Harvesting a wheat crop on the banks of the Tennessee River, in the Muscle Shoals district

The Seventy-Five Mile City

What Henry Ford Wants to Do with Muscle Shoals, and Why He Wants to Do It

By Littell McClung

BEFORE the advent of machinery it was not possible to make, or to use, large quantities of anything in any one place; or even to bring large quantities of anything to one place. This was the dominant circumstance in the medieval civilization. Each locality was self-contained and self-sufficient. And since the smith could not be kept busy and could not be afforded a living by doing blacksmithing for his neighbors, he filled in his time and his needs by doing a wide variety of other things for himself. In particular, he was largely the producer of his own food.

Late in the eighteenth century there was a period of discovery and invention, in which modern machinery had its genesis and in which power was for the first time usefully applied to machinery. Immediately it became possible to consume in a single shop far more raw materials than could be produced in the entire neighborhood, and to manufacture in the one plant far more of the finished article than could be used in the neighborhood. Transportation thus became a necessity; and the same agency —steam power—which had made it so made it also a possibility. At once there began the development of the "factory system," under which a large number of people work with machines and material provided by an employer; give their whole time to this work, in a building provided by their employer and removed from their homes; and in return receive money wages which they exchange at the store for whatever they require of the products of other workers similarly circumstanced. Farming is less suited to this organization than any other industry and has been slowest to adopt it; but even here, a modified factory system largely prevails. And in the marketing of his wares the farmer has, of course, had to fall in with the economic system of which his ultimate consumers are a part.

This way of doing things has vastly enriched the world; its benefits are greatly in excess of its demerits and we could not possibly think of scrapping it as a whole. At the same time it has many drawbacks and is peculiarly liable to abuses; and much thought has been given by individuals to the possibility of modifying it in detail so as to avoid some of these. Henry Ford's Muscle Shoals project is the latest and one of the most ambitious of these attempts to retain the good and reject the evil of the factory system; and failure to visualize it as such, or to give it its place in the setting of the world's industrial development, involves a failure properly to appraise it.

Ever since the present industrial system began to gain headway, it has leaned more and more toward the segregation of the working population into four groups. First we have an army of men engaged in tilling the soil and producing the animal and vegetable crops that feed the nation and keep its mills supplied with textile raw materials. Second we have the army of miners who produce the mineral raw substances which are equally essential to manufacture. Third, we have the army of workers engaged in the factories themselves, producing automobiles, clothing, wash-boards, egg-beaters, jewelry, tools, wonderful automatic machines for the better functioning of the factory, the farm and the mine—all the countless items in the list of the factory-made apparatus of modern civilization. And fourth we have the army of transportation workers, who carry the raw materials from the place of production to the place of fabrication, and move the finished products from the place of fabrication to the place of use.

THE most unfortunate feature of Henry Ford's plan for the utilization of the Muscle Shoals property is that he has chosen to couple it with what most of us believe to be an unsound scheme tending toward the debasement of our currency. The fact is, however, that the "75-mile city" is a complete and independent idea in itself, in no sense part of Mr. Ford's questionable financial views. While not necessarily attainable, it is by no means the wild dream which it is so often represented to be. A fair presentation of what Mr. Ford aims to do deserves to be made; and such a presentation demands that the idea be given its rightful setting in the economic history of modern times and in the economic structure of today. This we believe Mr. McClung has done very well indeed. It remains only for us to say that Mr. Ford is not personally responsible for the present article, and neither is the Editor; it represents Mr. McClung's interpretation of the Ford idea.—THE EDITOR.

Mineral products and transportation are bought by the individual in negligible quantities, especially under a scheme that substitutes hydroelectric energy for that of coal in cooking and heating, as Mr. Ford's does. But all of us must have food; and all of us must have a large number of factory-made articles of one sort or another. Mr. Ford therefore puts forth a suggestion that amounts to this: We can afford to let the miner and the railroad man retire within the shell of their narrow interests, if they insist upon so doing; but we cannot afford to have the farmer and the industrial worker do the same. So he advances a scheme for the promotion of direct and permanent cooperation between farming and industrial activities, and the broadening of the horizon and the improvement of the material fortunes of those involved. Always before the factory has robbed the farm of its best man-power. Through his "75-mile city" Mr. Ford would have the factory and the farm working hand-in-glove.

The average factory worker today must live in the city. He may save enough from his wages to buy a home, but this will not be located in the best neighborhood, and will be peculiarly liable to loss in value through deterioration of its surroundings. Even if it is desirably situated, there is little besides the house; ground ownership to any extent is impossible. The more worthwhile the home, the more remote it must be from the factory and the more time consumed in tiresome journeys to and from work. Food, fuel and clothing absorb the pay of the average city worker, even that of the skilled men on good salary; the cost of distribution in a great city is a controlling factor from which there seems no escape. Mr. Ford, the world's largest employer of men, realizes better than most the continual struggle to make ends meet that is involved in the effort to maintain a decent standard of living and give the desired advantages to a family of children. He wants to give the workers opportunity to labor advantageously in a rural or a semi-rural environment, making the home largely maintain itself while surplus money is earned in the factory.

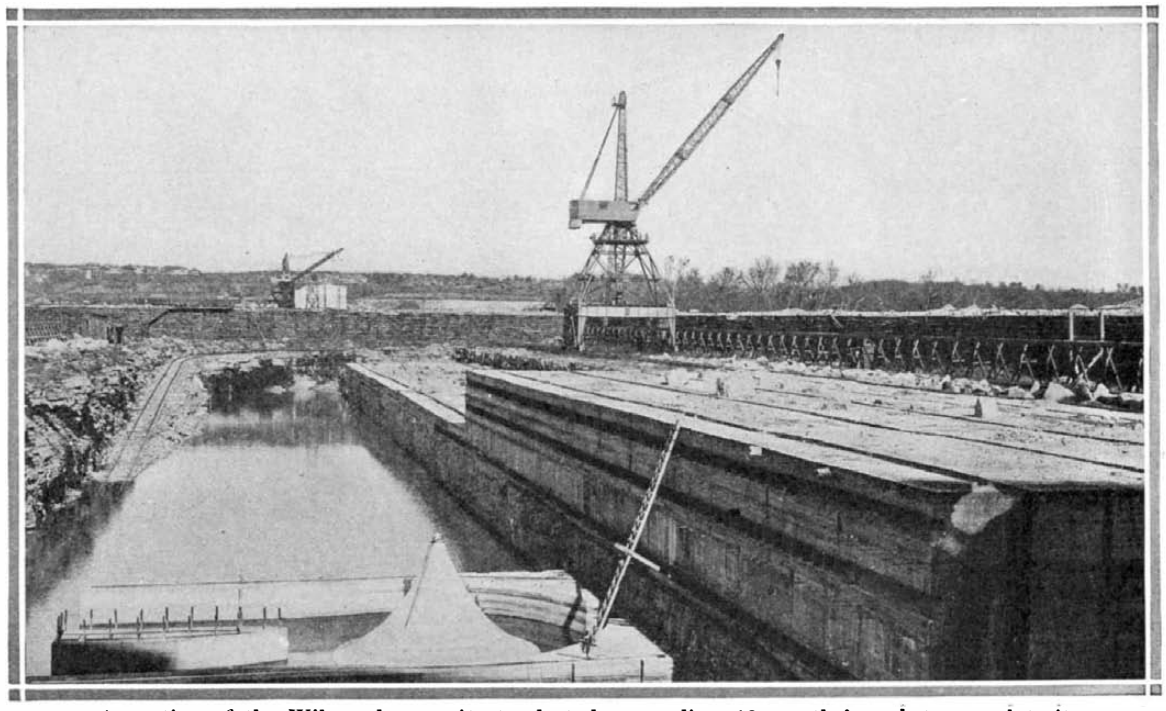
The first step toward realization of this idea would lie in the establishment of a new industrial center. The factories and the homes in any existing industrial district are fixed, as regards both character and location. Then, too, the Ford scheme calls for land, and land in great quantities; and this would be available at a practicable figure only in a new community. The industries of this new center would be related, in the sense that they would have a common source of hydroelectric power—a source of great magnitude, necessarily. They would all be related to one another, in the sense that so far as possible they would use one another's products and supply the goods consumed by their own workers, both in the home and in the field. They would not be concentrated within a smallest possible area as is the usual practice when industries, related or unrelated, are grouped in one city or one part of a city. They would preferably straggle out along the banks of the stream or streams from which they were deriving their power. There would be plenty of room between and around them.

Between these correlated hydro-driven plants would extend the farm-homes of the factory workers. An employe can have a five-acre patch for home and garden; a ten-acre plot for cow, hogs and a small field crop; or even a small farm of forty or eighty acres—and be a food producer and a salary-earner at the same time. Mr. Ford's eight-hour day and five-day week make this practicable. Yet these are not enough. The more important factor of success is present already in the Ford organization. Each man learns thoroughly several jobs in the factory; for each job there are

three or four times as many capable incumbents as are needed at any one time. When any worker is absent from his job, another who knows his work just as well steps to his post and takes his place till he returns. This makes leave of absence a simple proposition, where in the average factory it would be beset with extreme complications. Perhaps a concrete illustration will show better than any amount of abstract explanation just how the thing works out, in Mr. Ford's mind.

Bill Jones, a reliable machine worker with a family, has bought for $50 an acre and on reasonable time a forty-acre place two miles up the lake or out in the country from where he works. It is time for sowing wheat. Bill is given two weeks' leave—more if needed; and another man, trained in his work, takes over his machines for this time. Bill goes a-planting; but he is not left to work out his own salvation in blissful ignorance of how to run a miniature farm. An experienced farm demonstrator is on hand to aid him. Tractor, plows, pulverizer, harrow, grain drill are rented from the factory management—it has many of these, but not so many, and hence not so heavy an investment, as a group of independent farmers of size comparable to the group consisting of Bill and his fellows; for not all of these men will be using the harrow at the same time. The land is plowed; then disked and rolled at one operation—giving a compact seed-bed. Then it is drilled and seeded. Two weeks of Bill's time—or at most three, depending upon the state of the weather—here, and a few odd days later on, are all of Bill's time that is invested in the crop. With the exception of the tractor, no implement has been used for more than four or five days, and all of them are easily switched to other farms in the neighborhood. When planting is out of season the tractor goes into hauling ties, logs or timber; clearing waste land; sawing; or transporting material. After the community really gets started there will be much off-season work in road-making.

The following year—about when spring is warming up into summer—Bill's small wheat crop is ready to cut. He rents a binder and again a tractor from the factory. With the farming instructor at his elbow, Bill's grain is quickly cut and in the shock. Then a community thresher comes along and it is threshed. The grain is carried by barge or with tractor to the community elevator. Here it is honestly graded and Bill receives a check for his product, less the rental charged for the farm implements. Later the wheat is ground in the electrically-operated mill. In addition, Bill has straw to sell while also keeping enough for bedding for his cow.



A portion of the Wilson dam as it stands today, needing 18 months' work to complete it

The result of these systematic and intelligently directed operations is that Bill Jones has made a crop surprisingly cheaply, and has made an excellent profit on it. He did not have to buy horses or mules and feed them through the year. He has had no money tied up in machinery, although he has had the use of the most effective farming implements. And the farm demonstrator, without cost to him, has prevented him from making foolish or costly mistakes. Incidentally the outdoor work hasn't injured his health or detracted from his appetite.

Bill's wheat acres will not lie fallow during summer. In March the crop-directing expert had Bill and the boys sow lespedeza in the wheat. Now, with the grain cut, the lespedeza is already blanketing the stubble field in green—fine pasture and soil renovator. Meanwhile the farming adviser has helped Bill plant more blackberry vines along the hedges and set out some pear, peach and apple trees. When these come into bearing a woman home demonstrator will show Mrs. Bill Jones how to can and preserve the fruits for winter use. Bill's eight-hour day and five-day week give him adequate time to spade, plant and keep his plot free from weeds and keep down insect attacks. Meanwhile the wife is raising a few chickens and there are plenty of eggs for home use. In time there is a surplus to sell. Bill goes to work each morning in his motor-boat from his own little pier, or in his own flivver, as the case may be. And so he can take eggs and surplus garden produce with him to the factory market.

In time Bill and the family discover that they are living at little cost. They do not have to buy any milk, cream, butter, eggs or vegetables. These were continued purse-draining items where they formerly lived and worked. Nor do they have to buy coal or wood. The power lines run into the home—electricity for lighting, heating and cooking; current for churning, sweeping, washing and ironing—and very cheap. Bill is making and saving money right along to an extent quite impossible with workers in large cities and even in small ones. In time he is enabled to finish paying for his home and land. When he gets to the age where he figures that he has had all the factory work that he needs, he buys a larger place or adds to his acreage and gives all his time to stock and crops. Incidentally he has a pension and a couple of boys in the works; so that his family is about four times as prosperous and six times as contented as it would have been in the ordinary run under the old industrial dispensation.

So much for the bare bones of the idea—an idea which had been formulating itself in Mr. Ford's mind for some time. In fact, he would probably be at a loss to state just when it was first incubated. We have preserved a strictly non-committal attitude with regard to the kind of factory that Bill Jones works in, and other details of the project; for until the precise location is settled these cannot be crystallized. It makes a difference whether the mineral wealth of the region runs largely to iron, or to copper, or to aluminum, or to oil, or to coal, or to sulfur, or to something else; just where the project is located on the existing industrial map of the United States; what kind of agricultural soil is present; what kind of power may be developed and how much thereof. It is not by accident that they make automobiles in Detroit,

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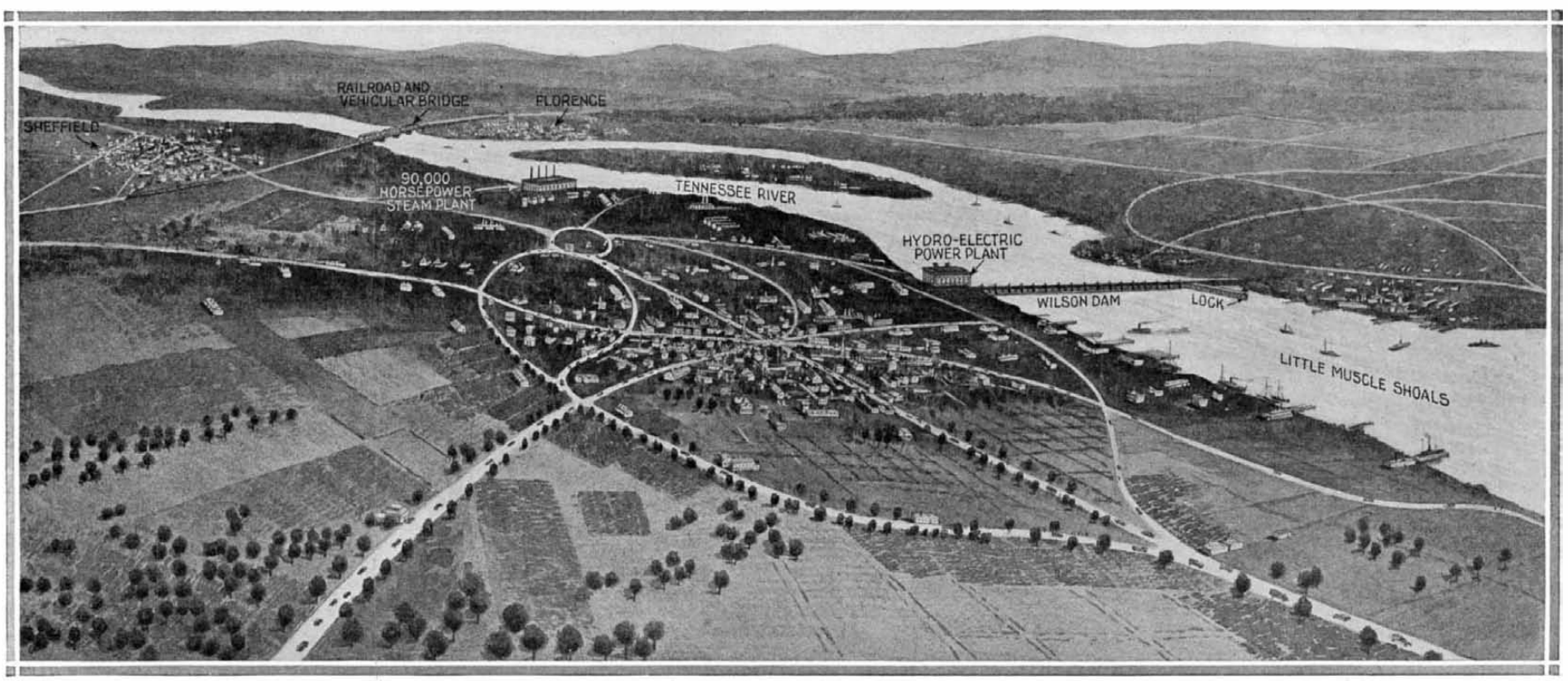

A birdseye view of the Tennessee Valley in the Muscle Shoals neighborhood, showing the Wilson Dam, the existing cities of Florence and Sheffield, etc.; and suggesting how these features would become part of the general scheme involving the whole valley

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Skilled Hands, or Automatic Machinery?

(*Continued from page 151*)

ital, at the same time placing in the hands of the great capitalists a weapon which they will be tempted, at least, to use unfairly?"

"It is undoubtedly the fact that the automatic machine causes a tendency toward large combinations of capital," said Mr. Leavitt. "That is one of the conditions to which we shall have to adjust ourselves. In that case, mind you, it is not the automatic machine which is to be blamed, but human nature, and the thing to do is not to take away the incentive of private gain or scrap the machines, but to regulate the activities of individuals or combinations which might abuse the advantage placed in their hands. The automatic machine in itself is a great blessing to every man, woman and child. The fact that it can be misused is no argument against it. It only emphasizes the fact that our lawmakers and enforcement officers ought to be fully alive to the possibilities in this new industrial agency."

On the train, headed back for New York, it occurred to us that if Mr. Leavitt had taken a little more sensational view of things we should have had a livelier story to tell. If only he had blamed the war on the automatic machine and added to that count the social hysteria of these turbulent days!

But somehow his calm view was reassuring. We took away the impression that a great many of us have been unduly exercised over the situation, which is evidently only one phase in a long period of transition, and, viewed from the calm standpoint of a man who had done a great deal toward bringing that condition about, gives every evidence of righting itself.

And is the manual skill of the workmen of a quarter century ago disappearing? Well, possibly! But what of it? Is not that, too, just one of the changing phases of the larger problem? Not one civilized man in thousands can duplicate the trick, which our remote ancestors could without exception perform, of making fire with a couple of dry sticks. We have forgotten this trick because we have no longer any need for it, and we are none the poorer in any sense for the substitution of matches and electric switches. Is not the substitution of machines for skillful manipulation in our industries just another case of the same sort?

The big point is that the man who is endowed with natural mechanical ability, the man who toils at the bench, at the forge, or at the machine in the factories, has a better chance today than ever before to enjoy as the fruits of that toil a happy, useful life. Take it as the word of a man who has been successful in that philosophy.

Or blame it on the automatic machine, if you like!

The Seventy-Five Mile City

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motion pictures in Los Angeles, and paper in Maine.

When the War Department was looking about for possible purchasers of the Muscle Shoals property, Mr. Ford visited the place at the Department's invitation. He saw at once its practical possibilities in connection with his pet scheme. It was then that he first allowed the "New City" which he had in mind to nail itself down to a definite location. The Muscle Shoals territory spelled to him a huge industrial development based upon the use of hydro power in the production of cheaper fertilizers for the farmer, cheaper aluminum ware for the housewife, and cheaper cotton goods for everybody. This is in fact the combination dictated by the natural advantages of the region, and the region is in fact the place of all places for such a development.

For 75 miles the waters of the Tennessee River flow between high flint-limestone banks, and over a solid limestone bed already tested by nature for seepage under high pressure. By building a series of power dams along the stream and impounding dams further up in eastern Tennessee where the mountain formation is favorable to the creation of artificial lakes, it would be possible to obtain over a million horsepower without a too-great variation between primary and secondary voltages. Just to the north, in Tennessee, lie partly developed beds of phosphate rock and untouched vast fields of dolomite. Less than a hundred miles to the southwest are large untouched bauxite fields. Directly south lie the brown hematite and the stratified red iron-ore of the Birmingham district.

Going still further into detail, we find that

when completed, the now one-third-finished Wilson Dam will throw back the waters 15 miles over the rapid Shoals to the Upper dam. This second concrete monolith, though not so high as the Wilson barrier, will by virtue of the less steep run-off of the river affect the stream for nearly 50 miles east and north. The two great inter-connected power dams, with their locks for navigation, will create a fresh-water lake about 70 miles long and varying in width from three miles to less than a mile. Along this body of water and its tributaries Mr. Ford would establish his electric furnaces and fertilizer factories. If they were used at all, the present nitrate plants, No. 1 (Haber process), five miles below the Wilson Dam, and No. 2 (cyanimid process), at the dam, would simply be units in a mighty chain of fertilizer industries extending up both sides of the long lake; for Mr. Ford's idea is to produce concentrated plant food in hitherto unrealized quantities.

In support of the agricultural features of the scheme, it may be stated that for many miles along the river and for a good distance back of it (especially on the south side) the land is rolling and with sufficient slope for natural drainage. The firm clay sub-soil, free for the most part from rocks or gravel, retains well both fertilizer applications and moisture. It is a soil that readily responds to "building up." And in this connection, fertilizers from the factories will be low in price and will carry no freight-charge burden. The present products in the valley are cotton, corn, winter grains, cattle and hogs. When limed the soil yields fine cuttings of alfalfa and white and red clovers. Rainfall is about 50 inches a year, fairly well distributed through the months. A real drought never occurs. The valley is free from malaria. The water supply is from hill and mountain springs and the clear waters that flow therefrom.

It is difficult to write of this project in terms sufficiently conditioned to make it clear that after all it is as yet only in a stage where there is no certainty of its attainment. So with this apology, perhaps we may be permitted to substitute the more vigorous "will" for the colorless "might," "could," "would," and "should." Out of the thousands who will have a part in this great effort, many will fall short, of course. This is natural and inevitable. But under a system, with continued, capable instruction, and prizes and bonuses for best results, there is no reason for a large number's not making good; some fully and others to a limited extent. There certainly will be opportunity for salary earning simultaneously with home and land ownership and soil production that otherwise would be wellnigh impossible no matter how carefully wages might be saved. Those who are seeking something for nothing or looking to get ahead without hard work will be weeded out automatically. Their places will be taken by others who are anxious to make continued, sincere effort and who are ambitious to make something of themselves and for their families. Even a few of these may fail from one cause or another, but in time a new and trained generation will come into existence.

A large agricultural and industrial school will be established in the valley, somewhat on the principle of Mr. Ford's trade school at Highland Park in Detroit. Boys studying agriculture will learn under actual field conditions. Their labor with the crops and livestock will be to produce for a profit so that they will receive this profit for their work. They will build the chicken houses, hog pens, barns, fences, etc., on the instruction farm. They will take care of and repair the machinery used. In the manual training department they will not play at making useful articles—they will make them to be sold for profit; such as chairs, tables and other furniture, small motors, radio sets, etc. All work will be along strictly utilitarian lines, the boys receiving reward in money, as well as knowledge and experience.

It will be much the same way with the girls and women seeking instruction and training in home-making. While they are getting experience in canning and preserving they will can and preserve vegetables and fruits for use in their own homes or for sale in the markets. In the garment-making department they will fashion and sew clothing for their own wear and for their mothers and sisters. In this new sort of intensely useful training institution to be established, the principal method will be to work to a definite purpose with definite, profit-making or money-saving results.

The completion of the two dams will create hundreds of miles of waterfront along the rivers and creeks that flow into the Tennessee River. With water transportation all the way down the Tennessee to the Ohio and on down the Mississippi, hundreds of farmers in other parts of the South and through the Central West are planning to locate in the Muscle Shoals district. They are coming not to work in the factories, but to farm independently and produce for the market wheat and corn, cotton, vegetables, dairy products, hogs and cattle. Cheap fertilizer right at hand and economical marketing facilities make a strong appeal to them, as their visits and letters to the Shoals district clearly show. Meanwhile native farmers in the valley are looking forward eagerly to the construction of the dams and the opening up of the great river to navigation. Most of the cotton and corn raised in the valley above Wilson Dam will be shipped down the river-lake on barges direct from neighborhood warehouses and cotton gins. This will effect large savings in freight charges, as these farmers well realize. The plan is later to open up the river for navigation all the way from Knoxville to New Orleans.

Factory and farm close together, yet cooperation between them; satisfying and lasting opportunity to tens of thousands of capable, ambitious workers—this is Mr. Ford's purpose and plan for his employes in the Tennessee Valley industrial operations. And his aim and plans for farmers all over America is to supply them with concentrated fertilizers at lowest possible prices so that American yields of cotton, corn and wheat per acre may be increased without increased cost to the farmer, but with larger profits to him. Increasing cotton yields a quarter of a bale per acre and corn production five bushels per acre would result in additional annual wealth to farmers, and the whole people, beyond the comprehension of the average man. As immense as it is, the automobile business would be a pigmy beside it. And cheaper fertilizers, shipped in concentrated form, will make it possible if not probable in time.

46,000 Miles of Good Roads

THE $350,000,000 appropriated by Congress as Federal aid in conjunction with State funds will result in the construction of about 46,000 miles of road, says the Bureau of Public Roads of the United States Department of Agriculture. This mileage would parallel the railroad from New York to San Francisco nearly 15 times, or, if divided equally among the States, would give nearly 1000 miles to each State.

The status of road building on April 30 was as follows: In projects entirely complete, a total of 16,375 miles; under construction, 13,950 miles in projects, averaging 62 per cent complete. A considerable part of the latter mileage is actually complete and in service. In addition, funds have been allotted to 7511 miles, much of which will come under construction during the present season. Besides this there is still available for new projects $60,148,000, which on the same basis as previous Federal aid construction will result in the construction of 8200 miles of highway. In March the fund available for new projects was taken up at the rate of $12,000,000 a month.

Extensive Drives Against Jack Rabbits

A TOTAL of 683,800 jack rabbits killed is reported by the Biological Survey of the United States Department of Agriculture, as a result of jack-rabbit campaigns this spring in Utah, Oregon and Washington. The figures are based on very close counts by farmers and other interested persons and are considered conservative. Probably a great many more rabbits were killed than were actually reported. In the Goose Lake Valley, Oreg., while the actual kills of rabbits were not large, the saving of future crops was very important. This is an irrigated district that is coming into heavy production, and the rabbits do a great deal of damage. More than 278,300 rabbits have been destroyed during the Oregon campaigns.

In Boxelder County, Utah, extensive operations were carried on in five communities, and practically every community that undertook the work in a systematic way obtained very satisfactory results. More than 250,000 rabbits were killed in this county alone. In checking up the central Washington district a total of 155,500 rabbits were reported in six counties as having been killed between November and February. This is the most successful campaign ever conducted in the State.