

A majority of the business men answering the questionnaire described on page 35 selected Mr. Ford as the man who has contributed most to business during the last 25 years.

What I Have Learned about Management in the Last 25 Years

HENRY FORD

In collaboration with SAMUEL GROWTHER

WE have been learning a deal about a great many things this last quarter-century, but principally we have been learning to manage—to manage men, to manage machinery, to manage transportation, and to manage the application of processes and things which we had known about for a long time but had never brought together into a single unit.

We do not know very much about anything as yet. We still waste more than we use. We waste men, we waste materials, we waste everything, and consequently we have to work too hard and too long to accomplish what in the end amounts to very little. But at least we are learning that above everything we need management—that no matter how much science we have, no matter how much machinery we have, no mat-

ter how much power we have, we cannot get anywhere without the kind of management which extends from the smallest detail to the whole purpose of what you are about.

Take, for instance, the design of an article which is to be made and sold. The design is not one thing, the making another, and the selling a third. Without management they are separate functions, but with management

they are all part of the same function. A design may seem to be exactly right for the market, but its execution may involve difficulties which so increase the cost of the product as to take it out of the market for which it was designed. Or again, the manufacturing side may so predominate that the resulting article, while cheap and easy to make, does not exactly fill the public need and therefore cannot be sold.

We have been learning that management is not something in an office building miles away from the product. It starts with the product itself and then, step by step, works back. A fine machine is a good thing to look upon of itself, but in a factory no machine is worth giving floor space to unless it contributes exactly and according to a plan to the doing of whatever it is you have started out to do in employing the machine. There need be no guesswork about a machine.

People used to talk about hand-work as though it were better than machine-work, but now the proper kind of machine will not only work to a thousandth of an inch, or to whatever degree of accuracy is necessary, but will do it every time. It is the fault of management if a machine or a series of machines leaves anything to be done by hand.

We used to think of a machine as a machine—as a thing which the employer owned and which could be used to make money for him. Now we know that a machine is a method for the application of power. A man can hit a harder blow with

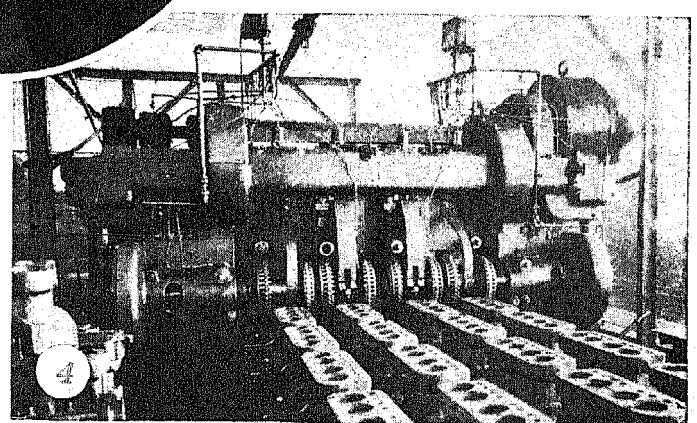
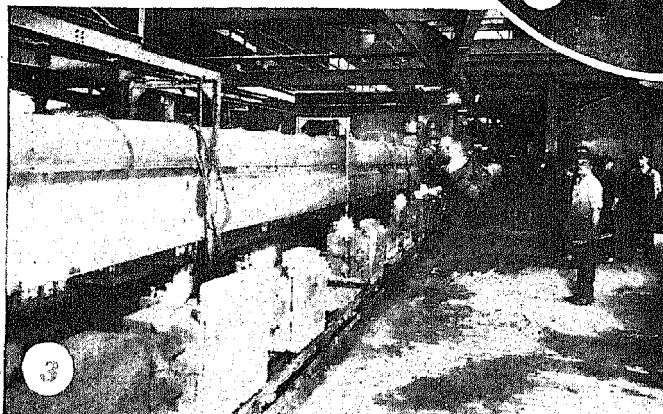
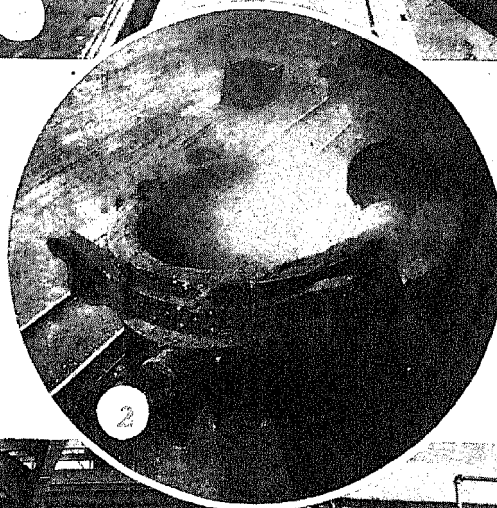
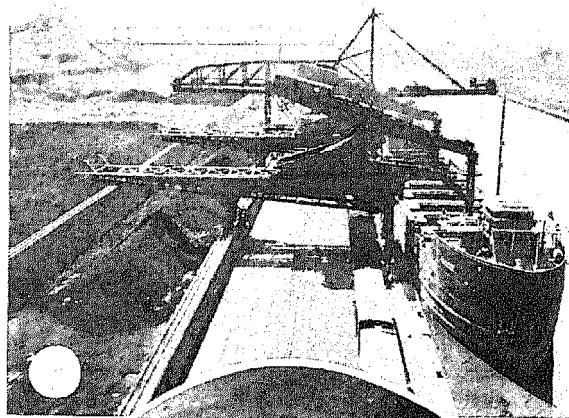
a hammer than he can with his bare fist—the man's power is increased by the extra force of the leverage of the hammer handle and the wear and tear on the hammer head is substituted for wear and tear on his hand. The power hammer goes much further than the hand hammer; it puts more power at the service of the worker. Therefore, the operator on a power hammer can do so much more in a day than can a man with a hand hammer that he can earn for himself a larger wage than can the hand-worker and produce a cheaper product.

A machine does not belong to the man who buys it or to the man who operates it but to the public, and it ad-

vantages the worker and the proprietor only as they use it to the advantage of the public. It benefits the public when and only when it is used to turn out cheap, well-made, well-designed articles that satisfy a public need. The workmen and the owner cannot expect to derive a benefit from the operation or from the ownership of the machine excepting as it benefits the public. We are learning that a machine is a public servant.

A place which has power and which subdivides it through whatever number of machines may be necessary to accomplish a given object, is a factory and it, too, pays only as it serves. The factory may generate its own power and perform within its own walls all the operations necessary for a complete product, or, again, it may buy its power and perform only a part of the necessary operations. Its course is surely determined by the measure of service which it has adopted. If—and this qualification is necessary for complete success—it tries to serve to the uttermost, then it will make only those parts of its product which it cannot buy from some company which is likewise trying to serve.

It is not a question of pride at all; it means nothing to say that you carry your product from the raw-material stage to the finished article unless, under your control, this process results in a cheaper product and a better one than you could achieve by assembling instead of manufacturing. The product alone governs—that

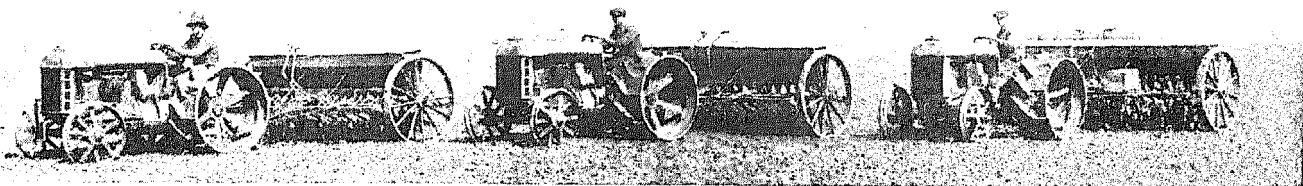


1. THE IRON ORE is received and unloaded at the River Rouge plant by machines which are almost human in their work.

2. WITHOUT HAND-WORK of any kind the ore is smelted and run off from the furnaces.

3. THE RED-HOT METAL is cast into cylinder blocks as a conveyer moves the molds along.

4. TWENTY-THREE HOURS from the time the manufacturing process was started the motor blocks are finished, still untouched.



With modern machinery all the necessary farm work, except on stock farms, can be done in about a month and a half a year. Country factories can then use the rest of the farmers' time.



A dry-cleaner applies the idea of moving-line production to his business.

Can I Use Mr. Ford's Ideas?

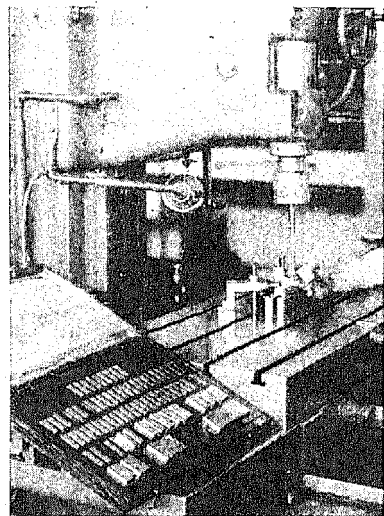
Some of the unusual precepts which are fundamental to Ford's idea of management are:

Reduce departments to "office" and "plant";

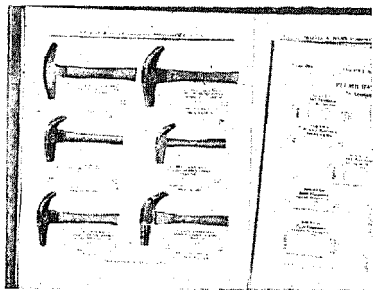
Eliminate needless final tests;

Use branch assembly to do away with production wastes.

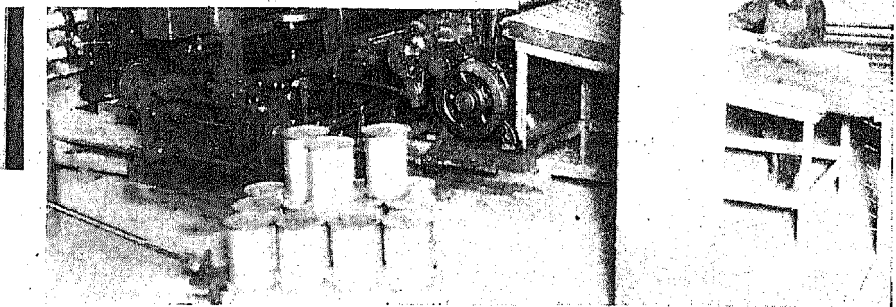
These photographs show how businesses are already using some of Ford's methods to speed production, to lower manufacturing costs, to cut out waste motion, and to enlarge markets.



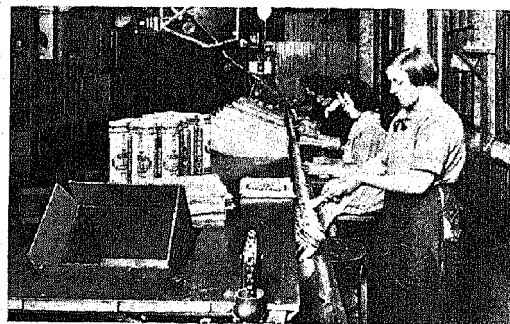
Accurately adjusted machines do away with the need for final testing.



Simplification reduced this company's models from six to two, as told in SYSTEM for March, 1925.



The Minneapolis Bedding Company produces spring fabrics at its factory, assembling the springs at branches.



The moving-assembly idea of production is also applied by the Toy Tinkers, Incorporated.

"Do not go into a side-line unless you can give it enough business to warrant its success." Following this rule assured the Fred. W. Albrecht Company that a laundry would be a profitable side-line.

What I Learned about Management

(Continued from page 40)

-the automobile has made it possible for a workman to live out in the country a considerable distance from his work. Some of these men have farms and practically all of them have garden patches. They have the advantages of country life, but at the same time can earn the high wages which attract people from the farms to the city.

An ambitious man will not, in these days, stay on a farm if he has to get his entire livelihood from the farm. Farming is essentially a part-time job and cannot be expected to pay full-time wages. The men in the valve factory who have farms find that they can do all the really necessary farm work by staying out a few days now and again—they will scarcely be out more than a month and a half during the entire year. This is quite enough time in which to look after a farm if a man does not keep live stock. The keeping of live stock is a specialized business which has nothing much to do with farming and is entirely unprofitable unless carried through on a large scale under industrial conditions.

The principle of going out into the country to establish new plants is now firmly fixed with us—although for reasons of transportation it is sometimes necessary for us to build assembly plants in or near the larger cities. Eventually all industry will get away from the cities and out into the country, for not otherwise can we strike the balance between farm life and factory life.

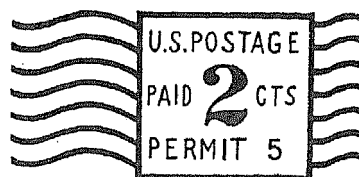
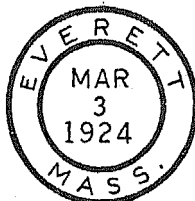
The farmer thinks he ought to have a better living than he can get from the farm and in that he is right. The city workman does not and cannot get full money's worth for his wages. The factory and the farm, instead of being opposed to each other as has been imagined, are really complementary.

The 12-hour day is practically a thing of the past. When we learn more about management we may discover that the 8-hour day is too long. We are now experimenting with the 5-day week and may be able to make it the standard week.

We always work on a 16-hour day in order to spread the plant overhead over the largest possible amount of production. In fact, because of the number of men we employ, we have some groups going out and others coming in all day long.

The change which will result in breaking up the big, inefficient, city

Can You Answer these Questions about Your Mail?



This indicia, imprinted on mail in various colors and denominations of postage, is the sign of Faster Mail at Less Expense.

What is the Simplest, most Economical, and most Efficient way of mailing my mail?

By mailing through the Standard Postal Permit System.

What's that system?

One that automatically feeds; separates; imprints beautiful post mark, stamp mark, cancellation marks; counts; seals; and stacks mail at the rate of 10,000 pieces per hour;

A system that eliminates the purchasing, accounting for, affixing, cancelling, loss from, and general use of the adhesive postage stamp;

A system that automatically gives you a *postage account control* of postage used by departments, day by day.

Is it generally used by mailers having an average of 300 or more pieces a day or large periodic mailings?

Approximately 6% of all first class mail is mailed under permit privilege.

What are some advantages of this Standard Postal Permit System?

Eliminates lost postage and labor of handling postage stamps; expedites mail through your office and the post office; replaces hand sealing; eliminates cancellation at the post office; accounts for all mail sent through it.

Tests show it produces more and faster returns from mailings, for its mail looks better and moves faster.

How do I pay postage?

Simply make a deposit at your post office against future postage. Send with the mail a statement of number of pieces mailed. Postage is charged against your deposit. It is most simple.

How is this system operative?

**Through the Standard Postal Permit
and Sealing Machine.**

Do I have to pay rentals for its use?

No, you own your own equipment. It is a most simple, durable, and economical system—it pays for itself in a few months.

Will you send me more information and your Postage Account Book (sent free)?

Yes. Simply return the slip below.

Standard Mailing Machines Company
Agencies in Principal Cities

Simply Fill In and Mail

Standard Mailing Machines Company
Everett, Mass.

☐ Postal Permit System

Please send information on

☐ Stamp Affixer

☐ Envelope Sealer.

Name

Title

Company

Address

☐ My mail averages over 300 pieces a day. Send me your *Postage Account Book*, free.

Other Standard Mailing Machines That Cut Costs

STAMP AFFIXERS—Affix postage stamps, precancelled stamps, stickers, or labels to mail five times as speedily as by hand.

ENVELOPE SEALERS—Seal 1,000 letters for a cost of less than one cent.

OVER 55,000 STANDARDS IN USE



An accountant would tell you that the three prime qualities in ledger paper were: flatness in binder, ability to stand erasure and great strength.

Three reasons why this paper is DIFFERENT

THE first Parsons paper was made in Holyoke seventy-two years ago. And today we offer you the famous "Three-Point" Parsons Paper with the features every bookkeeper wants.

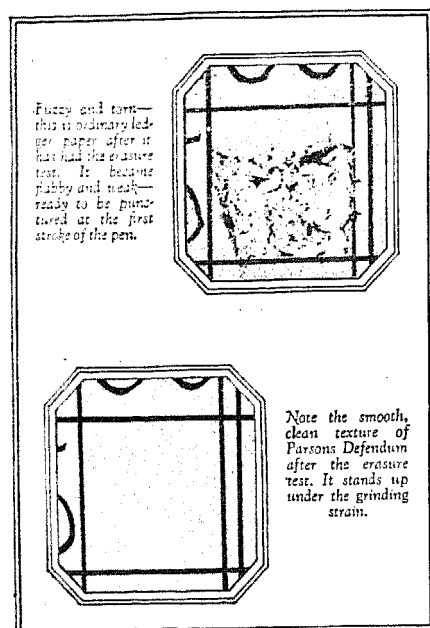
1. Parsons Ledger Paper has a Perfect Hinge for loose-leaf ledger work. The hinge is made in the sheet of paper (not crimped) and becomes a part of the paper itself.

2. Parsons is exceptionally easy to erase. A few strokes of the eraser and the page is absolutely clean. No ugly blemishes remain to mar and spoil the cleanliness of the page.

3. It is a sturdy paper—made to resist the ravages of constant daily handling. It will not curl or bend at the edges or sag at the binder. It facilitates writing. And it protects and preserves the priceless records of your business—keeping them legible, safe, always ready for reference.

Make this interesting paper test

If you are not at present using Parsons Defendum, write today to us for a sample of this famous



The erasure test shown above shows clearly why Parsons stands the gaff of hard business use.

"Three-Point" paper. Compare it with the paper you are at present using. Compare its ease of writing and erasing. Note its sturdy texture. And see the Perfect Hinge. Once you have tried it you will never go back to less efficient brands. Parsons Paper Company, Holyoke, Mass.

FOR EASE ON THE EYES WE RECOMMEND BUFF

PARSONS

BETTER BUSINESS PAPERS

for Ledger work use Defendum

factory and putting it out into the country where it may link up with farming, and the shifting of the specialized portions of farming into real specialties will bring about a most remarkable change in this country. We are out of balance and it is necessary that we should get into balance.

All of this, however, depends upon the character and the skill with which we manage, and whether we look at management as something of itself which exists for itself, or whether we look at it from the standpoint of getting the work done. Management, unless its purpose be kept always in view, may degenerate into a thing of red tape which does not manage at all.

Take a very simple instance—the signing of a bank check. We used to think that a proper control required that a number of precautions be thrown around the signing of a check and that it should bear the signatures of at least two officers. A check is drawn to pay a bill or some other charge and the amount set down on the check is the result of bookkeeping. The officers who sign the check never actually make it out—their time is much too valuable for that. If the amount of the check is in error, that fact will ultimately appear from the balancing of the books. The signer of the check, no matter how well he knows the reasons for the check, cannot determine whether or not its amount is right simply by looking at it. He may catch a large error but not a small one.

The point is that his signing the check is not much more than a form. So why should it be necessary for more than one man to go through this form? Having arrived at that conclusion, we arranged our affairs so that not more than one signature ever appears upon a bank check.

"We have only two divisions—office and shop."

Our methods of management have very little of what might be called method in them—in fact, when the method part seems to be getting ahead of the management part, we begin to look around a little. We have only two divisions—office and shop.

We do not have conferences, we do not have committees, we have no formal procedures of any kind. There is no formal method for interdepartment communication because we do not have departments—if one man wants to say something to another man, he says it over the telephone. It is rather difficult for him to say it any other way because the only men who have offices or stenographic facilities are those who

Decoded, the message read:

"Ship us Twenty Thousand Currency Fives, Tens, Twenties today sure."



Thirty Minutes to Train Time

A TELEGRAM from an out-of-town bank, urgently requesting an immediate shipment of currency. It must arrive before opening time next morning.

The Commerce Trust Company of Kansas City receives the correspondent bank's message shortly before closing time. In just a half hour, the last train which can carry the shipment, is scheduled to leave.

The Vice President, in charge of Banks and Banking, reaches for his P-A-X. Three swift, sure turns of the dial. Promptly the Chief Clerk responds, receives the Vice President's instructions and relays them, via

P-A-X, to the Currency Shipment Teller. Another speedy spin of the P-A-X dial. The Transit Department delegates a special messenger to deliver the package, properly insured and registered, to the train.

In less than five minutes, four separate departments have been co-ordinated.

The needs of a customer five hundred miles away have been supplied with ease, dispatch and no lost motion.

In handling the banking business of a hundred thousand customers whose combined accounts total one hundred million dollars, the executives of Kansas City's largest financial institution find P-A-X indispensable.

Varied and various are the ways in which P-A-X functions in banking service . . . Mrs. Carter loses a check while shopping . . . The Assistant Cashier turns to his P-A-X, dials the proper departments . . . Instantly, payment is stopped on the lost check.

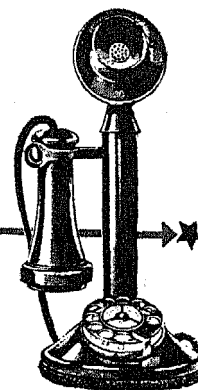
Ready messenger to executives in all departments, P-A-X saves each of them an average of an hour's time daily . . . It makes no mistakes . . . It is always at hand . . . It facilitates and expedites service, eliminates the cost of operators and pays for itself every day in practical, smooth-running service.

Automatic Electric Inc.

Home Office and Factory, CHICAGO, ILL. Branch Offices: New York, 21 East Fortieth St.; Cleveland, Cuyahoga Bldg. Representatives in all principal cities. In Canada: Northern Electric Co., Ltd., 121 Shearer St., Montreal, P.Q. Abroad: International Automatic Telephone Co., Norfolk House, Norfolk St., Strand, London, W. C. 2, England. In Australia: Automatic Telephones, Ltd., Mendes Chambers, Castlereagh St., Sydney.

P-A-X
TRADE MARK
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Automatic Electric Inc. is the originator of P-A-X and is the only organization in the United States manufacturing interior telephone equipment under this trade-mark. Its use by any other company is absolutely unauthorized.



must communicate with people outside of the organization.

The private office with all of its paraphernalia is a good deal of a time waster, and especially so in a factory. The managers of a factory ought to know what is going on and not sit around in an office waiting for some one to send a written communication about what is happening. The best place for a factory man's office is under his hat.

The first duty of management, in our way of thinking, is a very simple one, the importance of which is not always realized - it is to keep the tools in shape. By the tools, we mean more than the machines themselves - we mean the entire plant and everything pertaining to it.

Whenever we take over any enterprise already in existence, such as a railroad, we first of all clean up. A clean shop is a prerequisite to good work.

Dirt and disorder are enemies to good work but if, on the other hand, you give a man - I do not care who he is - a good tool, even a fancy tool, and put him in clean surroundings which he knows he will have to keep clean, his self-respect will make him take care of the tool and the work. Slipshod work is expensive work and in an atmosphere of cleanliness and neatness a man will not be slipshod.

"The work is departmentalized but the management is not."

Now, it might seem that since our operations are divided into many parts, it would be necessary formally to departmentalize. The work is departmentalized but the management is not. It is in a way decentralized, but all of the departments are in our method of manufacturing interdependent and the management is likewise interdependent. A foreman is responsible for his section of the work but, if the section preceding is in trouble, he is expected to know what is wrong with it.

The management everywhere is interlocking. It is a little hard at first for an outsider, who may be accustomed to strict definitions of duties, to grasp how a number of men may work together without exclusive responsibilities, yet it is merely that every man is responsible for getting the work out, and instead of divided responsibilities we have a united responsibility.

The business of management is to manage. The thing to be managed is the work. With that thought ruling and pressing, most of what are supposed to be the problems of management vanish.

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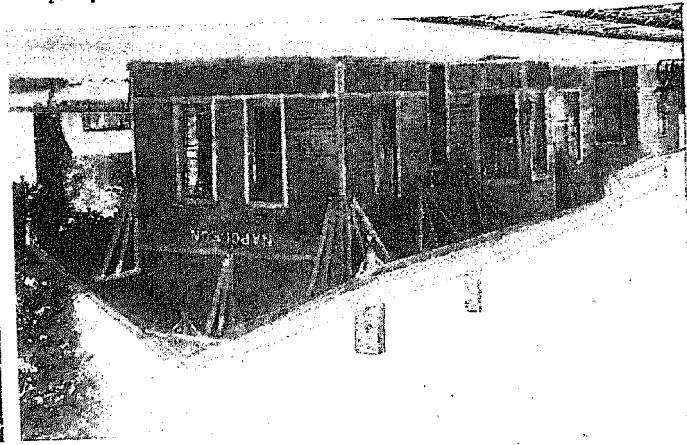
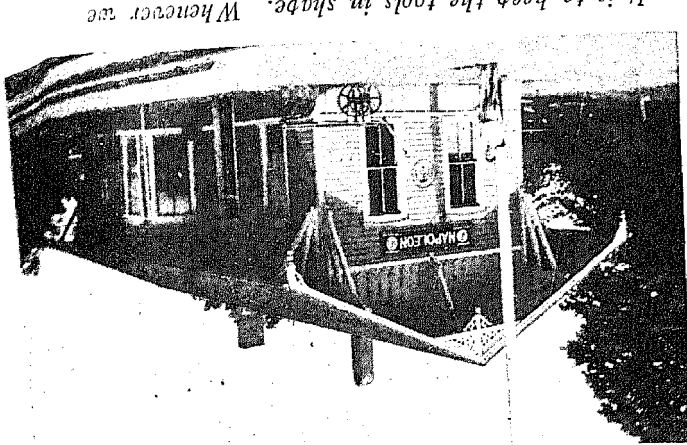
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"The first duty of management is a very simple one. It is to keep the tools in shape. Whenever we take over any enterprise, such as a railroad, we always clean up."



We made our first break away from the big-factory idea when we established a valve-making plant out in the farm country in Michigan on a site where we could get electricity generated by water-power. That plant has been going several years. It employs 300 people who live within a radius of 15 or 20 miles. (Continued on page 103)

THE up-keep of a city is expensive and, therefore, taxes are high and land values are high. Doing business in a city makes practically every item of expense higher than it ought to be, for the buying power of the dollar simply has to be low. Or, to put it another way, the overhead expense in a city, not only on the factory, but on every one and everything connected with it, takes too big a share.

If a plant is continually shutting down and opening up again, it saves money to have at hand a fund of unemployed, skilled workers who can be put into operations without the delay and expense of training. A labor market means at the least a small city or some densely populated district. A district of this character, where a majority of people take unemployment as a natural condition, certainly cannot be prosperous, and the living conditions cannot approach those necessary for a decent standard of health. The workman receiving wages this month and none next month will be most of the time in debt to his grocer, butcher, and landlord—which means that his living costs him more than it should. A man who has to buy on credit because he is unable to pay cash is not in a position to question prices.

ONLY a small percentage of our automobiles are used in or around Detroit and so we quit being automobile makers excepting for the district and instead began to make automobile parts and ship them out to assembly points through the country. This saved the cost of final assembly at the factory, of testing, of knocking down the automobile and crating it, and of paying the extra freight on a bulky piece of machinery like an assembled automobile.

regulation.

He has to test to see if the watch will run minus a few parts. But a watch-maker who has done his job does not find it necessary to test excepting for

is, the public governs. And seeing that it does govern its management. The control by the product has brought a great number of changes which are fundamental—although they have grown out of the making of the product. For instance, the subdivision of operations. The more obvious subdivisions can be made beforehand, but only as one gets into operation and learns by experience can the best subdivisions be arrived at. Naturally they are governed by the quantity to be produced, which gets right back to the product again, for, if the product be the cost of final assembly at the factory, of testing, of knocking down the automobile and crating it, and of paying the extra freight on a bulky piece of machinery like an assembled automobile.

WE all of us do many useless things solely through custom. Through many years we believed that we maintained an automobile factory and that it was part of our job to send a finished car out of the final assembly, counting four people to a family, means a population of 200,000 that has to find quarters within a reasonable distance of the factory. A population of this size forces house rents to a point where the worker does not get full money's worth for his wages or forces him to live in crowded quarters which cut down his power for work. There seemed to be no escape from the big factory and there could have been no escape under the rule of the notion that our main factory had to turn out a completely assembled product. But, having found that it was wasteful completely to assemble at the factory, the reason for complete con-

watch apart usually has some pieces making a final test. A boy who takes a alike, and there is no reason at all for to result in machines that are exactly the assembly of those parts is bound inspected as they go through, then all the parts are made accurately and well—if you have managed right. If entering whether you have done your work of fact, a test is a method of discovering we had done our work well. As a matter of fact, a test is a method of discovering whether you have done your work as did every one else, took this final test as an evidence of whether or not thing we could not dispense with. We, ing and shipping. Testing was some- test it, and then take it down for crating a finished car out of the final assembly, and that it was part of our job to send we maintained an automobile factory through many years we believed that things solely through custom.

and they are constantly changing. Industries are outgrowths of experience methods of manufacturing in the Ford one roof. Big factories divided into these parts had all to be made under brought up the question of whether to be assembled into an automobile and into the business of making parts Going out of the automobile business mobile.