wealth of historical material that is included in this book. In my opinion no author could have done the job as well as Mr. Simonds. I am happy to recommend this book to the thousands of customers who have purchased my other publications.

*Aloyd Clymer.*

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**A CLOSE-UP OF THE CHARLES CLIFTON AWARD**

This statuette, weighing nine pounds, standing 14 inches high and eight inches wide, was presented to Henry Ford and thirteen other automotive pioneers at the Golden Jubilee Celebration of the Automotive Industry held in Detroit, May 31, 1946.—*Detroit News Photo.*



Henry Ford as a young apprentice in Detroit, enlarged from a group photograph.

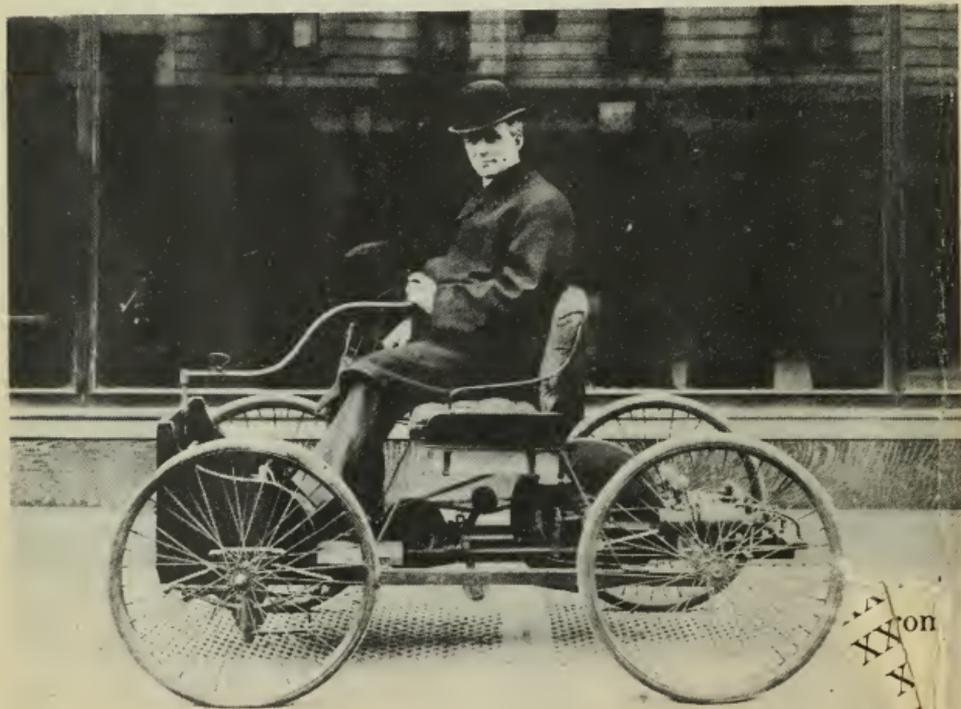
# CONTENTS

		PAGE
	FOREWORD . . . . .	13
I	THE YEAR OF GETTYSBURG . . . . .	16
II	BOYHOOD . . . . .	23
III	COURTSHIP AND MARRIAGE . . . . .	35
IV	THE FIRST FORD CAR . . . . .	50
V	GOING INTO THE AUTOMOBILE BUSINESS . . . . .	57
VI	STRUGGLE FOR RECOGNITION . . . . .	67
VII	BIRTH OF THE COMPANY . . . . .	77
VIII	GETTING UNDER WAY . . . . .	88
IX	CONTROL . . . . .	101
X	SMASHING THE MONOPOLY . . . . .	113
XI	A GIANT STIRS . . . . .	128
XII	\$5 FOR EIGHT HOURS . . . . .	136
XIII	THE PEACE SHIP . . . . .	151
XIV	WORLD WAR NO. I—LIBERTY MOTORS AND EAGLE BOATS . . . . .	168
XV	BUILDING THE ROUGE PLANT . . . . .	180
XVI	WEATHERING THE STORM . . . . .	193
XVII	THE AMENDE HONORABLE . . . . .	202
XVIII	IN MEMORY OF A FRIEND . . . . .	213
XIX	THE BANK HOLIDAY . . . . .	227
XX	NRA . . . . .	241
XXI	UAW . . . . .	261
XXII	TWO ANNIVERSARIES . . . . .	272
XXIII	THE GAME OF SMEAR . . . . .	285
the IV	MILLIONS FOR DEFENSE . . . . .	297
XV	PEACE WITH LABOR . . . . .	307
XXVI	ALL-OUT FOR VICTORY . . . . .	317
XXVII	WILLOW RUN . . . . .	329



*Photo by Ford Motor Co., Dearborn*

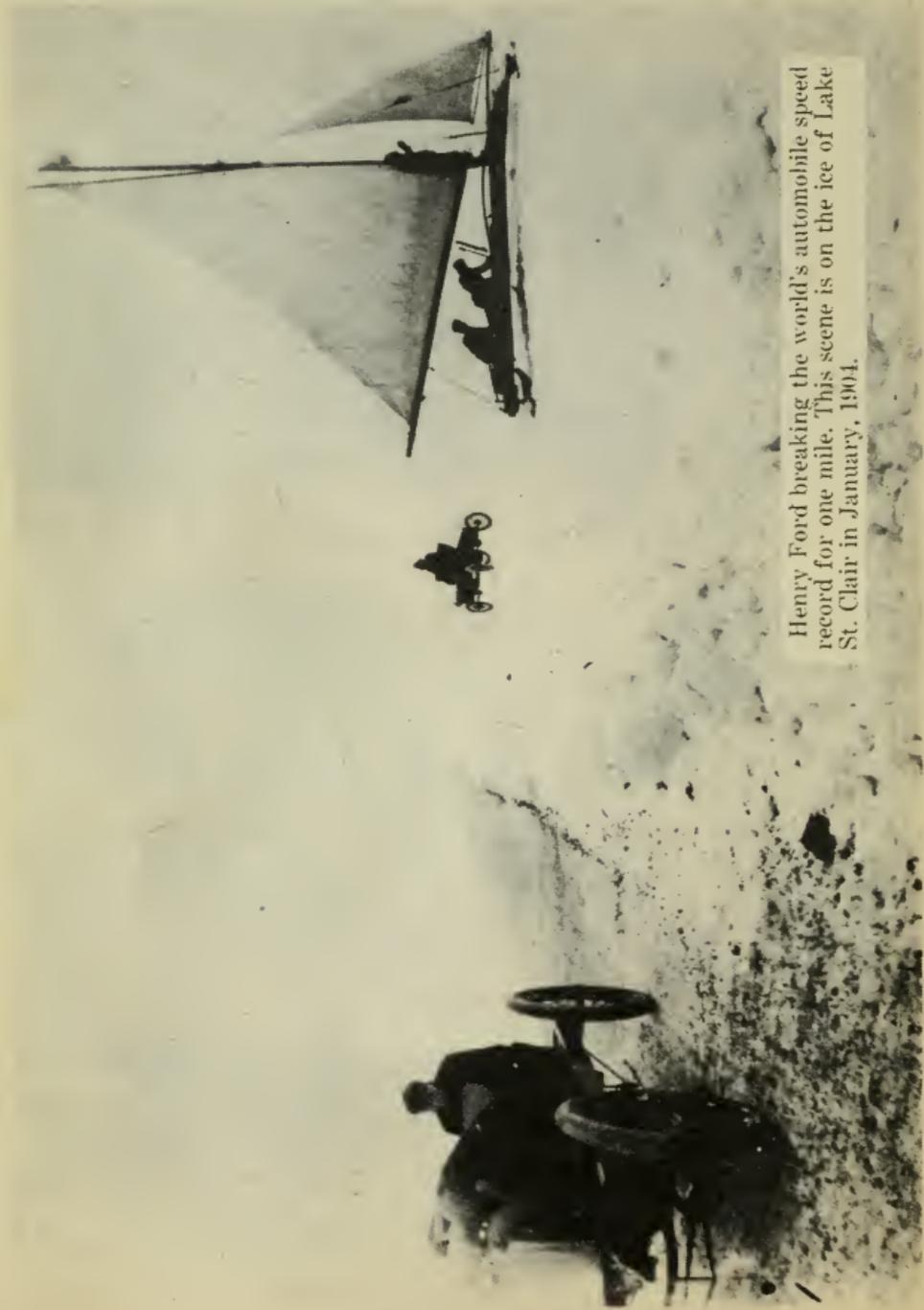
The first Ford shop, where the first Ford car was built in 1893, in the rear of Henry Ford's home on Bagley Avenue, Detroit.



The first Ford (1893) with Henry Ford at the tiller. This car was built and operated ten years before Henry Ford organized the Ford Motor Company and began to make even a slight success as a manufacturer.

## ILLUSTRATIONS

Henry Ford . . . . .		<i>Frontispiece</i>
	<small>FACING PAGE</small>	
Ford's "Automobile Plow" . . . . .		36
Henry Ford as a Young Machinist Apprentice . . . . .		37
The First Ford Car Leaves its Garage . . . . .		98
Interior of the Bagley Avenue Workshop . . . . .		99
The Car that Beat Winton and the Famous "999" Racer . . . . .		130
Three Early Ford Plants . . . . .		131
An Early Ford Advertisement . . . . .		196 ✕
Senator James Couzens and Henry Ford . . . . .		197
Model T No. 10,000,000 Meets the First Ford Car, and the First Ford Car Meets the 25,000,000th . . . . .		248
The Ford Rouge Plant . . . . .		249
Mr. Edison Signs his Name in Concrete . . . . .		274
Henry Ford and Thomas Alva Edison . . . . .		275
Mr. Ford's Seventy-fifth Anniversary . . . . .		302
The Fords Go to War . . . . .		303



Henry Ford breaking the world's automobile speed record for one mile. This scene is on the ice of Lake St. Clair in January, 1904.

# 39 $\frac{2}{5}$ Seconds

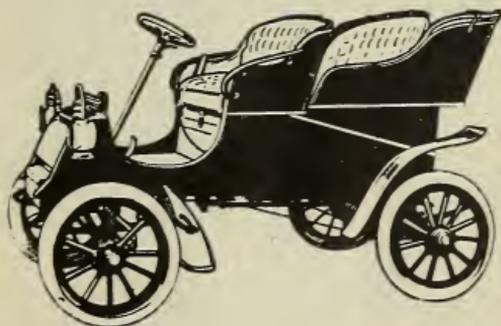
## The Record of Henry Ford

Building the wonderful "999," and driving it to this marvelous record, which is 6 $\frac{3}{5}$  seconds faster than any automobile ever went before, is merely the pastime of Henry Ford. His real work—the business that engages all his brain, skill and experience is the building of FORD MOTOR CARS—the best runabout machines that have yet been produced.

We have secured the New York Agency for these superb cars; and now have them on sale, at the Automobile Show, and at our Automobile Station.

The car in which Mr. Ford made his wonderful run is part of our large exhibit at the Automobile Show. Of course, everybody interested in automobiling will want to see it.

Owing to the late hour at which our plans were consummated, the only space we could secure at the Automobile Show was in the Basement; but we have four large, fine spaces there—Nos. 19, 20, 21 and 22, where we shall be glad to show you the famous racer, as well as the splendid FORD MOTOR CARS.



## The Ford Motor Car

today represents the most advanced type of automobile construction. The double cylinder motor not only gives the car unmatched powers, but it reduces the vibration, which, together with the four full elliptical springs, produces an ease of riding unknown in any other car of its class.

We have FORD MOTOR CARS ready for immediate delivery.

**Ford Runabouts, \$800. With Tonneau, \$900.**

Temporary Salesroom at our Automobile Station, 138-140 East 57th street.

# John Wanamaker

An early advertisement by John Wanamaker announcing the breaking of the World's speed record in 1904 by Mr. Henry Ford. Notice in the fourth paragraph the apology stating that the only space they were able to secure at the automobile show was in the basement of the building.



Famous personalities enjoying an outing: Left to right, Henry Ford, Thomas A. Edison and President Warren G. Harding.

## FOREWORD

THIS is the story of an eminent American, whose retirement from active participation in affairs in 1945 brought to a close a fabulous career. Born in the year of the Battle of Gettysburg, launched in the then infant automobile industry at the age of 40, he created one of the greatest organizations of all time and when he retired, was the only one of the early pioneers who had retained control of the business that he had founded.

Along assembly lines wherever mass production forged weapons of defense and munitions of offense during the world struggle, America gave thanks for the automobile maker who started Detroit on its road of enormous productive activity. On the day that he marshalled his technical skill and resources to help defeat the Axis powers, his previous accomplishments—development of the poor man's automobile, establishment of the \$5.00 daily minimum wage for 8 hours' work, experiments with soya beans and other agricultural products in industry, building of a new kind of educational program, preservation of early Americana—took on new significance.

A lover of peace and a hater of war, he realized that the surest way to permanent peace sometimes is to meet the aggressor on his own ground and let him have it harder than he sends. Even before Pearl Harbor he had taken off his coat and rolled up his sleeves.

Reading of the boyhood and youth of Mr. Ford, of his first struggles and his later triumphs, one realizes that during fourscore years he has never deviated from certain simple fundamentals by which his life was charted from the first. Those who have not found him understandable, or who have regarded some of his actions as inconsistent, might alter their opinion if they took that fact into account. He has not done the popular or expedient

thing, or chosen the course of least resistance. Rather, adherence to those fundamentals has been the easier way for him when to others it would have seemed more difficult.

In his presence one feels that one is with an "original"—in the old sense of the word, when most communities possessed a man who had his own original conceptions, compared with whom other persons seemed to be standardized types.

Many of the commoner frailties that beset most men have not been observed in him, even by his closest associates. Either he conquered them at an early age or never knew them. This does not mean that his career has been free from mistakes; in a personal way he has chosen to lead the clean life. Throughout his manhood he has cherished one wife. Jewelry to him has meant a watch. Food and drink are means of health, not of gratification. In exercise as in diet, he is moderate.

Yet his days are anything but gloomy. He radiates joy in living, interest in everything. On the ballroom floor he is the most graceful waltzer or quadrille dancer. He can outrun most of his employees. He lives close to Nature, close to trees, birds, and all growing things. Among children he is completely at ease, as they are with him.

Almost twenty years of association with Mr. Ford in various capacities have led the writer to select four traits which help to explain his character. By nature he is a builder of things, an inventive mechanic who understands a machine best by taking it apart and putting it together with his own hands. That was evidenced in his boyhood when he learned to repair watches and clocks; it extended in later years to steam engines, gasoline engines, motor cars, airplanes, tractors, and every kind of machinery.

Next is a gift of foresight—a kind of sixth sense which may have been inherited from his Irish forebears. It has revealed itself in several ways: his choice of the right man for the right job; his preparation against eventualities which others did not foresee.

Fidelity to principle, right or wrong, and support of the

minority have been outstanding among his qualities. He has always been ready to fight for what he believed to be right, irrespective of odds. No cause has been too small and no opponent too great to sway him from a stand based on the fundamentals learned in early life.

In him, too, is a great deal of sentiment. He has been called "an engineer poet." One cannot visit Greenfield Village and the Chapel of Martha-Mary without awakening to this fact. The honor shown by him to his mother's memory, his devotion to his wife, are reflected in every activity. His family has known him as a modest, kindly gentleman. His friends have found him gracious and unaffected. His adversaries have discovered that while he struck blow for blow and never knew when he was licked, he fought fairly and never held a grudge.

It is too early now to evaluate the place of Mr. Ford in history, or how far his influence will be traced in world happenings during the first half of the twentieth century; and this volume makes no pretense in that direction. Rather, it seeks to relate, as simply as its subject himself would wish, the Arabian Nights' tale of the Michigan farm boy who rose to high esteem without losing his sense of values, his love of Nature, or his faith in God.

WILLIAM ADAMS SIMONDS

Dearborn, Michigan



Henry Ford and his son, the late Edsel Ford, study a miniature replica of the Ford Rouge Plant

## CHAPTER ONE

### THE YEAR OF GETTYSBURG

#### 1

THE date was August 12, 1896; the scene was the banquet room of the Oriental Hotel at Manhattan Beach on Long Island. Seated around the oval table were leaders of the electrical industry from the big cities of the East and Middle West, and at the head sat the man whose researches had made possible their industry and whose name their companies bore—Thomas Alva Edison.

About halfway down the left side in the midst of one of the delegations was Henry Ford, young chief engineer of the Detroit company's plants, who was attending his first convention. The sessions had supplied him with helpful information and had enabled him to meet men who had pioneered the electric light with Edison—Samuel Insull of Chicago, John W. Lieb of New York, Charles L. Edgar of Boston, and many more.

Talk during the dinner ranged from the coming campaign between the new Democratic leader, William Jennings Bryan, and Governor William McKinley of Ohio, to the situation in the West Indies where Cuba sought relief from her Spanish overlords. Part of the afternoon's discussion had been given over to the use of storage batteries in the propulsion of vehicles, and during a lull in the table conversation talk again reverted to that subject.

The head of the Michigan group, Alex Dow, leaned across to address Edison.

"There's a young fellow"—pointing to Ford—"who's made a gas car."

Mildly interested, the diners ceased their deep-voiced chatter

and looked around. Dow went on to tell how one day he had heard a strange noise outside the Detroit main plant, a sputtering and putt-putting. Glancing out the window, he saw the four-wheeled carriage standing by the curb. On the seat was a young woman whom he recognized as Mrs. Ford, wife of the chief engineer, and on her lap was her young son Edsel.

Mr. Ford had stopped by for something. Soon he reappeared, mounted beside them, moved a handle, and off they went, winding along the street while people halted to stare or laugh or grow indignant.

The electrical men enjoyed the story. Someone asked what made the car go, and Ford began to describe the mechanism. Despite his deafness, Edison was able to understand most of it, for it was spoken loudly enough for those across the table to hear.

Lieb of the New York company motioned for Ford to draw a chair closer, and then Edgar of Boston thought of a better idea. He traded places with the Detroit man, seating the latter next to Edison.

Soon the inventor was asking questions. He wanted to know whether the gasoline was exploded in the cylinder by electricity. Using the back of a menu card as a drafting board, Ford rapidly sketched details, explaining the principle of his make-and-break mechanism.

Down came Edison's fist with a bang, rattling the glassware.

"Young man, that's the thing. You have it. Your car carries its own power plant—it's self-contained—no fire, no boiler. You have the thing. Keep at it."

That bang on the table brought the turning point in Henry Ford's life. It came at a moment when he was disheartened, uncertain whether to follow the conventional pattern of a comfortable job and an assured future, or to abandon it and heed the ambition that he had formed back in the days of his youth on the farm—to supplant the horse with the power of a practical and economical engine.

So far as the Edison company was concerned he already

might have been considered a success. At the age of 33 he was earning what was regarded as a better-than-average income as the head of its mechanical department. His reputation was that of an unusually efficient engineer, able to make a steam engine do everything except stand on its head. A long and pleasant period of employment with a pension at its end might have been his lot. But he could not do justice to growing responsibilities and at the same time continue his tinkering with the gas engine.

His neighbors knew all about that engine. Evenings while they sat on the front porch and argued about the ratio of silver to gold, or watched the trotting horses pulling shiny buggies along the street, they heard him hammering and banging away in the little alley shop behind his house, and shook their heads. No one but a queer fellow would stay up all hours of the night seeking to do away with the noble and useful horse.

During the long period of waiting, while he sought to hitch a gas engine to wheels, the girl from the Greenfield Township farm who had married him nine years earlier stood staunchly beside her independent-thinking husband. She had to forego certain pleasures; money was needed for tools and she had to manage without luxuries; but those minor trials had not swerved her from her faith in him. She was his one "Believer."

Now another had been added, for Edison himself had nodded his approval. There had been no pained smiles around the dinner table that night as the chap from Detroit explained his ideas. Rather, there was flattering attention, and at the end of the chat there was no discouraging comment, "Aw, you can't beat electricity"—no criticism, "What good is it?"—no croaking prediction, "You'll never make it work."

To the younger man, standing on the threshold of an unexplored world, came the challenge from the older one already on the pinnacle: "Keep at it."

How Mr. Ford met that challenge formed the story of his life from that point onward. Courage was a requisite, faith in his own ideas, belief in man's desire to escape the narrow bound-

aries defined by the radius of the horse-drawn vehicle, confidence in the ability of mechanical combinations to provide the means.

After he returned home, once more his lathe hummed, one by one the parts fitted into place; and as a result of his decision within a score of years he climbed from the obscurity of that Detroit electrical concern to world eminence, creating an enterprise which has been heralded as the greatest industrial empire achieved by one man. Great as was the Ford institution, it was but the lengthened shadow of Henry Ford, the man.

## 2

Halfway in the republic's history stands the year of Gettysburg, for this country is still young enough to have been spanned by two lifetimes, the one beginning with the signing of the Declaration of Independence and continuing until the Emancipation Proclamation; the other stretching from 1863 unto the present day, approaching the middle of the twentieth century.

There was a similarity between these periods. Each was marked by the discovery and penetration of a frontier rich in untapped wealth. The first yielded land, timber, minerals; the second—with its development of power—produced oil, steel, motors.

Paralleling each other in the two periods, moved the entrepreneurs, immigrants or the sons of immigrants. Pushing their way beyond uncharted frontiers, they first exploited the vast reservoir of natural resources and later explored the equally vast domain of the machine. Among the latter, born in the year of Gettysburg, was Henry Ford.

Ireland was the land of his family's origin, although English and Scotch blood was mixed with the Irish strain. As far back as memory could recall the Fords had been mostly farmers. During a great agricultural depression two brothers—James and George—had migrated from their Cork County homes to America. They were followed by a third brother, John, who was

accompanied by his three sons—Henry, Samuel and William; 1847 found them seeking fresh homesteads in the comparatively young state of Michigan. William in that year was a sturdy young man of twenty.

Beyond the northern and western limits of Detroit stretched a heavily wooded area, where the winding branches of the Rouge River and tributary creeks had worn channels through a broad expanse of forest and swamp. Here square mile upon square mile of well-watered ground awaited ax and plow and ditch to be transformed into fertile fields. The countryside clear through to Woodward Avenue was unbroken wilderness and brush.

The district in which the Fords built their cabins was first called Springwells Township. Beginning at the Detroit River, it extended along the city's western outskirts as far north as the Old Sauk Indian Trail, and beyond. About the time of the Fords' arrival the northern half was separated from the lower and given the name of Greenfield Township.

West was Pekin Township, with a collection of shanties perched on a ridge of high ground south and west of the Rouge River, nucleus of a village. There were saloons, a few stores and a livery stable. Just outside the farthest house was a water-driven flour mill; below the dam across the stream many a fishing party spent the day.

Far enough back from the Detroit River to possess thorough drainage, Pekin Village was an attractive spot to both Indians and white men. Near by was the popular Conrad Ten Eyck's tavern, where wolf steaks were sometimes on the menu. It is said that travelers who supped at the tavern used to call themselves "Wolverines," from which the state received its nickname.

One of Michigan Territory's most colorful characters, "Coon" Ten Eyck was short and fair and wore his hair long like an Indian's. He was both United States Marshal and sheriff of Wayne County. It was he who gave the township its name of Pekin. While at the legislature he learned that another name already selected had been pre-empted elsewhere, and he

suggested the Chinese substitute in reasonable certainty that no other district would choose it.

Sprawled on a sandy knoll at a four corners near the Rouge River bridge, his hospice was a welcome beacon to anxious emigrants journeying over the corduroy or floundering hub-deep in the thick and sticky mud, westward bound for the Illinois country.

Its site, one century later, served as the entrance to Fair Lane, the woodland estate forming the home of Mr. and Mrs. Henry Ford. Hand-made bricks from its foundation were used by them in the huge fireplace on the lower floor.

## 3

In time Pekin Village was changed to "Dearbornville," honoring the general who had commanded the American forces at the outbreak of the War of 1812; and the War Department selected it as site of an arsenal where artillery could be mounted, munitions stored, and small arms repaired.

For a short period the arsenal was the largest structure in all Michigan, being three stories high, exclusive of basement. Its bricks were made at a works near the river, owned by Titus Dort. One of his descendants later formed a partnership with W. C. Durant at Flint and with him founded the General Motors Corporation.

Northeast of the hamlet was a settlement of Scotch families who had migrated there a few years earlier, led by Richard Gardner. William Ruddiman, an Aberdeenshire native, and several others joined him in clearing the timber and draining the swamps. Their broad acres were strung along a declivity dug by Roulo Creek, whose ice-covered surface was the only route open in winter time to the Chicago Road.

The homesites of the Fords were about a mile beyond the Scotch Settlement.

To the youth William Ford, Michigan was a land of opportunity, with plenty of work for a husky young man of ambition.

Handy with tools, he helped complete the arsenal; later he joined the crews laying tracks westward for the railroad.

All this, however, was but temporary against the day when he had accumulated enough money to buy a tract of ground. Farming was his chosen occupation, and when he returned to it he hired out to one of the township's earlier settlers, Patrick O'Hearn, who owned 240 acres admirably located near both the Rouge River and Roulo Creek. The soil was well watered, black and fertile.

In the O'Hearn home was a dark-haired, blooming girl, their foster daughter Mary Litigot, who was then in her late teens. Her family, like the Fords, had settled at an early date in the Detroit region. The fact that William was about fifteen years her senior did not prevent a romance from blossoming, and, after he had purchased 40 acres from his future father-in-law, culminating in marriage. The year was 1862.

The home into which the young couple moved was a low rambling white house located some distance south of the other Ford families. It sat in a grove of trees on one corner of the forty, facing north, with orchard and barn adjoining, and had four rooms at first. South and west of the house, in a wide, willow-bordered curve, flowed Roulo Creek, emptying into the Rouge.

On the morning of July 30, 1863, the pages of the *Detroit Gazette* were filled chiefly with war news. Nearly four weeks had passed since high tide had been reached at Gettysburg. Five full companies of militia gathered at Dearborn in the arsenal, together with a cavalry detachment and the provost guard.

"Recruiting is now a very dull business," reported the newspapermen, "but it is expected that it will be livelier after the harvest work is finished in the country."

In the little white farmhouse there was much bustling and hurrying between the kitchen and the bedroom. One of the older neighbor women, "Grandma" Holmes, was directing affairs, and it was with her help that a male child was safely delivered. He was named Henry after his uncle.

## CHAPTER TWO

### BOYHOOD

#### 1

IN THE year of Henry's birth the fate of the Union still teetered in the balance of what was then the world's bloodiest war. The halfway mark had been reached, and the stage was being set for the march through Georgia, the capture of Richmond, and the handclasp of two great Americans at Appomattox Courthouse. The sands of history ran swiftly in those first few months while the infant on the Dearborn farm lay quietly in his cradle.

To farmers of the Great Lakes region and the Ohio Valley the conflict had brought an increased demand for products of the soil; long daylight hours were filled with endless work, most of it performed by hand. Mowing was done by scythe, threshing by flail. Such industries as existed for the farmer's use were scattered along the small streams—grist mills for grinding his grain, mills for carding his wool. Meat was smoked, yarn spun, fruit preserved, and butter churned at home. The packers, the great flour mills, the creameries and the canneries were still in the future.

Detroit with its fifty thousand population was a sprawling frontier town. Indians shuffled along the sidewalks in their blankets, the squaws carrying papooses or large piles of baskets on their backs. But the old days were passing swiftly. Within three years the first Pullman car was to enter the city from the West.

Principal manufacturing was that of grinding corn and wheat. Such industries as lumbering and textiles were far below it in numbers engaged. The average income of workers was about \$330 a year.

Here and there could be glimpsed portents of new giants stir-

ring. Oil had been struck in Pennsylvania; the age of steel was being ushered in by the development of the open hearth. By the time Henry rounded his sixth birthday the last spike was to be driven in iron rails spanning the continent.

Tom Edison, who was to play a chief role in events just ahead, was preparing to leave his Port Huron, Michigan, home and begin life as a telegrapher. Little was known about the business he proposed to enter; little in fact was known of the electrical impulse that made telegraphy possible. More than any other he was to unlock its mysteries, from the day he sent two messages for the first time over a single wire, to the day when as the Wizard of Menlo Park he imprisoned light in a glass globe.

But in 1863 Bell's telephone was still unknown. So were Sholes's typewriter, McCormick's reaper, and the electric dynamo.

When Henry was not quite two years old the awful tidings of the President's assassination flashed over the wire to Detroit. Houses and stores were hung with black; schools were closed; and the entire population assembled to view a procession two miles long, marching to solemn dirges.

## 2

The earliest event he could remember took place two years later. His father, holding Baby John in his arms, led the family to a corner of the barnyard not far from the house. There, under a fallen oak tree, they found a song sparrow's nest holding four speckled eggs. The memory lingered in Henry's mind, as did a later one of his father turning the plow aside in order not to disturb a bird's nest in the furrow.

From that time forward he was a lover of birds. He knew the day in April when the bobolinks returned to Dearborn from the South. On his extensive estate today more than two thousand birdhouses have been set up. He is able to recognize any native bird after hearing its call. When a bird built its nest in one of

the most frequented walks in historic Greenfield Village, half a million visitors were asked to detour their steps in order to leave the mother unmolested.

The first few years of the boy's life were spent at home under his mother's watchful eye. Brothers and sisters came in steady succession until six in all had been born, then two more rooms were added to the homestead.

The mother's hands were always occupied—what with skimming the cream from the deep milk pans, spinning the rovings of carded wool, overseeing the children's meals, making their clothes and performing the endless duties that filled the waking hours of a farmer's wife. There were pickles, jams, jellies and vinegar to be made and stored away. Onions, peppers and popcorn had to be braided in long strips and hung in the attic. Mrs. Ford was proud of her husband. Not only was he a member of the school board and road commissioner, but he was also vestryman of the village church and master of the Dearborn Lodge.

The Ford farmhouse occupied a unique position, straddling the township line—part of it was in Springwells and part in Dearborn Township. It was said that as a boy Henry went to bed in Dearborn and ate his breakfast in Springwells, because the line passed through the exact center of the home.

When he commenced school he was eligible in either township since his father paid taxes in both. He never forgot the date when he attended for the first time, January 11, 1871. The little red brick school in the Scotch Settlement was a mile and a half from the farm, and he walked the distance morning and evening carrying his lunch pail. His first seatmate was one of the Ruddiman boys, named Edsel. The two boys sat together at one of the wooden double desks in the far corner of the room.

Pretty Miss Emilie Nardin, the teacher, who was nineteen years old when she entered the district, boarded with the Fords. The always active Henry frequently found himself in trouble. "He got stood up in the corner for misbehaving," recalled a schoolmate, "and even got spanked with the same ruler I was spanked with. Henry was like all the rest of us. Usually we had

to sit with a girl as punishment for whispering or passing notes during school."

Years later, when Mr. Ford decided to acquire the brick schoolhouse and restore it in Greenfield Village, furnishing the interior as it had been when he and young Edsel Ruddiman were seatmates in the back row, he searched far and wide for a black round iron stove like the one that had stood directly in front of Miss Nardin's desk. So insistent was he on certain lettering and ornamental designs that finally someone asked: "How do you remember so well what the old stove looked like?"

"That's easy," he replied. "When a boy got in trouble he was brought up front and placed on the 'mourners' bench' directly under the teacher's eye. You could get a good view of the stove from that location, and I sat there so much of the time that the stove was indelibly impressed on my memory."

For a few terms he was taught by John Brainerd Chapman, who, besides conducting classes in the three R's, spent Saturdays at the cooper's trade. Chapman weighed 275 pounds, and received \$5.00 a month above the usual \$45.00 because he was so large. His home is now preserved in Greenfield Village.

One of Henry's teachers, F. R. Ward, noted that he was naturally fast at figures and made him do sums in his head instead of on the blackboard. Thanks to him, Mr. Ford in later years seldom had to put pencil to paper when working out a problem.

## 3

The room in which young Henry slept was under the eaves on the second floor, and its one window looked out over the yard toward the windmill beyond. Near the open pane the boy set up a shelf to serve him as a workbench. After supper he perched here on a stool and occupied himself with repairing ailing clocks and watches. During the cold Michigan winter evenings a lighted lantern on the floor near by kept his feet warm.

His first tools were fashioned by himself. There was a screw driver made by filing the point of a shingle nail. A corset stay

became a pair of tweezers. Knitting needles underwent similar transformation.

The first watch he remembered belonged to one of his father's hired men named Adolph Culling, who had brought it all the way from Germany and often showed it to the interested boy. As he grew older, whenever he found a clock that needed fixing he took it apart and learned how it ran. A neighbor jokingly remarked that every clock in the Ford home shuddered when it saw him coming.

Before long he was repairing all the ailing clocks in the vicinity, until his practical-minded father put his foot down. He told Henry he shouldn't be doing the work unless he was paid for it. The boy, however, was not easily deterred. After dark he slipped from home to a neighbor's house, obtained the clock that needed attention, took it to his room and after he had it running again, delivered it before he went to bed.

In a little while he was ready to tackle watches, also. One Sunday Frank Hutchings brought a large gold watch with a heavy chain to the Scotch Settlement church service, and showed it to Henry. It was a beautiful watch but it wouldn't keep time, and the youth offered to discover what was wrong with it. After church he carried it to his uncle's carpenter shop and took it apart.

Investigation showed that one of the jewels was out of place, and by use of a pair of tweezers he succeeded in getting it back, so that the watch started running again. Three years afterward, when he had learned more about repairing watches, he borrowed it again and corrected the trouble permanently.

All the neighborhood watches were turned over to him, and if no wheels were missing soon they were repaired and running.

One day the boys thought they would play a trick on him. They took a watch completely apart—every wheel and screw was removed from the case—and then asked him to fix it. They thought that he would never be able to find the correct places for the parts, but in a half-hour the watch was running perfectly.

[4]

In District School No. 1 there were no grades. Along with other Americans of his generation Henry derived most of his education from the McGuffey Readers. To the scholars of the seventies, these antiquated text books with their quaint woodcuts and homilies on good versus bad behavior opened a whole world of literature and learning.

The lessons described activities close to the child's heart. A no longer stood for Adam in whose fall we had sinned all. A was "AX," a tool everyone recognized as a necessary implement of the woodshed.

As the pupil progressed he became acquainted with "The Village Blacksmith" and "The Children's Hour"; he came to know Whittier and Scott, Bryant and Shakespeare. Although often a somber note pervaded the selections, one found also love of dumb animals, fair play, truth and honor emphasized.

About all that Henry used his geography for was to stand it up in front of him on his desk, open it, pull an old brass watch out of his pocket, and go to tinkering with it. One of his teachers remarked: "Henry, you seem to use the geography more than any other book."

Henry just grinned and so did the other pupils.

Among Henry's schoolmates were James Ruddiman, John Haggerty and Charlie Forsythe. In later years James married Margaret Ford.

At home Henry performed the usual chores—kept the kitchen woodbox filled, went after the cows at night, helped with the milking, chopped kindling, learned to harness a team of horses. By the time he was twelve he was plowing and doing a man's work about the farm.

His play was like that of other boys. Whenever he could get away he went swimming in the river or fished in Roulo Creek. He played marbles and flew kites. He was fond of jumping; in the winter he skated and became one of Dearborn's most expert. There were family gatherings and picnics, corn huskings,

and socials. Music for dancing was provided by a local orchestra with Alex Lee Moore playing the fiddle and Albert Race, a cripple, the dulcimer. By the strains of Race's instrument Mr. Ford learned to dance, and that instrument later became one of his valued possessions. Favorite caller was William Cox, whose "Do-Si-Do, Swing your partners, Hands all around," was voiced in a manner all his own.

Science, physics, chemistry—those were subjects too remote for the rural scholar. Mechanical knowledge had to be gleaned from experience, which was where young Henry got his.

His first water wheel was connected with an old coffee mill, which had been made fast to a near-by fence. A rake handle was the shaft; and power was obtained by blocking the county ditch.

He and his friends fed gravel about the size of wheat into the mill, and when the power was turned on a considerable flame resulted from the friction. It was interesting and colorful. The only difficulty was that they left the ditch still blocked when they called off work for the night, and when they returned to school in the morning they found the whole area flooded. Worse still, the owner of the surrounding farm land discovered that his potato crop was under water. Naturally he was furious, and demolished the dam with a single swipe of his spade.

Another early experiment had to do with the operation of a turbine from a boiler. After it had blown up a considerable section of the Miller School it was discontinued. Fortunately, classes were not in session on that day.

In the bunk house constructed from the abandoned planks of an old country road, he and his pals made a forge, its blower motivated by a wheel from a corn sheller, and at recess time melted up bottles and bits of broken glass and recast them into strange shapes.

Engines fascinated him. Armed with a monkey wrench, he took the top off a steam chest at the village sawmill one Sunday when it was idle, to learn the secret of the slide valve. After he

had it all apart he ran his arm in to locate the steam ports and find out how the valve controlled the steam. Just as he got his hand well inside, the sawdust caved in and the cylinder rolled over on top of him. There he was, caught like a bear under a deadfall but not injured.

Fortunately his arm was not broken or even wrenched, but he could not remove his hand unless he could turn the cylinder over, and he was not strong enough to do that without help. After studying the situation he thought of an engineering plan that might work.

With his left hand he reached around and dug away the sawdust on the other side, and made a trench into which the cylinder finally rolled. It was a slow and tiresome task, but he had to do it. There was no other way of escape. As soon as he got his hand out he went right ahead and solved the mystery of the slide valve.

Often he rode on his father's wagon to the Carding Mill at Plymouth, hauling loads of wool. That mill is now preserved in Greenfield Village. Or he made the day-long trip to Detroit with loads of hay and grain. On such occasions he visited Robert Magill's jewelry shop and bought tools or parts needed in his watch-repair work.

On one trip when about eight miles out of Detroit they met a traction engine chugging along the road. While the men drew up to quiet the horses and chat, Henry studied the mechanism. It was his first glimpse of a self-propelled vehicle, aside from a railroad locomotive; it took him, as he later said, into automotive transportation. \*

The power unit of the steam engine was connected with the rear wheels by a chain, and there was a belt attachment for transmitting power to thresher or sawmill. It had been built by Nichols, Shepard and Company, of Battle Creek.

Many years later an attorney cross-examined him on the witness stand regarding his observations at that roadside meeting.

"How many revolutions a minute did the engine make?"

"About 200, I suppose."

"Why do you suppose? Don't you know?"

"Because I never counted them."

"Why do you guess 200?"

"Because I asked the man running it how fast the engine could go, and he told me 200 turns a minute. I have never forgotten it."

PARENTS

5

One of the bright clear memories of his boyhood was of his mother. Although she passed away at the early age of thirty-seven, she exerted an influence on his character that remained with him during his later life. Many of his traits were traceable directly to her.

The spick-and-span cleanliness so noticeable in later Ford operations found its origin in the spotless cleanliness of the farm home. The housewife and mother believed it was as easy to keep a place clean as it was to keep it dirty; in years to come all corners in Ford plants would be painted white.

It was his mother who initiated his interest in dietetics. "Once when I was a lad I got sick. My mother couldn't understand it. She knew nothing she gave me could make me sick. She looked into it, and found out that I was trading the bread she gave me for Rennie Field's cake. She stopped that, and I stopped being sick."

Inquirers into the mystery of Mr. Ford's special genius who have explored his background and ancestry have attributed much of his success to the early influence of his mother. He himself once declared that whatever he had accomplished was due to the effect on his life of two women—his mother and his wife.

From his father he undoubtedly inherited certain traits, such as his love of the land, which was typical of the early Fords; they believed in the soil and its security. His love for mechanical things was also a bequest from William Ford, who in his earlier years saved money for his first farm by working at handy jobs,

carpentering, building, working on the new railroad and on the arsenal. Those who remembered him described him as a man who toiled early and late, enjoyed the association of his fellow men, loved Nature and God, remained conservative in his judgments, and stubbornly held by his own convictions even when he seemed to be wrong.

Mr. Ford's earliest memory was of his father, and that incident of the song sparrow's nest remained so vivid in his mind that the song sparrow always was his favorite bird. Another nature lesson he never forgot occurred one night when his father took him outdoors and showed him the Northern Lights. Because of it, Mr. Ford said afterward, he had learned to look up at the sky and stars.

William Ford couldn't understand why his son preferred being a mechanic to being a farmer. He objected strenuously when Henry left home to seek a job in Detroit, and thought he was "an awful fool" when he quit his job with the Edison company to devote all his time to the horseless carriage.

From the little Dutch mother Henry inherited, among other traits, the graceful bearing that was always characteristic of him. That same grace is evident in women of the Litigot strain at the present day. Kind and gentle in nature, she could be firm when necessary, keeping those she loved from making mistakes that might injure them.

His early lesson in dietetics—not to trade bread for cake—taught him to be abstemious in his eating habits, a lesson which paid large dividends in his health long after many of his earlier associates had filled their allotted span and passed on.

It was largely fondness for his mother that led Mr. Ford to restore the little white homestead on its original location, even to the most minute details of its furnishings, as it was when Mary Litigot Ford presided over it. No one lived there; he kept it as a shrine to her memory.

Her dresses hung in her bedroom closet. Workmen dug up the back yard around the kitchen in search of pieces of broken dishes which he recalled she had used and thrown out. With the

broken fragments to guide him, he had the very dishes themselves duplicated.

Often her famous son visited the homestead on summer afternoons, and within the old familiar walls cooked the evening meal and entertained an occasional favored friend. William Lyon Phelps was one of those so favored, as he has described delightfully in his *Autobiography with Letters*.

Near the northwest corner of what was once the old Bonaparte Road and Town Line Roads, now within the limits of Greater Detroit, is a well-kept plot of ground, carefully shielded by rows of evergreens that shelter its four sides. A neat iron fence, its friendly gate unlocked, marks the place as private.

The graves within are leveled to the ground and the lawns seem always freshly mown. In the springtime old-fashioned garden flowers bloom in a riot of color. There are beds of fragrant geraniums, flags, bleeding hearts, graceful fuchsias, mignonette and sweet william. The flower beds are bordered with stones from the countryside just as she was wont to fashion her own gardens.

Roses bloom there in summer, including a bush planted by Henry Ford at the head of Mary Litigot Ford's grave. And in the fall the bittersweet turns its brilliant color to the sky.

Here sleep the three Ford brothers who came to Michigan from Ireland. A small white stone bearing the name "Wm. F." marks the grave of Henry Ford's father.

Mary Litigot Ford sleeps beneath an old-fashioned stone, typical of its day. It bears the inscription:

In Memory of  
Mary  
Wife of Wm. Ford. Died March 29, 1876  
Aged 37 years

Young Henry had not quite reached his thirteenth birthday when she died. The house, he said later, was like a watch without a mainspring.

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## CHAPTER THREE

### COURTSHIP AND MARRIAGE

#### 1

AFTER his mother's death at first a married cousin kept house until Margaret had grown old enough to take over the task of caring for the family. Mr. Ford included her among the women who had influenced his life. "She was a real sister to all of us," he said. "I shall always be grateful to her."

Henry's preference for engines and machinery instead of the endless round of chores and farm work continued to grow, and finally led him to decide to leave home and seek his fortune in the city. After waiting until he was sixteen he walked into Detroit in search of a job. Not far from the Magill Jewelry Shop he found a boardinghouse where he could live for \$3.50 a week.

The first work he obtained was at the Michigan Car Works. It paid \$1.10 a day, but lasted only six days. By quitting at the end of that time he barely missed discharge. Unfortunately he had riled the older hands by using only half an hour to make repairs that ordinarily required five hours.

His next job was that of apprentice at a foundry and machine shop, operated by James Flower Brothers. Wages here were but \$2.50 a week, and it was necessary for him to find extra work to make expenses. Learning that Mr. Magill had acquired a large stock of clocks as his share of a jewelry store that had failed, Henry offered to clean them evenings and was given the task. Working in a little room in the rear of Magill's store, he earned \$.50 for the evening's labors.

The shop was located on the ground floor of a plain two-story brick building. Overhead were living quarters. In the

front window was a workbench for the repair of watches, but he was not allowed to work there where the public could see him.

When the end of his job approached, the young cleaner of clocks made a shrewd move, a move for which he had prepared back at the Scotch Settlement School when he had learned watch repairing behind his geography.

"One night," he said, "I went to work on the watches waiting for repairs. Mr. Magill was alarmed when he first learned about it, but after he examined the watches he was pleased. So pleased that he gave me a steady job.

"But he was afraid his customers would not approve of a boy repairing their valuable watches, so I continued to work at that bench in the back room, out of sight."

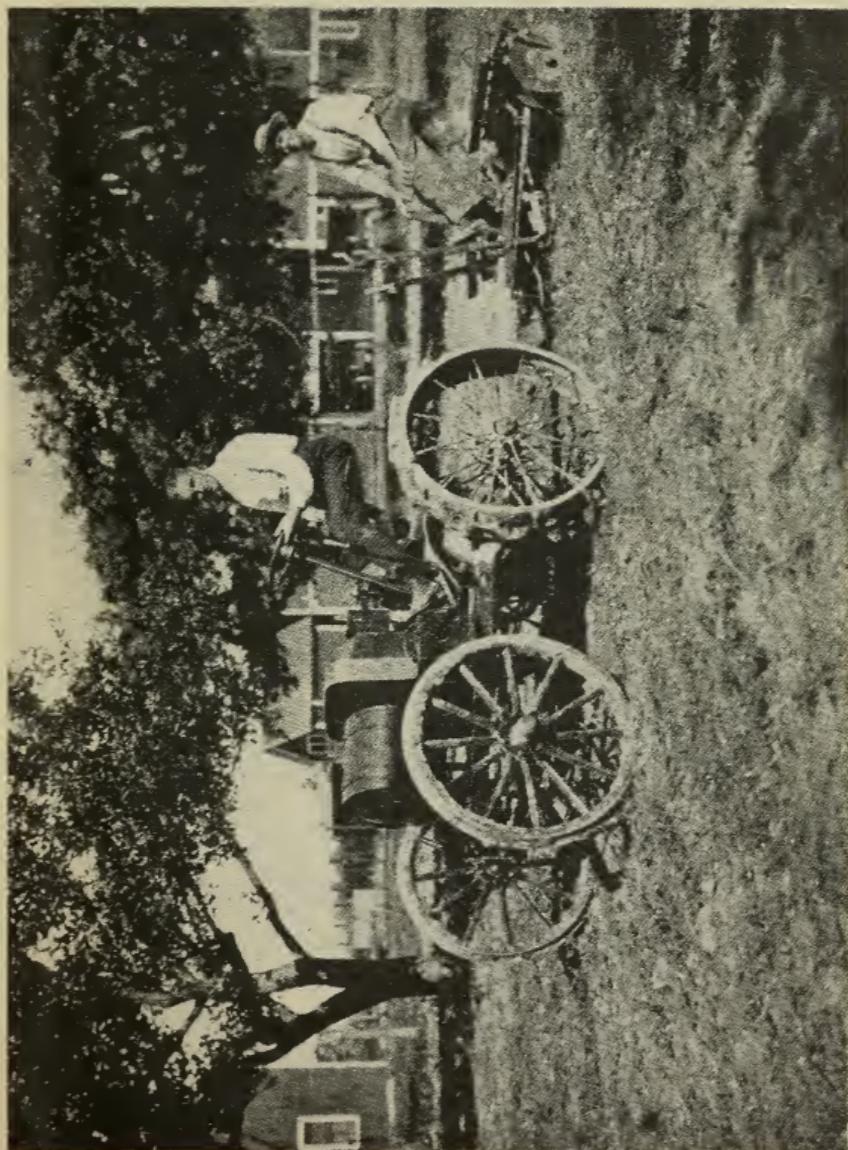
That workbench has been recreated in Greenfield Village, down to the most minute detail. Many of the instruments on it are the same ones with which Henry repaired watches, instruments which were found and repossessed only after long search.

To prove that the boyhood skill had not been dulled by the passage of the years, Mr. Ford inaugurated the reopening of the old store after its removal to the Village in 1940 by going to work on the watch of his father's hired man, Adolph Culling. He had obtained the treasured heirloom from Adolph's descendants because it was the first watch he had ever handled.

As the clocks chattered in the old store the man who had nursed their ailments more than a half-century earlier gave a demonstration of manual dexterity that would have been a credit to a youth. One who watched him remarked that the picture of Henry Ford the watchmaker seemed incomplete because the Ford eye contained no watch-glass.

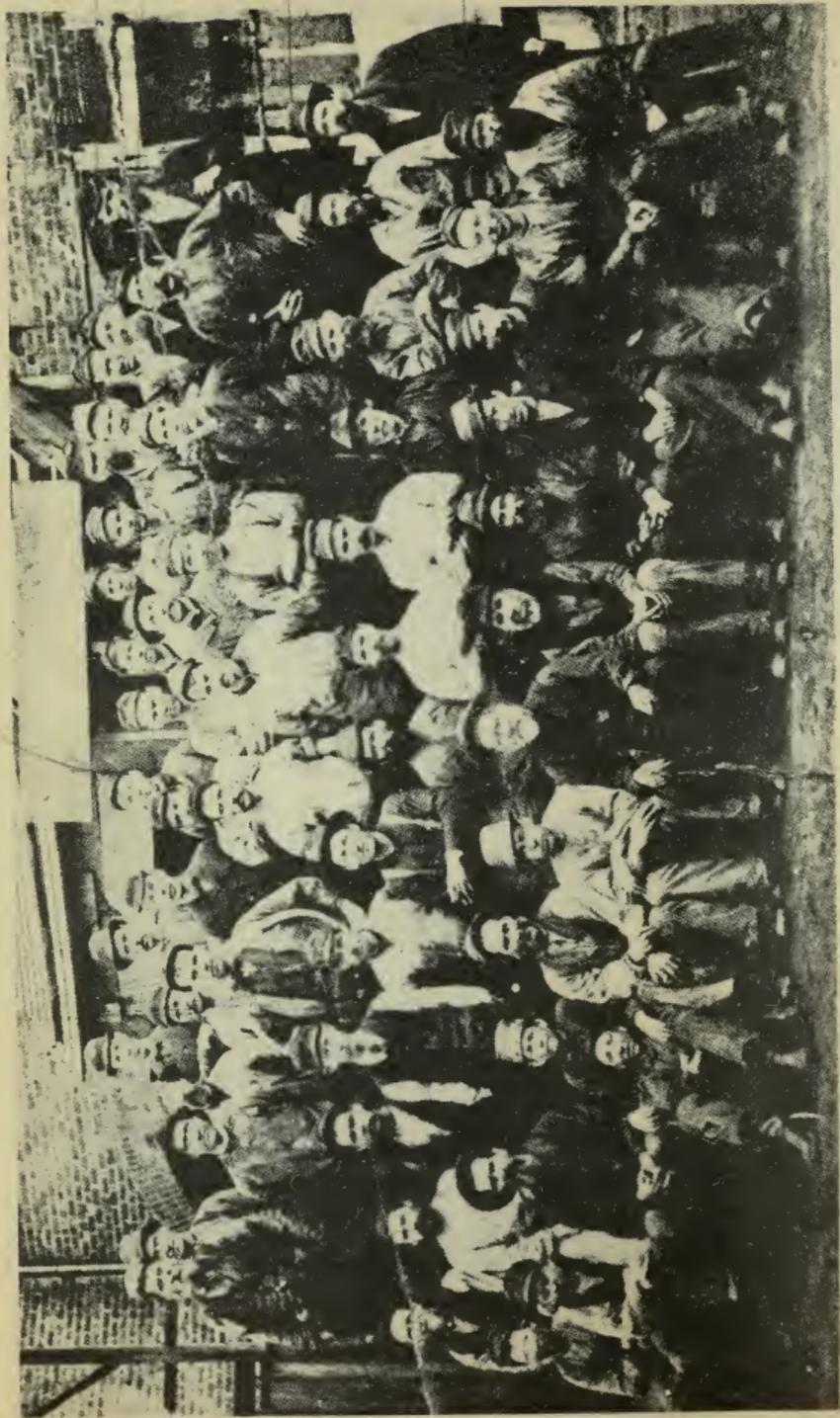
"I never used one," said the busy watchmaker, probing for a microscopic screw.

"And I don't have to use one now," was the continuation of the statement, a continuation that was superfluous at the mo-



FORD'S "AUTOMOBILE PLOW"

Henry Ford at the wheel, at his Dearborn farm.



HENRY FORD AS A YOUNG MACHINIST APPRENTICE

Employees of the Dry Dock Engine Company at Detroit. The young fellow in the back row, fifth from the right, is Henry Ford.

ment of its utterance. For at that particular moment the Ford fingers were deftly lifting out tiny pieces of the mechanism and replacing worn parts with new parts with a certainty of touch which, seconds later, had the watch whispering a thin echo of the chatter in the next room.

Even under the flickering yellow light from the gas jets he did not require the help of a glass.

While working for the Flower Brothers Henry made the acquaintance of a brass finisher, Samuel Townsend, who had come from England not long before. In his trunk he had brought a magazine called *World of Science*, which he lent to Ford. It described the invention of a German, Dr. Nicolaus A. Otto, an internal combustion engine, that only recently had been patented and licensed for manufacture in the United States. Henry pondered long and earnestly over the article; it made a profound impression on his mind.

The discovery of such an engine was as exciting to the mechanically minded youth of 1879 as television and stratospheric flights have been to youths of more modern generations. A simple, compact and economical engine embodying a new principle, it foreshadowed a new epoch in the development of prime movers.

To learn more about engines he left Flower Brothers after nine months, and worked at the Dry Dock Engine Company. Although the change meant a loss of fifty cents a week in pay, it was more than compensated for by the chance to increase his mechanical knowledge. During the two years he stayed there he learned every phase of the machinist's trade.

Frank E. Kirby, one of the greatest of the Great Lakes ship-builders, was his employer. One day when Henry was pushing a heavily loaded wheelbarrow up a gangplank to a ship Kirby walked past and stopped to watch proceedings. As Henry slowly edged upward, his feet occasionally slipping on the plank, Kirby called: "Stick in your toenails, boy, and you'll make it!"

When he met Kirby years later, he told his former employer he had been "sticking in his toenails ever since." That is why Kirby's name was among those carved above the entrance of Ford's engineering laboratory at Dearborn.

Already Henry was considering a plan for making low-cost watches so they could be sold for one dollar. If he could turn out 2,000 a day, the cost could be reduced to thirty cents. He worked late into the night on a vise clamped to his boardinghouse window sill, until the young teacher in the room next door complained that the noise set her teeth on edge, and he was forced to stop.

By that time he had gone so far as to design machinery, cut dies, and enlist the help of another young chap. When forced to abandon the scheme he had become convinced that it would be impossible to sell so many watches a day, even if he made them; and so he did not bemoan the death of the idea.

Meanwhile his father had been urging him to come back to the farm. Things had not been going any too smoothly at Dearborn: the death of Mary Ford had left a void in the home never filled; competent hired men were hard to get and harder to keep. Henry's help was needed; and he would be able to find an outlet for his mechanical bent in the operation and servicing of threshing engines.

The decision he made was to affect his future profoundly. He was ready for a few years' interlude before the call to return to Detroit became insistent once more. Those few years were happy ones; the courting years usually are.

## 2

Nineteen years old, he now began to take his place in rural society—church socials and meetings of the Greenfield Dancing Club, where he became proficient in the steps of the old-fashioned square dance and in the waltz. One New Year's Eve he met a dark, attractive girl named Clara Bryant, whose father

owned a farm north in Greenfield Township. They saw each other occasionally at dances at the Martindale House out Grand River Road followed by oyster suppers and merry sleigh rides along the snowy lanes in mid-winter.

Mr. Ford has been quoted as saying that half an hour after he first met his future wife he knew she was the one for him. She took longer to become interested in him. At the first meeting he made but small impression, but one year later, after "sitting out" two dances with him at a party, she told her parents about him when she got home.

"I remembered he showed me a watch he'd fixed himself to tell sun time and standard time—standard time was just coming in then—and he explained how he'd done it. I remember going home and remarking how sensible he was, how serious-minded. That was the beginning."

The Bryant family like the Fords had come to Wayne County at an early date. The yellowing records of School District No. 3, Greenfield Township, indicate that John Bryant was appointed moderator of the district as far back as 1839, only five years after it had been organized. In those days school kept for four months out of the year, and the teacher was paid six dollars a month. John was Clara Bryant's grandfather.

For many years John Bryant continued to serve as a director on the board, while the names of other generations of Bryants appeared in the same records following the Civil War.

Listed on the census record of 1871 was Clara Bryant, age 5. Her attendance for the winter term was 95½ days, and for the summer 72½ days. In the census of 1875 she was again registered and appeared thereafter up to 1885, three years before her marriage.

As in the school Mr. Ford attended, the McGuffey readers were used from the primer to the sixth grade. It was she who later revived his interest in them. One day as the school children danced and shouted past their home, she remembered a verse she had learned from the Readers:

“Hear the children gaily shout  
Half past four and school is out.”

Search was made for her old schoolbooks, but the First Reader, in which the verses were, was not to be found. Mr. and Mrs. Ford telephoned their friends, but none had the book. For a long time after that he haunted the old bookshops of many cities in search of the readers, and one result was the reprinting of them for distribution to libraries and others interested. Another was the restoration of McGuffey's log-cabin birth-place, and its establishment in a place of honor in Greenfield Village.

During the period of courtship Henry was busy; he attended the business college of Goldsmith, Bryant and Stratton for three months, starting December 1, 1884, and again the following winter for the same length of time. Besides operating a threshing engine, he traveled as service man and salesman for John Cheeny, state agent for the Westinghouse portable steam engines.

When it neared time to think of getting married his father gave him a woodlot of forty acres. He rented a portable steam engine with a circular saw and began the task of clearing the land. Plans for a house, one story and a half high and about thirty-one feet square, were drawn by the prospective bride. When he cut the lumber for its building Henry added enough for a lean-to for his tools.

The Bryant home was a brick house typical of better farm dwellings of that day. In its parlor on the evening of April 11, 1888, the young couple stood before the Rev. Stephen W. Frisbie, minister of St. Paul's Church in Greenfield, and spoke their vows. The date chosen was the bride's birthday.

The bridegroom wore a Prince Albert coat, long and straight with square corners in front. He wasn't nervous—"I was my own best man, and what was there to be nervous about?" They made a handsome pair—she was just twenty-one, and he was nearing twenty-five.

There was no honeymoon in the modern sense. They began their life together in the happiness of moving to their new home. The bride possessed a new piano, which she delighted to play. In the parlor was a carved armchair brought from the Bryant ancestral home near Warwick, England. Brother Bill Ford gave them an old-fashioned English clock. A dozen other wedding presents were among their furnishings.

It was said that one of Clara Bryant's points of beauty as a young woman was her lovely chestnut hair. Her eyes were soft and her mouth friendly, but she had a chin of determination and a nose of character. Her poise, her modesty, and her unassuming friendliness were characteristics of her then as always, and a firmness of will which any who sought to take advantage of her discovered, with the strength to assert it and the intelligence to perceive hypocrisy and sycophancy.

She followed with deep interest her husband's experiments with his farm locomotive and with a steam road carriage. He made his patterns and cast the cylinders himself. The rear driving wheels were big cast-iron ones from an old mowing machine. After he had completed the mechanical details he built a fire in the boiler and tried it out. It spluttered forty feet before it stopped when the steam failed; he couldn't generate enough power to keep the engine going.

After building various types of boilers—water-tube, fire-tube, and flash design—without getting satisfactory results he finally concluded that the steam engine would not serve as the best driver for a common-roads passenger vehicle.

One day while in Detroit he saw an engine made on the principle of that Otto gas engine he had read about in the *World of Science*. Unlike the steam engine, it operated without water, and it was using its power to pump pop into pop bottles.

That same evening after the supper dishes had been cleared away the young couple sat down in the front room under the soft glow of the parlor lamp. Outside, the twilight of the late Michigan summer day deepened into dark. Through the screened

windows sounded the chorus of the night. Occasionally a buggy rattled down the dusty road.

Mrs. Ford let her finger run gently over the piano keys. "What did you see in Detroit today, Henry?" She asked. Thus encouraged, he launched into a description of the new kind of engine—so compact—it didn't need steam to move pistons—no boiler.

On a piece of paper he drew a diagram of it so she might understand its operation. Then he revealed the secret of his heart.

"I've been on the wrong track," he admitted earnestly. "What I would like to do is make an engine that will run by gasoline, and have it do the work of a horse."

Reaching up on the piano he took down a sheet of music and on the back of it sketched his idea. If he could make such an engine and harness it to wheels—

"But I can't do it out here on the farm," he concluded. "I need other tools and money to pay for things. It would mean moving into Detroit."

The announcement and all that it implied—leaving this comfortable home and the independent life of the country for the crowded quarters and the unknown hazards of the city—did not dismay the young wife. In spite of the obstacles in the way she felt that Henry should have the chance.

When the news spread around the countryside some of the neighbors tried to dissuade her. "Let him go in if he wants to and try it out. You can always join him later."

But she had her mind made up—where he was, there she would be also. It has been that way all through their lives.

And her mother agreed with her. "Henry can get along anywhere."

He justified their faith by finding a job as steam engineer at the Detroit Edison Company, and the Fords began packing to move into town.

Early on the morning of September 25, 1891, the hay wagon with its rack spread wide to hold the household effects stood

waiting beside the little square farmhouse. Furniture, trunks, pots and pans were carefully loaded until everything they proposed to take with them had been piled into place.

"Well, good-by, Clara. Good-by, Henry. Don't forget to write and tell us how you get along."

The team of horses was hitched in front, Henry gathered up the reins, and the young couple took one final glance at the happy home they were leaving behind. Even so, others have looked as they turned from their beloved surroundings and faced the unknown.

"Gid-dap."

The two horses moved forward and the wagon rolled out into the road and turned east.

### 3

Mr. Ford had obtained his job through John R. Wilde, who had known him when both worked at Flower Brothers. After moving into a modest home at 570 Forest Avenue West, he reported for work at the Willis Avenue substation where a breakdown had occurred in the steam engine. By evening it was running smoothly, and Mr. Ford had won a permanent job on the night shift. His hours were from 6:00 P.M. to 6:00 A.M. and for the twelve hours he received \$45 a month.

That pay provided little more than a living, but Mr. Ford was content. As he said later, "I never did bother much about money. My wages were enough for food and shelter and that was all I wanted. Money matters always seemed to sort of take care of themselves some way."

Weeks and months slipped by. Despite his long hours at the plant Mr. Ford found time for outside activities, such as teaching a class in the newly established vocational school at the Y.M.C.A. Their first year in the city ended with the dark clouds of a threatened panic lowering ominously across the country. The November election returned Grover Cleveland

to the White House for a second term, to receive undeservedly most of the blame for the shutting down of factories and widespread unemployment.

In their modest home the Fords passed through the period without difficulty. They were still young enough to feel confidence in a secure future, and the knowledge that late November would bring an addition to the family had given them an increased zest for life.

Mr. Ford's interest in watches and clocks was as keen as ever. Clyde L. Herring, later United States Senator from Iowa and at that time proprietor of a small jewelry store on Cadillac Square, Detroit, told how the engineer strolled into the store one day with a Swiss watch on which he wanted some work done. As a result of that chance meeting a friendship began that continued after Herring had moved West to go farming. One day he tried to buy a Model K Ford in Omaha. The dealer sought to sell one of a different make, whereupon the indignant Herring sat down in his farmhouse and wrote his friend back in Detroit demanding to know why he couldn't buy a Ford car.

That inquiry brought a swift response. To the farm came a man from the factory with an invitation to the ex-jeweler to handle Iowa for Ford. By 1916 he was said to be the largest Ford dealer in the world.

Senator Herring was authority for the story that Mr. Ford for many years kept unplowed a small triangular plot of land where as a boy he lost a second hand of a watch. By keeping the ground undisturbed some day the hand might be brought to light.

One of the great events of 1893 was the opening of the Columbian Exposition in Chicago, heralded as the greatest World's Fair since the Centennial of 1876. Like many other Detroiters, Mr. Ford took a few days off to visit it, but unlike many of the Fair visitors, he did not find his principal interest in the Midway or "Little Egypt," or the camels of Cairo. What centered his attraction was a small gasoline engine that had been mounted on a

wide two-wheeled hosecart, and used for pumping water. It seemed more nearly like the kind of engine he had been trying to develop, and he took a mental photograph of it back home with him. Plans for the gas engine were resumed, with a clearer understanding of its operation.

When their son was born in November of that year, he was named "Edsel" after the seatmate of the old Scotch Settlement School. A trying winter faced the young couple, with hard times everywhere—little work and small pay. Detroit was fortunate in having as its mayor Hazen S. Pingree, and he led the way in organizing relief for the needy. Old pavements were torn up and replaced, and owners of vacant lots were encouraged to loan their property to the unemployed for the planting of potatoes in the spring. His political foes nicknamed him "Potato Pingree."

One afternoon when Edsel was only a few weeks old, the engines in the Edison company's main plant broke down and the manager, recalling Mr. Ford's success at the substation, sent for him to repair the damage. Because of his mechanical ability his pay was raised to \$75 a month, and after nine months he was made chief engineer at \$100. Later his salary was raised to the maximum of \$125.

## 4

To live closer to the main plant the Fords moved on December 15, 1893, into a double house at 58 Bagley Avenue. The change brought them nearer to the stores and downtown district, still pleasantly shaded and guiltless of skyscrapers and neon signs. The sudden rise to popularity of the bicycle had caused new traffic problems—indeed "foot passengers" complained that they couldn't cross certain streets at night because of the processions of bicyclists, sounding their clanging bells and flashing their tiny headlights.

Detroit was an interesting place in which to live, with *Uncle*

*Tom's Cabin* playing at the theater, and the newspapers advertising "Own your own telephone. Ours will talk thirty miles." A good suit for a man could be bought for as low as \$10.00. A pair of fine shoes could be had for \$1.85.

As became an engineer making a good salary Mr. Ford wore a handsome mustache, and could be seen frequently on his bicycle pedalling on some errand. Mrs. Ford and he had pleasant friendships with some of the employees of the Edison works. On sunny afternoons when she took Edsel out for a ride in his baby buggy, Mrs. Ford was sometimes joined in her stroll by Mrs. John Dixon, wife of a fellow employee, who had a little child of about Edsel's age.

In the rear of their Bagley Avenue home on the alley was a small brick shed used for storing coal and wood, one half being assigned to each of the two tenants. In his side Mr. Ford was able to set up his lathe and other tools, and to begin work on a gasoline engine.

The story of that engine has been often told; the engine itself has been exhibited many times. A length of one-inch gas pipe was reamed out to serve as a cylinder, and in it rested a home-made piston fitted with rings. This was attached by a rod to the crankshaft, and had a five-inch stroke. A hand-wheel off an old lathe served as the flywheel. A gear arrangement operated a cam, opening the exhaust valve and timing the spark much as is done on cars today. A piece of fiber with a wire through the center did for a "spark plug." It made contact with another wire at the end of the piston, and when this was broken a spark leaped across, exploding the gasoline.

Working in his spare time, Mr. Ford finished the engine within one week and prepared to test it. It was not possible for him to turn the flywheel to start it and at the same time adjust the flow of gasoline into the intake valve, so the assistance of Mrs. Ford was enlisted. He carried the old board on which the engine had been mounted into the house, and clamped it to the kitchen sink. A wire was connected from the overhead light

socket to the spark plug; and another grounded the engine to a water pipe.

In one hand Mrs. Ford held the oil cup filled with gasoline, while with the other she adjusted the screw that was to let the fuel drop into the intake, slowly or rapidly as desired. Her husband turned the flywheel. Air and gasoline were sucked into the cylinder, the kitchen light flickered, another adjustment, and the engine began to run on its own power. Flames came from the exhaust valve; the sink shook with vibration. Satisfied that the engine would work, Mr. Ford shut it off and laid it aside.

"I didn't stop to play with it," he said later. "I wanted to build a two-cylinder engine that could be used to propel a bicycle, and started work on it right away. In fact I didn't set the first one going again until 1934, when we were getting ready to take it to the second Chicago World's Fair."

## 5

Actual construction of the new engine began December 29. His idea was to place the two cylinders side by side in a horizontal position, and use the drive wheel of the bicycle as a flywheel.

During the ensuing two years while he worked on his new engine he continued to give satisfaction at the Edison company. Alex Dow, president of the company, described his chief engineer as "very resourceful."

"We found that out in the course of some repairs we were making," he said. "I recall that in putting in some new boilers we ran into a great pocket of quicksand. The foundations of our engines began to give way. Henry kept those engines running on wedges for six weeks. As the foundations of the engines sank into the quicksand, he would drive the wedges in a little more, day by day. He was very ingenious."

Another incident illustrating his skill with engines was mentioned by a Detroit manufacturer, Frederick F. Ingram. A new engine had been installed at the Ingram factory but would not

run. Ingram remembered hearing Dow boast of the Edison company's chief engineer, and requested Dow to send him over.

"In a little while," said Ingram, "a slim, wiry man came out to my place. He said his name was Ford. I shall never forget the occasion as long as I live. Ford stood around a minute or two while we told him of our troubles. He walked round the balky engine once or twice and maybe fussed with it a little. Then he walked up to the throttle, turned on the steam and away it went. I was astounded and asked him what he had done. He replied: 'Nothing.' I paid him ten dollars and he went away."

After Mr. Ford climbed to fame many stories were remembered of his early days, some of them doubtless apocryphal. "Jim" Bishop, who tended dynamo at the Edison plant, recalled numerous interesting incidents revealing Mr. Ford's sense of humor. One night, when Bishop and some others were repairing a motor in the old Tolsma building, suddenly the crew was seized with a sense of impending suffocation. Investigation revealed Mr. Ford and his friend Wilde outside the building. They had a huge shovel loaded with hot coals. On it they were dropping sulphur, and with an improvised bellows were carefully blowing the fumes through a knothole into the room where the crew was at work.

Another story related by him dealt with the installation of an engine. George Flint, the chief workman, was apt to leave his tools and working clothes scattered about. Mr. Ford found Flint's working shoes in the middle of the engine room one night, and nailed them to the spot with long spikes, which he twisted in such shape below the floor boards that Flint spent hours extricating them.

Once Mr. Ford made off with a bicycle which Bishop had borrowed from the Rambler Bicycle Company to teach a rosy-cheeked girl in Mrs. Canfield's millinery store how to ride. When Jim discovered that the borrowed bicycle was gone he ran down Washington Boulevard shouting: "Stop thief!"

Mr. Ford was just rounding the corner of State Street. He



## CHAPTER FOUR

### THE FIRST FORD CAR

#### 1

DURING the last few decades of the nineteenth century the race to give man individual transportation had attracted engineers and mechanics in both Europe and the United States, although those on the Continent had several years' head start over the Americans. At first the idea was to propel by steam. Efforts in that direction had been made in England and France at an early date. In the late eighties use of the internal combustion engine was championed by the Germans Benz and Daimler. Still later, electrical engineers began to advocate the practicability of an electric motor connected with storage batteries.

In this country two other men besides Henry Ford had begun to study the possibilities of the internal combustion engine—Elwood Haynes, an employee of the Indiana Gas Company at Kokomo, and Charles E. Duryea in New England. The latter was first to complete a self-propelled vehicle using such an engine. He attached a single-cylinder motor to the body of a lady's driving phaeton as early as 1892. Its secret was guarded from all except a few friends, and not until three years later did he disclose a two-cylinder topless carriage, which went on to win the Chicago *Times Herald* contest on Thanksgiving Day, 1895. During the next summer one of his carriages headed the parade of Barnum & Bailey's circus, chugging down the streets of city after city without missing an engagement.

Credit for completion of the first progenitor of the modern motor car has been given by many to Elwood Haynes. His single-cylinder carriage, after its completion in July, 1894, was

demonstrated on a gravel road near Kokomo, carrying three persons a distance of  $1\frac{1}{2}$  miles at a speed of seven miles per hour. Later a double-cylinder motor was substituted and the vehicle was driven more than 1,000 miles during its lifetime.

Some of this exploratory work was known to the Detroit mechanic through accounts in newspapers and periodicals, but most of it was unknown. Up to then the business of motor vehicle manufacture was regarded as too haphazard to be given serious attention. Scientific journals devoted little space to man's latest toy. The designer was forced to draw on his own knowledge and inventive genius for his ideas.

In Ford's first car many traces of the steam engine may be recognized. It was built in the shelter of the little brick shop in his backyard. As it began to take form Ford's next door neighbor, Felix Julien, good-naturedly let him use both sides of the shed, providing additional room.

Julien had no great understanding of mechanical things, but he was a friendly, kindly old fellow, and he seemed to be fascinated by Mr. Ford's experiments. The shed was divided in halves by a brick partition. While Mr. Ford used his half as a workshop, Julien used his for what it was intended—a storage place for coal, wood, washtubs and so forth. But when he saw what his neighbor was doing he insisted on knocking out the partition so Mr. Ford could have more room, and stored his fuel supply in the house. After that, he would sit there by the hour watching Mr. Ford; and often the latter would find him sitting there when he returned from his duties at the Edison plant, which called him away at all hours of the day and night.

To keep in touch with the plant Ford had a phone installed with an extension in the rear shop, so he could respond at once whenever trouble developed. Tools and machinery that could not be made by himself ate up all the spare money. Mrs. Ford said later, "It seemed as if we would never have any for ourselves."

When possible, parts were made from scrap-metal bits, ma-

chined on the lathe and worked with the tools. The two cylinders were bored and fitted in sections of the exhaust pipe of a steam engine. The crankshaft was forged at the Detroit Dry Dock works, where Mr. Ford had learned his apprenticeship under Kirby. Charles B. King, who had built a horseless carriage of his own, back in 1894, contributed two intake valves.

Four bicycle wheels about 28 inches in diameter comprised the car's running gear. The steering device was a tiller attached to the front wheels; the driver warned traffic by means of an alarm gong. A simple bicycle saddle, mounted on the 3-gallon fuel tank, provided a seat. A buggy seat wide enough for two came later.

To transmit the engine's power to the countershaft he arranged two belts which gave the driver a choice of speeds—ten or twenty miles an hour. One belt ran off the periphery of the flywheel; the other came from a much smaller wheel on the right face of the flywheel. When the driver pushed a lever forward it put the belt on high speed; when back, it was low; when upright, in neutral. A chain connected the countershaft to the rear wheels. There was no reverse—and there were no brakes.

## 2

Had any good citizen of Detroit been loitering near 58 Bagley Avenue early on a morning in May 1896 he would have witnessed a strange and historic sight. From its shop the builder trundled his car for its first trial.

Mr. Ford had been so occupied in building the car that he had completely overlooked the fact that the doorway, the only exit from the shop on the alley, was too narrow. He was so eager to see if the car would actually go that he could not wait. He got an ax and broke down the back wall. Then he pushed the bricks aside and steered the car through the hole.

It was raining, and Mrs. Ford carried an umbrella when she appeared at the back door to watch. Turning the flywheel, Mr.

Ford started the engine, climbed to the saddle, and pulled back the lever. While the engine sputtered the chain began to tug and the car moved. Across the cobblestones it shook and bumped, and out into the street at the end of the alley.

He steered it down Grand River Avenue to Washington Boulevard, and there something happened—the first motor trouble! A little spring broke, or a nut dropped off; he made a new part in the near-by dynamo room of the Detroit Edison Company.

Only once around the block—but a record non-stop long-distance run for Detroit, nevertheless. It was the first time a Ford car had appeared on the streets of the future motor capital of the world.

Early next day Mr. Ford returned to the Edison plant and bargained with two fellow workmen, bricklayers, to repair the damage to the alley door. They had hardly begun their work when the landlord, Mr. Wreford, called to collect the rent. When his eyes fell on the wrecked door he saw red. Mr. Ford tried to pacify him by explaining that the workmen would make everything as good as new, but Wreford kept saying: "What did you do it for?"

"I had to get my car out to see if it would run," replied Mr. Ford.

Wreford's anger cooled.

"You ran it?"

"Yes, sir."

"Let me see it."

Wreford became so interested he forgot all about the damage to the wall. Meanwhile the bricklayers went ahead.

"Say!" he exclaimed suddenly. "If those fellows put that wall back up, how are you going to get your car out again? I've got an idea. Tell those bricklayers to leave that opening and then you can put on swinging doors. That will let you in and out."

And so, as Mr. Ford later said, the first set of garage doors

was built. When he restored the shop in Greenfield Village the right-hand door was still wider than the one on the Julien side.

## 3

The first "long" tour came a few weeks later when Mr. Ford drove nine full miles without mishap, to the old homestead at Dearborn. Charles B. King followed on a bicycle and acted as mechanic's helper whenever Mr. Ford had to stop and tinker. The engine became so hot that bits of solder melted and dropped off. As a result of that experience Mr. Ford decided to braze water jackets on the cylinders. A water tank was placed on the carriage, with one pipe leading to the jackets and another back to the tank where the heated water could return for cooling.

Night after night while Mr. Ford was struggling closer to his goal Mrs. Ford had waited, watched, and helped. "It didn't seem right," she said later, "to go to bed and leave him there all alone." She was worried about his health, his ability to withstand the long hours and the night cold, but she didn't let him see it. Whenever he took the new contraption out for a trial run she invented some excuse to go along.

One day when they reached that part of Grand Boulevard where the broad thoroughfare ascends a slight grade they wondered whether the car would scale the hill. While they watched its ascent, a boy riding his bicycle became so excited by the queer contrivance that he fell off and rolled under the wheels. Both Mr. and Mrs. Ford scrambled out to see whether he had been hurt—as luckily he hadn't—and the world's first automobile accident ended without a casualty.

On another day they decided to drive out to the home of Mrs. Ford's mother. By that time a narrow buggy seat, still to be seen on the car today, had replaced the bicycle saddle.

"As I recall it," said Mr. Ford, "Edsel sat on his mother's lap that day. But it was a pretty tight squeeze so I put a lid on the battery box, and after that when we went for a drive Edsel

sat on the lid and clung to the steering rod to keep from falling off."

On trips about town Jim Bishop rode his bicycle ahead to see that all horses were held by their drivers. He'd go into saloons and stores and ask: "Whose horse is that tied outside?" After the owners had come out and gripped the halters or tie straps firmly Bishop would wave his arm by way of signal, and the strange-looking rig would advance, threading its way over the cobblestones.

Gasoline was delivered in cans. Little was known about its explosive properties. Once Edsel took the cork out of a can and Bishop fully expected an explosion to follow before he could replace it.

In later years Edsel was able to recall some of the early days at the Bagley Avenue Shop, where his tiny fingers were repeatedly burned on two hot brass valves which held an irresistible fascination for him.

Mayor Pingree had become Governor of Michigan, and Detroit was preparing to choose a new chief executive. "I remember when the candidate, William C. Maybury, came into the shop to see the new automobile," Mr. Ford went on. "It must have been around election time, for we had a picture of him in the window. He spoke kindly to me as he passed through the house."

To the public in general, of course, the inventor was queer. He used to leave the car beside the road in Belle Isle Park and stand behind bushes near by to hear comments. When a policeman ordered him not to drive over the city streets because of the commotion resulting, he sought his friend Mayor Maybury and obtained a verbal promise of protection against complaints—the world's first automobile license.

One of those who rode on that early car was E. G. Graham, later manager of Crane and Company at Kansas City, Missouri.

"I never will forget one day when I was in the Edison engine room and Mr. Ford came up to me and said: 'Eddie, you have never had a ride in my horseless carriage, have you?' My answer

was that I had not, and he nodded to me to follow him. We walked over to one of those old brownstone front houses on the southeast corner of Lafayette and Fourth Street to a stable in the rear, pushed the car out on the sidewalk, he cranked it up (I believe it was moving when we got in), we went east on Lafayette Street and turned north on Woodward. 'Bout midway in the block a man ran across the street to the west in front of us, and Henry deliberately clanged the gong and chased him. The man was running for his life, and we chased him fairly well to the east side of the street.

"I recollect there was quite a cloud of smoke well in the air behind us, and we hadn't gone far before there were twenty-five to fifty bicyclists following us. We circled around—I do not remember where—until we finally reached Lafayette Street, going west, and when we got fairly close to Fourth Street Mr. Ford instructed me when we turned the corner to jump out and run and open the door of the stable so that the car could be driven in before the crowd of bicyclists overtook us. This was done, and Mr. Ford had just snapped the padlock in the hasp when around the corner they came and one of them said, 'Mister, can you tell us where that horseless carriage went?' Henry replied, 'Yes, right up the alley,' and away they went up the alley to the east. Mr. Ford gave one of his humorous chuckles, and we walked back to the Edison station."

## CHAPTER FIVE

### GOING INTO THE AUTOMOBILE BUSINESS

#### 1

CHARLES AINSLEY of Detroit bought that first car for two hundred dollars, thus becoming the first of that vast family of owners whose numbers were to be as the sands of the sea.

Mr. Ford continued working at the Edison plant, supervising the operation of what was then the second largest steam engine in the city. His salary was said to have reached the lofty figure of \$1,800 a year. Meanwhile he set about designing and building his second car.

A description of his improved model appeared in the pages of the *Detroit Journal* in the first news story published about a Ford car. A four-column article bore the headline:

FORD'S AUTOMOBILE HAS NEW  
FEATURES AND IS A NOVEL  
MACHINE

The article opened with a general statement of the problems confronting the would-be creators of the horseless carriage:

The inventors who have been struggling with the question of perfect self-propelling wagon or carriage have had serious difficulties to confront, as certain requirements were absolutely demanded in the successful carriage for use on the public highways.

The first of these requirements was speed, and yet always within control, an absence of noise, except that made by the machinery in action, a form of engine that would be practically noiseless, safe and at the same time not give out any offensive odor.

Among the inventors who tried for this triumph was Henry Ford, mechanical engineer and superintendent of that department of the Edison lighting station. Ford has been working for some time on the application of a new principle in power and has experimented along these lines. He wanted to devise some sort of a gas engine that would work perfectly and yet be free from the objections of the ordinary engine which smells to heaven and would not do at all for road work.

The article then reviewed some of Mr. Ford's earlier work:

A motor was what Ford was laboring for. The carriage part came afterward. Inasmuch as some of his patents are not yet perfected or protected by letters patent, it would be hardly fair to describe them.

One feature of his machine is a sort of valve, or circular trap, that works automatically and at each movement shoots just enough gasoline into the cylinder to give the charge of the engine. This is the new idea, and once this part of the machine is started, the gas is lighted by an electric spark and it works along automatically without watching.

By a new device he is able to confine the gasoline in an absolutely air-tight compartment; yet when he draws out enough for one charge for the machine a device injects just air enough to prevent the forming of a vacuum, which, of course, would stop the working of the machine.

In that first Ford car story, Mr. Ford's idea of a light and economical automobile was set forth:

The French inventors have gone to the extreme of heaviness in construction and had apparently only one idea and that was to get a wagon that would run without horses.

The French machine also has a chain that runs over sprocket wheels and whirs along with noise enough to drown out a boiler shop in full operation. This was Ford's first avoidance after he had started his carriage.

The mechanical details were described:

Then he so placed the driving power of the motor as to act directly on the rear axle of the vehicle, accomplishing three purposes. He swept out the chain, gave extra power by applying it direct, and then was able to box in the whole machinery, getting rid of dust, which on country roads is apt to prove very annoying. This, with his newly devised valve or automatic trap, give him a long start.

The next purpose was the starting and stopping device. The speed regulator for this was very essential. Ford worked out more new ideas. By shifting to movable gears, each one of which in enmeshing itself with its twin disconnects all the others, he secured the desired result. Then to get rid of levers he made a connection between this speed lever and the one for starting and stopping the motor, or by throwing it all out of gear, stopping the carriage while the motor proceeded to move just as merrily as if it were sending the wagon bowling along.

The gearing of the machine is an especial feature. Suppose, for instance, the motor wagon was capable of running twenty-five miles an hour and city regulations held one down to a rate of eight miles an hour. Ford's gearing would do the trick, for he could set the speed of the thing at eight miles an hour, and it could not go faster.

The weight of the car was given as about 875 pounds, to be reduced to about 800 when the job was finished. The wheel-spokes were patterned after those of a bicycle. Ball bearings were used, and "special heavy pneumatic tires."

## 2

Completion of that second car extended over months during which many new ideas were examined and various obstacles overcome. Experimenting meant slow, tedious labor; parts had to be handmade; and should an idea finally prove impractical most of the work had to be performed over again.

While the current of life flowed along placidly with the Fords, as with other Detroiters, 'ninety-seven merged into 'ninety-eight. Edsel was nearing the age when he would begin public school.

Up at Lansing, Michigan, a man named Ransom E. Olds had brought out a gasoline-propelled runabout. Shortly fame was to descend upon him through the medium of a song by Gus Edwards—"In My Merry Oldsmobile."

In February of that year the battleship *Maine* was blown up in Havana Harbor, and by early April the United States was at war with Spain. The conflict lasted only ninety days, and when the swift conclusion came Detroit once more moved smoothly forward.

*The Horseless Age* was the somewhat prophetic name of a new magazine. In one of its issues during 1898 appeared a paragraph:

Henry Ford, of Detroit, Michigan, chief engineer of the Edison Electric Company of that city, has built a number of gasoline vehicles which are said to have been successfully operated. He is reported to be financially supported by several prominent men of that city who intend to manufacture the Ford vehicle. From Mr. Ford himself no information can be gleaned regarding his vehicle or his plans for manufacture.

By that year the race to give man his motor vehicle had attracted many aspirants. The trend was still toward steam or electric propulsion, but when a display of road equipment was held late that year in Charles River Park, Boston, under the management of the Massachusetts Charitable Mechanic Association, the presence of "explosive ones" was noted alongside the steam and electric vehicles.

The "prominent" Detroiters referred to by *The Horseless Age* were headed by William H. Murphy, and included Mayor Maybury and several other wealthy men who foresaw the advantage of getting on the ground floor of what promised to be a thriving business. Optimistic as they were, none had the audacity to perceive what a Gargantuan industry was even then in the pangs of emergence.

Chief promoter of the idea to manufacture Mr. Ford's car

was Frank R. Alderman, who after the Detroit Automobile Company came into being became its first secretary. While the plans were being discussed Mr. Ford went about his regular duties at the Edison plant.

His associates could not understand why he "wasted time" with a gasoline engine when everyone was sure that electricity was the coming motive power. Before the summer had passed he found himself face to face with another momentous choice—whether to remain in his present position or to sever connections in order to devote all his time to the proposed new business.

Several stories have been told of that crucial decision in Mr. Ford's life. One was that he was given his choice of forgetting the car or quitting his job. In Dow's notebook was an entry stating that he had had "a talk with Henry as to what part he cared to play in some big plans that we were about to carry out." Dow recalled that the company was planning some extensions that would have meant a bigger job for Ford.

"On the other hand," said Dow, "I knew that he was giving a great deal of thought to the gasoline car he was trying to make. He made the parts for his first car right here in our shop on company time, and I never objected to it. But I knew the extensions we were about to make would so increase his duties as to take all of his time. I simply wanted Henry to know what we were planning so that he could make his plans accordingly, but there was no threat to discharge him nor any time limit set before he must decide. The talk was entirely friendly."

The proposition which the organizers of the new company offered Mr. Ford was to advance \$10,000—enough to pay for building ten cars. He in turn was to resign his job and become chief engineer, using his design for the product. After careful consideration he made his choice and handed in his resignation to take effect August 15, 1899. Indeed, he really had no choice; the call of the horseless carriage and the fulfillment of his dream were too powerful to be denied.

Four days later the morning *Free Press* announced his associa-

tion with the new company. The item was sandwiched in between advertisements for cabbages at two cents a head, and cucumbers three for a cent.

The draughtsmen already have taken possession of one of the upper floors under the direction of Henry Ford, who will be superintendent of the works. The company expects to have the plant in operation as soon as the machinery can be gotten in place and by October it is expected to have one or two automobiles completed.

As mouthpiece for the fledgling concern, Secretary Alderman gave out the news. He added:

We have solved the problem of overcoming the bad odor by securing perfect combustion, and with our new method of applying the power to the rear axle and of keeping all the machinery hidden from sight, we will have a fine motor carriage.

## 3

During the fall months Mr. Ford went about his new work with the vigorous enthusiasm that might have been expected of a man who had seen his dreams come true. Much work remained to be done, of course, before the first car bearing his name would be ready for the market, and he was not one to be hurried into giving the public something that was just good enough.

Dissatisfied with the operation of the "mixer," as the carburetor was then called, he insisted on improving it, even if it meant delay in the sale of the new vehicle. The ten thousand dollars melted away before the first one had been pronounced "OK," and more money was raised.

Meanwhile the contract for building the motor had been awarded to the Leland-Faulconer Company, a marine-engine concern in Detroit headed by Henry M. Leland. Impatient at the prolonged delays, Mr. Leland grew more and more caustic in his criticisms of the chief engineer. Slowly the remarks began

to win support among the backers of the enterprise until they reluctantly considered the wisdom of changing chief engineers.

Mr. Ford's news sense was one of the most valuable assets the promoters had acquired, although they did not realize it at the time. On a wintry day in 1900 when snow covered the Detroit streets, he invited a newspaperman to go for a ride. The invitation was accepted, and the writer had an adventure that he never forgot. Headlines appeared in the next Sunday's paper:

SWIFTER THAN A RACE HORSE, IT FLEW OVER THE ICY STREETS

Thrilling Ride on the First Detroit-made  
Automobile When Mercury Hovered  
About Zero

The ride began in the company's shop where the motor was first warmed up. When Ford got outdoors and began to speed up to twenty-five miles an hour the reporter tried to climb out. Ford persuaded him to stay on board and showed him how the car was started without first applying a match to light the spark, and explained that it was entirely safe to sit over a tank of gasoline that actually held three gallons!

He also told the writer how to drive a car—one of the first driving lessons ever reported.

"First we'll try her on the rough country road," said Ford, as he veered around an unexpected corner.

The puffing of the machine assumed a higher key. She was flying along about eight miles an hour. The ruts in the road were deep, but the machine certainly went with dreamlike smoothness. There was none of the bumping common even to a street car.

"Hold on tight," said Ford. "When we strike the asphalt we will have a run."

"How fast?"

"Twenty-five miles an hour."

"Hold on! I get out."

Bang, bang, went the warning bell underneath the seat. A milk wagon was coming ahead. The horse pricked up his ears,

his eyes gleamed ominously; he shivered as tho about to run away.

"Ever frighten horses?" I asked Ford.

"Depends on the horse," he replied. "A low-bred, ignorant horse, yes; a high-born fellow, no. There is as much difference between horses as between dogs. Some are wise, some otherwise. The other day I was passing down in front of the Majestic Building in that big crush. Along came a man with a speeding cart and racer. The man who was with me told me to slack down, as there would surely be trouble. The racer came flying right by us and merely gave us a glance. He was too wise to show any emotion. Hello! What's this?"

By this time the boulevard had been reached, and the automobileer, letting a lever fall a trifle, let her out.

Whiz! She picked up speed with infinite rapidity. As she ran on, there was a clattering behind—the new noise of the automobile.

Down an asphalted street, Ford rushed her. People came to the windows and looked out with apparent curiosity. Pedestrians stopped to see her pass. She picked up speed as she traveled; and excepting that new noise, the run was smooth as it might have been in a dream.

"Look out," cried Ford.

Before an answer could be given, the danger was past. With a simple twist of the wrist, the big machine turned gracefully to the right just sufficiently to allow a loaded brewery wagon to lumber on its way.

I began to have a creepy feeling and told Ford I wanted to get out.

"Nonsense," he replied. "No danger. All you have to do is to keep a sharp look-out ahead. It's like a bicycle, you see—"

"But that man at the crossing, right ahead."

"Gone," came the broken answer as another block of houses vanished in thin air as the automobile's speed developed. Block after block.

"Now you see how quick we stop her," said Ford. "I'll wager that a race horse going a mile in 1:40 can not be hauled up in less than one-sixteenth of a mile; we'll do it in six feet."

With that, the automobileer pushed something, and with the suddenness of a complete collapse, the auto's speed died instantly away, and the big machine came almost to an immediate standstill.

"Whew," was all I could say.

Slowly Ford reapplied the power and the big machine picked up speed and flew again up the street, like some frightened ghost.

"How long would it take to learn to run her?" I asked.

"Oh, that depends," replied Ford. "Have you any sense about machinery?"

"Little."

"Well, in a few days, maybe a few hours—there's little to learn. Ride a bicycle? It's the same thing. If you don't look out ahead you may get into trouble. That is the secret of it. When you are running fast, you must keep your eyes open. Then you are perfectly safe. I have a speed-regulator under my foot. If I lift my foot, it stops her instantly. What more could you ask? She simply can not run away."

"But that puffing. Isn't she liable to blow up?"

"Nothing to blow up."

"But we are sitting on three gallons of gasoline."

"That's nothing," said Ford. "It's perfectly safe. There is no fire around here and then, we are in the open air."

Ford pointed to one side of the street and said: "See that harness-maker's shop? His trade is doomed."

By this time, the automobileer had turned into the thick of Woodward Avenue, as far south as Montcalm Street, and was whizzing along through the crowd of vehicles. The speed was about eight miles an hour, but there was not the slightest danger.

"Yes, the old harness-maker," continued Ford. "I was in his shop ordering a lap robe. I heard him saying to a chum of his: 'That thing will ruin us. They have to turn a crank to start her. She beats the devil.'"

"The horse is doomed," I said to Ford.

At that moment, the auto whizzed past a poor team attached to a big truck.

"That's the kind," said Ford. "Those horses will be driven from the land. Their troubles soon will be over."

And the chuck, chuck of the new voice sounded for the first time in the strange horses' ears.

Meantime the auto had slipped like a sunbeam around the corner.

Manager Ford is an expert in cutting circles and other fancy figures with an automobile. He turns sharp curves with the grace and ease of a wild bird, under full sail, and if at times he grazes the curbstones, so that the newcomer on the automobile seat hangs on for dear life, Mr. Ford only smiles. There is not the

least danger. Besides, the spice of possible peril adds zest to the ride.

## 4

By the time Mr. Ford and his backers came to the parting of the ways a total of \$86,000 had been spent. He was given \$1,800 in return for his "mixer," and the promise that the name "Ford" would not appear on any of their products although the design of their car was Ford's.

Forthwith the company's name was changed to "Cadillac Automobile Company"—later the Cadillac Motor Car Company. In due course Mr. Leland became its president, eventually resigning to form the Lincoln Motor Car Company. By a strange turning of fate that company in 1922 became the property of Mr. Ford. Thus after two decades he and Mr. Leland became associated again, only under far different circumstances.

To one unacquainted with Mr. Ford's character the severance of his connection with the Detroit Automobile Company after a comparatively short period must have seemed a bitter disappointment. That it was a disappointment was undoubtedly true. It was necessary for him to begin all over again, seeking new backing, unless he was willing to return to his old job at the Edison plant. And that was one thing he would not do.

The termination of his connection with that first company revealed a characteristic of his that continued unchanged throughout his later career. While developing a new model or working on an engineering design he would not be hurried nor persuaded to release it for production until he was entirely satisfied with it. Executives might tear their hair, dealers might plead that competitors were stealing the market, but nothing could budge him. The first stockholders of the first company discovered that fact, and found that rather than yield to them he preferred to break connections.

As for Mr. Ford he was sure he could find other backers. He had faith in himself and his ideas; he could afford to be patient.

## CHAPTER SIX

### STRUGGLE FOR RECOGNITION

#### 1

AT THE turn of the century Detroit was a city of broad avenues and shaded streets. Along Woodward Avenue merchants lingered on the sidewalks in front of their stores, hailing acquaintances and discussing the latest news with occasional customers. Even though the population had almost reached 300,000, it was still a small big city. On Cadillac Square John's Night-Owl Lunch still did a thriving business. Debating societies argued the merit of the direct primary. The trend of the infant automobile industry was toward speed. Racing was on everyone's mind, and cross-country endurance tests, hill climbing, and track contests were shortly to hold the center of interest.

Everywhere promoters and men with money were seeking to enter the amazing new field, either with their money or in person. In many aspects it presented the appearance of a "gold rush," with a bonanza awaiting those who got in first and were able to stake out the best claims. To catch the public's eye it was necessary to do the sensational, and the awkward monsters chugging around the race courses at what seemed a breakneck speed furnished thrills aplenty.

That was the situation Mr. Ford faced as he rented space in the loft of a shop near the C. R. Wilson Body Company, on Cass Avenue beside the railroad tracks, and began his experiments. Helping him was a twenty-two-year-old machinist from Fort Wayne, C. Harold Wills. Wills worked daytimes at the Boyer Machine Company, and evenings with Mr. Ford.

In the back of Mr. Ford's mind was the determination to

establish himself so thoroughly with the public that financial support would be enlisted and a company could be organized which would follow more closely his own ideas. To do this he had to compete in the hazardous racing field, and this meant he must build a new and faster type of speedster.

Best known of all America's daring drivers was the great Alexander Winton. He had won the first American track record on Decoration Day, 1897, and since then had achieved additional glory by taking a car abroad and entering it in a foreign race for the first time. In American meets he had won almost every competition into which he had entered.

Daringly Mr. Ford proposed to meet the great Winton. After drawing plans for the new car he began its construction, aided by his faithful mechanic and loyal assistant Edward S. Huff, better known as "Spider."

Alfred P. Sloan in his *Adventures of a White Collar Man* recalled how an associate, Pete Steenstrup, visited Mr. Ford and found him and Wills poring over a drafting board. So cold was the loft that the two men stopped occasionally and put on boxing gloves to flail each other till they were warm.

One day an engineer of the Oldsmobile organization and Roy D. Chapin drove down Cass Avenue in a small curved-dash Oldsmobile to the Wilson plant, which manufactured Oldsmobile bodies. While they were returning a spring on the steering apparatus of the car broke, something that happened about once a week in those days. They lifted the car and turned it in the middle of the street, and by repeatedly kicking the wheels to maintain a forward direction progressed back to a shop where Chapin's companion said the ailing spring could be fixed. "A man came out, a quiet kindly-voiced man; he inspected the spring and called an assistant who removed it and carried it into a small building adjacent to the Wilson plant, where the man repaired it himself.

"The man," said Chapin, later head of the Hudson Motor Car Company, "was Ford."

The meet in which Mr. Ford proposed to enter was not held until October, and meanwhile another and surprisingly different experience came to him, to exert an important influence on his later life.

President William McKinley was assassinated on September 14 while visiting the Buffalo Exposition, and on the day of his funeral Mr. Ford was handed a small book as a gift by a friend.

"That little book gave me the answer I was seeking," said Mr. Ford. "It changed my whole life. From emptiness and uselessness it changed my outlook upon life to purpose and meaning.

"Its title was *A Short View on Great Questions*, by Orlando J. Smith.

"It was given to me in—let me see if I can remember—it was handed to me the very day President McKinley was buried. I remember I read three-fourths of it while he was being buried."

The October race had been promoted by Daniel Campau, owner of the Grosse Pointe track, William Metzger, well-known Detroit bicycle dealer, and Charles B. Shanks, Winton sales manager. Sweepstakes prize was a beautiful punch-bowl set which Shanks had picked out because he figured it would look well in the bay window of the Winton dining room.

On the night before the race, a twinkle-eyed man walked into Metzger's bicycle store on Woodward Avenue and posted his cash entrance fee for the sweepstakes event. He wore a leather coat and leather cap, with a pair of goggles shoved up on the cap.

"Howdy, Hank," said Metzger.

"Howdy, Bill," said Ford.

The punch-bowl set never reached the bay window in the Winton dining room.

With storm clouds rolling in from the northwest the day of the race dawned dark and gloomy. Despite the inclement

weather a large parade formed in downtown Detroit at 10:30 and made its way out to the old Grosse Pointe Blue Ribbon Track.

The procession was led by mounted police, followed by two steam vehicles propelling a tallyho coach in which a band played popular airs. By race time in midafternoon, fully eight thousand spectators had arrived, and a line more than a hundred yards long was waiting for tickets.

Court in Detroit was officially adjourned for the afternoon to give attorneys and others an opportunity to see the "*flaggers*." "The World's Championship and first big race in the West," newspaper headlines called it.

Not without its humorous aspects was the reporting of this race held four decades ago. "The event is the talk of Detroit's smart set," ran one account. "The boxes are almost all engaged and the display of feminine finery is expected to attract quite as much attention as the speedy machines."

Before the main event several preliminary races were run off. "A lively five-mile-race for steam machines opened the programme."

Finally the track was cleared for the "big" race, the championship event over a 10-mile-course for machines of any weights. As the cars were called to the starting line three reported, with William N. Murray, Pittsburgh millionaire, Winton, and Ford as pilots. But while they waited for the starting gun a mechanic discovered a cylinder leak in Murray's motor, forcing his withdrawal. "He had given up a fishing trip in the Adirondacks in order to race," one paper reported, "and it was a great disappointment as he is a daring chauffeur and has one of the fastest machines in the world."

Ford's car presented a marked contrast to Winton's smart racer, which had been developed from long experience. The latter boasted forty horsepower while the Detroit's smaller, lighter car produced about twenty-six.

During the first seven miles of the race Winton led by nearly

half a mile. "Mr. Ford had not had experience in driving his machine and did not dare to keep her on the pole as Mr. Winton did," wrote one scribe. "E. S. Huff, Ford's mechanic, hung far out in his effort to ballast the car, but she swung wide at every turn. That Mr. Ford was an amateur was plainly shown by the way he took the curves. At the turns he was compelled to shut off the power entirely and two-fifths of the time his machine was simply coasting."

Suddenly at the rear of the big Winton machine a wreath of blue smoke appeared and rolled into a great cloud. Winton's mechanic leaned over the sputtering motor, frantically pouring oil on red-hot bearings.

"Mr. Ford swept by them as though they were standing still. Down the stretch he came like a demon, and the crowd yelled itself hoarse. In the next three miles Ford increased his lead to fully three-quarters of a mile and won amid great cheering."

The Detroit mechanic had driven his car over the ten-mile course in 13 minutes, 23 $\frac{2}{5}$  seconds.

Under the headline, "ONCE IS ENOUGH," a Detroit newspaper next day announced:

Henry Ford broke into the front ranks of American chauffeurs yesterday, but it is likely that he will never again be seen in a race.

This determination to remain out of the races does not mean that Mr. Ford will not go on the track again. On the contrary he is convinced that his machine is capable of making a mile a minute, and he will go after that record.

Said Mr. Ford: "Put Winton in my car and it will beat anything in the country."

Track champion of the United States, Mr. Ford had no difficulty in obtaining the desired financial backing. On November

23, 1901, papers were filed at Lansing for the Henry Ford Company, capitalized for \$60,000, six thousand shares at a par value of \$10 each.

Among the promoters of the new concern was Mr. Ford's old friend William H. Murphy, who had backed him in the Detroit Automobile Company and had enough faith to take 1,000 shares in the present one. Others who were listed as original stockholders were Clarence A. Black, Albert E. F., White, Lew W. Bowen, Mark Hopkins and Henry Ford, each holding 1,000 shares.

Those assigned to Mr. Ford as chief engineer were given him in exchange for his car design. The racing car that had defeated Winton served as the company's exhibit in a Detroit automobile show that winter.

Headquarters for the company were established at 1343 Cass Avenue, Detroit, and the outlook at first seemed promising. However, additional money soon was needed, while production moved all too slowly.

According to the report filed with the Secretary of State at Lansing on December 31, 1901, the company then possessed personal property and real estate valued at \$32,240.68, owed \$5,810, and had outstanding accounts owing to it of \$433.86. Inasmuch as \$38,000 had been the total cash paid in, the business did not appear in a very prosperous light to prospective investors.

Meanwhile friction had again intervened among the original stockholders. Like most promoters of that early day, they wanted to join the parade of new companies manufacturing high-priced vehicles, while Mr. Ford held stubbornly to his idea that the big market was in the low-priced field.

By that time the ranks of Winton, Olds, Haynes, and Cadillac had received many new recruits. Down at Warren, Ohio, was Packard; at Westfield, Massachusetts, was Locomobile; at Cleveland, Ohio, was Stearns; at Auburn, Indiana, was Auburn; at Racine, Wisconsin, was Case. Others on the point of joining them included Buick, Premier, Franklin, Peerless, Pierce, Mar-

mon. Gradually the horseless carriage was becoming an automobile. Dashboards and fenders were receiving attention from designers.

Before long the stockholders and Mr. Ford found it impossible to go ahead, and the company was disbanded. Within three years after he had embarked in what had looked like a promising career in a fast-growing business, he had received two conspicuous setbacks. Yet they had not changed his ideas or caused him to lose faith in himself.

He resolved that when he made his third try he would not let the same mistakes occur. He could not afford to. In order to insure himself against that contingency he took advantage of every opportunity to consult with Detroit's successful manufacturers, men who had learned the fundamentals on which a business should be established in order to endure. The elder statesmen perceived his sincerity, and recounted lessons they had learned in the hard school of experience. These proved invaluable to him in later years.

## 4

Resuming his experiments, Mr. Ford obtained a small shop at 81 Park Place, back of the Parker and Webb building. Plans were drawn and construction begun on two powerful racing cars which were to be the fastest things on wheels. Helping Mr. Ford were Wills and "Spider" Huff. A young chap named John Wandersee was messenger and handy boy, and the mechanic was a capable worker named Gus Degener. Another member of the little group was a former bicycle riding champion named Tom Cooper, who foresaw fresh glories on the automobile race track.

As the heavy elongated chasses of the two cars took form, they resembled truck frames more than the streamline racing cars of today. Big oblong radiators stood up in front, obscuring the view of almost everything except the wire wheels. The cars

had no bodies—nothing but flat beds, each with a lone seat for the foolhardy driver.

Each car was painted a bright color and given a name. The first one, called the "Arrow," was subsequently wrecked while racing for a time record at Milwaukee. The other, named the "999" after the famous locomotive of the Empire State Express that had established a world's rail record, went on to become the greatest of all racing cars.

It was indeed a terrifying monster. Four huge cylinders with 7-inch bore and 7-inch stroke developed 80 horsepower, and the roar of the engine once it had got under way was, as Mr. Ford said, "enough to half kill a man."

Each cylinder had its own sight-feed oiler—a glass tube from which the oil ran as opportunity offered. The heavy crankshaft hung out in the open, free to catch dust or miscellaneous matter as it revolved. A long-snouted oil can was used to squirt lubricant into the open parts, as is done on slow-moving machinery today.

When it was cranked up for its first trial run the big red car sputtered and then quit cold. The trouble was with the "mixer"—it didn't receive the gasoline fast enough. Air pressure on the tank would solve the trouble, and there was only one way to supply that—cut a hole in the tank, tape a rubber hose in the hole, and have the mechanic ride along beside the driver, blowing like a cyclone into the tank. Then the "999" was ready for the races.

After Tom Cooper and "Spider" Huff had given it a preliminary try-out on an Ohio track it was brought back to Detroit in time to enter in the big Grosse Pointe meet. Accompanying it was a bicycle racer from Salt Lake City, Barney Oldfield, who had never driven an automobile but had the reputation of being afraid of nothing.

After Barney and Huff had unloaded the big car from the boat at the Detroit dock they left it there while they looked up Night-Owl John's lunch wagon at Cadillac Square. John was a familiar figure among the early racers; he had staked more than

one of them to grub. The wagon is one of the features in Greenfield Village today. While at the lunch wagon Huff and Barney arranged for the use of John's horse to tow the "999" through the more crowded downtown district.

Good-natured John drove his wagon home, and brought his horse back. Toward daylight they reached the wharf and hitched up the sturdy nag to the "999." After it had hauled the racer some distance out East Lafayette Street they unhitched and cranked up the eighty horses concealed in the four big cylinders.

As the "999's" exhaust pipe emerged at the side of the engine, instead of at the rear of the chassis, it sounded, as Barney once said, like the rattle of musketry in battle, and had they attempted to travel through the streets under their own power, the roar from the exhaust would have frightened horses and pedestrians half out of their wits.

When they arrived at the track Barney turned to Huff.

"Let me try it now," he begged.

The desired permission was granted and Barney oiled up. When he climbed into the seat he was extremely nervous, but before he could change his mind Huff had cranked the engine and clambered aboard behind Barney. Around the track they went, first slowly, then faster; and at the end of the ride, Huff spoke his approval. "Take her out again," he suggested. "You can get more speed out of her than Cooper or I."

Before the time came for the racers to line up in what was called the five-mile Manufacturers Challenge Cup, Mr. Ford came up and sought to dissuade Barney from risking his life in driving the car with so little experience. While they were still talking Barney went ahead anointing the bearings with oil and dropping more in the oil cups. Nothing Mr. Ford could say would stop him. He proposed to beat Alexander Winton and his Bullet even if he lost his life. "I might as well be dead as dead broke," he laughingly told a friend.

That historic race on October 23, 1902, always remained the biggest race in Oldfield's memory, although he went on to win

much larger and more important contests. He believed that the glory he won from driving the "999" had started him on the road to fame, and he was quoted as telling Mr. Ford that each of them had made the other—Mr. Ford through building the "999" for Barney, and the latter by piloting it to victory. "But," he declared with a smile, "I did much the best job of it."

Six cars had been entered in that Grosse Pointe race. Oldfield took the lead at the start and never slackened speed. At the finish the "999" was ahead by a full half-mile.

Mr. Ford's name once more resounded in the public prints, and a new group of backers lined up, prepared to gamble once more in the dazzling game of financing an automobile business.

# NOTICE

To Dealers, Importers, Agents and Users of Our

## Gasoline Automobiles

**WE** will protect you against any prosecution for alleged infringements of patents. Regarding alleged infringement of the Selden patent we beg to quote the well-known Patent Attorneys, Messrs. Parker and Burton: "The Selden patent is not a broad one, and if it was it is anticipated. It does not cover a practicable machine, no practicable machine can be made from it and never was so far as we can ascertain. It relates to that form of carriage called a FORE CARRIAGE. None of that type has ever been in use, all have been failures. No court in the United States has ever decided in favor of the patent on the merits of the case, all it has ever done was to record a prior agreement between parties."

We are pioneers of the GASOLINE AUTOMOBILE. Our Mr. Ford made the first Gasoline Automobile in Detroit and the third in the United States. His machine made in 1893 (two years previous to the granting of the Selden patent, Nov. 5, 1895) is still in use. Our Mr. Ford also built the famous "999" Gasoline Automobile, which was driven by Barney Oldfield in New York on July 25th, 1903, a mile in 55 4-5 seconds on a circular track, which is the world's record.

Mr. Ford, driving his own machine, beat Mr. Winton at Grosse Pointe track in 1901. We have always been winners

*Write for Catalogue.*

### FORD MOTOR COMPANY

688-692 Mack Avenue, - - - DETROIT, MICH.

## CHAPTER SEVEN

### BIRTH OF THE COMPANY

#### 1

Two months before the successful debut of the "999" on the Grosse Point track Mr. Ford had been able to enlist the support of a pioneer Detroit coal dealer, Alexander Malcolmson. While still engaged in perfecting the giant racer Mr. Ford found time to discuss with his Scotch friend his ideas for a small practical car, and after Oldfield's victory over Winton's Bullet Malcolmson decided to go ahead and assist in the formation of a company.

The proposal was nothing new to the fuel man. Often when he had called at the Edison plant in connection with a coal delivery he had chatted with the chief engineer about the possibilities of a self-propelling vehicle. Some of his enthusiasm had been transmitted to two of his employees, a car checker named James C. Couzens and a clerk, C. J. Woodhall.

By the fall of 1902 the industry was no longer on an experimental basis. During the preceding year the Oldsmobile company had produced the stupendous total of 1,400 cars, and they were now planning on increasing this to 2,500! The entire country's production was estimated at 9,000. In the National Association of Automobile Manufacturers were 112 members. Many machine shops and foundries had taken over the task of supplying parts to manufacturers, among them two brothers from Niles, Michigan—John and Horace Dodge. Skilled, careful mechanics, they had turned out such good work that it had been necessary for them to move into a larger shop. One of their big jobs was building transmissions for the Oldsmobile company.

When Alexander Malcolmson agreed to back his friend the

only stipulation was that his bankers were to know nothing of the connection. He established a new account in the name of his car checker, Couzens, at an entirely different bank.

One day Malcolmson called on a friend, Albert Strelow. "Albert, I want you to let us have room for a shop in back of your place. We're going to start building automobiles."

The man addressed, a slender keen-eyed individual with a straggling mustache and a stern face, looked curiously at his caller. He had known Malcolmson for years and had done more than one job for him. But this was something new.

"Who's with you?" he asked, bluntly.

"Some of my friends. We're getting the money together now."

"But what's the automobile? Whose car are you going to build?"

"It's designed by a chap named Henry Ford. You know him, I think."

Strelow didn't remember. He thought he had met Ford down at the plant—indeed, Strelow had built the Edison plant—but he wasn't sure.

"Come with me and I'll show him to you."

Strelow and Malcolmson crossed the city to 81 Park Place. Inside a small shop at that address they found two men busily at work. One of them at Malcolmson's summons came forward and shook hands with Strelow.

After they had left, Strelow turned to Malcolmson.

"No," he said, "I won't do it."

The coal dealer brought all his powers of persuasion to bear. In his particular field Strelow was an important figure in Detroit. A hundred painters and carpenters worked for him; he lived in a mansion of fifteen rooms and had a country home on the St. Clair flats. His support would mean much to the new company. Against his own judgment and largely because Malcolmson was not only an important customer but also a close friend, he at last agreed to provide the factory and to subscribe \$5,000 in cash.

## 2

Under the terms of the agreement between the coal dealer and Mr. Ford the former was to guarantee bills up to \$3,000 and to direct the financing through a representative in the management. The man he named to represent him was Couzens. It was the latter's duty to see that the \$3,000 was not needlessly dissipated, and also to try to line up investors. Malcolmson was to receive 25½ per cent of the stock issued, a book value of \$25,500.

Ford in turn was to receive an equal share, his subscription being accounted for by the new car model and seventeen patents on its mechanism, which were to become the property of the company.

The task of enlisting investors was not an easy one. Ford tried to persuade Mr. Dow down at the Edison company to take a "flyer," but his old boss refused. "I'm too busy with my own work," he said. "However, I wish you luck, Henry. You'll sell all the cars you can make without much trouble."

"I didn't know then, of course," recalled Dow later, "that he was going to make millions of the blamed things."

In after years Couzens described the discouragements he encountered in attempting to interest others in the new venture. He came down the stairs from one Detroit's office and sat down at the curb almost in tears because of the rebuff he had received.

Meanwhile plans to commence production went forward. Persuading manufacturers to supply parts was almost as difficult as enlisting investors. Mr. Ford sounded out the two Dodge brothers on the proposition of making his chasses. By February they were ready to talk business, and the group met in Malcolmson's office. When John Dodge outlined the requirements as to payments they seemed so exorbitant that Couzens leaped to his feet with the outburst: "We'll not stand for that!"

"Who in hell are you?" roared Dodge, also springing from his chair.

Malcolmson quieted them. "It's all right, John. Couzens is my adviser in this matter."

Before the conference broke up the Dodges signed a contract agreeing to build 650 chasses for Mr. Ford, providing Malcolmson guaranteed the bill.

The contract was drawn by John W. Anderson, Malcolmson's lawyer, who was likewise the author of the company's first prospectus. He and his partner, Horace H. Rackham, originally agreed to invest \$2,500 in the new concern, but after listening to Malcolmson decided to double the amount.

Anderson was forced to seek funds from his father who at that time was a physician at La Crosse, Wisconsin. He requested his father to obtain a loan of \$5,000 from the La Crosse bank, and in order to set forth fully the purposes for which it was to be used wrote a letter that in descriptive detail has remained since that time not only a document of historic importance but also a model in financial writing. His conservative father was afraid of the proposition but after careful consideration decided to send the money. The letter has preserved for history the early plans of the company. It read:

DETROIT, June 4, 1903

DEAR FATHER:

Horace and I have an opportunity to make an investment that is of such a character that I cannot refrain from laying the details before you for consideration, suggestion or advice.

Mr. Ford of this city is recognized throughout the country as one of the best automobile mechanical experts in the United States. From the very beginning he has been interested in their construction and development. Years ago he constructed a racing machine which was a wonder, and since then has constructed others in which he has raced all over the country, East and West, and has won numerous contests on many tracks. I simply mention this to indicate his reputation as his name is widely known in automobile circles everywhere, and consequently a very valuable and favorable asset to any automobile company.

Several years ago he designed, perfected and placed on the market a machine. A company was organized, but not long

after, desiring to devote his attention to a new model entirely, he sold out his patents and interest, and retired. The machine is known as the "Cadillac" (you will see it advertised in all the magazines), and is now being manufactured here by a large company. The only condition Ford exacted in selling was that the company should not use his name in the company.

He then turned his entire attention to the designing and patenting of an entirely new machine. Mr. Malcomson, the coal man, backed him with money, and the result is they have now perfected and are about to place on the market an automobile (gasoline) that is far and away ahead of anything that has yet come out. He has had applications for patents taken out on every point he has designed and has just received word that 17 of them have been allowed, every one of which is incorporated in the machine and, of course, cannot be duplicated in any other.

Having perfected the machine in all its parts, and demonstrated to their complete satisfaction and to the satisfaction of automobile experts, and cycle journal representatives from all over the country who came here to inspect it say that it was superior to anything that had been designed in the way of an automobile, and that it will be a sure winner, the next problem was how to best and most economically place it on the market. After canvassing the matter thoroughly, instead of forming a company, with big capital, erecting a factory and installing an expensive plant of machinery to manufacture it themselves, they determined to enter into contracts with various concerns to supply the different parts and simply do the assembling themselves.

So, they entered into a contract with the Dodge Brothers who own a machine shop here to manufacture the automobile complete—less wheels and bodies—for \$250 apiece, or \$162,500.00, for the 650 machines, which were to be delivered at the rate of 10 per day, commencing July 1st, if possible, and all by October 1st. I drew the contracts, so know all about it.

Now Dodge Brothers have the largest and best-equipped machine plant in the city. They have a new factory, just completed and it is not excelled anywhere as an up-to-date and thoroughly equipped machine shop. Well, when this proposition was made them by Ford and Malcomson, they had under consideration offers from the Oldsmobile, and the Great Northern automobile Company to manufacture their machines, but after going over Mr. Ford's machine very carefully, they threw over both offers and tied up with Mr. Ford and Mr. Malcomson.

Now, in order to comply with this contract, which was made last October, Dodge Brothers had to decline all outside orders and devote the entire resources of their machine shop to the turning out of these automobiles. They were paid only \$10,000 on account, and had to take all the rest of the risk themselves. They had to borrow \$40,000, placed orders for castings all over the country, pay their men from last October (they have a large force), and do everything necessary to manufacture all the machines before they could hope to get a cent back.

I go into this fully, so you may understand the faith that these experts and successful machinists have in the machine itself, in staking their whole business, practically, on the outcome, because under the contract if Mr. Ford or Mr. Malcomson did not pay for them, Dodge Brothers were to have the machines in lieu of the money—thus making the risk entirely theirs, as I state above.

In addition to this, contracts for the remaining parts of the automobile—the bodies, seat cushions, wheels and tires—were made so that they were to be supplied as wanted. The bodies and cushions by the C. R. Wilson Carriage Company at \$52.00 a piece and \$16.00 a piece, respectively. The wheels by a Lansing, Michigan, firm at \$26.00 per set (4 wheels). The tires by the Hartford Rubber Company, at \$40.00 per set (4 wheels).

They found a man from whom Mr. Malcomson rents a coal yard on the beltline R. R. with a spur track running into it. He agreed to erect a building, designed by Mr. Ford for their special use, for assembling purposes (which will cost between \$3,000 and \$4,000), and rent it for three years to Mr. Ford and Mr. Malcomson at \$75.00 per month. This building has been all completed and is a dandy. I went all through it today. It is large, light and airy, about 250 feet long by 50 feet wide, fitted up with machinery necessary to be used incidental to assembling the parts, and all ready for business.

To this assembling plant are shipped the bodies, wheels, tires, and the machines from Dodge Brothers, and here the workmen, ten or a dozen boys, at \$1.50 a day each and a foreman, fit the bodies on the machines, put the cushions in place, put the tires on the wheels, the wheels on the machines and paint them and test them to see that they run "O.K.," and it is all ready for delivery. Now this is all there is to the whole proposition.

Now, as to the investment feature. You will see there is absolutely no money to speak of tied up in a big factory. There is the \$75.00 a month rent for three years, and the few machines neces-

sary in the assembling factory. All the rest is done outside and supplied as ordered, and this, of course, is a big saving in capital outlay to start with.

The machines sell for \$750, without tonneau. With a tonneau the price is \$850. This is the price of all medium-priced machines and is standard. It is what the Cadillac and Great Northern sell for here, and what other machines elsewhere sell for. Now the cost, figured on the most liberal possible estimate, is as follows:

Machine . . . . .	\$250.00	Fixed by contract.	
Body . . . . .	52.00	Fixed by contract.	
Wheels . . . . .	26.00	Fixed by contract.	
Upholstering . . . . .	16.00	Fixed by contract.	
Tires . . . . .	40.00	(All these fixed by contract.)	
Cost of assembling . . . . .	20.00	This includes wages, rent, insurance and all incidentals at factory.	
Cost of selling . . . . .	150.00	This includes advertising, all salaries, commissions, etc. 20% on each automobile (it will be nearer 10 or 12%).	
	<hr/>		
	\$554.00		
Cost of tonneau . . . . .	50.00		
	<hr/>		
	\$604.00		
Selling price with tonneau . . . . .	\$850.00	Without tonneau . . . . .	\$750.00
Cost price with tonneau . . . . .	604.00	Without tonneau . . . . .	554.00
	<hr/>		<hr/>
	\$246.00		\$196.00
Throwing off \$46.00 (For any possible contingency) . . . . .	46.00		46.00
	<hr/>		<hr/>
	\$200.00		\$150.00

On the season's output of 650 machines it means a profit of \$97,500, without a tonneau, and more in proportion to those sold with tonneaus, and, of course, the latter is almost always bought, as it adds so much to the capacity of vehicle.

Now, the demand for automobiles is a perfect craze. Every factory here (there are 3 including the Olds—the largest in this country—and you know Detroit is the largest automobile center in the United States) has its entire output sold and cannot begin to fill their orders. Mr. Malcomson has already begun to be deluged with orders, although not a machine has been put on the market and will not be until July 1st. Buyers have heard of it and go out to Dodge Brothers and inspect it, test it and give their orders. One dealer from Buffalo was here last week and ordered twenty-five, three were ordered today, and other orders have begun to come in every day, so there is not the slightest doubt as to the market or the demand. And it is all spot cash on delivery, and no guarantee or string attached of any kind.

Mr. Malcomson has instructed us to draw up articles of incorporation for \$100,000.00 limited liability company, of which he and Mr. Ford will take at least \$51,000.00 (controlling interest), and the balance he is going to distribute among a few of his friends and business associates, and he is anxious that Horace and myself go in with him.

Mr. James Couzens, whom Spencer met, is going to leave the coal business, for the present at least, and devote his entire time to the office end and management of the automobile business—and he is a crackerjack. He is going to invest, as he expresses it, "all the money he can beg, borrow or steal" in stock.

Mr. Dodge, of Dodge Brothers, is going to take \$5,000 or \$10,000 and two or three others, like amounts. Horace is going to put in all he can raise, and I do want to do the same if I can, because I honestly believe it is a wonderful opportunity, and a chance likely not to occur again. Mr. Malcomson is successful in everything he does, is such a good business man and hustler, and his ability in this direction, coupled with Mr. Ford's inventive and mechanical genius, and Mr. Couzens' office ability, together with fixed contracts which absolutely show what the cost will be, and orders already commencing to pour in, showing the demand that exists, makes it one of the very most promising and surest industrial investments that could be made.

At a conservative estimate the profits will be 50 per cent with a good sinking fund in addition. The machines are turned into money as fast as delivered and indicate a return of the whole original investment practically by winter, if nothing is turned into the surplus account. It is a well-known fact that the Oldsmobile Works, with a capital of \$500,000, cleared up a million

dollars last year and are now preparing plans to double their capacity for next year, which indicates, as strong as anything possibly can, what the demand is throughout the country.

I went all over the Dodge Brothers plant and the assembling rooms today, and even into the room where the half-dozen draughtsmen are kept under lock and key (all the plans, drawings and specifications are secret you know), making drawings and blueprints of every part, even to the individual screws, and was amazed at what had been accomplished since last October. Not another Automobile Company has started and got its product on the market inside of three years before this.

## 3

While plans for the company were being formulated, an advertisement was inserted in a trade journal, announcing the advent of the "Fordmobile" car, to sell at \$850. It was to be manufactured by the Fordmobile Company, Ltd. Among other statements was one that the Dodge Brothers machine shop had been leased by the new concern. This so displeased John Dodge that he demanded and received an apology from Malcolmson, as well as a retraction of the publication.

The two Dodge boys agreed to take 50 shares each, giving promissory notes therefor, and meanwhile were paid \$10,000 on account from money contributed by Malcolmson's uncle, John S. Gray, who was also president of the German-American State Bank. He had been induced to buy 100 shares after he had gone with his nephew, Mr. Ford and Couzens to the Dodge machine shop and with his own eyes had seen the work in progress on the new car. The visit came as the aftermath of a conference between the Dodge brothers and Malcolmson, during which the former had demanded payment on work completed. Under the contract terms they had the right, if they failed to get their money otherwise, to market the cars themselves.

Malcolmson, who had spent all his available cash, asked them for an extension, but they needed money to carry on the work; and finally the coal dealer realized it was a case of pay up or lose everything. He decided to appeal to Gray, arranged to show

him the work at the Dodge shop, and as a result obtained the needed \$10,000. In return for that investment Gray was promised the presidency of the company, and Malcolmson agreed to guarantee him against loss.

Two of Malcolmson's friends let him put them down for 50 shares each. They were Vernon E. Fry and Charles H. Bennett. The former, a cousin of the coal man's, was a dealer in real estate and subdivisions; the latter, besides being president of the Daisy Air Rifle Company of Plymouth, was a mechanic and sympathetic fellow inventor.

On a sultry June night in 1903 the men who with difficulty had raised \$28,000 in cash convened in Malcolmson's office to lay the foundations of the company.

In the foreground was Malcolmson, the evangelist, practically sole guarantor of the venture, undertaking to act as surety for most of the cash invested.

In the background were his two employees, Couzens, and Woodhall, whose attributes as prospective stockholders were almost entirely confined to their employer's enthusiasm. Couzens had \$900, had borrowed \$100 from a sister, and contracted for an additional \$1,500, Malcolmson endorsing his notes. Woodhall gave a four-months note for \$1,000.

The list of stockholders was as follows:

Alex Malcolmson . . . . .	255 shares
Henry Ford . . . . .	255 shares
John S. Gray . . . . .	105 shares
John F. Dodge . . . . .	50 shares
Horace E. Dodge . . . . .	50 shares
Horace H. Rackham . . . . .	50 shares
John W. Anderson . . . . .	50 shares
Albert Strelow . . . . .	50 shares
Vernon E. Fry . . . . .	50 shares
C. H. Bennett . . . . .	50 shares
James Couzens . . . . .	25 shares
C. J. Woodhall . . . . .	10 shares

---

1000 shares

An even dozen. The story goes that a thirteenth, Dr. Fred E. Zumstein, also sought to subscribe \$500, but that someone objected to starting with thirteen and John S. Gray raised his subscription from 100 to 105 shares in order to complete the list without Zumstein.

Whether that be true or not, the fact was that Couzens' sister, Miss Rosetta V. Couzens, was later entered as a stockholder with one share, for which she had loaned her brother \$100 instead of the \$200 he had requested. That hundred dollars was eventually to bring her \$355,000.

Mr. Ford was elected vice-president and chief engineer with a salary of \$300 a month; Couzens was secretary and business manager at \$200; Malcolmson became treasurer; and John Dodge and Horace H. Rackham were added to the board of directors.

And so the company—with \$28,000 in cash—sallied forth like David, to engage the Goliath of a well-fortified industry already preparing to crush with gigantic strength the audacious stripling.

## CHAPTER EIGHT

### GETTING UNDER WAY

#### 1

WHEN LeRoy Pelletier sat down to compose the first description of the new Ford car a vision of the future must have inspired him. The desire of the company, he declared, was to market an automobile especially dedicated to "everyday wear-and-tear business, professional and family use," one that would be "admired by man, woman and child alike for its compactness, its simplicity, its safety, its all-around convenience."

Last but not least, it was to have "an exceedingly reasonable price, which would place it within the reach of many thousands."

This was the Fordmobile, the "Latest and Best"—the "Boss of the Road." Mechanics who examined the design pointed out that it provided far fewer parts than the usual single-cylinder car on the market at that time.

The first "factory" at 697 Mack Avenue was a barnlike affair 250 feet long and 50 feet wide, and, as Anderson's letter pointed out, was connected by a spur track with the Belt Line, so that parts could be hauled in by freight car and unloaded as cheaply as possible. The rental, as Anderson wrote, was \$75 a month.

From the outset "J.C." (as Couzens was nicknamed) performed the duties of secretary, bookkeeper, cashier and, after November 13, sales manager. His assistant was a one-armed stenographer named Talmadge. The latter was soon asked to find another job because he insisted on driving a car, and "J.C." was afraid he might hurt somebody. Couzens hired and fired, kept the books, collected, spent and saved the cash, and signed agencies. He struck off the first annual statement.

Mr. Ford was superintendent, general manager, master mechanic, and vice-president. C. Harold Wills resigned from the adding-machine company to act as his right-hand man. Other "old" employees were Wandersee and Degener. Jacks-of-all-trades, they performed any service from drafting to toolmaking.

Their product, the first Model A, has long since become a museum piece. Its engine was described as a two-cylinder "opposed horizontal" and was rated at eight horsepower. Six feet long, the car weighed 1,250 pounds, and achieved a top speed of thirty miles an hour. One filling of its gas tank would take it 100 miles.

A "front door" was as yet unthought of. The driver sat exposed to public view, and slid in and out as in the old-time carriage. The steering wheel was on the right side, nearest the curb.

Simplicity, as had been said, was the watchword. The transmission (or as it was called, the "change gear") was of the planetary type with high or slow speed, plus reverse. Gears were protected by an oil-tight, dustproof case, and all parts were easily accessible. Both ignition and throttle controls, so important in early driving days, were hand-adjusted.

## 2

More than a score of strong competitors already occupied the field which the company was entering—pioneers like Haynes, Olds and Winton—popular makes like Packard, Cadillac, and the air-cooled Franklin. Because of a patent covering almost every application of a gas engine to a vehicle, granted back in 1895 to George B. Selden, of Rochester, all manufacturers were required to obtain licenses and pay royalties to the lessee of the patent, the Electric Vehicle Company of Hartford, Connecticut. At that time licensees were assessed \$15.00 per vehicle royalty, or \$5.00 per engine. Some agreed voluntarily to this, others were forced to do so if they wished to continue in business.

In order to protect themselves, the licensees had formed an

Association shortly before the Ford enterprise was launched, and had arranged with the Electric Vehicle company to control the industry. Thereafter any newcomer seeking to enter the field must be voted into membership by the others before he could secure a license from the patent lessee. If elected, he must pay a royalty of  $1\frac{1}{4}$  per cent of the catalog price on every car built; but no concern could be voted in until it had been in business one year.

Hardly more than a month after Mr. Ford embarked in business, he was threatened in late July with prosecution. An advertisement appeared in a Detroit newspaper warning against "unlicensed" automobiles, their manufacture, sale, purchase, or use.

The Association did not hesitate to threaten purchasers or users of "non-member" cars. Injunctions to tie up such vehicles, damages because of "injury" suffered by the members, faced those who dared to patronize outsiders.

As the advertisement couched it:

No other manufacturers or importers are authorized to make or sell gasoline automobiles, and any person making, selling or using such machines made or sold by any unlicensed manufacturers or importers will be liable to prosecution for infringement.

The warning came as Mr. Ford was ready to ship his first cars. Mr. Ford and "J. C.," coats off, collars unbuttoned, sleeves rolled up, helped to load the shipment into the freight cars, bound for Indianapolis, Minneapolis and St. Paul. Two days after the warning was issued, Ford's reply appeared under the same headline as that used by his adversaries. In addition to a pledge to protect dealers and users against possible prosecution, he presented an analysis of the association's claims.

The Selden patent is not a broad one, and if it was, it is anticipated. It does not cover a practicable machine, no practicable machine can be made from it and never was, so far as we can ascertain. It relates to that form of carriage called a "Face Car-

riage." None of that type have ever been in use, all have been failures. . . .

We are the pioneers of the Gasoline Automobile. Our Mr. Ford made the first gasoline automobile in Detroit and the third in the United States. His machine made in 1893 is still in use. Our Mr. Ford also built the famous "999" gasoline automobile which was driven by Barney Oldfield in New York City on Saturday a mile in  $55\frac{1}{2}$  seconds, on a circular track, which is the world's record.

Mr. Ford, driving his own machine, beat Mr. Winton at Grosse Point in 1901. *We have always been winners.*

So he answered the challenge. At the same time he speeded up work at the Mack Avenue plant, and more than one prospect, admiring Mr. Ford's independent spirit, gave him an order.

Before long, factory space was so crowded that an addition to the building had to be made. . Conservative Strelow refused to spend the money, and Mr. Ford finally decided to have it put on by the company, although it took nearly one-half their entire capital.

The threatened lawsuit was not the only difficulty worrying the chief engineer. A purchaser at Pittsburgh complained that his car would not climb the hills. Using for his proving ground a crude incline propped against the side of the factory (by which deliveries could be made to the second floor), Mr. Ford drove a car up the ascent time and again. More complaints arrived, and he ordered all shipments stopped until he could locate the trouble. "J. C." pointed out that if this happened the company would go bankrupt.

"Discounting our bills of lading is all that stands between us and that, right now," he declared.

His counsel was heeded; and while Mr. Ford went ahead with his tests, other men were sent into the territory to correct the fault in the various localities, as soon as he could get word to them.

The addition to the factory space was soon outgrown, too,

and it was apparent that a much larger layout must be obtained to take care of his needs.

For its Eastern outlet the company succeeded in signing the C. A. Duerr & Company, and shipped 25 cars to New York City. A guarantee to protect the dealer and his customers was posted by Ford, who by this action definitely called for a showdown by the Association. The long threatened suit was brought in October, with three factors joined as defendants—the manufacturer, Ford, the dealer, Duerr, and the purchaser of Ford car No. 134, a New York advertising man.

Meanwhile the company had already declared its first dividend of \$2,000. Soon it was to declare a second of \$10,000, both within less than six months after its beginning.

About the same time "J. C." inaugurated a sales policy that continued from that day forward. One month after he took charge of the sales he learned that his old boss, Malcolmson, had given a friend named Harry M. Jewett a discount on the purchase of a car. He protested so vigorously at the stockholders' meeting that the others saw his point, too; and in order to end the argument Malcolmson agreed to pay over the difference himself.

## 3

While the licensed group of manufacturers were girding themselves for what was to be a finish struggle, Mr. Ford stole a march on his opponents by a move that electrified the country. The scene of his exploit was a small fishing village on the shores of Anchor Bay, an arm of Lake St. Clair northeast of Detroit.

On a bitterly cold day soon after the first of the year he arrived with Mrs. Ford and Edsel, then a lad just past his tenth birthday. What he proposed to do was to break the world's record for one mile held by Augieres, a French driver, who had set the official time of 40½ seconds.

He planned to use a straightway course on the frozen sur-

face of the bay, traversing it with his own "999"—faster than the car had ever been driven, even by Barney Oldfield.

In spite of bleak weather Mr. Ford arranged for a crew of farmers to scrape snow from the ice and haul cinders from the near-by powerhouse. These were sprinkled over the course when the sun was out, to let them sink in enough to provide a surface that would partially grip the big tires.

January 8 was set as the day to make the attempt, but unfortunately no arrangements were made for representatives of the American Automobile Association to be present.

Unaware of this oversight, Mr. Ford and "Spider" Huff warmed up the engine and at the given signal hurled the huge machine over the measured mile in the record-breaking time of 36 seconds.

One of those who saw it done was Fred P. Schlosser, son of the local hardware dealer. The entire course was four miles long, permitting distance for the car to get under speed before entering the measured mile and also distance beyond in which to stop it. According to Schlosser the measured mile was lined on the day of trial by townspeople, "most of whom had never seen the like of the machine that smoked and roared to a speed beyond their comprehension."

E. E. Crook, superintendent of schools, recalled that at the end of the trial Mr. Ford stopped the "999" in a cloud of snow that whirled over the decks of the *Garibaldi*, a sailing schooner frozen fast in the ice.

The reason for that was that "Spider" Huff was puffing so hard on the rubber hose leading to the gas tank that Mr. Ford had to swerve into a snowbank to stop the mad rush of the car. He and "Spider" had a system of signals arranged; one kick meant "blow harder," and two meant "stop." In the excitement "Spider" got them mixed, and the more Mr. Ford kicked him the harder he blew.

The description of the trial as chronicled in the *Detroit Free Press* included the following:

The carbtorator is designed to be regulated by the driver by means of a foot pedal. The jarring of the auto made this impossible and Ed Huff volunteered riding in front of the windshield and controlling the throttle. Neither wore face protectors. The machine twice swerved from the track, striking the banked snow.

The race against time was in vain, because of the absence of officials, and four days later Mr. Ford was forced to repeat the hair-raising exploit, this time with official timers present.

On that second run Mr. Ford was clocked at  $39\frac{2}{5}$  seconds, slower than the unofficial time but still faster than Augieres. Affidavits were prepared and submitted to the American Automobile Association, and at a meeting in New York City during the following week the record was officially accepted as the world's best for the one mile straightaway.

## 4

As the headlines blazoned the news: "39 $\frac{2}{5}$  SECONDS THE RECORD OF HENRY FORD," Philadelphia's famous merchant prince John Wanamaker signed up as an agent of Ford cars and established temporary salesrooms at East 37th Street, New York City. Time did not permit him to reserve space in the Automobile Show, but room in the basement was obtained and the "999" was placed on exhibition.

Soon he likewise was a defendant in the suit alleging patent infringement.

Nineteen-four was the year in which Theodore Roosevelt was re-elected to the White House and the Louisiana Purchase Exposition opened at St. Louis. Lovers of the English language bemoaned the invasion of French terms—tonneau, chassis, chauffeur, garage. At the annual banquet of the Association one speaker protested: "*Drive* is a verb, yet we speak of going for a drive."

Driving an automobile was an exciting adventure. In New York State—for example—upon signal from persons driving or

leading horses the operator of the automobile had to halt, and in case of accident give his name and address. Stops of reasonable length were required to allow restive horses to pass.

The opening of the Exposition at St. Louis found the Ford Company entering an exhibit, its first at a World's Fair. A tour was arranged from eastern points to St. Louis, and the course of the plunging vehicles across the country was marked by slaughtered chickens, ducks and dogs. Farmers, sensing the future, tied their horses to posts along the route to acquaint them with the road monsters.

Drivers visiting the Fair were required to deposit \$5.00 with the city on arrival, and announce the length of their stay. In return they received a special license plate for use while in St. Louis, and were informed as to local regulations, including the speed limit—six miles an hour.

Numbered tags to identify motorists were just coming into use. In Chicago members of the Automobile Club kept themselves immune for a time by applying to the court for an injunction and obtaining it. One difficulty in that city was that three separate park boards—North, South and West—legislated ordinances for all drivers under their jurisdiction. These laws differed from each other and also from those of the municipality itself. Each required separate tags, and the befuddled Chicago motorist must display four different license tags if he wished to drive about the city.

In remote communities advent of the first car caused run-aways and a small riot. When Paul Naschke drove his new Ford down the streets of Galveston, Texas, after unloading it, its back-firing frightened a prominent citizen so much that the latter drew a knife and advanced ominously. "If that happens again, I'll kill you," he threatened.

Not infrequently while driving in the country halts were made to untangle long grass from the sprocket wheel under the car. Often it was necessary for a member of the party to walk ahead of the car and point out the road.

J. V. Waldrop, an early Alabama Ford dealer, recalled meeting a farmer and his wife in a wagon. The woman jumped from the wagon and took to the woods on approach of the car. Seeing that the horses were frightened, Waldrop shut off his engine, walked over to the farmer and asked if he could help with the horses. The farmer said: "Hell, no, but you can help me tame my wife!"

## 5

Part of that year was spent by Mr. Ford at the Fair in connection with his exhibit, and as one result a branch was established in St. Louis the following year. When it opened its doors less than a dozen Ford cars could be found in the entire region, from southern Illinois to Indian Territory.

He gave his deposition in the Selden patent suit during July and August, 1904, at Detroit. The Association lawyers cross-examined him closely as to the source of the ideas which were later embodied in his car. He recalled his interest in traction engines during boyhood.

"What examination did you make of those engines as a boy," the attorneys demanded, "that would enable you now, twenty-nine or thirty years afterward, to come in and testify as to exactly how those engines did, beyond perhaps remembering that you saw them run without being dragged by horses?"

Mr. Ford answered that one thing which impressed him was "that they put them in and out of gear the same as mowing machines."

"Do you mean to say," the lawyers scoffed, "that you carried that recollection with you from then to the present time?"

"Yes," replied the engineer. "Better than I can remember things that only happened last year."

It was then that the question was put about the turns per minute made by the engine, and he answered: "I asked the man that was running it how fast the engine ran and he told me 200 turns per minute and I have never forgotten it."

Hanging in the library of the Gray home in Grosse Pointe is the original of one of the first semi-monthly pay rolls of the company as it had been written with lead pencil by John S. Gray, its first president. Dated 1904, it listed the names of every man in the organization of that date together with their rates of pay, and showed that Mr. Ford and "J. C." had already received increases in salary:

H. Ford . . . . .	416.67
J. Couzens . . . . .	166.66
Wills . . . . .	125.00
J. H. O'Brien . . . . .	87.50
Audrich . . . . .	83.33
Ch. Grant . . . . .	62.50
Hayes . . . . .	62.50
Kulick . . . . .	50.00
Carey . . . . .	50.00
Grose . . . . .	37.50
Aikenhead . . . . .	50.00
Lunbach . . . . .	50.00
Clarkson Miss . . . . .	17.50
Coutrik . . . . .	25.00
L. Hauck . . . . .	20.00
F. Rockelman . . . . .	32.50
Hague . . . . .	50.00
Huff . . . . .	50.00
Meyer . . . . .	
Miller . . . . .	20.00
Mead . . . . .	62.50
Logie . . . . .	32.50
Linden C. M. . . . .	37.50
Kaplan . . . . .	25.00 left
Parsons . . . . .	50.00

Easily identified on the list are the names of Couzens, Wills and Huff. Kulick remained with Mr. Ford for many years, driving racing cars and piloting one of the Model T's to take part in the Guggenheim trophy race of 1909. Rockelman rose steadily, to become manager of the Seattle branch of the Company, gen-

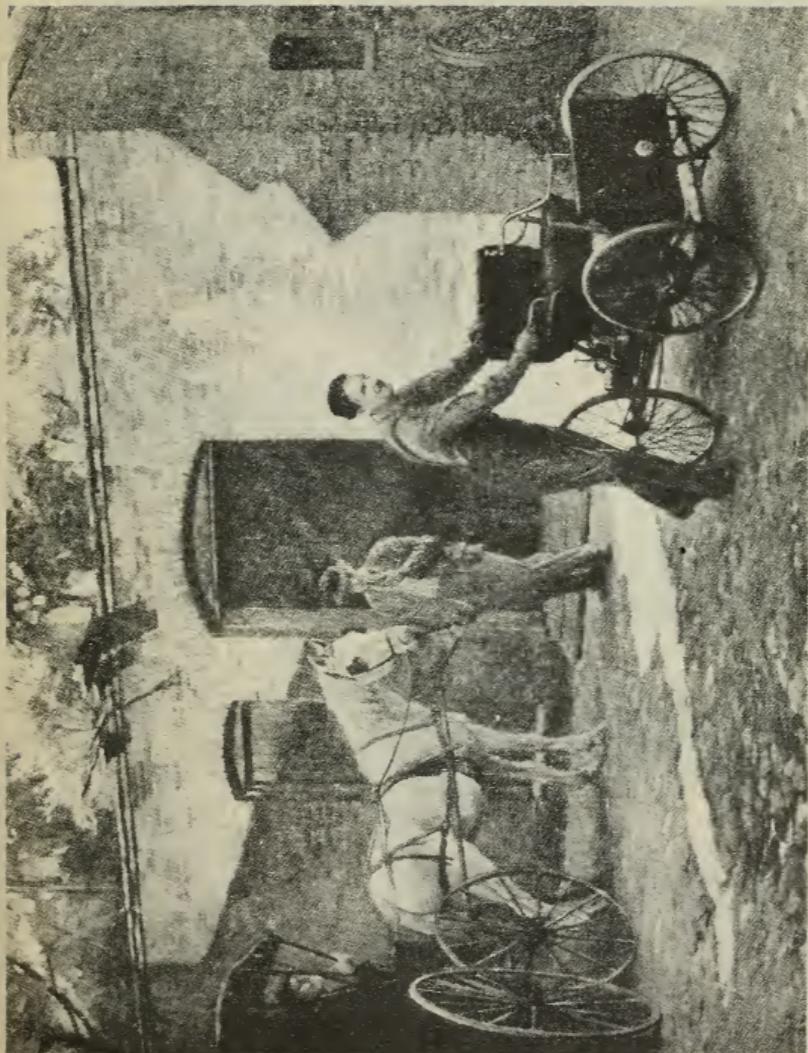
eral manager of the Detroit, Toledo and Ironton Railroad after Mr. Ford acquired it, and ultimately general sales manager of the entire company.

Charlie Grant was shipping clerk—a job with plenty of headaches in those days. His willingness to work early and late attracted the attention of “J. C.” One day he called Charlie into his office and told him: “I want you to put \$2,000 into stock of the company.” The suggestion took Grant’s breath away, but he could not see how a clerk on his salary could raise the money. So he let the opportunity pass by. Years afterward, when the two men chanced to meet, “J. C.” and Grant figured that the \$2,000 in stock would have drawn \$3,500,000 in dividends alone.

Two names not on the foregoing list were added to the company pay roll during 1904. One day a young fellow all dressed up in his Sunday suit came in and asked Wills for a job. He had worn his best clothes to make a good appearance, and was in a quandary when Wills asked him to start work at once. His name was P. E. Martin. “We had quite an argument,” said Martin, “he wanting me to go right in the shop and I wanting to go home and change my clothes. Finally he said it would be all right if I came back in the morning, so I did. I’ve been here ever since.” (In fact he became vice-president of the company, and served as such until he retired in 1941.)

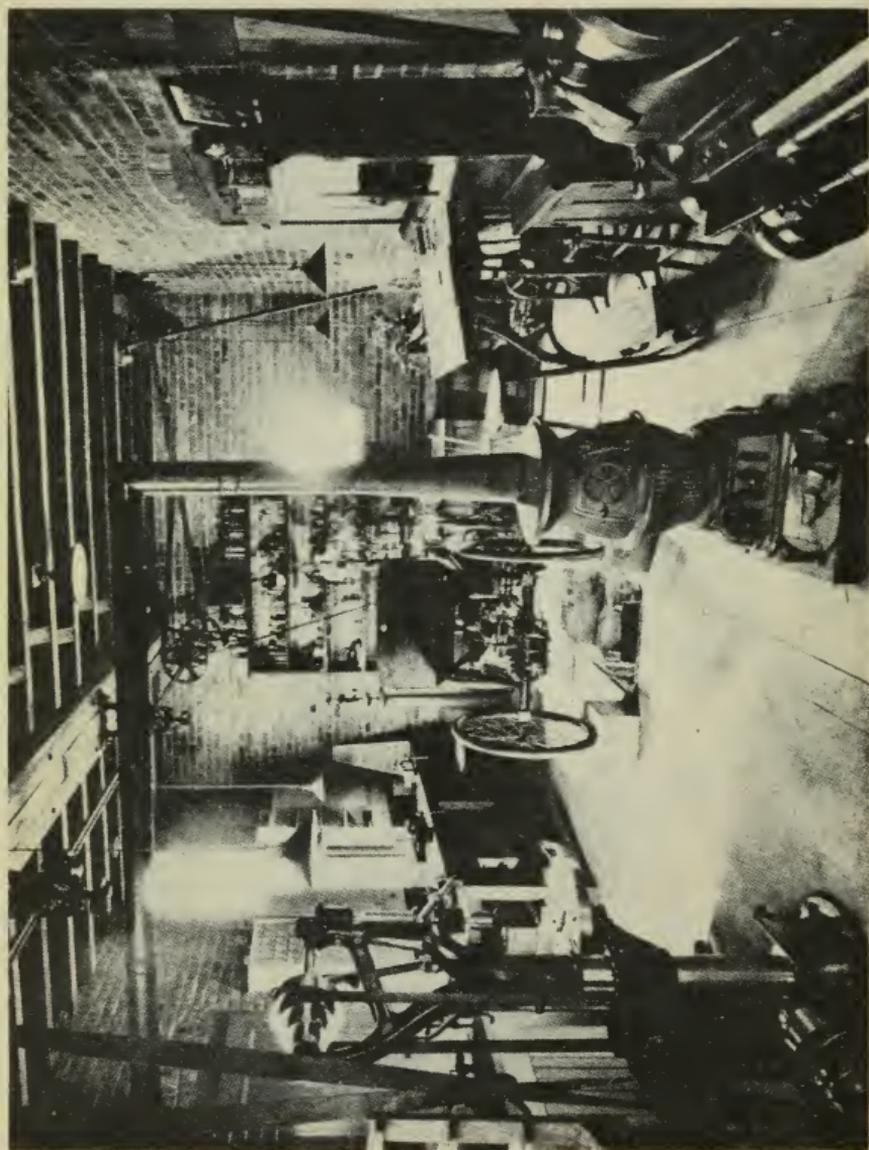
Another name was that of a patternmaker, Charles E. Sorensen, who was employed by a firm of machinists and foundrymen named Bryant & Berry. At their shop he had met Mr. Ford while the latter was still with the Edison company and had made some early patterns for his castings. As a youth of fourteen, Sorensen had served as an apprentice in the pattern department of the Jewett Stove Works at Buffalo, where his father was superintendent, and had received training in the toolroom, foundry, machine shop and drafting room.

Even in 1904 good patternmakers received high wages, but Sorensen believed there was a future in this new horseless carriage business, and he recognized in Mr. Ford a true mechanical



THE FIRST FORD CAR LEAVES ITS GARAGE

An artist's conception of the scene in the alley behind 58 Bagley Avenue, Detroit, when the first Ford car was wheeled out of the shop.



INTERIOR OF THE BAGLEY AVENUE WORKSHOP

genius. He applied for work with the newly organized company, but Mr. Ford would not let him risk his future in what might easily prove a hazardous enterprise. Finally, before the close of the first year, he consented to Sorensen's coming over to take charge of the pattern shop, and thus began the career of the man who in time was to be regarded as one of the great production giants of the industry. He, too, in time became a vice-president of the company.

The first expansion of the company occurred during 1904, when a downtown sales branch was opened on Jefferson Avenue and a sister factory was established across the Detroit River on the Canadian side. An old wagon plant was utilized, whose only machinery was a drill press; and power was furnished by the old steam engine—the first one Mr. Ford had tended at the Edison works, which he had located and purchased for use in the new plant. Much of the stock of the Canadian company was taken up by the dozen men who had founded the parent concern.

On October 2 of that year announcement of the Ford 1905 line appeared in the *Automobile Review*. Two models were listed, the B—"Henry Ford's latest and greatest success," selling for \$2,000; and the C—priced at \$950.

"Our 1905 touring car weighs only 1710 pounds," declared the advertisement. "The four-cylinder vertical motor develops over 20 horsepower, so that this car has more power for its weight than any car in the world." Specifications included: wheel base of 92 inches; direct drive with universal coupling; cylinders 4x5; automatic oiling device with force feed; large side entrance; tonneau seating three people.

As to the Model C—"The improvements on the Ford two-cylinder car place this model ahead of any car on the market at anywhere near the price. Both in style and in mechanical construction, this car is a year in advance of its nearest competitor. Double-opposed motor of 10 actual horsepower, planetary transmission, chain drive, and increased gasoline capacity. The most stylish low-priced car on the market."

The Model B with its four cylinders and 20 horsepower was a concession to those stockholders who believed Ford should build a heavy, high-priced automobile. His own ideas were more nearly represented in the two-cylinder 10-horsepower Model C.

These two cars were followed early in 1905 by one which was "in between" them, a Model F priced at \$1,200, a four-cylinder vehicle with a light, strong frame and a powerful engine.

"People are going to get out of the habit of buying a new car every year," read a company advertisement in *Colliers' Weekly* during May 1905. "That is an absurd proposition. Who would think of buying a new carriage every spring? . . . It is time for the Automobile business to settle down and give the Automobile buyers real value for their money."



The 1904 Model B Ford. Henry Ford's first attempt at manufacturing a large car. It had four cylinders developing 20 horsepower

## CHAPTER NINE

### CONTROL

#### 1

Two dividends totaling \$88,000 were declared by the company during 1904, and in 1905 they were increased by \$200,000. Prosperity had attended the stockholders from the outset, despite the overhanging lawsuit. According to the minutes of a directors' meeting September 9, 1905, the salary of J. C. Couzens was raised to \$8,000 a year.

With funds from the working capital a new plant had been completed at Piquette and Beaubien Avenues, the last word in automobile factory construction of that time. Clustered around a three-story brick central building were a number of smaller structures, and although these provided much more floor space than heretofore, they became more and more congested after operations were transferred from the Mack Avenue shop. Materials had to be piled on the ground wherever there was room. Any orderly system of arrangement was impossible.

Even the testing of finished cars had to be done outdoors; the so-called testing room was too small to handle more than a fraction of the daily output.

Manufacturing technique was still feeling its way. The smaller buildings housed a six-cylinder factory, a store room, a paint shop, a steel plant, and a powerhouse.

Across the top of the main building stretched a huge banner with the words: "Home of the Celebrated Ford Automobiles."

Among the office employees was a young bookkeeper and cashier named Klingensmith. When he began work for the company at \$65 a month there were seven men on the staff. One day after a long search for an invoice he went back into the shop

and asked Mr. Ford if he had seen it. Stopping his work for a moment, Mr. Ford suggested, "It might be upstairs." The youth looked in an upstairs room and found not only the invoice but a whole batch of unopened mail. He filled two wastebaskets, took them to the office and worked late into the night, slitting open the envelopes and sorting out the contents—checks, bills and letters.

The experience taught Couzens a lesson, and gave him an idea. "From now on," he told Klingensmith, "it will be part of your job to open Mr. Ford's mail." Thus Mr. Ford acquired his first secretary. Later Klingensmith was said to have had a young assistant; afternoons after school Master Edsel often came in and helped to get out the mail, putting stamps on letters or doing other work.

In charge of the drafting room was Carl Emde, a German who had taken out his first papers. Both Emde and Klingensmith were to figure later in the Ford chronicle—indeed, the latter in time became vice president and treasurer of the company.

Among the workmen in the shop was Robert S. Taylor, who became a well-known automotive engineer at Seattle in later years. "Work started at 7:00 in the morning," he recalled, "and we had half an hour for lunch at noon. Resuming work at 12:30, we continued until 5:30 P.M., a 10-hour day for six days each week, making a 60-hour week. Overtime began at 6:00 P.M. and continued until 9:00; however, this was not usual. Night shift worked 55 hours each week and got paid for 60. Wages ranged from 22 cents per hour for a novice, to around 35 cents per hour for an experienced man, the weekly wage ranging from \$13.20 to \$21.00, without overtime.

"On the lower floor stood a large number of chasses, one end on the floor and the upper leaning against the wall. The second floor was occupied by three departments. In the south was the experimental and engineering department, in the center the assembly room for both engines and chasses, and in the north the tool shop.

"Fire doors separated them. The engine assembly was on the west side, the complete chassis assembly on the east. An elevator south of the engine assembly moved the chassis to the yard, where the testers started it on the road."

## 2

Despite the busy manufacturing scene all was not serene among the stockholders. Well-satisfied with the result of his Ford investment, Malcolmson was openly interesting himself in another automobile enterprise. The other stockholders felt this was inimical to their interests, and in December asked him to resign as treasurer and director. The action was initiated by Attorney Rackham, and seconded by Mr. Ford. The coal dealer, however, refused and took his fellow stockholders to task for making the request.

The first definite break in the ranks of the original dozen was caused by death. Malcolmson's uncle, John S. Gray, passed away, leaving his shares to the Gray Estate, while Mr. Ford succeeded to the presidency.

While introducing a new light "runabout"—the Model N, with 15 horsepower and a speed of forty miles an hour, Mr. Ford left the four-cylinder field to produce a six-cylinder car—the Model K. It developed 40 horsepower and attained a maximum speed of fifty miles an hour. With its ton weight and price of \$2,500 it pleased those who insisted Mr. Ford had to build a heavy, expensive car if he wanted to remain in the business.

In November, 1906, Couzens wrote a letter to Mr. Ford:

I think you are fully conversant with the amount of work and responsibilities involved in my work and particularly during the last year, as well as the present time; also that the compensation is not in accordance with what others in like positions in other companies are receiving. You said I should receive \$10,000 per annum and an amount on each car sold.

He asked 90 cents for every Model N sold and \$3.00 for every Model K. Mr. Ford granted the request.

Nineteen-six was to have been "a Ford Year," according to the company advertisements, but sales did not justify that prediction. From the previous year's total of 1,695 they dropped to 1,599, while profits fell from \$290,194 to \$102,398. Drastic measures were needed. For one thing the heavy car must be discontinued, and production speeded on the "runabout" in order to attain volume.

Mr. Ford had begun to dream of producing 10,000 cars in twelve months. Searching about for ways and means to accomplish this aim, he recalled an Ohio machinist who had come to see him a few months earlier.

On that occasion a big man with an unruly mop of curls had handed in his card at the main office, with a deep-voiced request: "Show this to Mr. Ford." On one corner of the card was the word: "Crankshafts." His name was Walter E. Flanders, and he was representing a small Ohio shop. Crankshafts were causing much anxiety at the Ford works—good machinists were hard to find—and Flanders believed he could furnish the solution if he could get a contract from someone like Mr. Ford.

When he left, in his pocket was a contract for 1,000 shafts. With it as security he borrowed money, and hired most of his neighboring townfolk to help turn them out. The village machine shop made good, and now that Mr. Ford proposed to break loose from the shackles of limited production he remembered the man from Ohio. A wire brought Flanders to Detroit where he was offered the job of production manager. With him came his assistant, Thomas S. Walborn. They took off their coats and went to work.

Several weeks were spent in installing new machinery and rearranging processes, and by the third month they were on their way. If Flanders could turn out 10,000 cars within twelve months, he was promised a bonus besides his salary.

As soon as production was well started the job of selling

10,000 cars was begun. Agents who "have closed with us can congratulate themselves." Sales branches were established in New York City, Boston, Philadelphia, Buffalo, Chicago, Cleveland, and Kansas City.

Yes, shouted the advertisements, the company was actually producing parts for 10,000 cars—cylinders, engines, wheels, axles, bodies:

Such quantities were never heard of before. If we made as a profit one-fifth as much on each car as is usually figured as a proper profit, we would make as large a gross profit as a manufacturer who builds two thousand cars.

## 3

Affairs with the company, though outwardly smooth, drifted slowly toward a crisis. While the cash piled up Ford and Couzens were eyeing acreage north of the city at Highland Park, where a whole race-track site could be purchased for less than \$75,000.

This rash proposal was frowned on by those of the stockholders who wanted the flow of dividends to continue. Albert Strelow had been investigating a gold prospect in British Columbia, and when he returned to Detroit to raise funds for its development offered his Ford stock for sale.

Another who agreed to part with his was Malcolmson. Late in 1906 the coal dealer sold out for \$175,000, Mr. Ford acquiring the stock. Part of this money was borrowed from William Livingstone, then head of the Dime Savings Bank, and Mr. Ford was able to pay it back within six months, much to the banker's surprise. To fill the post vacated by Malcolmson, Couzens was elevated to treasurer.

Gray, Woodhall, Bennett and Fry followed Malcolmson's lead. Woodhall's shares were bought by Mr. Ford for \$5,000. Couzens paid Strelow \$25,000 for his. The latter had also held 31.8 shares in the Canadian company.

"When Couzens bought my stock I handed him my Canadian

shares for nothing," bemoaned Strelow later. "Now that Canadian stock is worth a fortune!"

Incidentally, his gold-mine venture failed. When he returned to Detroit seven years later it was to seek a job with the company of which he had once been landlord and part owner.

With the sale of the stock the original dozen holders had been reduced to seven, counting the Gray Estate. Remaining—still steadfast to the Ford banner—were Couzens, the two Dodges, and the two attorneys, Anderson and Rackham. Their decision to stay with the company was to reap millions for them in the ensuing years.

The lineup of stockholders was then changed as follows:

Henry Ford . . . . .	585 shares
James Couzens . . . . .	110 shares
The Gray Estate . . . . .	105 shares
John F. Dodge . . . . .	50 shares
Horace E. Dodge . . . . .	50 shares
J. W. Anderson . . . . .	50 shares
H. H. Rackham . . . . .	50 shares
	<hr/>
	1,000

Control of the company rested in Mr. Ford's hands and from that day forward its future success or failure lay entirely within the wisdom of his direction.

#### 4

Although the next year, 1907, proved to be one of financial stress throughout the country, Mr. Ford went right ahead with his plans. The first step was to complete the purchase of the Highland Park race track for \$62,000. Located about two and a half miles from Piquette Avenue beyond the extreme northern boundary of Detroit, it made available 60 acres of ground, plus a mile of track for testing. An entirely new factory layout was contemplated.

Meanwhile the Model N had met with pleased response everywhere. Sales mounted to 8,759 cars, while other manufacturers wondered how they could head off Ford. Profits leaped from \$102,398 to \$1,124,671.

Still playing a lone hand, Mr. Ford next proposed to build the sort of dream car he had in mind, a light four-cylinder touring car of not less than 20 horsepower, capable of transporting five passengers.

Its advance announcement, appearing at the time of the Grand Central Palace Show in midwinter of 1907-8, predicted that this car would "stand clearly defined as a monument to the genius of America's master builder of automobiles."

His decision to build a light car was not approved by certain of his associates. The story was told that Production Manager Flanders violently disagreed with the idea. When the big, broad-shouldered, tousle-haired production manager learned that a new model was contemplated he met Mr. Ford in a factory aisle one day. "Ford, are you crazy? The boys tell me you're dropping the old model."

Rather amusedly Mr. Ford replied: "What's wrong with that?"

"But this new car of yours won't sell, Ford. How about these thousands of orders we've got now?"

Nothing Mr. Ford could say would pacify the red-faced manager, and abruptly Flanders walked away. A few days later he turned in his resignation and joined with Metzger and Barney F. Everitt in launching the E-M-F Company. With him went his assistant, Tom Walborn.

The departure of Flanders and Walborn made possible the promotions of two men who in later years were to rise high in the organization. The newly fledged *Ford Times* in its initial issue (dated April 15, 1908) carried the announcement:

Edward Martin, former Assistant Superintendent, succeeds Thomas Walborn as General Superintendent. Martin is a heavy-

weight in factory experience as well as physically—is a practical man and well liked by the men.

Charles Sorensen, foreman of the pattern shop, succeeds Mr. Martin as Assistant Superintendent. Sorensen isn't as big as Martin physically, but he stacks up plenty big enough for the job.

The background was now complete and the stage set for the entrance of the greatest automobile of all time—the Model T.

## 5

Since the start of the company back in 1903 the circumstances of the Ford ménage had changed materially, although neither Mrs. Ford nor her husband had permitted the sudden coming of money to change their standards or sense of values. Both went about their daily routine in the same unassuming way as in the days on Bagley Avenue. The story was told that Mrs. Ford while looking over her husband's suit before sending it to the cleaners found a folded paper in a pocket. Taking it out, she discovered it to be a check for \$50,000. He had received it some months before, placed it in the pocket and forgotten all about it.

For two years now they had lived at 145 Harper Avenue, and in 1908 they were to move to a substantial residence at 66 Edison Avenue, which was to continue as their home until they moved back to Dearborn.

During those Detroit years the Fords retained ownership of the old farm, and it provided a retreat for them as well as a testing ground for his latest idea in an iron horse for agriculture. Like the first one he had made, the "automobile plow" was equipped with heavy traction wheels from a farm implement. Those in front were taken from a wagon. Propelled by a gasoline engine instead of steam, the ungainly but powerful tractor pulled a plow successfully.

Racing continued to be a popular means of attracting attention, but the trend was turning toward the practice of persuad-

ing prominent personages to be photographed while seated in an automobile. First chief executive of the country to ride in one was Theodore Roosevelt, and the Secret Service men, after a mild protest, watched the proceedings with considerable uneasiness, and were plainly relieved when the ride ended.

To indicate how conditions were to change, the same branch of service was rendered equally uneasy when it was proposed at Dearborn in 1929 that President Herbert Hoover ride in an old-fashioned railroad train behind a wood-burning locomotive. Considerable persuasion had to be exercised before the guardians of his person agreed that he could ride on the train with Messrs. Edison, Ford, their wives, and many distinguished guests. An automobile, they said, would be much safer!

Both Mr. and Mrs. Ford kept alive their old friendships at Dearborn as their circles of acquaintances widened. He had become affiliated with Palestine Lodge, one of the pioneer Masonic bodies in Detroit, and they attended the Episcopal Church, where Mrs. Ford took part in the philanthropic activities. At Dearborn were such old friends as Mr. and Mrs. Louis Ives with whom they were wont to spend their wedding anniversaries; the members of the Snow family, children of Doctor Snow, a pioneer Dearborn physician; the Haighs, whose lovely old mansion had once been the home of Col. Joshua Howard, commandant of the Arsenal; the Ruddimans, with whom the Fords were allied by marriage; and others of the old pioneer stock—the Schaefers, the Theisens, the Gardners, and many more.

What was destined to develop into a business friendship over a period of many years with Harvey S. Firestone began when the tire manufacturer, just starting in business, went to Detroit to seek an order from Mr. Ford. Like the latter, Firestone was "outside" the little group who controlled the bulk of the tire industry. Like Mr. Ford, he had been combating an association which held patents covering the trade.

A price of \$70 a set had been offered Mr. Ford on an order for 2,000 tires by the other group. Firestone, however, owned

a rim that could be used only with his tires. He saw that Mr. Ford's chief object was to make the price of the new model as low as possible, and agreed to supply his tires at \$35 a set.

"If your tire proves to be what you think it is," said Mr. Ford, at last, "we'll use it."

"It was characteristic of him," said Firestone later, "that no sales talk would suffice. He tested tire after tire on the car before he became satisfied as to its quality and gave us the order."

The association ripened into a personal friendship and led to numerous summer vacations together in later years, along with Edison, Burroughs, the naturalist, and others. The relations of his company with that of Ford also continued to expand until, with the advent of the Model T, Ford gave Firestone what was said to be the largest tire order in history up to that time.

Edsel, who celebrated his fifteenth birthday in 1908, was the proud possessor and driver of a Model N runabout. Over the garage behind the family home he had installed a machine shop in which were a fine Hendey lathe with gearshift, together with other devices with which he trained his hands in technical skill. One of those devices was a woodworking shaper in which the tip of a middle finger was nipped off accidentally.

During the five years that had elapsed since the Wright brothers flew their first airplane at Kitty Hawk, North Carolina, members of the younger generation had become deeply interested in the possibilities of man's conquest of the air, and Edsel was no exception. In his father's office was a young man of twenty, Charles Van Auken, who had commenced work at the Piquette plant as a floor-sweeper. He, too, was avidly devouring all the information he could obtain on aviation, and had proposed to Mr. Ford that the company build an experimental plane. At first Mr. Ford had refused permission, but finally he agreed to let Charles go ahead, using the new Model T engine for motive power.

Charles and Edsel collected all available material, libraries and magazine stands were searched, and hours were spent studying

pictures and articles about flying ships. Eventually work was commenced in the summer of 1908 in a renovated barn at 1302 Woodward Avenue which Mr. Ford had leased for a shop in which to carry on privately his experiments with a farm tractor.

Using Van Auken's design, patternmakers and machinists began the shaping of parts. Patterns were made, sent out to a foundry to be cast and then brought back for machining. Those that were too large to be machined in this small garage were taken to the Piquette plant for finishing.

The frame was made out of wood and tubing, the wings of spruce covered with silk and linen fabrics. Pieces of canvas were laced to the fuselage back of the pilot so as to catch side winds. A tricycle landing gear was made from bicycle wheels attached to the body of the plane by forks. It was possible to turn the front wheels as on an automobile.

There were no ailerons on the front wings, movement being controlled by shoulder braces to which wires on the wing edges were attached. By moving his shoulders the pilot could warp the wing, thus adjusting its position to the proper angle with the currents. The back stabilizer was pivoted, allowing it to be rotated and making the entire wing act as an aileron. Operation of the rudder was similar to that on modern aircraft.

A "pepped-up" 28-horsepower Model T motor was installed, with the propellor directly attached to the driveshaft. The pilot's seat and controls were directly behind the motor between the front wings.

Nearly a year passed before the plane was completed. For the initial tests the machine was taken to the Ford farm at Dearborn, where a small gully provided a slope down which the plane could descend and be launched into the air. Planks were laid on the ground to provide a firm, even surface. During its first trial the plane succeeded in rising only four feet off the ground.

There was too much weight in proportion to the power, apparently, so the model was hauled back to Woodward Avenue and placed in the shop for lightening and overhauling. As much

extra bulk as possible was removed, and a second attempt to fly was made, this time at the Fort Wayne parade grounds on a hill slope. Again the weight proved too great for the motor, and attempts to keep the ship in the air were unsuccessful. Occasionally it would hop to the height of six feet, but almost immediately would drop back to earth.

To climax the failure the crankshaft broke while the ship was in the air, a side wind caught it, causing loss of control, and the plane crashed into a tree. Van Auken was not injured seriously, but Mr. Ford decided to discontinue further attempts and advised the two young enthusiasts to give up the idea. It was in the fall of the year, and frequent winds and sharp gusts of wind made flying dangerous. By the time the plane could have been repaired it would have been too late to test it further that year. It was many years later, in fact, before the Fords, father and son, again turned their attention to the field of aviation.

## SMASHING THE MONOPOLY

## 1

EVEN as Mr. Ford completed the design of the Model T, the Piquette plant worked day and night filling orders for the last of the runabouts, the Model S. By the middle of 1908, while William Howard Taft was preparing to campaign for the Presidency against Bryan, the old factory set another record—building and shipping 100 runabouts in a single ten-hour day, “about four times as many cars as are manufactured by any other concern in the world,” according to a company publication.

Downtown Detroit caught its first glimpse of the new wonder car from an electric sign atop the Temple Theatre. The open square below was jammed by a noisy crowd as the model flashed into brilliance, apparently slipping over the road at top speed—wheels turning, dust flying in the foreground, while in the rear the waves of some inland sea dashed against the shore. Underneath was the slogan that had already become a watchword: “Watch the Fords go by!”

To mark the company's <sup>1908</sup> fifth birthday, occurring a few days later, contracts were let for the Highland Park factory. On the suburban prairie a building was to rise, paralleling Woodward Avenue for one-fifth of a mile. Largest in all Michigan, it was to contain six acres of floor space. Architects referred to it as the “Crystal Palace” because of the amount of window glass. In front of the main structure two other buildings were to be erected, a powerhouse and an office.

During hot weather ground was broken and a signboard was erected on the former race-track site:

*New Factory Buildings***FORD MOTOR COMPANY**

*Will be the largest automobile factory in the world.*

During that same summer Mr. Ford was invited by the head of the Buick company, William C. Durant, to join with R. E. Olds and Maxwell-Briscoe in a giant new company that would purchase the others through stock issues equal to the assets. Lack of cash made the deal seem unwise to Ford and Couzens. They insisted on at least \$3,000,000 in cash, and when Olds made the same demand the whole project was abandoned and Durant went elsewhere to organize General Motors.

Meanwhile preparations were made to meet a flood of orders following the debut of the new Ford car. The stupendous production schedule of 25,000 was set as the target for the year. After the introductory full-page announcement appeared in the *Saturday Evening Post*, the week-end mail brought nearly one thousand inquiries. Monday's additions swamped the mail clerks, and by Tuesday night the office was well-nigh inundated. By the end of thirty days orders on hand aggregated more than \$200,000, and were increasing.

## 2

Before Thanksgiving, papers were filed in Lansing increasing the capital stock of the company from \$100,000 to \$2,000,000, merely a transfer of \$1,900,000 from surplus.

In a public statement, the company expressed a pardonable pride in all it had accomplished:

We have been able without once calling for outside help, and in the face of the most determined and organized opposition, to grow from comparative insignificance into a \$2,000,000 cash-paid-up, no-stock-for-sale-or-ever-offered-for-sale, prosperous organization.

Plenty of obstacles still had to be overcome. Notwithstanding herculean efforts it was not possible to complete the new factory by New Year's. All four stories were up; windows were being put in; steam piping set in place; and electric wiring installed. But much was unfinished, and meanwhile the Piquette plant had to serve.

An entirely new layout of machinery was purchased, so that the old factory could produce without interruption or shut-down. Nevertheless, it was impossible to keep up with the flood of orders. Within a few months branches and dealers were notified that "there will be no use of your taking any more orders as we, under no circumstances, can enter them here."

Requisitions for materials had been so large that the mills lacked capacity to fill them. A single item called for ten million pounds of special steel, largely vanadium, the light alloy adopted by Mr. Ford in the car's construction. He had first become acquainted with it while watching a race at Palm Beach in 1905, in which a Model K had been entered. After a French car had been wrecked he picked up a little valve trip stem and was surprised at its lightness and strength.

The alloy was unknown in America—indeed Mr. Ford's championship of it led to the first mention of him in a national magazine. *Harper's Weekly* on March 16, 1907, introduced him to the American public with an article on his use of the new material. To obtain a supply Mr. Ford prevailed upon a small steel plant at Canton, Ohio, to run a heat for him, guaranteeing the concern against loss if it failed. It did fail but he persisted, and was finally successful in launching the manufacture of vanadium in America. Use of that steel gave the Model T reduced weight with increased strength.

Chief of its sensational features was its low price, \$950. Mr. Ford was asked how anyone could build a good car and sell it for so little, and in his reply he explained the Ford philosophy of manufacture. Necessary factors were:

1. Quantity production
2. Fewer parts in the car
3. Progressive methods of manufacture
4. Common sense sales methods
5. Ample sales outlet
6. Smaller profit per unit
7. Cash discount on all bills
8. No loans; no interest
9. Eliminate extravagance.

"An output of 500 cars a year means a very considerable higher cost per car than when it reaches 20,000 cars a year," he began. "The cost of designing, of special tools, experimentation and exploitation are about equal in each case; but the cost per car is widely different, in favor of the car built in quantity.

"Building in quantities means buying in quantities, and quantity-buying gets the rock-bottom prices. This truth has within the last few days been forcibly illustrated to me. Last month we bought materials for 15,000 more cars, the largest order ever placed by a car manufacturer.

"We put \$250,000 into machinery for this new car, but by its use the output per machine has increased, with a proportionate decrease in the labor required. One man does the work now of three. There are several operations where one man with the new machinery can do the work of five or six with the old, yet the old was new three years ago.

"Not every firm today is financially able to purchase an entirely new machine equipment of \$250,000 every time they change models, without seriously impairing their working capital, but we have done it and have given our customers the price benefit, and have been satisfied to wait for our profits until enough cars have been produced to earn the reward.

"It is impossible to market a large output through a few dealers. A dealer with too large a territory hits the high spots only, and sells no more cars than if he thoroughly canvassed a smaller field.

“It is not necessary to make a small fortune on each car in order to pay dividends. Quantity sales necessitate a smaller profit per car to the manufacturer.

“Taking advantage of cash discounts on all bills payable means a saving to the Ford Motor Company of at least \$150,000 in the next twelve months. The manufacturer who pays interest, who cannot discount every bill, is adding to the cost per car, and the customer pays for it.

“The manufacturer out of debt has no interest to pay on borrowed money. We have never had to pay one cent for interest since the day the company was organized, while we have earned thousands of dollars from the banks on our average daily cash balances.

“High salaries for so-called star performers; extravagant expense accounts for entertainment; a costly sales method; lack of intelligent, systematic organization—all these must be eliminated to make possible and profitable a low-priced car.

“After all, there is no secret. It’s all in the system employed. The material is the best that can be bought; the making and selling force are ample and well-paid; nothing is skimped except extravagance, and that is entirely eliminated.”

## 3

In those days it was still the driver’s custom to sit on the right side of the front seat, following the European style. The first national advertisement of the Model T announced that the steering wheel had been moved “to the left-hand side, the logical side for American roads.” Some argued that because the left hand was not trained like the right, more accidents would happen than under the old arrangement, but most persons agreed that the advantages outweighed the disadvantages.

One of the earliest Ford stories was that it was easy enough for any engineer to prove the Model T would not run. The difference between theory and practice was that it *did* run.

In the past, separate castings had been made for each cylinder in the engine. With the Model T, Ford introduced the practice of casting four cylinders at one time, in a single motor block.

"Ah!" exclaimed the critics. "That means when you have an accident to one cylinder, you must buy a whole new block!"

"What of it?" countered the designers. "You can buy the entire new block at a lower price than most factories charge for the cylinder."

Cylinders cast en bloc were bound to be alike, and wouldn't get out of line. They would have fewer parts, and correspondingly lighter weight. That was what Ford was after.

Next he detached the cylinder head, making it possible to get into the motor from the top and thus have easy access to the engine's innards. Motorists heaved sighs of relief when they learned that it was no longer necessary to lie on their backs on dusty roads, striving to pry up into balky, greasy engines from beneath. So it went from the new simple magneto to the use of light vanadium steel.

Competitors poked fun at the new alloy, claiming that Ford's "flimsy contraption" would soon fall apart, that he had seized upon this new steel merely to gain additional publicity for his car. However, after the Navy Department officially adopted vanadium as a means of increasing the resistance of steel used in armor on warships, at the same time reducing weight, they were less vociferous.

"In two or three years," Mr. Ford predicted, "vanadium will be universally employed in the manufacture of automobiles. Now we are almost alone."

His best argument was the difference between ten miles per gallon of gas—usual for that period—and the twenty-two to twenty-five given by the Model T. He admitted the charge that he was a "price buster," and even boasted that every reduction in automobile prices had been forced by him. One of his most incredible claims was that Model T tires would last for 10,000 miles!

At first the public found it hard to comprehend how any car could be so good and yet could be sold at such a low price. Somehow the two ideas just didn't jibe. Again and again the message was hammered home—quantity production, efficient methods, improved management. And then came proof that could not be gainsayed. The Model T proved its sturdy qualities in unmistakable fashion.

## 4

On June 1, 1909, a transcontinental route stretched between New York City and Puget Sound, waiting to be blazed by motor car. Much of its 4,106 miles was nothing but trail; indeed some sections were not even mapped. To mark the way a contest was arranged by the Alaska-Yukon-Pacific Exposition in Seattle, its prize a trophy cup put up by Robert Guggenheim, mining magnate.

The prospect was enough to cause even the daring to hesitate. During May a pathfinder car that had been dispatched to survey the route found itself unable to complete the job, and abandoned the trail somewhere in Idaho. Another, leaving Seattle to examine the gap through the mountains, found snow seventeen feet deep on Snoqualmie Pass, and had been shipped by freight over the range.

Rules governing the contest made the trip an actual test of the car's stamina. Entrants were forbidden to carry wheels with flanges so they could travel on railroad tracks. New parts could be obtained from two cities only, Chicago or Cheyenne.

Just before the race began one entrant withdrew because of "engine trouble." Five started—an Acme, a Shawmut, an Itala, and two Model-T Fords. Of the last-named Car Number 1 was driven by Frank Kulick and H. B. Harper; Car Number 2 had as pilots Bert Scott and C. J. Smith. President Taft pushed a gold key, Mayor McClellan fired a gold revolver, and the transcontinental tourists puffed away from the New York City Hall.

Not until the cars had left St. Louis did the real tussle begin. A seven-day downpour of rain mixed with hail transformed the country lanes into gumbo and quagmire. Across Kansas and in Colorado and Wyoming the mud often scraped the axles. Ten miles an hour was a good average.

Because of the deluge most streams were swollen into torrents, and dangerous quicksand added to the troubles of the contestants. Rear wheels would spin and cars would be marooned. Planks and muscle helped to get them to a spot where traction was possible, unless the carburetor had filled with water in which case man-power alone had to serve. The thirty Ford dealers along the route between New York City to Seattle were all on the job. They helped a lot.

First entry to withdraw was the Itala; its owner reached it by wire at Cheyenne and ordered it to complete the journey to the coast in a freight car. The others ploughed bravely on. West of Cheyenne roads grew worse and worse. Where smooth highways greet today's motorists the pioneers of 1909 had to traverse seldom-used wagon trails. Some mountain crossings had grades of  $33\frac{1}{3}$  per cent. Some were so narrow that there was not room for even a horse to pass.

The super-difficulty of all came at the summit of the Cascades. The drivers had been told to expect hardships when they entered Snoqualmie Pass, and they found these warnings fully justified. Mishap after mishap befell them. No car had crossed so far that year but Ford, who was in Seattle, wired instructions to the crew of Car Number 2, then leading, to come on, while he hired snow shovelers and took them up the slope on the west side. There they dug a path through the deepest drifts so the car might worm its way across.

Car Number 1 was not so fortunate. On top of the pass it collided with a rock head-on, and the crew spent the next seven hours rebuilding the motor beside the spot where one rivulet trickles down the west side and another drops away to the eastward.

Meanwhile Car Number 2 reached salt water and captured the trophy. The excitement that thrilled Seattle's downtown streets on that occasion is still remembered. A few miles outside the city the mud-bespattered winner with Scott at the wheel was met by local motor enthusiasts who escorted it through the downtown streets and north to the Exposition gates. Fully 75,000 persons, it was estimated, greeted it there as it was placed on display among the features of the Fair. It had crossed the continent in 22 days and 55 minutes, with New York air still in its two front tires!

At the banquet when the trophy was awarded, Mr. Guggenheim said:

"Mr. Ford's theory that a light-weight car, highly powered for its weight, can go places where heavier cars cannot go, and can beat heavier cars costing five and six times as much, on the steep hills or on bad roads, has been proved. I believe Mr. Ford has the solution of the problem of the popular automobile."

## 5

No longer was it said that the Model T "couldn't take it." Then came the announcement out of a clear sky that the Ford company in the future would confine itself to one model. Immediately Ford became a fresh target for ridicule. With competitors boasting of as many as thirty it seemed the height of folly to reduce his salesmen to one.

Some said as much. It was necessary, they felt, to cater to a customer's whims if the car was to be sold. Mr. Ford, so the story goes, replied by instructing his engineers to design a car that would incorporate all the things all prospective buyers might ask for. As far as is known the car has not yet put in its appearance.

"There are but four constructional units to the Model T," Mr. Ford explained, "the power plant, the frame, the front axle and the rear axle. I believe that it ought to be possible to have the parts so simple and inexpensive that the menace of hand-repair

work can be eliminated. The parts can be sold everywhere, just as nails and bolts are sold."

Followers of the industry could foresee that 1910 was to be a crucial year. To reduce the risk of running out of parts Ford was gathering quantities of frames and cylinders. The close of the fiscal year 1908-09 showed the profits to have exceeded \$1,000,000 for a second time. Receipts had aggregated \$4,701,298, and net worth had risen to \$2,028,553. There was ample money in the bank to meet the onrush of new companies into the field, organized as assembling concerns and promoted for quick returns in stock sales.

In the midst of his preparations to meet new and stiffer competition the blow fell. A decision was handed down upholding the Selden patent and threatening Ford with bankruptcy and extinction. More strongly than ever convinced of the righteousness of his cause, he took an immediate appeal to the higher court.

"Our position," he declared, "is unshaken. This Selden patent is a freak among alleged inventions and is worthless as a device." He pointed out that if the patent were allowed to stand, "trust methods would be encouraged, the evolution of the industry curtailed, high prices and inferior quality maintained, because it is obvious that a protected monopoly does not try to please the public by producing better goods by more mechanical means."

The opposition A.L.A.M., suddenly reawakening to life, issued a broadside "for the Protection of Automobile Buyers." Using that same heading, Ford replied with an unqualified guarantee to protect all buyers to the full limit of his resources against law suits or intimidation.

We will give them, in addition to the protection of the Ford Motor Company with its some \$6,000,000 of assets, an individual bond, that each and every owner of a Ford car will be protected . . .

Mr. Ford later recalled that not more than fifty persons asked

for the bonds. When warned that war to the death was to be waged against "unrecognized" automobiles, Ford retorted:

It should be evident to the members of the A.L.A.M. that the automobile industry must take its course with other industries, must allow the weeding out of the unfit, and must permit of the continuance of the industry by those who are left with the survival of the fittest. This is exactly as in other lines of trade.

It is said that everyone has his price, but I can assure you that while I am head of the Ford Motor Company there will be no price that would induce me to permit my name to be added to the A.L.A.M.

For nearly 100 weeks prior to that time Ford had been expending something like \$2,000 a week in defending himself against the licensed manufacturers. Small wonder that an editorial writer hailed him as "Ford, the Fighter," and added, "There is a man for you—a man of backbone."

Rumors persisted that the company was for sale or had been offered for sale. Benjamin Briscoe, who was trying to create the United States Motor Company, did send an emissary to sound out Ford and Couzens on selling, with an offer of \$8,000,000 for the business. The emissary, George F. McCullough, quoted Couzens as replying: "Let's see the color of your money."

No money was offered, and no deal was made. Briscoe's company went into receivership after a meteoric two years, and was reorganized under the leadership of Walter E. Flanders as the Maxwell Motor Company, which, following a subsequent reorganization, became the forerunner of the Chrysler Corporation.

During October Durant, whose General Motors company was then one year old, sought to obtain an option to purchase the entire capital stock of the Ford company for \$8,000,000, of which \$2,000,000 was to be in cash and the remainder in one and two-year notes. Like his previous attempt, this one fell through because he could not raise the cash.

Durant's recollections of the transaction were related by him in after years to the well-known Detroit advertising man W. A. P. John, and subsequently published in *Motor*. "Do you think," asked John, "that if the purchase had been consummated you would have accomplished as much as Mr. Ford has?"

Mr. Durant shook his head. "Mr. Ford has no equal in this particular line. He has made as few mistakes as anyone—perhaps fewer. He has built well. He has sold well. He has financed ably. In the conduct of his automobile activities he has never severed from his fundamental principle. And as a result, he more than any one man is responsible in a business way for America's present industrial leadership. For he has made cheap transportation possible, and transportation is the basis of natural prosperity."

The various attempts to buy out the company had led to the spread of rumors that it had actually been sold. When it was certain that the offers had been "paper" ones, Mr. Ford came out flatly and listed five reasons why the tales had been false:

1—~~The Ford Motor Company has been in business since 1903.~~ Its officers and directors prefer to take a profit from its cars rather than its stock. The latter cannot be bought—the former can, if you get your orders in early enough.

2—Ford has the money.

3—Folks that have wanted to buy out Ford have not been able to talk in cash, although the paper figures might be high.

4—The Ford Motor Company manufactures the Ford car. It is not an assembled product, so we are not worried by a shortage scare.

5—The most perfect harmony exists throughout the entire Ford organization.

## 6

Meanwhile the "largest factory in all Michigan" was completely occupied by the company. On New Year's Eve cars were shipped from the Piquette Avenue plant for the last time; on the first day of 1910 deliveries were made from Highland Park. The

general offices, sales and other departments remained at the old factory.

As the company approached its seventh birthday Mr. Ford described his idea of the industry's destiny. "The car of the future," said he in an interview with the *Detroit Saturday Night*, "must be a car for the people, a car that any man can own who can afford a horse and carriage; and mark my words, the car is coming sooner than most people expect."

Ford owners were urged to try summer vacation trips by the company, and were furnished important new travel hints:

When inquiring about the road, ask the way to the next town, naming it. This means making a list of the towns to be passed, and checking them off. If you inquire the way to a distant final destination, the average rural resident is completely at sea and is apt to direct you wrong.

When stopping overnight in a town, first ask the price for storing the car. Prices asked after the service is rendered are usually double the price named in advance.

Keep your gasoline tank filled. You may figure on buying gasoline at the next town and then find the stores all closed or sold out. It is easier to buy before you have to, than after the car has stopped ten miles out of town.

One of those who made a cross-country tour during the summer of 1910 was Edsel Ford, who drove with his friend Philip Worcester through the "dirt and grime" of nearly three hundred miles from Detroit to Chicago, and return, in his Model-T roadster. It was a two days' journey each way, of course, the distance to South Bend alone requiring sixteen hours. Part of that time was occupied in fording a creek where a bridge had broken through, and when the water rose above the wheels and the engine stopped both lads had to get out and push their car through the water to dry land.

On the return journey they required only twelve hours to cover the mileage between South Bend and Detroit by driving steadily all day, not even stopping for meals. In concluding an

account of their excursion, the *Ford Times* remarked: "As no word has yet been received from county sheriffs in regard to speedi g, the boys are commencing to rest easier, in hopes that their twelve-hour spurt from South Bend went unnoticed by the ever watchful guardians of the village laws."

Right in the midst of the "crucial year," Mr. Ford was served with an injunction ordering him to desist from infringing the Selden patent. John Wanamaker and other dealers were enjoined from offering "unlicensed" cars for sale. Mr. Ford put up a bond of \$350,000 to guarantee the members of the "licensed" association against loss, pending decision on his appeal. Then he went on building Model T's.

Rumors continued to persist that the company was for sale, or participating in a merger, which led to the issuance of a flat denial intended to put an end to them. Dated September 21, 1910, it read:

TO WHOM IT MAY CONCERN:

It has come to our attention that a number of the newspapers throughout the country have published a statement in connection with the recent financial troubles that the Buick Motor Company have had to the effect that Eastern Bankers have come forward with a loan of \$2,500,000 and that same was obtained by depositing as collateral security Cadillac Motor Car Company and Ford Motor Company stock.

Generally this has not been believed, but we find quite a number of people who are doubtful, so we take this opportunity of most emphatically denying that any Ford Motor Company stock was deposited as collateral to this loan, or that this company has any connection whatsoever with the General Motors Company or the Buick Motor Company, or, in fact, any other motor or automobile company or combination.

The Ford Motor Company has not put up its stock as collateral for anything, and has no intention of so doing, or becoming connected with any combination.

Yours truly,

FORD MOTOR COMPANY

By James Couzens,  
Sec'y and Treasurer

By the time the new powerhouse, apple of Mr. Ford's eye, was ready to operate, the Highland Park plant resembled nothing so much as a beehive. In the rear of the big main building long low machine shops stretched the entire length. Foundry buildings, test shops and storehouses were scattered about. Near the avenue was the powerhouse. Someone commented that although the usual manufacturing establishment had its powerhouse in the backyard, Mr. Ford put his in a glass case and set it out on the sidewalk.

Then came victory. The United States Circuit Court of Appeals handed down its decision completely settling the Selden patent suit and sustaining Ford in his contentions. The industry poured its congratulations in on the winner, erstwhile adversaries vying with one another to praise the fight he had made. During the New York Automobile Show he was guest of honor at the annual banquet of the "licensed" association at the Hotel Astor in January, 1911, where compliment after compliment was paid him.

About that same time Mr. Ford decided to take over the John R. Keim Mills at Buffalo, from which he had been buying various automobile parts. With the purchase he also acquired the services of the young assistant superintendent, a Danish immigrant boy who had already demonstrated his production skill at the Buffalo shop. He was to rise high on the industrial ladder in later years. His name was William S. Knudsen, but everybody called him Bill.

## CHAPTER ELEVEN

### A GIANT STIRS

#### 1

COMMENCEMENT of production in the Highland Park Plant marked the beginning of the swift upsurge of Ford cars, and at the same time the first use of what is called "mass production" in the automobile industry. Eli Whitney had introduced this scheme of production many years before in the manufacture of muskets, but never on a scale comparable with that it was now to receive. The figures mounted skyward: 10,607 cars in 1909; 18,664 cars in 1910, first year of the new plant; 34,528 cars in 1911. These big gains were almost infinitesimal compared with those that followed: 1912, 78,440 cars; 1913, 168,220 cars; 1914, 248,307 cars.

The annual cash receipts jumped from a little over \$9,000,000 to nearly \$120,000,000 in the same period. Profits went from \$3,125,875.58 in 1909 to approximately \$25,000,000 in 1914.

In the light of after events some of the early records of the company's progress do not now appear quite as astounding as they did at the time. The fact that the factory space had grown from a quarter-acre to sixty in less than ten years seemed remarkable but no one visioned the 1,200-acre factory of ten years later. Expansion of the working force from 12 men and 1 foreman to more than 7,000 sounded like a tremendous gain, but if someone had predicted that the same payroll would reach 100,000 within a decade the prophecy would have been described as fantastic. The daily production record of 600 automobiles set a new high mark for those days, but within less than a dozen years Ford was to produce 10,000 in twenty-four hours.

Detroit and the surrounding territory had already felt the terrific impact of a giant industry a-borning. Even if the citizens had been able to foresee the seven-billion-dollar business that was to put the world on wheels, they had little realization of the changes it would make in the course of history or the complete transformation in age-old habits and modes of life.

Improvements in manufacturing processes had been continuous. At the Ford plant old machinery and methods were being constantly scrapped. A dozen assembly branches were established at strategic points throughout the country, effecting both a saving in freight through shipment of parts instead of automobiles and added capacity in production.

A steady progression of materials through the factory had been devised, so that they entered as raw products on one side and without a backward movement went forward until they could leave the plant on the opposite side as completed cars.

The "backyard" of the plant was made into a gigantic shipping platform, not by raising the yard but by depressing five parallel tracks, bringing the floor of the freight cars level with the ground.

Mr. Ford thought he could see what was ahead. In an interview he declared: "When I look toward the future and perceive what it holds for the automobile industry, my eyes are dazzled by the radiant portent. To my mind, the industry is in its infancy and even the most sanguine expectations of what the coming years will hold are bound to be surpassed by the actuality."

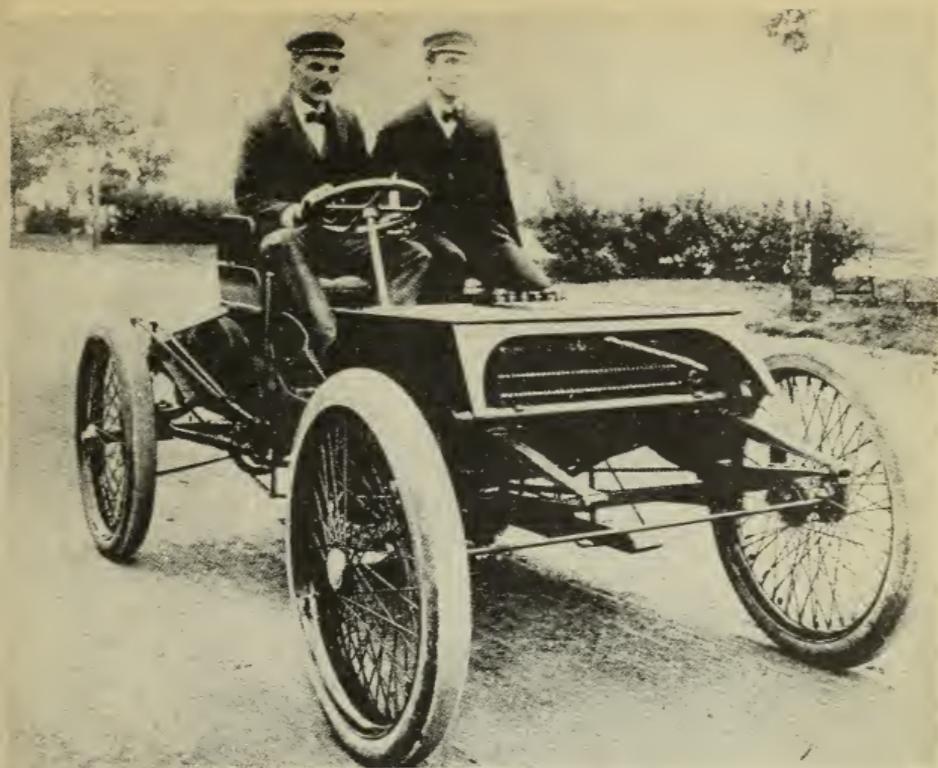
"In the years to come, there will be no incredulous persons to convince that the motor-driven vehicle is feasible. From now on, the question is simply one of quality, service, and price. Unquestionably, the company that lays proper stress on service is bound to grow rapidly with the years. When the time comes—and it is rapidly approaching—when poorly constructed and maintained roads will no longer be tolerated, all the world will travel by motor car. It plainly appears that the motor car has barely commenced its destined service."

Nineteen-twelve saw Charles W. Nash installed as the president and directing genius of the General Motors Corporation. One of his strokes of genius was the appointment of Walter P. Chrysler as works manager of the Buick plant. A new rival had entered the field. The Chevrolet Motor Company of Michigan, organized the preceding year, had swung into production and given the world a six-cylinder touring car, of which 3,000 were made and sold.

As 1913 dawned Mr. Ford approached his fiftieth birthday. He was in his "prime," in what most men would have considered as "middle life." No longer did former acquaintances who had moved from Detroit write home to inquire: "What is poor old Ford doing?" Detroiters no longer regarded him as crazy. He was in a class by himself. The outside world had recognized him.

Elbert Hubbard of East Aurora wrote: "Henry Ford, inventor and manufacturer of the Ford automobile, always reminds me of Thomas Jefferson. I regard it as one of the great privileges of my life to know him. As an inventor, creator, manufacturer, humanitarian and public servant, the name of Henry Ford will endure. Henry Ford will live in history not only as one of the makers of America, but as the one who made it possible for all humanity to ride in motor cars."

By then Edsel had entered the company shops to learn the mechanical side from actual experience. His had been a unique boyhood. Born in a home of modest means, he had witnessed after his tenth year the growth of a world-encircling business. His father had become a widely known man of affairs, and yet in training and preparation for life Edsel had not been "spoiled." He was taught the value of money, and necessity for work. His mother watched over him as carefully as she did over her husband. He had studied in the Detroit University School, a college



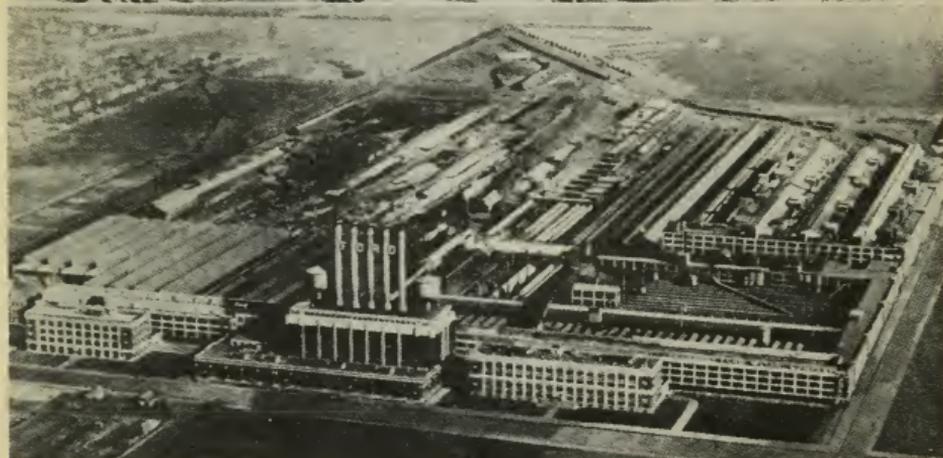
THE CAR THAT BEAT WINTON

Beside Mr. Ford is his mechanic, "Spider Huff."



THE FAMOUS "999" RACER

Barney Oldfield at the wheel. Henry Ford standing by the racer.



THREE EARLY FORD PLANTS

*Top:* Mack Avenue Factory, first occupied by the company in Detroit. *Center:* Piquette and Beaubien Avenue Plant, Detroit, where the Model T was born. *Bottom:* Highland Park Plant, once the world's largest, now dwarfed by the Rouge Plant and Willow Run.

preparatory institution, and while there formed friendships with fellow students and instructors that were to endure.

After he entered the plant a room was set aside for him adjoining his father's office, with drafting board and other equipment. Among the objects placed there was the first crude gasoline engine made by his father in the Bagley Avenue shop twenty years earlier. It was a constant reminder of the company's humble beginnings.

A new phenomenon now made its appearance—the Ford joke. Irvin S. Cobb in his *Exit Laughing* told how he was employed to write five short tracts for the company, popularizing its product. He did so under the heading, "Talks With a Fat Chauffeur," and wondered whether in conjunction therewith he had not originated the first Ford wisecrack. For pay he was offered his choice between a check and stock in the company and he took the former, a choice which later was to cost him considerable money—but few regrets.

Meanwhile humorous references to the Model T spread like wildfire. As Roger Burlingame wrote in *Engines of Democracy*, "No show was complete without a Ford joke. For six years, this is said to have taken the place of all paid advertising. . . ." Even books were published with collections of "uncanny stories about a canny car." In the foreword to the second volume of the stories the publisher complained that no less than six imitations of its first volume had appeared.

His Satanic Majesty was quoted as saying to a visiting motorist: "Help yourself to any one of these cars and take a spin around Hades."

The motorist replied: "But, Your Majesty, these are all Fords."

"Sure," said H.M., "that's the Hell of it."

No less a humorist than Ring Lardner added his contribution under the title "Phil and his 4D." He concluded his story: "You can see where this here motoring keeps a man busy Dave and its a hole lot of fun but dont never leave nobody tell you its

a cheap sport. Not even with a 4D it aint. Your old Pal, Phil."

The famous "philosopher," Luke McLuke, introduced his "Phord Philosophy" with the remark, "The man who claims that he never gets rattled has never had a ride in a Ford." He went on to remark that "two flies can manufacture 48,876,552,154 new flies in six months, but they haven't anything on two Ford factories." Another observation was that "Mother used to develop her arms turning the handle of a clothes wringer, but her daughter gets all the exercise she needs by cranking her Ford."

Then there was the story about Mr. Ford finding one of his cars stalled on a country road. After he had assisted the owner in getting it started he declined the grateful dollar the owner had tendered, and remarked that he already had more money than he could use. "Oh, come now," replied the owner, tartly, "if you really have so much money you certainly wouldn't be driving one of these Tin Lizzies."

## 3

What was said to have been the first moving assembly line ever tried in manufacturing, and certainly the first in the automobile industry, was used in producing the flywheel magneto of the Model T. The attempt was made in the spring of 1913 only a few weeks after the inauguration of Woodrow Wilson as President. Under the previous system, one workman making the entire assembly was able to complete from 35 to 40 in a 9-hour day, or an average of one in about 20 minutes' time.

A line was laid out along which an endless chain moved the units in assembly past twenty-nine different operations at a speed of 5 feet a minute. On the first day the group of workmen produced 1,188, an average of 13 minutes and 10 seconds for each flywheel magneto.

The speed of the assembly line, however, was found to be too fast and was lowered to 18 inches a minute, which proved to be too slow. The third speed tried was 3 feet 8 inches a min-

ute, and that was found to be about right. Another defect was that the moving line had been built eight inches too low, so that the workmen had to stoop over in such a way as to become tired easily. That, likewise, was corrected and eventually the resulting time of assembly per unit was 7 minutes, later 5 minutes.

The next use of the moving assembly line was on the transmission cover. The experiment was tried out in June, 1913, and resulted in a reduction of time per unit from 18 minutes to 9 minutes 12 seconds.

The engineers were then ready to tackle the biggest job of all—the chassis assembly. They waited until August when the midsummer seasonal lull afforded plenty of time, and then one morning Charles E. Sorensen towed a chassis by rope and windlass down an imaginary line 250 feet long to blaze the trail for the millions that were to follow in the future history of the company.

Before that time each chassis was assembled in a specified fixed location. Along each of two avenues which stretched for 600 feet through the factory were fifty such locations, on which a total of 100 chassis could be assembled at one time by a force of 600 men, of whom 500 were actual assemblers and the remainder suppliers of parts.

In the process the two axles were placed on the floor, the frame with its springs laid on top, the wheels added, and finally the other parts. The best time recorded for a single assembly was 12 hours and 28 minutes, although 14 hours was the average. During the experiment with the moving chassis 6 men walked beside it and picked up parts from piles placed at intervals. The time was reduced to not quite 6 hours.

Further experiments were carried out, using a line 150 feet long, down which the chassis was pushed by hand from location to location. The time was cut still more, but it was evident that the workmen needed more room, and the length of the line was doubled. Arrangements were then made for a chain-driven line, and this was followed by two others, one for tall men and the

other for short men. In time the chassis assembly was reduced to 1 hour 33 minutes and thus the assembly line was born.

From that time on improvements came rapidly. The speeds of the different lines were changed until each workman had exactly the time needed for his assigned task. Eventually every line was mechanically driven. The workmen who added screws, bolts and nuts, or put on wheels, hub caps and mudguards, or poured gasoline into the finished car, or fastened the body to the chassis, stood at appointed places and received parts from a department of transportation established for the purpose. No worker moved or lifted anything; whatever he had to handle was brought to him and placed where he could pick it up without wasted motion.

② In the past the naked chassis, after completion of assembly, had been driven out into the street where the chauffeur jockeyed it back and forth until the inspectors took it over. They in turn sent it to a point where the bodies awaited, and four men lifted the right one onto the chassis. Then the Model T galloped away merrily to the shipping clerk's office.

With new chasses popping out of the shop door every 40 seconds the street was usually filled with scurrying wheels. All this was done away with when a track was laid along the street from the door to the body chute. On it were installed idlers by which the rear wheels could be run while the chassis stood on the track undergoing inspection; and a rig was devised to set the body on the chassis by a simple handling.

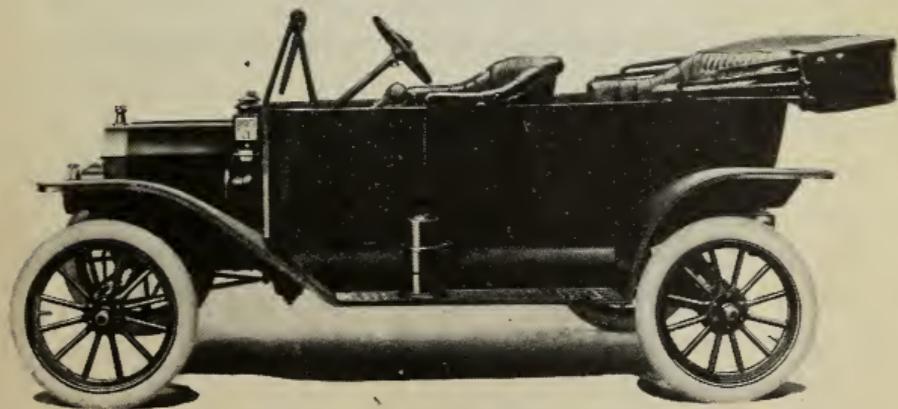
Previously workers had fallen over each other while searching for tools and materials. Mr. Ford specified that all tools and men should be in the sequence of the operation. Mechanical carriers were provided upon which each workman could drop a completed part, for transfer to the next operation. Sliding assembly lines delivered parts at convenient intervals.

To an untrained observer the group of assembly lines as finally evolved was something like a network of railways, with the various branches feeding the main division. Even the motor

with all its moving parts was given an assembly line. In the old Piquette factory days, before any attempt at systematizing production was made, the motor block traveled at least 4,000 feet during the finishing process, and 594 minutes were required for the job. At Highland Park the distance was reduced through use of continuous assembly to 334 feet, and the time to 226 minutes.

Processions of parts traveled along moving platforms, or swung by on carrier conveyors. The workmen stood at their places, each with a specific job, from the fitting of a bolt to the placing of the crankshaft. Thus the engine grew; at the appointed time it reached the end of its line and joined the main stream from which Model T's poured in an ever-increasing number.

With production accelerating, and along with it profits, Ford was ready for his next move—one which was to revolutionize the condition of the working man. Incidentally it was to place him for the first time squarely on the front pages of the nation's newspapers.



The 1913 Model T. Notice the tilting windshield, a bulb for the horn and the generator for the gas headlights

## CHAPTER TWELVE

### \$5 FOR EIGHT HOURS

#### 1

MR. FORD rocked the business world twice during nineteen-fourteen—at the outset of the year he doubled wages, meanwhile reducing the hours of labor from 9 to 8 hours per day; during midsummer he offered to refund approximately fifty dollars per car to every purchaser, providing a certain number were sold within twelve months from that date.

Basic pay for a laborer at the end of nineteen-thirteen was \$2.34 a day, or 26 cents an hour. The scale of living was low; many families existed on \$10 a week. Food, rent and clothing were on about the same price level. Pleasures such as are afforded by a motor car or a radio were unknown to the common laboring man. A downstairs five-room flat in Detroit could be rented for \$14 a month; a modern home in a good residential district for \$33. Turkey sold from 18 cents to 25 cents a pound in Detroit for the nineteen-thirteen holidays; chicken was 12 and 13 cents. Men's overcoats could be purchased for as low as \$10, and fashionable stores advertised women's suits for \$16.75.

In seeking to understand Mr. Ford's revolutionary step one must go back to September 30, 1913, the close of the previous fiscal year. Within the twelve months that ended on that date the company's surplus had doubled, this notwithstanding the fact that large dividends had been paid to the stockholders, tremendous additions had been built on the factories, and huge investments made as well.

In those same twelve months the assets had climbed from less than 21 million to more than 35. The company's earnings, due

both to increased sales and improved production methods, were the marvel of the industrial world.

Yet it was not money alone that led Mr. Ford to launch his new movement. Up to that time the company had been working two 9-hour shifts, with about 15,000 men on the Highland Park payroll.

"There's the reason for the 8-hour day," he told one interviewer, pointing out the window at Highland Park to a section of Woodward Avenue where three or four hundred men were lining up to ask for work.

"With the 8-hour day and three shifts working we can put 4,000 more of those men at work. We even considered a 4-hour day so that still more men could be employed, but such a thing could not be worked out and still retain our present organization. So we adopted the 8-hour day."

There was still another reason. James Couzens, then secretary of the company, explained:

"Henry Ford is the originator of the plan. He believes there has been too big a division between capital and labor; labor has not shared to the extent that it should. The profit-sharing plan is not to be looked upon as an increase in wages. It is merely a plan whereby the employees of the company will share what the plant and its branches produce."

"We believe it will materially improve the standard of our employees."

"The commonest laborer who sweeps the floor shall receive his \$5.00 per day," added Ford.

Economic conditions in late 1913 were not promising. The Federal Reserve Act had just passed Congress and was not yet in operation. In many sections of the country a genuine depression existed. On December 10, after an unbroken record of more than forty years, the New York, New Haven and Hartford Railway had suspended payments of dividends to stockholders.

On New Year's morning Henry Ford called his executives together in a room at Highland Park to consider the question of

higher wages for the employees. No one knew just what he had in mind, for he wanted each to express his own ideas without suggestion.

A quarter of a dollar was added to the per diem and chalked up on the blackboard; then a second. Fifty cents wasn't enough, so the increase mounted gradually until at last it reached one dollar. Such a jump was enough to cause any executive to pause, for it meant \$15,000 a day . . . \$90,000 a week.

An 8-hour day meant at least 4,000 more men, an increase of \$13,000 more—at least \$100,000 a week or 5 millions for the year.

Yet it was not enough. The executives looked at each other; doubt was in the eyes of some. Cautiously, someone added another twenty-five cents. That seemed the absolute limit. But Mr. Ford was not satisfied. He sat there, listening to the worried conversation. Another twenty-five. That made seven and one-half million dollars for the year—all the company could possibly afford. Up went the chalk marks. Another twenty-five cents; and still another. And then more—until they had doubled the basic pay, an increase to \$4.80 per day.

Dr. William L. Stidger related that Mr. Couzens had not been present at the meeting. Next day when he learned of the increase he asked sharply: "Why in hell don't you make it \$5.00 a day and bust the company right?"

"I'll take it!" retorted Ford. "It shall be \$5.00."

The announcement consisted of three elements:

(a) During the year 1914 the employees would be given \$10,000,000 in bonuses in addition to their wages; to be added semi-monthly to the pay envelopes.

(b) A minimum wage of \$5.00 a day was established for the year, beginning January 12. This in addition to the bonus referred to.

(c) The 8-hour day was instituted.

An uproar resulted. The *Detroit News* described Ford's pronouncement as marking an "industrial epoch." Others were not

An automobile was built every half-minute. The yearly sales neared the 90-million-dollar mark.

## 2

Abroad, ominous clouds were gathering, centering about a hitherto unknown village in Serbia where a youth had assassinated the heir to the Austro-Hungarian empire. During that hot summer between the date of the crime and the outbreak of hostilities, an important announcement was issued by the Ford company:

All retail buyers of new Ford cars from August 1, 1914, to August 1, 1915, will share in the profits of the company to the extent of \$40 to \$50 a car on each car they buy. Provided we sell and deliver 300,000 new Ford cars during that period.

Added to this was a price reduction bringing the touring car to \$490. The public was literally lifted off its feet. During all Motordom's history, no shrewder sales aid had been devised. During the previous twelve months the company had sold 221,888 cars, and the new objective of 300,000 did not seem impossible. The dealers sold and the customers bought, and meanwhile the first World War broke out and swept most of Europe into its holocaust.

Across Belgium and over the French border swarmed the gray-clad armies, swinging toward Paris. The gay capital became the scene of feverish excitement. The American colony immediately organized an ambulance unit to which ten Model-T chasses were contributed by Ford. The Paris Ford service station was called upon hastily to build bodies for these, and in responding tore up the floor of one room to get wood. The cars served in carrying wounded during the Battle of the Marne.

Orders for large numbers of Ford ambulances followed. The British War Office placed many with the plant at Manchester. After the new French associated company, Automobiles Ford, was organized June 1, 1916, the government of Paris took over its

output. The first lot assembled there comprised 500 cars for the army, mostly ambulances. From that time on until the close of the war, this plant supplied 11,000 cars to the French government.

One important phase of Model T war work was the part it played in the Mesopotamian campaign. Major Alexander Powell in his book *By Camel and Car to the Peacock Throne* wrote: "I was told by a British general in Bagdad that Britain would never have won the Mesopotamian campaign had it not been for Henry Ford."

W. T. Massey, noted journalist who served as special correspondent with General Allenby's forces in the Near East, declared the Model T was the "wonder car of the War."

## 3

As in the case of the man who built the proverbial mousetrap, the world was beating a path to Mr. Ford's doorstep. Like other successful men he had attracted attention, but he was more than successful; he had original, unexpected ideas. His home on Edison Avenue was easily accessible to anyone who wanted to look up the address in the city directory. Strangers sat on the front porch in hope of getting a glimpse of him, and perhaps an interview. Some merely wanted jobs; others wished to borrow a million dollars; still others had blueprints to save the world. They rang the doorbell into the late hours of the night. The telephone buzzed incessantly; messenger boys came and went.

All prospect of peace or quiet at home or abroad had vanished, especially after the five-dollars-a-day announcement. Shortly after it the Fords had gone for a brief trip to New York, only to find themselves besieged. Reporters met the train; photographers flashed lights and broke down potted plants in the hotel making pictures; their suite was blockaded. A sackful of letters arrived; the telephone had to be disconnected. Finally a

guard had to be placed at the door to insure them any privacy whatever. And that was only the beginning.

Forty-second Street on the north side of the Hotel Belmont was jammed by crowds seeking a glimpse of him. "The situation has a serious side," wrote a *Herald* reporter. "It is making heavy demands on hotel employees, who have been besieged with inquiries in regard to the Ford party. The telephones to the apartment on the fifth floor were disconnected yesterday, and an extra squad of house detectives was on hand."

He could not go into a barbershop without being followed. The most intimate details of his visit were chronicled. When the newsmen interviewed him they found him unique. "There was nothing," said the *Times*, "about his demeanor to indicate that he thought he had done anything remarkable."

Back home, the thoughts of the Fords turned toward the scenes they had always loved and often returned to—the pleasant fields and wooded lots of Dearborn and Greenfield. Quietly they acquired more acreage along the Rouge River near the old farm and commenced construction of a shaded retreat that was to be their home.

It was not to be a fashionable or elaborate place, but was to have gardens and flowers and fireplaces and big spacious rooms with plenty of windows. A swimming pool was to be built for the young folks. There was to be a music room where Mrs. Ford could linger over her music, and a library filled with interesting books where she could read to her husband in the evening.

There were to be many tokens of friendship. Thomas Edison was to lay the cornerstone of the garage. John Burroughs was to plant a tree. There was to be a "Burroughs Nook" in a secluded corner of the grounds.

During the construction period Mr. and Mrs. Ford moved out to the old homestead and made their home thereafter at Dearborn. The house had not been occupied for some time, and a mother bird had built her nest just above the old front door. After Mrs. Ford spied the nest and the eggs in it she called it to

her husband's attention. Whenever they went in or out of the front door they interfered with the bird's peace of mind. Thereafter until the babies were hatched, guests entered and left the homestead by the side door. They found on the front steps this notice:

Please use the back door.

There is a nest of young phoebes in one corner of the porch, and a robin's nest in the other corner. Mr. Ford does not want anyone to use the front door until the little birds have left their nests.

During the fag end of the previous winter the Fords had journeyed South for the first of many visits at Fort Myers, Florida, next door to the Edisons. On that first trip John Burroughs joined them. The visit was returned by the Edisons the next October when the inventor and his wife, with their son Charles, drove to Detroit and spent the night with their friends at the Detroit home on Edison Avenue.

After laying the cornerstone of the new garage at Dearborn, the Fords joined the party and traveled to Port Huron over the Grand Trunk Railroad, retracing the route taken by young Tom back in 1862 when he had peddled magazines on the train and during odd hours studied chemistry or practiced telegraphy.

While Edison chatted with relatives and old friends Mr. Ford's secretary, Ernest G. Liebold, obtained a news-butcher's outfit—cap, suit, basket, cigars, fruit and papers. Edison's eyes twinkled when he saw them. On the return journey he hooked an elbow through the basket handle and sold his wares along the aisle of the train, just as he had done more than half a century before.

Mr. Ford disappeared for a while, and when he returned his face and hands were black with smoke and soot. He had learned that the engineer of the train had known him back at the Detroit

Edison Company. Mr. Ford had climbed over the tender and down into the cab, and for part of the return journey had been driving the locomotive.

## 4

Although the Highland Park Plant was still being enlarged, Mr. Ford foresaw the day when its limit would be reached, both in actual productivity and in capacity for expansion. Establishment of assembly branches throughout the country—a job largely directed by “Bill” Knudsen—afforded a temporary relief as did the creation of factories in Europe under Sorensen’s direction, but there was a limit to their effectiveness, also. More room was required if manufacturing processes were to be still further improved.

When he mentioned plans for an entirely new and much larger plant in a different location the other stockholders violently opposed the idea. Undeterred, Mr. Ford went ahead. His personal real-estate representative, William T. Gregory, was ordered in May 1915 to purchase vacant property along the Rouge River near the town of Springwells.

Already the Dodge brothers had notified him that when their contract expired in June they would not continue making motors for the company. It was rumored that they proposed to bring out a car of their own. The reason for their decision was said to be the fear that some day Mr. Ford would tell them he no longer wanted parts from them but would make them himself.

Among Mr. Ford’s plans was the manufacturing of a farm tractor. That early dream, of building an instrument to lighten work on the farm, had remained alive and vivid during the busy years. Back in 1908 when he was experimenting with the “automobile plow” on the old Dearborn farm, he had asserted that “the next ten years will see automobiles in use, doing things of so varied a kind that even with all our knowledge and preparedness to accept almost any advance, we dare not predict. But one

of the sure developments will be in the way of self-propelled farm implements.”

Since that 1908 experiment he had expended a small fortune in developing an all-round gasoline-propelled tractor. The phenomenal success of the Model T had provided funds to bring about its realization. Construction of factory buildings for its manufacture at Dearborn was planned.

Meanwhile the year of the bonus ended, and actual count showed that 308,213 units had been sold. Next came the huge task of distributing an equal number of \$50 checks, that being the refund decided upon.

Their mailing was handled with characteristic Ford ease—ten thousand were sent out each day until more than 15 million dollars had been accounted for. The first check went to Texas, the second to Utah. Practically every village and post office in the country received at least one during the distribution.

Some time before this a campaign had been launched in Detroit to raise funds for a general hospital, and Mr. Ford had been among the largest subscribers. Disputes arose among the contributors until it appeared that the entire project would go glimmering. Then Mr. Ford had come forward with an offer to carry it all through himself. The other moneys were returned and he undertook to complete the institution that later became the Henry Ford Hospital.

Many stories were told explaining why he did this. One was that he believed doctors were charging too much. Another was that he believed hospital methods were out of date, and that a sort of “assembly line” could be worked out with the patient receiving the benefits. All services to patients would be performed by resident physicians or surgeons, with fixed fees that could be based on actual service and outlined in advance to the patient. There would not be one fee for the rich and another for the poor—each would pay what the service actually cost, and Ford would make up whatever deficit remained as a result of student nurse training, new construction, charity patients and other items for which no charges could be made.

In preparing to complete the hospital Mr. Ford sent emissaries to visit the best institutions in the East, to observe and ask questions. By the fall of 1915, when the maples along Grand Boulevard were turning to scarlet and purple and copper, the institution was formally opened.

About the same time a Detroit newspaper reviewed some of the amusing rumors that were circulating about Mr. Ford.

"Ford is to sell cars for \$100 each on his birthday. Ford is to sell cars for \$100 each on his son's wedding day. Ford is to sell cars for \$101 each at a certain hour all over the country. Ford is to sell cars for \$100 each, providing 1,000,000 persons send in their names with one dollar enclosed. Ford is giving away cars to anybody who sends in four dimes, the mint letters of which spell F.O.R.D. Ford is to sell cars for \$100 on the day that Virginia goes dry."

Meanwhile Ford went serenely along. When the *Detroit News* repeated in print one of the most ludicrous of the jokes then in circulation about the "flivver," and Couzens insisted that the writer be fired, Ford countermanded the order. Malcolm Bingay, in his article "Get a Horse" in the *Saturday Evening Post*, quoted from the letter sent the *News*:

SIR: I hereby forbid you ever again to mention the name of the Ford Motor Company in your publication.

JAMES COUZENS  
General Manager

At the same time, all advertising was canceled, and the culprit reporter was sent out to see Mr. Ford. After he had revealed his plight Mr. Ford chuckled.

"Jim has no sense of humor. I'll cancel his cancellation. I think those jokes are funny. And good publicity."

Relations between Mr. Ford and his general manager became more and more strained. In several interviews Mr. Ford had reiterated his opposition to war and his hope that America would not become engulfed in it, and Couzens took exception to many of his remarks.

One October day Mr. Ford dropped in at the latter's office, and Couzens told him that he had stopped an article which was to be published in the company's house organ. Words followed, for the article was an expression of Mr. Ford's views, and finally Couzens ended the argument by announcing that he was quitting. Mr. Ford urged him to think it over, but Couzens had decided that he was "all through."

While the organization rocked with the news, Couzens went ahead with his resignation as active manager, to take effect the first of November. He retained his stock and remained on the board as a director. Klingensmith succeeded to the posts of vice-president and treasurer, and Edsel, a young man of 22, became secretary.

The newspapers pressed for statements. Couzens said:

"I could not agree with Mr. Ford's utterances on peace, and the Allies' war loan, and national unpreparedness. This has been brewing for more than a week. For some time I have disapproved of the manner in which Mr. Ford has been giving statements to the press. His statements on these and other matters disgusted me. I told him so and we had it out.

"What Mr. Ford has to say is considered by many to be of wide importance, because the business of the Ford Motor Company has been built up to such magnitude that the public eye is always on him.

"I disapprove of his views on preparedness, and it was of so serious moment to me that I decided to break relations with him. The friendly relations that have existed between us for years have been changed of late, our disagreements daily becoming more violent.

"I finally decided that I would not be carried along on that kind of a kite. We started in the automobile business thirteen years ago and it was through my efforts that the Ford Motor Company was built up around one man—Henry Ford.

"I have never in my life worked for any man. Even when I was a car checker, a few years ago, I had no boss; but I was, and

am today, willing to work with any man. I will be willing to work with Henry Ford, but I refuse to work for him.

"The world is perhaps interested in the fact that I have resigned from the Ford Motor Company, because the concern occupies such a unique position in the business world. Concerning the personal differences between Mr. Ford and myself, they ought not to be of public interest."

Mr. Ford was quoted briefly:

"Mr. Couzens has taken the action in this matter and I feel it his privilege to tell why he did, if he cares to. Mr. Couzens' resignation was not entirely unexpected. I have seen that there was a possibility of it for a week, or more."

5

That year the Panama-Pacific Exposition was held at San Francisco, and one of the displays was the actual assembly of Ford cars. It was a far cry from that Columbian Fair of 1893 which had given the Detroit man so much inspiration. Only six years had elapsed since he waited in Seattle at the other Exposition, for the arrival of the Model T that was fighting its way across the country to win the Guggenheim trophy.

Ford and Edison planned to meet at the Golden Gate City on the anniversary of the incandescent lamp's invention, October 21, which had been designated "Edison Day." The Fair officials wanted October 22 to be "Ford Day" but he wired:

GIVE ALL THE HONOR YOU CAN TO MY FRIEND TOM,  
BUT I AM COMING TO SEE THE EXPOSITION.

Luther Burbank joined them and they visited his home at Santa Rosa. The plant wizard asked his distinguished callers to register in his guest book. One column was for "signature," another for "home address," a third for "occupation," and a fourth was headed "Interested in."

Under the last Edison wrote: "Everything." He handed the pen to Ford. "Write 'ditto' under it," he ordered.

Wherever they went the crowds lined the streets to catch a glimpse as they passed by. Fifty thousand people stood in the fog till ten o'clock at night on Market Street to watch them drive up that thoroughfare under the blazing glare of countless incandescents.

Another Edison Day was held at the San Diego Exposition, and en route, Harvey Firestone, who was with the party, suggested they leave the train near Los Angeles and drive down leisurely by car. Edison liked the idea, and so much freedom and fun were had that the inventor proposed similar "gypsy" trips in future summers, seeking relaxation in "Nature's laboratory."

Several incidents enlivened their Southern California visit. Edison laid the cornerstone of a motion-picture studio. Lunch was eaten at the great state penitentiary at San Quentin. Ford had expressed a willingness on many occasions to give a "second" chance to ex-prisoners who had served their time, and his appearance at the luncheon led to a call for a speech. As was his habit, he rose and bowed, and then sat down. The report was spread that he had said: "Glad to see you all here." The story was repeated many times but Firestone is authority for the statement that it is not true.

Another bit of entertainment was a Hawaiian dinner, staged by the tire manufacturer, at which a Hawaiian orchestra provided music. Their lilting waltzes so pleased Ford that he hired the entire troupe and sent them back to Detroit, where they would be available to play for him.

Edison proposed that the three go camping next summer; he would decide where. The idea was approved unanimously, and led to a series of vacation trips to different parts of the East and Middle West. Tents like those used by the Army were obtained, together with cooking and sleeping equipment. The outings provided opportunity for complete relaxation during the extreme hot weather, and drew the "vagabonds" together into an even closer friendship.

## CHAPTER THIRTEEN

### THE PEACE SHIP

#### 1

WHILE Mr. Ford was on his way back from California, leading pacifists of the United States, headed by Dr. David Starr Jordan as chairman of the Fifth International Peace Congress and Louis P. Lochner, secretary of the Congress resolutions committee, called at the White House for the purpose of urging President Wilson to initiate a neutral conference for what was called "continuous mediation." The President seemed sympathetic but not ready to act, and it was with the hope of persuading Mr. Ford to finance a campaign which would arouse public opinion in favor of such action that Lochner took a train for Detroit.

He had been preceded by the noted Hungarian pacifist Madame Rosika Schwimmer, who had lectured in that city and had already had one interview, arranged by the editor of the *Detroit News*, E. G. Pipp. The meeting had taken place in the presence of Dean Marquis and several others, and was followed by an invitation to lunch at the Ford home.

Lochner was included among the guests and was granted an opportunity to present his proposal. The idea of maintaining a neutral commission in Europe interested Mr. Ford to such an extent that he agreed to go to New York and Washington and meet with other leading peace advocates as well as talk with the President.

The New York gathering took the form of a luncheon, with a small but distinguished list of guests. They included Jane Addams of Hull House, Oswald Garrison Villard, Dean George W. Kirchow of Columbia University, Paul U. Kellogg of

*Survey.* Quite by accident the idea of a special ship to take abroad delegates to a neutral commission was suggested, and Mr. Ford without hesitation agreed to put up the money. All were unanimous in their belief that both sides were weary of the trench-locked struggle, and that combined action initiated by the non-belligerents would provide a vehicle whereby an armistice could be arranged. Such was the unselfish purpose, bright with the promise of peace, before the second winter of the war closed down upon a darkening civilization.

One important factor in sustaining their hopes was the portfolio of documents brought from Europe by Madame Schwimmer. Ever since the war's outbreak the women of the world, led by the mothers, had been striving to end the bloodshed. Each of the warring powers had been approached on the possibility of settling points at issue through diplomacy, and none had refused to listen. Madame Schwimmer brought written and initialed papers from foreign-office representatives indicating that a proposal from the neutrals "would not be unwelcome."

Mr. Ford threw his support unreservedly behind the movement. "If I can be of any service whatever in helping end this war and keeping America out of it," he told them, "I shall do it if it costs me every dollar and every friend I have."

While Madame Schwimmer was arranging to charter the *Oscar II* from the Scandinavian-American line, Mr. Ford talked with Colonel House and went on to Washington, where he saw the President at noon the following day. At that interview he urged Wilson to appoint delegates to go abroad while he, Ford, defrayed the expenses. The President demurred, saying that he could not commit himself to any single peace proposal, whereupon Mr. Ford announced that he himself would take "a shipful of American delegates to Europe."

Back in New York he released the story to the newspapers, and the subsequent uproar caused most of the well-intentioned peace advocates to reconsider their resolve to become identified with the expedition.

## 2

To editorial writers and cartoonists the notion of a Peace Ship seemed fantastic. "Out of the trenches by Christmas" became a byword. Headlines in the morning *Tribune* read: "GREAT WAR ENDS CHRISTMAS DAY; FORD TO STOP IT." In the *Times*, as a thinly clad David, he made ready to hurl a Model T at the Goliath of War. In the *Herald* he turned a crank at the side of his head, grinning happily. As Walter Millis wrote, "the Peace Ship was launched, to the undying shame of American journalism, upon one vast wave of ridicule."

Mr. Ford had chartered the first and second classes of the *Oscar II* for a one-way passage to Norway, at a cost of \$80,000, and invitations had been telegraphed to a selected list of one hundred prominent men and women to join the party as guests. Among the few hardy enough to accept was Judge Ben Lindsey of Denver. To represent the youth of the country, students from leading universities were included. Mr. Ford then extended a broad invitation to the very newspapermen who had pilloried his idea to come along with all expenses paid. Fifty-four joined up.

Even such close friends as Edison and John Burroughs declined, the latter because of a bad cold. Mr. Ford ate Thanksgiving dinner at the Edison home, but returned to New York without an acceptance.

Ex-President Taft felt that only a movement initiated by the government could succeed; and so declined. Ida M. Tarbell came in person to express her regrets.

Even Jane Addams at the last moment failed to sail. However in her case she had no choice; her physician positively ruled against her undertaking the voyage.

Among those who did not let ridicule dissuade them were such distinguished clerics as Dr. Charles F. Aked and the Rev. Jenkin Lloyd Jones. S. S. McClure, editor of the *New York Mail*, was a passenger. So were Elmer Davis, Berton Braley,

William C. Bullitt, Emil Hurja. There was even a stowaway, "Jake" Greenberg of Brooklyn. Irving Caesar, later a popular song-hit writer, was a secretary-stenographer on board and kept a daily diary as well as voluminous notes of all that occurred.

Also in the party was Dean Marquis, who had recently resigned from his post at St. Paul's Cathedral to serve in the sociological department of the Ford company. He has said that he spent most of the night before the ship sailed with William Livingstone, Mr. Ford's old friend in the Detroit bank, trying to prevail on his chief to refrain from accompanying the ship.

They were dealing, however, with a man who had learned years earlier to accept ridicule or praise with equanimity. Opposition merely made him more determined, once he was satisfied he was right.

His reply to the dean was: "It is right, is it not, to try to stop war?"

Marquis could only answer: "Yes."

Mr. Ford went on: "You've told me that what is right cannot fail."

Although the ship was scheduled to sail at two on the afternoon of December 4, it was delayed several hours. In the interim the crowd of several thousand watchers who jammed the pier were entertained by two bands, one on board and one ashore, which played such popular tunes as "I didn't raise my boy to be a soldier." The ship was decorated with banners reading STOP THE WAR and OUT OF THE TRENCHES.

When Mr. Ford came on board, escorted by a squad of police officers, he answered the reporters' questions by remarking: "Peace is nothing but commonsense." Shortly before sailing time he came back on deck to bid good-by to his companions, William Jennings Bryan and Edison. The crowd cheered all three, Bryan and Edison went ashore, and the Peace Ship backed into the North River slowly.

The final bit of excitement was provided by a spectator who sprang into the icy water and began swimming after the depart-

ing liner. When he was fished out he told reporters: "Do not think I was trying to catch that ship. I was swimming to reach public opinion." His name, he added, was "Mr. Zero."

A series of lectures and forums had been arranged, to inform the passengers in preparation for the events ahead as well as to entertain them. Early dispatches called the *Oscar II* a "floating Chautauqua." The newspapermen kept apart from these sessions, however, and organized themselves into a Viking Press Club, with headquarters in the ship's bar, which originally had been set aside for the holding of religious services. Because of the scarcity of news, they made their own. Young Bullitt, correspondent for the Philadelphia *Public Ledger*, recorded that two ministers, Rev. Charles Aked and Rev. Jenkin Jones, played leapfrog on the deck, while newsreel men photographed them.

During the first few days Mr. Ford mingled freely with his guests, but on the fourth he was drenched by a huge wave that washed over the deck while he was taking his constitutional, and contracted a heavy cold. News dispatches read: "FORD A PRISONER IN HIS CABIN." He was "chained to his bed by his secretary." Some of the worst articles were referred to Mr. Ford by the captain, whose ire had been aroused. "Let them send anything they please," Mr. Ford ordered.

He rejoined the party on the night of the captain's dinner, but after the *Oscar II* docked insisted on walking to the hotel, and later "ploughing through the heavy snow," and once more he was confined to his bed with what appeared to be an attack of influenza. He told Lochner: "I guess I had better go home to mother. You've got this thing started now and can go along without me."

The plan was for the delegates to go on to Stockholm, Copenhagen, and The Hague, elect a permanent delegation of five, and return home. That was completed by early January, and late that month all returned except Lochner, Madame Schwimmer and a few others.

Meanwhile Mr. Ford arrived in New York. To newspaper

reporters he again expressed his faith in the outcome of the expedition, and declared he was ready to charter another ship if necessary. Indeed he continued to finance the expenses of the commission abroad until February 1917, when diplomatic relations were severed between the United States and Germany. Lochner went on to become an important newspaper correspondent during the second great world conflict.

So ended the saga of the Peace Ship. Cardinal Gibbons called it "the finest and best gift the world received for Christmas," and Millis, writing later, described it as "one of the few really rational and generous impulses of those insane years"—which was "snuffed out by a cruelty and levity that are appalling."

And Upton Sinclair predicted that "historians, looking back upon the events from the vantage point of years, seeing what use the Allied diplomats made of their opportunity, seeing the ideas of truth and fair-dealing they cherished, the kind of peace they made and what came out of it—the historians will begin to ask whether Henry Ford and his 'Ship of Fools' did not show more sense than all the chancelleries of Europe and the British Empire."

### 3

On December 4, 1940, the twenty-fifth anniversary of the Peace Ship's sailing, a handful of its survivors assembled at the Overseas Press club in New York City to commemorate the occasion. There were Irving Caesar, Elmer Davis, Berton Braley, and even Jake Greenberg, the stowaway.

Word was sent to Mr. Ford of their plans and he wired a message to the guests via one of the newspapermen who had made the voyage, Burnet Hershey:

"I do not hesitate to say that I learned a great deal on that voyage which has helped me to understand other things that have occurred during these twenty-five years. And it seems to me that with the oceans full of warships, we can afford to remember that

there was once a peace ship. At least we who sailed in 1915 did not decrease the life or love that was in the world.”

An indication of how the passage of a quarter of century in time and the outbreak of an even more terrible world war had altered America's attitude toward his strange Odyssey was given by the editor of the *Detroit Free Press* in commenting on the anniversary luncheon:

The Ford Peace Ship was a dream ship. After 25 years of moral retrogression, the world understands better than ever the illusive nature of the hope that inspired it.

But we do not laugh any more, nor joke, when that unique argosy is mentioned. We mourn rather the disappearance of times when men could still believe in progress in human enlightenment, and thought that even those in the throes of blood lust might be led to reason.

With a touch of nostalgia, we envy the faith Mr. Ford and others like him had. . . .

No peace ship has sailed since the Second World War began. None will sail. It could find no port either geographically or in the hearts of men.

If we failed to learn the one lesson we might have gained from the first World War we may, God grant, learn it from the second: That not by hate and force can the problems of mankind be solved.

Perhaps in the ages to come, when the immediate practicalities of the present have been blurred, historians may ponder on why the Peace Ship was considered such an incongruous gesture.

## 4

The Peace Ship expedition was reported to have cost Mr. Ford \$400,000. Be that as it may, he did not begrudge one nickel of it, nor sorrow in secret over the criticism and cynicism with which the world at first regarded his effort.

However much the world might scoff at his “idealism,” with the next breath it voiced a chorus of praise at the phenomenal strides the company was achieving under his direction.

That New Year's Day, while Mr. Ford was aboard ship westward-bound from Norway, marked the second anniversary of the 8-hour day and the \$5.00-a-day minimum wage. Investigation among the employees disclosed that their average bank deposit had grown from \$62.12 to \$204.00. On their homes they had paid 605 per cent more than in 1914. Life insurance policies had swelled more than 12 millions; bank deposits by nearly 5 millions; and home purchases by 12½ millions.

The plant was producing 2,000 units a day at that time, and by April this figure was increased to 2,500. The number of employees had passed the 30,000 mark.

Shortly after his return from Europe Dean Marquis found himself in charge of the sociological department, supervising the work of promoting the employees' welfare. Many of these had come to Detroit from abroad, bringing with them Old-World customs, and one of the department's most important tasks was making them into Americans. Classes in both the English language and citizenship were conducted, with membership in the thousands.

The sudden increase in earnings to \$5.00 a day and the added hours of leisure had brought certain abuses. Employees were fair game for all manner of stock schemes, real-estate promotions, and more vicious forms of amusement, especially among the immigrant workers, and in the outlying districts sprang up dens of various kinds where men might be separated painlessly from their earnings by what passed for sociable pastimes.

To combat the hovering vultures was another important assignment undertaken by Dean Marquis and his assistants. The battle was waged by constructive suggestions. Employees were urged to improve their standards of living, to save, to buy life insurance, to educate the children. Dean Marquis outlined the program to the National Educational Association:

"We receive every man on six months' probation and we make a careful study of his habits. To get his share of the profits he has to show that he spends constructively. There are two

ways of spending money—constructive, and destructive of self, family and community. A Ford man must be a builder. If he is not, he is called to the office and his destructive habits are pointed out to him. His profits are taken away until he reforms. If he reforms in sixty days, he gets 75 per cent of them. If he does not reform in sixty days, he is allowed to go elsewhere.”

Although this type of supervision resulted in advancing the employees' welfare, certain of them resented it as subjecting them to humiliating experiences. As Dean Marquis described it:

“They said that it interfered with their personal liberty and independence. So far as my experience went I found such complaints came from men whose individual liberties had been interfered with, but they were such liberties as getting drunk and beating up one's wife, abusing one's family, and wasting one's money.”

The well-intentioned program was finally abandoned except in individual cases where company assistance was needed or invited, sometimes to save a home, sometimes to provide medicine for the sick; and in its place came a program of practical education which began with the boys' trade school and finally embraced the Apprentice School and other training courses enabling employees who wished to do so to improve themselves and progress with the company.

When President Wilson visited the factory in early July he congratulated the vast army of men who poured from their machines to hear him “upon being associated with a concern, not to say with a man, who knows the human relationships of men to each other, and who knows that the real foundation of business is efficiency and the interest of those who work in the things that they are doing.”

## 5

The first of the schools to be established was intended for boys who were unable otherwise to obtain a high-school education.

Expansion of industry and the tremendous growth of allied manufacturers had created a demand for skilled workers far in excess of supply. No effort was being made to train youths to prepare themselves for the opportunities that lay before them in the vast new field of endeavor. The Highland Park plant alone employed battalions and regiments of toolmakers, all of whom required special fitness for their work.

This problem gave Mr. Ford occasion to put into practical application ideas he had been considering for several years. As a youth he had learned his trade in the shop; while he was learning he had also performed a useful service and earned money. He decided to establish a new kind of school, one in which lads who might not otherwise have a chance to learn a trade could receive the fundamentals of a high-school education and earn money while doing so.

It was named the Henry Ford Trade School. With a nucleus of six boys from Mr. Ford's farms, and three teachers, it was formally opened October 25, 1916, at 7:30 A. M.

The first three hours until ten-thirty were spent in recitation and study, one-half of each hour being devoted to recitation and one-half to study. The room used was borrowed from the English school; later the Army and Navy building on Woodward Avenue near the north end of the Highland Park plant was taken over.

The first day's lessons were reading, geography, and physiology and hygiene. At ten-thirty the pupils went to the machine training room and were started in their instruction on the fundamental principles with which every skilled mechanic must be familiar. New machinery was being installed. Its condition, thoroughly covered with oil and dirt, was observed by each boy, and the necessity of oil as a safeguard against rusting in the process of transportation was explained by the teacher in charge.

The boys were set to work, wiping off the oil, cleaning the machines and oiling them. At this point the need for clean and well-oiled machinery was made clear. Oil-holes were looked for

and distinguished from all other holes and depressions on the machine. Incidentally each boy became more or less familiar with the movable parts of lathe, milling machine, shaper, drill press, screw machine or grinder.

Before dismissal the boys were given a lesson in order and cleanliness in the workshop, each pupil cleaning up with a broom and wipe cloths. This day was representative of those to follow. It yielded for each boy three hours of schoolroom instruction, five hours of training in the machine shop, and a substantial guarantee in the guise of a daily wage for the comfort of his leisure hours.

From this small beginning the school grew rapidly, attaining an enrollment of 2,800 students and 12,000 applicants. From the outset it adhered to three cardinal precepts: the boy was to be kept a boy and not changed into a premature working man; academic training was to go hand in hand with industrial instruction; and finally, the boy was to be given a sense of pride and responsibility in his work by being trained on articles that were used, in other words to work on objects of recognized worth.

Many graduates found important posts in the organization; others were at liberty to seek posts elsewhere. In charge as superintendent was Frederick E. Searle, happy combination of educator plus practical man, who had been on the faculty of the Detroit University School when Edsel was a student there.

Principles which were first established in the school were found to have practical value in training of youth everywhere, and vocational-education leaders incorporated them in great school systems. Mr. Ford himself carried them on through the establishment of an Apprentice School for his older employees, and later, when America was again threatened with the Second World War, in a great training school for aviation mechanics.

Although the company had paid its workmen the highest

wages known, its profit during the year had exceeded one million dollars a week. Mr. Ford believed the public was entitled to a lower price on the car, and announced a drop of \$80, bringing the Model T as low as \$360, within reach of the average working man.

Ready now to seek larger facilities, he proposed to invest much of the previous year's profits in the construction of a great new plant along the Rouge River.

Julian Kennedy, foremost designer of blast furnaces in the country, was retained to superintend the construction of two blast furnaces on the property, and plans were made for storage docks nearly half a mile long.

All this was too much for the minority stockholders, who eyed the sixty-million-dollar melon enviously. The reduction in car price meant a loss in revenues during 1917 of another forty millions. The two Dodge brothers went into court and obtained an injunction halting the work and tying up the profits. In reply Ford posted a bond of ten millions to protect the plaintiffs in case they won the argument, and construction proceeded.

Fate thus made it possible for America to profit from Henry Ford's acumen. The preliminary work along the Rouge River was well started by April of the following spring, 1917, when Uncle Sam entered on the World War.

After the original hearing the Circuit Court held that the Dodge brothers' position had been well taken, that the company already possessed capital assets far beyond the legal limit, that the expansion of the Highland Park Plant must be stopped, and that the blast furnaces and foundry could not be built along the Rouge River.

Money expended thereon up to date was to be charged to Mr. Ford personally, and future earnings must be distributed as earned, while remaining cash on hand was to be distributed at once.

Those who had followed Ford's battle in the Selden patent suit, however, knew that this first setback would not stop him. He appealed to the Supreme Court.

An interesting bit of testimony by him during his cross-examination by the Dodge attorneys was the following:

A. It has been my policy to force the price of the car down as fast as increased production would permit.

Q. Then your conscience would not let you sell cars at the price that you did last year and make such awful profits, that is what you said, isn't it?

A. I don't know that my conscience has anything to do with the case.

Q. Why did you say it wasn't right to get such awful profits if it wasn't your conscience?

A. It isn't good business.

Q. It isn't good business. That is what you were thinking of, was it?

A. It wasn't good business for the institution. . . .

Q. And for that reason you were not satisfied to continue to make such awful profits?

A. We don't seem able to keep the profits down.

Q. You are not able to keep them down; are you trying to keep them down? What is the Ford Motor Company organized for except for profits, will you tell me, Mr. Ford?

A. Organized to do as much good as we can everywhere for everybody concerned.

Q. Do you know of anything in the law that discusses anything about doing people good in connection with the manufacture of automobiles?

A. I don't know very much about law.

Q. You didn't object in the beginning to having pretty satisfactory profits, did you?

A. We needed them.

Former Judge Carpenter, in his closing argument for the Dodges in the Supreme Court, said:

"Then, if your honors please, under Mr. Ford's project, this fifty-two million dollars in cash, or approximately or nearly all of it, will be used to the financial disadvantage of the corporation and of its stockholders. It will be distributed to laborers and purchasers of cars.

“Surely, a project by which fifty-two million dollars in cash of the money of the company going in this way to laborers and purchasers of cars, at the expense of the stockholders, is illegal and wrong as well. It is wrong, and it is illegal,

“Now, either the whole proposition altogether is indefensible, or at least that part of it which fixed the price of cars at such a low price as to produce this result, must be eliminated.

“Now, the testimony proves beyond question that there was no sense and reason, either in law or in justice, in making that reduction. It was Mr. Ford’s declaration that he might have kept up the prices and made sixty-five or seventy million dollars.”

Alfred Lucking, chief counsel for Mr. Ford, replied:

“The expansion, both at Highland Park and the River Rouge, had been agreed upon, planned for and the moneys to meet it arranged for a year and five months before the suit was brought, and the plaintiffs knew all about it. The cut in the price of the car in July, 1916, was strictly in accordance with all previous policy and practice. They were still pursuing the methods that had made this company singularly successful. Plaintiffs received the same treatment as every other stockholder. Defendant Ford had nearly six times the interest of the plaintiffs, and is not accused of selfishness or self advantage, but is only accused of too great generosity towards the public and the workers. It is true that Mr. Ford refused, or declared that he refused, to try to make sixty million dollars, and declared he did not think it would be right. He also stated the public would not stand for such awful profits.

“Ford declares that he believes a liberal and generous policy, both to the public and workers, is the best permanent policy for this company, and we submit his management along those lines has been fairly successful, and that reasonable men ought not to complain. \* \* \*

“Now one word in closing, in spite of all the criticism, the great controlling master facts remain, First, that it is one of the best managed corporations in the world. Second, that it is still progressing and no harm has come to anybody. Third, that no fraud or bad faith is shown, no attempt at self-benefit or advantage. Fourth, that the magnificent dividends have been paid steadily and regularly, and that it never lost any money. Fifth, that nobody has been frozen out, all treated alike. Sixth, that the

complaints are mere trivialities, complaints of a few months of delay in cutting the melon, complaints that are mere nothings in the light of the great results. Seventh, the most that could be possibly said of the president and the chief owner of this corporation would be, after an acknowledgement of his wonderful success as the author of the policy of expansion, and of cuts in prices and liberal treatment of the public as well as the turning of the unbounded wealth into the laps of the stockholders, I say the most that could be said by way of criticism is 'enamoured of your success in the past, possibly this year you are going a little too far in the matters of increase of production and cutting of prices.' But is this any ground for a court to interfere and place a strait-jacket on the operations of what everybody concerned knows to be a most successful institution?"

The Supreme Court decided in favor of Mr. Ford. He went right on increasing the capacity of his plant, building the blast furnaces and tractor plant at River Rouge, lowering the price of his car and increasing wages.

## 7

Progress at the site of the proposed new plant was paralleled by work on the new farm tractor. In order to remove the latter as a source of friction among the stockholders he requested the board to turn over to him all claims to the device; and also to give him permission to use the name of "Ford," provided he put "Henry" in front of it.

The request was granted, and the firm of Henry Ford & Son was organized to manufacture the tractor. When the machine itself was subsequently placed on the market, it became known as "Fordson." That name was also taken by the village of Springwells, in which the site of the Rouge plant was located.

Practical use of the tractor began in an entirely unexpected way. The unrestricted submarine campaign of the German U-boats had caused a serious food shortage in Great Britain. Not enough draft animals remained to do farm work; British factories

were all busy on munitions; such tractors as could be used were steam-propelled.

At request of the British cabinet, a cable was sent to Henry Ford seeking his aid. In part it said:

THE NEED FOR FOOD PRODUCTION IN ENGLAND IS IMPERATIVE. AM REQUESTED BY HIGH AUTHORITIES TO APPEAL TO MR. FORD. . . . WOULD YOU BE WILLING TO SEND SORENSEN AND OTHERS WITH DRAWINGS OF EVERYTHING NECESSARY, LOANING THEM TO THE BRITISH GOVERNMENT.

The answer was swift. On arriving in England Mr. Sorensen endeavored to sign up the British factories for the manufacture for Fordson tractors. The lowest bid he could get was \$1,500 per machine, with delivery indefinite. He then offered through the Ford Motor Company to make five thousand tractors in America at a cost not to exceed \$700 each, and to start shipping within sixty days.

The offer was accepted. An emergency extension was built on the Dearborn plant; in less than sixty days the first tractors were on the New York docks in the hands of British authorities. They reached London early in December, and the whole five thousand went through in less than three months. These tractors, driven by women, as officers of the British government said, "rendered incalculable aid to Great Britain. Without their aid in growing food, the crisis could scarcely have been met."

## 8

After a close and hard-fought presidential campaign Woodrow Wilson was re-elected for another four years. Although by family tradition a Republican, Mr. Ford had never followed party lines closely, and on this occasion he supported the Democratic incumbent, whose slogan "He kept us out of war," fluttered on a huge banner across the side of the Highland Park plant when the President visited it earlier in the year. Mr. Ford

told reporters he had been a Republican for the same reason he had ears—he was “born that way.”

He had never indulged in politics and knew none of the politician’s ways, yet the Michigan delegation that summer was instructed to place his name before the Republican convention as “Michigan’s favorite son.” It was a handsome tribute, but did not swerve him from his wholehearted support of Wilson.

True to his independent ideas, he declined to donate to the Wilson campaign fund. He said: “There are more ways of choking a cat than stuffing it with butter.” After a visit at Shadow Lawn, summer White House, he announced that he would finance a countrywide newspaper campaign on his own hook, urging the President’s return.

Shortly before Election Day an important event occurred in the Ford family. On the evening of November 1 their only child, Edsel, took as his bride Miss Eleanore Clay, niece of Detroit’s pioneer merchant J. L. Hudson. The young woman had met her future husband while she was still a girl with her hair down her back, and the acquaintance had continued for five years before their formal engagement.

Both had been pupils at a Detroit dancing school, and it was there that the courtship ripened. Miss Clay was described as slender, tiny, and a little wistful, with blue eyes, light complexion and hair the color of flax in the deeper shadows. They were married in the presence of close friends and immediate relatives by the Rev. H. Lester Smith of Central Methodist Church, Detroit, and went to Honolulu on their honeymoon.

## CHAPTER FOURTEEN

### WORLD WAR NO. 1—LIBERTY MOTORS AND EAGLE BOATS

#### 1

FOR two years Mr. Ford had continued to finance the efforts of Lochner and his associates at The Hague to accomplish peace by "continuous mediation." By February 1917 even the most optimistic realized that the cause was hopeless, and preparations were begun to throw the undivided support of the country behind the President as America cast her lot with the Allies. Lochner was summoned to Dearborn, the situation was explained to him, and the peace mission was terminated.

After bidding Lochner farewell Mr. Ford went to Washington to place all his resources at the disposal of the government. Calling on the Secretary of the Navy, Josephus Daniels, he offered use of his plants for the construction of any war material they could produce.

Looking back at those days from the vantage point of the vast preparedness into which the United States embarked during 1940 and 1941, the efforts of early 1917 seem pitifully inadequate for a world conflict. One reason is that the degree of frightfulness, of man's use of the machine to destroy his fellows, of mechanized warfare, had not yet been born. Use of the airplane as a weapon had not been fully developed.

The cry was for Liberty motors for airplanes. How rapidly could they be produced? Automobile factories like Packard and Ford were assigned the problem, as was Henry M. Leland's new plant, where his latest car, the Lincoln, was being introduced. The automobile had become a "non-essential," and its mounting

production curve was abruptly halted as factory after factory turned to the manufacture of war materials.

Ford's top production men, Martin, Sorensen, Knudsen, Findlater, Hartner and Emde, led various phases of the company's efforts.

It was said that the Liberty motors could not have been produced in quantity without Emde's aid. At that time the approved method was to machine cylinders out of solid forgings, a method that consumed a vast amount of time and required a tremendous amount of equipment and labor. To eliminate delay the company decided to use steel tubing cut to length and "upset." The plan was to have one end of the tube heated and formed to a conical shape, leaving a small opening at the end of the cone. A second operation flattened the cone so as to weld the hole shut, making a seamless joint. Unfortunately this method was found impractical; the hole was closed, but seams and cracks appeared where the edges came together.

As it was essential to produce a seamless wall in the cylinder, four men—Emde, Findlater, Hartner, and Martin—set to work to find a method of doing it. They finally placed the point of the cone to one side, so that the defect was located on the spot where a two-inch hole had to be drilled for the valve seat. Production was started, but another delay was experienced because of the slow method of cutting the tubes. Emde, at work again, designed and built a shear to be used instead of a steel saw. Soon production soared to 4,000 cylinders a day.

In other plants the valve housings, intake and exhaust were acetylene-welded to the top of the cylinder. Emde with a companion, Riemenschneider, worked out a method of butt welding which made a superior weld and saved much time. This method was subsequently adopted by other makers of the Liberty motor.

The need for submarine-chaser or patrol boats was serious.

America had entered the war unprepared to guard herself against the underseas craft. Several types were experimented with before the "Eagle" boat was finally selected.

Could it be built in quantities, at a pace fast enough to be of some help before the war ended? Shipbuilders shook their heads. Quantity production of automobiles might be feasible, but not of warships. The Navy Department turned to Mr. Ford, and asked him to undertake the task. He agreed; and on January 18, 1918, Secretary Josephus Daniels telegraphed instructions to "go."

Ten miles from water, inside one of its buildings at Highland Park, the company built a complete war boat, and demonstrated that the organization could accomplish what seemed to be an impossible task. After the boat was done it was taken apart. The experience gave the men a practical understanding of the job they had to do.

Within three days after the contract with the government was signed a host of men were at work on the Ford land along the Rouge River, wet and swampy and threaded by an undredged shallow creek. Up went two tremendous buildings, one of them a third of a mile long. Nearly two million dollars was spent. The "Assembly Building," as the largest was called, covered thirteen acres, and was all one room. Down its length ran three tracks, on each of which seven Eagle boats could rest at one time. Long cars were used to hold each boat, more than two hundred feet long. This was the assembly line; it was divided into seven distinct operations. The ship entered at one end from the "Fabrication Building," hardly more than a skeleton. It left at the other end, a completed vessel.

Its manufacture followed the assembly process which had been pioneered by Mr. Ford with his car, a revolutionary method in shipbuilding. Each boat was made entirely from steel sheets; automatic machines cut the patterns out, as marked on the sheets by the men. Parts were bent into proper shapes and angles by big stamping presses. Rivet holes were punched in the edge of

the steel plate, thirty or forty at a time. Standardized parts were cut out, fitted together, then riveted. Shipbuilders had never heard of such a thing!

By May keels were being laid and the Eagles were being hatched. By early June five boats were on the "assembly line." In less than five months the buildings had been set up, the machinery installed, and the first ship was ready for launching. That was speed!

Much of the task of producing the Eagles was turned over to Bill Knudsen, a splendid apprenticeship for the man who was to find himself a score of years later leader in the early days of the nation's defense effort as it prepared for World War II.

As the Ship Building plant was a mile distant from the river, each ship at launching had to be moved to the transfer yard and onto a track that led to the Rouge basin. The loaded launching dock sank gently into the water and the Eagle boat moved away.

As time went on and the men became more proficient, their performance set new records. In one month 18 fully completed ships were delivered, the greatest number that any single shipyard turned over in a like period during the War. In four months they built 43, a world's record for ship deliveries within a specified time.

The Eagles served on the seven seas. Six went to the Philippines; at least one saw the coast of China; three were stationed off Archangel, Russia; some were despatched to the Caribbean; others to Italy.

Besides building the boats themselves, Ford built the oil-burning steam turbines which propelled them—3,000 horsepower each.

All the cylinder forgings used by all the plants in the United States that built Liberty motors during the war were produced

by Ford. The total number of cylinders turned out was 511,854. The contract price for the cylinders was \$20; through the improved methods he was able to reduce the cost to \$12, and had the contract changed to conform.

The company also turned out 700,000 bearings for the motor, and these were so superior that the government placed orders with Ford for all the Liberty motor bearings made in this country. By Armistice Day 400,000 had been delivered.

Complete Liberty motors were also built, at a saving to Uncle Sam of \$1,000 on each. Instructions given engineers and mechanics were "to build as though their brothers or themselves were to trust their lives to the power and proper functioning of the motors."

The first one completed was sent to France to Air Service Production Center No. 2, and was accompanied by a personal letter from Mr. Ford addressed "To the Men at the Front in France."

"We want to say to you," he wrote, "that we have put into this motor the best there is in us; the best of our brains, our skill and our labor. . . . We realize that we hold in our hands the lives of the men who may drive this motor, and that their victory over the enemy depends in a large measure upon the thoroughness and honesty of our work. . . ."

Another important wartime achievement of the Ford company was in the making of caisson axles. The problem was to get away from solid axle forgings, for they required the drilling of a hole through seventy-six inches of solid metal. Ford accomplished this by making the axles out of steel tubing. Every one passed the government test, and the cost was one-sixth that of the old method.

More than 8,000 trucks, 25,000 Ford cars, and 6,126 ambulances were delivered by the company. Nor was that all. The Ford chemical department co-operated in making of gas masks. Motion-picture reels for Liberty Loan, Red Cross and other patriotic uses were made and supplied in sufficient quantities to

be used all over the country. Other motion pictures were sent to the American forces on every fighting front.

When President Wilson chose ten men to serve as labor umpires in disputes, Mr. Ford headed his list. Despite all these and many other activities Mr. Ford was still for peace. He firmly believed this was the world's last war.

"I am a pacifist," said he, "if to believe that war is the worst thing in the world is to be a pacifist. I am willing to fight only to put an end to all war. I stand exactly where I have stood right along. But if we can't have peace without fighting for it, by all means let us fight. And let us fight in such a manner that we mean business—that we are in it to stay, with all our hearts and souls, until the finish."

In addition to the other things mentioned, more than one million dollars' worth of work was done by the company in the production of special devices for the Navy Department of Great Britain. Nearly ten thousand gun caissons were built for the American army; a saving of \$500 on each was achieved. One hundred listening devices, and 2,731,573 "tin hats" for the "doughboys" were made. On these helmets the cost was cut from \$.30 each to \$.07. At the war's outset the government asked for 7,200 a day. By November, 1918, this figure had jumped to 40,000. Ford had facilities for 75,000 if necessary.

Three-ton tanks, each propelled by two synchronized Model-T motors, were built. Everything was set to make 6,000 six-ton tanks and 15,000 one-ton battle tanks when the Armistice came.

Notwithstanding this record of war service, criticism was leveled in certain quarters against both father and son—at the former because of his openly avowed peace views, and at the latter because he had remained at the factory in an executive capacity, rather than joining the military forces.

Civilian status at that time meant accepting thoughtless jibes, and it would have been a simple matter for the young man to have accepted the offer of a desk job in a Washington bureau where, nominally at least, he would have been in uniform. That role would have silenced his critics, but he chose the more difficult one of directing an industry.

"Edsel told me there was one job in the war he did not want and would not take, and that was the job of a rich man's son," said Dean Marquis. "If he did go in, it would be on the same level as anyone else."

The dean is authority for the statement that without Edsel at Highland Park productive activities would have slowed up disastrously. "His father spent more and more time at Dearborn, and it was absolutely necessary for us to have someone at hand who could make decisions and give authority to go ahead on a hundred matters every day. No man labored harder and more conscientiously, or rendered a more valuable and patriotic service to this country, than did he."

Criticism of the father was an outgrowth of his consent to accept the Democratic nomination for United States Senator from Michigan. There was nothing that Mr. Ford wanted less than political office, and when the Republicans first approached him on the same matter he turned a deaf ear. It was the appeal of President Wilson that led him to set aside his own desires.

Summoned to Washington during early summer for a conference on the submarine detector, the manufacturer found himself drafted.

"No one knows as I do the work you and your son are doing to help win the war," Wilson told him. "No one knows better than I know the heartache and sacrifice you are putting into it. But I hope you will put aside your personal feelings and make this additional sacrifice."

Ford demurred. "I can't leave Detroit. I can't take the time to make the race. I've so much to do that I couldn't spend enough time in Washington if I were Senator. Besides, I can't

make speeches. And I haven't the patience to sit around and listen to folks who like to talk."

The President finally had his way. "I need you," he repeated, over and over again, till Ford at last agreed to accept.

News that he would make the race threw Michigan into a furore of excitement. Ford was universally known, and it was predicted throughout the state that he would be overwhelmingly elected. The Republicans nominated the strongest candidate they could select, Commander Truman H. Newberry, a highly respected citizen of Grosse Pointe, ten miles from Detroit.

Neither Mr. Ford nor Commander Newberry had the faintest idea of what lay ahead, of the bitterness that was to fan into a federal prosecution and a virtual scandal before the Senate. Otherwise, neither would have entered into the campaign. Mr. Ford, a lifelong Republican, was doing it as a service to his country as well as to a Democratic President. Commander Newberry, a man of high ideals and unquestioned patriotism, had much respect for Mr. Ford and like many other men of his type, little conception of the intricacies of politics. His son Phelps was a close personal friend of Edsel's.

In the early stages of the campaign Ford went off for a few weeks' rest with his friends, Edison, Burroughs and Firestone. All except the aged naturalist were busily engaged in war work, and felt that the relaxation would do them good. They met at Pittsburgh for a vacation in the Smokies, and were joined by Commissioner Hurley of the Shipping Board for a brief stay.

During the trip Ford tried to persuade his friend to become a candidate for the Senate from the State of New Jersey, but Edison was not interested. He was like Faraday, he said. When they wanted to make Faraday a knight, he replied: "I was born plain Faraday, and I want to die plain Faraday."

Both Ford and Edison were great storytellers. One of Firestone's guests recalled: "I never saw such a change come over a man's face as when one of their funny yarns hit Burroughs. He nearly fell off his chair in a fit of laughing, and many a

time Burroughs would go off by himself and laugh heartily."

From their association grew another Ford story that has been often repeated. They were riding through a rural district in a Model T when one of the Mazda globes burned out. Mr. Ford stopped to purchase a new one. After he had paid for the bulb, he remarked with a twinkle in his eye: "By the way, you might be interested to hear the man who invented this lamp is sitting out there in my car."

"You don't say! You mean Edison?"

"Yes. Incidentally, my name is Henry Ford."

"Do tell! Glad to meet you, Mr. Ford."

Ford's eye, still twinkling, noticed the Firestone tires on the rack behind the counter.

"Glad to meet you, sir. One of the other men in the car makes those tires—Firestone."

The dealer's jaw dropped. A hard gleam came in his eye. "Look here, mister. That's enough. If you tell me that old fellow with the whiskers out there is Santa Claus, I'm going to call the sheriff."

## 5

On Sunday morning, November 3, two days before the casting of the ballots, the Republican State Central Committee published a full-page advertisement in the *Detroit Free Press*, which exploded like a bombshell in the electorate of Michigan. In heavy type was the headline:

### HENRY FORD AND THE HUNS

The body of the ad began with an attack on Carl Emde, who had been associated with Ford since Piquette Avenue days:

Carl Emde, a German alien and a German sympathizer, is boss of the drafting work on the Liberty motor at the Ford plant.

Henry Ford knows he is a German alien and a German sympathizer, but he refuses to take him off this work. . . .

It is now plain to every voter in Michigan that Henry Ford is no more wary of Hun agents than he was when he followed Rosika Schwimmer to Europe on the peace ship three years ago. He is as innocent as ever.

If Carl Emde wishes to make plans and photographs of the Ford plant or the Liberty motor for use by the enemies of the United States, Henry Ford is willing to give him a chance to do it, just as he fell for Madame Schwimmer's pro-German peace plans.

Henry Ford loves the Huns too much to be trusted with a seat in the Senate of the United States, and help make peace with them. Commander Newberry knows them for what they are and is helping to fight them at every stage of the game.

There can be but one choice for wide-awake Americans in this election.

The attack was timed so as to make reply difficult before the election. Nevertheless, a reply was prepared and submitted to Ford for approval. Before studying it he insisted on telephoning to Emde personally, and that concern for the maligned workman probably cost him the election. When he finally did approve the statement it was too late to catch the state editions of the newspapers, and thousands of voters went to the polls Tuesday ignorant of his defense against the charges.

E. G. Pipp who had left the *Detroit News* to take charge of the newly acquired Dearborn *Independent* was present during the Emde conversation, and left a record of it:

"Don't worry, Emde. I have seen the papers. I know you; I have watched you work and I know you are honest and faithful. If they try to hang you they'll have to hang me first. I am going to see that you get a square deal."

The Ford statement as finally published, read:

Our policy is to make men, not to break them. In times of panic great injury and injustice are often done to innocent persons, and we try to keep our heads.

We would not allow injustice to be done to an old, trusted and valued employee, even though he was born in Germany. The results speak for themselves. Mr. Emde, referred to as the special example in the Hughes report, has been with us a little over twelve years, and he is a most able and excellent engineer and has always given perfect satisfaction. Not one word could be found by Mr. Hughes or anyone else with regard to Mr. Emde's actual work. We in the plant know that he gave valuable assistance and many suggestions with regard to the development of the Liberty motor cylinders, which are being furnished to all the manufacturers with a saving of \$345,000 a month to the government over former orders.

From the beginning of the war we have taken the greatest precaution. We have had no interference with our work that could be in any way traced to enemy aliens. The United States Marshal can speak for himself as to our organization and work with regard to that.

## 6

First reports gave the election to Commander Newberry by 7,567 votes. An official recount later altered these figures slightly, but not the result.

Then came the charges that the Corrupt Practices Act had been violated by the victors—that too much money had been spent. The commander was tried and convicted in the Grand Rapids federal court, and sentenced to two years at hard labor at Leavenworth. It was not until two years afterward that the Supreme Court by a vote of five to four set aside the conviction and declared the act under which he had been indicted unconstitutional. He was subsequently seated by the Senate by a vote of 46 to 41, but resigned in disgust and was succeeded by James Couzens. All this, however, came much later.

Any lingering doubt as to the efforts of the company in war work were dispelled when, following the Armistice, it received several citations, among them the following:

In accordance with the recommendation of the direction of

Air Service a certificate of merit has been sent to you under separate cover.

The citation by the Director of Air Service is as follows:

"This company produced 3,950 complete Liberty 12 motors of unusual good quality. They also produced all cylinder forgings used by all plants in the manufacture of Liberty motors, and they invented and developed special machinery and processes for this purpose. This plant was 100 per cent on war work."

The Chief of Ordnance also made similar recommendation and citation.

It is very gratifying to me to be enabled to transmit this visible recognition of patriotic war service.

GEO. W. BURR  
Major General  
Assistant Chief-of-Staff.

On Armistice Day 7,000 Ford workers were represented by stars on the company's service flag. It was the largest service flag of any factory in America.



The 1916 Model T. Coupelet. This model was a forerunner of what later became known as the convertible model. The top could be lowered.

## CHAPTER FIFTEEN

### BUILDING THE ROUGE PLANT

#### 1

THE breaking of active relations between Ford and his former associates, James Couzens and the Dodge brothers, together with the bitterly fought lawsuit to compel a distribution of profits among the stockholders, led Mr. Ford during the winter following the Armistice to decide to buy them out completely, and concentrate ownership of the enterprise in his own family. Before he did this several preliminary moves were necessary. He wanted Edsel at the helm when the step was accomplished. To pave the way he resigned the presidency in his son's favor on the last day of 1918.

Next he arranged for a one-year credit with Boston and New York banks, whereby the sum of \$75,000,000 was to be advanced any time within twelve months if a stock transfer from the original holders could be effected. One by one they were approached and persuaded to sell—at a stupendous price, of course—and the half-dozen men and lone woman who had ridden to riches with the Dearborn farm youth reaped their bonanza on a basis of about \$12,500,000 for each original investment of \$5,000.

The Dodges received \$25,000,000; Couzens, whose first holdings had been augmented, was given \$29,308,858; to his sister Rosetta, now Mrs. A. P. Hauss, went \$260,000 for the \$100 she had advanced (on which she had already received a return of \$95,000 in dividends); the two attorneys, Horace H. Rackham and John W. Anderson, received \$12,500,000 apiece; and the heirs of John S. Gray, banker and first president, divided \$26,250,000.

Never in all history had such a reward been paid for participation in a business venture.

The new Ford Motor Company was capitalized at \$100,000,000.

Details of the stock purchase were not completed till late in the year; meanwhile work went on at an accelerated tempo. The task of rearranging the organization for the resumption of production brought with it important developments, involving the completion of plant facilities along the Rouge River.

As the Eagle boats left the Assembly building, equipment for the manufacture of car bodies was moved in.

During the previous summer foundations had been laid for huge ore, stone and coal bins paralleling the stream. They were built of solid concrete two feet deep, and set on piles sunk in the ground at points four feet apart. Directly west of the storage yards a great concrete wall and massive dock-head were fashioned side by side, a short distance apart. On them rails were laid to support giant ore-unloaders, which were to pick up the metal from lake boats at the rate of twelve tons per shovelful, and transfer it into the bins.

Writers compared the scene to Panama during the period of construction on the Canal. Mingled together were steam shovels, concrete mixers, hoists, pile drivers, tractors, trucks, miniature and life-size locomotives and cars; and finally the dredge *Niagara* gnawing her way along the bed of Roulo Creek, emptying into the Rouge.

## 2

January 1919 found Mr. Ford increasing the minimum wage of his employees to \$6.00 a day.

It also found him the president of a publishing concern. During the second week of January a new periodical appeared on the news-stands, bearing the name of an old local weekly newspaper, the Dearborn *Independent*. In many ways it was

unique. The page size was twice as large as that of the ordinary magazine; there were few illustrations; the articles were largely comments on national or international affairs. The masthead bore the name of E. G. Pipp as editor; two of the full-page articles were written by another former ace of the Detroit *News* editorial staff, William J. Cameron, who later succeeded Pipp.

An inside page bore the name of the president and founder. Through the eight years of the magazine's existence "Mr. Ford's Own Page" continued to appear each week. Among other things, his first message stated:

This paper exists to spread ideas, the best that can be found. It aims to furnish food for thought. It desires to stir ambition and encourage independent thinking.

A further explanation was given in the introductory editorial:

The Dearborn *Independent* is not in any sense a trade paper published in the interest of the Ford industries; indeed, it is as far from that as can be conceived. The paper owes its establishment to Henry Ford's desire to serve the new freedom of the future.

It was something of a paradox for the new publisher, who had suffered during much of his active life from ridicule, to turn like the proverbial worm, and to seek redress from one of the country's great newspapers by asking damages for libel. What roused his ire was the headline: FORD IS AN ANARCHIST. It captioned a report that the automobile manufacturer, back in the days before the World War, had opposed sending the militia on a punitive expedition south of the border into Mexico. In response to a direct inquiry from the Chicago *Tribune*, an executive had replied that the jobs of any Ford workmen who responded to the call would not be waiting for them when they returned. Two days later Mr. Ford repudiated the statement, but it was too late.

He had always consistently opposed war, but at the same time he felt he did not deserve the brand of "anarchist."

The editorial on which the libel was alleged read in part:

Inquiry at the Henry Ford offices in Detroit discloses the fact that employees of Ford who are members of or recruits in the National Guard will lose their places. No provision will be made for anyone dependent on them. Their wages will stop, their families may get along in any fashion possible, their positions will be filled and if they come back safely and apply for their jobs again they will be on the same footing as any other applicants. This is the rule of the Ford employees everywhere.

Information was refused as to the number of American soldiers unfortunate enough to have Henry Ford as an employer at this time, but at the Detroit recruiting office it was said that about seventy-five men will pay this price for their services to their country.

The editorial continued:

Mr. Ford thus proves that he does not believe in service to the nation in the fashion a soldier must serve it. If his factory were on the Southern and not on the Northern border we presume he would feel the same way. We do not know precisely what he would do if a Villa band decided that it would be pleasant to see the Ford factories burn. It is evident that it is possible for millionaires just south of the Canadian border to be indifferent to what happens just north of the Mexican border.

If Mr. Ford allows this rule of his shops to stand he will reveal himself not as merely an ignorant idealist, but as an anarchistic enemy of the nation which protects him in his wealth.

The entire country enjoyed the spectacle of the trial, which began in May at Mt. Clemens and lasted until the middle of August.

Although the amount sought was one million dollars, monetary reward was the last thing Ford desired. His name was being linked with leading anarchists whom he did not even know; and more than one Republican newspaper had a secret grudge against him because of the part he had played in supporting Woodrow Wilson and in running for the Senate against Commander New-

berry. The *Tribune* happened to be selected because it was regarded as the most powerful newspaper in the group attacking him.

During the course of the trial the courtroom resembled a battlefield, with hostile armies arrayed on either side. Each sought to gain tactical advantages, resorting to legal byplay that had no bearing on the points at issue. Correspondents from press services and all big newspapers sat entrenched at long tables, with telegraph boys sauntering in and out bearing "copy," and the temptation to steal the headlines was irresistible.

Although the suit had been brought by Mr. Ford, in no time at all it developed that he himself was the defendant, that what was on trial was "his Americanism." From the Mexican border came an amazing array of witnesses whose testimony was to paint a picture of conditions there in 1916. Twenty Texas Rangers in full costume, ten-gallon sombreros, jingling spurs, bow legs, and six-shooters, paraded up and down the courtroom aisles and through the lobbies of the Mt. Clemens hotels.

Deputy sheriffs flashed silver stars from a dozen counties along the Rio Grande. Floyd Gibbons, famous war correspondent, was called to relate his thrilling experiences both with Villa and Pershing. Vainly the Ford attorneys attempted to narrow the trial to the points at issue. The frail victim of a Mexican raid told tearfully how her husband and sons had been shot down in cold blood.

As June turned to summer, the little courtroom became a torture chamber; the air was stifling inside, and when the windows were opened outside breezes wafted in the sulphur fumes of the near-by Mt. Clemens baths.

To supplement the newspaper's own attorneys E. G. Stevenson, who had represented the Dodges in their suit, was called in to assist in the examination of Mr. Ford. Report reached the Ford camp that Lawyer Stevenson had boasted he would force Mr. Ford to read aloud from long documents and books with which he was not familiar, proving that he was illiterate. Fore-

warned of the plan, Mr. Ford left his glasses at home on the day he occupied the witness stand and whenever documents were presented to him to read, he refused to do so. The exasperated Mt. Stevenson, with profuse apologies, asked blandly: "Mr. Ford, I dislike to ask this question but I have heard that you cannot read or write. Is it true?"

Sharp and bitter was the wrangle that followed, before the court quieted the antagonists. The examination turned to American history. "Mr. Ford, what was the United States originally?" "Land, I guess." That time the laugh was on Stevenson.

Every day for more than a week Mr. Ford occupied the witness stand, while he was questioned about advertisements, articles, and even definitions of words like "ballyhoo," "treason," and "idealist."

One day Mr. Ford had worn to court an old, comfortable pair of shoes and as he sat in the witness box, he drew from a pocket an old knife and idly whittled at a bit of leather on the sole of one. Off guard, he was suddenly asked: "Tell the jury who Benedict Arnold was."

A short time before Mr. Ford had been host to Arnold Bennett, and he might have been thinking of him; or he might have been thinking of Matthew Arnold who was also not unknown as a literary figure. At any rate, he looked up from the shoe in surprise and replied: "Arnold?—Why, Arnold was a writer!"

What a merry headline that made! And when Mr. Ford added that in his opinion "History was bunk," the correspondents had all they needed. This was no new statement by him. As far back as May, 1916, he had remarked to a reporter: "Records of old wars mean nothing to me. History is more or less bunk. It's tradition."

During the years to come his remark was to be repeated more than once, until the day when he could demonstrate his conception of history by tracing the development of the peaceful arts and crafts at Greenfield Village.

Less publicized was his definition of an idealist, which slipped

out during the cross-examination: "An idealist is one who seeks to make profit for others."

The right way to conquer Mexico, said Mr. Ford, was by instructing its people in the commercial and industrial arts. Peoples who follow those pursuits and enjoy prosperity will not want war. When asked what he was doing to further such an ideal, he replied: "Well, we have three hundred Mexican young men drawn from all over the various states of Mexico, now in my tractor plant learning how to manufacture and operate tractors, so they may carry American ways and methods back to their homes."

Further testimony brought out the fact that these young men had been selected by the President of Mexico, and had been admitted to this country through a special arrangement between the two governments.

The verdict was promptly reached by the jury and it was in Mr. Ford's favor. He did not need nor desire monetary recompense, and the award of six cents was as good as six million so far as clearing his name was concerned.

## 3

Those who followed Mr. Ford's activities closely have always observed that just when some new creation of his was being completed his mind had leaped ahead to the day when the new would give way to something newer. As he himself expressed it, on the day a new machine commenced to function its obsolescence began. Designers must commence plans for the machine that was to improve and supersede it. He called it progress through change.

Even as the steel furnaces lifted their heads into the air along the Rouge River, and the tattoo of air hammers told of the construction of a gigantic industrial concentration, he was looking forward to the next step—decentralization. Employment of a vast army of men meant an influx from country to city. Congested living conditions, dependence on wages, and helplessness

during layoffs would result. Once the functions of the main plant were organized, the problem would be to separate them wherever possible and lead industry back to the country where workers would find a more wholesome life.

Village plants along little streams, using neglected water-power sites, would make this possible. The owner of a small farm could perform all necessary work in a few weeks, using mechanized equipment, and have time left over to take a part-time job in the near-by plant, thus adding substantially to his earnings.

"These people can work twenty-one days each year on the farm," he said, "and spend the rest of their time at useful and necessary tasks. They'll make collars and cuffs and shirts; build better houses, more schoolhouses and universities; read books, write 'em; ride in motor cars and airplanes; see the world and know it, and learn how to run it right. Most people, even in countries called civilized, live in houses unfit for habitation, in sanitary and general circumstances that make it impossible for life to be what it ought. All this is going to be changed, and sooner than most people think."

While many commentators disputed his theory, especially as to the amount of time needed to take care of all the duties on a farm, he turned to the river of his boyhood and looked among its upper reaches for an old grist mill that once had served the Michigan countryside. He found one at Nankin, and after restoring it, equipped it for the manufacture of small parts. At Northville, still farther up the river, he acquired an old furniture plant and turned over to it the job of making valves for Ford cars.

During that summer's camping trip with Edison, Burroughs and Firestone he explored northern New York State, and selected a site for a plant on the Hudson River near Troy where a dam had been built but never used. The four "vagabonds" carved the first letters of their last names on a small boulder that later became a treasured relic of the Ford Green Island Plant.

Meanwhile work went on in ever increasing extent at the

River Rouge Plant. A foundry was begun, thirty acres in area, to be the largest in the world. Twenty railroad sidings were stretched across Miller Road to the new structure, to eliminate the excess handling of steel in its erection.

Next came the construction of a battery of coke ovens. Coal which cost the company approximately \$5.00 a ton delivered at the plant, was to be converted into coke and by-products yielding from \$12.00 to \$13.50 a ton. Part of the black fuel was to yield the snow-white ammonium sulphate, highly regarded as a fertilizer. Enough gas would be generated to heat the ovens and leave more than fifty per cent for outside sale. Once the ovens went into operation, the process of heating from gas produced would be continuous. Tar, benzol and still other by-products would be obtained.

## 4

Then came the Ford commissary stores. Because prices were at new high levels, ordinary necessities of life cost as much as luxuries formerly did. In the same dwelling where a downstairs five-room flat had rented for \$14 a month in Detroit back in 1913, the upstairs flat now commanded \$45 monthly. A modern home in a good residential district—\$33 then—cost from \$60 to \$85 now. Dressed turkey had ranged from 18c to 25c a pound; now live turkey was 44c and 45c; chicken (live) had gone up from 12c and 13c to 31c and 32c.

The motto of the Ford commissary stores was to be: "Bring the dollar back to par." Prices on suits and overcoats were to be lowered five to ten dollars below outside prices. Shoes were to be sold at prices from one dollar to fifty cents less. Coke from the River Rouge Plant was to be sold at 60 per cent of the prevailing price.

Over the country a buyers' strike was gathering momentum against the continuation of war prices. Early in 1920 a failure was reported here and there, a business or manufacturing con-

cern. Soon their numbers increased. The buyers' strike grew; it was only a matter of time before it would affect sales of automobiles also.

By June sales were dropping seriously. Everything began to slow down, yet suppliers of raw materials would not cut their prices. Theodore MacManus and Norman Beasley related in *Men, Money and Motors* how Knudsen and others called on the steel plants in an effort to get a reduction for Ford.

Everything was done by the Ford company that could be done to keep business moving and its army of 80,000 employed. A bonus of \$15,000,000 was paid in January.

To set an example a price slash was announced at a time when the company had on hand unfilled orders for 146,065 cars and tractors for immediate delivery.

Coming at a dramatic moment, the cut caused a sensation. Some editors, realizing that unless similar action was taken drastic steps would be adopted by banks to deflate credit, hailed the move.

The Chicago *Tribune* declared that "the decision of the Ford Motor Company to reduce the prices of its cars to pre-war level, is an important contribution to the work of restoring the country to a sound economic and industrial basis."

"In this stroke," said the New York *Sun*, "Henry Ford has pointed the way for all other producers, all other merchants. The country is headed for lower prices, pre-war prices or thereabouts."

Simultaneously with the price cut it was announced that wages would not be dropped.

Work was continued at the new plant, preparing for employment of more and still more men. Fires were lighted in the first of the two blast furnaces May 17, 1920. Mr. Ford's grandson, Henry Ford II, touched a match to the oil-soaked excelsior and from its blaze production began.

Above the powerhouse now rose giant smokestacks 325 feet above ground, two-thirds as high as the Washington Monument.

Continuance of employment and the attack on high prices were only part of the program. Expansion was on a scale greater than ever. A railroad was bought outright; coal mines were purchased; a great timber reserve was obtained. All these were to have their part in the lowering of the cost of the car, truck and tractor.

While the plant was under construction the government had asked the Detroit, Toledo and Ironton Railroad to replace its old bridge across the Rouge with a new one. Unable to stand the expense, the railroad asked Mr. Ford to finance a half-million dollar bond issue.

"Maybe it would be better to buy the railroad," he replied. Already the line had been reorganized twenty-six times; during a period of fifty years it had never paid a dividend. Yet it offered a direct route to the coal fields of southern Ohio, West Virginia and Kentucky, avoiding congested centers. By securing it and at the same time purchasing large coal holdings in the fields mentioned Ford would be made practically independent so far as that resource was concerned.

The directors of the railroad made an offer which allowed the stockholders nothing on their investment. Ford increased the amount asked so that all could get a return on their money, and bought it for \$5,000,000, assuming a mortgage of \$2,000,000 more.

The railroad's equipment was in bad shape. Part of the track was too light, badly worn and bent; it was replaced by 10,000 tons of heavy rail. The ties were just as bad. Ten engines were scrapped, together with 800 flat and coal cars, too old or too light to repair. Altogether, more than \$8,000,000 was spent rebuilding the road after the purchase.

In order to learn for himself exact conditions, Mr. Ford made a personal inspection of grades and bridges over the 454 miles of main track. In his automobile he traversed a considerable length of the line, visiting towns along its route. He made a

special point of calling at roundhouses and shops to converse with the mechanics, went out with repair-gangs, and examined every unit of the road's motive power.

One result was the discovery that a considerable saving could be effected in both inbound and outbound transit time. This was to prove of great service to him early in 1921 when he was able to release \$28,000,000 in goods tied up in transit, a sum sorely needed to help weather the financial storm.

In addition to buying the railroad Mr. Ford invested heavily in coal fields of Kentucky and West Virginia. Altogether, the Ford company now held reserves of 195,000,000 tons.

In the Upper Peninsula of Michigan 300,000 acres of timber were purchased, 70,000 at L'Anse, and 30,000 at Pequaming, on the shore of Keweenaw Bay, Lake Superior.

Work was begun at Iron Mountain on a mill, where timber would be shaped into bodies for cars. Hardwood parts were to be made here; also Ford planned to use up the scrap by erecting the largest wood-distillation plant in the world. Sawmills and logging camps were planned.

Eighty miles north of Iron Mountain at Michigamme was an old iron mine that had been abandoned ten years previously. After Ford bought it, it was made to produce 625 tons of foundry iron ore every twenty-four hours. This was shipped to Menominee or Marquette, transferred to boat and sent down to Detroit for transport to the River Rouge bins.

These were some of the ways in which Ford strove against the rising tide of depression and failure. When fall came, and Warren G. Harding battled James M. Cox of Ohio for the Presidency, a second cut of car prices was made. On the face of things it was not justified. As the company still had large supplies of stock bought at high prices, the new cut brought the car below the cost of manufacture. The company announced that in the hope of hastening a general return to the pre-war basis, it would take its loss at once; it charged off its books \$17,000,000.

That is, it put a value of \$88,000,000 on stock, raw and manufactured, that had cost it \$105,000,000. Other manufacturers declared that Mr. Ford was crazy.

To some extent the cut brought the desired result. Sales took a bound upward for a few weeks. Other manufacturers cut prices too, but it was only temporary. There was no reduction in inventory values or in prices of supplies. One plant after another over the country closed down, and as winter set in the cessation of industry became general. The Ford plant alone continued to operate at full capacity.

Sales did not warrant the large production, but the company kept on making its monthly quota of 90,000 cars, manufacturing stock into automobiles. Looking ahead, Mr. Ford saw that a crash was coming, and he wanted to convert as much stock as possible into motor cars before it arrived.

Supply concerns still refused to lower prices, and in the end Mr. Ford realized that if the process was to be hastened, a move must be made that no one could fail to understand. In December he closed the Highland Park Plant, determined not to resume production until the company could buy materials at peacetime prices. He thought two weeks would be sufficient; as it turned out, six were required.

## CHAPTER SIXTEEN

### WEATHERING THE STORM

#### 1

WHEN the gathering storm broke in midwinter, 1920, business came to a standstill everywhere. In the South the cotton growers were forced to unload a bumper crop on a glutted market; tobacco growers faced starvation. In the West livestock raisers saw ranches and cattle slip from their control. Wheat growers, after holding grain worth \$2.50 a bushel, saw it tumble headlong to less than a dollar.

With factory boilers cold and machines idle the families of thousands of Detroit workers felt the pinch of want. In the midst of the gloom Mr. Ford prepared to pay a second bonus to his employees, aggregating more than \$7,000,000. In numerous cases it was the only income received for weeks.

He paid the bonus, although the company's financial condition was none too bright. While he had \$20,000,000 on deposit in the banks, he had obligations to meet by April that totalled \$58,000,000. After the Highland Park plant shut down rumors were circulated that the great "wonder company" at last faced disaster. Vague reports hinted that, due to the cut in price and other causes, grave problems confronted Ford; and that shortly the company must close its gates, or go bankrupt, or both.

"Creditable authority" had it that Mr. Ford, his back to the wall, was making a supreme effort, calling on every resource to borrow money—without success. The end was not far off.

When the news was published that the big factory at Highland Park, after its "two weeks for inventory," would not reopen, confirmation seemed to be given to the rumors. Press wires car-

ried the dispatches far and wide. Even sober, level-headed businessmen began to suspect that something was fundamentally wrong within the Detroit organization.

Resumption of operations at Highland Park was "indefinite." Ford was "broke." If the plants ever opened again, they would be "in new hands"; "Mr. Ford was ready to retire."

Several factors added fuel to the fires. One was the resignation of Frank L. Klingensmith, Couzens' successor as vice-president and treasurer.

When the representative of a Wall Street banking group called at Mr. Ford's Dearborn home to offer a loan, he made it plain that his people would want "to have some say as to who the next treasurer would be."

"I handed him his hat," said Mr. Ford, "showed him where the door was, and told him to take his things and get out right quick. The next time I saw Edsel I told him that in the future he was to be the treasurer as well as the president of the Ford Motor Company."

Back in 1919 when the Fords bought out the other stockholders, they had borrowed 70 million dollars on notes. Of this, 37 had been repaid, leaving 33 due. The final installment of the 1920 Federal income tax was unpaid, and it, together with the installment due April 15, 1921, made a total of 18 million owing Uncle Sam. The bonus for the employees had taken another 7-58 million in all.

In the bank was \$20,000,000. Approximately 93,000 finished cars were on hand at the time of the shutdown. Cars and parts had been shipped out as fast as they were finished, and the plant was cleared of all materials. The branches continued to manufacture until they, too, ran out of parts. Sixty thousand cars were shipped to dealers in January, enough for about one month of normal sales. Sales, however, were anything but normal, and dealers protested loudly and bitterly against the shipments and the necessity of borrowing money to pick up the bills-of-lading. The company, however, saw no alternative, and did not hesitate to cancel dealers who refused to pay for the cars.

Fortunately, sales began to improve in February and it was possible to reopen the Highland Park Plant. Before April \$24,700,000 worth of stock had been converted into cash. That sum plus the 20 millions on hand when the year began, furnished nearly 45 of the 58 million needed. Accounts receivable were collected—\$3,000,000 in foreign parts and \$3,700,000 from by-products. Liberty bonds totalling \$7,900,000 were sold. Altogether, \$59,300,000 was raised—more than enough.

On the Detroit, Toledo & Ironton Railroad, ways were found to cut the amount of time required by goods in transit. Previously about twenty-two days had been needed to haul raw material to the factory, make it into Model T cars, and place the latter in the dealers' hands. In other words the production cycle covered a period of about three weeks. It was necessary to buy three weeks in advance of use, thereby tying up 88 millions in reserve stocks, plus stocks in transit.

By speeding up the movement of raw materials to the factory, and that of finished cars to the dealers, the company was able to release some 28 millions—took it from funds invested in stocks in transit, and put it to other uses. Better methods reduced the manufacturing time, and it was no longer necessary to carry immense reserve supplies.

By abolishing red tape, speeding up delivery and centralizing control, the three weeks was reduced to fourteen days—a cut of almost one-third.

The amount of money invested in raw materials was cut from 88 millions to 60.

All these matters involved considerable housecleaning. Hundreds of jobs were abolished. Literally, a whole trainload of desks and furniture were taken out; they were no longer needed and hence were sold. The office force was pruned from 1,074 to 528 employees. Fully 60 per cent of the telephone extensions were taken out. A similar reduction was made in the shops.

Before the housecleaning, the expense for labor and commercial overhead charges had averaged \$463,200 a day, or \$146 a car. By June this had been reduced to \$93.

During that time several valuable men left the organization in addition to Klingensmith. Among them was Bill Knudsen.

In time he joined the Chevrolet organization and rose to the head of General Motors. Despite their parting, he and Ford remained good friends. To Ford, Knudsen always would be a "production genius."

## 2

Slowly the great plant on the Rouge River took form. When spring came partial production of crankcases got under way in the huge foundry. Then came that of cylinder blocks. By a new method the blast furnace adjoining the foundry gave off molten metal directly into the castings of the cylinder blocks, without the remelting process.

As the enclosed type of car grew in favor, more and more glass was required in making the Model T. Ford decided to be independent in the supply of that material, and at the same time sought a way whereby it could be produced more efficiently and at less cost. For ten years he had experimented to attain this end, developing devices radically different from established practice. A conveyor featured those new operations, and finally he succeeded in evolving a method in which the glass moved continuously from the moment it left the furnace, until it became a polished windshield. Glass was rolled successfully from a tank furnace for the first time.

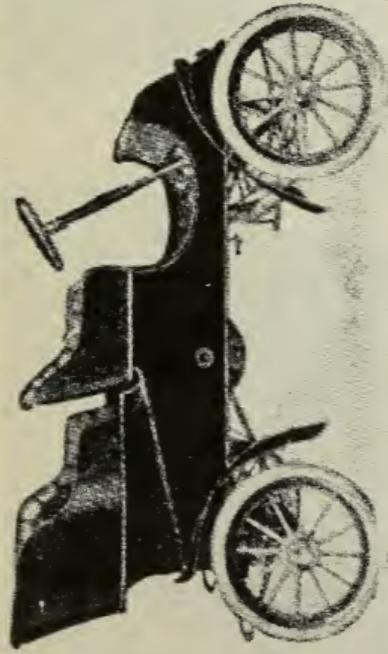
Production was planned to take place at the River Rouge, where a glass plant was under construction.

The world marvelled at Ford's showing for that depression year. More than 1,000,000 cars and trucks were made; nearly 37,000 tractors. Purchases of material ranged as high as 50 million dollars monthly.

Cash receipts for the year were \$546,049,449.96.

Net profits were in excess of 75 million dollars, enough to pay for the stock purchases.

*The Latest and Best*



The **FORD**MOBILE with detachable tonneau  
**\$850.00**

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**FORD MOTOR CO., 697 Mack Ave., Detroit, Mich.**

AN EARLY FORD CAR ADVERTISEMENT

Published in *Frank Leslie's Monthly* in July, 1903.



SENATOR JAMES COUZENS AND HENRY FORD

Various developments accompanied the production surge. In the past ore or timber cargoes had been unloaded at the mouth of the Rouge River and transported five miles overland to the Ford plant, because of the shallowness of the water in the small stream.

To eliminate the transfer and bring laden carriers all the way up, dredging was begun to make the river deep enough for boats of 10,000 tons to navigate. Since the minimum requirements of the plant were 730,000 tons of ore a year, not to mention several hundred thousands tons of limestone, the saving effected would be enormous.

That work was not completed until the summer of 1923. In time the river was deepened to 21 feet, sufficient for the largest of lake boats, and the surface was widened from 80 to 300 feet.

Mr. Ford's interest in power development was not confined to small streams and village grist mills. He expected the day to come when factories everywhere would be operated by water power.

When a committee from Alabama called at Dearborn and laid before him the prospect of completing the unfinished project of Muscle Shoals, he turned his attention to the idea. Here, indeed, was a matter worthy of the enthusiasm of the master industrialist. An urgent need of a supply of nitrate for the manufacture of explosives had developed at the time this country entered the World War. The government had decided to build a dam at the Shoals, together with a great nitrate plant.

The latter was erected and produced nitrate before the close of the war, but the Wilson Dam was never finished. When the emergency passed Congress refused to appropriate further money; indeed, rival interests were quite willing to see the whole project abandoned. As a result it was about to be scrapped when Mr. Ford stepped in.

Up to then the government had expended \$129,951,977; engineers estimated another 40 million dollars would be needed to round out the project. Ford proposed to make of Muscle Shoals

the greatest industrial undertaking in America. The dam and electric plant would produce around one million horsepower, and another million that had been lost over the spillways was to be saved by a series of storage dams. He planned the building of a great industrial community, composed of many independent large towns and small cities, extending along the Tennessee River for a distance of seventy-five miles.

No sooner was his offer announced than violent opposition arose. Despised, neglected, forgotten Muscle Shoals, apparently destined for the scrap heap, became a great national asset which ought not to be put in the hands of any one man, particularly for a long period.

Mr. Ford had agreed to devote part of the power to manufacturing nitrates for fertilizer, and in case of war to furnish an abundant supply for explosives. Under his plan the government would issue currency to the amount of \$40,000,000 against the property—enough to complete it—and save payment of interest on the bonds. He would redeem the currency gradually from the earnings of the concern after it became a going proposition.

So much antagonism was created, however, that finally he withdrew from the field and Muscle Shoals reverted to its white-elephant stage, till in later years the Tennessee Valley Authority carried many of his ideas to fulfillment.

It might have been easy for him, had he been inclined to play politics, to obtain the franchise despite the opposition. During that summer of 1921 he camped again with Edison and Firestone, and President Harding joined them in Maryland. But politics were not mentioned during the days they spent together. That year the wives of the three "vagabonds" accompanied their husbands. The aged naturalist, John Burroughs, was missing. Earlier in the spring he had passed away, and the others had followed his body to its burial.

Mr. Ford's last visit at Riverby, the naturalist's home on the west side of the Hudson, had taken place not long before the

western trip that ended in Burroughs' death. Ford found an old ax imbedded in the soil of the garden, bearing the name "Kelly" stamped on it. Much excited, Burroughs recognized it as his grandfather's. "Let's bury it here again," suggested Ford, "and then some day you and I will come here and dig it up." Burroughs replied: "Maybe you will be here to dig it up, but I won't."

On the way home from the cemetery after the funeral, Edison turned to his Dearborn friend and remarked, "Well, Ford, I'll be the next to go."

## 3

As in the case of so many other companies the finances of Henry M. Leland's company had become seriously involved after the close of World War I. Finally it was placed on the auction block with its car, the Lincoln, and a sale was held on the steps of the factory's main entrance. The high bidders were Henry and Edsel Ford.

Appraisers of the property placed its value at 5 millions, to which the Fords added another 3 millions to take care of outstanding obligations. Their payment completed the sale, but Mr. Ford made a further personal contribution. On Mr. Leland's birthday he presented him with a check for \$325,000, the amount the elder Leland had originally invested in the plant. He also paid a good-sized sum on the personal obligations of Mr. Leland and his son Wilfred.

There were no strings to these checks; they were separate and apart from the purchase of the business. Finally, 4 million dollars more was added to pay off all outstanding bills.

No obligation existed so far as the Fords were concerned, inasmuch as when they had purchased the concern it had been bankrupt; and the sale had been at auction. Debts of the old company were not included among its terms. The Fords were actuated, according to the Associated Press dispatches, by the

desire to "play fair" with all who in the past had in any way assisted the industry.

Twenty-two years had passed since Ford had stepped down and out of the old Detroit Automobile Company and Henry M. Leland had taken over its direction. Provision was now made by the Fords for the Lelands to continue in the management of Lincoln—a generous gesture to a white-haired veteran of the automobile industry.

Another funeral, that of President Harding at Marion, Ohio, marked that summer's meeting of the friends, Edison, Firestone and Ford. After attending that sad event they returned to Detroit and went on to the Upper Peninsula to inspect Ford operations. On the way they fell in with Jed Bisbee, a famous north-country fiddler, and the nation's old memories were stirred as people read of the revival of forgotten tunes and sprightly dances such as had once graced the meetings of the Greenfield Dancing Club.

Meanwhile a faster tempo marked developments along the Rouge River. Ford proposed to make his own steel, and a steel mill was laid out half a mile long—open-hearth furnaces, blooming mill, rolling mill.

Then came the nucleus of what later was to be the Ford fleet. The eldest son of Edsel B. Ford, for whom the ship was christened, flashed a signal to the scene of the launching, whereupon a Great Lakes freighter moved down the ways.

The *Henry Ford II* was more than six hundred feet long and had a cargo capacity of 12,500 tons. With its twin, the *Benson Ford*, it was to ply between L'Anse on Lake Superior and the Rouge plant, bringing down iron ore and taking back coal, thus having a cargo both ways.

The war against waste continued. From the refuse of lunch-boxes and wastebaskets, paper and cardboard were made at the Rouge Plant. Next came the conversion of slag from the blast furnaces into cement.

Car production continued to attain figures of astronomical proportions, until one day someone discovered that very shortly,

the ten-millionth Model T would be reached. It was decided to give the event the recognition it deserved.

A group of officials and employees cheered lustily as the black touring car drove off the assembly line at Highland Park and crossed the city to the Ford residence at Dearborn, where it was introduced to its famous progenitor, the original car of 58 Bagley Avenue.

First motor car to bear a serial number of eight figures, it attracted attention wherever it was driven. As a fitting celebration it was decided to take the car entirely across the country from the Atlantic to the Pacific coast, meeting governors of states and other famous persons en route.

While the car was on its festive tour the "vagabonds" made their final summer vacation trip together, with the Wayside Inn as their headquarters. That famous New England hostelry at South Sudbury, Massachusetts, had been restored by Mr. Ford. Nearly every night of their stay, old-fashioned dances and forgotten tunes brought gaiety and sparkle to the ancient ballroom. Two masters of the stately dances, Mr. and Mrs. Benjamin B. Lovett, came down from Boston to instruct and direct, and later went on to Dearborn to aid Mr. and Mrs. Ford in their revival of the graceful Varsoviene, Lancers, Virginia Reel, and all the other favorite steps of half a century before.

A visit with President Calvin Coolidge at his father's farm in Vermont ended the vacation.

## CHAPTER SEVENTEEN

### THE AMENDE HONORABLE

#### 1

THE enterprise which Mr. Ford headed at the time he rounded threescore loomed like Colossus above the industrial world. The base of the gigantic pedestal on whose apex he stood was the Rouge Plant, and that plant, it should be added, was on the books free and clear.

Stretching for a mile and a quarter in length, and extending one and one-eighth miles in width, it presented a panorama of lofty stacks, enormous structures and monolithic towers. Ore was unloaded at the docks on Monday, machined and assembled into units, shipped to a near-by branch, put into a finished car, delivered to a dealer, and sold to a customer by the following Thursday.

It was impossible to describe any phase of his business without using astronomical figures. Half a million railroad cars were required each year to carry his merchandise, at a cost of \$150,000,000 in freight and express bills. He used one-fourth of all the plate glass produced in the country, and 1,000,000 feet of lumber daily.

His yearly pay roll aggregated more than a quarter of a billion dollars. From all this the customer had been the principal beneficiary. Prices of the product had been dropped to a new low; \$260 for the runabout and \$290 for the touring car.

Mr. Ford moved about his enterprises easily, unperturbed by their size or multiplicity.

"The bigger the business gets, the easier it is to run," he declared. He was still proceeding with his Village industries and

farm experiments, and now with his consent the company became pioneers in aviation.

The story of how Ford interest was aroused was an interesting one. William B. Stout had arrived in Detroit without a job, without capital, after a plane of his design had failed miserably in its attempt to pass Navy tests. Former head of the aircraft division of the Packard Motor Car Company, and air technical advisor to the government during the first World War, he now dreamed of an all-metal monoplane. He could have taken a position with almost any automobile manufacturer, but his interest was in the air.

Boldly he set out to draft the support of Detroit's leaders. To one hundred of the city's prominent men, predominantly automobile manufacturers, he addressed a letter challenging them to accept for Detroit the chance to lead in the coming air industry. As automobile men, he pointed out, they were capable of handling such questions as the advisability of placing an automobile engine under the back seat of a car; but they did not possess the same authority when it came to aviation. He offered them a chance to learn about it. From each, Stout asked for \$1,000—no more, no less.

An inducement was a twelve-lesson course in aviation, starting with the simplest principles of flight—illustrated by a home-built plane, a folded card with a paper clip in the leading edge, which would soar for a few feet—and ending with a discussion of structure and future possibilities. The money was to be used in the development of the Stout Metal Aircraft Corporation. Sixty men replied, each sending the sum requested. *Printers' Ink* called it the world's best response to a selling letter. The names of those subscribing read like a page from *Who's Who*. Among them was that of Edsel B. Ford.

The thousand dollars was only the beginning. What Stout needed was facilities with which his designs could be translated into practical experiments. Henry Ford was not only able to promote these, but also had the pioneering spirit. When the two

engineers joined forces they wrote a brief but glorious chapter in the early history of American conquest of the air.

One day a brief announcement appeared:

For the purpose of encouraging aircraft development, the Ford interests are erecting near the Dearborn laboratory a modern factory building and hangar which will be devoted to research work in aviation. A landing field nearly three-quarters of a mile square is being leveled, and drainage tile laid.

Operations began when the *Maiden Dearborn I*, an all-metal plane powered with a Ford-built Liberty motor and bearing the familiar Ford script painted on the sides of the fuselage, rose gracefully in the air from the airport on its first round trip to Chicago. Bags of company mail made up its load.

Satisfied with the preliminary results, the company decided to acquire the stock and assets of the Stout Metal Aircraft Corporation, and to go forward with the development of a trimotored all-metal airplane, together with a small "flivver" plane for general use. An airplane division of the Ford Motor Company was organized, with Stout at its head.

During the first year not a single accident occurred to pilots or passengers, although more than 200,000 miles were flown and more than 1,000,000 pounds of freight carried. Progressive manufacturing methods were introduced; at one end of the new factory, the plant's construction started with sheet duralumin and rough stock; at the other, the finished plane emerged ready for its initial flight.

## 2

Probably the most important contribution made by the company, aside from its stressing of safety, was in the perfection of the radio beam, later to be given to the industry by Ford and to form the basis of modern aviation.

The Army Air Service had been working on a radio beacon

for sending signals to airplanes in flight, but in its experiments with spark equipment encountered serious difficulties. Meanwhile Ford engineers, working independently with a radio tube system, successfully completed a device, and a Ford trimotor plane was flown, directed entirely by means of the new radio beacon, to McCook Field, Dayton. Later that day it returned to Dearborn, guided on this flight also by the newly developed beam. A transmitter of the Ford planes had used their respective beacons heretofore; this trial was the first in which any flight had been made between separate fields at both of which beacons were working in co-ordination.

Beacons were next installed at the Ford Airfield in Chicago, and by the Bureau of Standards at College Park, Maryland, and Bellefonte, Pennsylvania. Instruction in the use of the beam was given by Ford men to commercial pilots and Army aviators. Meantime Ford engineers perfected the marker beacon by which a pilot, coming in on the beam, was enabled accurately to locate the field below him. A Ford test plane, flying in a midwinter snowstorm, had received signals by which the radio engineer conducting the test deduced that the plane was over the field. Coming down for a landing, the pilot found himself leveling off just over the choppy waters of Lake Erie. Instead of crossing the field, the plane had crossed the beam at right angles. When safely back on the course again the engineer hit on the idea of sending an additional nondirectional signal of less intensity than that of the beam, having a range of approximately a half-mile, from a vertical straight-wire-type antenna, which would tell the pilot definitely when he was over the landing field. This marker beacon consisted of three "dots" and could not be confused with the beam signal.

U. S. Patent No. 1,937,876, applied for on May 2, 1928, and granted to the Ford Motor Company, provided for "a radio beacon . . . especially adapted for use in connection with the piloting of airplanes or other aircraft . . . which will send out a signal in a

predetermined direction so that a pilot may fly on that signal and may be kept upon his course by following the signal." The patent also covered the station location indicator.

Today it is possible for a pilot to have two-way radio communication with his beacon station. By means of a three-point selector on the same wave length, he can listen to the beam only, the beam and reports simultaneously, or radio reports only. When the system was first perfected, it was necessary to have an additional signal for manual transmission over the beacon wave length to notify the pilot that the station sending the beacon signals desired to communicate with him on a predetermined wave length other than that of the beacon. Upon receipt of this signal the pilot turned a switch in his receiving set, which tuned out the beacon and tuned in the communication signals—generally given in code. The trouble with the code messages was that few pilots were experienced enough to receive them. Subsequent development of the beacon has provided for microphone transmission of these messages.

The simplicity of the Ford-developed instruments permitted the starting, stopping and altering of radio beacon signals as well as the transmission of messages to pilots, without the sender's approaching the instrument station. This permitted the installation of radio beacons along a flying course with all controls at the terminals. The beacon of the Ford airlines in Dearborn, for instance, was located at the southeast corner of the airport half a mile from the airport headquarters, from which point it was controlled.

The Bureau of Standards experimented with several aids including two-way telephony between the air and the ground, and simplification of beacon signals to the point of merely watching a light on the instrument board of the plane. All commercial air liners now have two-way radio sets, but beacon signals are still received audibly, for this was found to be superior to the proposed light system. Improvements of the beacon have kept pace with other developments, although the present "radio range" is merely

a refinement of the system originally designed by the Ford engineers.

Mr. Ford was once quoted as saying, "Aviation is bigger in possibilities than anything else in the world. Too big to be a one-man patent concern, too big to be any one man's contribution to science. We take patents on our own developments or discoveries only to prevent others from freezing us out when they may chance to make the same discoveries. Many of our patents have been picked up and used by others. When a thing is useful it is bound to come into use. Patents cannot stop it."

Although Ford still controls the patent, no royalty has ever been demanded from the companies that manufacture the beacon.

## 3

Swinging idly at their chains in various moorings throughout the country in 1925 were hundreds of war-built ships, constructed of high quality steel. They had been built on a vast scale for wartime needs; their deterioration in peacetime was inevitably rapid.

Bids had been invited from different companies by the Shipping Board on 200 of the ships (later reduced to 199) and as Mr. Ford's was highest, he was given a contract of sale. Among other things, he agreed to dismantle the ships so that they could never be used in navigation. The purchase price was \$1,697,470.

The immensity of the proposition might well have staggered veteran shipbuilders. Where individual ships had been torn down before, now an entire fleet was to be dismantled. New machinery had to be specially devised; a complete program had to be planned which, once started, would go through without a hitch.

So thoroughly was the job accomplished that at its conclusion the fabled Chicago packers, who used all of the hog but the squeal, had been outdone. Ford salvaged all of the ships, even the whistles.

At the time of the purchase the ships were located at scattered

points along the Gulf of Mexico and the Atlantic coast, from Texas to New York. They could not operate under their own power, yet they had to be made seaworthy and brought to Dearborn where the salvaging was to take place. This meant towing, the largest towing job ever attempted. Fifty of the ships were too large to enter the Great Lakes because of the limited size of the St. Lawrence River canals. They had to be taken apart on the Atlantic seaboard and loaded on the other boats.

Getting them safely to the River Rouge was only one of the problems. At the outset it took nearly six months to dismantle a boat. By the end of the second summer three ships were being taken apart every five days. In the main part of the job a progressive operation just the reverse of an assembly line was set up. It began with the removal of wood, dishes, furniture, et cetera. Oak ceilings and panelings were salvaged in large quantities. As many as forty doors were saved from each ship. The salvaged nails were turned daily into more than thirty pounds of steel; sawdust went to the butcher shops of the commissaries; paper went to the paper mill for reclaiming; oak tables were sent to the Henry Ford Trade School. Even the coffee urns were sent to the lumber camps of the company.

Along the dismantling dock were ten stages of operations; as one ship was completely scrapped, the other nine each moved up a notch and a new one entered at the lower end. More than 200,000 net tons of steel were recovered. The great bottom sections, each weighing 10 tons or thereabouts, were chopped up by a giant shears, the largest in the world.

More metal was obtained than the furnace could accommodate, of course, and great piles were stored in the plant yards for future use.

On the last day of 1926 Hornblower & Weeks, the investment house, offered one billion dollars for the purchase of the

Ford company. The offer was not seriously considered by the Fords, although it would have established father and son as the world's richest men. That was one distinction they did not care for; money interested them as a means of providing employment and performing a service.

Disclosure of the huge deal, which was really a proposal to recapitalize, was made by John W. Prentiss of the financial firm during a hearing of the appeal of Senator Couzens and other former stockholders against an additional income tax on the sale of their stock. Three previous bids were also described by him.

"In 1916 I went to Detroit," he testified, "and saw C. Harold Wills. I asked him to introduce me to Mr. Ford. We were talking a while and then as I was sitting in Mr. Wills' office Mr. Ford suddenly bobbed into the room. Naturally I had not expected to see him quite so soon, and it took me off my feet. Mr. Wills introduced me, however, and Mr. Ford said to me: 'Mr. Prentiss, what is your business?' I replied that I sold stocks and bonds and the like. He said, 'Oh, you are one of those Wall Street guys.' I admitted that I was, and after a while he took me down to lunch and showed some pictures of the plants and the machines used in them.

"I told him that he should recapitalize his company at \$500,000,000, and that Hornblower & Weeks would be glad to take all or any part of it. Mr. Ford laughed at me."

The next attempt, he testified, was in 1924. Then Prentiss made his approach through Stuart Webb of the Old Colony Trust Company of Boston, who had conducted the negotiations which led to the purchase of the minority stock in 1919. The offer this time was for a billion, and was laid before Mr. Edsel Ford by Howard Bonbright of Detroit. After it was turned down it was renewed the next year, again in vain.

One of the expert witnesses for the stockholders was Paul Clay, noted economist and vice-president of the Moody Investment Service of New York City. He described the Ford management as "the most skilled and efficient that I have ever observed

in the records of any company." Mr. Ford's performance, he went on to assert, "exceeded anything I have ever encountered."

✓ During 1927 Mr. Ford faced two libel suits, each for one million dollars damages, resulting from a series of articles that had been published in the Dearborn *Independent* regarding the influence and activities of certain Jews in this country. The amount at stake was not the important consideration; indeed, he spent much more than one million dollars in preparing his defense, before he became convinced that the articles could not be substantiated, and he made public apology.

The first of the suits was based on several articles written by a former Hearst newspaperman, whose previous work had been found accurate. They described the activities of a Jewish attorney, Aaron Sapiro, in organizing farmer co-operatives.

Depositions were taken in many different parts of the country wherever the associations were located, in order to make it unnecessary to call an army of witnesses to Detroit for the trial. Attorneys for plaintiff and defendants traveled from Spokane, Washington, to San Jose, California, from Georgia to Maine. Practically none of the bigger co-operatives were overlooked, save such older ones in California as Sapiro had not organized. The tobacco and cotton growers in the south, the prune, apricot and bean growers of the West, the maple-sugar growers of the Adirondacks, the potato growers of Minnesota, the broom-corn growers of Oklahoma, the truck gardeners of the lower Rio Grande Valley, all were questioned before notaries.

Trial began in March, 1927, before a crowded courtroom in the old Detroit Federal building, with Judge Fred M. Raymond of Grand Rapids presiding. Star of the drama on the Ford side was United States Senator James A. Reed, white-haired orator from Kansas City, Missouri, who had been retained as special counsel, to assist Clifford B. Longley, chief of the company's legal staff. Sapiro was represented by William Henry Gallagher, Detroit lawyer, who was aided by Judge Robert S. Marx of Cincinnati and Walter F. Lynch of Chicago.

The case was declared a mistrial when evidence was presented indicating that one of the women jurors had been conversing with one of the persons involved in the case. Before the new trial was begun Mr. Ford became convinced that the articles could not be justified, and issued a retraction satisfactory to the plaintiff and his attorneys.

Under the heading, SAPIRO CASE SETTLED, an editorial appeared in the Dearborn *Independent*:

It has since been found that inaccuracies of fact were present in the articles, and that erroneous conclusions were drawn from these inaccuracies by the writer. As a result of this, Mr. Sapiro may have been injured and reflection cast upon him unjustly. Such statements as may have reflected upon Mr. Sapiro's honor or integrity, impugned his motives or challenged the propriety of his personal or professional actions are withdrawn. Likewise the charge that there was a Jewish ring which sought to exploit the American farmer through co-operative associations is withdrawn.

Mr. Henry Ford did not participate personally in the publication of the articles and has no personal knowledge of what was said in them. He, of course, deprecates greatly that any facts that were published in a periodical so closely associated with his name in the minds of the public should be untrue.

A second suit, also for one million dollars, had been filed in New York City by Herman Bernstein, an editor, because of a different series of articles dealing with the Jewish question and the so-called Protocol of the Twelve Wise Men of Zion. It, too, was disposed of when Mr. Ford announced that he was convinced the articles had not been based on fact.

The series had highly enraged prominent Jews of America, and their reprisals had brought difficulties to the magazine. Its sale had been prohibited on the Pittsburgh newsstands. In Toledo police reserves were called out to quell a mob in front of the Federal building when traffic was blocked because of its distribution. Several public libraries barred the periodical from their tables.

Later, in explaining his retraction, Mr. Ford said: "Those who know me can bear witness that it is not in my nature to inflict insult upon and to occasion pain to anybody, and that it has been my effort to free myself from prejudice.

"I deem it to be my duty as an honorable man to make amends for the wrong done to the Jews as fellow men and brothers, by asking their forgiveness for the harm I have unintentionally committed, by retracting so far as lies within my power the offensive charges laid at their door, and by giving them the unqualified assurance that henceforth they may look to me for friendship and good will."

During the Sapiro trial a prolonged effort was made to present evidence, especially while the business manager, Fred L. Black, and the editor, William J. Cameron, were on the stand, that Mr. Ford had directed the preparation of the articles, but the testimony showed exactly the opposite, that there had been no interference or attempts at dictation.

One night during the trial as he was returning home alone, his coupé was sideswiped by a hit-run driver and knocked over an embankment. The accident took place near the entrance to his home, and came close to disaster. His car was forced out of control and plunged down the embankment, crashing into a tree, which kept it from dropping into the Rouge River. In a semidazed condition Mr. Ford walked several hundred feet to the gateway of his estate, where help was summoned. His most serious injury was a sprained back, which necessitated his wearing a cast for several weeks.

Even as a former Hearst newspaperman had prepared many of the libelous articles, another aided in the settlements. Arthur Brisbane offered his services as negotiator, and it was through him that the retractions were arranged.

On the day the Sapiro retraction was published Mr. Ford passed another birthday. "Sixty-four today," he told reporters, "and the biggest job of my life ahead of me."

## CHAPTER EIGHTEEN

### IN MEMORY OF A FRIEND

#### 1

ALTHOUGH Ford designers and engineers were still occupied with further refinements and improvements in the Model T, a change to a new model would have to come sometime. Everybody knew that, but nobody knew when. Final decision rested with the Fords, father and son, and they must have reached it reluctantly, for it seemed like parting with an old friend.

Official announcement of the nineteen-year-old car's passing was made on the eve of the day that the fifteen-millionth descendant was to emerge from the assembly line. Its requiem was sounded by the man who created it.

"The Model T was a pioneer. There was no conscious public need of motor cars when we first made it. There were few good roads. This car blazed the way for the motor industry and started the movement for good roads everywhere. It is still the pioneer car in many parts of the world which are just beginning to be motorized. But conditions in this country have so greatly changed that further refinement in motor car construction is desirable, and our new model is a recognition of this."

Work on the mysterious stranger, he said, had been begun several years previous. "In fact the idea of a new car has been in my mind much longer than that. The sale of the Model T, however, has continued at such a pace that no opportunity seemed to arise for getting the new car started."

As was fitting, eight of the oldest employees whose services extended back to the early 1900's—J. F. Wandersee, A. Degener, Frank Kulick, F. L. Rockelman, P. E. Martin, C. B. Hartner,

C. E. Sorensen and Charles Meida—stamped the motor number 15,000,000 on the last of the Model T's.

The significance of manufacture of fifteen million motor cars of a single model is not grasped readily. During manufacture of the Model T the company paid in wages the sum of \$1,970,416,-172.29. Purchases of materials to supply its wants amounted to \$4,868,427,012.32. Total taxes paid during that period by the company were \$547,720,792.47.

Cost of changing over machinery and dies and re-tooling the plant for the manufacture of the new car was estimated by Mr. Ford at one hundred million dollars. With every tool and fixture fitted for the production of a single product, every part standardized to the minutest detail, more than 50 per cent of the production machinery had to be replaced, redesigned, or supplemented by additional equipment. More than 43,000 machine tools had to be altered; more than 50 per cent of these rebuilt. Five million dollars went into new dies and fixtures alone; twenty-two millions into factory preparations before the first car came off the line. Six months were required for the change-over.

Mr. Ford had regarded it as his biggest task. Truly it was Brobdingnagian. Only one who has actually worked on a drafting board knows the havoc that is caused all the way down the line by the mere shifting of the center of a hole in a casting; the endless amount of detail, the innumerable changes that have to be made in tracings, blueprints, patterns, dies, moulds, and in all kinds of machinery. The proper persons throughout the shop need to be notified that such a change is very soon contemplated. Machines already on the floors have to be readjusted or replaced, and new ones added. New jigs, fixtures and single-purpose machines must be manufactured. Materials suppliers must be informed, and contracts altered. Sales and service literature must be modified.

One of those who saw Mr. Ford at this time was Paul U. Kellogg, who had been among the passengers on the Peace Ship. Writing in *Survey Graphic*, he quoted Mr. Ford as crediting Edsel with giving the new car its "style and much besides."

Another who wrote brilliantly of Ford's "midwifery" was Waldemar Kaemffert in the *New York Times*. "Whether the chassis and engine were to cost \$16,000 or 16 cents was of no immediate consequence," he asserted. "It was the production department's function to evolve shop methods which would make it possible for the masses to buy the new Ford."

When someone asked Mr. Ford if it was true he had lost one hundred million dollars because the new model had not been ready as soon as he quit manufacturing the old car, he grinned. "What in the world do you think we wanted of that money?" he asked. "What do you think we put it in the bank for? Did you think we might have spent it for something if we hadn't used it to rebuild our plant, or do you think we wanted to keep it in the banks?"

"The only reason whatever for laying up such a surplus is to have it when you need to use it; and no one could use money in such amounts upon himself, even if he were fool enough to try. The only right use for money is to capitalize industry. One might give it away, to be sure, but giving it away doesn't do any good."

After production started each car as soon as it came from the assembly line was tested as completely as the "experimental" cars had been. After each ordeal it was taken to pieces and examined microscopically for any possible weakness that might develop.

When he was urged to end the delay Mr. Ford replied that the big question was not *when* to start turning the cars out, but *what kind of cars* he would turn out. "The public hasn't lost anything by the delay," he pointed out. "The only way the public could lose would be through our not doing the best we could."

While it was true that the public had not lost anything, Ford dealers were compelled to lose considerable business to their competitors during the shutdown. After their stock of Model-T cars had been cleaned out they had no new units to sell, and most of them had to readjust their organizations to an emergency basis. The delay was equally painful for those employees whose

departments were idle during most of the summer and fall.

By the time production began most of the essential operations had been transferred from Highland Park to the sprawling giant on the Rouge River. Finally, early in December, the Model A, second of that name to be built by Ford, was unveiled. Long lines of people fought to get their first sight of the Model T's successor. They found many changes. Mr. Ford declared when he announced it: "We believe that it is as great an improvement in motor car building as was the Model T back in 1908."

For one thing the standard gearshift had replaced the planetary. In appearance and refinements the Model A was radically different from its simpler ancestor, but the basic principles of economy of production, elimination of waste, and quality of materials were retained. As one commentator expressed it: "Lizzie had become Elizabeth."

## 2

After the Christmas holidays, in keeping with their annual custom, the Fords journeyed to Fort Myers, Florida, to spend part of the winter with the Edisons. The silvery-haired inventor, then eighty years young, was engaged on a new problem—the finding of a substitute for rubber, something that could be grown on American farms. His experiments were carried on in a one-story frame laboratory building adjoining his home.

One day his friend Ford surprised him by asking for the laboratory.

"What do you want it for?" queried Edison.

"I'd like to move it to Dearborn."

"All right. Give me another, and you can have this one."

Having agreed to replace it, Ford brought in carpenters and workmen and before he returned north in the spring had arranged for its dismantling, board by board, and removal to the Michigan location.

Although the aging wizard did not know it, his friend was

planning the construction of a shrine that would keep Edison's memory bright in the years to come. It was to be an educational project, to serve as an inspiration to youth for generations, to glorify deeds of peace, and to trace the development of the modern way of life through changes in crafts and industries. It was to illustrate graphically what Mr. Ford had meant when he asserted that history as generally taught was "bunk."

When the clapboard laboratory had been reassembled on an old farm site adjoining the Ford Airport, Edison paid another visit to Dearborn, invited there to turn on steam in its rejuvenated engine which furnished power for the laboratory machinery. The day was gusty, and the top coats of the little group who watched the ceremony flapped in the September gale. After they left the reconstructed building Ford designers moved in, spread their papers over the drafting boards, and began work on a new automobile engine, a V-shaped 8.

From the Fort Myers building cars whirled the guests to a site nearer the Engineering Laboratory, where a block of concrete rose ten feet above the surrounding field. Its surface had been covered with wet cement, and a ladder was set alongside by which Edison might climb up and write his name in his familiar script to be perpetuated as the stone mixture hardened. He walked upon the surface, also, while he imbedded Luther Burbank's spade in the block, leaving the impression of his footprints. With that block as a cornerstone, Ford began the erection of an 8½-acre building to house the collections of Americana which were to form part of his projected memorial.

These collections had been slowly accumulating over a period of years, dating back to the time Mr. Ford had restored the little white farm home of his parents. After the tractor-manufacturing operations had been removed from the original Dearborn plant, the empty space was filled with acquisitions of Americana. On their various expeditions together Mr. and Mrs. Ford kept their eyes alert for objects of the past, and many a box and crate followed them home. In time long rows of spinning wheels, what-

nots, grandfather clocks, music boxes, Hitchcock chairs, threshing engines, and other vestigia of an era fast vanishing were gathered under the eaves of the old tractor factory.

The criterion was not the monetary value of an antique, but its usefulness or importance. "When we are through," said Mr. Ford, "we shall have reproduced American life as lived; and that, I think, is the best way of preserving at least a part of our history and tradition. For by looking at things that people used and that show the way they lived, a better and truer impression can be gained than could be had in a month of reading, even if there were books whose authors had the facilities to discover the minute details of the older life."

Such was the type of memorial he proposed to create in Edison's honor. With his customary enthusiasm, Mr. Ford selected the phases of his friend's career that were to be emphasized. Bisecting the center of the old farm, a street was laid out, its terminus at the Fort Myers laboratory. At the other end, near the railroad tracks, was placed the little red brick depot from Smith's Creek, Michigan, where young Tom Edison back in 1862 had been ejected from the train by the irate conductor for setting fire to the baggage car while performing a chemical experiment. Ford obtained the depot from the Grand Trunk railroad and had it removed brick by brick from its original location.

Between this symbol of the wizard's youth and the laboratory of his last years, stretched the length of street. Along it Ford proposed to restore a group of buildings representative of Edison's life and achievements. Much of the inventor's productive labor had been performed at Menlo Park, New Jersey, and thither Ford went to see what could be recovered from the past. Edison and his son Charles went over from West Orange to join in the exploration. They found the site deserted, the old buildings torn down. Neighboring farmers had dismantled the large frame laboratory to salvage its lumber. Only a few foundations remained of the brick machine shop and the office.

Having first bought the ground, Ford proceeded with excava-

tion operations, meanwhile scouring the surrounding country for remnants of the buildings. Original boards were traced by purchase of sheds, barns, corncribs and chicken coops. The spades of diggers uncovered a dump pile where workmen had tossed broken apparatus. Even pieces of the underground wiring used on Edison's first electric railway back in 1880 came to light. It was a find such as would have gladdened the heart of an archaeologist. Among the relics were pieces of the laboratory's old mortar, and Mr. Ford carefully took them home with him and restored it.

Next came the task of transporting the material to Dearborn and giving it its original form. To assist in the restoration Ford desired the services of one who had served in those early days, and on Edison's recommendation employed Francis Jehl.

Along Christie Street a rectangle of ground was set aside and spread with a layer of red New Jersey clay from the Menlo Park site. One by one a group of five buildings was re-erected.

Through the generosity of Edison himself many of his old instruments and patent office models were obtained. Others, learning of the project, also contributed. The original electric locomotive and the "glass house" where the first incandescent bulbs were blown were supplied by the General Electric Company.

## 3

Only part of Mr. Ford's activities concerned the Edison buildings and furnishings. An entire village began to take form under his direction. Adjoining Menlo Park, a green or "common" was laid out and around it community structures were planned, among them a church, a school, a courthouse, an inn, a general store, and a town hall.

The village was to be named "Greenfield" after the township in which Mrs. Ford had been born, years since swallowed by the expanding Detroit. The bricks that he had saved when the home

of her girlhood had been demolished were hauled in and used to form the walls of a chapel, set on a knoll at the head of the green. It was named "Martha-Mary" after Martha Bryant and Mary Litigot Ford, the mothers of Mr. and Mrs. Ford.

At the same time the brick schoolhouse was brought in from the old Scotch Settlement. Across the way was the log-cabin birthplace of Dr. William Holmes McGuffey, author of the famous readers.

Magill's Jewelry Store, with its watch-repair shop in its rear, was moved in. The Plymouth carding mill, which young Henry had visited when his father hauled wool there, served as the nucleus of the textile group. Richard Gardner's white farmhouse from the Scotch Settlement illustrated the homes of the early immigrants. The steam engine of the Detroit Edison Company, repair of which had led to Mr. Ford's advancement to chief engineer; the first watch he had ever seen, that of the hired man, Adolph Culling; his first tools; the brick shop at 58 Bagley Avenue—all formed parts of the exhibit.

Memories of great Americans were preserved in other structures. The courthouse where young Abe Lincoln practiced law; the office used by Luther Burbank at his Santa Rosa nursery; the home of Stephen Foster's parents; the summer camp of Charles Proteus Steinmetz; the bicycle shop where the Wright Brothers solved the problems of their first airplane—these among others. Little craft shops—those of the blacksmith, the tintype artist, the cooper, the shoemaker, the miller, the glass blower—lined the outlying streets.

All summer long the clatter of hammer and hum of saw resounded over the former fields of the old farm. Sidewalks were laid; gas, water and electric lines were brought in; drains were dug; gardens planted; grounds were landscaped; fences were strung along streets. By October the scene was ready for the memorial's dedication. It happened that the twenty-first of that month marked the fiftieth anniversary of the invention of the incandescent lamp by Edison, and that day was selected as the

time for the ceremonies. Invitations were mailed to more than four hundred of the country's leading citizens to attend. An old-time railroad train of the fifties was completely restored, and the interior of the baggage coach was made to look as it had when the youthful Edison used it as an experimental laboratory on the run between Detroit and Port Huron. Shelves with bottles of chemicals were built against the wall at the front end, and across the aisle was set up a hand printing press such as he used to publish his paper, *The Herald*. With the Edisons as their guests Mr. and Mrs. Ford went to welcome President and Mrs. Hoover, Secretary of War James Goode and other distinguished personages who came on the executive's train from the national capital, accompanied by newswriters, special correspondents and camera men. A heavy rain was falling but did not mar the festivities.

While they boarded the old-fashioned train for the brief ride to the Village, others gathered on the Smith's Creek depot platform to welcome them. After the train had puffed into the Village siding and the passengers had disembarked, Edison came down from the baggage car on specially constructed steps, President Hoover acting as his escort.

All day the guests roamed about the Village. In the general store Julius Rosenwald sat beside the heater with Adolph Ochs and Otto H. Kahn, and reminisced on his experiences as a storekeeper before Sears, Roebuck and Company had been born. On the inn register appeared the names of Orville Wright, Will Rogers, Will H. Hays, Jane Addams, Walter P. Chrysler, R. E. Olds, Fred P. Fisher, Charles M. Schwab, A. R. Erskine, Roy D. Chapin, John D. Rockefeller, Jr., Charles G. Dawes, George Eastman, Gerard Swope, Lee deForest—a veritable *Who's Who*.

Special cars transported them back to their hotels to change into formal clothes for the evening banquet. There was no let-up in the deluge of rain.

As guests stepped into the lobby of the museum that evening from the teeming rain, it was as if they had entered fairyland. All was candlelight. Figures great in contemporary history filed up

the broad winding staircase to leave their wraps, then descended to an array of glittering tables that stretched to the right under candle-filled candelabra to the speakers' table.

Madame Curie, co-discoverer of radium, was among the guests. Members of Edison's family, pioneers who had worked with him, delegations from Japan and Europe, giants of the industrial world, leaders of Detroit and the State of Michigan, were numbered at the tables. Messages came from the Prince of Wales, and Albert Einstein, German scientist. The National and Columbia Broadcasting Companies carried the program to homes throughout America and beyond the seas.

As the nation awaited the moment of the re-enactment of the lamp's invention, Edison with the President, Mr. Ford and Mr. Jehl left the hall and drove through the rain into the village to the restored Menlo Park laboratory, now dimly illuminated by gas flames. Gradually Edison fed current from the glass battery jars to the glistening globe suspended beside the mercury pump, with its filament of carbonized sewing thread.

The tiny horseshoe imprisoned within the globe slowly turned cherry red in the half-light, then brighter and brighter till it reached its blazing maximum. At that moment the electric lights above the banquet corridors sprang into full brilliance, and everywhere, in homes throughout the country that had been expecting the signal while they waited in darkness, the lights were switched on.

In replying to the tribute paid him Edison's voice clearly attested the extent of his emotion. He was visibly affected. He spoke briefly, and closed with an acknowledgment to his friend:

"This experience makes me realize as never before that Americans are sentimental and this crowning event of Light's Golden Jubilee fills me with gratitude. I thank our President and you all. As to Henry Ford, words are inadequate to express my feelings. I can only say to you that in the fullest and richest meaning of the term—he is my friend."

In the following year Edison returned once more to see the

project; it was his last visit. A few months before Edison's death, Ford made a hurried trip down to visit his friend, and it proved to be their final chat together. Slowly the fading years reached their sunset, and in October of 1931 the Fords journeyed to West Orange to attend the funeral.

## 4

At the very time the guests were assembling for the dedication of the memorial the stock market crashed, setting in motion a depression that brought the country to the edge of financial chaos. The golden age of the Coolidge era ended abruptly, and on the shoulders of President Hoover, who had served less than one year in office, fell the burden of restoring business confidence and rebuilding the shattered economic structure.

In response to an urgent appeal from him Mr. Ford came forward with an upping of wages throughout his entire organization, lifting the minimum from \$6.00 to \$7.00 a day. The increase was announced at a time when production was steadily diminishing; it cost the company \$15,000,000. Everywhere the step was hailed as the right way to combat the general feeling of pessimism pervading both industry and labor; but few were willing to follow the lead.

The story of the down plunge which resulted finally in the nationwide closing of the banks in February, 1933, was highlighted by several Ford efforts to keep the wheels of industry turning, not only in the United States but abroad. Most of the rest of the world was engulfed like this country in a general depression.

Near London, England, a great new factory was commenced on the Thames River, to be the largest of its kind in Europe. Six hundred miles up the Amazon, with the co-operation of the Brazilian government, a vast rubber plantation was cleared and planted.

Extensive improvements at home included the construction of

a tunnel more than two miles long connecting the Rouge Plant with the Detroit River. In later years this was to be described as a mysterious passage for ingress and egress of secret-service men, despite the fact that a billion gallons of water flowed through it every day.

Production passed the twenty-millionth car, but still conditions grew worse in the automobile industry and throughout the business world. Unemployment mounted, bread lines grew, and Mr. Ford finally concluded that he would have to readjust his wage scale to a basis more in keeping with the times. In 1931 he reduced the daily wage by taking off the "prosperity dollar" of 1929; the minimum rate for hiring in common labor was set at 50 cents an hour. That of skilled labor remained unchanged.

Meanwhile Ford engineers completed tests of what appeared to be the best four-cylinder car produced by the company up to that time. Orders were given to put the "improved Model A," as it was called, in production for the midwinter showings and spring deliveries. Suppliers all over the country were given orders. Trainloads of raw materials began rolling in. The power plant's output started up toward peaks not reached in months. The foundry began pouring castings night and day. And the endless carriers of parts—the conveyors—wound through the various departments on a 24-hour schedule. Down the assembly lines the "improved" models moved in a steady stream.

In the midst of all this preparation Mr. Ford suddenly called a halt. Looking ahead, he decided that an "improved" car was not enough to thaw out business or break through the apathy that had resulted in a "buyers' strike" everywhere. The public, as he expressed it, demanded something brand-new, something startling in its concept and service.

The halt came on the morning of December 7. Edsel Ford came over from the Rouge Plant offices and went to his office in the low gray-stone laboratory. Henry Ford came in. Father and son were together alone, for an hour or so. Then, suddenly, things began to happen.

Orders went out to the plants to stop production—when 35,000 of the “improved” Model A’s were already manufactured and on their way to the West Coast for early January showing; with 50,000 more of them “in float,” that is, coming through the plant in finished parts and bodies ready for assembly.

The whole productive organization was abruptly thrown back on its haunches. The carriers slowed down. The trains of raw materials dumped, went out empty, and came no more. The assembly line again was stilled. Long rows of parking lot spaces stood vacant as employees waited a summons to return and resume work.

From the Fort Myers laboratory drafting room the new V-8 engine was brought to the engineering department. Mr. Ford had decided to make it instead of the “improved” car his chief offering for the coming year. That same morning orders went out to the staff to prepare for large-scale production.

From that moment on he personally became the dynamo of the works. He was everywhere, ordering, directing, changing. The whole program had to be revised. Building of the V-8 car would require many finished parts which Ford did not make. These had to be designed, contracted for, and produced elsewhere. A large amount of machinery had to be taken out. New machines, not yet in existence, had to be designed, built, brought in and set up. Somehow a rumor got around the Ford had discontinued making the “fours.” There came a flood of letters urging that the “four” type be continued. For the time, so far as it affected the building of the “eight,” this unexpected demand was rather disconcerting. Ford then had approximately 50,000 men working. He put half of them to work making the improved Model A and with the other half he began the job of changing over the plant to get out the “V-8.”

“My father is never happier than when he is solving some big mechanical problem,” said Edsel Ford then. “When the new Model A was brought out he left many things to others, but I have never seen him give such attention to detail as he is doing

now. He works for hours at a time trying to eliminate a single part. He figures that the fewer parts in a car the less the risk of trouble. In the Model A this was carried so far that repair bills were cut in two. Our business in parts for the old Model T used to run from \$10,000,000 to \$12,000,000 a month. On the Model A this fell off to from \$3,000,000 to \$4,000,000 a month. The Model A didn't require as much service."

"How certain are you that you have a market for your new cars?" Henry Ford was asked.

"We're not certain," he replied. "But we're going to risk it. Someone has to risk something to get things started. And, you know, faith is catching; if we have confidence, others will too. The chief thing is to meet the public's demand for something new and better at a price the average man can pay. We're doing everything in our power to give the public that kind of a car. And we believe the public will come halfway—it always has before."

## CHAPTER NINETEEN

### THE BANK HOLIDAY

#### 1

DISTRESS was not confined to the industrial centers, with their welfare loads and their long lines of hungry, ill-clad men and women. Throughout the farming regions, also, the effect of factory closings had been to produce an unexpected surplus of food. Harvested crops could not be moved. The farmer as a result had found himself unable to buy the tractor or truck he had planned to own.

Various outlets had been developed by research organizations in past years for the farm yield, especially cotton and corn. The angle from which Mr. Ford now proposed to attack the problem was that of the automobile manufacturer. Two objectives were sought by him—increasing the market for agricultural products in industry, and providing a closer link between the two major fields of occupation.

The day would come, he believed, when the farmer would not only grow and supply raw materials for industry but would take part in the initial processing. The program fitted in naturally with that of the village industries he had launched back in 1919. After the rural districts were able to offer more opportunities for earning a living, the movement cityward would be lessened and the problem of helpless wage earners dependent on relief during periods of layoff or wide depression would solve itself. Mr. Ford called it a "double security"—a livelihood from the soil and a cash income from industry during the busy months of the year.

He went about his search for agricultural raw materials without waiting to set up an elaborate laboratory. To the task he

brought young men who had no preconceived notions of what couldn't be done or what the results would be. At their head he placed Robert Boyer, a graduate of the Henry Ford Trade School and son of the manager of Wayside Inn. For their use he built a small frame structure in Greenfield Village, and told them that other facilities would be provided whenever they were needed.

Following the old Edisonian method of trial and error, they explored the field. Literally thousands of bushels of cabbages, carrots, onions, watermelons and whatnot went into the caldrons. Stacks of cornstalks and sunflowers vanished in the hoppers. Late in 1931 the experimenters decided that the soy bean offered most possibilities, and they began to concentrate on it.

In the counties within an hour's drive from Dearborn, Ford acquired twenty thousand acres of land, a large part of which was planted with the legume. More than a million dollars was expended, and a plastic was developed from which it was possible to stamp out several small parts for the car.

Mr. Ford told a magazine writer: "No matter what we may guess as to the proportion of automobile parts that can be built from the fruit of the field, our guess will fall far short of the eventual result."

What he had in mind was the construction of the entire car body from agricultural plastic. That accomplishment, of course, was still many years ahead. Meanwhile the erection of little industrial plants in the outlying country continued until nearly a score of them dotted the valleys and utilized forgotten water-power sites in the rural sections. Along with the plants went the revival of local schools, providing practical training for the village youth.

Shortly after the V-8 was announced, a "Hunger March" led by members of the Young Communists League was staged from

a hall inside the Detroit city limits to the gates of the Rouge Plant. The demonstration was sponsored by the "Unemployment Council," although it owed much of its stimulus to William Z. Foster, well-known Communist leader who proposed it at a downtown mass meeting on the preceding day and then left Detroit. The demands as listed in the "proletariat" magazine *The New Force*, were:

1. Jobs for all laid-off Ford workers
2. Immediate payment of fifty per cent of full wages
3. Seven hour day without reduction in pay
4. Slowing down of the deadly speed-up
5. Two fifteen-minute rest periods
6. No discrimination against Negroes as to jobs, relief, medical service
7. Free medical aid in the Ford Hospital for the employed and unemployed Ford workers and their families
8. Five tons of coke or coal for the winter
9. Abolition of service men (factory guards)
10. No foreclosures on homes of former Ford workers—Ford to assume responsibility for all mortgages, land contracts, and back taxes until six months after regular full-time re-employment.
11. Immediate payment of lump sum of fifty dollars winter relief
12. Full wages for part-time workers
13. Abolition of graft system in hiring workers
14. The right to organize

At the Dearborn city limits the marchers' progress was barred by a force of Dearborn and Detroit police officers, who tried in vain to make them stop. Tear gas was turned against them, but because of the strong March wind it blew away without effectiveness, and the comrades, armed with rocks, moved on.

By the time they reached the plant gates guards were ready with fire hoses and doused them with a chilling bath. A barrage of missiles followed as the men charged. Someone yelled, "We

want Bennett," and suddenly Harry Bennett, head of the Ford personnel department, appeared. As he stepped from his car to parley with the attackers, stones flew and a rock struck him on the head, knocking him unconscious.

Revolvers barked. Two leaders, one a district organizer of the Young Communists League and the other a member of the league and an organizer of the Young Pioneers, fell mortally wounded, the former across Bennett's body. Two more marchers were also slain before the men retreated, terminating the battle. The wounded included twenty-five police and fire officers, and twenty-eight marchers.

On the day following the demonstration the American Legion's Council of Wayne County came forward with an offer of its services to the company if the march should be repeated. Resolutions were adopted "condemning such actions on the part of the organized agents and groups whose purpose is to foment discord and destroy American institutions."

A careful check-up disclosed that none of the rioters had ever worked in a Ford plant—most of them had never worked anywhere. Few of them were from Detroit, and none of them belonged to any recognized trade union.

Overlooking the scene was a great room in which were seventy Soviet engineers, learning to take back to Communist Russia what the American Communists were bent on destroying. The Soviet engineers lined the windows, marveling at what they called "the fools" in the road below.

### 3

The "Hunger March" and its tragic sequence formed but one of a series of difficult situations occurring during the depression. Even darker times lay ahead. More deaths were to follow when a "Bonus Army" marched on Washington. Meanwhile another presidential election year came along and the Democratic nomination was won by Governor Franklin D. Roosevelt of New

York, with promise of a New Deal for the "Forgotten Man."

Mr. Ford gave his support to Hoover in the belief that the depression was economic rather than political, and that Hoover's experience as administrator of Belgian relief, and later as Secretary of Commerce, had fitted him for the herculean task of combating it.

"I'm not saying that Herbert Hoover can work miracles," he declared over the air in his first radio broadcast. "I've known a number of Presidents and I never yet have known one who could. It is only common sense when a man like Hoover has been educated by experience, when he has got control of the thing he is fighting, when he is beginning to show results—it is only common sense to let him finish the job."

The voters, however, decided otherwise and gave Roosevelt a decisive majority.

As winter closed in Mr. Ford was taken to the Henry Ford Hospital for a major hernia operation and appendectomy. It was his first serious operation, but he recovered rapidly and his vitality seemed if anything improved. On the day following the operation by Dr. Roy D. McClure, chief surgeon at the hospital, he was able to sit up, and in exactly one week left his hospital bed and returned to Dearborn.

Headlines telling of his illness brought a flood of messages from all over the world, from Buckingham Palace, from kings, princes, maharajahs, and from workmen who had spent most of their lives in his employ. His recovery surprised even his doctors. During the previous summer, on his sixty-ninth birthday, he had told a small gathering of newspapermen: "I'm never sick. I can run faster than any of you people in this room." The odd part of it, one of these present added, was that he could.

During his brief convalescence he was interviewed by the reporters, and from his bed gave them the word that future cars built by him would be painted with soybean oil. It was the first announcement of practical use resulting from his experiments to knit agriculture and industry more closely.

Business plunged from bad to worse as the days dragged slowly toward inauguration of the new Federal administration. Several of the largest banks had been saved from disaster by government help, but no one suspected that the two powerful financial groups in Detroit were in serious danger. A decline in real-estate values had reduced mortgage collateral to such an extent that unless new lifeblood could be pumped into the stream they might not be able to withstand much more.

The Fords were heavy depositors in the Union Guardian Trust Company, a unit of the Union Guardian group. Already Edsel Ford had loaned \$5,000,000 in bonds and \$1,000,000 in cash to the Guardian's investment securities unit. He had also executed a note for \$2,500,000 from the company's deposit to the group's account.

When the banking department of the Union Guardian Trust Company found its difficulties mounting, decision was reached that the concern be continued as a trust company only. To obtain funds with which to pay off its depositors the officers asked the Reconstruction Finance Corporation for \$50,000,000. The amount was reduced to \$37,500,000 and approved by the Comptroller of Currency, who was preparing to forward the money when Senator Couzens stepped in.

As chairman of the committee to approve collateral for R. F. C. loans, Senator Couzens objected on the grounds of insufficient collateral. Faced with necessity for stringent action, Detroit bankers appealed to Governor William A. Comstock in the hope that an eight-day banking holiday throughout Michigan extending from February 14 to 21 would permit the company to iron out its difficulties.

Although Mr. Ford was not a stockholder, officer or director of any bank, and not even a borrower, his only connection being that of a depositor, somehow his name was brought in as having contributed to the crisis. Governor Comstock started the misinformation, ignorantly (as he later admitted) tossing some of the responsibility in the Ford lap. Later the same day, after receiving

more complete information, he retracted his remarks, but the retraction received little circulation compared with the original statement.

He had stated to the press that Mr. Ford had refused to cooperate with two other big depositors, General Motors and Chrysler, in averting the crisis.

"I am informed that I misunderstood the facts in the Union Guardian Trust Company situation," he now admitted. "Chrysler and General Motors are not depositors. Mr. Ford had no agreement with the trust company or with Chrysler or General Motors.

"The Ford Motor Company, General Motors, and Chrysler had not agreed upon any arrangement to take care of the trust company. It was suggested by Chrysler and General Motors that the Ford company should put up a substantial part of the necessary funds to take care of the loss. The Ford Motor Company took the position that they had already put approximately \$20,000,000 in the Union Guardian business and they could make no further investment in it."

When the holiday was declared Mr. Ford was the largest depositor of both groups. He had \$7,500,000 on deposit with the Union Guardian Trust Company, \$31,000,000 in the Guardian National Bank of Commerce, and \$22,000,000 in the First National Bank, a total of \$60,500,000, approximately the equivalent of a month's running expenses of his company in normal times.

In questioning the collateral offered the Reconstruction Finance Corporation, Senator Couzens performed what he felt was his duty to protect the government's interests. The chief asset listed was Ford's \$7,500,000 deposit, and the Senator insisted that it be "frozen," that is, held in the bank as security for the loan.

Mr. Ford countered by offering to allow it to be "frozen" providing other large depositors could be persuaded to do likewise. When they refused, he declared that neither would he be made a "goat"—what was the R. F. C. for, anyway, if not to assist the stabilization of the banks?

With both sides obdurate, Senator Couzens was called to the White House, where President Hoover pleaded with him; he replied that he would go on the floor of the Senate, if necessary, and denounce the loan if it was granted. In the waning hours of his administration the President did not dare to risk such an attack.

Then came the disturbing news that the First National Bank of Detroit—largest between New York and Chicago and twelfth largest in the country—was in even worse condition than the Guardian Trust. Frantically the bankers searched for some way of continuing operations by immediate payment of quick assets, segregation of slow assets, with the old banks continuing as depositories. But the sound old heads among Detroit bankers thought that there would be no chance to proceed on that basis. They said that you cannot take away 80 per cent of a depositor's rights at one window and expect him confidently to offer you his remaining 20 per cent at another window. The old banks could not continue. There must be new banks.

It was a bitter pill for the stockholders to swallow. Washington was impervious to any suggestions that would ease their position. It laid down the hard and fast rule for Detroit that there must be two new banks; the old banks must be regarded as closed. Whether this decree was justified or not, there was nothing to do but organize two new banks.

All through these negotiations Ford's sixty millions of deposits remained in the closed banks; he made no effort to draw a nickel out when the drawing was good. Many others did. To get the new banks organized his support was necessary, and when the bankers came to him he made what seemed to them a startling proposition.

For many years he had been formulating his own ideas about the way a bank should be run. He had two basic principles; first, absolute security of deposits at all times; second, no loans for speculation but only for constructive and productive purposes. With this in the back of his mind he agreed to furnish the capital for two new banks if he could pick the men who would work

with him and who would agree to turn the two banks into one at a later date, in order to make room for another large one and so not to monopolize banking in Detroit.

The offer was made on February 26, shortly after the eight-day holiday was supposed to end. It read:

TO THE DEPOSITORS AND DIRECTORS  
OF EACH BANKING GROUP:

We are ready to join you in the creation of two new banks and will match the total necessary capital which we understand is eight million two hundred fifty thousand (\$8,250,000.00) dollars with the good brains of those who are willing later to unite these banks into one institution founded on what we think sound banking should be, provided you have confidence in our ability to select the men who we all believe will merit future public confidence.

The institutions so established will be the type of financial structure that will merit public faith in the ability of industrial Detroit to rehabilitate itself.

HENRY FORD  
EDEL B. FORD

There were many gratified bankers in Detroit that day. Hastily they notified Washington that the terms had been met. The Ford offer was accepted by formal note. The bankers' announcements in the press called it "generous" and "public-spirited." There was much good feeling and satisfaction.

Within two days there was an about-face. Something happened under cover. One banker who had been most importunate in his urgings on Mr. Ford—but who was not included among the list of men who were chosen to build the new banks—claimed that it was impossible to run such a bank as Mr. Ford proposed. The attitude of the bankers seemed now to have changed. Instead of using every effort to get Mr. Ford into banking, they now worked to keep him out. He was asked to withdraw the offer which had been urged so strongly only a few days before. He refused.

To this day the bankers have never informed Washington or Mr. Ford why they refused the aid for which they had pleaded. For two months while boards of directors split and argued his offer stood.

Eventually the government stepped in and set up a bank, to which it subscribed half the stock. Another bank was organized in which the Ford interests became a depositor. The old banks were liquidated, the depositors in time receiving all of their money.

After the smoke of controversy cleared away, these facts remained. Mr. Ford as a depositor had left his funds in the banks even when he knew that trouble was coming. He could have withdrawn them, but it would have precipitated the collapse. He was not responsible in any way for the situation, being neither a director nor a stockholder in any bank. He offered a plan, acceptable to the government and the bankers, which was sidetracked. His principles of banking, based on the theory that "the deposit belongs to the depositor and not to the banks," have since been held by some of the best bankers in the country as the pattern of future banking.

Meanwhile the desperate plight of the Detroit banks had spread like wildfire. On February 24 runs were made on banks in Baltimore, and Governor Ritchie declared a holiday. By Inauguration Day banks were under some form of restriction in thirty states. New York and Illinois were among the last to fall.

Shortly after taking the oath President Roosevelt declared a countrywide holiday, and took full command of the nation's currency.

## 4

Although it was not generally known, action by Mr. Ford had done much to mitigate suffering both during the first part of the depression and later during the bank holiday. By placing \$1,000,000 in cash in the Dearborn State Bank where many of

his employees had their checking accounts, he prevented its depositors from losing any of their money. He also came to the rescue of banks in other towns where Ford plants furnished some of the employment, and where a large share of the losses would fall upon his workmen and their families.

During the earlier depression several soup kitchens were discontinued on his personal order, and commissaries opened instead where the people could buy their own supplies on their I.O.U.'s. For the first time in his career he did business on credit, and he did it with the poorest of the poor. Their word was good with him.

His own reaction against charity was the humiliation it caused the recipient. He felt that charity was not humane, and he put his own helpful operations on the basis of good will and mutual trust. These intangible considerations were in his opinion worth immeasurably more than all the material aid he could give, and the material aid became mountainous in its proportions as the work went on.

During those troubled years Mr. Ford always maintained that the best cure for economic sickness was employment. By every device he could think of employment was spread and prolonged and even created, to obviate the necessity of charity. While he did not believe in creating work any more than he did in charity, as the term is generally used, now for once he was inconsistent. He did make work, and he did give charity, using his own methods.

One was to stretch to the limit employment in the non-profitable enterprises he was carrying on. He transferred many thousands of unemployed plant workers to his farm projects and paid them \$5.00 a day, a ruinous rate for the work and the production. The crops raised were distributed where needed.

Others were kept on at the plant, producing parts which piled up and could not be disposed of. The chief problem worrying the executives in the shop was what to do with them after the bins and aiseways had been filled. They could

not halt the flow, for Mr. Ford forbade the laying-off of men.

When he was not around these units were referred to as "welfare units." They were disguised charity but they saved the self-respect of the men on the machines, which was Mr. Ford's main concern.

Many other instances could be cited. The deficit entailed by any six months of charity service at the Henry Ford Hospital, charged to Mr. and Mrs. Ford's personal account, would on that count alone give them a reputation for large philanthropy, except that Mr. Ford dislikes the word even as he despises its connotations. For that reason, their hospital contributions have never been disclosed. All his efforts were toward the attainment of a way of life in which charity, or the need of it, would be abolished, as slavery has been abolished.

Chris Sinsabaugh in his reminiscences of the automobile industry told of an incident that occurred during this period. Mr. Ford was driving along Michigan Avenue one day when he saw a line of about five hundred men standing in the rain. On inquiring what they were doing he learned they were seeking jobs. "Forthwith he ordered them all hired at once," Sinsabaugh continued. "As the line began to edge forward, those on the tail end ran to telephone their friends and relatives, and some 1,500 were employed."

Then there were the "depression boys," first enrollees in a new school started by Mr. Ford primarily to keep high-school graduates off the streets. The school was the outgrowth of an idea originally presented to him by Carl Hood, at that time a Dearborn high-school principal and later head of the Edison Institute school system. Hood's idea was to work out a program whereby the average high-school student could learn the fundamentals of a mechanical trade within a relatively short time. Such training would not make him capable of doing the work of a skilled mechanic, but it would fit him to start in a factory with a working knowledge of some mechanical trade or of shopwork in general.

Chief obstacle was the fact that to equip the manual-training department of a high school with sufficient number and variety of the machines required for a three-months course of intensive training would cost more than the ordinary budget could stand.

"How many machines do you need to get started?" asked Mr. Ford.

The next day several truckloads of machinery were delivered at Mr. Hood's high school. When the new industrial-training department was opened, nineteen boys who had dropped from school for lack of interest in academic work returned. They learned how to run all the machines, completed their courses, and were graduated. Soon they came back, asking permission to spend part of their time in the school, as they couldn't find jobs.

When Mr. Ford learned about the boys he decided that something should be done about their predicament. "After all," he told Hood, "industry must take more interest in young people, or there will not be any industry. And industry must prepare young people for their jobs."

Before the close of that day he had arranged with production men at the Rouge Plant to establish the sort of school Hood had been suggesting, offering a combination of mechanical and academic training over a three-month period, and acquainting the students with the kind of work they would eventually do, with the various types of machinery and materials used, safety rules, and so on. Enrollees were selected from lists prepared by boards of education on a basis of scholastic standing, mechanical training and aptitude, and were paid during their ninety-day instruction.

From the "depression boys" the number of students swelled steadily until finally 300 were trained during every quarter year, and as many as 1,600 in one year. On the day the twenty-five-hundredth student enrolled he was invited by Mr. Ford to inspect the new tool and die shop. After wandering through the maze of machines, the youth asked: "Mr. Ford, do you know how to run all these machines?"

"I've run them all," Ford replied, "but I can't keep running them forever. It's time for young fellows like you to start."

Still another of Mr. Ford's unpublicized activities during the depression period was in the village of Inkster, a few miles west of Dearborn, among the colored residents who largely populated it. Public acknowledgment of his aid was made by the assembled citizens on a May week end a few years later, when they gathered, as they said, "to pay tribute to Mr. Ford for the great aid rendered this people in this particular community in helping us stem the tidal wave of depression."

Speaking for the colored people, Mr. Esais Lee summarized that aid:

"Unemployment had consumed the livelihood of this community, and as we faced the long dreary winter of 1931-32 human suffering and misery were inevitable. It was at this time that Mr. Ford came to our rescue in no uncertain manner. He opened the Commissary on the I.O.U. plan, hospitalized the sick, established a tennis court, clinic, tailor shop, dressmaking shop, bakery, and shoe-repair shop. He liquidated our homes, buying the contracts; he graded our streets and plowed our gardens, and built a ten-room school which you see here. Greatest of all, he gave us a chance to work, which we most earnestly desired."

## CHAPTER TWENTY

### NRA

#### 1

THE anti-Semite movement which had followed the rise to power in Germany of the Nazi regime had resurrected as a part of its propaganda the almost forgotten articles, published originally in the Dearborn *Independent* and subsequently retracted by Mr. Ford.

Reappearance of the articles abroad during 1933 gave enemies of Mr. Ford at home an opportunity to launch a new attack. Rumors were hatched; soon reports appeared in the newspapers that he had actually contributed \$40,000 to the Nazi campaign, in payment for the articles' re-publication.

Usually Mr. Ford made no reply to such stories, believing that time itself would answer them, but this one was so far from fact that he deviated from his rule. In a prepared reply he declared categorically that he had "no affiliations with foreign parties, their leaders or representatives. . . ."

A close associate pointed out that "Mr. Ford is asked for contributions every day. It seems to me that he did receive such a proposition from someone over in Germany. I don't remember who it was or what the circumstances, but we filed it away and forgot about it. It's probably been destroyed now. We refused it, of course."

The German edition of the articles was published by the Hammer-Verlag Company of Leipzig under the title: "*Der Internationale Jude*." A copy was placed before a special Congressional committee investigating Nazi propaganda in this country, together with the following telegram from the Ford offices:

THE USE OF MR. HENRY FORD'S NAME ON THE BOOKS IN QUESTION IS ENTIRELY UNAUTHORIZED FOR THE REASON THAT MR. FORD IS NOT THE AUTHOR OF THE LITERATURE INDICATED.

As far back as November, 1927, Mr. Ford had written the German publishers demanding that the publication of the articles under his name be discontinued. A copy of his letter was laid before the committee by Representative Carl Weideman:

On June 30, 1927, I issued a statement regarding articles concerning Jews that had appeared in the Dearborn *Independent* and some of which had been reprinted in pamphlet form under the title "*The International Jew*."

Being satisfied that these publications were unwarranted and that consequently it was my duty as an honorable man to retract the charges against the Jews in these publications and to withdraw the publications from circulation, I gave this statement the fullest publicity, and took it for granted that my wish in this regard would be scrupulously observed.

I am enclosing a correct and authorized copy of that statement. All of the copies of the "*The International Jew*" in the possession of or under the control of the Dearborn Publishing Company have been destroyed at my instance.

I am informed through the public prints that you are still publishing and circulating these pamphlets in various European countries and in a number of languages, using my name in connection therewith and asserting that the publication rights thereof have not been withdrawn.

In order that there may be no misunderstanding as to my wishes in this regard, you are accordingly notified that whatever rights you have or claim to have to publish "*The International Jew*" anywhere or in any language whatsoever, are hereby revoked and terminated, and that the publication, sale, or other distribution of "*The International Jew*" and the use of the name Henry Ford or the Dearborn Publishing Company in connection therewith, by you or by any person or corporation claiming under you or acting by your authority as agent, license or otherwise, are hereby forbidden.

In acknowledging this letter, will you kindly inform me of

your assurance that you will in all respects acquiesce in this demand?

That was in 1927. No acknowledgment was received.

In the midst of the stories about his "\$40,000 contribution" Mr. Ford rounded the biblical three score years and ten. Changing times, an uncharted future, abandonment of the gold standard, a new deal for capital and labor—worried him not at all. "My preference is to look forward," he said; "I've been doing that all my life."

"Of course we are now at the end of an era," he told Willis Thornton, of the N.E.A., "but what is there about that to be afraid of? There is a place in the world for everybody. That's basic under any system."

Thornton was one of a number who wrote about Mr. Ford on his birthday, and one and all declared that they found no sign of seventy years—"sixty, you might guess—but never seventy."

He revealed an agility of body, an elasticity of mind and an eagerness to face the future that was sometimes lacking in many men years younger.

"There are still some things I can do that need to be done. I have no romantic idea of dying in harness, but I expect to go on working because it is the thing I do best, and because I take it for granted that every man must work—that's his natural destiny," he said.

To newspaper reports that he had lost \$75,000,000 during the previous year, he answered: "We did not lose it. We spent it. Most of it went into wage envelopes, the rest for taxes; but we did not lose it—we used it. If we had dropped it in the stock market, that would have been losing it."

The reference to the "loss" originated in the annual report which the company filed each year with the state of Massachusetts, and which had shown an indicated loss of \$74,861,644 for the year 1932. The same report revealed that its surplus was still more than half a billion dollars, despite the heavy charges of

the past five years—including changeover from the Model T, the stock market crash, the Depression, the bank holiday.

The balance sheet of the company on December 31, 1933, was as follows:

<i>Assets</i>	
Real estate . . . . .	\$150,912,504
Machinery, etc. . . . .	90,112,502
Inventory . . . . .	48,537,414
Cash, accts. receivable, etc. . . . .	343,304,237
Deferred charges . . . . .	6,239,168
	<hr/>
Total . . . . .	\$639,105,825
<i>Liabilities</i>	
Capital stock . . . . .	\$17,264,500
Accounts payable, etc. . . . .	38,328,408
Reserves, etc. . . . .	6,995,838
Profit and Loss Surplus . . . . .	576,517,079
	<hr/>
	\$639,105,825

The record down the years since 1926, the year before the Model T was discontinued, indicated that despite the vicissitudes and general paralysis of the economic situation, the decrease in surplus had been less than \$125,000,000. Each year's total was as follows:

<i>Profit and Loss Surplus</i>	
1933 . . . . .	\$576,517,079
1932 . . . . .	580,440,603
1931 . . . . .	655,302,247
1930 . . . . .	708,888,247
1929 . . . . .	664,427,424
1928 . . . . .	582,629,563
1927 . . . . .	654,851,061
1926 . . . . .	697,637,788

## 2

As the government began efforts to establish a New Deal for industry and labor, two objects were sought under the National Recovery Administration. Industry was to be placed upon the footing it had enjoyed in 1926; while the distress of labor was to be relieved by shorter hours and minimum wages.

The terms of the National Industrial Recovery Act were to be made effective through codes of fair competition, enforced by law, after approval by the President. The executive was also empowered to prescribe codes, and to create a licensing system in any field of industry. Each code contained the following clause:

That employees shall have the right to organize and bargain collectively through representatives of their own choosing, and shall be free from the interference, restraint, or coercion of employers of labor, or their agents, in the designation of such representatives . . . that no employee and no one seeking employment shall be required as a condition of employment to join any company union or to refrain from joining, organizing, or assisting a labor organization of his own choosing; and that employment shall comply with the maximum hours of labor, minimum rates of pay, or other conditions of employment approved or prescribed by the President.

To serve as chief administrator of the NRA the President selected Gen. Hugh S. Johnson, West Point graduate whose executive work during World War I had earned credit. Gen. Johnson tackled his duties with aggressive zeal. "Every businessman from the hot-dog stand to Henry Ford's industrial empire" would have to display the Blue Eagle under terrible pains and penalties.

Aided by General Johnson, leading automobile manufacturers—all except Ford—drafted a code providing for a minimum wage of 43 cents an hour, and 35 hours a week.

After studying it Mr. Ford delayed adding his signature. Threats of an ultimatum, of a ban of his products, failed to budge him. Years before he had inaugurated a policy even more liberal than NRA proposed. With the minimum in his plants set at 50 cents an hour, he declared that the company, should it sign, would have "to live down" to the code minimum of 43 cents.

Next came the rejection of a Ford bid on a government truck order. Although lowest, it was declined on the ground that Mr. Ford was still recalcitrant and had not yet hoisted the Blue Eagle.

His offense was, as Mark Sullivan expressed it, "a mere failure to go through the ceremony of submission, failure to genuflect, failure to make the obeisance at Canossa."

He was living up to every requirement—he had to or the Administration would have "cracked down" on him. He conformed to every meticulous rule except signing the code, and that act under the law, was voluntary, not compulsory.

General Johnson felt he could not afford to let so prominent a man as Mr. Ford "get away with" failure to unite in what was deemed a "holy cause."

Then came an attempt to incite a popular boycott against Mr. Ford and the company's products. The spectacle of the government punishing its citizen was not a pretty one. If such interference would stop, Mr. Ford suggested, the United States would emerge from the depression quickly. "The people as a whole are wise enough and sensible enough to solve their own problems," he added. "It is an act of injustice for General Johnson to intimate that any refusal has been made of any proper demand on our company."

One of his objections to the code was that the company would be required to file reports of its operations with the National Automobile Chamber of Commerce, successor to the organization with which Ford had fought in the early days when he overthrew the Selden patent.

In Mr. Ford's opinion it was not necessary to sign the code or fly the Blue Eagle in order to obey the law as to wages and hours.

He was not alone in this view, but as the most important rebel he was the target of the administration's fire.

"I am not going to sign away my constitutional rights in recovery's name," he replied. In order to bring his payroll "down" to the average required by the NRA, 9,000 men must be laid off. When that fact developed General Johnson offered to grant him an exception. The stalemate ended temporarily when Comptroller General McCarl ruled that Ford should be allowed government contracts even though he had not signed the code; and an order for 700 trucks was awarded him.

In a message broadcast to all Ford dealers in December of that year Mr. Ford urged them to "pitch in and help the President pull this country out of the hole."

With a sigh of relief General Johnson remarked that "it did his heart good to hear this." Reaction to the Ford "boycott" had been generally unfavorable to the government. Said Will Rogers: "You can take the rouge from female lips, the cigarettes from the raised hands, the hot dogs from the tourists' greasy paw, but when you start jerking the Fords out from under the traveling public you are monkeying with the very fundamentals of American life."

Arthur Brisbane was one of the first to express himself on the administration's attacks on Mr. Ford.

"Henry Ford does everything that NRA calls for and more in the way of hours and wages," he wrote, "but does not put the Blue Eagle on his cars. He built up quite a business without any eagle, and perhaps he feels that an American citizen has the right to use only such decoration as he chooses.

"The Comptroller General of the United States says Henry Ford is eligible to bid on government contracts. Some high court probably will decide on the government's authority to compel Americans to join anything unless they want to, as long as they obey the usual laws."

Editorial comment generally was favorable to Mr. Ford. Said the Boston *Evening Transcript*:

To think that any present action is due exclusively to a desire to share in Federal contracts is to forget Mr. Ford's record as an industrial leader. More than once he has subordinated personal gain to personal principles. We doubt very much if the few thousands of dollars that might accrue to the Ford Motor Company's profit through the selling of cars to the government would be of sufficient inducement to Henry Ford to sacrifice any economic philosophy he might have.

The editor of the *Chicago Tribune* declared:

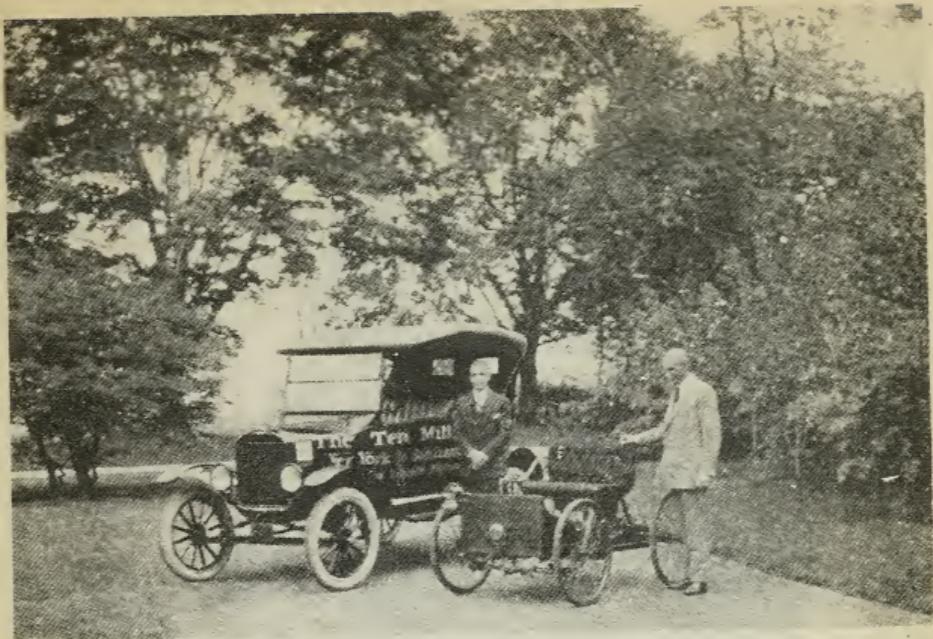
The fact remains that Mr. Ford has been a benefactor of his country. He pioneered the field of cheap automobile transportation. For years he provided employment at better than standard wages for tens of thousands of workmen. It will be no easy task to convince the public that an employer with his record, who today is paying higher wages than he needs to pay to get the blue eagle, is not within his rights when he refuses to sign away control of his business.

"Would the public penalize a man who years ago developed the basic idea of the NRA and put it into practice merely because he failed to sign up to do something he was already doing?" asked the *Kansas City Journal Post*. The *Brooklyn Times Union* declared that "an attempt to boycott Henry Ford when he is already doing more than the code required would not gain much public sympathy." The *New York Mirror* summed it all up:

Henry Ford has never shown himself to be anything but a real American and a devoted citizen. Any reference to him that tends to place him in any other light is a rank injustice to a man who has done his full share, and more, for the welfare and happiness of the mass of the people.

### 3

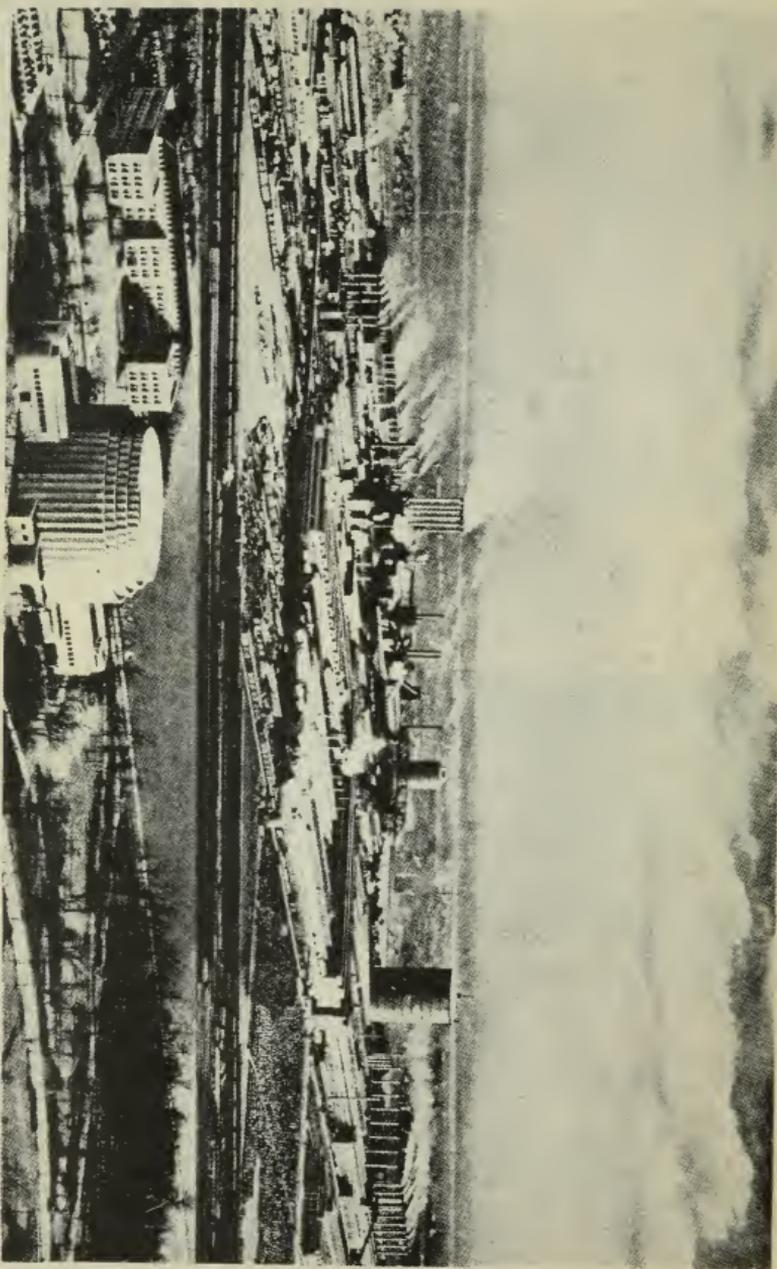
Early in March 1934 Mr. Ford returned from Florida just as the automobile manufacturers were gathering at the General Mo-



MODEL T NO. 10,000,000 MEETS FIRST FORD CAR



THE FIRST FORD CAR MEETS THE 25,000,000TH  
Edsel Ford occupies the same seat in the first car he had as a young boy.



### THE FORD ROUGE PLANT

Once called "Man's greatest industrial achievement since the Pyramids." In the foreground is the Rotunda, gateway to the plant for visitors, and at its left are the administration offices. At the far right is the steel mill and the open hearth. The tall stacks in the center mark the huge powerhouse.

tors Building in Detroit to discuss the Automobile Code. They were ready to approve the wages and hours provisions, but an issue was to be made of collective bargaining. In the midst of the conference late-afternoon extras of Detroit newspapers were thrown in the door, announcing Ford's return to the \$5-a-day minimum, "beating them," as one columnist expressed it, "to the draw."

The increase brought an added compensation of \$.50 to \$1.00 a day for approximately 47,000 of the 70,000 Ford workmen employed in this country. In the Detroit area alone 32,681 men benefited.

A statement given out by the company said:

This is the first blanket raise the Ford Motor Company has made since December, 1929, when it added the 'depression dollar' to its wage rate, bringing the daily minimum of \$6.00 a day up to \$7.00.

During the month of February, 17,000 men had received small wage increases, but on Henry Ford's return to Dearborn last week, he began to put into effect the plan that had been in his mind for some time.

The increase became effective Tuesday morning, hours before it was announced. The men were told during the afternoon and received the news with great enthusiasm.

Two days later President Roosevelt issued an order requiring that every bidder for a government contract must file a certificate, duly executed, stating that the bidder was complying with the NRA.

It applied not only to government contracts but also to "all contracts and purchase orders authorized by any state, municipal corporation or local subdivision," and to "any person or corporation in connection with projects to be carried out, wholly or in part, with funds lent by the United States."

The requirement overruled the fundamental law long in the statutes that all bids must be awarded to the lowest bidder.

As in his fight against the Selden patent monopoly, Mr. Ford

now seemed to be alone in his refusal to "give anybody a signed blank check."

Three decisions handed down by the United States Supreme Court on May 27, 1935, in the Schechter Poultry case, the Frazier-Lemke case, and the W. E. Humphrey case, virtually put the NRA out of business. The highest tribunal in the land agreed with Mr. Ford. The court held "that Congress, in setting up the NRA, delegated legislative powers that were unconstitutional, and that the attempt, through NRA, to regulate and control a business that only indirectly affects interstate commerce is unconstitutional."

Code enforcement was abandoned; General Johnson admitted that "three-fourths of the New Deal is out of the window"; and the President asserted that the decision had thrown the country back into the "horse and buggy age." With one blow the whole attempt to regulate the nation's industrial activities was overthrown, and the machinery set up by 557 code authorities was brought to a dead stop. Business in general breathed a sigh of relief, while gloom prevailed in the ranks of the labor leaders.

Will Rogers gave them a word of cheer. "Some of the papers are kinder excited over 'What will Henry Ford do?' Well, that's the least thing we got to worry about nowadays. He'll do better by labor than anybody else. So that's good enough."

Indeed, one week before the decision was handed down nullifying the NRA, he had increased his minimum daily wage once more to \$6.00.

## 4

"When I heard that the automobile industry was going to be started toward recovery by a group of political experts," Mr. Ford told Meigs O. Frost of the New Orleans *Times-Picayune*, "I asked: 'Who are these supermen?' I've been looking for such men all my life."

Frost interviewed Mr. Ford at Dearborn about the time of

the latter's seventy-first birthday, and wrote a careful description of the man he saw. "His hair is whitening and thinning, retreating up a high forehead. His eyes are blue-gray, deepset. His face is clean shaven, etched with the lines of long, deep thought, faintly weathered by sun and wind in open air. His lips are firm, but not tense. They can smile, and they do. His hands, resting easily on the arms of his chair, are not the hands of the traditional machinist. They are the hands of a great violinist or a great surgeon. The fingers are long, sinewy, sensitive. They are weathered, too. There is strength in that spare figure.

"He wears a plain gray business suit of indifferent cut, indifferently pressed. It, like his striped shirt, his high white starched fold-over collar, his diagonally striped necktie, could be duplicated in the clothes of tens of thousands of his workers. His shoes are plain black. He wears no jewelry of any kind. His right foot is tucked comfortably under his left knee on the seat of the big chair."

The years had dealt lightly with Mr. Ford. Having learned the importance of self-discipline, he knew how to keep himself fit. For exercise he took a brisk walk, or rode a bicycle before breakfast. Or he placed an ax on his shoulder and went out for an early morning swing, chopping off dead limbs, trimming trees, and cutting out roots that had begun to grow across paths on his estate. Part of the way he ran; it "loosened" him up, made his breathing easier. He was not a heavy sleeper; five or six hours at night were sufficient.

Wherever he was, sleeping or walking or strolling about Greenfield Village, he worked on some problem. It was never a problem of finance; his vast holdings did not worry him. What if the surplus had decreased by seventy-five millions? That was only two months' payroll in normal times. "We just circulated that much money more than we took in"—used it to keep men at work and prepare for better times.

Nor did the strides made by his competitors worry him. He once remarked that he never expected to build all the motor cars

and trucks in the world. At one of the noonday executive lunches the conversation turned to the inroads other cars were making in Ford sales. The atmosphere was gloomy. Suddenly Mr. Ford said: "I guess those people are getting what they want." "What do you mean, Mr. Ford?" "Well," he drawled, "those fellows are out to get you fellows' minds off your work—and they seem to be succeeding."

"We could hog all the business if we wanted to," he told Philip Kinsley of the *Chicago Tribune*. "We could make a lot more money, but I have always believed that business cannot be good for any one until it is good for every one. I think that every fellow ought to have a chance. We shut down to change our model and gave other businessmen the whole American market. It didn't injure us to do that. If we can't compete on a basis of merit, we don't belong in business."

Nor did he worry over the attacks made on him by certain groups of economists. Talk of "tax the surplus" brought from him the comment that every business with a surplus had become an object of envy. "Our surplus keeps men working when business is bad," he said. "Spending money is a greater science than getting it. These fellows don't know how to spend, because they don't know how to earn money."

Mr. Ford believed that the oft-repeated proposal of "sharing the wealth" was aimed chiefly at his organization, but it failed to disturb his belief in the ultimate triumph of right.

"I'm not paying any attention to this new tax scheme," he told Kinsley. "I just know that there is a principle of right and wrong, and that the wrong thing will not work. I feel perfectly able to handle any situation they may create. All we ever need in such conditions is to have the people think. The people have the final say—and they cannot be finally deceived."

The proposal to tax the company's surplus led Mr. Ford to suspect that its object was to force him to borrow money and eventually come under the control of financial interests.

"Our institution has always been a great conundrum to those

who want to live by lending," he remarked. "They have sought control in many ways. But finance did not build this business, and when we were born government was content simply to govern. Now finance and government propose to step in and take control.

"They tried it under NRA and that failed. They have tried it by financial methods and failed. Now comes the new thing—taxation—well, we shall see how that goes. Of course, they know I am 72 years old, and they probably think that something is likely to happen—but I expect to be around here a long time yet."

As for the inheritance tax, he asked: "Well, what is that? Take ourselves. What will the government do? Will it come and confiscate two hundred stamping machines and a couple of furnaces, and a block of buildings? How else can you divide up a business? Does the government want these simply because the man who made them is dead? Or does it want to compel somebody to borrow the money the machines are supposed to represent, so that the government can take the money?"

"There is no Ford fortune to divide up. If they divide up the plant and the organization, what will they do with it? Can they use it? And yet, the wealth is not the money, but the machine and its useful product. Politicians think that money can do anything. It can do nothing.

"Money is only something the bookkeepers put down. It ought to be a sign of a man's right to his work. It is not a commodity of any value in itself—merely a part of the mechanism of exchange. America is not a land of money, but of wealth—not a land of rich people, but successful workers."

Many of Mr. Ford's activities, as the years progressed, diverged from the actual manufacture of automobiles. While he still kept in close touch with that phase of his business, he devoted more and more time to developments for the future. He

believed that the motor car was still in the oxcart and corduroy-road stage.

Already his program of decentralization was beginning to bear fruit. Each year more small factories were added to the number that dotted the river valleys of southeastern Michigan. More acreage was planted to the soybean, and plastic from the legume was being used on Ford cars and trucks.

To acquaint the farmers generally with what he was trying to do he moved an old hay barn from his father's farm to the Ford exhibit at the Chicago Century of Progress Exposition of 1934. The interior of the barn was equipped with simple machinery for processing the bean.

"There are thousands of old barns like this one all over the United States," he pointed out. "I think we are not far from the time when any farmer, or group of farmers, who are so minded, may begin on a scale within their means to manufacture on the farm or in a near-by village products which industry will buy.

"Our experiments have shown that from soybeans, grown on our own farms, we can extract oil which we use in the enamel on our cars. From the residue, after the oil is taken out, we have found we can make steering wheels, timing gears, and other parts. The old barn shows how it can be done with machinery which most any farmer can rig up at home from odds and ends."

Another field of experimenting to which he was giving more and more attention was that of education. Throughout the rural districts where he had established his little plants and soybean farms he restored and reopened little red schoolhouses. It was not with an idea of reverting to the methods of half a century earlier than he did this. He believed that the district school could be brought abreast of the times without sacrificing the individual contacts and wholesome atmosphere of country life.

As he viewed it, the present-day educational system did not fit its high-school graduates for jobs. "Every child should be trained to use head and hands both on the individual's natural bent."

In the experimental villages where industries were bringing new life, lovely old homes were restored by Mr. Ford and country young people were given educational and social privileges such as their city cousins enjoyed. Old-time dances were revived in towns fifty and sixty miles distant, as well as in near-by districts. Instruction in such professions as nursing was provided upon graduation. The boys learned mechanics in machine shop and garage; woodworking, also was taught, as well as practical agriculture. The prospect of jobs in small plants near home, at wages comparable to those paid in the industrial centers, diverted their attention from migration to the city.

On one of his trips to inspect the soybean farms Mr. Ford found a back-country four corners, all that remained of the once flourishing town of Macon. Straggled along Main Street were the homes of the few families who for one reason or another had been unable or unwilling to move away. A blacksmith shop, general store, frame church and shabby school comprised the only other buildings.

Not long after his visit carpenters and truckloads of lumber and paint arrived in the sleepy hamlet, and a frame building went up beside the creek. Finished, it was a compact white colonial structure with a community center and chapel on the ground floor, and a new blacksmith shop in the rear. Next door another frame building went up, to serve as a sawmill. Upstairs, woodworking machinery was installed.

Meanwhile two old houses along the street were fitted with hardwood floors, doorways were repaired, roofs fixed. From Dearborn came more trucks with sewing machines and hand looms, beds, tables and cooking equipment. When ready, the homes were turned over to the girls of the village high school as laboratory equipment. The boys were given the woodworking machines and taught how to make furniture. In the blacksmith shop they were instructed in acetylene welding and in the repairing of tractors and other metal work needed around a farm.

Under guidance of an instructress, the girls were soon making

party dresses and pajamas. A small kitchen was provided, and at noon the sewing room became a lunch room for all the students, the girls preparing the single hot dish, and the boys washing the dishes. On certain nights, square dances and quadrilles were called in the school hall, and laughter and gay fiddling floated out on the country air.

The sawmill became a place of employment for the community, following Mr. Ford's idea of a small work unit to provide wage-paying jobs. In a short while the formerly deserted village became once more the center of the countryside, largely through giving its youth a new outlook and an awakened interest in the possibilities of the neighborhood. Macon's story was repeated many times elsewhere.

Back in 1927 when Edison had been experimenting with goldenrod as a source of synthetic rubber, Ford had acquired a tract of potential goldenrod land along the broad Ogeechee River west of Savannah in the eastern corner of Georgia, where South Carolina drops swiftly toward the ocean. The tract expanded into an enormous plantation of 80,000 acres which he named Richmond Hill.

Part of the tract lay in a district known as the "Black Ankle," so-called from the mud that caked the bare feet of indentured servants who ran away from their masters in the early days to hide in the dank cypress swamps. From these forebears had come poverty-stricken, malaria-yellowed descendants, gaunt and prematurely aged, whole families infected with hookworm. Farming worn-out land, living in vermin-infested cabins, they seemed mired forever in poverty and misery.

Among them Mr. Ford began the slow task of rehabilitation. Wholesale charity was repugnant to him, but he was eager to help the people work out their own salvation after he had once kindled hope in their hearts.

In the near-by town of Ways they rebuilt an old sawmill, and then, having all the lumber they needed, they proceeded to build a powerhouse, two schools, a community house, a firehouse,

and later a classic colonial chapel where Sunday services were conducted by the local residents.

The community house was provided with guest rooms, ball-room, lounge and dining room. Roads were graded; ditches opened; landscaping improved; a high school built. White and colored children attended separate schools, where manual arts were taught along with academic subjects. Free lunches were provided daily. For the smaller children there was a kindergarten.

After the schools for the Negro children of the region had been modernized and renovated, Mr. Ford arranged for the term of instruction to be increased from six to nine months. He also furnished individual textbooks for each pupil—after observing on one of his visits to the school that there were not enough books to go around. Other supplies included radio sets, stoves, libraries and athletic uniforms. Old-fashioned dances and occasional social affairs for the entire community were other contributions he made possible.

One of the schools was named for the great Negro, George Washington Carver, who came over from Tuskegee Institute to open it.

A mother whose youngsters attended the kindergarten described the new attitude that changed the entire aspect of life for the dwellers in the "Black Ankle." "Before all this happened," she said, "we used to sit around feelin' sorry for ourselves because of all the things we didn't have. Now we know there ain't nothin' we cain't have if we really go after it." She added: "All we needed was somebody to lend us a hand."

Hand in hand with social, mental and spiritual rehabilitation went physical uplift. When the Fords first built their winter home at Richmond Hill, tests indicated that almost half the near-by inhabitants were afflicted with "chills and fever." In a short while this number was reduced to 2 per cent. The hook-worm that had been affecting a third of the population was just about eradicated.

The treatment against these diseases was characteristic. The aid of Dr. C. F. Holton of Savannah was enlisted by Superintendent J. F. Gregory of the plantation, and 18 nurses were brought in for the purpose of dosing the entire community against malaria. At the same time the mosquito problem was solved by proper drainage.

At one of the old-time dance classes Mr. Ford noticed a little girl whose eyes were crossed. Learning that her family's circumstances did not permit medical aid, he arranged for her to receive treatment at the Henry Ford Hospital in Detroit, and put the father to work at a job which gave the whole family a new start.

To enable her and other children less fortunate than their playmates to make progress in education, he established a "Little Red Schoolhouse" as a part of the Edison Institute system, with a private teacher and nurse.

Publicity about his generosity is genuinely distasteful to Henry Ford and for that reason a complete record of it will never be made. But stories of it are legion.

Stuart Kinzie told of a Negro one-legged watchman, Willie Flowers, who was busy tending his gate one day at the entrance to Richmond Hill when a car drove up and Mr. Ford leaned out.

"What do you do when it rains?"

"Ah gits wet, suh."

"Well, you ought to have a house."

In a few days a truck came by with a sentry box built for Willie. Every time he recalled the incident, which was every time it rained, Willie shook his head over it. "That man," he murmured, "Ah hopes he never does die."

After naming one of the schools after Doctor Carver Mr. Ford learned one day that the distinguished Negro scientist was in poor health, finding it more and more difficult to get about, even to climb the stairs in his Tuskegee home. One day workmen arrived there and installed an automatic elevator, a gift of Mr. Ford. "That elevator saved my life," Doctor Carver said.

During the hottest part of the summer it was Mr. Ford's custom to visit the cool shores of Lake Superior with Mrs. Ford. This gave him an opportunity to inspect his timber operations in the hardwood forests of Upper Michigan. Here also he undertook a rehabilitation program with a farm-industrial community.

Ten miles south of the lake he laid out a village at a point where a highway pierced the virgin timber, and dammed a creek to form a lake of fifty acres at one end of the valley. Below the dam he erected a modern, compact sawmill, with homesites near by on roads stretching back to the foot of the wooded slopes. He named the village "Alberta" after the daughter of his Upper Michigan manager.

With their industrial life wholly dependent on the cutting of lumber the residents found security through a program of timber conservation. Six square miles of solid hardwood were set aside for this program. All logging was on what might be termed a selective basis. The quantity cut throughout the years was constant so that employment in the mill did not vary. Only those trees were cut which had reached maturity, except such as had been attacked by insects or disease or which would never mature because of deterioration of soil or the failure of proper wind-break.

By limiting cutting of timber to a predetermined rate on a selective basis an adequate reserve was provided for the sawmill. By the time the available timber had been cut in the last areas, more trees would have matured in the areas first logged years before.

Unlike the typical sprawling ragged lumber town, the residential section of Alberta was outstanding in its attractiveness as a new city sub-division. Each home was located on a large lot. The houses were insulated and had painted plaster walls, maple floors and birch woodwork trim, as well as such built-in features as modern baths, hot air heat, electricity and lighting fixtures appropriate to the interior color schemes. High on the side of one

of the slopes, clear cool water was gathered in a reservoir from a near-by woodland spring.

Two frame and fieldstone schoolhouses reminiscent of half a century before were established by Mr. Ford for the community. As in his other schools classes were not limited to academic study.

Throughout his other holdings in the northland he also established schools, including a new high school near his huge saw-mill at Pequaming. During the summer vacations vocational instruction continued, along with old-fashioned dancing classes and recreation in the Bungalow, the students' social center on the shore of Lake Superior.

## 6

In 1933 the Edison Institute at Dearborn with its old-fashioned village and historic museum was opened to the public. Its fame had been carried to all parts of the country, attracting more than half a million visitors a year. They were permitted to enter the grounds and watch the progress of the project, even though it was still unfinished.

Before them was embodied Mr. Ford's idea of history. "History doesn't mean dates and wars and textbooks to me," he said. "It means the unconquerable pioneer spirit of men, and the things men have invented with their brains and made with their hands to make life easier."

He defined Americanism as the world's pioneer "extract"—"the essence of the world's pioneer spirit that isn't afraid to tackle anything. Americanism is a type of character. America was made by people who had the courage to leave the known, come here, face the unknown, and make a new country. And that pioneer extract is here yet. The old pioneer American stock always responds to the need of the hour."

## CHAPTER TWENTY-ONE

### UAW

#### 1

WHEN, late in 1934, Mr. Ford announced that he expected to build a million cars during 1935 one Detroit editor, too wise to be taken in by such palpable nonsense, blue-penciled the item and buried it inside the paper where its non-fulfillment a year later would not embarrass anyone.

"So far as our company is concerned," Mr. Ford had said, "the Depression is over."

He added that he intended to spend at least \$415,000,000 in the course of the next twelve months.

Exactly one year from the date of the prediction the millionth car rolled off the Rouge Plant assembly line. In building that many automobiles Mr. Ford spent more than the sum mentioned. Over half a billion, \$523,111,389, was paid out for materials, and another \$140,119,326 went for wages to company employees, to say nothing of \$21,000,000 in taxes.

During the previous summer the Detroit Symphony Orchestra had been employed by Edsel Ford to furnish music at the company's exhibit in the Century of Progress Exposition at Chicago, and had been so successful that after the Fair's close they were engaged to play an hour's concert on Sunday evenings over a national network. The Ford Sunday Evening Hour became a radio institution. To round out the program an outstanding soloist was added, and during a brief intermission a talk on some phase of company activities or industry in general was made by Mr. W. J. Cameron.

One of his chats in the fall of 1935 included figures showing

that the cost of setting up the average job for a man to work in the company was \$9,007.37. The amount was divided as follows: Real estate and buildings per man, \$2,008.55; machinery and equipment, \$2,670.59; materials, \$654.78; miscellaneous charges—such as power, maintenance, replacement, and the like—\$3,663.00.

Out of each dollar of income from sales during the twelve months, labor took 94 cents, and the company received 1½ cents.

At that time a favorite suggestion among those seeking fresh sources of revenue was to “soak the rich.” Mr. Ford did not hesitate to express his views or air his philosophy of taxation and profits. Never prone to seek a fight, he has also never shunned one.

“The main thing, I think,” he said, “is that taxes should not be administered in a way to discourage anybody. Especially they shouldn’t discourage anybody who would start something new. We can’t devote our lives merely to producing revenue for a government. Government is certainly not the chief end of human effort. But there is little use of worrying about that; it will correct itself. If the tax is unwise it yields less revenue. You can’t make anything stick if it’s wrong. As Emerson said, things refuse to be mismanaged.”

In response to a question from S. J. Woolf, *New York Times* artist who had come to Dearborn to draw his likeness, who inquired his views on “share the wealth,” Mr. Ford pointed out that the idea was not new.

“It has been proposed over and over again, and always given up as impracticable,” he said. “The only trouble is that most people who suggest it are not sincere and know they are not. What they do not explain to their audience is that money is not wealth.

“The only way we can have production is by sharing it, and the only way we can share it is by having it.

“This is a strange world, and it is only by the exchange of benefits that profit can exist. It is only in finance that one man’s gain is another man’s loss. Customer, maker of the product, and

manufacturing plant all must profit. That is what happens in honest industry. The customer gets creative labor transformed into some utility for living. What he buys is worth more to him than what he pays for it. The maker of the product gets his profit in wages or salary, and the third share goes to the manufacturing plant which for the sake of its customers as well as for its employees must be kept up to date and efficient. The surpluses created in busy times must be used to tide over periods of adversity. This is the ideal condition, and were it universal, wealth would be shared."

The main purpose behind the various proposals, in his opinion, was to stifle competition.

"The NRA had that for its object," he declared. "So has this share-the-wealth business. Kill competition and the world will not progress. When I speak of competition I am talking about fair competition, not the cannibal kind that murders and steals in order to get ahead of the other fellow.

"There are always two of everything in the world and that being so, there is bound to be competition and no laws can prevent it. It is lucky that they can't. This world was built to develop character and healthy competition is one of the principal agents in doing this. Trying to stop it is like throwing a handful of ashes into the teeth of a gale."

## 2

On his seventy-third birthday Mr. Ford was asked what he did—"to keep going." His answer was: "The way to keep going is to keep going." He was amused at questions about his "routine." "I haven't any," he replied. "There isn't any average day in my life. I eat when I feel hungry and I eat what I happen to feel like eating."

Asked what the automobile of the future would be like, he said: "I don't know. If I did, I would build it."

When he accepted the renomination for the Presidency at

Philadelphia President Roosevelt referred to "economic royalists" who had "carved new dynasties" and who had "impressed" into their "royal service the whole structure of modern life." Although he did not mention Mr. Ford by name, there were many who believed he had Ford in mind.

"I'm not worrying about new laws to increase inheritance taxes," said Mr. Ford. "I hope to be around for quite a while in this most interesting world. If anybody must worry about it, it should be the government that expects to collect the huge tax and the people who will see most of their independent institutions wrecked by it. . . ."

"Our business, of course, is able and willing to pay reasonable taxes. We have paid over half a billion dollars in taxes during our business career. Most of our income is immediately translated into outgo. We are used to that. . . ."

"Large fortunes do not continue to exist unless they are profitably employed. When I use the word profitable I use it in its true sense. Comparatively few of the large fortunes which have been inherited have remained long in the possession of the heirs. Those that have were bequeathed to people who knew how to work and how to share their wealth."

As might have been expected, Mr. Ford endorsed the Republican candidate, Governor Alfred M. Landon, of Kansas.

"I am not criticizing the New Deal," said Mr. Ford, "I only say that we have had enough of it, we have had about all the country can stand. Its intentions may have been good, but its performance was very poor. As a manufacturer I have been its special target for about three years, but I don't hold that against it—it has set me thinking. All of us have to thank the New Deal for keeping us on the alert for our country."

One of the campaign issues was "social security." The idea of taking a certain sum of money from the wage envelopes of the men on payday was repugnant to Mr. Ford.

"The only security I can understand," he said, "comes from the self-dependence of a man who knows how. A man must gain security for himself. Everything combines to help him in this.

Our social system forces men up, not down. But no real security comes from any outside source. We must get over expecting anyone to make us secure—we must do the main part of that job ourselves.”

A few days after Governor Landon’s visit at Dearborn, President Roosevelt arrived in Detroit by special train, and Senator Couzens left his sick bed at a hospital to join the party and dine with the President. After he had learned of the Senator’s illness the President rearranged his schedule to permit a call at the hospital, but Senator Couzens insisted on getting up and keeping the dinner appointment. His own meal consisted only of milk.

Later he accompanied Mr. Roosevelt to a rally in Hamtramck and appeared on the platform there, as well as at the Detroit City Hall sometime afterward. On the following day he announced that he was feeling no ill effects from the exertion and made plans to return to Washington. However within a day or so his condition became critical—he had been suffering for some time with a stomach disorder—and it was decided to operate. The operation proved vain, and the Senator passed away in late October. Mr. Ford was one of the pallbearers.

The split between the two men in 1915, although it had been final in a business way, did not result in any personal bitterness. The two men met frequently afterward, and at times Mr. Ford supported Couzens in his public policies. At other times they disagreed, as when Couzens opposed the proposal that Mr. Ford become a candidate for the Presidency in 1923.

“I never loved a man and thought so much of a man in his place as I do Henry Ford,” said the Senator in a speech before the Detroit Republican Club at the Statler Hotel at that time. “There never was a man who was kinder and more thoughtful and respectful to me than Henry Ford.”

Although there had been sporadic outbursts from time to time—strikes at the Briggs body plant, at the Edgewater and

Chester assembly plants of Ford, and elsewhere—the first major contest in the struggle to unionize the automobile industry came late in December 1936 following the re-election of President Roosevelt.

Attempts of automobile workers to organize themselves into a “vertical” union, instead of through the various “horizontal” crafts of the American Federation of Labor, had brought them within the fold of the Congress of Industrial Organizations and under the guiding genius of John L. Lewis.

As head of the United Automobile Workers Homer L. Martin sought to arrange a meeting with William S. Knudsen, who by then had risen to the vice-presidency of General Motors. Knudsen’s reply was that labor matters should be taken up with the heads of the various plants and their managers. Unable to get anywhere with the managers, the automobile unionists abruptly “sat down” in the factories—that is, they took over possession of the plants, receiving food from the outside while the bosses, the managers, the foremen and the “white-collar” workers fumed helplessly.

The strike lasted 44 days and paralyzed 60 factories, in 14 states. More than once it seemed that bloodshed would occur—as on the occasion when the heat was turned off in one of the body plants while the police stormed its gates, only to be beaten off after a pitched battle; and again, when the court had ordered the strikers to evacuate the plants by 3 o’clock on the afternoon of February 3, and the National Guard gathered outside the factory walls.

At the last moment Governor Frank Murphy wired that he had persuaded Mr. Knudsen to confer with the UAW, and serious trouble was averted. Out of the struggle came recognition for the union as exclusive bargaining agency for the workmen in 17 plants.

Flushed with victory, the organizers turned to Chrysler and Ford. Early in March they had seized 8 Chrysler plants, and behind snow-covered barricades, defied the governor and the

local police to oust them. The impasse continued with growing bitterness until Walter P. Chrysler himself met with Lewis at Lansing early in April, and with the aid of the Governor, arranged an armistice.

Ford was next. Several minor clashes, including one at his Kansas City plant, were quickly settled, but the main plant at Dearborn could not be penetrated by the organizers. Both Lewis and Martin had predicted that it would be in the bag shortly. On the other hand no one in the Ford organization believed that the workmen desired union representation, or needed it. Ford labor policies, it was pointed out, had always been based on the employees' welfare.

While 11,000 Hudson workers prepared to follow 65,000 Chrysler men into the UAW ranks, Mr. Ford girded himself for what promised to be a "relentless struggle."

During that same month of April the United States Supreme Court by a vote of 5 to 4 upheld the Wagner Labor Act, and the National Labor Relations Board found itself clothed with authority to enforce the provisions of a law which up to that time had been largely ignored. Under the Act an employer was compelled to treat with chosen leaders of his employees in controversies over wages and working conditions, whenever a majority of the workers had become members of a labor organization.

Shortly after the decision, Mr. Ford made it plain that his employees were free to join a union if they wished, but he believed they would be foolish to do so.

"The Ford Motor Company has had a labor relations act for years," he added. "I would be ashamed to have anyone tell me our conditions and pay are wrong. That part of my job was started twenty years ago. I have heard no complaints from our men. There is nothing a union can give them that they haven't already got. I haven't given the Wagner Act a thought. We've always had it in force."

He felt that the same interests on Wall Street who had sought

to gain financial sway over his business twenty years previous, and whose object had been to stabilize industry on a basis of no competition, were now seeking to stabilize labor at a definite level. "It will be time enough to stabilize it," he declared, "when we get things near where they ought to be."

Labor leaders threatened to file charges against Ford before the Labor Board, alleging "discrimination and intimidation." Toward the middle of May Mr. Ford decided to place before his workers a statement of his views. Printed cards entitled "*Fordisms*" were attached to time cards throughout the plant.

A monopoly of jobs in this country is just as bad as a monopoly of bread!

This group [of union organizers] is asking us to sit still while it sells our men the jobs that have always been free.

What was the result of these strikes—merely that numbers of men put their neck into an iron collar. I'm only trying to show who owns the collar.

I have always made a better bargain for our men than an outsider could. We have never had to bargain against our men and we don't expect to begin now.

There is no mystery about the connection between corporation control and labor control. They are the two ends of the same rope. A little group of those who control both capital and labor will sit down in New York and settle prices, dividends—and wages.

Circulation of these views brought the struggle between the company and the union to a crisis. On the ground that "*Fordisms*" constituted an illegal attempt to coerce employees, President Martin threatened to invoke the Wagner Act against the company. Organizers invaded the concrete overpass leading from the employees' parking lot into the plant, for the purpose of handing out literature to workmen entering or leaving. The group was led by Richard T. Frankensteen, organizational director, and Walter P. Reuther, president of the West Side Local.

As they ascended the bridge and stepped on company property, they were met by employees and, following a brief but savage scuffle, forcibly ejected. Much ill feeling resulted and charges were filed with the Labor Board, while those who had been battered in the fight nursed their wounds and brought damage suits against the company and its officials.

Late in June the Board, in a nine-page complaint, summoned the company to a hearing of charges alleging a "malicious and brutal assault" on UAW leaders; using threats and coercion on its employees; circulating propaganda; and discharging employees for union activities; all for the purpose of interfering with the rights of the employees to organize.

"The respondent," said the indictment, "circulated and disseminated among and to its employees and the public generally, statements and propaganda disparaging and criticizing labor organizations and holding them up to scorn and contempt; warning, cautioning and advising its employees not to join such organization; and expressing its opposition to the exercise by its employees of their right to self-organization."

## 4

Mr. Ford did not know it at the time, and would not have conceded it if he had, but he was fighting a losing fight. Conditions of employment and labor relations had changed much since the early days when he knew every workman by his first name. It was characteristic of Mr. Ford to hold out until he had exhausted every effort, and he fought to the end.

Other big competitors had seen their factories invaded and their men enrolled as members of the union. He remained the last great independent. A new kind of trial awaited him, in which accusers, prosecutors, judges and jury had already found him guilty, he believed, regardless of whatever defense he might offer.

Upon his lieutenant, Harry Bennett, who had successfully

guarded the plant portals against the "sit-downers," fell the brunt of the labor wrath. An ex-gob, deep sea diver and lightweight boxer, his name was anathema to the UAW leaders. They pictured him as the overlord of a Ford Gestapo, with hidden nests of machine guns, subterranean tunnels, and a vast army of thugs. Every tenth man in the Ford employ was one of his spies, it was claimed.

"That would mean about 9,000 special policemen," he retorted. "Bunk!"

To James Kilgallen of the International News Service he revealed that the company carried about \$1,000,000 in cash on hand daily—"because every day is payday." The only armed men in the factory, he continued, were those who guarded the pay roll and the powerhouse.

He invited Kilgallen to meet some of the "thugs," introducing him to a group of men including Stan Fay, captain of a University of Michigan football eleven, "Pat" Smith, another Michigan football player who had been All-American, and captain "Normie" Smith, one of the greatest goalies in hockey, and others. "These fellows thugs!" Bennett concluded. "It is to laugh."

To the charge that there were ex-convicts on the pay roll, he replied: "Yes, we have them here, but they're all working in production, with one exception. The exception is Kid McCoy, the famous old prizefighter who was once tried for manslaughter. He's working in the gardens. Why, the ex-convicts would be in the way in the event of any real trouble around here."

A Ford sweeper was produced by union attorneys who identified Bennett as a man who had driven up to the scene of the riot at its conclusion and congratulated the men for their victory in ejecting the UAW organizers. To refute his testimony two Detroit newspapermen, one of them an Associated Press writer, declared they had been at lunch with Bennett at the time of the affair, and had heard him, when called to the telephone, give in-

structions: "If they want to peddle there, that's all right. Don't disturb them."

On their side of the case the Ford company declared that the union representatives had been the aggressors, and that the riot had taken place on private property. Further, nothing in the National Labor Relations Act prohibited freedom of speech, it asserted.

Part of the charges against Ford sounded to many like an attempted abridgement of that right. Said the *Detroit News* editorially:

The Ford Motor Company, under our Constitution, has as much right to discuss the UAW and its leaders as John L. Lewis has to discuss the Ford Motor Company. Its rights in that respect are as untrammled, subject only to the libel laws, as those of any citizen. That is flat and uncontrovertible. The Labor Board's attempted exercise of a power of censorship is something more than temerity; it is downright foolishness, raising serious question as to the Board's capacity.

The hearing lasted through most of the hot summer. One hundred and fifty witnesses gave testimony under the usual Labor Board procedure. The riot story was told by those who participated; others testified that they had been discharged from the plant for union activities. In time the Board announced its findings, pronouncing the company guilty and ordering it to "cease" and "desist" from its anti-union attitude and to reinstate certain discharged employees. Meanwhile distribution of UAW literature was resumed outside the plant, and the peddlers were not interfered with so long as they remained outside Ford property.

## CHAPTER TWENTY-TWO

### TWO ANNIVERSARIES

#### 1

THE decision of the National Labor Relations Board came soon after the first of the year and the company, its appeal having been denied, prepared to take the case into the Circuit Court.

Nineteen-thirty-eight was to be an eventful year in world history as well as in the history of Henry Ford. Anthony Eden was to leave the British cabinet because of his "no surrender" policy toward the dictators. Hitler was to achieve his *Anschluss* with Austria. An American gunboat was to be machine-gunned by Japanese airplanes on the Yangtze River.

Ahead for Henry Ford were two important milestones: Mrs. Ford and he would celebrate their golden wedding anniversary; he himself would round the three-quarters-of-a-century mark. Meanwhile he went ahead on a new idea for the development of young men.

The frost was hardly out of the ground before 65 unemployed boys pitched a row of tents on a 320-acre tract of land near Dearborn, provided by Henry Ford. Many of them were the sons of dead or disabled war veterans. Some had been homeless, and most of them were undernourished. On the vacant land set aside for their use, they were to raise vegetables and sell them at a drive-in stand on a near-by highway.

The boys were between the ages of 17 and 19 and had been selected from lists furnished by recognized social agencies. A few had been wards of the state. It was felt that they should be nearly the same age, in order to promote a better chance for cooperation and group spirit. More could have been included, but one of the important objectives in Mr. Ford's mind was to make

them feel that they were working partners in a legitimate enterprise from which each would derive a fair return, and the same results could be obtained as with a larger number.

The camp comprised eleven sleeping tents arranged along a company street, army style. Other tents included headquarters, the cook tent, a tent for supplies, another for washroom. In addition several permanent buildings were to be constructed—an army-type mess hall with kitchen, a simple but attractive chapel for worship, and a combination bath house and power plant.

The boys were to govern themselves under a camp foreman and field assistants chosen from among their number. They were to settle their own problems, maintain their own discipline, handle the division of labor themselves. A capable instructor was to teach them what to plant and how to take care of it. Mr. Ford agreed to supply tractors and other modern implements, along with plenty of hoes and a truck.

Most of the boys had had no experience in farming or gardening. They started by planting at least some of every kind of vegetable that could be grown in Michigan, in order to learn by the trial-and-error system which would find the heaviest demand at the wayside market.

From the money earned by the sale of the produce, each boy was to receive a daily wage of \$2.00, and the foreman \$2.50. At the end of the season, the money received from the sale of fresh produce at the market was to be distributed among all, after wages and operating expenses had been deducted.

From this idea of Mr. Ford's some interesting results were obtained. During their second year the boys had a nest-egg at the end of the summer of \$128 each, in addition to the daily wage earned. The average gain in weight was nearly 9 pounds per boy.

Best of all, those who had worked faithfully were promised permanent jobs with the company at the close of the season.

So successful did this experiment prove that Ford established a similar camp near the Willow Run district school in Washte-

naw County, close by the thousands of acres he had acquired for the growth of soybeans. It proved equally successful, but as the youths went about their daily gardening neither they nor their sponsor had the faintest idea that within a few years the great walls of the world's largest airplane plant would stand where neatly weeded rows of vegetables then grew.

Mr. Ford was a constant visitor at the camps. He helped the boys figure how to grow more vegetables with less effort, how to conserve their time and strength, how to turn every working hour into a profit. They heeded him, not because he was their benefactor, but because—even though he was nearing his seventy-fifth birthday—he could think faster than most of them and could swing a hoe with the best of them.

He expressed the purpose behind his idea when he said, "They are like most young Americans. Give them a chance, and they'll help themselves." His chief interest was less the efficient operation of the camp than the fact that the boys were helping to help themselves.

## 2

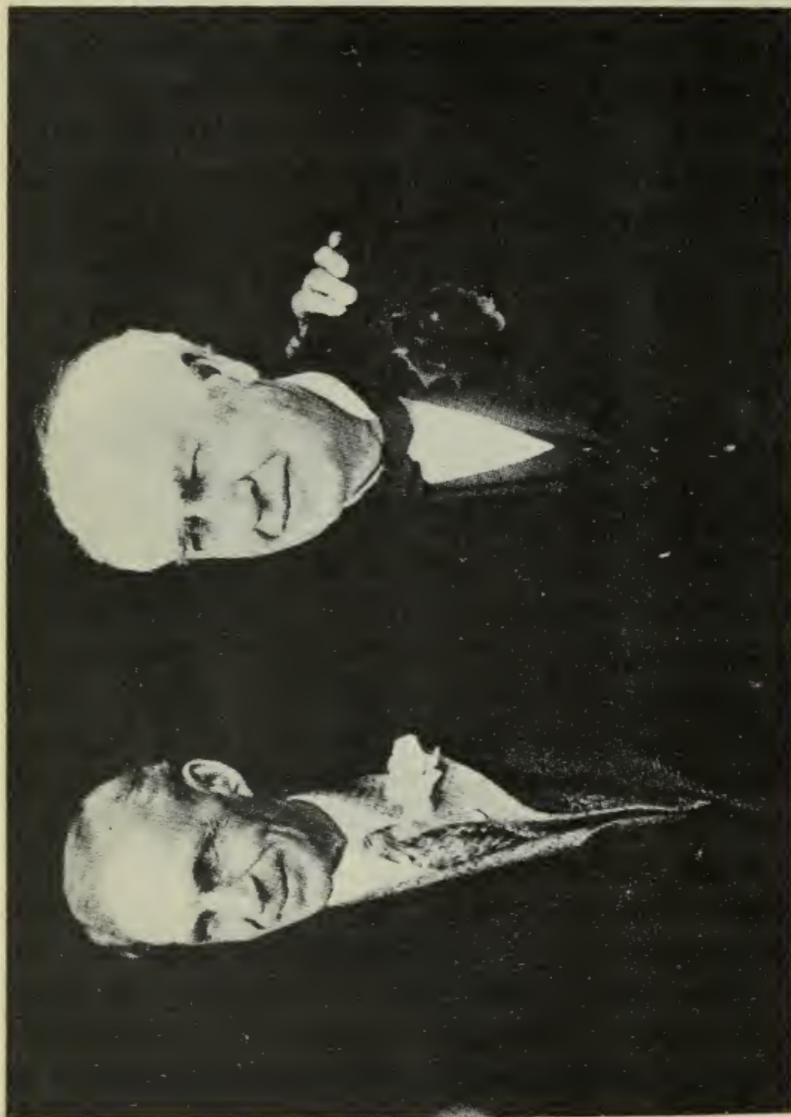
Fifty years had passed since the evening of April 11, 1888, when Clara Bryant and Henry Ford stood together in the Bryant parlor on Greenfield Road and pledged their marriage vows. As their golden anniversary approached, the countless demands of a world-wide business were less important than the happiness of a devoted couple, now climaxing five long decades of successful married life. Friends and admirers everywhere united in congratulating them and wishing them well. The general feeling throughout the nation was expressed by the editor of the New York *Herald-Tribune* in a tribute entitled "Clara and Henry." In part, he wrote:

Clara has seen Henry put his imprint upon his country and has heard him described, for better or worse, as the man most responsible for the growth of the new industrial age. It is prob-



MR. EDISON SIGNS HIS NAME IN CONCRETE.

The great inventor plants Luther Burbank's spade and leaves his own footprints in the wet concrete of the cornerstone of the Edison Institute Museum.



HENRY FORD AND THOMAS ALVA EDISON

"As to Henry Ford, words are inadequate to express my feelings. I can only say to you that in the fullest and richest meaning of the term—he is my friend."

able that the Fords are the richest couple on earth. Whether that fact is more astonishing than their record of having remained married fifty years is a matter for debate. And they remain essentially simple people. Clara never dyed her hair purple or had her face lifted or won the prize at the Beaux Arts Ball. Henry, for his part, although he has had his share of odd notions, never bet twenty grand on a dice game, never had to be psychoanalyzed to get the bats out of his conscience, and has never been reported by the gossip writers as carrying the torch for either a countess or a showgirl. More, they still dance with each other. It may be that, in more matters than one, they are the richest people in the world.

The good wishes of their friends were placed on a scroll of 700,000 names from cities and towns in all the forty-eight states. More than two miles long, the huge scroll was rolled on a giant spool for presentation, along with a book filled with thousands of messages.

It was characteristic of Mr. Ford that he rose on the morning of his golden-wedding anniversary at his usual hour, 6:30 A.M., and that he worked for a large part of the day on a new idea for a farm tractor.

During the day he met for an hour with visiting newspapermen and in response to their inquiries, gave his formula for a successful marriage. "Stick to one model," he advised, and added: "Of course you have to pick out a good mother-in-law. A father-in-law isn't so important."

Two celebrations marked the event, the first a reception at Edsel Ford's home where several hundred Detroit friends were invited to exchange greetings. White flowers filled the large drawing room, and tiny white geraniums banked the hall leading to the supper gallery. The latter was decorated in gold and white. At one end of the huge room were pictures of Clara and Henry Ford taken at the time of their marriage and framed in an old-fashioned white and gold locket. To the strains of the wedding march the couple walked between rows of guests to the far end of the gallery to cut the wedding cake.

Dearborn's celebration was strictly a neighborhood affair, marked by informality. There were no speeches. Edgar A. Guest had written a poem which was read. A huge floral piece of yellow roses was presented to Mrs. Ford, and her husband received the book of congratulatory messages. Present were many old-timers, who joined in singing the familiar tunes once sung and whistled by gay young blades in the days of Mr. Ford's courtship. Heading the group of old friends was 85-year-old Henry Haigh, who had gone from Dearborn to college when Henry was a lad of eight.

The county clerk presented the couple with a photostatic copy of their marriage license. "Let me see how I made the 'H' in my signature," Mr. Ford asked, with a chuckle.

He told the Dearborn mayor, John L. Carey: "Just as long as Mother is with me is celebration enough for me."

An invitation to visit the President at the White House came one week later. En route, he stopped at Wayside Inn and told newspapermen: "I am going down to let him have a look at someone who doesn't want anything, and who also doesn't want to give him any advice."

He said he wanted to shake hands with the President "as an old friend." The invitation was for an informal luncheon. He had known Mr. Roosevelt back in the First World War days, when the latter was Assistant Secretary of the Navy and the two held conferences on machinery and various other items under production.

Edsel Ford and W. J. Cameron accompanied Mr. Ford, and while they might not have been in agreement, the meeting between Mr. Roosevelt and Mr. Ford was cordial. Ford's first remark afterward was: "If finance would get out of Government, and Government would get out of business, everything would go again." He added: "The President is trying to do the best he can, like everybody else."

In New York he attended a banquet of 1,200 newspaper publishers. To them he made what was said to be his first speech

in public. "We are all on the spot. Stick to your guns and I'll help you all I can, with the assistance of my son."

## 3

A few months slipped away, and the end of July brought the seventy-fifth birthday. Mr. Ford's friends and neighbors proposed to make it an occasion long to be remembered. Committees were appointed in both Detroit and Dearborn to arrange programs; meanwhile Mr. Ford went about his work as usual.

Three-quarters of a century had not changed his way of life, or of thinking. Never a conformist, he set his own values. Out of the thousands of gifts of the day one that pleased him most was a new necktie, half of the material in which came from the soybean.

In order to permit both communities to participate, separate celebrations were arranged, commencing in Dearborn. There in Ford Field—an amphitheatre Henry Ford had presented to his home town—the citizenry turned out en masse to greet him on the eve of his anniversary.

The tiers of spectators crowding the banks gave Mr. and Mrs. Ford a tremendous ovation as they entered; and repeated it when they waved good-by at the close of a pageant depicting the early history of the village. The pageant began with the flow of traffic on the Sauk Indian Trail past the tavern of "Coon" Ten Eyck, and portrayed the building of the arsenal and the founding of Dearbornville. Events in Mr. Ford's boyhood and youth were depicted with Mrs. Ford's niece, Miss Betty Bryant (later Mrs. Harry Wismer), who was said to resemble her aunt, in the role of Clara Bryant. The transformation of country village into the city of Dearborn concluded the episodes.

Detroit's fete consisted of two parts—a morning with the children from the city's 121 playgrounds, and an evening banquet climaxing the celebration. Merchants were asked to display flags along the avenues where once Henry had piloted his chugging

horseless carriage. The speakers who were to greet "Detroit's greatest citizen," as the city government proclaimed him, were to be old friends and associates.

In many respects the children's party, held in the vast Coliseum hall, was most exciting. The mammoth stage at one end was painted in silver and hung with pale blue curtains, on which the midmorning sunshine sparkled as a brightly polished Model T with Jimmy Smith (who had piloted one of the cars across the United States in 1909), at the wheel, drove in. Seated in the tonneau, smiling gaily, were Mr. and Mrs. Ford, and when they alighted from the ancient vehicle there was an ovation that all but raised the roof.

Mr. Ford was in rare form. Evidently he had decided that since this was a children's party he could be as much of a kid as any of them. As the thousands of youngsters waved their flags and sang, he waved back. Then came the float bearing his birthday cake, with seventy-five little girls in white, each bearing a candle—one for each year. When the cake arrived in front of him, it came to life and a tiny pretty girl, bearing a bouquet of pink roses, sprang from its center and presented the flowers to the guests. The great chorus of children's voices lifted in the song "Happy Birthday to You"; and the song was carried through the air to cities and towns and farms far away, for the simple ceremonies were broadcast over two national networks.

Detroit's community dinner brought to the speakers' table Mr. Ford's former boss at the Edison company, Alex Dow; Bill Knudsen, former employee and later production head of Ford's outstanding competitor; Eddie Guest, lifelong friend; and others. The large fountain room at the Masonic temple was crowded with diners and brilliant with color as Mr. and Mrs. Ford came down the steps and walked to their places in the midst of the throng. Between them sat Mr. Dow, who acted as toastmaster.

To the majority of those who sat in the hall the scene was highly dramatic. Surrounded by old employees, old neighbors,

his largest business competitors and his strongest rivals, Mr. Ford accepted all the plaudits quietly.

There was a sentimental touch that neither song nor speech could put aside. The man whose early dreams had been dreamed in the quiet of an older day, and whose career had been decided in a brick shop not far distant from the lighted hall, seemed on that birthday evening as keen, vigorous and forward-looking as in his prime, except that his hair was more silvery.

One year older than the Republic was when he was born, his life had spanned half his country's history; he had seen wars and disorders, depressions and difficult times, notable advances in every line of man's activity. Through them all he had kept his faith in America. As one speaker expressed it: "He typified Americanism."

## 4

Predictions of John L. Lewis and his associates that "Ford" would soon be "in the bag" had failed to materialize. After more than twelve months, his workmen still continued to do their work under conditions of work set by the company, without sanction of the C.I.O. Mr. Ford himself became the target of a campaign of especially virulent abuse. Having blazed the trail to this rich field of industrial endeavor, the manufacturer once more found himself "an outsider." He was a "king," his workmen "slaves," his plants an "empire."

One reason the organizers met with small success at first was that among the thousands who walked into the Ford shops each morning, more than 19,000 had worked there from fifteen to thirty years. Of their number, fully one-fourth had worked for Mr. Ford more than twenty years, and many had a total of quarter of a century of employment on their record.

An unusual sidelight on the company's policy was that for every 6,000 employees Ford saw to it that at least one blind man was on the rolls. The average was actually larger, but the figure

was based on the fact that among each group of 6,000 employable men in the community, one is blind.

The same rule applied to other men who were physically handicapped. Tubercular persons were provided with open-air work; under medical supervision men were employed who were epileptic, blood-pressure or heart-disease cases, who had had infantile paralysis, sleeping sickness, or other handicapping illness.

A blind man was employed at putting washers on bolts. The man who led him daily to his work was a paralytic. Men born deaf or mute, men with a leg or arm or both legs gone—each performed a task according to his strength. More than 11,000 of the total were in various stages of disability, but all were earning full pay.

If specific tasks to which the men were assigned were found to be too strenuous, they were changed to something lighter—light bench work, light machine work, outside cleaning jobs, errands.

Their number included more than 50 deaf mutes, 1,200 with only one eye, and 300 whose vision was so impaired they could not obtain other employment, 42 who had suffered infantile paralysis. Eighty had no arms at all, or only one. Another 200 had crippled arms; and 21 had no hands. There were nearly 30 with only one leg and 12 who had none.

For example, there was Albert Lyons, who had lost both arms in a sawmill accident. He had been on relief, but was cut off after obtaining a pair of artificial arms. No one would hire him until he went to Ford's and was made a doorman, opening and closing a big door by pressing a button.

There was John Walsh, father of a son and twin twelve-year-old daughters, who had been out of work for six years after an accident in which a vertebra had become dislocated. He had learned to move around with the aid of a heavy cane, but had been unable to find a job.

Early one cold February morning Walsh heard a puppy whimpering outdoors, where it had been dropped by a passing

autoist. Although it was 3:30 A.M. he got up from bed and brought the half-frozen dog into his cottage. Someone informed the *Detroit News* of his kindly act, and next day he had a job—at Ford's.

There were many other cases. One man had been blinded as a youth when playing football. Another had lost the sight of one eye at school when a playmate jabbed him in the eye with a pin; and shortly after the sight of the other was also lost. Two had been blinded in explosions—one in Nashville and the other in Detroit.

The same policy applied to older men. One man who had been employed when he was 60 was still working at 84. Approximately 16 per cent of the total payroll were men of 50 years of age or older. They worked at light manufacturing jobs, as inspectors, or in some other phase of complicated and technical work. In a single group on the operation of assembling generator parts were men whose ages averaged 67 years. The oldest was 77, the youngest 56.

These were among the men the UAW was attempting to form into a union to demand fair treatment from Mr. Ford. They had received fair treatment so long they saw nothing to be gained by entering the organization.

During the time that the union was waging its campaign the floor space of the Rouge Plant was expanded by 25 per cent. A panorama of steel framework, uprooted earth and piles of building materials was transformed into an ordered scene of new buildings. A new Press Steel Shop, where body panels could be pressed from steel sheets 60 inches wide, added 1,500,000 square feet of floor space. Another new building housed all tool and die work, formerly distributed throughout the plant. Under its roof the company could make virtually any type of machine repair or tool and die work, regardless of size.

When engineers designed the new units, good working conditions were stressed equally with advanced manufacturing facilities. New to most heavy industry were the sanitary shower

baths and commodious washrooms provided for the workmen.

It was characteristic of Mr. Ford that during the period of strongest attacks he proceeded calmly on an entirely unorthodox program. During the years when business was struggling toward recovery he was doing the unprecedented thing. In seven years following the crash of 1929 he scrapped 46 per cent of the entire Rouge Plant and replaced it with new.

The actual value involved was \$175,000,000. Most of the discarded equipment was in excellent condition and could have been utilized productively for many more years. In the ordinary sense none of it was worn out, broken down or obsolete. But in the Ford sense, anything becomes obsolete, no matter how good it is, when something better appears.

The scrapped equipment was replaced with \$217,000,000 worth of new plant. While to many this expenditure might have seemed unnecessary at the time, to Mr. Ford it was economy, keeping abreast of improvements as rapidly as they were introduced and thus not only creating higher values for the customer but also more employment and higher wages for the worker.

Tire manufacture was undertaken, marking the first time an automobile company had entered that field. Production was arranged to move continuously on one level, from the hold of the freighter bearing raw material, through plant processes, to the shipping platform.

In the world's largest industrial power plant important expansion took place. A third turbo-generator and a second high-pressure boiler were added; and the capacity of the powerhouse was raised to the tremendous total of 345,000 kilowatts, or 462,000 horsepower.

At that date few expected that within a short time demands for defense production would necessitate a greatly increased power output; but the policy of continuous expansion made it possible for the Ford company to have the power available as it became necessary. At its peak the Rouge powerhouse was

equipped to supply enough current to serve whole cities like Boston or San Francisco.

When, as defense production got under way, the daily power production shot up to nearly 4 million kilowatt hours during a 24-hour period, even that mark represented only about 45 per cent of the total installed power capacity.

In the farm-machinery field Mr. Ford's experiments had culminated in the introduction of a light-weight tractor with implements, incorporating the Ferguson system of hydraulic controls. That unique system eliminated excess weight and tended toward economy of operation, with consequent increase in farming profits.

He placed in operation two more rural plants, the thirteenth and fourteenth village industries, continuing the program of industrial decentralization started more than seventeen years before. In an old grist mill, completely rebuilt, industry returned to Sharon Hollow, a quiet wooded glen seventy miles west of Dearborn. The plant employed men from neighboring towns and farms in making parts for instrument panels. At Brooklyn, a few miles away, another small plant occupied more than 150 workers in the assembly of automobile horns.

The twenty-seven-millionth Ford car was produced.

## 5

The encroaching years seemingly had brought little diminution in Mr. Ford's vigor and buoyancy.

One of the newspapermen who had covered the *Tribune* libel suit at Mt. Clemens twenty years previous came to renew the acquaintanceship shortly before Mr. Ford's seventy-sixth birthday. He was Douglas D. Martin, managing editor of the Detroit *Free Press*. Martin found him still possessing the agility and vigor of a man of middle age.

"So far as his appearance was concerned, the calendar might have been turned back to July, 1919," Martin said.

When he suggested as much to Mr. Ford the latter chuckled. "Do you think so? Well, I've learned a lot in twenty years, anyhow."

He continued to adhere to a modest diet and a form of daily exercise. Some mornings his breakfast consisted of nothing but a little fruit. Often when an important decision was ahead of him he ate nothing. He ate only when he was hungry; and it was his belief that by keeping his stomach free of food he was able to think more clearly, because the blood remained in his head.

Walking seemed to him the best form of exercise, both for old and young. Every day he went into the woods for a mile or so. On one favorite path were several low-hanging limbs on which he would chin himself four or five times. At the end of the stroll he proceeded more briskly, finishing with a vigorous trot.

Once a week he received an osteopathic treatment to keep up his good condition and circulation.

Another who observed him at seventy-six was the publisher Bernarr Macfadden. A student of physical culture himself, Mr. Macfadden was "astonished and pleased that the years had been so kind to him." Mr. Ford seemed to him to move on smooth-running wheels—his steps were so alert.

Visitors often remarked on the apparent peace in his soul, and his enthusiasm over America's future. Down the years he had learned "not to worry."

"I think I can harmonize myself with circumstances and environment better now than when I was younger," he told Macfadden. "I have learned to put myself in tune with life physically, mentally and spiritually. Now, that is a fruit of age, but it is really the attainment of youth."

## CHAPTER TWENTY-THREE

### THE GAME OF SMEAR

#### 1

MANY of Mr. Ford's views on economic problems or individual enterprise were not shared by economists and social students; and he was never popular with the politicians. He cared little what the economists thought, and made no effort to be popular with the politicians. From time to time articles severely criticizing some of his ideas or methods of operation appeared in the public prints. They ranged from the "confessions" of a Ford dealer in *Harper's*, to a work of fiction by Upton Sinclair, *The Flivver King*.

Apart from these was the institution of a series of articles in a weekly magazine (not one of the larger publications) which appeared to be planned to link Ford with Hitler and the Nazi Gestapo. Its line of approach was based on circumstantial evidence, plus the claim that he was still anti-Semitic. Another line argued that in his opposition to the unionization of his employees he was using un-American tactics.

Back in 1938 it had happened that, as a gift on his seventy-fifth birthday, Hitler had presented Mr. Ford with the highest decoration Germany could bestow on a foreigner, the Grand Cross of the German Eagle. The award was said to have been in recognition of Mr. Ford's pioneering efforts to make automobiles available to the masses. Mr. Ford had accepted it as he had accepted gifts on the same occasion from India, France, Poland, Rumania, and elsewhere. He had accepted it as he had the James Watt medal from Great Britain, a remarkable tribute because this recognition had never before been awarded to anyone except a British citizen.

Other decorations had come to him, such as the Franklin Institute medal, honorary doctorates from universities, and tokens and medals of many kinds, all of which he had accepted with his usual graciousness. At that time Hitler had not attacked Poland, nor had the American people come to look upon him and the other Axis powers as world aggressors.

On one of Mr. Ford's trips to England he chanced to be seated at a luncheon next to Winston Churchill. During their conversation Ford asked: "Why don't you English raise more food? Why do you depend on the stuff shipped in to you?"

Churchill replied: "Why, Mr. Ford, we can't do that. We can't raise any more food in England."

Mr. Ford believed there was a way by which it could be done. "I'll buy a farm and show you," he promised.

A few days later Mrs. Ford and he purchased a farm about thirty-five miles from London. It was not a small place—the price was around \$400,000. After he took possession he transformed the large house into a new kind of agricultural school for boys; meanwhile tractors and modern machinery went to work on the land. Through careful planning and intense cultivation his men were able to produce during the next year \$50,000 worth of Brussels sprouts alone, not to mention other crops.

Out of that venture came the Henry Ford Institute of Agricultural Engineering, inaugurated at Boreham House, center of the Ford project, in July 1937. It proved of definite value later when food production assumed grave importance in the defense of the island.

Another sign of his interest in England was his establishment at Dagenham, near London, of Europe's greatest automotive works, with blast furnaces, docks, and centralized system of supply for all parts of the Continent. These acts, however, meant little to those who saw nothing except desire to favor the Reich.

As his opponents dug further into past events they uncovered several items that seemed to substantiate their hypothesis. There was that advertisement that had been published by the Repub-

licans back in 1918 during the Newberry campaign: "Henry Ford and the Huns."

There was *Der Internationale Jude*, republished in Germany against his protest.

There was the fact that Prince Louis Ferdinand, grandson of the Kaiser, had worked in the Rouge Plant and in other Ford plants around the world. It was untrue, of course, that he had been paid \$300,000 while thus employed, but the very idea of his serving under the Ford banner seemed sinister.

Finally, a chemist named Fritz Kuhn had worked for a time in the Ford laboratories. Whatever he did was inconsequential, but when he moved from Detroit and enjoyed a brief notoriety as leader of the German Bund in this country, an important link between Mr. Ford and the *Reichsfuehrer* seemed forged.

Suddenly, after the tanks and armored cars had swarmed across the Polish border, the world became embroiled in what threatened to become another general conflagration. Shortly, Japan was to be added to the Axis, creating a distinct threat to the Western Hemisphere.

Here was a timely opportunity for those who sought to attack Mr. Ford to drag the anti-Semitic pro-German bugaboo into the limelight, and the charge was again made in *American Merchants of Hate*, a weekly magazine sold on book stands.

## 2

"The game of smear"—as one newspaper commentator labeled it—was aimed not only at Mr. Ford himself, but also at certain of his key men who were valuable aids against the opposition. These included William J. Cameron, whose reasoned logic as expressed over the radio on the Ford Sunday Evening Hour had won millions of listeners. Cameron had been editor of the Dearborn *Independent* before its suspension and had been identified for many years with an organization known as the Anglo-Saxon Federation, whose followers studied prophecies of the Old

Testament and traced the wanderings of the Ten Lost Tribes of Israel after they left the Babylonian captivity. His affiliation with the Federation supplied sufficient pretext to brand him as "anti-Semitic."

On the front cover of a New York weekly was published the photostatic copy of a letter purportedly written by Cameron to Fritz Kuhn. To many observers the letter appeared to be a forgery. The name across its top was "Anglo-Saxon Society of America," instead of the correct one, "Anglo-Saxon Federation." The address was given as "P. O. Box 12, Dearborn, Michigan," which, postal records showed, had never been used by Cameron, by the Federation, or by anyone else connected even remotely with it. At the post office where Mr. Cameron received his mail there was no Box No. 12.

The letter set forth that Cameron had talked with Bennett to prevent information "leaking out" to New York newspapermen that Kuhn had been employed by the Ford Company, and was addressed to "Dear Fritz."

"I never heard of Fritz Kuhn until I read in the newspapers of his notorious Bund in New York," said Mr. Cameron, "and even then my attention was attracted only because he was referred to as a 'Ford employee.' That seemed so impossible that I looked up his employment record and found that he had worked here in the metallurgical department but had left in 1936. I could only find two men who had known him, and they had no use for him. I never knew Fritz Kuhn, never saw him so far as I know, and never had any manner of communication with him. All newspapermen who inquired at this office concerning Kuhn's employment with us were given full information."

The last sentence of the letter read:

"H. is in Florida, but keeps his eyes and ears open."

Inferentially, the reference was to Mr. Ford. Aside from the fact that Cameron never referred to him in that manner, he would hardly have placed his chief in Florida when the entire organization knew that he was spending his winters in the sister

state of Georgia. But at the time the letter was dated, (May), Mr. Ford was many miles from both Florida and Georgia.

At the bottom of the letter was a signature that was not even a good imitation of Mr. Cameron's. It seemed to confirm the suspicion of forgery, and made the entire document look amateurish. Yet when Cameron disclaimed writing it, or any other letter to Kuhn, or ever knowing the Bund leader, the opposition refused to accept his denial and replied to his protest by republishing the letter.

Not long afterward an investigation of Mr. Cameron's personal history brought to light what the same paper believed to be an improper procedure when he became a citizen of the United States. Again his picture was portrayed on the front cover of the weekly, only this time across his face ran a smear with the indictment: HE FALSIFIED HIS OATH! On an inside page was the heading: *Cameron Swore Falsely, and this is how . . .*

Behind the new attack was a simple, matter-of-fact story. Brought to America from Canada by his parents when he was a lad of nine, Cameron grew up in Michigan and after he became of age exercised the rights of citizenship as did the other children in the family. Not until 1927, when he applied for passports to visit England, did he discover that his father's naturalization records could not be located, and that under the law he was an alien. When he applied for citizenship he learned that the government had provided for such cases as his, by permitting the candidates to be naturalized without undergoing the customary waiting period, owing to the length of time during which he had been serving as a citizen.

After the formalities had been completed and Mr. Cameron had taken his oath, he registered in Dearborn as a voter. On the file card containing his signature and oath was provided a space at the bottom for an answer to the question: "When did applicant last vote?" Without consulting him, a clerk in the municipal office typed in the space the word: "Never."

On that basis the weekly made its accusation that he had "fal-

sified his oath." Not content with the public revelation, it urged the government to take his citizenship away from him.

The matter came up before the Immigration and Naturalization Committee of the House of Representatives in Washington, D. C., when the publisher of the weekly was called to present his evidence, and the Attorney General's office was represented by Lemuel B. Scofield, special assistant.

Mr. Scofield said: "No fraud or illegality has been found and there is no evidence that there was anything improper in the court proceedings through which Cameron became an American citizen."

Cameron, it was shown, had voted in elections for twenty-seven years before learning that he could not establish his father's naturalization. The typed word "Never" had been placed on the card, he said, without his knowledge. "It is contrary to all the facts, has no bearing on any fact, and did not emanate from me."

The committee voted unanimously to drop the investigation, satisfied that Cameron's citizenship had been attained properly.

"The point in it all," said Mr. Cameron, "is to injure Mr. Ford's name, which I think will be rather difficult, for his Americanism, too, has been proof against the dictators. However, the drive seems to be on to smear Americans. And some Americans seem to be falling for it."

### 3

Another target was the man who had stood at the gates of the Rouge Plant and prevented the UAW from "sitting down," as it had done at General Motors and Chrysler. Because of his vigilance and the thoroughness of his organization, Bennett had shown himself a match for the shock troops and was chiefly responsible for the fact that four years after John L. Lewis had uttered his dictum at Pittsburgh, Ford was still not "in the bag."

Because of this, Bennett was described as a second Himmler,

his department was a Gestapo, and most union appeals to the National Labor Relations Board carried the proviso that it was to be abolished as one prerequisite to peace.

Bennett's story was much like that of other Ford executives. He had served with the company twenty years, starting at the bottom and working his way up. Before then he had been in the Navy and had done some work in the Navy Intelligence.

When he was placed in command of the Service Department he made it an efficient organization. In keeping with Mr. Ford's policy, occasionally he gave paroled convicts a "second chance." Among the 100,000 employees, 53 had served time in prison. Their employment was one of the charges voiced against him in the smear. One was working as a switchman, another as valve grinder, others as laborers, and their list was referred to in one publication as "one of the most astounding documents in this magazine's files."

Had the investigators dug farther, they would have discovered that one of the company's general sales managers, one of the great sales managers of all time, had himself served a prison sentence. When he had been given a "second chance," he had made good in tremendous fashion.

Bennett was also charged with hiring football players, wrestlers, boxers, hockey players, baseball players. Prowess on the athletic field had never been considered as disqualifying a man from employment, yet the fact that he had given jobs to men of that caliber was described as un-American.

Similarly with ex-service men. Ordinarily veterans receive a preference in employment, but in his case hiring them was pointed to as evidence of a dark, malignant purpose.

During the winter of 1938-39, the CIO had an opportunity to move into the Ford organization with little opposition. Troubles in outlying assembly plants had disturbed the Ford executives, and Bennett met with President Homer Martin in a series of conferences which led to an arrangement for organizing the employees. Such an easy solution did not seem logical; the leaders

smelled a rat; and charges of double dealing were advanced against Martin himself.

It was alleged that he had been bribed to sell the UAW down the river. The story was, as a writer in the *American Mercury* remarked, "typical of the canards that have sprung up about their meetings." Bennett may have given Martin permission to go ahead and sign up Ford workers; but that sort of victory did not satisfy the opposition. They read Martin out of the CIO, and matters went back to the point where they had been before the conferences began.

## 4

"Are you playing the new game?" asked one newspaper columnist. "It is called: Smear Henry Ford. It is quite popular among the warmongers. You see, Henry is that *rara avis* known as an American—an almost extinct genus."

The nature of the smear was indicated by the following excerpts from a magazine article current at that time:

Deep underground, hidden from the curious eyes of thousands of men who must toil in the vast, busy Ford plant at River Rouge, are secret tunnels, equipped with light and air, through which "shock troops" of strikebreakers can be rushed. Secretly cached in various parts of the plant are guns, ammunition, tear-gas bombs, an arsenal of terror. A deadly Siegfried line of ingenious weapons is being made ready. An army containing ex-convicts, thugs, murderers is being trained. The police, local politicians, the press—all are being prepared for the coming battle. . . .

Again, as was his custom, Mr. Ford let events themselves prove the truth or falsity of the charges. Such attacks did not reflect the general public attitude, he believed. In New York City he was presented with the Holland Society medal. The Masonic fraternity showed its esteem by elevating him to the

honorary thirty-third degree, and called an extraordinary session of the Supreme Council to Detroit to confer it upon him.

The Circuit Court of Appeals sustained him in his contention that he was entitled to express his views on unionism to his employees.

"Unless the right of free speech is enjoyed by employers as well as employees," the court declared in its opinion, "the guaranty of the First Amendment is futile, for it is fundamental that the basic right guaranteed by the Constitution belongs equally to every person."

This point was the most important issue involved in the controversy, he believed. Had the Labor Board's theory that employers had no right to state their views been upheld, said *Colliers*, "the next logical step would be a ruling that only a labor organization favored by the NRLB could speak its piece in any given plant. This NRLB effort to nullify the Bill of Rights, in part, is of a piece with Attorney General Jackson's recent odoriferous attempt to engraft on the Wagner Act a provision denying government contracts to firms said by the NRLB to have violated that Act. . . . We're glad to see Henry Ford stand up to the NRLB in a last-ditch fight that is a fight for freedom of speech for everybody."

The Labor Board attorneys did not appeal from this part of the Circuit Court's decision. Despite the "game of smear," public opinion throughout the country seemed generally to approve Mr. Ford in his stand. This was evidenced by a poll taken in the spring of 1940 by *Fortune* magazine of a cross-section of working people. It placed him above all other Americans as "helpful to labor." He topped Senator Wagner, John L. Lewis, and Madam Secretary of Labor Perkins by comfortable percentages, receiving 73.6 per cent of the votes cast.

four children—three sons, Henry Ford II, Benson and William, and one daughter, Josephine. During their childhood years they were brought up quietly at home. As the sons became older, Henry Ford II attended Yale University, where he served as crew manager. Benson was a student at Williams College. Both had grown into tall young men and by the summer of 1940 were ready to take an active part in the organization their grandfather had founded.

The summer before he became a freshman at Yale was spent by Henry Ford II in Europe. Returning home on the *Normandie*, he met an unusual family, seven brothers and sisters and their parents, Mr. and Mrs. James Francis McDonnell, who were also returning home. Among the daughters was a shy, blonde athletic girl named Anne. They swam in the ship's pool, played deck tennis, and danced together on the dance floor as the liner plowed her way toward the New York harbor.

The McDonnells formed the largest family in New York and Long Island society. It comprised fourteen children, all of whom were athletic, good riders and tennis players. They spent their summers in a large fifty-room house facing the ocean, East Wickapogue "Cottage," which the children called the "hotel." Next door were their cousins, children of the Thomas Murray Juniors—a family of 11. Four garages housed three sport coupés, five station wagons, three limousines, and so on.

Founder of the family had been Thomas E. Murray, inventor whose works had numbered only a few less than those of his friend Edison. Among the twenty-five young people in the two summer homes, Henry was soon made one of the club. He entered into the spirit of the lively band, enjoying their freedom, so much of which had been denied him because of early kidnap threats.

During the 1939 vacation he spent nearly every week end with the family, sharing their sport on the beach, the buffet lunches in the huge dining hall, the night songs around the beach fire after a barbecue or a late dive in the pool.

So it happened that in the early part of the summer of 1940, the eyes of the press were on Southampton, Long Island, where the Ford romance culminated in marriage. The wedding took place July 13 at the Church of the Sacred Hearts of Jesus and Mary, with Monsignor Fulton J. Sheen of Washington, D. C., officiating. Over the cable shortly before the ceremony, came the apostolic blessing of His Holiness Pope Pius XII.

The groom's brother Benson acted as best man, his sister Josephine was a bridesmaid, his brother Billy an usher. The bridesmaids included Kathleen Kennedy, daughter of Joseph P. Kennedy, then ambassador to Great Britain. Among the guests were former Governor Alfred E. Smith and Mrs. Smith, Mr. and Mrs. William S. Knudsen, and many other notables. The young couple went for their honeymoon to Honolulu and on their return settled at Grosse Pointe, while Henry, now a director in the company, prepared himself to take an active role in the business.

A few weeks after the wedding Henry Ford senior, who had danced gaily with his new granddaughter at the reception following the ceremony, rounded 77. "When you get to be 77 years old," he remarked, "you're more or less used to birthdays; the years themselves don't count anyway; it's what you've done with them that adds up to success or failure."

The various attacks of the past year had not disturbed his peace of mind nor his confidence in the America of the future. The second World War had long since emerged from its "phony" stage, but he saw no reason why America should be drawn into it.

"Our people know from experience that only a limited few with financial investments involved ever profit from war," he declared.

Already the two great political parties were looking forward to another presidential battle, the Democrats with their leader Franklin D. Roosevelt a candidate for a third term, while the Republicans had placed their faith in Wendell Willkie, of In-

diana. Both candidates, although far apart on domestic issues, were united on the determination that America was not to become engulfed in the conflict abroad.

As might have been expected, Mr. Ford gave his support to Willkie. After a hard-fought campaign, the President was re-elected in a precedent-shattering triumph; and America set aside its private quarrels to back Britain to the limit in the war against the Axis powers.

At the close of 1940 the affairs of the Ford company were set forth in a balance sheet filed with the Massachusetts commissioner of corporations and taxation, and revealed a surplus of \$607,628,389; and total assets of \$713,189,884. The company was in a stronger position than it had been for many years.

## CHAPTER TWENTY-FOUR

### MILLIONS FOR DEFENSE

#### 1

FOR the second time in the course of his adult life Mr. Ford saw the world upset by war; for the second time he adjusted his plants to the giant mechanisms of defense. Although he declined to put his American factories to producing munitions of war for other countries, his Canadian, Australian, South African, Indian, Malayan and British plants were united in a tremendous program of war defense work.

Throughout America the long, tedious task of re-arming against aggression had begun in dead earnest. Students of world affairs saw in the triumphant sweep of Hitler a definite threat to the democracies, while in the Far East Japan's affiliation with the Axis promised more trouble. Combined with hemisphere defense was the imperative demand of all-out aid for Great Britain, which like a lion at bay, opposed domination of Europe and the Mediterranean by the Nazis.

Across the Detroit River at Windsor, Ontario, Ford's was the largest automobile plant in the whole British Empire. It became the largest single source of mechanical transport vehicles for her fighting forces. The head of Ford of Canada, Wallace R. Campbell, was called to Ottawa to lead the Dominion's program of war production.

Among the products of the plant were more than 50,000 special vehicles—trucks, gun tractors and other types of mechanized equipment supplied to all the British armies. Thousands of them went to South Africa where the government had standardized on the Canadian-built Ford equipment; other thousands

went to the Mediterranean area and played a decisive role in the dash across Libya.

In addition to special army vehicles and regular trucks and cars for military purposes, the organization was called upon to manufacture a small, speedy tank-type fighting vehicle. As the manufacture of this unit was entirely new in the Dominion, it became necessary to expand the facilities of the Windsor plant. A \$700,000 addition to the machine shop was constructed at company expense. Ground for this new building was broken in July, 1940, and the extra space it provided was in use by the end of the year.

These unusual vehicles were armored against small firearms and equipped with caterpillar treads. Powered by standard Ford engines, they were capable of speeds up to forty miles an hour and possessed great maneuverability.

Many changes were made in the plant layout. Another complete assembly line was added, along which moved a steady flow of olive-green units and sand blue-gray trucks and station wagons for the air force; gun tractors; big six-wheeled, heavy-load army trucks, and powerful wrecking trucks capable of pulling heavy army equipment from ditches or shell holes.

## 2

Throughout his life Mr. Ford consistently opposed war as a means of settling differences, yet in the cause of defense he was among the first to offer the full capacity of his vast manufacturing resources to the government.

In that cause once again these were put to work. Ford was asked to prepare facilities and build 4,236 Pratt and Whitney eighteen-cylinder air-cooled radial airplane engines of the Wasp type. The order was described as the largest single airplane-engine contract let under the program up to that time.

Starting from scratch, the company began the construction of a new factory to cost a cool \$21,000,000—money for which was

advanced by the company itself. Ground was broken September 17; within two months more than 4,000 tons of steel piling had been driven down 100 feet to bedrock, along the Rouge River, to form the completed foundation.

Four days ahead of schedule the 9,000-ton steel framework was finished, and work on the superstructure begun under unusual conditions. The walls of the plant sprang up from the foundation through the use—probably for the first time in America—of new cold-weather construction methods. Inside an immense shelter box of 900,000 square feet heated by charcoal braziers, steelworkers, cement crews and bricklayers worked through the dead of winter unhampered by storm and cold. The first section was put up in 100 days and within six months the entire factory would have been completed—eight months earlier than would have been possible with orthodox construction methods—had not Uncle Sam asked the company to double the size of the plant.

When the order for the huge radial engines was increased to 9,043, the cost of the building advanced to \$37,000,000 and eleven months were needed to complete it. At the end of that time the plant girded itself to turn out one engine a day, with its ultimate target 300 a month. Through the use of specially designed walls and floors and the omission of windows, the plant's operation was made possible under black-out conditions. Air-conditioning provided employee comfort and also insured the precision machinery against deviations from temperature changes.

When the need of additional training facilities for Navy recruits arose, Rear Admiral John Downes, commandant of the Ninth Naval District, turned to industry. At the Rouge Plant he found school, curriculum and instructors "made to order."

The same methods of training that had been used for years in the Henry Ford Trade School and the Apprentice School, plus the facilities of the plant itself, offered tremendous advantages. With Rear Admiral Downes, and under the approval of Secre-

tary of Navy Knox, the company set about to develop a program.

It wasn't a question of building a new institution—it was simply one of making use of facilities already available. There was, of course, the matter of housing and otherwise providing for those who came to be trained. When asked what would be needed the naval authorities mentioned sleeping facilities for 1,200 students, a mess hall for 2,000 men, administration building, provisions storage, recreation room, and athletic field, in addition to accommodations for classrooms and the practical instruction of the men. These things were provided by the company without cost to the government.

As soon as Secretary Knox gave the Go-Ahead signal, the first shovel of earth was turned. That was on December 6. Forty days later, the first contingent of 150 young men moved in. On the day of their induction Mr. Ford told the Navy representatives over a nationwide broadcast: "During this crisis, our organization wants to do everything possible to help America and the President. The Navy being our first line of defense, I feel that the training of these young men will vitally benefit our nation. And when this crisis is over, we can then reclaim these mechanically trained young men in our industries."

Next day the training program began. The recruits received instructions in the making of aircraft and Diesel engines; they worked in the electrical departments, the machine shops, the press steel shop, the foundries and assembling plants. They learned toolmaking and diemaking. During their three months of schooling, they were, as Mr. Edsel Ford predicted when he welcomed them: "enabled to visualize and study the entire background of our industry."

Thus facilities for adding 4,500 trained mechanics annually to the Navy forces were established and set to work. Within three months the introductory class of 150 had grown to 900, all of whom were quartered in attractive barracks within the plant, and were receiving training from the Ford personnel.

## 3

One of aviation's bottlenecks in the expanding defense program was the shortage of facilities for producing magnesium alloy. Its lightness and strength—one-quarter the weight of cast iron but equally strong—made it vital in airplane manufacture. At a cost of \$800,000 (its own money) the company added a foundry to its Rouge Plant for production of the precious alloy—one of the few in the country and by far the largest. It supplied the engine requirements for the Pratt and Whitney Wasps built by Ford—110,000 pounds a month—and made the remainder of the output available for other vital defense industries.

Looking ahead, Mr. Ford foresaw the need of skilled workers for fabricating the engine parts, and while the construction work was in progress he established an aircraft Apprentice School where 3,000 students at one time could be trained. Temporary quarters were provided for them in the Trade School until they could move into the new factory building. This move brought the number of young men under instruction in the company's industrial schools during the Spring of 1941 to an amazing total in excess of 12,000. The volume of applicants was so great that only one in forty could be accepted.

At the very moment the government was awarding contracts to Ford it was having its difficulties with the CIO, who were insisting through Sidney Hillman, associate of Knudsen as head of the defense production program, that compliance with NRLB orders be required of Mr. Ford as a condition of contracts.

Ford was given a contract to build 1,200 quarter-ton bantam fighting trucks for the War Department; and this led to an open protest. This was despite the fact that there was no lag in the company's performance on its contracts for defense work, and Congress itself had not directed that compliance with the National Labor Relations Act be written into them. In fact, it had twice specifically refused to require such compliance as a contract condition.

Immediately after the contract for the midget scout cars was announced, the award was challenged. As one result of the outcry, a second order for half-ton Army trucks, on which the Ford bid was lowest by a quarter of a million dollars, was handed to another firm. It developed that a labor clause had been inserted in the ten-million-dollar contract at the specific request of Hillman and the labor group, without the consent of the other members of the defense commission.

In the midst of the furore over the award of a contract to other than the lowest bidder Mr. Ford came forward with an offer to do any work the government required on a non-profit basis, provided the competitive companies would do likewise.

"Bill" Knudsen, despite Hillman's success with the Army truck order, refused to ignore the vast Ford manufacturing resources. When a contract arose for construction of parts for heavy bombers, later to be assembled at the Douglas and Consolidated plants, no other qualified producer could be found, and Knudsen insisted that the job be given to Ford without the NRLB specification.

The new contract brought the Ford defense commitments to well over \$150,000,000. Complete airframe assemblies for four-engined bombers were to be built in a new factory which the company itself designed. By late spring the plans had been changed to authorize Ford to build the bombers complete, as well as the assemblies. In acquiring land for the plant the company had secured enough additional land to provide for the expansion which the new contract now entailed.

Mr. Ford's first move after the contract was awarded was to send seventy engineers and designers to the West Coast, to evolve a technique of assembly with Consolidated Aircraft.

When Mr. Ford was given a contract to build the complete airplane, it boosted his bomber contracts to about \$400,000,000. What was described as the largest factory of its kind in the world went up, with airport hangars, main assembly building, manufacturing wing, power plant, school, and offices. More production



MR. FORD'S SEVENTY-FIFTH ANNIVERSARY  
Mr. and Mrs. Ford arrive at a civic dinner in honor of his  
seventy-fifth birthday.



THE FORDS GO TO WAR

Ford-built "jeeps" or "blitz buggies" undergoing Army tests at the Rouge Plant.

men and engineers were sent to the West Coast for schooling.

Meanwhile the first of the "blitz buggies," as the midget combat cars were nicknamed, began to roll off the Rouge assembly line. With a wheelbase of less than 7 feet, the car was light in weight and small enough to find easy concealment in a field. At its cowl it was but 38 inches high. Able to carry three men and a machine gun, it could climb precipitous inclines, rumble through sand or mud, and scout across open terrain at a speed of a mile a minute. So successful was it that the original order was doubled by the Army.

## 4

In the opinion of Mr. Ford wars are caused by ignorance. Victory by force of arms has never been a true victory. His dream for America was that she could be a friendly neighbor to smaller nations, setting an example of peaceful development through which all mankind might benefit. Not just the Anglo-Saxons, or the Aryans, but all peoples.

"I hope neither side wins the war," he remarked to James Kilgallen of the International News Service. Of course, that was before the Japanese had attacked at Pearl Harbor, when the United States was not yet a belligerent. He added: "I don't think either side will. I think this is going to be the last war. Whoever wins will lose, paradoxical as that may sound."

The cure for strife between peoples, he believed, was greater use of the land. "There's not a country in the world," he told A. M. Smith of the *Detroit News*, "that might not easily support itself if it knew how to use the soil. Our nation should be strong enough and wise enough to show to the rest of the world how they can keep out of war, and why they must."

He explained his thought by asserting that until people knew how to use the land they possessed, they would set out to grab what other people were already getting. Both England and Germany were, in his opinion, productive countries. By proper

use of their own soil productivity, they would lose all incentive to expand their holdings.

During the progress of defense work Mr. Ford was also carrying on his agricultural and chemical research. In his soybean laboratory under the leadership of Robert Boyer nearly thirty young men continued their experiments. "I wouldn't be surprised," said Mr. Ford, "if this laboratory comes to be the most important building in our plant."

Restriction in the use of metals speeded the development of plastics. One of Mr. Ford's objectives was the production of the entire car body, except the frame, from fiber plastic. Another was the use of plastic in airplane assemblies. A third was the development of a plant "wool" for upholstery and even for cloth. The very suit that he wore was 25 per cent soybean protein fiber.

Research disclosed that the tensile strength of the soybean plastic was about one half that of steel. Not willing to concentrate exclusively on the legume, he directed his chemists to experiment with various weeds. Every plant in Nature's garden had something, he believed, that could be utilized under the proper laboratory analysis and processing.

In recognition of the work done by Boyer under his direction, the Junior Chamber of Commerce selected the former as the outstanding young man of the country for the year 1940. This high honor for the former Trade School student came at the same time that Mr. Ford authorized him to order a complete set of dies for the first road model of the future plastic automobile.

That car, with its plastic body, was built during the following summer, and was first displayed to Ford's fellow townspeople at Dearborn Day, a local celebration.

To demonstrate the strength of the sheet plastic Mr. Ford swung an ax with all his might against the plastic rear panel in a special experimental body. Because of the improvements made through research, the sheet material had been proved to be 50 per cent lighter, 50 per cent cheaper and ten times stronger than

steel. The panels could be bent like a jack knife, only to snap back into shape after the pressure was released. Fenders would be able to withdraw from minor collisions like rubber balls.

As *Time* magazine expressed it: "If the dream is true, the technological novelty known as plastics has graduated from its celluloid-and-beetleware phase into an instrument of industrial revolution."

The dream of a plant wool also was fulfilled when a textile mill to spin the yarn and weave it into cloth was erected by Mr. Ford at Dearborn opposite the old Ford Airport.

A different kind of experimentation was undertaken by engineers under his direction with an entirely new type of airplane engine especially designed for mass production. Its parts were so planned that the weight would be less than 1,400 pounds, although it would develop 1,800 horsepower at the take-off and deliver 1,500 at 33,000 feet. Liquid cooled, it was intended for high-altitude, long-range bombers.

One innovation was the building of the turbo-supercharger integrally with the engine. Another was the direct injection of "solid" fuel, doing away with the conventional carburetor. A saving was planned in production time as well as in scrap by using a cast crankshaft rather than a forging; another idea was to cast the block in a single piece of light alloy, and use steel cylinder barrels as inserts without any intermediate cooling jacket.

## 5

After weeks of intensive study Ford engineers evolved a method of conserving "critical" or "strategic" materials. By its use a saving could be accomplished, it was believed, of 80 per cent in nickel, 50 per cent in aluminum, and 50 per cent in the amount of zinc used in the manufacture of automobile parts.

Development of a new technique in machine tools was also set in motion. Tests with lighter, more flexible presses, lathes,

and other machine tools were begun, in the bright hope of once again revolutionizing the entire industry.

Ford's defense activities included the building of chasses for mobile field kitchens for the British War Relief, designed to feed 200 at one time. Built-in equipment for cooking hot foods right on the field of emergency, and insulated compartments to keep stew, soup, and tea hot for hours, were included.

Staff cars in olive-green drab rolled from the Rouge assembly line. Another type of vehicle built for the Army was equipped with a crane for hoisting bombs into place under the wings of airplanes.

In Ford's case there was no marking time, waiting for orders or contracts. Anticipating the need, the company prepared for it in advance, saving months of time by its forehandedness.

Both of the grandsons, Henry Ford II and Benson, had taken an active part in working out the defense production problems, yet neither asked for deferment when their numbers came up before their local draft boards. Benson failed to qualify because of eyesight and was placed in a lower classification. After trying to enlist in the Navy and Coast Guard, he succeeded in joining the Army through special permission of the War Department. Henry was commissioned as an ensign in the Naval Reserve, and soon was in uniform at the Great Lakes Training Station near Chicago.

Shortly before he was appointed he became the father of a daughter, first great-grandchild to enter the family. She was named "Charlotte" after Mrs. Ford II's favorite sister.

In the midst of the happiness occasioned by the advent of the baby girl, the great Ford industry was suddenly paralyzed. For the first time in its thirty-eight years the company's gates were picketed at Dearborn. It was the first major labor trouble ever to beset its founder.

## CHAPTER TWENTY-FIVE

### PEACE WITH LABOR

#### 1

THE events that culminated in a labor contract between the company and the CIO caught both of them unaware, although the 30-day "cooling-off" period after a notice of strike had been filed with the state board had already elapsed. Weeks of rumbling, back as far as the CIO convention, had presaged the coming storm.

After Murray had replaced John L. Lewis as CIO head, the convention announced that its paramount objective in the succeeding months would be the organization of Ford employees into the UAW. The former campaign was to be revived, but this time there would be no let-up.

The director of the drive, Michael F. Widman, Jr., announced the employment of 40 organizers, with 20 organizing offices in Detroit. Daily radio programs and special editions of a newspaper helped to spread the propaganda.

When the Supreme Court refused the company's plea to review the NLRB order against it, the company proceeded forthwith to comply with the provisions. Throughout the plants signs were posted pledging that it would "cease and desist" from discouraging union membership, interfering with the exercise of the rights of self-organization and collective bargaining, or the distribution of union literature in the vicinity of the plant. Reinstatement and payment of back wages of 22 discharged men was also required, although most if not all of the men had been re-employed before the Court's action.

As the posting of notices began, CIO buttons appeared on the

caps of some of the workers. Sporadic outbursts of temper between the wearers and others who objected to their presence led to tiffs in which operations were interrupted and feelings rose to a high pitch.

These finally resulted in the discharge of eight members who had been acting in the union's behalf inside the plant, and the union retaliated by issuing an order calling out the workers and closing down the shops. Thus the giant enterprise which had become a synonym for mass production throughout the world was brought to a complete standstill.

## 2

The world's largest industrial plant was barricaded with all approaches cut off, even railroad tracks and waterways. First announcement of the strike was shouted at the main gate by one of the campaign leaders shortly after midnight April 1. "All UAW-CIO members come out of the plant—the strike is on!" Inside were waiting union committeemen, who at the signal sped to the various departments. As the message went from building to building, the late shift workers poured out into the dark streets. A small army marched to the main gate singing "Solidarity." Others roamed from department to department, armed with files and heavy tools, urging the remainder to join the walk-out.

By early morning picket lines had been established and barricades erected to prevent the day workers from entering. About the only way one could get into the plant was by parachute from an overhead plane. Trucks and cars guarded the bridge over the Rouge River, so that Ford boats could not come up it to the great docks.

Streetcar lines and arterial highways were blockaded by automobiles packed solidly from curb to curb, with fender locked to fender. At a distance of several blocks from its gates, gangs of men armed with clubs and iron pipes met the incoming workers on the early morning shift.

"Where d' yuh think yuh're goin', buddy?"

"To work."

"Naw. Yuh ain't goin' t' work. Henry Ford don't run this plant any more."

Those who persisted were jerked from their cars, and the cars were turned over. Some heads were clubbed; but no great strike in industrial history was characterized by less bloodshed. Against the mobs of men and jams of cars, the small force of 140 local police was powerless, but when state troopers came in, orderly picketing became the only evidence that a strike was in progress.

All through Wednesday, April 2, the huge sprawling plant remained paralyzed while Michigan's Governor and Federal and state mediators strove to bring about a conference between company and union officials. An agreement was reached with the former not to reopen the plant, and with the latter not to interfere with maintenance operations.

Inside the gates remained several thousand loyal workers who had refused to leave their jobs when the strike was ordered, defiant alike to threats and cajoling. Most of them were foundry employees, and many were colored.

Whatever else it proved, the strike demonstrated that Ford had no "Siegfried line," "subterranean tunnels," or "arsenal of terror," as had been charged. No nest of machine guns was uncovered; no army of thugs and ex-convicts mowed down the unionists.

3

Viewed from the labor angle the most serious charges against the company, perhaps, were not the outgrowth of Labor Board hearings at Detroit but rather at some of the outlying branches. Of these, that which aroused the most comment occurred at Dallas, Texas, where a million words of testimony were accumulated by a trial examiner named Denham, dealing with methods used to circumvent the attempt of the UAW to organize that plant.

However sympathetic the public might have felt toward the company's policies in general, the fact remained that its cause was not aided nor its standing improved by the reports of tactics used by some of its representatives in preventing the spread of "unionism."

In order to present its side, the company published an advertisement entitled: "The Ford Way of Doing Business." It declared that the workers' daily wage ranged between \$6.00 minimum and \$10.80, and averaged \$7.25 among all who were not salaried employees.

Company policies over a period of years, it was stated, had resulted in a 300 per cent increase in built-in values of the car, as well as a 75 per cent reduction in price. The public, it was indicated, had an interest in the business, as well as management and workers. During conferences among the executives, Mr. Ford often withdrew to one side and remarked: "Go ahead. I'll sit here and represent the public."

Colonel Frank Knox, who was later to serve his country as Secretary of the Navy in World War II, was among those who analyzed the Ford advertisement and hailed it as an important contribution. In a signed editorial in the *Chicago Daily News*, he emphasized five points:

- 1—The Ford business was founded by a workingman.
- 2—It was among the first to recognize that the workers had a right to share in its prosperity.
- 3—It relied wholly on its own actual earnings for both profits and expansion.
- 4—The management believed in the competitive system, and practiced it.
- 5—It relied, not upon price, but upon volume for its success.

Colonel Knox held the company up as an illustration of the free enterprise system, and how that system worked for both owners and employees when given a chance.

The CIO, however, challenged its import. They contrasted the average wage of \$7.25 or \$.90 an hour, with pay received by General Motors and Chrysler workers under UAW contracts, said to range from \$1.10 to \$1.38 an hour. Parenthetically, it should be added that the Ford figure included the pay of janitors, sweep-up men and window washers, and was not confined to machine operators or tool and die makers, aristocrats of the mass-production industries.

At that time the Ford pay roll throughout the United States aggregated 112,628 wage earners, exclusive of office help, students and executives. Their income for the year amounted to \$185,105,639.12, an average of \$1,629.05.

This was almost twice as high as the national average of all workers who were covered by old-age-insurance laws, the figure for which was \$841.

The company believed—and stated—that its minimum wage scale for unskilled labor, \$6.00 a day, was the highest in the industry; and that its top wages for skilled labor compared favorably with, or were higher than, the top paid by other automobile companies.

In addition to this the company had paid to its workers over a period of twenty-one years an interest fund of \$20,000,000 on individual savings deposited with it. The plan of investment for employees was announced January 1, 1920, since which time the company had paid twice yearly a guaranteed rate of interest on savings by its workers, never less than 4½ per cent annually.

More than 17 per cent of the hourly-rate employees were taking advantage of this plan at the time of the strike, with total savings of more than \$8,000,000. This money was guarded by the company but was not used as a source of financing.

In paying an interest rate in excess of that which might be earned on virtually any other form of safe investment, the company hoped its employees would assure themselves of a substantial added income each year regardless of business conditions.

Ford executives believed that the strike had been Communist-inspired, part of a carefully planned nation-wide campaign in which one huge industry after another, essential to defense work, would be agitated and wherever possible interfered with. The simultaneous outbreak of strikes or threats of strikes in soft coal, steel, aluminum, Allis-Chalmers, North American Aircraft, and other companies at a time of critical national emergency hardly seemed due to love of country.

The Ford appeal for aid, dispatched by Bennett, went to President Roosevelt himself. It set forth the charges of communistic direction:

Unlawful sit-down strikes followed by seizure of highway approaches and entrances to the plant in a Communistic demonstration of violence and terrorism have prevented the vast majority of our 85,000 employees from going to work at the Rouge Plant at Dearborn, Michigan, today. Communist leaders are actively directing this lawlessness. Agitators schooled in the Communist tactics of mass action have been imported from neighboring states of Ohio and Indiana, and from other automobile plants in this locality.

After he had failed to obtain help from the President, Mr. Ford turned to the courts and obtained a temporary injunction from Judge Arthur J. Tuttle in Detroit, prohibiting the use of barricades against the plant. Testimony began on union activities and the presence of Reds in the leadership, and was still being presented when a truce was effected to end the strike.

Later, after the UAW-CIO leaders joined with the government in ending the strike at the great airplane works in Southern California, and adopted a firm attitude against the presence of Leftists, this element in the union lost its importance. Thomas, Reuther, Frankenstein and others demonstrated in no uncertain fashion their patriotism as the nation neared the brink of war.

Sabotage of defense tools and materials resulting in damage of

more than \$100,000 and several weeks' delay was also charged by the company against the strikers. Holes had been burned in two furnaces in the open-hearth steel plant, requiring a month's delay to effect repairs. Nine hundred tons of molten steel had been poured onto the floor of the foundry when the strike began, and wasted. Dies had been broken which would need months to replace.

In the midst of the strike the NLRB at Washington granted the request of the UAW for an election in the Ford plants. Attorney Capizzi was refused permission by the Board to discuss the charges of Red instigation and domination.

After one week of the strike had elapsed and the pinch of idleness had affected supply firms as well as the company's outlying plants and branches, a telephone call from Michigan's Governor to the White House gained permission for Philip Murray to break an appointment with the President in order to come to Detroit.

The CIO chief was taken to Dearborn for a conference with Bennett, as a result of which prospects of a settlement immediately brightened. Negotiations between union leaders and company spokesmen were brought to a successful conclusion by the mutual adoption of a formula worked out by Governor Van Wagoner. The original one, which the company agreed to accept with certain modifications, provided for three main points:

- 1—All employees to be returned to their jobs without discrimination, except in the cases of three men who had been among the eight whose discharge brought on the strike. Their cases were to be mediated by the Federal conciliator, Dewey.
- 2—Establishment of grievance procedure to be in effect until after an NLRB election, which would be held as soon as possible and in any event within six weeks. The grievance board included the Governor and Dewey.
- 3—Agreement of both parties to help to speed the NLRB election.

As the picket lines withdrew, the company began preparations to resume production. Maintenance crews removed the debris and cleared the plants, and one by one the various departments reported for work. Long before the date set for the election, May 21, the factory was operating on a 6-day basis to make up for lost time, and the twenty-nine-millionth Ford car rolled off the assembly line, a gift to the Red Cross.

Largest ever held for one factory, the election embraced more than 80,000 men in the Rouge Plant alone. More than sixty curtained booths were built by the company and scattered through its various departments, so that about 1,400 could vote at each.

In small groups the workmen filed to the polls from their respective departments, and were checked from master lists before receiving ballots. Observers representing the company, AF of L, CIO, and Board were stationed at each voting place.

When the results had been tabulated it was found that nearly 70 per cent had been cast for the CIO, which thus became exclusive bargaining agency for the plant.

## 5

It was characteristic of Mr. Ford throughout his life to recognize the inevitable and adjust himself to changing situations. Once the CIO had qualified under the law to bargain for his workmen, he did not wait for the Labor Board to certify the election. An invitation was extended to R. J. Thomas, CIO president, to open negotiations, without waiting for formalities.

The conferences were speedy and harmonious. By mid-June a contract had been drawn up which was hailed by both sides as setting a new high mark in industrial relations. The bitterness of the previous months vanished in an agreement of mutual understanding; hearings on charges of intimidation and coercion were dropped, while both parties made concessions in the effort to establish peace.

By its provisions the union was granted its first closed shop

and check-off of dues. Every hourly-rated employee on the Ford payroll was required to belong to the UAW-CIO, and to keep in good standing. New employees were required to sign up within thirty days after hiring. The company agreed to deduct the dues, as well as initiation fees and assessments, from pay envelopes. It also agreed to identify members of the plant protection police by uniform, badge or cap. Wages were to equal or surpass those paid elsewhere for similar work.

Permission was given the company to place on its products a union label, the first time this had been granted in the industry.

Arrangements were made to settle all complaints and hearings pending before the National Labor Relations Board, as well as civil suits entered in the courts, and to pay off wage claims of employees discharged for union activity.

Thus company and union wiped the slate of all differences and began a fresh start in the hope that peaceful negotiation and arbitration would put an end to the internal strife of the preceding months.

Decision by Mr. Ford to enter into the contract with the CIO was based on his faith in the men working for him. Once the election had been held, he accepted the results. "It's the law," he said, "and we're living up to it. If it's wrong, we'll find out. If it's right, we haven't anything to lose."

Ford officials agreed that the vote had been an honest one, although they believed the majority of those who had cast their ballots for the union had been signed up after the strike had been called, rather than before. Nevertheless, a clear majority favored the CIO and Mr. Ford was ready to go along with the majority.

Institution of the "check-off," collection of dues by the company for the union, was declared by Bennett to be based on the belief that the union should have proper finances if it was to function. While the agreement made the company a sort of banker for the union, in another sense the two became partners in maintaining production and quality of output.

Much that the union had asked for in the line of working conditions, pay and seniority of service had been part of Mr.

Ford's industrial philosophy during the company's history. His plants had been regarded as models; jobs on his pay roll offered security when employees performed their work; his treatment of men had been founded on justice and consideration. In many instances, the employment of fathers had been followed by that of sons who had grown to manhood and who had in turn established families whose support came from Ford pay envelopes.

In explaining the reasons for the decision to sign the contract Edsel Ford said:

"The company has always considered every problem from the viewpoint of its workingmen. Through the years it has voluntarily instituted changes that were not only of immediate benefit to Ford workmen, but by example had a far reaching effect in improving labor conditions elsewhere."

After the overwhelming vote of the employees to designate the UAW-CIO as their bargaining agent, the company decided that "no half measures would be effective. We cannot work out one scheme of things for some of our workmen and another scheme for the remainder. So we decided to go the whole way."

Meanwhile the position of the country as an innocent bystander in the war between Hitler and the British Empire was becoming daily more precarious. More and more productive capacity was demanded of the automobile industry; finally came the proposal that one half its usual output be curtailed in order to release materials and men for defense work. Students of affairs sensed the drift toward final cessation of automobile production; new models were canceled; and once more Mr. Ford saw his industrial enterprise geared to serve as a major factor in providing sinews of war to sustain the ideal of American democracy.

It was America versus Hitler; and behind America, among others, stood Mr. Ford. Thanks to him and the mass production methods he had pioneered, America was able to match machine for machine against the most formidable threat that had yet appeared to darken the pages of history.

## CHAPTER TWENTY-SIX

### ALL-OUT FOR VICTORY

#### 1

LOOKING back at those anxious months that preceded Pearl Harbor, one recognizes frequent signs of what appears to have been the hand of Providence guiding the destinies of the American people. Led by the President, an all-out program was instituted to save the nation from the state of unpreparedness such as had existed in 1917. Something of this could be glimpsed in the steps that marked the transition of the Ford organization from peace to a wartime basis.

When Mr. Ford gave the signal that set a crew of men clearing ground on his soybean acres near Camp Willow Run for a giant bomber factory, no contract to build those formidable weapons of offense had as yet been given him. Nevertheless, he was told to "Go ahead," and he needed no formal signature to bind the order.

No more difficult task had been undertaken by him in a long list of many difficult ones. The big bomber which he was to furnish was the product of the finest skill in the aviation industry; it was being produced for both the British and United States Air Corps; the technique of its manufacture had already been mastered. The problem given him was to produce this complex mechanism in quantities, applying to it the mass-production methods which had been originated by him in the days of the Model T. Instead of one or two a week, he was to send it from the assembly line into the open air—ready to fly—faster than man had ever done before.

For that, he was to design and erect the largest plant of its

kind; he was to train an organization from scratch and have it building the bombers within twelve months, preferably before; he was to gear his men to the tremendous task of locating the stock, evolve a new technique, plan new tools and fixtures, build, install and finally operate them. Fortunately he had at his elbow men who could take his ideas and translate them into successful accomplishment.

Edsel as head of the company had been foremost in placing its facilities at the disposal of the government, following the collapse of France. He had also led the way in arranging the bomber sub-contract, and had laid the foundation for the Willow Run enterprise during early 1941, when he and the production chief, Charles E. Sorensen, met at San Diego. The latter had been made a vice-president after the retirement of P. E. Martin. Recognized generally as a genius in the planning and execution of great industrial undertakings, he reflected credit on the mentor with whom he had been associated since 1904.

The post of vice-president had also been assigned to the head of purchasing, A. M. Wibel, a veteran who had entered the Ford employ in 1912 and six years later had become head of its engineering department. In that capacity his name appeared on the 1919 organization chart. The arrival of 1942 marked the completion of thirty years' service by him with the company.

Under these three were able key men trained along the various specialties of mass production. The development of the Willow Run Plant, for example, fell to the lot of one who had made a highly successful record as the head of the small village industries located over the Michigan countryside. Roscoe Smith had joined the organization as machine-shop electrician at Highland Park back in 1916, and when the starter and generator were added to the Model T, he became foreman of the winding division and later of the entire department. Since then his advancement has been steady, extending to the Rouge Plant itself and then to the country plants.

Production of the bomber was entrusted to the hands of

Logan Miller, one of Sorensen's top production lieutenants who had joined the organization at Highland Park and had gone to the Rouge Plant as superintendent of the press steel building. His name appeared on the 1924 organization chart as shift superintendent at Highland Park. Since then he had passed through most of the production divisions and had headed such important units as the B Building with its final assembly line.

Smith and Miller were among the delegation sent to the West Coast early in 1941 to learn about the heavy bomber and how it was made. Others accompanying them included E. D. Scott, later head of the Willow Run engineering staff; H. B. Hanson, power and construction chief, under whose supervision the huge factory was to be built; and W. F. Pioch, in charge of tool and die design.

While the Willow Run nucleus was forming, other types of war work were entered into or carried on by other Ford men. Building of the aircraft engines was under M. L. Bricker, another Highland Park veteran who later was given general charge of war work; Larry Sheldrick, chief engineer, acted as consultant on tanks, jeeps and mobile military equipment; Hudson McCarroll, chief chemist, directed the work in research and metallurgy; Ray Rausch superintended the operation of the vast Rouge Plant; L. S. Treese took charge of Highland Park.

The task of placing the organization on a wartime basis moved rapidly under Mr. Ford's personal direction. Sales branches were closed or turned over to the government. Assembly plants made war products or served as warehouses. The Sunday Evening Hour was taken off the air. Greenfield Village was closed to the public. Executives of sales and other departments were transferred to war work or released.

Meanwhile the bomber program made rapid progress. It was four-fold in scope: training of personnel, designing and construction of tools, purchase of machines and materials, and planning and erection of the plant. Wherever "bottlenecks" were found to exist in the sequence of either manufacture or assembly, they

were approached without regard for traditional methods or cost of solution. Ingenious and unheard-of fixtures new even to the automotive world went from drafting board to tool room. By separating some operations and combining others a speedier flow of parts was outlined, paving the way for production in greater quantities.

An enormous plant rose like magic beside the tents of Camp Willow Run. Its airport extended across the fields almost to the very doors of the Willow Run district school that Mr. Ford had restored some years earlier. Through midsummer heat crews of men rushed the digging and leveling, smoothing the way for the concrete mixers. In the airfield alone a total of 153 acres of cement were laid, the equivalent of a 20-foot highway more than 60 miles long.

## 2

During the usual birthday interviews Mr. Ford on his 1941 anniversary expressed the same hatred of war that he had always felt, adding that it was bringing the people of the world together as never before. "They're beginning to see that you can't build anything permanent on hate," he added. "The world is learning tolerance as never before. There'll be more tolerance in the world because there'll be more understanding."

Someone asked him whether he believed there would be tolerance in the world, after the war, for the Jew.

"There's a need for the Jew in the world," he replied, "and it's bound to be recognized. Among the Jews are some of our ablest financiers and greatest merchants. They understand trade. They know that all prosperity is based on the ability of the farmer to buy. And they know the value and function of competition. They recognize it as the one thing that will keep business from getting slovenly."

The world after the war, he predicted, would be filled with opportunity for everybody who could stop looking backward, face about and go forward.

"It seems that wars are necessary to teach us lessons we seem unable to learn any other way," he declared. "With so much of our metals being wasted in war, industry everywhere is forced to seek other metals for production of non-war commodities.

"One of the greatest changes in the new world will be the turning of industry, in its search for materials, from the forest and the mine to the farm. Literally tens of thousands of articles and manufacturing parts now made from metals will be made plastically from materials grown on the farm. This new plastics industry will, literally, give employment to millions of people on farms and in factories."

He also foresaw a great future for aviation. "All we see today is but a beginning. The airplane factories of the future will alone give employment to millions. The airports and accessory industries will employ millions more."

No depression would follow the close of the war in America, he was confident, if competition could remain active. "There are a lot of people in the United States who are trying to throttle competition," he asserted. "They'll stop at nothing to accomplish their ends—foment strikes, urge restrictive laws or anything else calculated to crack competition. But America should never forget that competition is the lifeblood of industry, trade, and social and commercial progress. For monopoly means stagnation, stagnation means unemployment, and mass unemployment means industrial, commercial and social decay. America's strength and power in the world was built on competition, and a throttling of competition will just as surely bring its decline."

During the same interview he once more paid tribute to Mrs. Ford. When asked what he considered the greatest event of his life, he answered: "Why, it was meeting and marrying Mrs. Ford. If anyone thinks I've done anything in life, they should remember that my wife has been a great helper. I don't believe I would have got far without her. She has always believed in me and backed me in whatever I've attempted. I've always called her 'the Great Believer.'"

A few weeks before Mr. Ford's birthday Benson, second of

his grandsons, was married to Miss Edith McNaughton, daughter of Lynn McNaughton, who for many years had been vice-president of the Cadillac Motor Car Company. The wedding took place in Christ Church Chapel at Grosse Pointe, and was distinguished by its simplicity and unaffectedness. Following the ceremony and reception, the bridal couple left for California on their honeymoon.

## 3

Not alone in the manufacture of weapons and munitions did Mr. Ford play an important part in helping defeat the Axis. To him was given part of the credit for the unexpected strength revealed by two of the Allied nations, Russia and China.

No less an authority than Maurice Hindus, well-known author, declared that the mechanization of the Russian hinterland had "saved Russia," in that millions of her young people had to learn to understand and operate farm machinery. Young women as well as men were taught to handle machines on a large scale, and this training gave the country the skilled manpower needed to build and operate guns, tanks, and planes.

"The Russians took the idea of large-scale mechanized farming," said Mr. Hindus, "from the first man to practice it, Henry Ford."

Even before the days of the collective farms Soviet engineers were schooled in production methods in the Rouge Plant at Mr. Ford's invitation, and returned to their own land to make some practical application of the lessons they had been taught.

Albert Kahn, Detroit industrial architect, was commissioned by the Soviet government back in 1929 to plan its new factories. Shortly afterward he received a telephone call from Mr. Ford.

"I hear that you have agreed to build factories for the Russian government. I am very glad of it. I have been thinking for a long time that these people should be helped."

Before they had concluded the conversation Mr. Ford added:

“Those people have a right to their destiny, and they can only find it through work. We are willing out here to help all we can. So you can tell them for me that anything we have is theirs for the asking—free. They can have our designs, our work methods, our steel specifications—anything. We will send them our engineers to teach them, and they can send their men into our plants to learn.”

Kahn gave the story to a *Free Press* reporter and it appeared in the early editions that evening. The Russian commission called from New York to verify it. Being assured that it was true, they came to Dearborn to negotiate with Mr. Ford. Access to the Rouge Plant was given to their engineers, while Ford men were sent to Russia to help get the work started.

One reason the Soviets were able to put up their magnificent defense against the German armies was that back in 1929 Henry Ford had been willing to extend a hand to a nation whose people at that time were hardly considered fit to associate with civilized nations. “I think,” said he, “that the stabilization of Russia through industry is the hope of the world.”

When the Republic of China was invaded and her industries were destroyed or taken over, “vest pocket” industries to produce everything from shoes to chemicals were set up as small co-operative shops in dugouts, deserted temples, canyons, caves, ruined villages—anywhere out of sight of the Jap bombers. In charge of the movement was a New Zealander, Rewi Alley, and his first lieutenants were several hundred Chinese young men who had been trained in the Henry Ford Trade School at Highland Park and Dearborn. Between 1922 and 1930 these young men came to America to learn mechanics and machines at the invitation of Mr. Ford. Details of the arrangements for their training were worked out by the Dearborn industrialist and a Californian missionary and engineer, Joseph Baillie.

After the devastating raids of the Japanese the “Baillie-Ford boys,” as they were called, proceeded to set up 3,000 small factory units. Their goal was 28,000, with a potential capacity of a

million jobs. The "Alley and Indusco" movement was described as one of the most dynamic forces at work in the awakening Orient.

In few ways has Mr. Ford's uncanny foresight been more clearly demonstrated than in his establishment of a rubber plantation in the Amazon valley back in 1927. At first the effort was considered as another one of his experiments; but when the sources of raw supply were cut off in Malaya and the Dutch East Indies suddenly it acquired national importance.

After fourteen years of constant study and many disappointments the end of the Far Eastern supply found his South American plantation preparing to ship 750 tons of creamed latex to Dearborn, with prospects of an annual yield by 1950 of 7,500 tons. Almost equally significant was the fact that the company had begun to supply the United States Department of Agriculture and other great rubber concerns with high-yielding clones, to be used in establishing plantations in other countries around the Caribbean Sea.

The construction of two model communities, maintenance of public schools for the native children, modern hospital facilities, and development of other products for both local consumption and export, accompanied the Ford South American enterprise in seeking an independent source of rubber for the United States.

Meanwhile, as the shortage led to nation-wide rationing, Mr. Ford directed his engineers to seek a new kind of tire in which rubber would form only an inconsequential part. Although it is too early at the time of this writing to indicate the practical value of their work, it is known that they have succeeded in producing a tire with specially treated fabric as the main ingredient, rubber comprising only about one-sixteenth of the contents.

Mr. Ford's program of fostering the training of youths in mechanical trades justified itself many times over as the war became one of production machinery and assembly lines. The thousands of young men who had received instruction in the

Trade or Apprentice Schools occupied important posts in forwarding the war effort.

Early victories of the Axis made it vital that youths in the Navy, Army and Air Corps be given an intensive course in mechanical subjects. Aviation mechanics, machinist mates, electricians and other specialists could not be found in sufficient quantities to meet the demand, and Ford schools helped fill the breach.

Facilities to train 3,000 aircraft apprentices, as has been already described, were set up in the Aircraft Engine building. A completely equipped service school, including barracks for 1,200, was erected and turned over to the Navy. A handsome building with adequate classrooms and laboratories was placed alongside the Willow Run Bomber Plant.

For Air Corps mechanics, a service school was arranged in the Aircraft Engine Plant. Here also were provided courses of instruction in maintenance of Ford-built military equipment, confined to officers of the Army. Trucks equipped as mobile classrooms toured the camps to bring similar instruction direct to the Army in the field. Women volunteer automobile mechanics were given facilities at the Highland Park Plant for use by the Red Cross Motor Corps.

Ten vessels of the Ford fleet, five of them ocean-going, were turned over to the U. S. Maritime Commission to haul national defense cargo, and help break the shipping bottleneck. Ford crews continued to man and operate them, both in the coastwise service and on the high seas. Shortly after they joined the service one was sunk in the North Atlantic waters, a victim of an Axis prowler.

Production of 300 tons of steel castings a day for aircraft engine parts and armor plate for tanks was made possible through the addition to the Rouge Plant late in 1941 of another unit wherein a new technique in manufacture of certain important parts for the Pratt and Whitney engine could be developed.

In this technique Ford engineers adapted for aircraft engine

use their experience of several years in making centrifugal castings for tractors, trucks and in automobile transmissions. It embraced casting on a rotating mold, relying upon centrifugal force to whirl the strongest molecular structure of the metal to the outside, where strength was most needed. Excess metal amounted only to about 2 per cent, and little machining was required, in contrast to the forging technique in which immense hammers were used to shape the part from solid metal blocks, and the subsequent machining discarded approximately 50 per cent of the metal.

The engineers believed that the force of the heavy hammers concentrated the strongest molecular strength of the metal in the center where it was least needed. Substitution of steel castings in the center crankcase sections and in the cylinder sleeves where aluminum had been used was proposed.

From the production of armor plate for tanks to the production of tanks themselves was only a step, and Ford men took it in their stride. The old Highland Park Plant, once the magnet of thousands of visitors daily, regained some of its vanished glory. Into the long bays, once alive with crawling conveyors and whirling machines, went construction workers to install four continuous assembly lines, from which giant 30-ton mobile fortresses were to roll.

Known as the M-4, the Ford tank weighed two tons more than those supplied by other companies, and followed the recommendations of American and British military experts who had watched American-built tanks in action in the desert battles of Libya. Its armament was augmented by a 75-mm. gun mounted on an all-welded power turret, in addition to the usual complement of anti-aircraft guns and machine guns. Production of an even heavier model, size of the biggest land battleships, was planned at the Rouge Plant.

Installation of machinery and planning for production were paralleled by the training of workmen, even as in the bomber job.

These were but a few of the Ford war activities. Mr. Ford's gift of his yacht to Uncle Sam, his researches into the utilization of low-grade ore, his engine experiments, his constant improvement of methods in aircraft engine production, were others.

In addition to the 12-cylinder liquid-cooled engine for aircraft, of which mention has been made in a previous chapter, Ford had a tank engine designed by his engineers, using a V-shaped block and eight cylinders, to develop 400 horsepower. He added another aircraft engine, of the pancake type, liquid-cooled, which could be mounted within an airplane wing, thus reducing wind resistance. Although such a type had been discussed in aviation circles for some time, he added a number of new features, among them the use of two crankshafts geared together to drive the propeller, with the combustion chambers facing inward instead of outward.

It was sometimes remarked within his organization that every time Mr. Ford sat down with an Army officer, he took on some new job. The amount of war work he had contracted to perform was estimated at more than one billion dollars.

The wholehearted way in which he had turned the processes of mass production to the service of the nation brought him honorable mention in the magazine *Time* as an outstanding contender for the title of "Man of 1941," ranking close behind the President himself. And when the La Salle College Civil and Social Congress of Philadelphia in early 1942 awarded him one of its coveted medals, the citation pointed to "his monumental contribution to national defense."

## 4

Largest of all the Ford activities during the war was the Bomber Plant at Willow Run. Everything connected with that enterprise was superlative. Throughout the winter of 1941 the structural steel workers lifted the tall framework and the bricklayers laid the walls through daylight hours and by floodlamps

after dark. In January 1942 when the first men and machines moved in, the floor was not yet dry. By February, parts were being fabricated, although the far end of the plant had not yet been roofed.

By March, sub-assemblies were being made for one of the allied contractors; and on April 18, anniversary of the breaking of ground, a full-sized bomber crept along the assembly line, gathering parts and nearing the day when it would fly away. It was the first or "educational" ship; after it would come a swarm of angry warbirds whose spreading wings some day were to darken the skies over Tokyo and Berlin.

Willow Run formed a fitting climax to the career of the man whose whole life had been preparing him for the job. Even as its bombers left the assembly line on their deadly mission, he was already planning how to use the same enterprise in a still greater way when peace had come.

## CHAPTER TWENTY-SEVEN

### WILLOW RUN

#### 1

MAY 16, 1942, was a cold, stormy day at Willow Run. After several weeks of balmy spring sunshine, a harsh wind blew in from the Northwest, driving before it a blustery rain.

Outside the broad exit doors of the bomber plant a small group of men gathered, braving the downpour to witness a thrilling event. Before them, just inside the doors, stood a giant warbird, its propellers churning the air as the deep-throated roar of its engines sounded across the dripping apron. First of the ships to be assembled by Ford, a vanguard of the mighty armada, it moved across the exit line and out of the building into the open air.

Across the nation flashed the news, released by the War Department: "ACTUAL PRODUCTION OF BOMBERS FOR THE ARMY HAS STARTED AT WILLOW RUN." It spread to Europe and Asia—bad news for Hitler, Hirohito, and Mussolini. It answered inquiries like that of a Yugoslav guerilla, made to a press correspondent in the mountain hideout of General Mihailovich: "When will Ford start turning out bombers?"

At Cairo in Egypt an N.B.C. broadcaster reported that everyone was talking about the big bomber plant—"where pots and pans were pushed in at one end, and big warbirds came out at the other."

Thus Willow Run swung into production, although it had a long way to go yet before it could attain its peak output. Not until the Axis has been finally crushed can the cloud of military secrecy be lifted from the plant, and a full disclosure made of the job performed there as a vital contribution to the American war effort.

In undertaking mass production of the giant bomber, Ford revolutionized the way of making it, changing the process from the former comparatively slow handmade method to the quicker, more precise way of the machine. New fixtures designed by his engineers shortened the time in some instances from a matter of days to a fraction of an hour, combining many operations in one. On the other hand many conventional major assemblies were separated or "broken down" into smaller ones, adopting the methods of automobile quantity production to aircraft manufacture.

As at the Rouge Plant the raw materials arrived at one end of the mammoth factory and proceeded to flow through presses and machines into departments where small parts were put together. Mile-long conveyers lifted and carried them to other departments where they joined other small parts and became sub-assemblies. Larger conveyers or cranes moved them into the main assembly bays where they joined other sub-assemblies to become major sections of the rapidly growing airplane. Finally, with all the preliminary operations cleared away, the major assemblies took their positions and at the proper moment joined the others to complete the ship.

Some of Ford's methods involved such radical departures from regular airplane practice that they were pronounced impractical if not impossible—until they were found to work out. As Logan Miller, veteran Rouge production man, expressed it: "We were too dumb to know that we couldn't do them—so we went ahead and did them."

One example was in the greater use of spot welding in place of rivets at certain points where stress was not a factor. When Mr. Ford had his first glimpse of the giant bomber flown to Dearborn for his inspection by the Army, he glanced inside the fuselage and turned to Mr. Sorensen. "Golly, Charlie, look at all those rivets!"

"Some of them can be replaced by spot welding," predicted Sorensen.

An aircraft man standing near them interrupted: "No, Mr. Ford, you can't do that. Spot welding can never replace rivets."

Nevertheless, one of the first departments to get under way at Willow Run was assigned to spot-welding research. Many of its suggestions in substituting welds for rivets were subsequently approved by the Air Force engineers.

In the course of their experiments, they accidentally learned that by refrigerating the electrodes on the welding machines they were able to save a good deal of time, as it was not necessary to stop so often and clean the points.

Another development was the mechanical cleaning of the long sheets of skin to be welded for the bomb-bay doors, instead of cleaning them with chemicals. This again saved many hours of time.

Another "impractical" idea was the use of thousands of heavy steel dies, instead of the cheaper rubber and Kirksite dies usually employed in traditional aircraft manufacture. Being automobile men, the Ford engineers were more experienced in the heavier metal and were able to overcome the preliminary difficulties in adjusting the dies to use with aluminum alloys. As a result literally thousands of parts were formed in the press shop in a manner new to the industry.

Ford's outstanding contribution was in the larger assembly operations, building the wings and fuselage sections and mating them together. For the assembly of the central wing section, fixtures were designed, sixty feet in width and weighing nearly thirty tons. They overcame the necessity of tearing down the fixture after the part had been assembled in order to remove the wing section. A removable bridge structure, built to serve as the top of the fixture, could be rolled to one side after the section was completed while an overhead crane hoisted out the part. The top was then rolled back into place and a new section begun. The amount of time thus saved was estimated at several days on each wing section.

Representatives of other aircraft plants who visited Willow

Run to learn of the new Ford procedures were amazed at the huge milling machine designed by the engineers to handle the central wing section after assembly. In the past it had been the practice to move the section from machine to machine, while the different operations—drilling for the engine mounts, boring the landing-gear bearings and so on—took place. Sorensen's idea was to seat the wing in a cradle between upright supports, and then move all the machines up to it. Thus at one location, twenty-six different operations could be performed practically simultaneously, reducing the time required from days to a fraction of an hour.

## 2

The immense size of the plant baffled writers and aircraft men alike. "There seems to be no end to anything," said one. "Like infinity, it stretches everywhere into the distance of man's vision." No one but a master planner, it was conceded, could understand the system underlying the seeming chaos.

While it is impossible for military reasons to disclose the exact floor space which lies under the plant roof, some idea can be gleaned from the fact that 16,000,000 creosoted wooden blocks—600 carloads—made up the floor.

The site was selected by Ford and Sorensen in the mid-winter of 1941 as they stood near the boys' camp at Willow Run and looked across the stubble fields toward a grove of sugar maples and willow trees. From that time on the two men kept in touch with the plant's progress, following the excavation, raising of the walls, grading of the airport and other operations.

Almost daily Mr. Ford climbed into his car beside his driver and forty-five minutes later was turning in at Willow Run. There he joined Sorensen, M. L. Bricker, Bennett, H. C. Doss, or one of his other executives while they watched the progress of the work. That interest persisted after the machinery had been moved into place and the sound of rivet hammers filled the air from one end of the plant to the other.

On rare occasions he visited it alone, and those who saw him will never forget the picture—the slender, wiry figure of the gray-haired master moving on foot along the edge of the world's strangest assembly line, while he watched the latest offspring of his mass-production methods taking form.

Another sight, equally unforgettable, was presented one morning when he walked through the fuselage assembly department, accompanied by two men. At his right was Charles F. Kettering, noted research scientist and vice-president of General Motors; on his left was Fred M. Zeder, head of Chrysler engineering. Competitors only a few months earlier, the three engineer-industrialists had united their resources in the common cause against the Axis. And on this morning two great rivals paid tribute to the production miracle which the pioneer automobile man had brought to pass.

One afternoon shortly after the middle of September the gates of the great plant were closed; no one was permitted to go in or out; soldiers, armed with fixed bayonets, guarded every entrance. Shortly before 3:30 a locomotive and eight Pullman cars came rolling over the hill to the west of Willow Run, turned on a spur track and entered the plant. This was the special train of President Roosevelt himself, accompanied by Mrs. Roosevelt and Donald Nelson. On a secret swing to inspect the country's war effort, the chief executive had already toured the Chrysler tank arsenal at Detroit and was then on his way to the West Coast.

As the guests alighted they were greeted by Henry and Edsel Ford, heading a large group of Army officers and Ford executives. They entered cars, Mr. Ford sitting in the rear seat between the President and Mrs. Roosevelt, and Edsel in one of the middle row along with Mr. Sorensen and Michigan's Governor, Murray Van Wagoner. War Production Chief Nelson rode alongside the driver. The procession headed into a big doorway leading to the assembly bays, passing the towering presses and the tall wing assembly fixtures.

Everywhere, as soon as the President was recognized, cheers

rang out from the workers whose day shift was done or who had left their machines hurriedly when they heard that he was passing by. Time and again he had the car halted so he could examine some part more closely, or watch the operations of a riveter or welder a little longer.

At the point where the outer wing panels were attached to the central section, he spied two midgets high up on the top wing surface, and waved them to come down and shake hands. It was a big moment for the little men, two of the number employed to crawl in and out of wing recesses where grown men could not enter. They chatted briefly, and then the cars rolled on.

Besides discussing production problems and some of the Ford innovations, the chief executive and Mrs. Roosevelt talked with the Fords on other matters of more personal interest. The First Lady mentioned that she had been told of a "beautiful chapel" at Dearborn, meaning the Martha-Mary Chapel in Greenfield Village, and that she would like to see it. In reply, Mr. Ford offered to show her a "nice chapel close by." It was the one he had built three years earlier for the Camp Willow Run boys. She asked to see it, and their car was driven to the spot where it stood surrounded by army barracks, its white spire looking down over the sprawling plant.

After the party returned to the train the Fords and Mr. Sorensen went on board and finished their visit with the Roosevelts in the coolness of the air-conditioned car. A few minutes later the train moved off. Not until two weeks later, October 1, did the nation learn of their call at Willow Run. After the swing around the country had been completed and the Roosevelts were back home, the news was released.

The sight of the Roosevelts and Fords together was a heartening one to those who recalled the bitter differences that had existed between them over New Deal politics. For the duration, at least, differences had been forgotten; nothing was to interfere with the winning of the war. Mrs. Roosevelt impressed Mr. Ford with her keen interest, energy and intelligence. He spoke of her later as "a really remarkable woman."

The Roosevelts saw something new in Ford practice—a large number of women at work. For the first time in the company's history women students are attending its schools, learning trades and getting the same pay as men. Old-timers have found it hard to believe their own eyes as they watch women workers driving overhead cranes to and fro, lifting heavy dies and swinging them across the plant, operating machine-shop lathes and performing other jobs hitherto considered reserved exclusively for male workers. The only bar to the presence of a woman on a job at Willow Run is the possibility that it might be too heavy for her. Otherwise, everything is open.

With a brand-new half-million-dollar building and close to 150 instructors, the Willow Run Airplane Apprentice School quickly attained high rank among the Ford educational institutions. One of the important services performed by it is the instruction of flight mechanics from the Air Force training schools. Hundreds of these men are brought to Willow Run for a post-graduate course specializing on the B-24 bomber. Barracks were built for them on the site of the boys' camp, together with mess halls, recreation facilities, and hospital.

To the executive staff at Willow Run was added Col. Charles A. Lindbergh, assigned to do technical research under the War Department. Before Pearl Harbor he had resigned his colonelcy in the Air Corps Reserve because of disagreement with Administration policies, and after the outbreak of the war he had offered his services to the War Department. Mr. Ford himself invited "Lindy," who had taken the automobile man on his first airplane flight, to join the organization, and the War Department gave its approval. He could have written his own ticket, but told Mr. Ford that he wanted to work for the same pay that he would have received as a colonel in the Army. Much of the work that he has subsequently performed cannot be revealed until after the war.

By means of its close fittings and its synchronized methods the Willow Run program made possible for the first time the interchangeability of parts on the giant bomber. Parts made in

that plant could be joined to other parts in distant plants, despite their bulk and complexity. Likewise they could be shipped to remote bases and airfields at the front, and used as replacements on ships in service.

Thus, in addition to its own output of ships, the plant poured forth a steadily increasing stream of parts which, some predicted, would in time become an even more important product of Willow Run than the bombers themselves.

## 3

Enormous as it was, Willow Run did not interfere with the many other Ford war activities, or preclude the addition of new ones. During the same month in 1942 that production was officially inaugurated at that plant, the company undertook elsewhere the manufacture of huge transport gliders for the Army. The engineless airplanes were designed to carry fifteen fully equipped soldiers; and because of their construction they made a product admirably suited to the woodworking plants established by Ford in the Upper Peninsula.

The wings, spreading over a width of eighty-four feet, were built of airplane spruce and mahogany plywood, with an outer surface coated with cotton fabric. A framework of tubular steel gave form to the ship.

After Ford engineers had designed fixtures for assembling the gliders, the machines were shipped to the northern location and thousands of woodworkers, many of whom had been formerly employed in the making of Ford station wagons, returned to produce the gliders.

By early September their first one had been completed and was put through tests by representatives of the Army glider-development program. Cut loose from a two-motored Army transport plane at 8,000 feet, it floated over Ford Airport at Dearborn for fifteen minutes before it moved gently to a landing.

The defeat of Marshal Rommel's army in Egypt was ma-

terially aided by the new M-4 or General Sherman tank, on which Ford production had been engaged during 1942, along with other companies. Here again company engineers evolved new practices that helped to speed up the final stages of armor-plate manufacture and eliminated the use of the cumbersome "straightening machines."

By substituting water-cooled dies for water tanks, sprays and straightening machines, they reduced the hitherto complicated business to one short operation. The time required to cool and straighten the buckling hot plates was cut from two hours to from three to eight minutes. Red-hot metal slid directly from the furnace onto a series of rollers that sped it into a huge, water-cooled press, where it was simultaneously cooled and straightened under 2,500 tons pressure, after which it emerged ready for use.

Ford ships manned by Ford crews carried Lend-Lease cargoes and supplies for American forces as part of great convoys crossing the Atlantic. While the number sunk cannot be divulged, the loss of men included many who had served the company for long periods of time and brought sadness to the entire organization.

Late in 1942 the company concluded an agreement with the government whereby the tire factory at the Rouge Plant was dismantled for shipment to Russia. Under the Lend-Lease program, machinery for such a plant was promised to the Soviets, and arrangements to obtain that at the Rouge—termed the most advanced of its type in the world—were completed after brief negotiations between Edsel Ford and William M. Jeffers, national rubber director.

In line with other Ford practices, the tire plant was chiefly remarkable because it was the first of its kind in which production was routed straight through from the hold of the freighter docking at the Rouge Plant from the Brazilian plantation, to the delivery truck waiting for its load of tires.

Designed to provide 16,000 units a day, the plant originally cost \$5,000,000 to build.

In the midst of its war effort in the late spring of 1943, Mr. Ford and the entire organization sustained a grievous blow. For some months it had been generally known that the health of the company's president, Edsel Ford, had not been improving despite an operation he had undergone at the Henry Ford Hospital. Although he realized the seriousness of his condition, he continued to work up to the last minute without sparing himself.

Suddenly came the word that he was dangerously ill, and that his recovery was doubtful. The news stunned all who heard it. It seemed incredible that one who was so generally beloved and was so greatly needed at that particular time, must pass away. He died on May 26, 1943.

His illness dated back to early 1942 when he underwent a major operation for a stomach ailment. He never fully recovered from it, and a subsequent stay in the hospital in March, 1943, did not benefit him. Undulant fever was also present.

A man of simple tastes, he preferred to remain in the background in the direction of the worldwide enterprise that he headed. Because of his social mindedness, he was able to interpret public trends; in contacts with Washington officialdom, with heads of rival automobile companies, with union leaders and with the aircraft industry, he did much to counteract misunderstandings and smooth over ruffled feelings.

On the afternoon of the funeral, as the services began in the Grosse Pointe chapel, workers laid down their tools in Ford factories from England to Australia. At the bomber plant, the chatter of rivet guns was silenced.

His body had hardly been placed at rest in the Woodlawn Cemetery before automobile circles were buzzing with conjectures as to how the void in the organization would be filled. This ended abruptly when Henry Ford himself announced that he would take

over the presidency. Once more he picked up the reins he had handed over to his son 25 years earlier. Despite his years—his eightieth birthday was but two months away—the vigor of his step and the keenness of his glance were undiminished.

Home from the Navy came the eldest grandson, Lieut. Henry Ford II, to assume part of the heavy burden. A realignment of the board of directors brought to that body the widow of Mr. Ford, Mrs. Eleanor Clay Ford, together with the general manager at Willow Run, M. L. Bricker, H. H. Bennett, personnel director, and R. R. Rausch, Rouge plant superintendent.

The two oldest grandsons were already on the board, as were the senior Mr. Ford and Vice-President Sorensen. Edsel Ford had also been treasurer of the company, and that post was filled by the election of B. J. Craig, formerly secretary. He was named vice-president and director. He was succeeded as secretary by H. L. Moekle, head of the company's auditing department. H. E. Schluchter, who had joined the organization in 1907 and served as cashier, was made assistant secretary and treasurer.

Within the next year Sorensen retired from the company, as did A. M. Wibel, purchasing director, and H. C. Doss, sales head. Henry Ford II rapidly assumed growing responsibilities and was made executive vice-president, a post which he filled until the middle of 1945 when Henry Ford Senior resigned the presidency and the young man at his request took over the direction of the company.

Assumption of command by Henry Ford II ushered in a new era, in which fresh vigor and youth brought sweeping changes. Among the latter were the retirement of Bennett and Rausch from active participation in company affairs. Ernest R. Brech, a former president of Bendix Aviation was appointed executive vice-president. J. R. Davis, who had headed the sales and advertising departments, was named a vice-president; as was Bricker, who became top production man. John S. Bugas, former head of the Federal Bureau of Investigation in Detroit, was placed in charge of industrial relations, and one of the first results of that move

was the signing of a new contract with the United Automobile Workers as the climax to weeks of amicable negotiations. In addition to wage increases, and other benefits to the workers, the company was given security against unauthorized strikes and walk-outs.

National recognition of the young man's leadership came when the Junior Chamber of Commerce selected him as the outstanding young man of the nation during 1945.

## CHAPTER TWENTY-EIGHT

RETIREMENT of Henry Ford from active participation in affairs brought rumors of failing health, although he continued to attend functions and accompany Mrs. Ford on automobile rides over the countryside and in overseeing their large holdings. At 82, it was only natural that he should seek a rest from the exacting labors of more than four decades, and he watched with deep satisfaction the energetic leadership of his grandson.

Nevertheless there had never been a plan for a Ford dynasty. The objective was to do a job as well as humanly possible. When someone asked Mr. Ford Senior, what was to become of the great factories after he had relinquished control, he replied: "Well, if we keep them up to date, there will always be someone to use them."

The future had never worried him. He remarked with a grin that it was one thing he could not do anything about.

When it came time to sum up Ford contributions to the war effort, they were found to reach staggering proportions, particularly at Willow Run where the plant exceeded its objective of one Liberator an hour. Another outstanding product was the V-8 tank engine, developing 500 horsepower at 2,600 revolutions per minute. Its light weight and high power output led to its adoption in the new big tanks that proved their mettle as Allied troops drove the Nazis beyond the Rhine.

As he looked ahead to the days of peace, Mr. Ford predicted that the greatest thing to come out of the world conflict would be a "Brotherhood of Man," such as Alfred Tennyson wrote about in *Locksley Hall*. "Without tariffs and other trade barriers to keep us apart after all this is over," he declared, "we will move toward a Federation of the World."

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## Henry Ford 83 Years Old

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**H**ENRY FORD, on his 83rd birthday, July 30, 1946, called upon the young people of the nation to solve our problems which he termed "only temporary."

"I am constantly reading and hearing about unsettled conditions in the world today," said the famed founder of the Ford Motor Co. "In my lifetime I've witnessed similar situations many times as they followed military and economic warfare.

"Actually, each of those periods was only temporary and from each of them we learned. We emerged a little more intelligent; a little more able to combat recurrence.

"We've never succeeded in preventing these cycles because we've never searched out and rid ourselves of the real reasons for them. Those reasons are greed, selfishness and narrow thinking; simply to state, so hard to remove.

"I am convinced that after five years of war and its subsequent problems, this nation is ready, will-

ing and able to prepare itself for an unprecedented future of peace and prosperity.

"As always, I look to the young people of this country for the real solution of our problems. May I suggest they devote themselves to clear the long range thinking and planning, to selection of proper and sincere leadership and, above all, to hard work.

"With these as the goal, I'm sure this nation and the world again will be on the right track."

Active, but no longer the guiding genius of the fabulous empire he founded a little more than four decades ago, today the automobile pioneer spends most of his time at his huge fenced-in estate, "Fairlane," in nearby Dearborn. He makes infrequent visits to the company's big main plant or to his Greenfield village where he has assembled much valuable Americana.

Although he retains a 58 per cent interest, with Mrs. Ford, in the Ford Company, he apparently makes no attempt to dictate its policies. The only official connection he retains with the company is as a member of its board of directors.

—It's not the number of hours that a man puts in, but what the man puts in the hours that counts.

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## Neighbors Will Honor Ford, 83

**DETROIT, July 29.—(P)—**Friends and neighbors of Henry Ford in near-by Dearborn will join tomorrow in observing his 83rd birthday anniversary as a gala occasion.

And the master of mass production, to whom a birthday almost invariably has been "just another day," has promised to participate at least briefly in some of the festivities.

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# EVOLUTION OF THE FORD CAR



FIRST FORD CAR  
1888



MODEL M 1903



MODEL N 1908



MODEL S 1908



MODEL K 1913



FORD RACER No. 499  
1910



MODEL B 1909



MODEL R 1907



MODEL T 1927



MODEL V 1934



MODEL Y 1905



MODEL K 1906/7



MODEL T 1908

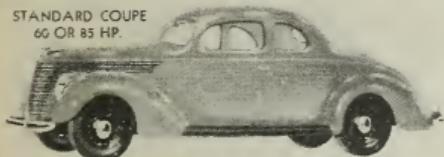


MODEL V 1934



STANDARD TUDOR SEDAN  
60 OR 85 HP.

STANDARD COUPE  
60 OR 85 HP.



DE LUXE TUDOR  
SEDAN 85 HP.



STANDARD FORDOR  
SEDAN 60 OR 85 HP.



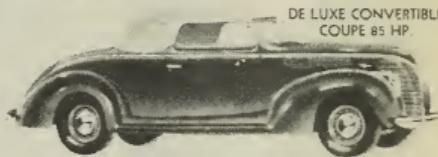
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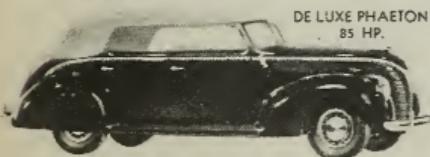
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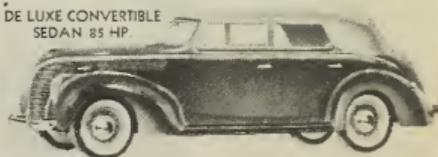
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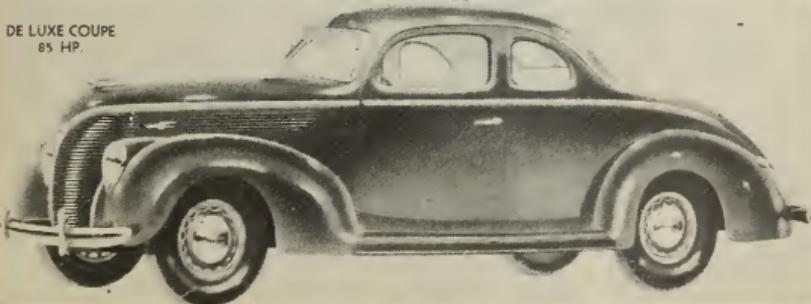
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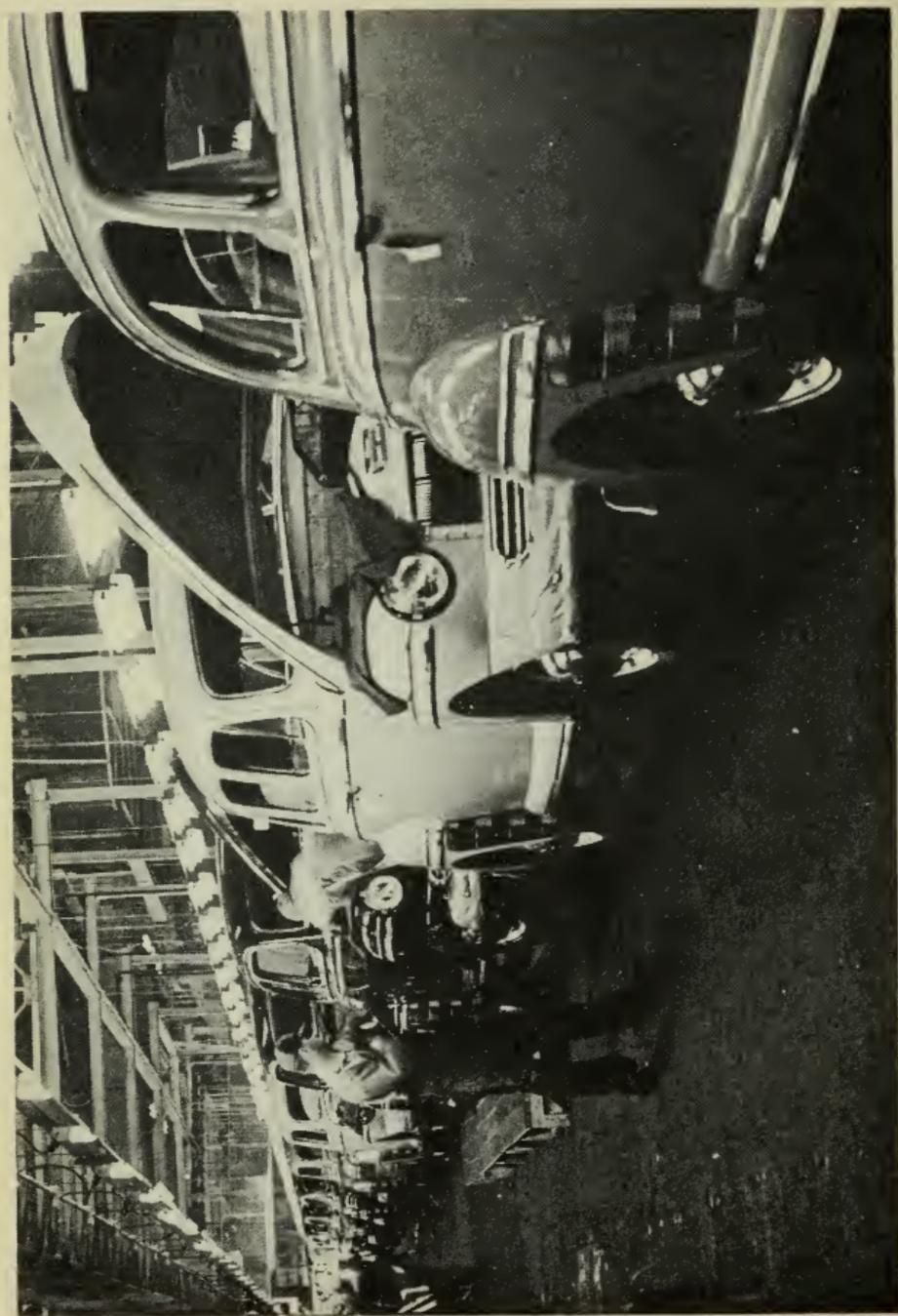
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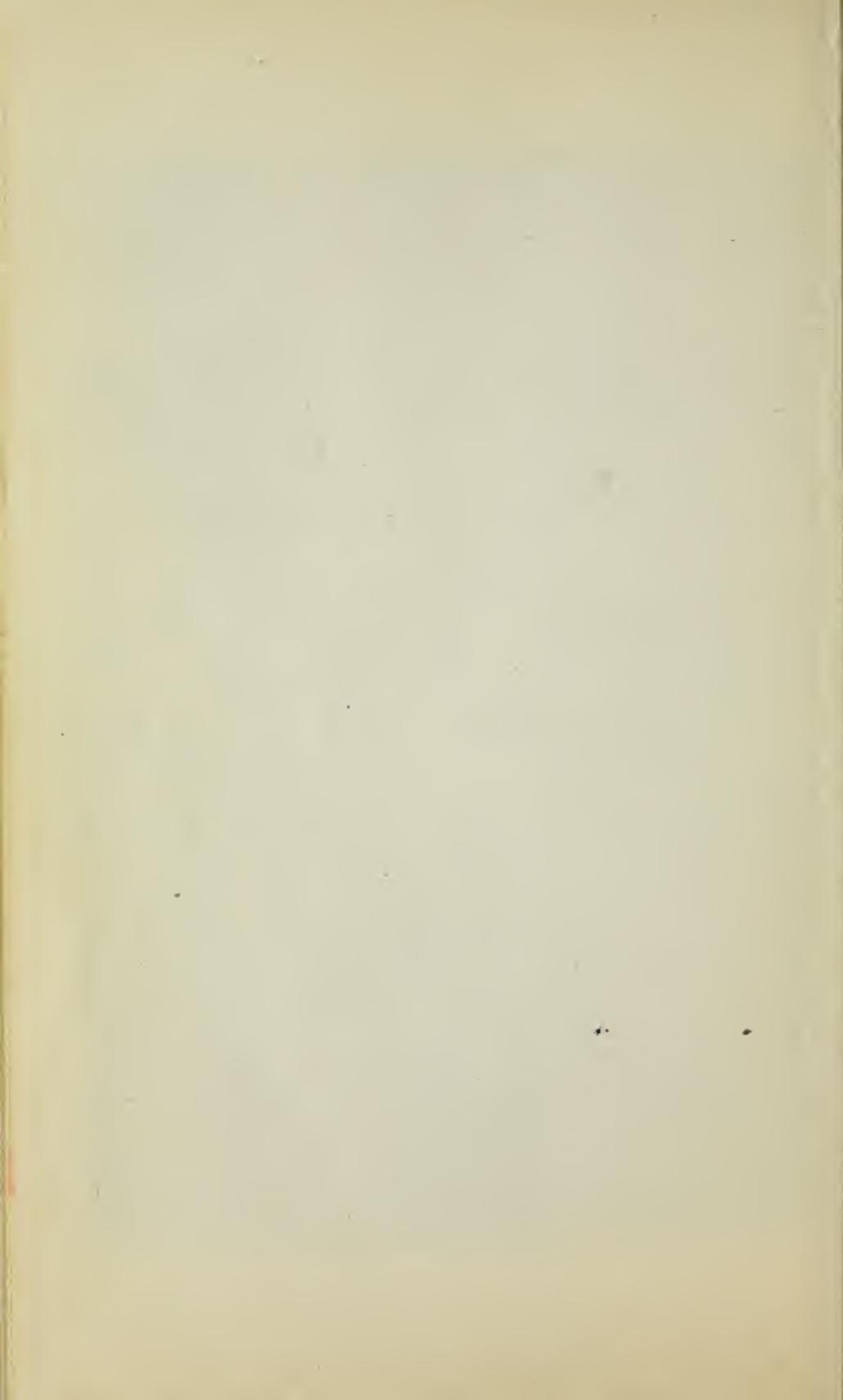
DE LUXE COUPE  
85 HP.



# 1938 FORD MODELS



INDEX



## INDEX

- Addams, Jane, 151, 153, 221  
 Ainsley, Charles, 57  
 Airplane Apprentice School, Willow Run, 301, 335  
 Aked, Dr. Charles F., 153, 155  
 Alaska-Yukon-Pacific Exposition, Seattle, 119  
 Alberta, Michigan, 259  
 Alderman, Frank R., 61, 62  
 Alley, Rewi, 323  
 Allis-Chalmers Manufacturing Company, 312  
 American Federation of Labor, 266, 313  
 American Legion's Council of Wayne County, Michigan, 230  
*American Merchants of Hate*, magazine, 287  
*American Mercury*, magazine, 292  
 Anderson, John W., letter quoted, 80-85; mentioned, 106, 180  
 Anglo-Saxon Federation, 287, 288  
 Apprentice School, 159, 161, 299  
 Auburn car, 72  
*Automobile Review*, magazine, quoted, 99  
 Baillie, Joseph, 323  
 Bennett, Charles H., 86  
 Bennett, Harry, struck by rock in labor riot, 230; bears brunt of attack on Ford company by organized labor leaders, 269-271, 290; Ford employee for 20 years, now head of Service De-  
 partment, 291; gives UAW permission to organize Ford employees, 291-292; sends Ford appeal for aid to President Roosevelt, 312; confers with Philip Murray, 313  
*Benson Ford*, freight boat, 200  
 Bernstein, Herman, 211  
 Bisbee, Jed, 200  
 Bishop, "Jim," 48, 55  
 Black, Clarence A., 72  
 Black, Fred L., 212  
 Bonaparte Road, Detroit, 33  
 Bonbright, Howard, 209  
 "Bonus Army," 230  
*Boston Evening Transcript*, quoted, 248  
 Bowen, Lew W., 72  
 Boyer, Robert, 228, 304  
 Boyer Machine Company, Detroit, 67  
 Braley, Berton, 153, 156  
 Bricker, M. L., 319, 332  
 Briggs body plant, Detroit, 265  
 Brisbane, Arthur, 212, 247  
 Briscoe, Benjamin, 123  
*Brooklyn Times Union*, quoted, 248  
 Bryan, William Jennings, 16, 113, 154  
 Bryant, Betty (Mrs. Harry Wismer), 277  
 Bryant, Clara, *see* Ford, Clara  
 Bryant  
 Bryant, John, 39

- Bryant, Martha, 220
- Buick Motor Company, 72, 114, 126
- Bullitt, William C., 154, 155
- Burbank, Luther, 149, 217, 220
- Burlingame, Roger, 131
- Burroughs, John, vacation trips with Ford, 110, 144, 175; plants tree at Ford's Dearborn home, 143; declines journey on "Peace Ship," 153; visited by Ford before his death, 198-199
- Cadillac Motor Car Company, 66, 72, 81, 83, 89, 126, 322
- Cadillac Square, Detroit, 67
- Caesar, Irving, 156
- Cameron, William J., joins staff of Dearborn *Independent*, 182; testifies in libel suit against Ford, 212; talks weekly on Ford Sunday Evening Hour, 261; accompanies Ford on his visit to President Roosevelt, 276; accused of being connected with Fritz Kuhn, 287-288; personal history, 289; citizenship proved to be properly obtained, 290; speech at Ford's 75th birthday anniversary dinner quoted, 339-340
- Campau, Daniel, 69
- Campbell, Wallace R., 297
- Carey, John L., 276
- Carver, George Washington, 257, 258
- Case car, 72
- Chapel of Martha-Mary, 15, 220, 334
- Chapin, Roy D., 68, 221
- Chapman, John Brainerd, 26
- Cheeny, John, 40
- Chevrolet Motor Company, 130, 196
- Chicago *Times Herald*, 50
- Chicago *Tribune*, sued for libel by Ford, 182-186; quoted, 189, 248; mentioned, 283
- Chicago World's Fair, 1893, 44
- Chicago World's Fair, 1934, 47, 254, 261
- China, Ford's aid to, 323
- Chrysler, Walter P., 130, 221, 267
- Chrysler Corporation, 123, 233, 266-267, 333
- Churchill, Winston, 286
- Civil War, 22, 23
- Clay, Eleanore, *see* Ford, Eleanore Clay
- Clay, Paul, 209
- Cleveland, President Grover, 43
- Cobb, Irvin S., 131
- Colliers Weekly*, magazine, quoted, 100, 293
- Columbian Exposition, Chicago, *see* Chicago World's Fair, 1893
- Comstock, Governor William A., 232
- Congress for Industrial Organization, organizes United Automobile Workers, 266; Ford Motor Company continues to resist, 279; arranges with Bennett to organize Ford employees, 291; Martin, UAW head, dismissed from, 292; campaign to organize Ford employees, 307; calls a strike on Ford Rouge River Plant, 308; attacks Ford wage scale, 311; chief Philip Murray confers with Bennett and settlement is

- Congress for Industrial Organiza-  
tion—*cont.*  
reached, 313; wins NLRB elec-  
tion in Ford plants, 314; Ford  
agrees to all conditions of con-  
tract with, 315-316
- Consolidated Aircraft Company,  
302
- Coolidge, President Calvin, 201
- Cooper, Tom, 73, 74
- Couzens, James C., early career,  
77; begins work for Ford com-  
pany, 79-80, 84; invests in Ford  
stock, 86; secretary, business  
manager, 87-88; warns of bank-  
ruptcy, 91; sales policy, 92; sal-  
ary increased, 97, 101, 103-104;  
advises Grant to invest, 98;  
treasurer, 105-106; refuses to  
sell company, 123; issues denial  
of sale or merger, 126; explains  
Ford labor policy, 137; dis-  
agreements with Ford, 147-148;  
resigns, 148-149; elected to Sen-  
ate, 178; sells Ford stock, 180;  
chairman of committee on RFC  
loans, 232-234; death, 265;  
quoted on Mr. Ford, 265
- Couzens, Rosetta V. (Mrs. A. P.  
Hauss), 87, 180
- Cox, James M., 191
- Cox, William, 29
- Crook, E. E., 93
- Culling, Adolph, 27, 220
- Dagenham, England, 286
- Daisy Air Rifle Company, Ply-  
mouth, Michigan, 86
- Daniels, Josephus, 168, 170
- Davis, Elmer, 153, 156
- Dawes, Charles G., 221
- Dearborn, Michigan, Ford's re-  
turn to, 143; tractor factory  
built, 146; airplane factory,  
204; site of Greenfield Village,  
216; police battle "Hunger  
Strike," 229; bank aided by  
Ford, 236; celebrates wedding  
anniversary, 276; Ford birth-  
day, 277
- Dearborn *Independent*, mention-  
ed, 177, 287; description of,  
181-182; series of anti-Semitic  
articles in, 210, 211, 241, 242;  
quoted, 211
- Dearbornville, Michigan, 21
- deForest, Lee, 221
- Degener, Augustus, 73, 89, 213
- Detroit, Michigan, frontier town,  
23; Ford family burial-ground  
in, 33; in 1893, 45-46; first trip  
of Ford car in, 53; in 1900, 67;  
World's Championship auto  
race in, 70; Model T first shown  
on electric sign in, 113; effect  
of new industry on, 129
- Detroit, Toledo and Ironton Rail-  
road, 98, 190, 195
- Detroit Automobile Company,  
61, 66
- Detroit Edison Company, men-  
tioned, 16, 17, 32, 42, 53, 55, 57,  
60, 220; Ford's first work at,  
43; Ford becomes chief engi-  
neer of, 45; Ford's work ap-  
praised, 47-48; Ford resigns  
from, 61
- Detroit *Free Press*, mentioned, 61,  
283, 323; quoted, 62, 93-94, 157,  
176-177
- Detroit *Gazette*, 22
- Detroit *Journal*, quoted, 57-59

- Detroit *News*, mentioned, 151, 177, 182, 281, 303; quoted, 138, 271
- Detroit Republican Club, 265
- Detroit River, 20
- Detroit *Saturday Night*, quoted, 125
- Detroit Symphony Orchestra, 261
- Dixon, Mrs. John, 46
- Dodge, Horace and John, supply parts to automobile manufacturers, 77; agree to build chasses for Ford cars, 79-80; detailed account of contract with Ford, 81-82; invest in Fordmobile Company, Ltd., 84-86; deny their shop was leased by Ford, 85; John on Ford's Board of Directors, 87; retain stock in the new Ford Motor Company, 106; contract to make Ford motors expires 1915, 145; obtain injunction against Ford, 162; sell their Ford stock, 180
- Dort, Titus, 21
- Doss, H. C., 332
- Douglas Aircraft Company, Inc., 302
- Dow, Alex, first brings Ford to Edison's attention, 16-17; praises Ford as his chief engineer, 47-48; offers Ford advancement in Detroit Edison Company, 61; refuses to invest in Ford Motor Company, 79; attends Ford's 75th birthday celebration, 278
- Downes, Rear Admiral John, 299
- Dry Dock Engine Company, Detroit, 37, 52
- Duerr, C. A., & Company, 92
- Durant, William C., 21, 114, 123, 124
- Duryea, Charles E., 50
- "Eagle" patrol boats, 170-171
- Eastman, George, 221
- Eden, Anthony, 272
- Edgar, Charles L., 16
- Edison, Charles, 144, 218
- Edison, Thomas Alva, first meeting with Ford, 16-18; early life, 24; mentioned, 109; vacation trips with Ford, 110, 150, 175-176, 198, 201; lays cornerstone of garage at Ford's Dearborn home, 143; visits Ford, 144; attends "Edison Day" at World's Fair, 149; declines trip on "Peace Ship," 153; attends funeral of Burroughs, 199; Ford moves Edison's Florida laboratory to Dearborn, 216; Ford builds Edison memorial in Greenfield Village, 218-219; attends dedication of memorial, 220-222; death, 223
- Edison Illuminating Company, Detroit branch, *see* Detroit Edison Company
- Edison Institute, Dearborn, Michigan, 260
- Electric Vehicle Company, Hartford, Connecticut, 89, 90
- Emde, Carl, 102, 169, 176-178
- E-M-F Company, 107
- Erskine, A. R., 221
- Everitt, Barney F., 107
- Fair Lane, home of Henry Ford, 21
- Field, Rennie, 31

- Fifth International Peace Congress, 151
- Firestone, Harvey S., first meeting with Ford, 109-110; vacation trips with Ford and Edison, 110, 150, 175, 198, 200-201
- Fisher, Fred P., 221
- Flanders, Walter E., 104, 107, 123
- Flint, George, 48
- Flivver King*, novel, 285
- Flower Brothers foundry and machine shop, Detroit, 35, 37, 43
- Flowers, Willie, 258
- Ford, Anne McDonnell (wife of Henry Ford II), 294-295, 306
- Ford, Benson (grandson of Henry), 294, 295, 306, 321-322
- Ford, Charlotte, 306
- Ford, Clara Bryant (wife of Henry), mentioned, 17, 18, 46, 52, 92, 109, 219, 272, 277, 278; early life, 39; courtship and marriage, 39-41; description of, 41; move to Detroit, 42-43; birth of son, 45; helps test first Ford engine, 46-47; goes on many trial runs, 54-55; unspoiled by wealth, 108; plans country home at Dearborn, 143; golden-wedding celebration, 274-276; Ford pays tribute to, 321
- Ford, Edith McNaughton (wife of Benson), 322
- Ford, Edsel (son of Henry), mentioned, 17, 54, 55, 59, 92, 161, 199, 203, 209, 214, 224, 225, 276, 316, 333; birth of, 45; first work in father's office, 102; early technical training, 110; interest in aviation, 110-112; drives to Ford, Edsel—*cont.*
- Chicago in Model T, 125-126; education, 130-131; secretary of Ford company, 148; marries, 167; needed at the factory during World War I, 173-174; president of Ford company, 180; treasurer, 194; gives reception to celebrate parents' golden wedding, 275; children of, 293-294; offers resources of the company to the government, 318; plans for the future, 340
- Ford, Eleanore Clay (wife of Edsel), 167, 293
- Ford, George, 19
- Ford, Henry, first meeting with Edison, 17; work in Detroit Edison Company, 18, 42, 43, 45, 47, 48, 51, 53, 57, 61; birth of, 22; father's influence, 24, 27, 32; brothers and sisters, 25; early school days, 25, 26, 28; repairs clocks and watches, 26-28, 35, 36, 44; first mechanical experiments, 29, 30, 41; mother's influence and early death, 31-34; first work in Detroit, 35-37; returns to farm, 38; marriage, 40; birth of son, 45; first constructs a gasoline engine, 46, 47, 49; constructs his first automobile, 51, 52; Ford car makes its first run, 52, 53; description of some early rides, 54-56; builds his second car, 57-59; organizes Detroit Automobile Company, 61-62; resigns, 66; builds his first race-car, 67-69; organizes Henry Ford Company, 72; Company disbanded, 73; builds

Ford, Henry—*cont.*

two race-cars, 73, 74; organizes Fordmobile Company, Ltd., soon called Ford Motor Company, 78-80, 85-87; wins lawsuit over Selden patent, 90-92, 94, 96, 122-123, 126-127; designs and manufactures five models before Model T, 99, 100, 103; first Ford factory, 101; assumes control of Ford Motor Company, 106; keeps Dearborn farm for testing tractors, 108; first meeting with Firestone, 109-110; first attempt to build an airplane, 110-112; builds new factory and launches Model T, 113-114, 124, 127; builds and moves to country home, 143, 144; vacation trips, 150, 175-176, 187, 198, 200, 201; Democratic candidate for U. S. Senator, 174-178; publishes Dearborn *Independent*, 181-182; sues Chicago *Tribune* for libel; 182-186; twice sued for libel, 210-212; builds Edison memorial at Dearborn, 216-219; dedicates Edison memorial and Greenfield Village, 219-222; begins agricultural and chemical research, 227-228, 231; first serious illness, 231; tries to maintain employment and relieve distress during depression, 237-240, 249; accused of supporting Hitler and the Nazis, 241-243, 285-287; refuses to sign NRA code, 245-250; description of, on 71st birthday, 251; rehabilitates dy-

Ford, Henry—*cont.*

ing communities, 255, 256-258, 259-260; builds winter home at Richmond Hill, Georgia, 257; conflicts with organized labor, 267-271; establishes farm camps for boys, 272-274; celebrates golden wedding anniversary, 274-276; celebrates 75th birthday, 277-279; description of, on 76th birthday, 283-284; founds Henry Ford Institute of Agricultural Engineering in England, 286; takes active part in defense production, 298-306; approves contract with CIO, 314-316; expresses hope for future, 320-321, 338

Original ideas: on decentralization of industry, 186-187, 227-228, 254-256, 259, 283; on history, 185, 217-218, 260; on hospitals and medical costs, 146; on labor unions and collective bargaining, 267-268; on money and banking, 215, 234, 236, 252-253; on old-time dancing, 14, 29, 38, 201, 255, 258, 260; on peace and war, 147-148, 151, 152, 154, 173, 182-183, 186, 298, 303, 320; on philosophy of manufacture, 116-117, 119, 202, 310, 321; on practical education, 159, 160, 161, 238, 254-255, 260, 272-274, 286, 299-300, 301; on wages and hours, profit-sharing, 137, 262, 264

See also Ford Motor Company, and references beginning Henry Ford

- Ford, Henry (uncle of the inventor), 20
- Ford, Henry II (grandson of Henry), 189, 200, 294, 295, 306
- Ford, James, 19
- Ford, John (uncle of Henry), 19
- Ford, John (brother of Henry), 24
- Ford, Josephine, 294, 295
- Ford, Margaret, 28, 35
- Ford, Mary Litigot (mother of Henry), 22, 25, 31-34, 220
- Ford, Samuel, 20
- Ford, William (father of Henry), 20-22, 25, 32, 33
- Ford, William (brother of Henry), 41
- Ford, William (grandson of Henry), 294, 295
- Ford Airfield, Chicago, 205
- Ford Airport, Dearborn, 336
- Ford car, race-cars, 67-69, 73, 74, 91, 93, 94; Model A, 89; Model B, C, and F, 99, 100; Model N, 103, 107; Model K, 103, 115; Model S, 113; Model T, 108, 110, 115, 117, 118, 119, 121, 125, 135, 141-142, 162, 201, 213-214; Model A (II), 216, 224-226; Model V-8, 225
- Ford farm tractor (Fordson), farm locomotive, 41; "automobile plow," 108; Ford leases shop for tractor experiments, 111; tractor factory at Dearborn planned, 145-146; tractor manufacturing firm organized, 165; 5,000 tractors sent to England, 166; light-weight tractor, 283
- Ford Field, Dearborn, amphitheatre, 277
- Ford jokes, 131, 132
- Ford Motor Company, history: organization, 86-87; first car, Model A, 89; Selden patent suit filed, 92; one of first pay rolls, 97; Highland Park Plant constructed, 113-114, 124; initiates "mass production," 128-129; uses first moving assembly line, 132-135; distributes bonus to all 1914-15 Ford buyers, 141, 146; in World War I, 141-142, 165-166, 169-173, 178-179; sued by Dodge brothers, 162-165; begins construction of Rouge River Plant, 162, 165, 170, 181-192; reorganized, 180-181; Ford commissary stores, 188; during 1920-21 depression, 189-192; closes Highland Park Plant for 6 weeks, 192; absorbs Lincoln Motor Car Company, 199-200; Ford fleet, 200; discards Model T, 213-214; develops rubber production and synthetic rubber experiments, 223, 256, 324, 337; produces V-8, 225-226; during 1930-33 depression, 227-240; and the NRA, 245-253; and the CIO, 266-271, 279, 307-316
- In World War II: airplane engines, 298; Navy training school, 300, 325; foundry for magnesium alloy, 301; Aircraft Apprentice school, 301; ¼-ton army trucks, 301; heavy bomber planes, 302, 317-320, 327-336; army staff cars, 306; transition

Ford Motor Company—*cont.*

to wartime basis, 317-320, 325-337; Ford boats given to government, 325; Ford tanks, M-4, 326; transport gliders, 336

Factories outside U. S.: Australia, 297; Canada, 99, 297-298; England, 140, 141, 223, 286, 297; France, 140-142; India, 297; Malaya, 297; South Africa, 297

Financial status, 87, 92, 101, 104, 107, 114, 122, 128, 136, 180-181, 193-196, 214, 233, 243-244, 261-262, 282, 296, 311

Labor policies, 137, 138, 140, 158-159, 181, 188, 223, 224, 249, 267-268, 279-282, 310-311, 314-316

*See also* Detroit Automobile Company, Fordmobile Company, Ltd., Henry Ford Company

Ford of Canada, Windsor, Ontario, 297

Ford slogan, "Watch the Fords go by!" 113

Ford Sunday Evening Hour, 261, 287, 319

*Ford Times*, quoted, 107-108, 126  
"Fordmobile" car, 85, 88

Fordmobile Company, Ltd., 85

Fordson tractor, *see* Ford farm tractor

Forsythe, Charlie, 28

Fort Myers, Florida, 144, 216

*Fortune*, magazine, 293

Foster, Stephen, 220

Foster, William Z., 228

Frankenstein, Richard T., 268, 312

Franklin car, 72, 89

Franklin Institute medal, 286

Frisbie, Rev. Stephen W., 40

Frost, Meigs O., 250

Fry, Vernon E., 86, 105

Gallagher, William Henry, 210

Gardner, Richard, 21, 220.

General Motors Corporation, mentioned, 21; Durant invites Ford to join, 114; one year old, Oct., 1909, 123; Ford Motor Company denies any connection with, 126; Nash becomes president of, 130; Knudsen becomes president of, 196; and the Union Guardian Trust Company, 233; UAW recognized as bargaining agency for, 266; Kettering vice-president of, 333

Gettysburg, battle of, 19, 22

Gibbons, Cardinal, 156

Gibbons, Floyd, 184

Goldsmith, Bryant and Stratton, business college, 40

Goode, James, 221

Graham, E. G., 55

Grand Central Palace, N. Y., automobile shows, 94, 107, 127

Grand Cross of the German Eagle, 285

Grand River Road, Michigan, 39, 53, 54

Grant, Charlie, 97, 98

Gray, John S., 85, 86, 87, 105, 180

Great Northern Automobile Company, 81, 83

Green Island, near Troy, N. Y., 187

Greenberg, "Jake," 154, 156

- Greenfield Township, Michigan, 20
- Greenfield Village, mentioned, 15, 25, 26, 30, 36, 40, 54, 185, 228, 334; planning and building, 216-220; dedication, 221-222; closed to the public, 319
- Gregory, J. F., 258
- Gregory, William T., 145
- Grosse Pointe Blue Ribbon Track, Detroit, 69, 70
- Guest, Edgar A., 276, 278
- Guggenheim, Robert, 119, 121
- Haggerty, John, 28
- Haigh, Henry, 109, 276
- Hanson, H. B., 319
- Harding, President Warren G., 191, 198, 200
- Harper, H. B., 119
- Harper's Weekly*, 115
- Hartford Rubber Company, 82
- Hartner, C. B., 169, 213
- Hauss, Mrs. A. P., *See* Couzens, Rosetta V.
- Haynes, Elwood, and the Haynes car, 50, 72, 89
- Hays, Will H., 221
- Henry Ford II*, freight boat, 200
- Henry Ford & Son, tractor company, 165
- Henry Ford Company, 72, 73
- Henry Ford Hospital, 146, 147, 231, 238
- Henry Ford Institute of Agricultural Engineering, England, 286
- Henry Ford Trade School, 160-161, 208, 228, 299, 323
- Herald, The*, Edison's newspaper, 221
- Herring, Clyde L., 44
- Hershey, Burnet, 156
- Highland Park race track, Detroit, 105-106, 113
- Hillman, Sidney, 301
- Hindus, Maurice, 322
- Hitler, Adolf, 272, 297, 316
- Holland Society medal, 292
- Holmes, "Grandma," 22
- Holton, Dr. C. F., 258
- Hood, Carl, 238
- Hoover, President Herbert, 109, 221, 223, 231
- Hopkins, Mark, 72
- Hornblower & Weeks, New York, 208
- Horseless Age*, magazine, quoted, 60
- House, Col. Edward M., 152
- Howard, Col. Joshua, 109
- Hubbard, Elbert, 130
- Hudson, J. L., 167
- Hudson Motor Car Company, 68, 267
- Huff, Edward S. ("Spider"), 68, 71, 73-75, 93, 97
- "Hunger March" to River Rouge Ford Plant, 229-230
- Hurja, Emil, 154
- Hutchings, Frank, 27
- Indiana Gas Company, Kokomo, 50
- Ingram, Frederick F., 47, 48
- Inkster, Michigan, 240
- Insull, Samuel, 16
- Ives, Louis, 109
- James Watt medal, 285
- Jeffers, William M., 337
- Jehl, Francis, 219, 222

- Jewett, Harry M., 92  
 Jewett Stove Works, Buffalo, 98  
 John, W. A. P., 124  
 Johnson, Gen. Hugh S., 245-247, 250  
 Jones, Rev. Jenkin Lloyd, 153, 155  
 Jordan, Dr. David Starr, 151  
 Julien, Felix, 51
- Kaemffert, Waldemar, 215  
 Kahn, Albert, 322  
 Kahn, Otto H., 221  
 Kansas City *Journal Post*, quoted, 248  
 Keim, John R., Mills, Buffalo, 127  
 Kellogg, Paul U., 151, 214  
 Kennedy, Joseph P., 295  
 Kennedy, Julian, 162  
 Kennedy, Kathleen, 295  
 Kettering, Charles F., 333  
 Kilgallen, James, 270, 303  
 King, Charles B., 52, 54  
 Kinsley, Philip, 252  
 Kinzie, Stuart, 258  
 Kirby, Frank E., 37, 38, 52  
 Kirchway, Dean George W., 151  
 Klingensmith, Frank L., 101, 102, 148, 194  
 Knox, Col. Frank, 300, 310  
 Knudsen, William S., begins work for Ford, 127; in charge of Ford assembly branches, 145; mentioned, 169; in charge of producing "Eagle" boats, 171; leaves Ford company, 196; as vice-president of General Motors, recognizes UAW, 266; attends Ford's 75th birthday celebration, 278; attends wedding of Henry Ford II, 295;
- Knudsen, William S.—*cont.*  
 head of U. S. defense production program, 301; gives contract for bomber parts to Ford, 302  
 Kuhn, Fritz, 287, 288  
 Kulick, Frank, 119, 213
- Landon, Governor Alfred M., 264, 265  
 Lardner, Ring, 131  
 La Salle College Civil and Social Congress of Philadelphia, 327  
 Leland, Henry M., 62, 66, 168, 199  
 Leland-Faulconer Company, Detroit, 62  
 Liberty airplane motors, 168, 169, 178-179  
 Lee, Esais, 240  
 Leland, Wilfred, 199  
 Lewis, John L., 266, 279, 293, 307  
 Lieb, John W., 16  
 Liebold, Ernest G., 144  
 Lincoln, President Abraham, 24, 220  
 Lincoln Motor Car Company, 66, 168, 199  
 Lindbergh, Col. Charles A., 335  
 Lindsey, Judge Ben, 153  
 Litigot, Mary, *see* Ford, Mary Litigot  
 Livingstone, William, 105, 154  
 Lochner, Louis P., 151, 155, 156, 168  
 Locomobile car, 72  
 Longley, Clifford B., 210  
 Louisiana Purchase Exposition, St. Louis, *see* St. Louis World's Fair

- Lovett, Mr. and Mrs. Benjamin B., 201
- Lucking, Alfred, 164
- Lynch, Walter F., 210
- Lyons, Albert, 280
- McCarroll, Hudson, 319
- McClure, Dr. Roy D., 231
- McClure, S. S., 153
- McCook Field, Dayton, 205
- McCullough, George F., 123
- McDonnell, Anne, *see* Ford, Anne McDonnell
- McDonnell, James Francis, 294
- Macfadden, Bernarr, 284
- McGuffey, Dr. William Holmes, 220
- McGuffey readers, 28, 39, 40
- McKinley, President William, 16, 69
- McLuke, Luke, 132
- MacManus, Theodore, *Men, Money and Motors*, 189
- McNaughton, Edith, *see* Ford, Edith McNaughton
- McNaughton, Lynn, 322
- Macon, Michigan, restored by Ford, 255-256
- Magill Jewelry Shop, Detroit, 30, 35, 36, 220
- Magnesium alloy, 301
- Maiden Dearborn I*, first Ford airplane, 204
- Malcolmson, Alexander, agrees to finance Ford in manufacture of a small car, 77-80; invests heavily in new company, 84-86; becomes treasurer, 87; outvoted on matter of discounts on Ford prices, 92; asked to resign as treasurer and Malcolmson, Alexander—*cont.*  
director, 103; sells his Ford stock, 105
- Marmon car, 72
- Marquis, Dean, 151, 154, 158, 159, 174
- Martha-Mary Chapel, *see* Chapel of Martha-Mary
- Martin, Douglas D., 283
- Martin, Homer L., 266, 268, 291-292
- Martin, P. Edward, begins work for Ford, 98; general superintendent, 107-108; aids production of Liberty motors, 169; stamps last Model T, 213-214; retires, 318
- Marx, Judge Robert S., 210
- Masonic fraternity, 109, 278, 292
- Massachusetts Charitable Mechanic Association, 60
- Massey, W. T., 142
- Maxwell-Briscoe company, 114
- Maxwell Motor Company, 123
- Maybury, William C., 55, 60
- Meida, Charles, 214
- Menlo Park, New Jersey, 218-219
- Metzger, William, 69, 107
- Michigamme, Michigan, 191
- Michigan Car Works, Detroit, 35
- Miller, Logan, 319, 330
- Miller School, 29
- Moody Investment Service, New York, 209
- Moore, Alex Lee, 29
- Motor*, magazine, 124
- Murphy, Frank, 266
- Murphy, William H., 60, 72
- Murray, Philip, 307, 313
- Murray, Thomas E., 294
- Murray, William N., 70

- Muscle Shoals dam, 197-198
- Nankin, Michigan, 187
- Nardin, Emilie, 25, 26
- Naschke, Paul, 95
- Nash, Charles W., 130
- National Association of Automobile Manufacturers, 77
- National Automobile Chamber of Commerce, 246
- National Labor Relations Board, given power to enforce Wagner Labor Act, 267; summons Ford Motor Company to a hearing, 269; finds Ford company guilty of charges, 271; denies Ford company appeal, 272; decision partially reversed by Circuit Court of Appeals, 293; compliance with NLRB orders as a condition of war contracts, 301, 302; grants request of UAW for election in Ford plants, 313; Ford company agrees to settle all complaints and hearings pending, 315
- National Recovery Administration, 245-250
- Nelson, Donald, 333
- Newberry, Commander Truman H., 175, 177, 178
- New Force*, quoted, 229
- New York American*, 139
- New York Globe*, 139
- New York Herald-Tribune*, quoted, 143, 274
- New York Mirror*, quoted, 248
- New York Sun*, quoted, 189
- New York Times*, 143, 215, 262
- New York World*, 139
- Nichols, Shepard and Company, Battle Creek, 31
- Night Owl John's lunch wagon, Detroit, 67, 74
- "999," Ford racing-car, 74-76, 91, 93, 94
- North American Aircraft, 312
- Northville, Michigan, 187
- Ochs, Adolph, 221
- O'Hearn, Patrick, 22
- Oldfield, Barney, 74-76
- Old Sauk Indian Trail, 20, 277
- Olds, Ransom E., 60, 114, 221
- Oldsmobile car, 60, 68, 72, 77, 81, 84, 89
- Otto, Dr. Nicolaus A., 37
- Outlook*, magazine, quoted, 139
- Overseas Press club, 156
- Packard car, 72, 89
- Panama-Pacific Exposition, San Francisco, *see* San Francisco World's Fair
- Parker and Webb building, Detroit, 73
- Peace Ship (*Oscar II*), 152-157
- Peerless car, 72
- Pekin Township, Michigan, 20
- Pekin Village, Michigan, 20
- Pelletier, LeRoy, 88
- Pierce car, 72
- Pingree, Hazen S., 45, 55
- Pioch, W. F., 319
- Pipp, E. G., 151, 177, 182
- Powell, Major Alexander, *By Camel and Car to the Peacock Throne*, quoted, 142
- Premier car, 72
- Prentiss, John W., 209

- Race, Albert, 29
- Rackham, Horace H., 80, 86, 87, 106, 180
- Radio beam, developed by Ford engineers, 204-207
- Rausch, Ray, 319
- Raymond, Judge Fred M., 210
- Reconstruction Finance Corporation, 232-233
- Redfield, William G., 139
- Reed, Senator James A., 210
- Reuther, Walter P., 268, 312
- Richmond Hill, Georgia, Ford's winter home, 256-258
- Rockefeller, John D., Jr., 221
- Rockelman, F. L., 97, 213
- Rogers, Will, 221, 247, 250
- Roosevelt, President Franklin D., wins Democratic nomination and national election, 230-231; refers to "economic royalists," 264; visits Detroit in 1936 campaign, 265; re-election, 266; invites Ford to White House luncheon, 276; nominated and elected for a third term, 295-296; appealed to by Ford for aid against strikers, 312; visits Ford plant, 333-334
- Roosevelt, Mrs. Franklin D., 333-334
- Roosevelt, President Theodore, 94, 109, 139
- Rosenwald, Julius, 221
- Rouge River, 20, 145, 162
- Roulo Creek, 21, 181
- Ruddiman, Edsel, 25, 26
- Ruddiman, James, 28
- Ruddiman, William, 21
- Rumeley, Edward A., 140
- Russia, *see* U. S. S. R.
- St. Louis World's Fair, 94, 95
- San Diego Exposition, 150
- San Francisco World's Fair, 149
- Sapiro, Aaron, 210-212
- Saturday Evening Post*, 114
- Schlosser, Fred P., 93
- Schwab, Charles M., 221
- Schwimmer, Madame Rosika, 151, 152, 155
- Scofield, Lemuel B., 290
- Scotch Settlement, 21, 25
- Scott, Bert, 119, 121
- Scott, E. D., 319
- Searle, Frederick E., 161
- Selden, George B., 89
- Selden patent, nature of patent, 89; association of licensees formed, 89-90; Ford issues his analysis of Selden patent, 90-91; suit against Ford, 96; court decision upholds patent, 122; Ford served with injunction, 126; U. S. Circuit Court decides against patent, 127
- Shanks, Charles B., 69
- Sharon Hollow, Michigan, 283
- Sheen, Monsignor Fulton J., 295
- Sheldrick, Larry, 319
- Sinclair, Upton, 156, 285
- Sinsabaugh, Chris, 238
- Sloan, Alfred P., *Adventures of a White Collar Man*, 68
- Smith, Alfred E., 295
- Smith, C. J., 119, 278
- Smith, Rev. H. Lester, 167
- Smith, Orlando J., *A Short View on Great Questions*, 69
- Smith, Roscoe, 318, 319
- Smith's Creek, Michigan, 218
- Snow, Doctor, 109

- Sorensen, Charles E., early training, 98; begins work for Ford, 99; assistant superintendent, 108; initiates first chassis assembly line, 133; in charge of Ford's European factories, 145; goes to England to arrange production of tractors for British war use, 166; mentioned, 169; stamps last Model T, 214; vice-president of Ford company, 318; uses new methods in bomber production, 330, 332; confers with President Roosevelt, 334
- Soybeans in relation to industry, 228, 231, 254, 255, 274, 277, 304, 317
- Spanish-American War, 60
- Springwells, Michigan (later Fordson), 145, 165
- Springwells Township, Michigan, 20
- Stearns car, 72
- Steenstrup, Pete, 68
- Steinmetz, Charles Proteus, 220
- Stevenson, E. G., 184, 185
- Stidger, Dr. William L., 138
- Stout, William B., 203, 204
- Stout Metal Aircraft Corporation, 203, 204
- Strelow, Albert, 78, 86, 91, 105-106
- Sullivan, Mark, 246
- Swope, Gerard, 221
- Taft, President William Howard, 113, 119, 153
- Taylor, Robert S., 102
- Ten Eyck, Conrad (Coon), 20, 277
- Thomas, R. J., 312, 314
- Thornton, Willis, 243
- Time*, magazine, 305, 327
- Town Line Road, Detroit, 33
- Townsend, Samuel, 37
- Treese, L. S., 319
- Tuttle, Judge Arthur J., 312
- UAW, *see* United Automobile Workers, CIO
- Union Guardian Trust Company, Detroit, 232-233
- United Automobile Workers, CIO, 266-271, 313
- United States Motor Company, 123
- U. S. S. R., engineers trained at Ford plant, 230, 322-323; Ford's aid to, 322-323
- Van Auken, Charles, 110
- Van Wagoner, Governor Murray, 313, 333
- Vanadium, steel alloy, 115, 118
- Villard, Oswald Garrison, 151
- Wagner Labor Act, 267, 293
- Walborn, Thomas S., 104, 107
- Waldrop, J. V., 96
- Wall Street *Journal*, quoted, 139
- Walsh, John, 280
- Wanamaker, John, 94
- Wandersee, John F., 73, 89, 213
- Ward, F. R., 26
- Washington Boulevard, Detroit, 53
- Wayne County, Michigan, 20
- Wayside Inn, South Sudbury, Mass., 201, 228, 276
- Webb, Stuart, 209
- Weideman, Carl, 242

- White, Albert E. F., 72  
Whitney, Eli, 128  
Wibel, A. M., 318  
Widman, Michael F., Jr., 307  
Wilde, John R., 43, 48  
Willkie, Wendell, 295-296  
Willow Run Bomber Plant, 317-320, 327-336  
Wills, C. Harold, 67, 73, 89, 97, 209  
Wilson, President Woodrow, urged to initiate a mediation conference, 151; refuses to commit himself to Ford's peace proposal, 152; visits Ford factory, 159; supported by Ford in his campaign for re-election, 166; chooses Ford to serve as labor umpire, 173; drafts Ford to run for U.S. senator, 174-175  
Wilson Body Company, Detroit, 67, 68, 82  
Wilson Dam, *see* Muscle Shoals dam  
Winton, Alexander, 68, 70, 71  
Winton car, 69, 70, 71, 72, 77, 89  
Wismer, Mrs. Harry, *see* Bryant, Betty  
"Wolverines," 20  
Woodhall, C. J., 77, 86, 105  
Woolf, S. J., 262  
Worcester, Philip, 125  
*World of Science*, magazine, 37  
World War I, 141, 152, 153, 156, 162, 173, 178-179, 182, 197  
World War II, 157, 161, 171, 295, 296, 297, 303, 310, 316, 321, 322-323, 327, 337  
*World's Work*, magazine, quoted, 140  
Wright brothers, 110, 220, 221  
Young Communists League, Detroit, 228, 230  
Zeder, Fred M., 333  
Zumstein, Dr. Fred E., 87



## HENRY FORD II

At the time this revised edition of HENRY FORD, HIS LIFE, HIS WORK, HIS GENIUS goes to press, Mr. Ford is in retirement.

Henry Ford II, the grandson of Henry Ford and son of the late Edsel Ford, has assumed the presidency of the Ford Motor Company. This pleasant and aggressive young man who at 28 commands the largest family-owned enterprise in the world, has added immeasurably to the strength of the Ford Motor Company, and the consensus is that his promotion is more earned than inherited.

After his period of service in the Navy he spent considerable time at various posts inside the factory.

Those who know him well say he has the gentleness of his father, Edsel, who was President of the Ford Motor Company from 1918 to his death in 1943, and the quiet determination and stick-to-itiveness of his grandfather, Henry.

The millions of Americans who have throughout the years admired the efforts of Henry Ford extend to Henry Ford II their best wishes for a continued and successful operation of a great American institution.

FLOYD CLYMER, Publisher



### 1946 FORD OFFICIALS IN A HAPPY MOOD

Left to right: John S. Bugas, Chief of Industrial Relations; Jack Davis, Executive Vice-President and General Sales Manager; James Melton, famous radio and opera star; Ernest R. Breech (standing), Executive Vice-President; and at extreme right, Floyd Clymer, publisher of this book. While Melton and Clymer have no connection with the Ford Motor Co., they enjoyed a joke told by Mr. Breech during the banquet tendered the participants in the 1946 Glidden Tour, at Dearborn Inn. The drivers of the early cars were guests of the Ford Motor Co., at Camp Legion and Dearborn Inn. The 1946 event was a re-enactment of the famous Glidden tour which in the early days of the industry did much to promote good roads and the development of better automobiles. The 1946 tour was held under the auspices of the Veteran Motor Car Club of America. James Melton was Tour Chairman and Master of Ceremonies.

—Ford Motor Co., Photo.

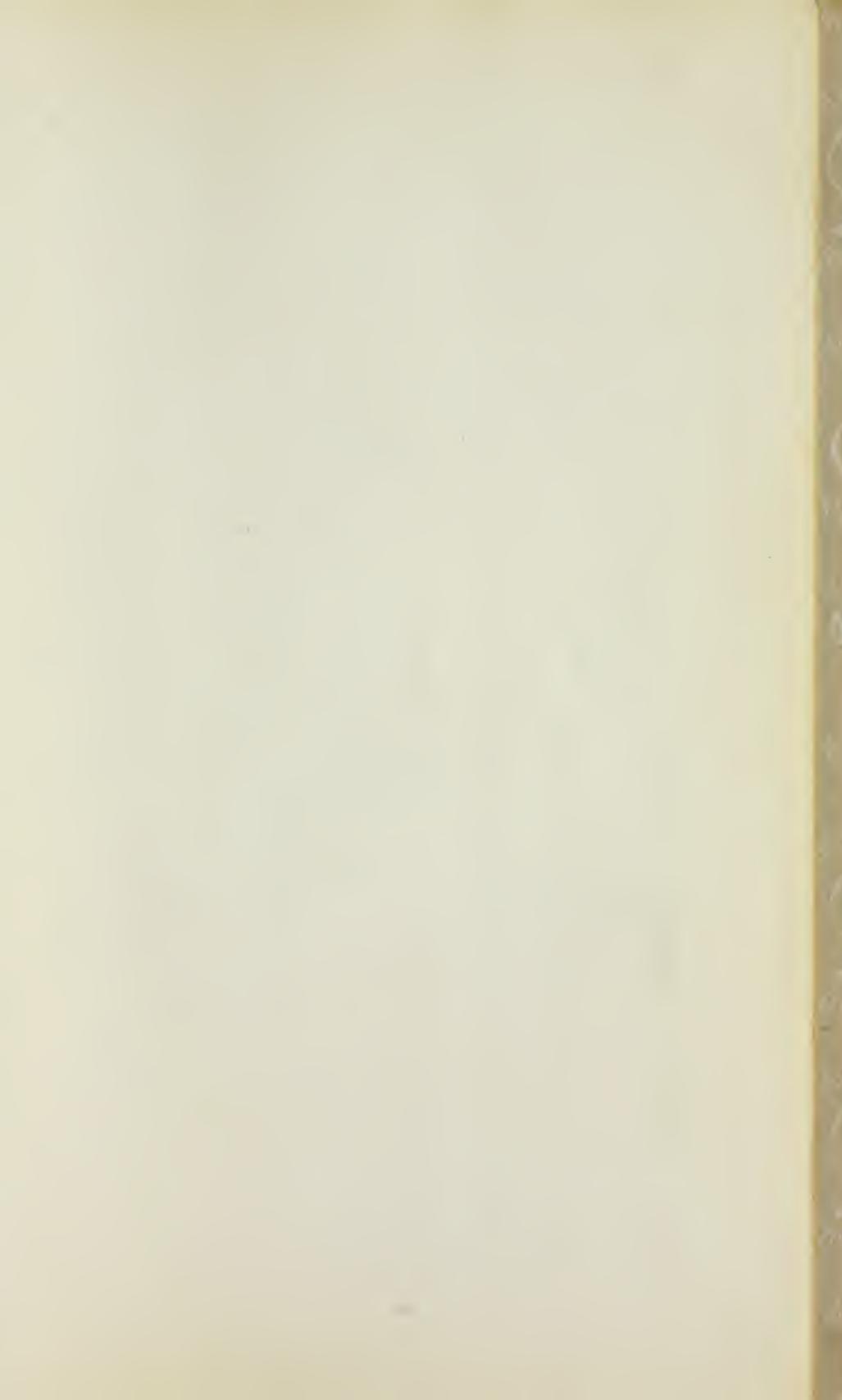


### HENRY FORD RECEIVED CHARLES CLIFTON AWARD

During the Golden Jubilee Celebration of the Automotive Industry held in Detroit, May 31, 1946, Henry Ford and thirteen early pioneers received the Clifton Award which symbolized outstanding contributions to the industry.

The awards were presented on the stage of the Masonic Temple in Detroit. The statuettes awarded each pioneer were designed by Arvard Fairbanks and contributed by Aluminum Co. of America. Seated, left to right: John Zaugg, early factory worker; John Van Benschoten and Charles Snyder, veteran dealers; Ransom E. Olds; the late Barney Oldfield, veteran racer; Charles W. Nash; Frank Kwilinski, veteran factory employee; Charles B. King; George Holley; Henry Ford; J. Frank Duryea; Edgar Apperson and William S. Knudsen. Mr. Ford was approaching his 83rd birthday when this celebration was held.

—Detroit News Photo.







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