

The Family Heritage Series

A weekly discussion of Americanist truths and traditions for those "heirs of all the ages" who will have to preserve that most important inheritance of all — freedom. Produced by the Movement To Restore Decency.



Volume II

Lesson Eighty-Seven

Fifteen Million Model T's

LESSON IDEA

To show how Henry Ford combined imagination, determination, and perseverance to revolutionize the automobile industry — and to benefit every American who wanted an inexpensive, reliable motor vehicle.

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IN 1900 an automobile was in much the same category as a yacht is today. Many Americans wanted one, but only the rich could afford such a luxury. A motor car was a plaything. A prestige item. A status symbol. Each high-priced mechanical wonder was carefully built by hand — a product of individual craftsmanship. The engine was meticulously put together by skilled machinists like John and Horace Dodge; the transmission by other expert craftsmen; and the rear axle differential by still others. Then a versatile mechanic took all the essential parts, together with a frame, and built a car. He labored over his mechanical carriage, tinkered with it, worried over it, and fussed with it until its engine had the healthy hum which would propel its obliging chassis out of the shop and onto the selling lot.

Nine years passed with only a few changes in this basic manufacturing procedure. The hiring of unskilled men as stock-runners, or stock-chasers, to fetch the parts the mechanic needed from the tool crib, was one notable change. The mechanic's time was too valuable, the car-makers decided, to be wasted in walks to and from parts bins. And at the Ford Motor Company, the unorthodox Henry Ford

had split up the mechanic's job among several men, working side by side, each one responsible for a limited set of operations.

Naturally a car put together with such special attention was worth its two-thousand-dollar selling price. Nobody quarreled about that. The difficulty came in finding two thousand dollars, or even one thousand, or even eight hundred and fifty (the price of the most economical Ford), in the days when most Americans were paid two dollars *a day* in wages — that is, just ten dollars a week or five hundred and four dollars a year. Spending four years' salary on a car — when a horse would serve as well, or better — was unthinkable.

Imagine, then, how you might have felt if you had opened your newspaper one evening in 1908 and read the following ad signed by Henry Ford:

I will build a motor car for the great multitude. It will be large enough for the family but small enough for the individual to run and care for. It will be constructed of the best materials, by the best men to be hired, after the simplest designs that modern engineering can devise. But it will be so low in price that no man making a good salary will be unable to own one — and enjoy with his family the blessing of hours of pleasure in God's great open spaces.

Was Ford joking? Or was he becoming senile? After all, he was approaching fifty. And everyone

knew he was an uneducated man. Of books and formal education even in his special sphere, he knew next to nothing – and cared less. Other car-makers had been in business longer than Ford, and several had shown more expertise.

The most complimentary thing you could say about Henry Ford, the man who was promising to put one of the country's most fascinating status symbols within everyone's means, was that he was a shrewd, ingenious, persevering Yankee mechanic. He was self-made and self-taught, a product of a midwestern farm and of the Michigan machine shops; and he had succeeded in marketing a well-made car for a modest price.

THE FORD IDEA was unique. While other manufacturers were intent on producing a new model every year so that the more prosperous owners would get rid of their old cars and buy new ones, Henry Ford wanted to build a car that would last for years. He called it a "universal car," and what he meant by the term "universal" was that parts on the first models and corresponding parts on later models would be as much alike as "pins or matches," making repairs always easy and cheap. The family that bought a Ford could expect to keep it for many years simply by replacing worn-out parts with new ones. There never would be a time, if Henry had his way, when a Ford owner would be told that the part he needed was "not made any more" or that "the newer models had changed all that."

Moreover, the "universal car" would never be outdated by a stylish new model. Year after year it would look the same and be painted the same color – black. Not having to change styles would mean an

enormous savings in tools and machines, Henry had decided; and while his competitors spent their profits on new tools and new machines for new models each year, Ford planned to pass on his savings to the customer by lowering the selling price each year. The "universal car" was to be the Model T – the sole product of the Ford Motor Company for nineteen years after the 1908 announcement.

Ford's customers loved the idea; his stockholders hated it; and his salesmen began looking for new jobs. Was this unique plan to steadily reduce the selling price a sound business practice, or was it, as most people believed, a sure way to bankruptcy? [*Encourage a family discussion on profits. Who is entitled to decide what should be done with profits? The stockholders? The owners? The managers? The workers? What effect will the different ideas discussed have on the prosperity of a business?*]

The Ford theory was: If a car costs a dollar less to produce, and the dollar comes off the price, the result is that more people are able to buy. More buyers make a still larger business. A larger business still further reduces the cost, which in turn increases the business again. If, on the other hand, the one dollar saved is added to the manufacturer's profit, the price of the car remains the same and there is no incentive for more people to buy cars. If the dollar saved is added to wages instead of being subtracted from the car's price tag, there will be no change in the volume of business. But sharing the profit with the public yields an immediate advantage: As prices go lower, business increases; more men are employed; wages increase; and profits rise.

PUTTING THE FORD theory into practice created many production problems – the most serious of which was a lack of skilled technicians. As the sale of Model T's climbed from eleven thousand per year to eighteen thousand to thirty-four thousand, a frantic search began for mechanics, assemblers, machinists, and other expert craftsmen. The question was: Could enough be found to keep pace with increased production? The answer was *no*. But Ford's solution to the dilemma was as simple, and as unique, as his other innovations. If the present method of production was inadequate, the system had to be changed. Unskilled labor, of which there was always plenty, had to be used instead of skilled

FOR SERIOUS STUDENTS

The Wild Wheel, Garet Garrett's book about the life and career of Henry Ford, is perhaps the best account of Ford's extraordinary life. In the foreword Garrett, who knew Ford personally, describes the great industrialist as America's last and best practitioner of *laissez faire* capitalism – a "divine mechanic . . . who thought with his hands." *The Wild Wheel*, published in 1952, is available at most public libraries, and we urge you to read it.

labor. And many, many more machines would be necessary.

Skill was still essential, of course; but skill could be built into the machines – automatic, unerring skill. Engineers and highly skilled mechanics could design and build machines especially for the production of the Model T; and, as Ford biographer Garet Garrett observed: “A man of very ordinary intelligence could mind such a machine, because he would have only to fill its maw according to a formula and then activate it by pulling a lever or stepping on a treadle, all with a few disciplined motions of his hands and feet, the fewer the better. And he could be trained to do that in a few hours A Ford man going to and fro in the world was expected to keep his eyes alert for any new wrinkle in machine craft that could be copied or adapted. Anyone who could think of a new machine or of a better way to make an old one work was king for a day.”

But the addition of specialized machines – unerring in their skills – still could not produce enough of the tough and sturdy Model T’s to suit the demand. Too much time was being wasted getting materials to and from the men and their machines. “The undirected worker,” said Ford, “spends more of his time walking about for materials and tools than he does in working. Save ten steps a day for each of twelve thousand employees, and you will have saved fifty miles of wasted motion and misspent energy.”

TO CORRECT this problem of wasted motion, Ford resolved that a man would never have to take more than one step if it could possibly be avoided – which meant that the man had to stand still and the work had to move. Furthermore, no man should ever need to stoop over to work – which meant that his work should be brought to him waist-high. Conveyor belts solved both problems.

For an understanding of the production speedup that resulted from these innovations, let’s compare the old method of assembling an engine with the Ford system. Under the old system, one man assembled the entire engine, walking round and round it until it was finished. But under the Ford system, what that one engine assembler did was broken down into eighty-four separate operations, one man to each operation, all eighty-four of them standing still, with the work moving past them waist-high, each man having



HENRY FORD: COMPETITIVE CAPITALIST

only time enough to do one thing. And where it formerly took eighty-four men to assemble eighty-four engines, now eighty-four men assembled 252 engines, or three times as many.

“You will realize,” writes Garet Garrett, “that the Ford way could not have been thought out all at once. It wasn’t. There were too many unexpected complications; the solution of one difficulty brought unexpected problems into view. It had to grow by trial and error”

If something worked on a trial scale it was immediately adopted on a large scale. Almost overnight any section of the factory might be torn apart to be reorganized on a new system. The conveyor-belt idea of moving the work to the man and from one machine to another, for example, was first applied to all the subassembly operations for the Model T – the engine, the flywheel magneto, the transmission, the rear axle differential, and so on.

“The first result of speeding up the subassemblies in this manner,” says Garrett, “was to confound confusion There stood the chassis still, in the middle of the floor, with everybody running around it, everybody bringing something to it, until somehow a finished automobile should appear; so that of

course the faster the subassemblies arrived . . . the madder the disorder was. Then a natural thought presented itself. *The chassis had to move!*”

The first Ford chassis moved along the factory floor tied to the end of 250 feet of rope wound around a windlass. [*Have a family member look up the dictionary definition of windlass.*] The assemblers either walked with it or rode it, doing their specialized operation as they moved and picking up parts and subassemblies along the way. The entire process took only five hours and fifty minutes – a drastic cut in the former record of twelve hours and twenty-eight minutes. It was an extraordinary victory for the Ford production chiefs!

The celebration had hardly died down, however, before someone thought of tying more chassis to the end of the rope, and another innovator suggested increasing the speed of the windlass. New ideas were offered for simplifying each assembler’s job; the time shrunk to an even lower figure, and everyone was happy. Until the day the rope broke. Then the Ford production experts threw away the windlass and rope and sat down to think.

“What they thought of,” Garrett tells us, “was a power-driven endless conveyor belt, flush with the floor, like an escalator running on the level. It was wide enough to hold not only the chassis but workers on both sides of it, so that the workers and the automobile moved together, each worker doing his specialized bit of work, then stepping back a few paces to do it again to the next car, in a string of forty-five On that first conveyor belt the time required to assemble an automobile was reduced to ninety-three minutes

“This made such a raging river through the middle of the shop that the subassembly lines began to run dry. So they had to be raised higher and higher and more were added, and the work everywhere was subdivided again and again to a point at which each operation was incredibly simplified

“There seemed to be no limit to how far you could go in that direction. Ford overhauled his fantasy of a car a minute. It did not stop there. Five years later a Model T was appearing every ten seconds of the working day. That was mass production.”

And along with mass production came the price cuts Ford had planned. In 1909 the Model T sold for \$950; but every year the price was lowered until

in 1917 it was \$360. Ultimately it sank to \$295. Pound for pound, the Model T was the best value money could buy.

So firmly did Ford believe in his theory of low prices that sometimes he would set a price actually below cost just to see if his engineers and managers could meet it; and they always did. A low price forced everyone in the shop to strive for the highest point of efficiency. In fact, Ford often said he had made more discoveries under this forced method than he could by any other. Price should be decided first, he concluded; and if the price was set at the point where more sales would result, cost would follow. There was no room for waste or unnecessary expense in a Ford operation.

Concluding Thought

“I will build a motor car for the great multitude,” Ford had promised in 1908. And in the next nineteen years, he made fifteen million Model T’s. Not because he was a socialist who pretended to serve the “public interest,” but because he was a capitalist who loved machines and machinery and the challenge of doing what no one else had been able to do. His ingenuity and imagination so revolutionized industrial methods that the cost of making *all* cars – not just Fords – was amazingly reduced, and the possibility of owning one was brought within reach of every wage-earning American.

Looking Ahead

Next week we will leave the factories of Detroit for the one-room schoolhouses of Ohio where a pioneer lad named William Holmes McGuffey prepared for a teaching career that would ultimately have an extraordinary effect on Henry Ford and millions of other Americans.

The Family Heritage Series

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The Family Heritage Series is published by the Movement To Restore Decency, a project of The John Birch Society. The annual subscription rate is twelve dollars for fifty-two lessons, mailed monthly. Individual lessons may be purchased in any quantity at four copies for one dollar. Address all orders and subscriptions to The John Birch Society, 395 Concord Avenue, Belmont, Massachusetts 02178. ©1975 by The John Birch Society