

Car Shops of the Hocking Valley Railway

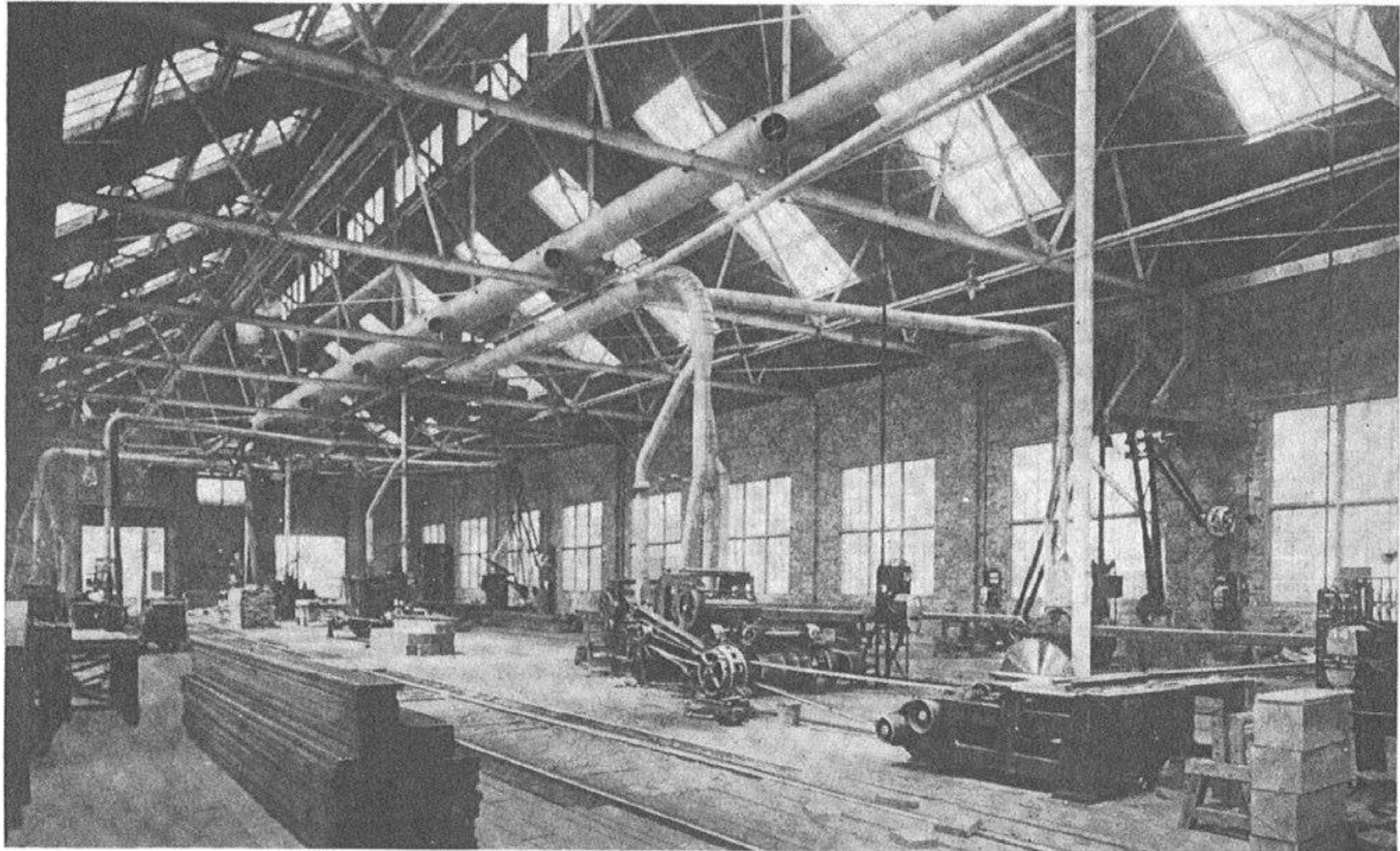
By C. A. Tupper.

For a number of years the Hocking Valley Railway Company did practically all its car repair work in its South Columbus shops; but the facilities there were inadequate for the constantly increasing demand for work of this character and, after a careful consideration of the various details involving the location of a plant to effect economical operations and accomplish the greatest efficiency, a plant modern in every respect was built at Logan, Ohio. This town represents the most advantageous distributing point for the equipment, inasmuch as it is the central station for the four divisions of the Hocking Valley Railway and is also the distributing point for coal cars, which represent 80 per cent of the company's business. The heavy coal tonnage

Saw Shop.

At the southeast end of the crane runway is located the saw shop or mill. This structure, 200 feet long, 70 feet wide, is built of paving brick on concrete foundations, and as much of the walls is given to windows as is consistent with strength. The roof, supported by steel trusses, is equipped with eighteen large sky-lights glazed with wire inserted glass. A monitor runs the length of the roof, also to give light and ventilation. Inasmuch as by far the largest percentage of repair work done is on the wooden coal cars, naturally the greatest amount of power utilized is in the saw shop.

In this building all the lumber used in the reconstruction



Saw Shop Showing Individual Motor Drive on Rip Saw and Cut-Off Saw.

necessarily made repairs for the coal carrying equipment a large item, but with the shops at Logan the Company effects a considerable saving in the transportation of cars; and, further the fact that the cars can be taken directly from the shop and distributed to the various coal properties was another factor in deciding on this location. After determining upon the site, the officials of the Hocking Valley Railway made a careful inspection of the most modern practice in the United States, with a view to building a plant not to be surpassed in design and equipment.

The works consist of eight buildings of brick and steel construction, as follows:

Car repair and assembly shop, saw shop, office and store room; blacksmith shop; wheel, axle and air brake shop; lumber storage building; power house and oil house.

These are concentrated along a traveling crane runway, which serves all of the main buildings beginning with the saw shop buildings or mill, main repair or erecting shop, blacksmith shop, store room and material platforms. This crane runway is 600 feet long, and the traveling crane which runs upon it is capable of lifting a load of five tons.

of the cars is worked into the necessary shapes and sizes. To accomplish this the shop is equipped with a swing cut off saw, tenoner, two boring machines, gainer, crosscut saw, timber planer and matcher, rip and band saws, together with the necessary grinding machines. These tools are all connected to 60 cycle, 3 phase, induction motors, fifteen motors in all being employed in this capacity as follows:

One cut-off saw belted to a 15-h. p. 1130 r. p. m. motor.

One timber sizer direct connected to 50-h. p. 900 r. p. m. motor.

One swing saw belted to a 5-h. p. 1130 r. p. m. motor.

One tenoning machine belted to a 15-h. p. 1130 r. p. m. motor.

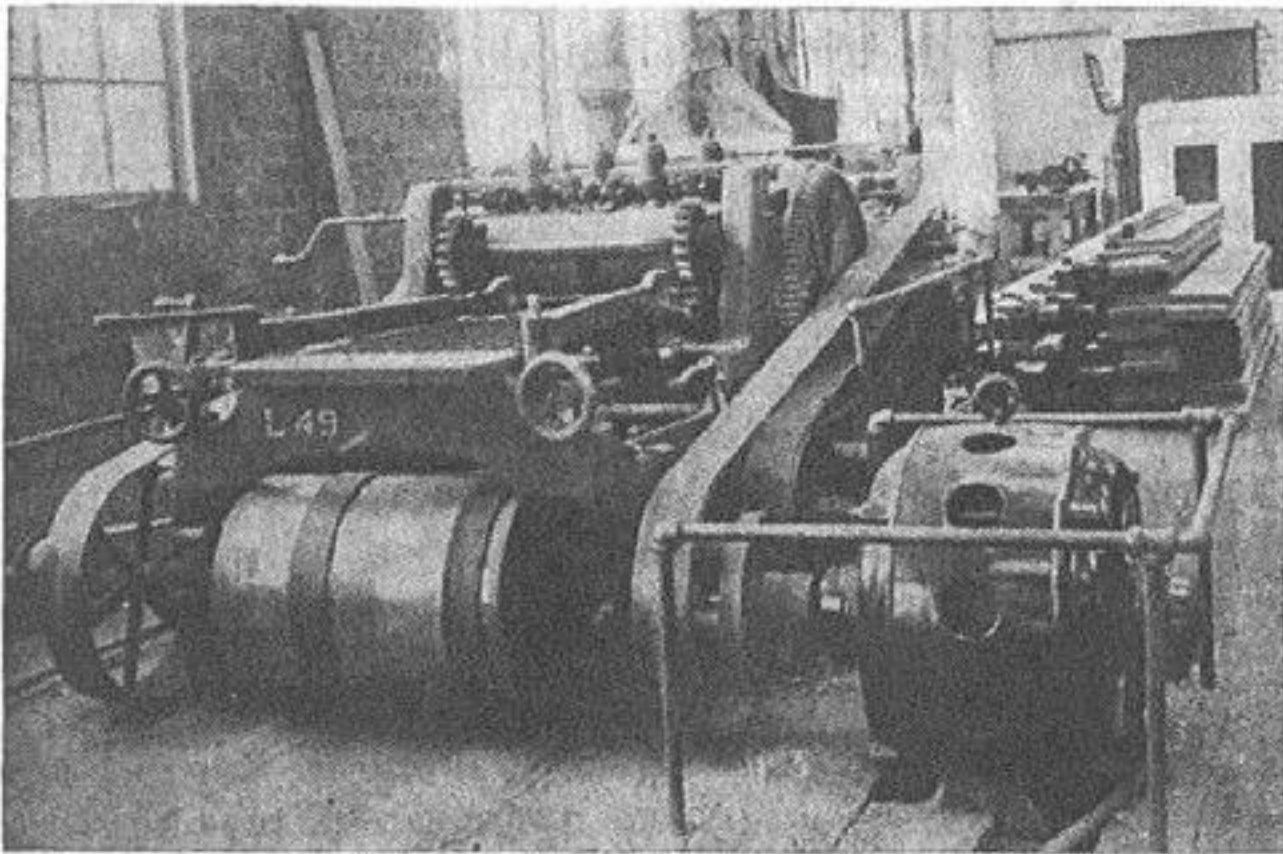
One mortizer belted to 15-h. p. 1130 r. p. m. motor.

One rip saw, one gainer, one wood worker and one tenoner grouped on a 15-h. p. 1130 r. p. m. motor.

One self feed rip saw belted to 15-h. p. 1130 r. p. m. motor.

One gaining machine belted to 15-h. p. 1130 r. p. m. motor.

Two three-spindle boring machines, one single band saw, one automatic knife grinder belted in group to 20-h. p. 1130 r. p. m. motor.



50 H. P. Allis-Chalmers Motor Direct-Connected to Timber Sizer.

One planer and matcher direct connected to a 50-h. p. 900 r. p. m. motor.

One gainer belted to 15-h. p. 1130 r. p. m. motor.

One gainer belted to a 10-h. p. 1130 r. p. m. motor.

One three-spindle boring machine belted to 10-h. p. 1130 r. p. m. motor.

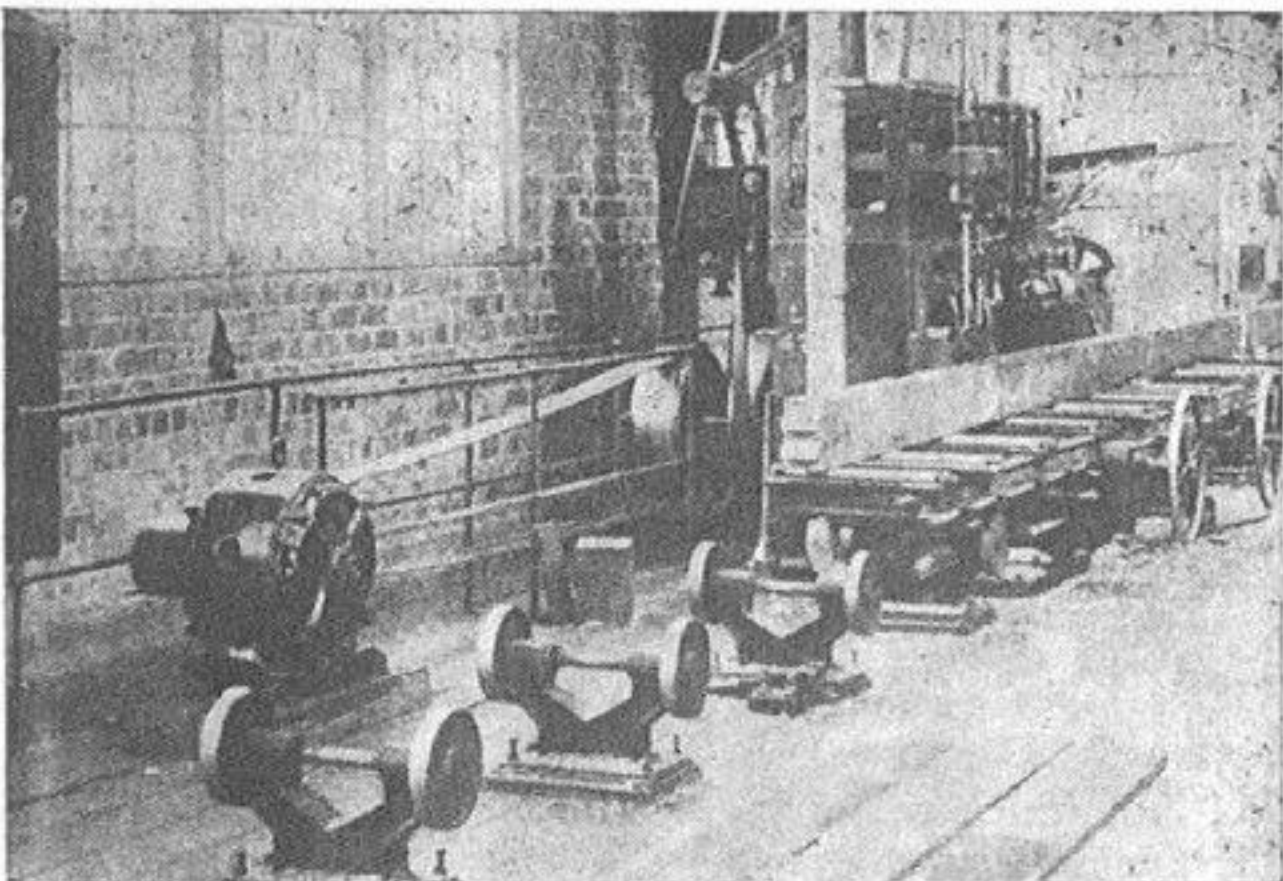
All of the motors, as well as the power house machinery, were supplied by Allis-Chalmers Co., of Milwaukee, Wis.

The arrangement of this machinery leaves practically nothing to be desired and was greatly facilitated by application of the electric drive. The timber is received in the rough at the east end of the shop and delivered in a finished condition at the west end ready to go to the dry lumber shed, which is located some distance west of this shop, or to the main car repair shop, which is located just north.

An extensive dust conveying system has been installed throughout the shop. To each machine is attached a receiver, into which the shavings, dust, etc., are drawn by a fan belted to a 40-h. p. motor located on the roof trusses. All the dust is then transmitted in the usual way back to the boiler room and fed into the ovens as fuel. At the end of the saw shop is located a relay fan to help in the transmission, being driven by a 50-h. p. motor. The building is well lighted with arc lamps and each machine has one or more incandescent lamps.

Power House.

The power house is 94 feet by 40 feet and is located in such a manner that extensions can be made without interfering with the track layout and, therefore, additional equipment can be installed at any time. The power equipment consists of two 200-kw. 60 cycle, 3 phase, alternating current generators, direct connected to engines. The exciters are driven directly from the fly wheels of the en-



Induction Motor Driving 3-Spindle Boring Machine.

gines, as shown in the illustration. In the engine room is also installed one compound steam driven air compressor to supply necessary air for the pneumatic tools, painting machines, etc.

The switchboard consists of five panels; two generators, one exciter and two feeder panels. The power load for each shop is controlled directly from the power house, as is also the lighting.

Boiler Room.

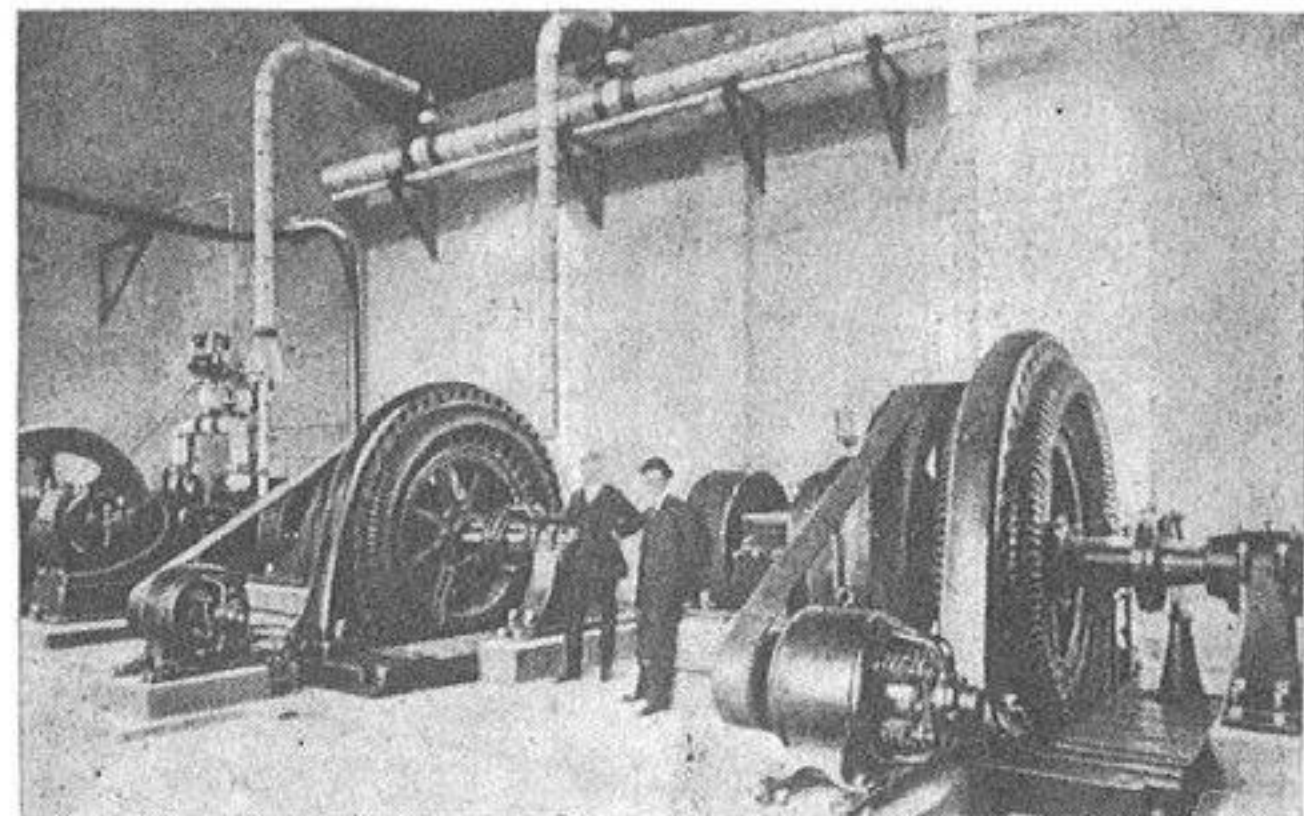
The boiler room equipment consists of three 200-h. p. water tube boilers furnished with Jones underfeed stokers, and the boilers are equipped with forced draft, the fan of which is steam driven.

Oil Storage.

In a small isolated building adjacent to the power house is the oil storage house, which is 20 by 40 ft. This building is equipped with automatic oil feeders and contains all the inflammable material, as also all the paints, etc., used.

Round House.

The round house located along the right of way has a small auxiliary machine shop, which is driven by a 15-h. p. belted type motor. The round house was for a time equipped with its own boiler and engine plant as the water storage tanks are also located at this point; however, this plant has since been discontinued and the pump is now driven by a 15-h. p. direct-connected motor.



Power House Equipped with Allis-Chalmers Machinery.

Wheel, Axle and Air Brake Shop.

The designation, wheel, axle and air brake shop, signifies the nature of the repairs carried on in this building. It is 90 ft. long and 50 ft. wide and is characteristic of the other buildings in respect to light, ventilation and heating. Four motors, aggregating 92½-h. p., drive the various machines installed in this shop.

The equipment consists of one hydraulic wheel press driven by a 7½-h. p. geared motor, which is mounted on the top of the press.

On axle lathe, one boring mill and one small pipe cutting machine are driven in group from a 40-h. p. 900 r. p. m. motor.

One vertical drill press and one double end emery grinder are driven in group from a 5-h. p. 1130 r. p. m. motor.

Car Assembling and Repair Shop.

The car assembling and repair shop which is 500 ft. long and 160 ft. wide, is so located that the material from all the other buildings naturally gravitates to this section of the works. It is of steel construction with a tar and gravel roof. The sides of the building are sheathed with corrugated iron and are so designed that every other panel is a roller door or a window. In the summer the windows may be opened and the doors rolled up so that practically the sides of the building are opened. The natural lighting

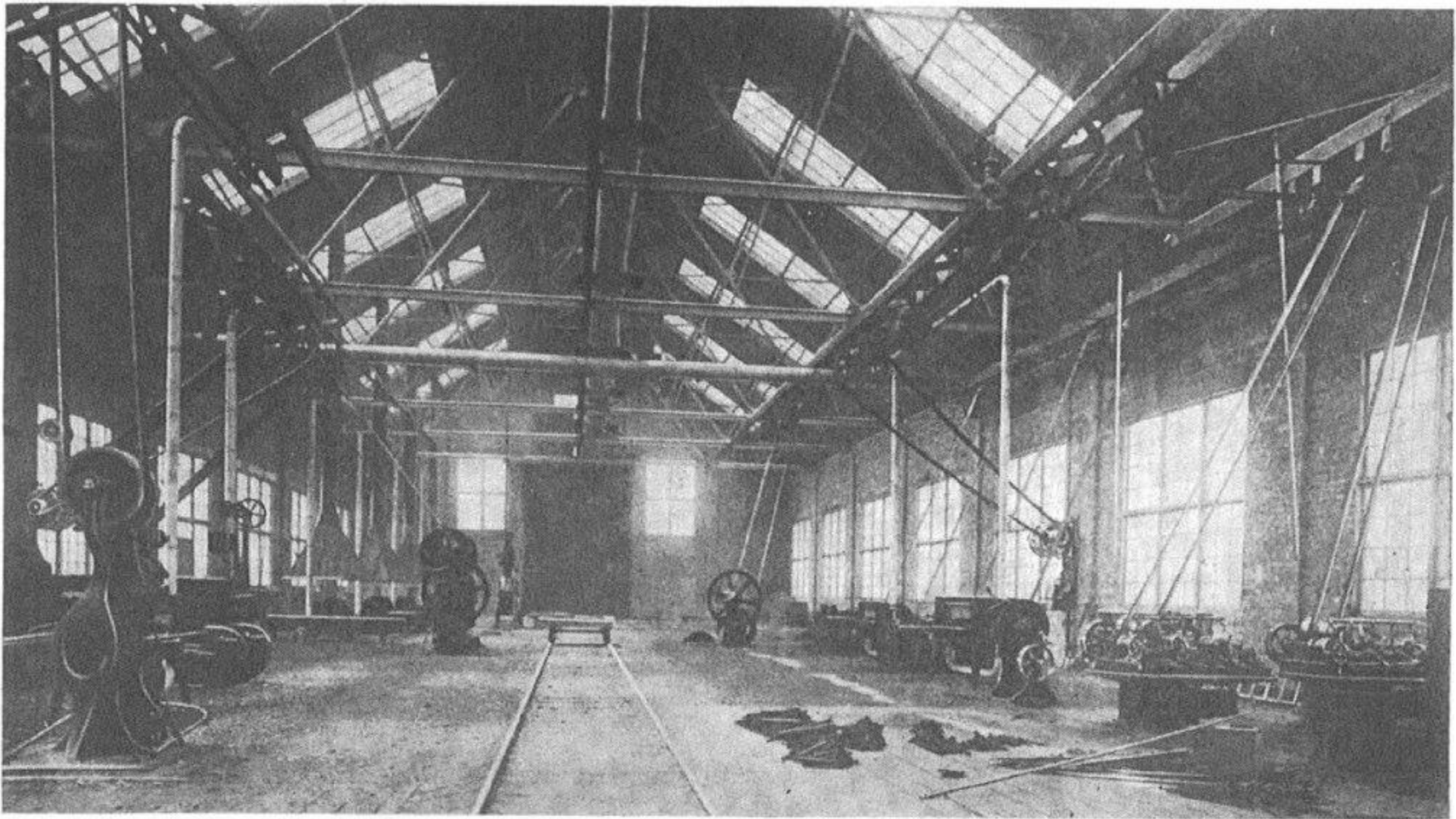
of the building is increased by wire inserted glass skylights and a monitor running the full length of the building, the windows of which for ventilating purposes are regulated by a system of levers.

The building contains three ten-ton cranes to assist in the erection work. In front of the building and under a canopy is located a ten-ton crane which is free to travel in front of the blacksmith shop and the saw shop and convey the heavier parts to the car assembling shop. It is also arranged to take care of the wheels and axles after they come from the wheel shop. The car shop has a capacity of seventy cars, distributed on six tracks running longitudinally. There are also four larry tracks, on which push cars may be operated to increase the facilities for handling material.

The heating system of this building includes two blowers, each driven by belting from 50-h. p. motor.

circuits, and they have special advantages for operation in plants of this kind, having no moving electrical contacts and consequently causing no fire risk. They also start under load, run at approximately constant speed regardless of load, and if the load is suddenly thrown off no racing can occur. They are extremely simple in construction, having no commutator or brushes, and this, as above intimated, insures absolute freedom from sparking, flashing or burning. The voltage in the rotating part is so low that insulation breakdowns do not occur. Furthermore, an induction motor, when started, does not require synchronizing and, on account of its simple construction and absence of all auxiliary devices, except starters, the cost of maintenance and attendance is less than for any other type of electric motor.

There are installed in this plant twenty-three constant speed induction motors with a combined capacity of six



Blacksmith Shop, Hocking Valley Shops.

Blacksmith Shop.

The blacksmith shop, 160 ft. long and 70 ft. wide, is similar in design and construction to the saw shop. All machines in this building are arranged in groups, as much as possible, and driven from line shaft. There are eight heavy forges installed, the air for which is supplied by a fan belted to a 40-h. p. motor. One combination punch and shear and a bulldozer are driven in a group from a 30-h. p. 900 R. P. M. motor. One double emery wheel, one grinder, one two-drill press and other light tools are driven in a group from a 15-h. p. 1130 R. P. M. motor.

Three triple bolt threaders, one punch, and one emery grinder, one "I" bending machine, one 7½-inch bolt header and one guillotine shears are driven in a group by a 30-h. p. motor. All these motors are mounted on the walls of this shop, about six feet above the floor line, so they consume practically no space and are not high enough to be injured by the smoke and dirt, which naturally exist in such a shop.

The blower heating system for the shop is driven from a 15-h. p. motor.

Motors.

Induction motors are, in all respects, the best type of machine for general power distribution on alternating current

hundred and three horsepower, not including the three ten-ton cranes, which are each equipped with 35 rated horsepower.

The Webster vacuum heating system is installed in the entire plant.

The Logan shops of the Hocking Valley Railway represent an investment of \$350,000 approximately, but it will readily be realized that the company has improved its service to a far greater degree than that shown by these figures. The shops will employ 450 men and will turn out 5000 heavy repair cars each year. They were originally designed to take care of 50% in excess of their present requirement, and, while they were built primarily as repair shops for wooden cars, they are also laid out with a view to taking care of the steel construction work later on.

The information and illustrations for this article were secured by courtesy of the Allis-Chalmers Co.

It is reported that the New Iberia, Lafayette & Northeastern is planning building from Eunice, La., southeast via Church Point, Lafayette and St. Martinsville, to New Iberia, about 60 miles. F. N. Welch, president; H. A. Gennung, chief engineer, New Iberia.