

The Knowledge Bank at The Ohio State University

Ohio State Engineer

Title: Engineering 'Round About Columbus

Creators: Weed, John Merrill, 1897-
Crusey, Howard

Issue Date: Jan-1936

Publisher: Ohio State University, College of Engineering

Citation: Ohio State Engineer, vol. 19, no. 3 (January, 1936), 4-5.

URI: <http://hdl.handle.net/1811/35251>

Appears in Collections: [Ohio State Engineer: Volume 19, no. 3 \(January, 1936\)](#)

ENGINEERING 'ROUND ABOUT COLUMBUS

Inspected by
HOWARD CRUSEY and MERRILL WEED

VIII. Lesson in Economics.

The economists are doing a good deal of talking about the durable goods industries and the need for a renewal in them to bring back prosperity. By durable goods they mean machinery (sometimes called producer's goods) and buildings, things that can't be worn or eaten. Consumers' goods, like food, clothing, gasoline, and cigarettes are being made and sold all the time, say the economists, and the only thing required to restore property in those fields is for the durable goods industries to resume work full blast so that their employes will have the money to buy the things to make their lives enjoyable.

Nearly everyone agrees that that is the situation. What is missing is a suitable means to put the remedy into operation.

Coal, of course, is something that people buy—if they have the money—and use up. So it's a consumers' goods. (Strictly speaking, we have to draw the line between coal used to warm houses and coal burned in factories.) Efficient mining machinery helps to bring down the cost of coal and so enables people to use more of it. That machinery is producers' goods. We see, then, how producers' goods depend on the demand for consumers' goods for their market; if the mines are not doing well they can't buy much machinery.

It's something like the old puzzle, the priority of the chicken and the egg. After the first stage of bewilderment one can see that the important thing is that they go together, each complementing the other. So it is with the light and heavy industries.

Improved machinery affords the way to higher standards of living because it brings down the cost of consumers' goods. It has a way, though of putting people out of work at first, that is, until they get located elsewhere. The three results, lower costs, shorter hours, and unemployment, get so tangled together that sometimes it seems almost impossible to straighten out the mess; labor and capital and government reach the name-calling stage, and the distressed citizen sometimes wishes that no advance had been made because the changes are so unsettling. In general, the gains outweigh the losses, though there may be some disagreement about that.

People sigh for "the good old days." The trouble is that they think of a few things that were good and forget any number that were bad. The slow pace of the Victorian age would bring back kerosene lamps and horses, house flies and typhoid, and no one wants them.

IX. A New Industry in the Little City of Columbus.

One of the most important industries in Columbus belongs in the durable goods field. It's the Jeffrey Manufacturing Company, makers of coal mining machinery and conveying equipment.

Every one has heard of the bankers who, unwillingly, have entered the manufacturing business because the manufacturers couldn't pay their bills. Exactly the reverse was true of Joseph Jeffrey, a banker of Columbus, who put money into an invention of mining machinery and finally quit being a financier to concentrate on manufacturing.

That was in 1877. Conditions were very different from what they are now. Queen Victoria had been safely on her throne for forty years. General Grant was just out as president of the United States and Rutherford Hayes of Ohio was in. The country was just beginning to crawl out of a long depression following the Civil War. All the statesmen and politicians wore enough whiskers to start a mattress factory. More than half the population lived on farms, used kerosene lamps, drove horses and mules, and were relatively self sufficient; many of them could and often did go for weeks without a dollar in their pockets.

Columbus was a thriving town of fifty thousand, many of them politicians, for the state capital had been here a long time. People drank well water and congratulated themselves on getting through the summer without an attack of typhoid. In the open country facing a dusty road called High Street, three miles from the heart of the city, the new and little Ohio School of Agriculture and the Mechanic Arts was ready to receive its second batch of students. There was a telegraph line down town, and one could ride the horse cars.

Progress was in the air. The year before, celebrating the hundredth birthday of American Independence, the Philadelphia Centennial Exposition had disclosed a world of wonders. The big Corliss engine had turned all the machinery of the big show. Bell had displayed his telephone, Edison his phonograph. Industrial America was beginning to stir.

Into a setting like that, a new and improved way of getting coal out of the ground was certain of success. Things were moving too rapidly for the old hand methods with shovel and pick. The age of power was just beginning and it demanded a plentiful supply of fuel.

Today, around the lobby of the Jeffrey office building, are friezes depicting advances in coal mining. The handwork miner lay down to undercut the seam of fuel; unless he was extremely careful there was danger that the loosened ledge might fall on and crush him. Undercut and shot down, the coal had to be shoveled into cars and drawn out by patient donkeys or even more patient human beings. It was a miserable life. The wages were low, but even so the cost of coal was high—compared to wages—because the efficiency was so poor.

The machine changed all this. Now, as the sculptor has depicted it, a skilled workman directs the performance of a machine. Motors cut, drill, load, and haul. There is still hard work, but machines do most of it. There is terrific responsibility. And the output per man is many times what it used to be.

X. One Success Leads to Another.

The beginning of the Jeffrey Company was the building of a machine to cut under the ledge of coal. Electric motors weren't developed then, so the power was compressed air working a piston in a cylinder. That machine has evolved into the big cutters of today, with their motors and knives traveling on a chain to prepare the coal to be shot down. There were many difficulties, as always in developing something new, but the machine became very successful.

One success leads to another. A good cutter increased the demand for a loader, and Jeffrey built one. Mines required ventilation, so Jeffrey went into fans and ducts. Mine locomotives, screens, and conveyors followed.

The fact that a machine was built for mine work doesn't prevent it from being adapted to other purposes. Naturally coal screens were used for gravel, loaders for about anything to be loaded, conveyors for anything to be conveyed. So the business has grown.

The Jeffrey Company is very proud of its part in building Grand Coulee Dam, in Washington State, the biggest of the government projects at present. Out there a Jeffrey conveyor system carries earth for more than a mile. They speak of it as "Rivers of Dirt."

For its coal machinery the Jeffrey Company had to build big chains with heavy links. The chains themselves have other uses. Uncle Sam is buying some to lift the rollers at the big dams now under construction. That chain must stand a pull of 700,000 pounds. Its heaviness is indicated by the fact that it weighs 350 pounds per foot.

XI. Cathedral of Industry.

Running a modern industrial plant is not simply a matter of having a place where workmen can gather, take material from the stock pile, throw the parts together, and convey the finished product to market. Far from it. A modern factory is a living—almost breathing—organism, with many parts, and the parts must balance with each other.

There must be an office, of course, for the business spends and takes in money, and woe betide it if it doesn't, in the long run, take in at least as much as it pays out. And engineering departments. Drafting rooms. Along come such accessories as blue print rooms and photographic equipment. Then the pattern shop, the materials room. The assembly divisions with their riveting, welding, and cutting equipment. The foundry. The sources and streams of parts of all kinds, finished or partly finished, coming together at the proper time to take their places in the completed article.

The testing, for the goods must deliver performance promised for them. And then the sales, with advertising. The product must go into the hands of customers, else there will be no return on the investment.

But that is not all. The welfare of employes must be considered. Every large plant must have its hospital, its clinic, a cafeteria or two. Often there are cooperative stores and building associations.

The industrial machine is a delicately balanced organization, like an automobile, and every part must be in working order.

There is this ramification of departments of all kinds at the Jeffrey plant, in several buildings, each serving its particular purpose. An industrial organism must have circulation—which may be compared to the blood stream in the body—and so around the plant are narrow gage tracks with cars and locomotives. Thus the plant uses some of its own products.

Focus of the operations incident to making Jeffrey locomotives and cutters and ventilators and conveyors is the main plant, a large building which satisfies our sense of the fitness of the structure to its purpose. That makes it good architecture. The high central bay, with a mezzanine along each side, gives the effect of the nave in a cathedral, and so it is, a building consecrated to industry. Here the finishing touches are put on the equipment by which the Jeffrey Company keeps its standing at home and abroad.

The use of power and of the devices of invention have changed our civilization. Some think the change has been too fast for our slowly evolving laws and customs. But even though imperfect, it has made life easier and broader, and given us problems to solve that we didn't know existed. (Many of them were there all the time but human beings were so busy earning a mere living that they didn't perceive the problems.) And so we have only begun to realize the advantages that the machine may bring us.

The full advantage may never be realized. The sacrifices may appear too great, and we, in our limited vision, may refuse to make them. The votaries of modern industry are only a small group, and their services may not be widely appreciated.

But that service is being rendered by men who work in shops, some of them little and some that are, like the Jeffrey plant, cathedrals of industry.