BUILDINGTHERHIROHD

RAILWAY SUPPLY INDUSTRIES CONTIN



THE RAILROAD

is a New York World's Fair 1939-1940 Exhibit

sponsored by the Railway Supply Industries

-an association comprising several hundred companies that

furnish the raw materials, supplies, and equipment

used by American railroads.

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HE PURPOSE OF THE EXHIBIT

The purpose of this exhibit is to illustrate graphically how every industry in America contributes to "building the railroad." From farm, mine, forest, and factory, railroads purchase immense quantities of diversified products for their construction, operation, and maintenance. In normal times they disburse five billion dollars annually in wages, taxes, equipment, fuel, materials, and supplies. Each year, in addition, their "capital expenditures"—equipment and structures—average one-half billion dollars. They buy and use 70,000 different commodities from more than 1200 communities in all states and in 85 per cent of all counties. The railroads and supply industries together employ about two million people.

Under the dome of the Railroad Building is a huge animated model of a mountainous landscape, 28 feet high and 80 feet in diameter at the base, accurate to scale and authentic in every detail. The landscape suggests that mountains are the primary source of many raw materials essential to railroad construction and opera-



tion. As the spectator proceeds up a spiral ramp around the display, there is unfolded a graphic development of railroad building, from the right-of-way to finished rolling stock, entering a city terminal.

Over the landscape appear forests, quarries, mines, smelters, steel mills, factories, and farms, which supply materials to the railroads. Varied activities are realistically portrayed by numerous working models of railroad shops, together with miniature trains engaged in freight, high-speed passenger, and suburban service. These trains operate on complete railroad systems fully equipped with yard facilities, roundhouses, bridges, tunnels, snowsheds, and signal systems. Within the mountain, motion pictures of many manufacturing processes are shown, and finished products displayed.

The highest type of engineering and research talent, manufacturing skill, and executive ability of Railroad and Supply Industry personnel have been co-ordinated in perfecting rail transportation systems that are superior to any in the world. These joint activities have made a vital contribution to our country's development and the welfare of its citizens. The United States has 30 per cent of the world's railway mileage although its land area and population are each but 6 per cent of the world total. There are 400,000 miles of track-enough to encircle the globe at the equator 16 times. Each mile of line represents an investment of \$100,-000, and for its upkeep \$1500 is spent each year. In normal times annual replacement needs are about two million tons of steel rails (enough to build a track 10,000 miles long), and onehalf million tons of track fastenings. Tracks are laid on more than one billion timber crossties, about 3000 each mile, and more than 50 million are needed annually for replacement. For track and roadway tools the average annual expenditure by all the railroads is ten million dollars.



In building a railroad, the first step is construction of the right-of-way. The model conveys an idea of the obstacles encountered in bridging canyons, tunneling mountains, and blasting a safe roadbed along a steep mountainside. Temporary piles are driven, a bridge is built, materials are unloaded, and concrete is poured. In the background are shown completed concrete viaducts, and on an upper level is seen a snowshed that protects the track during winter operation.





In this view, at the right, is shown a limestone quarry, with rock being loaded by a steam shovel onto cars that are hauled to a crusher plant at the left. The ballast thus prepared is then transported to the construction site shown in the preceding picture. The steam shovel is a motion model, and the trains are operating models, automatically controlled. On an upper level speeds a streamlined passenger train, emerging from a tunnel.

Limestone, of "ballast" size, is another important material used for railway construction and maintenance. It is placed on the roadbed to drain water from the ties, spread the load over softer subgrade, provide stability, and assure good riding qualities. Every year the railroads purchase about 12 million cubic yards of ballast, enough to fill 160,000 freight cars. In maintaining the right-of-way they must periodically clean the ballast to free it from accumulated sand and cinders. The modern method of screening is by a self-propelled machine that travels along the rails, lifts the ballast, sifts it free of fine dirt, and replaces it along the track. To maintain their roadways and pay taxes the railroads spend almost one-third of every dollar they take in.

9

Products from the forest are used extensively for railway structures and equipment. Twenty per cent of all cut timber produced in the United States finds its way to the railroads. Normally they spend more than 100 million dollars annually for this material, more than one-half of it being for crossties alone. To lengthen its life, much of railroad timber is now treated with preservatives, which come from another sizable contributing industry. The yearly expenditure for treating materials is about 9 million dollars. The railroads also purchase each year about one million barrels of cement (8 per cent of the nation's production), and many carloads of the other ingredients for concrete-sand and gravel. They also spend, on the average, three million dollars for locomotive firebrick every year.



Operations of three contributing industries are shown in this view. At the left background is a lumber camp where timber is cut, and near by is a woodworking plant, from which emerge crossties, sheathing, and other products. In the center background is a brickyard. At the extreme right is a modern cement plant whose product has been used in building a concrete dam and structures for the hydroelectric power plant shown in the foreground. Emerging from a tunnel and passing over a concrete viaduct is a modern freight train.





The railroads every year purchase more than one-third of the country's annual total production of iron and steel castings for cars and locomotives, at a cost of about 60 million dollars. This is in addition to an immense tonnage of castings embodied in complete equipment purchased as "capital expenditures." To produce one ton of finished steel requires more than four tons of raw materials-iron ore, iron and steel scrap, coke (derived from coal), and limestone, each representing large contributing industries. An important one of these is the collection and merchandising of scrap. The annual domestic consumption of this material is thirty-two and a half million gross tons, valued at about 600 million dollars. The railroads, in disposing of discarded parts and materials, contribute 10 per cent of this tonnage of iron and steel scrap.

To build a standard locomotive requires more than 7500 parts from approximately 120 manufacturing plants, and provides employment equivalent to the work of 50 men for one year. American railroads now have in operation more than 46,000 locomotives of all types, and normally spend about 50 million dollars for new motive power each year. The average pulling power of locomotives has increased 50 per cent in the past 20 years (thus permitting more economical transportation service). Iron and steel products of all sorts, representing various specific industries, are used to construct a locomotive, including, on the average, more than one mile of boiler tubing. The railroads purchase millions of tons of steel products each year at a cost of almost 300 million dollars. Material for maintenance of shop machinery alone costs about 15 million dollars annually.



In the right background of this picture is again shown the open iron ore mine, and coal mine. A railroad hauls coal to the coke producing plant in the middle background, where also is situated a blast furnace that produces pig iron. Scrap iron is stored near by. At the right is shown a steel and allied products plant that supplies materials and apparatus for railroad use. In the foreground is a construction shop where locomotives are built, assembled, and tested. Operations are illustrated in great detail on the motion model.





This picture illustrates some of the processes involved in locomotive maintenance. At the extreme left, in the foothills, oil wells and storage tanks are seen. To the right of this, in the center, is a coal mine. Near the right is a factory that produces maintenance and supply apparatus. In the foreground is an engine terminal where locomotives are kept in operating condition. Here ashes are removed, grates cleaned, and locomotive exterior groomed. Minor repairs and adjustments are made. Then locomotives are lubricated, supplied with fuel and water, for another trip.

To operate and maintain locomotives the railroads spend immense sums for materials and supplies. Their annual bill for bituminous coal is 200 million dollars, representing 22 per cent of the nation's output, and giving employment to 94,000 mine workers. They also use annually 60 million barrels of fuel oil, 25 million gallons of lubricating oil, and 350 billion gallons of water for locomotive boiler use, much of which is purchased from towns and municipalities. This water is sufficient to fill a channel 350 feet wide and 9 feet deep from New York to San Francisco. To conserve fuel the railroads have progressively adopted more efficient motive power. During the past 20 years the unit fuel consumption for steam locomotives has been reduced 30 per cent. Other types of locomotives now used are electric, Diesel-electric, and turbo-electric.

To preserve equipment and structures, and keep them looking shipshape, requires the use of paints, dyes, and chemicals of all sorts. Treatment of water for locomotive boilers to prevent scale and corrosion, thereby reducing fuel consumption, lengthening life, and cutting repairs, is a growing practice that draws heavily on chemical industries. Two million dollars are spent each year for boiler compounds. Cleaning the outside of locomotives after each run creates a market for certain materials. Large quantities of chemicals, mixed with high-pressure steam, are used for removing grease and dirt from the jacket and running gear. To refinish locomotives and freight cars alone requires the use of 5 million dollars worth of paint each year.



At the extreme left of this picture are seen a rear view of the engine terminal, a coal tipple, cars from which coal is being unloaded for locomotive use, and ash removal apparatus. Back of this is a factory with supplies emerging along a siding to the main line. Further back, along the mountainside, are several oil storage tanks. To the right is a vertical-shaft coal mine with a village near by. In the right foreground is a factory that produces paints, chemicals, and dyes, from raw materials being brought from underground sources at the rear.





Copper and its alloys, brass and bronze, are used extensively and in diversified ways by the railroads. Mining, smelting, and refining operations, together with widespread manufacturing processes, are involved in producing such products as: wiring for lighting equipment and buildings, power connections, signal systems, telephone, telegraph, and transmission lines; rail bonds; fittings of all sorts; car and locomotive journal bearings; and materials for electrical apparatus embodied in equipment classified as "capital expenditures." In the course of a year the railroads spend approximately 25 million dollars for this class of supplies.

To build one freight car requires material from 31 states and provides employment equal to the work of one man for a year. There are now in service on American railroads about two million freight cars, enough to make a train of almost globe-encircling length. Normally more than 50,000 new cars are needed each year. The average load capacity of all freight cars has increased about 20 per cent, and the average speed of trains more than 62 per cent during the past 20 years. In the United States one ton of freight can be hauled one mile for a cent. In many other countries the rates are twice as high. Fast, safe, dependable, and cheap freight service has been made possible by progressive development of the railroads, to which the products of supply industries have contributed.



Here is shown a shop for the building of freight cars with details of manufacturing processes depicted by motion models. Raw materials and finished apparatus are shipped in. There are shown such operations as shearing, punching, and forming of steel plates; fabrication of underframe, sides, ends, and assembly of entire car and mounting it on the trucks; installation of brake apparatus; painting the cars, and rolling them out on the line ready for hauling freight of all description over the vast country.





In the foreground of this illustration is shown a modern plant for building the popular streamlined car, while in the background are situated the shops of several contributing industries. At the left is a factory representative of the many that produce finished apparatus and equipment, which provide comfort and convenience for travelers. Up on the mountainside is an aluminum ore (bauxite) mine and a plant for extraction of this metal. In the car shop various processes are shown: receiving and distributing materials; fabricating parts; installing apparatus; and placing seats.

The railroads now have in service about 47,000 passenger cars, and continue to buy the newest type of equipment, including streamlined trains, as they are developed, and at a cost of millions of dollars. The recent trend is toward lightweight construction, which has entailed the use of new materials such as stainless steel and aluminum alloys. A new impetus has thus been given to the steel and aluminum industries. Large expenditures have been made for research and for the development of manufacturing methods and facilities to produce these metals in the particular form and characteristics specifically adapted for use in modern railway vehicles.

The railroads spend every year 15 million dollars for stationery and printing, 10 millions for locomotive, train, and station supplies, and millions more for office equipment. Rubber, leather, and fiber products cost 7 million dollars annually. For commissary supplies, tableware, utensils, and equipment they spend about 20 million dollars each year. Great quantities of farm products are used in serving 25 million dining car meals every year, such as 15 million pounds of meat, two million dozen eggs, nine million pounds of potatoes, 30 million rolls, and 15,000 barrels of apples that go to make the most popular dessert. For use in Pullman cars there are purchased annually almost one million pieces of linenware, and through their laundries pass 174 million pieces of linen and one-half million blankets.

This picture illustrates a present-day metropolis of modernistic design. Here are shown an electric power plant, hotels, homes, and office buildings, with an airplane beacon atop one of them. At the extreme left, in the distance, may be seen a summer resort on the mountainside. There is a modern subsurface transportation terminal into which enter interurban, main line, and subway trains. Here are provided such accommodations for patrons as will afford them the same degree of comfort and convenience they enjoy while traveling.





In one year American railroads carry 500 million passengers, and every five seconds one of their 16,000 trains is either starting or ending a trip. Distinctive progress has been made during recent years in providing superior service having maximum attractiveness, convenience, comfort, dependability, and safety, still at a rate lower than in any other country. One dollar now pays for carrying a passenger 54 miles, compared to 32 miles in 1921. Of the world's fastest scheduled trains, 56 per cent are American. Today the daily mileage of "mile-a-minute" trains is fifty times that of 1930. Since 1934 there have been put into service 108 de luxe high-speed streamlined trains on 24 railroads. Within the past six years 25 per cent of all passenger cars have been air-conditioned. The railroads continue to spend millions of dollars each year to maintain their outstanding transportation service.



AILWAY SUPPLY INDUSTRIES EXHIBIT

GEORGE A. BLACKMORE Chairman

S. G. DOWN Vice-Chairman LEONARD OUTHWAITE Designer

ERECTED AND MAINTAINED FROM FUNDS CONTRIBUTED BY THE FOLLOWING COMPANIES:

Acetylene Products Company	. Indianapolis, Indian
Ackermann Printing Co., Inc., G.A.	New York, N. Y
Acme Steel Company	Chicago, Il
Acme White Lead & Color Works	Detroit, Mich
Adams & Westlake Co., The	Chicago, Il
Adirondack Foundries & Steel, Inc	Watervliet, N. Y
Air Reduction Sales Co	New York, N. Y
Ajax Hand Brake Co	New York, N. Y
Ajax Metal Co., The	Philadelphia, Pa
Akron Coal Co	Akron, Ohi
Albany Car Wheel Co	Albany, N. Y
Allegheny Steel Co	Pittsburgh, Pa
Allen, Lane & Scott	Philadelphia, Pa
Allentown Portland Cement Company	Catasauqua, Pa
Allis-Chalmers Mfg. Co	Milwaukee, Wis
Alpha Portland Cement Company	Easton, Pa
Aluminum Company of America	Pittsburgh, Pa
American Arch Co., Inc.	New York, N. Y
American Automatic Elec. Sales Co	Chicago, Il
American Brake Shoe & Foundry Co., The.	New York, N. Y
American Brass Co., The	Waterbury, Conr
American Car & Foundry Co	New York, N. Y
American Chain & Cable Co., Inc	Bridgeport, Conr
American Creosoting Co., Inc	Louisville, Ky
American Enameled Magnet Wire Co	Toledo, Ohi
American Fork & Hoe Co., The	Cleveland, Ohi
American Frog & Switch Co	Hamilton, Ohi
American Laundry Machinery Co	Cincinnati, Ohi

American	Locomotive Co	. New York, N. Y.
American	Lumber & Treating Co	Chicago, Ill.
American	Optical Co	Southbridge, Mass.
American	Pulley Co., The	Philadelphia, Pa.
American	Radiator Co	. New York, N. Y.
American	Rolling Mill Co., The	. Middletown, Ohio
American	Smelting & Refining Co., Federated	

American Steel Foundries	Chicago, Ill.
Ames & Company, W	Jersey City, N. J.
Ames Baldwin Wyoming CoF	Parkersburg, W. Va.
Anaconda Copper Mining Co	New York, N. Y.
Anderson Mfg. Co., Albert & J. M	Boston, Mass.
Apollo Steel Co.	Apollo, Pa.
Armbrecht Lumber Co	Mobile, Ala.
Arrow Sand & Gravel Co., The	Columbus, Ohio
Atlantic Creosoting Co., Inc	New York, N. Y.
Atlantic Steel Castings Co., The	Chester, Pa.
Atlantic Tie & Timber Co	Washington, D. C.
Atlas Steel Casting Co	Buffalo, N. Y.
Atlas Waste Mfg. Co	Glendale, N. Y.
Austin Lumber Co	Pittsburgh, Pa.
Automatic Transportation Co	Chicago, Ill.

B

Babcock & Wilcox	Tube	Co.,	The	 Beaver Falls, Pa.
Baird Co., David.				 Camden, N. J.
Baker Co., J. E				 York, Pa.

Baker Rauning Company	Cieveland, Onio
Baldwin Locomotive Works, The	Philadelphia, Pa.
Baltimore Mall. Iron & Steel Casting Co	Baltimore, Md.
Baltimore Paper Co	Baltimore, Md.
Barco Mfg Co	Chicago III
Barnes & Co. A. P.	Chicago III
Barnes & Co., A. R	Ditt 11 11 D
Barnes & Tucker Co	Philadelphia, Pa.
Barrett Co., The	New York, N. Y.
Basalt Trap Rock Co	Alexandria, Pa.
Batteiger Co., R. L	Philadelphia, Pa.
Beamer Handle Co.	Manor, Pa.
Beckwith-Chandler Co	Newark N I
Beerle Tie Consist Co	Foot St Louis III
Beegle Tie Service Co	Di ili 1
Bellefonte Lime Co	Phillipsburg, Pa.
Bemis & Call Co	Springfield, Mass.
Benson Co., Inc., The L. A.	Baltimore, Md.
Berry Bros.	
Berwind-White Coal Mining Co	Philadelphia, Pa.
Bethlehem Fairmont Coal Co	Baltimore Md
Bethlehem Parmont Coar Co	Bathlaham Ba
Betnienem Steel Co	
Bettendorf Co., The	Bettendorf, Iowa
Bingham Co., The W	Cleveland, Ohio
Binkley Coal Co	Indianapolis, Ind.
Bird-Archer Co	New York, N. Y.
Bird Coal Company	
Birdshoro Steel Edry, & Machine Co.	Birdsboro, Pa.
Black Diamond Coal Co. The	Columbus, Ohio
Blaw Knox Co. Union Steel Casting Div	Pittsburgh Pa
Bakennen Co., Onton Dicci Casting Di	Marion Ohio
Bonannan Co., The Wilson	Louisville Kr
Bond Bros.	Louisville, Ky.
Boston Insulated Wire & Cable Co	Dorchester, Mass.
Boston Iron & Metal Co., Inc	Baltimore, Md.
Bostwick-Braun Co., The	
Bowsman Washed Sand & Gravel Co	Troy, Ohio
Braeburn Allov Steel Corp	Pittsburgh, Pa.
Brake Equipment & Supply Co.	Chicago, Ill.
Briggs & Turivas Inc	Blue Island, Ill.
Brubaker & Bros Co W L	Millersburg Pa
Buckeye Steel Costings Co. The	Columbus Obio
Buckeye Steel Castings Co., The	So Milwaukee Wis
Budy Co. The	Horvey III
Buda Co., The	Di il dal bio De
Budd Mig. Co., Edw. G.	Philadelphia, Pa.
Buffalo Bolt Co	North Tonawanda, N. Y.
Buffalo Brake Beam Co	New York, N. Y.
Buffalo Slag Co., Inc., The	Buffalo, N. Y.
Business Furniture Co	Pittsburgh, Pa.
Butler Consolidated Coal Co.	Wildwood, Pa.
Byers Co., A. M.	Pittsburgh, Pa.

Claveland Ohio

Palson Dauling Componen

Cambridge Collieries Co.....Cleveland, Ohio Camel Sales Co..... Cleveland, Ohio Canonsburg Coal Co..... Canonsburg, Pa. Cardwell Westinghouse Co.... Chicago, Ill. Carey Co., The Philip.....Lockland, Ohio Carnegie Coal Corp......Pittsburgh, Pa. Carter Coal Co..... New York, N. Y. Chicago-Hutchins Corp. Chicago, Ill. Chicago Malleable Casting Co..... Chicago, Ill. Chicago Pneumatic Tool Co..... New York, N. Y. Chicago Railway Equipment Co..... Chicago, Ill. Clark Brothers Bolt Co......Milldale, Conn. Clark Equipment Co......Buchanan, Mich. Clarke & Son, Inc., L. A..... Washington, D. C. Cleveland Chain & Mfg. Co. and Associated Companies.....Cleveland, Ohio Cleveland-Cliffs Iron Co., The Cleveland, Ohio Cleveland Frog & Crossing Co..... Cleveland, Ohio Coach & Car Equipment Corp. Chicago, Ill. Coale Lumber Co., Thomas E..... Philadelphia, Pa. Coal Mining Co. of Graceton, Inc. Punxsutawney, Pa. Coffin, Jr., Co., The J. S. Englewood, N. J. Coleman & Co., Inc. Philadelphia, Pa. Collins & Aikman Corp. New York, N. Y. Colonial Sand & Stone Co. New York, N. Y. Columbus Bolt Works..... Columbus, Ohio Concrete Products Co. of America..... Pittsburgh, Pa. Conley Frog & Switch Co..... Memphis, Tenn. Consolidation Coal Co..... New York, N. Y. Consumers Co. of Illinois..... Chicago, Ill Continental Diamond Fibre Co. Newark, Del Continental Iron & Steel Co..... New York, N. Y Continental Roll & Steel Foundry Co..... Pittsburgh, Pa. Continental Steel Corp. Kokomo, Ind. Coplay Cement Manufacturing Co. Coplay, Pa.

Copperweld Steel Co.	Glassport, Pa
Corning Glass Works.	Corning, N. Y
Cortright Coal Co	Philadelphia, Pa
Costanzo Coal Mining Co	. Wheeling, W. Va
Crane Company	Chicago, II
Creepcheck Co., Inc., The	New York, N. Y
Creighton Fuel Co	Creighton, Pa
Crescent Insulated Wire & Cable Co., Inc	Trenton, N.
Cross, Austin & Ireland Lumber Co	Brooklyn, N. Y
Crown Coal & Coke Co	Pittsburgh, Pa
Crucible Steel Co. of America	New York, N. Y
Cuneo Eastern Press, Inc., of Penna., The	Philadelphia, Pa
Currie & Campbell	Philadelphia, Pa

D

Dale Engineering Co.	
Dalton Foundries, Inc., The	Warsaw, In
Davis Brake Beam Co	Pittsburgh, P
Dayton Malleable Iron Co., The	Davton, Oh
Dayton Mfg. Co.	Davton, Oh
Dearborn Chemical Co	Chicago, I
Delta-Star Electric Co	Chicago, I
Denney Tag Co., The	West Chester, P
Detroit Seamless Steel Tubes Co	Detroit, Mic
Detroit Steel Castings Co., The	Detroit, Mic
Diehl Mfg. Co.	Elizabethport, N.
Dietz Co., R. E.	New York, N.
Dixie-Vortex Co.	Easton, P
Dodge Steel Co.	Philadelphia, P
Douglas Co., C. J.	
Dravo Corp	Pittsburgh, P
Dreifus Co., Charles	Philadelphia, P
Duer & Sons, Inc., John	Baltimore, M
Duff-Norton Mfg. Co., The	Pittsburgh, P
Dunlap Printing Co.	Philadelphia, P
Dunlop Tire & Rubber Corp.	Buffalo, N.
Dunn, D. A.	
Duquesne Slag Products Co	Pittsburgh, P
Durvea Corp., O. C.	New York, N.
Dutton Lumber Co., A. C.	Poughkeepsie, N.
Dver Ouarry Co., The John T.	Birdsboro, P

E

Eastern	Coal & Coke Co	Philadelphia, Pa.
Eastern	Rock Products, Inc.	Utica, N. Y.
Eastern	Rolling Mill Co	Baltimore, Md.

Eastern Tar Products Corp.	Baltimore, Md
Easton Car & Construction Co	Easton, Pa
Eaton Mfg. Co	Massillon, Ohi
Economy Arch Co	St. Louis, Mo
Edgcomb Steel Co	Philadelphia, Pa
Edgewater Steel Co	Pittsburgh, Pa
Edison Cement Corporation	Orange, N.]
Edison, Inc., Thomas A.	
(Discon Batter Disister)	TH. C 11 MT 1

(Primary Battery Division)......Bloomfield, N. J. Edison Storage Battery Division

(Thomas A. Edison, Inc.)	West Orange, N. J.
Edna Brass Mfg. Co., The	Cincinnati, Ohio
Egyptian Tie & Timber Co	St. Louis, Mo.
Ehret Magnesia Mfg. Co	Valley Forge, Pa.
Electric Products Company	Cleveland, Ohio
Electric Storage Battery Co., The	Philadelphia, Pa.
Elliott Co., B. K.	Pittsburgh, Pa.
Elwell Parker Electric Co	Cleveland, Ohio
Emmons Coal Mining Co	Philadelphia, Pa.
Ender Coal & Coke Co	Chicago, Ill.
Enterprise Railway Equipment Co	Chicago, Ill.
Eppinger & Russell Co	New York, N. Y.
Erie Forge Co	Erie, Pa.
Erman-Howell & Co., Inc.	Chicago, Ill.
Erman-Howell Car Wrecking Co	Chicago, Ill.
Etna Forge & Rivet Co	Pittsburgh, Pa.
Evans Products Co	Detroit, Mich.
Ewald Iron Co., Inc.	Louisville, Ky.

F

Falls Hollow Staybolt Co	Cuyahoga Falls, Ohio
Farrell-Cheek Steel Co	Sandusky, Ohio
Federal Portland Cement Company, Inc	Buffalo, N. Y.
Firth-Sterling Steel Co	New York, N. Y.
Fisher & Young	
Flagg & Co., Inc., Stanley G.	Philadelphia, Pa.
Flannery Bolt Co	Bridgeville, Pa.
Fleishel Lumber Co	St. Louis, Mo.
Fleming Bros. Lumber & Mfg. Co., Inc	Scranton, Pa.
Fletcher Lumber Co., E. P	Cairo, Ill.
Floed & Conklin Mfg. Co	
Foedisch Coal Co	Philadelphia, Pa.
Ford Collieries Co	Detroit, Mich.
Fort Pitt Bridge Works	Pittsburgh, Pa.
Fort Pitt Steel Casting Co	McKeesport, Pa.
Frampton & Co., D. B.	Pittsburgh, Pa.
France Stone Co	Toledo, Ohio

ranklin Railway Supply Co.,	Ir	ıc	• •			 		New	York,	N. Y.
rieder Co., The Philip W					 			. Cle	veland	, Ohio
riedman Co., The M. D						 		4	Ashland	d, Ky.
rost Lumber Industries, Inc.						 		. Shr	evepo	rt, La.

G

Gair Co., Inc., Robert	New York, N. Y.
Garlock Packing Co., The	Palmyra, N. Y.
General American Transportation Corp.	Chicago, Ill.
General Coal Co.	Philadelphia, Pa.
General Crushed Stone Co., The	Easton, Pa.
General Electric Co	.Schenectady, N. Y.
General Railway Signal Co.	Rochester, N. Y.
General Refractories Co	Philadelphia, Pa.
General Scrap Iron, Inc	Fall River, Mass.
General Steel Castings Corp	Eddystone, Pa.
Getty & Co., Inc., H. S.	Philadelphia, Pa.
Giant Portland Cement Co	Philadelphia, Pa.
Glens Falls Portland Cement Co.	Glens Falls, N. Y.
Goodall Rubber Co., Inc.	Philadelphia, Pa.
Gould Storage Battery Corp.	St. Paul, Minn.
Granite City Steel Co.	Granite City, Ill.
Gravbar Electric Co., Inc.	New York, N. Y.
Great Lakes Portland Cement Corp	Buffalo, N. Y.
Green Bag Cement Co. of Pennsylvania	Pittsburgh, Pa.
Greene Co., Stephen	Philadelphia, Pa.
Greenheart Lumber Co., The	New York, N. Y.
Greenville Steel Car Co.	Greenville, Pa.
Gustin-Bacon Mfg. Co.	Kansas City, Mo.

Н

Hackmeister-Inc	Pittsburgh, Pa.
Handlan, Inc.	St. Louis, Mo.
Hanna Co., The M. A.	Cleveland, Ohio
Hanna Coal Co	Cleveland, Ohio
Hanlon & Wilson Co	Wilkinsburg, Pa.
Harcon Corp	Boston, Mass.
Hardy & Sons Co., William A.	Fitchburg, Mass.
Harmon Creek Coal Corp	Pittsburgh, Pa.
Harris & Co., Harry	Chicago, Ill.
Harris Structural Steel Co	New York, N. Y.
Harrison Steel Castings Co., The	Attica, Ind.
Hatfield Campbell Creek Coal Co., The	Cincinnati, Ohio
Henderson Coal Co.	Pittsburgh, Pa.
Heppenstall Co	Pittsburgh, Pa.

Hercules Cement Corp.	Philadelphia, Pa.
Herman Pneumatic Machine Co.	Pittsburgh, Pa.
Hertner Electric Company	Cleveland Ohio
Heywood-Wakefield Co	Gardner Mass
Hickman Williams & Co. Inc.	Pittsburgh Pa
Hicks Interests (Lewis A Hicks)	Pittsburgh Pa
Hilb & Bouer	Cincinnati Ohio
Hillman Coal & Coke Co	Pittsburgh Pa
Hindley Mfg. Co	Volley Folle P I
Hindley Mig. Co	Boltimore Md
Hobbs Western Co	St Louis Mo.
Hobbs-western Co	
HOCK & CO., J. F.	Baltimore, Mid.
Hodell Chain Co., The	Cleveland, Ohio
Home Rubber Co	Trenton, N. J.
Hoosier Waste Renovating Co.	Indianapolis, Ind.
Horgan Fuel Co.	New York, N. Y.
Hubbard & Co	Pittsburgh, Pa.
Hughes & Co., C. A.	Cresson, Pa.
Humphreys Coal & Coke Co.	Greensburg, Pa.
Hunt-Spiller Mfg. Corr.	Boston, Mass.
Huron Portland Cement Company	Detroit, Michigan
Hussey & Co., C. G.	Pittsburgh, Pa.
Hyman-Michaels Co	Chicago, Ill.

I

Imperial Coal Corp	Johnstown, Pa
Indiana & Illinois Coal Corp	Chicago, Ill.
Indiana Wood Preserving Co.	Chicago, Ill.
Industrial Brownhoist Corp.	Bay City, Mich.
Industrial Paper Co	Baltimore, Md.
Ingersoll-Rand Co.	New York, N. Y.
Inland Steel Co	Chicago, Ill.
International Business Machine Corp	New York, N. Y.
International Chain & Mfg. Co	York, Pa.
International Nickel Co., Inc	New York, N. Y.
ron & Steel Products, Inc	Chicago, Ill.

J

Jackson Lumber Co	Lockhart, Ala.
Jamestown Malleable Iron Corporation	Jamestown, N. Y.
Jamison Coal & Coke Co	. Greensburg, Pa.
Jefferson Electric Co	Bellwood, Ill.
Jenkins Bros.	New York, N. Y.
Jennison-Wright Co., The	Toledo, Ohio
Johnson & Sons, B.	Richmond, Ind.

Johnson Bronze Co	New Castle, Pa.
Johns-Manville Sales Corp.	New York, N. Y.
Johnstown Coal & Coke Co	Johnstown, Pa.
Jones & Laughlin Steel Corp	Pittsburgh, Pa.
Jones Co., The George M.	Toledo, Ohio
Joseph Co., The David J	.Cincinnati, Ohio
Joslyn Co., The	New York, N. Y.
Joyce-Cridland Co., The	Dayton, Ohio

K

Kalback & Son, J. E	Winchester, Va
Kaplan Co., M. S.	Chicago, Il
Karlen Davis Lumber Co	Tacoma, Wash
Karpen & Bros., S	Chicago, Il
Kennecott Copper Corp	. New York, N. Y
Kercher, Marshall & Co	Pittsburgh, Pa
Kerite Insulated Wire & Cable Co., Inc., The.	. New York, N. Y
Keystone Coal Co	York, Pa
Keystone Coal & Coke Co	Greensburg, Pa
Keystone Grinder & Mfg. Co	Pittsburgh, Pa
Keystone Portland Cement Company	Philadelphia, Pa
Keystone Wood Preserving Co., Inc.	Philadelphia, Pa
Klaff & Co., Inc., H.	Baltimore, Mo
Knox Consolidated Coal Corp	. Indianapolis, Ind
Koppers Coal Co., The	Pittsburgh, Pa
Koppers Company Tar & Chemical Division	Pittsburgh, Pa
Kopp Glass, Inc.	Swissvale, Pa
Kramer & Co., H	Chicago, Il
Kress Box Co., F. J	Pittsburgh, Pa
K. W. Battery Co., Inc.	Chicago, Il

L

Lamson & Sessions Co., The	Cleveland, Oh
Landis Machine Co., Inc.	Waynesboro, P.
Lanman Co., The E. B.	.East Chicago, Ind
Larkin Co., Inc	Buffalo, N. Y
Latrobe Electric Steel Co	Latrobe, P
Lawrence Portland Cement Co	. New York, N. Y
Lebanon Steel and Iron Co	Lebanon, P
Lebanon Steel Foundry	Lebanon, Pa
Lehigh Portland Cement Co	Allentown, Pa
Lehigh Structural Steel Co	Allentown, Pa
Lima Locomotive Works, Inc.	Lima, Oh
Lincoln Electric Railway Sales Co., The	Cleveland, Ohi
Lincoln Gas Coal Co	Pittsburgh, Pa

Lindsay Coal Mining Co.	Punxsutawney, Pa.
Lockhart Iron & Steel Co	Pittsburgh, Pa.
Locomotive Finished Materials Co	Atchison, Kan.
Locomotive Fire Box Co	Chicago, Ill.
Lone Star Cement Corp	New York, N. Y.
Long, Jr., Co., Chas. R	Louisville, Ky.
Lorain Coal & Dock Co., The	Columbus, Ohio
Lovell-Dressel Co., Inc	Arlington, N. J.
Loyal Hanna Coal & Coke Co	Philadelphia, Pa.
Lucas Bros	Baltimore, Md.
Lucas Printing Co., J. D.	Baltimore, Md.
Lukens Steel Co	Coatesville, Pa.
Lumber & Mill Work Co. of Phila., The	Philadelphia, Pa.
Lundie Engineering Corp., The	New York, N. Y.
Luntz Iron & Steel Co., The	Canton, Ohio
Luria Bros. & Co	Philadelphia, Pa.

M

Mack International Motor Truck Corp., Lon	g Island City, N.Y.
Madison-Kipp Corp.	Madison, Wis.
Magnus Metal Corp	New York, N. Y.
Magor Car Corp	New York, N. Y.
Maintenance Equipment Co	Chicago, Ill.
Manheim Mfg. & Belting Co	New York, N. Y.
Marble Cliff Quarries Co., The	Columbus, Ohio
Maryland Bolt & Nut Co., The	Baltimore, Md.
Maryland Car Wheel Co	Baltimore, Md.
Masonite Corp	Chicago, Ill.
Massachusetts Mohair Plush Co	New York, N. Y.
Massey Concrete Products Corp	Chicago, Ill.
Massillon Steel Casting Co., The	Massillon, Ohio
Mathis Co., John H.	Camden, N. J.
Mauk Lumber Co., C. A., The	Toledo, Ohio
Maumee Collieries Co., The	Terre Haute, Ind.
Maust Coal & Coke Co	New York, N. Y.
McCreary Lumber Co., R. J.	. Montgomery, Ala.
McCrosky Tool Corp.	Meadville, Pa.
McKay Co., The	Pittsburgh, Pa.
Medusa Portland Cement Company	Cleveland, Ohio
Merchants Steel & Supply Co	Chicago, Ill.
Mercury Mfg. Co., The	Chicago, Ill.
Merkin Paint Co., Inc., M. J.	New York, N. Y.
Milton Mfg. Co., The	
Miner, Inc., W. H	Chicago, Ill.
Moore & Co	Baltimore, Md.
Morden Frog & Crossing Works	Chicago, Ill.

Morganite Brush Co., IncLo	ng Island City, N. Y.
Morris Basin Dry Docks	Jersey City, N. J.
Morrison Railway Supply Corp	Buffalo, N. Y.
Mountain State Steel Foundries Co	Parkersburg W. Va.
Moss Tie Co., T. J	St. Louis, Mo.
Mount Vernon Bridge Co	Mt. Vernon, Ohio
Mt. Vernon Car Mfg. Co	Mt. Vernon, Ill.
Mowbray & Robinson Lumber Co., The	Cincinnati, Ohio
Murcott & Campbell	Brooklyn, N. Y.

N

Jathan Mfg. Co	New York, N. Y.
Vational Aluminate Corp	Chicago, Ill.
Vational Cylinder Gas Co	Chicago, Ill.
Vational Lead Co	New York, N. Y.
Vational Lime & Stone Co., The	Findlay, Ohio
National Lock Washer Co., The	Newark, N. J.
National Malleable & Steel Castings Co	Cleveland, Ohio
National Portland Cement Company	Birmingham, Ala.
National Railway Appliances Assn	Chicago, Ill.
National Refractories Co., Inc	Philadelphia, Pa.
National Telephone Supply Co	Cleveland, Ohio
National Waste Co	New York, N. Y.
Natwick & Co., J	Baltimore, Md.
Nazareth Cement Company	Nazareth, Pa.
Neville Co., The	Pittsburgh, Pa.
New Castle Lime & Stone Co	New Castle, Pa.
New Haven Trap Rock Co., The	New Haven, Conn.
New York Air Brake Co	Watertown, N. Y.
New York Car Wheel Co	Buffalo, N. Y.
New York Coal Co	Columbus, Ohio
Nixdorff Krein Mfg. Co	St. Louis, Mo.
North American Cement Corp	Albany, N. Y.

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ale Construction Co	Chicago, Ill.
glebay Norton & Co.	Cleveland, Ohio
Dhio & Indiana Stone Co	Indianapolis, Ind.
Dhio Brass Co., The	Mansfield, Ohio
Dhio Injector Co. of Illinois, The	Chicago, Ill.
Dhio Steel Foundry Co., The	Lima, Ohio
Okadee Co., The	Chicago, Ill.
Okonite Co., The	Passaic, N. J.
Old Ben Coal Corp.	Chicago, Ill.
Dliver Iron & Steel Co	Pittsburgh, Pa.

Otis Elevator Co	. New York, N.	Y
Otis Steel Co., The	Cleveland, Oh	ic
Oxweld Railroad Service Co., The	Chicago, I	11

D

Paige-Jones Chemical Co., Inc.	Chicago, Ill
P. & M. Co., The	Chicago, Ill
Pantasote Co., Inc., The	New York, N. Y
Peabody Coal Co.	Chicago, Ill
Peale, Peacock & Kerr, Inc.	New York, N. Y
Peerless Cement Corp.	Detroit, Michigar
Peerless Chain Co.	Winona, Minn
Peerless Equipment Co.	Chicago, Ill
Penn Iron & Steel Co.	Creighton, Pa
Penn Steel Castings Co	Chester Pa
Pennsylvania Coal & Coke Co.	New York N Y
Pennsylvania Coar & Conc Communication	New York N V
Perry Lumber Co. L.B.	New York N V
Philodelphia Insulated Wire Co	Philodelphia Pa
Philos Podio & Television Corp	Philadelphia, Pa
Pinleo Radio & Television Corp	Claveland Obi
Pillied Co. The	Swonton Ohio
Pillod Co., The	Dittahungh Da
Pittsburgh & Pairmont Coal Co	Pittsburgh, Pa
Pittsburgh & Snawmut Coal Co	Ditt hand, Pa
Pittsburgh Bridge & Iron Works	Pittsburgh, Pa
Pittsburgh Coal Co.	Pittsburgh, Pa
Pittsburgh Forgings Co	Pittsburgh, Pa
Pittsburgh Plate Glass Co.	Pittsburgh, Pa
Pittsburgh Screw & Bolt Corp	Pittsburgh, Pa
Pittsburgh Steel Co	Pittsburgh, Pa
Pittsburgh Steel Foundry Corp	Glassport, Pa
Plunkett Webster Lumber Co., Inc	New Rochelle, N. Y
Pocahontas Fuel Co	New York, N. Y
Poland Coal Co	Pittsburgh, Pa
Pollock, Mayer	Pottstown, Pa
Positive Lock Washer Co., The	Newark, N. J
Potosi Tie & Lumber Co	St. Louis, Mo
Pratt & Lambert-IncLo	ong Island City, N. Y
Pratt & Letchworth Co	Buffalo, N. Y
Pressed Steel Car Co., Inc.	Pittsburgh, Pa
Price-Watson Co	Chicago, Ill
Pruett-Schaeffer Chemical Co	Pittsburgh, Pa
Pullman-Standard Car Mfg. Co	New York, N. Y
Pursglove Coal Mining Co., The	Cleveland, Ohi
Putnam Lumber Co	Shamrock, Fla
Pyle National Co., The	New York, N. Y
Pyrene Mfg. Co.	Newark, N. J

	Q		
Quigley Shipyard,	Inc	Camden, 1	N. J.

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Rail & River Coal Co	Cleveland, Ohio
Rail Joint Co., The	New York, N. Y.
Railroad Accessories Corp.	New York, N. Y.
Railway & Industrial Engineering Co.	Pittsburgh, Pa.
Rainey, Inc., W. I.	New York, N. Y.
Ralston Steel Car Co., The	Columbus, Ohio
Rand McNally & Co.	Chicago, Ill.
Red Jacket Coal Sales Co.	Columbus, Ohio
Reitz Coal Co.	
Reliance Coal Mining Co.	Pittsburgh, Pa.
Remington Rand, Inc.	New York, N. Y.
Reppert Coal Co.	Flemington, W. Va.
Republic Creosoting Co.	Indianapolis, Ind.
Republic Steel Corp.	Cleveland, Ohio
Revere Copper & Brass, Inc	New York, N. Y.
Rice Miller Coal Corp.	
Ripley & Sons, David-	
W. Frank Hopping, Inc.	Port of Newark, N. J.
Rochester & Pittsburgh Coal Co	Indiana, Pa.
Rochester Iron & Metal Co	Rochester, N. Y.
Rockbestos Products Corp	Pittsburgh, Pa.
Rome Cable Corp	
Rotter-Speer Co., The	Cleveland, Ohio
Rubico Brush Manufacturers, Inc	New York, N. Y.
Russell, Burdsall & Ward Bolt & Nut Co	Port Chester, N. Y.
Russell Mfg. Co., Inc., John M.	Naugatuck, Conn.

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Safety Car Heating & Lighting Co	New York, N. Y.
Sahara Coal Co	Chicago, Ill.
Schaefer Equipment Co	Pittsburgh, Pa.
Schiavone Bonomo Corp	New York, N. Y.
Schreiber & Sons Co., The L	Cincinnati, Ohio
Schwarzenberg Co., The E. A	Cleveland, Ohio
Scientific Production Corp.	New York, N. Y.
Scovill Mfg. Co	Waterbury, Conn.
Scullin Steel Co	St. Louis, Mo.
Sears, Roebuck & Co	Chicago, Ill.
Sharon Steel Corp	Sharon, Pa.

Shawmut Coal & Coke Co., The	St. Marys, Pa.
Sherburne Co	Boston, Mass.
Sherwin-Williams Co	Cleveland, Ohio
Shield Electric Co	New York, N. Y.
Shubuta Tie & Timber Co	Shubuta. Miss.
Sidford & Green, Inc.	New York, N. Y.
Simplex Wire & Cable Co	Cambridge, Mass.
Simpson Creek Collieries Co., The	Cleveland, Ohio
Sitnek Fuel Co	Philadelphia, Pa.
Sivyer Steel Casting Co	Milwaukee, Wis.
SKF Industries, Inc.	Philadelphia, Pa.
Solomon Co., Max	Pittsburgh, Pa.
Southwestern Portland Cement Co	. Los Angeles, Calif.
Standard Coal Co	Vincennes, Jnd.
Standard Forgings Corp	Chicago, Ill.
Standard Nut & Bolt Co	Valley Falls, R. I.
Standard Railway Equipment Mfg. Co	Chicago, Ill.
Standard Railway Fusee Corp.	Boonton, N. J.
Standard Slag Co., The	Youngstown, Ohio
Standard Stoker Co., Inc., The	New York, N. Y.
Standard Varnish Works	Staten Island, N. Y.
Standard Varnish Works Steamship Fuel Corp	Staten Island, N. Y. New York, N. Y.
Standard Varnish Works Steamship Fuel Corp Steers, Inc., Henry	Staten Island, N. Y. New York, N. Y. New York, N. Y.
Standard Varnish Works. Steamship Fuel Corp. Steers, Inc., Henry Sterling Coal Co.	Staten Island, N. Y. New York, N. Y. New York, N. Y. Philadelphia, Pa
Standard Varnish Works. Steamship Fuel Corp. Steers, Inc., Henry Sterling Coal Co. Sterrling-Wasser Box Co.	Staten Island, N. Y. New York, N. Y. New York, N. Y. Philadelphia, Pa Pittsburgh, Pa
Standard Varnish Works. Steamship Fuel Corp. Sters, Inc., Henry Sterling Coal Co. Sterling Wasser Box Co. St. Louis & O'Fallon Coal Co.	Staten Island, N. Y. New York, N. Y. New York, N. Y. Philadelphia, Pa Pittsburgh, Pa St. Louis, Mo.
Standard Varnish Works. Steamship Fuel Corp Sters, Inc., Henry Sterling Coal Co. Sterling-Wasser Box Co. St. Louis & O'Fallon Coal Co. St. Louis Car Co. St. Louis Car Co.	Staten Island, N. Y. New York, N. Y. New York, N. Y. Philadelphia, Pa Pittsburgh, Pa St. Louis, Mo.
Standard Varnish Works. Steamship Fuel Corp. Steers, Inc., Henry Sterling Coal Co. Sterrling-Wasser Box Co. St. Louis & O'Fallon Coal Co. St. Louis & O'Fallon Coal Co. St. Pierre Chain Corp.	Staten Island, N. Y. New York, N. Y. New York, N. Y. Philadelphia, Pa Pittsburgh, Pa St. Louis, Mo. St. Louis, Mo. Worcester, Mass.
Standard Varnish Works. Steamship Fuel Corp. Sters, Inc., Henry Sterling Coal Co. Sterling Wasser Box Co. St. Louis & O'Fallon Coal Co. St. Louis Car Co. St. Pierre Chain Corp. Stucki Co. A.	Staten Island, N. Y. New York, N. Y. New York, N. Y. Philadelphia, Pa Pittsburgh, Pa St. Louis, Mo. St. Louis, Mo. Worcester, Mass. Pittsburgh, Pa
Standard Varnish Works. Steamship Fuel Corp. Sterrs, Inc., Henry Sterrling-Wasser Box Co. St. Louis & O'Fallon Coal Co. St. Louis & O'Fallon Coal Co. St. Louis Car Co. St. Pierre Chain Corp. Stucki Co., A. Sturki Co., A.	Staten Island, N. Y. New York, N. Y. Philadelphia, Pa Pittsburgh, Pa St. Louis, Mo. Worcester, Mass. Pittsburgh, Pa. Columbus, Qhio
Standard Varnish Works. Steamship Fuel Corp. Steers, Inc., Henry Sterling Coal Co. Sterrling-Wasser Box Co. St. Louis & O'Fallon Coal Co. St. Louis & O'Fallon Coal Co. St. Pierre Chain Corp. Sturki Co., A. Sturm & Dillard Co., The Summer & Co.	Staten Island, N. Y. New York, N. Y. Philadelphia, Pa Pittsburgh, Pa St. Louis, Mo. St. Louis, Mo. Worcester, Mass. Pittsburgh, Pa Columbus, Ohio Columbus, Ohio
Standard Varnish Works. Steamship Fuel Corp. Sterrs, Inc., Henry. Sterling Coal Co. Sterrling-Wasser Box Co. St. Louis & O'Fallon Coal Co. St. Louis & O'Fallon Coal Co. St. Jouis Car Co. St. Pierre Chain Corp. Stucki Co., A. Sturk Dillard Co., The Summer & Co. Sumter Lumber Co., Inc.	Staten Island, N. Y. New York, N. Y. Philadelphia, Pa Pittsburgh, Pa St. Louis, Mo. Worcester, Mass. Pittsburgh, Pa. Columbus, Ohio Columbus, Ohio Electric Mills, Miss.
Standard Varnish Works Steamship Fuel Corp. Steers, Inc., Henry Sterling Coal Co. St. Louis & O'Fallon Coal Co. St. Louis & O'Fallon Coal Co. St. Louis Car Co. St. Pierre Chain Corp. Stucki Co., A. Sturm & Dillard Co., The Summer & Co. Sumter Lumber Co., Inc. Sunbeam Electric Mfg. Co.	Staten Island, N. Y. New York, N. Y. Philadelphia, Pa Pittsburgh, Pa St. Louis, Mo. St. Louis, Mo. Worcester, Mass. Pittsburgh, Pa. Columbus, Ohio Cloumbus, Ohio Electric Mills, Miss. Evansville, Ind.
Standard Varnish Works. Steamship Fuel Corp. Steers, Inc., Henry Sterling Coal Co. St. Louis & O'Fallon Coal Co. St. Louis & O'Fallon Coal Co. St. Jeirre Chain Corp. Stucki Co., A. Sturm & Dillard Co., The Summer & Co. Sumter Lumber Co., Inc. Sumber Blectric Mfg. Co. Sunday Creek Coal Co.	Staten Island, N. Y. New York, N. Y. Philadelphia, Pa Pittsburgh, Pa St. Louis, Mo. St. Louis, Mo. Worcester, Mass. Pittsburgh, Pa. Columbus, Ohio Clectric Mills, Miss. Evansville, Ind. Columbus, Ohio
Standard Varnish Works. Steamship Fuel Corp. Steers, Inc., Henry Sterling-Coal Co. Sterling-Wasser Box Co. St. Louis & O'Fallon Coal Co. St. Louis & O'Fallon Coal Co. St. Louis Car Co. St. Jouis Car Co. St. Jouis Car Co. St. Jouis Car Co. Sturm & Dillard Co., The Summer & Co. Sumter Lumber Co., Inc. Sunday Creek Coal Co. Superheater Co., The Summer & Co. Superheater Co., The	Staten Island, N. Y. New York, N. Y. Philadelphia, Pa Pittsburgh, Pa St. Louis, Mo. St. Louis, Mo. Worcester, Mass. Pittsburgh, Pa. Columbus, Ohio Columbus, Ohio Clectric Mills, Miss. Evansville, Ind. Columbus, Ohio New York, N. Y.
Standard Varnish Works. Steamship Fuel Corp. Steers, Inc., Henry Sterling Coal Co. St. Louis & O'Fallon Coal Co. St. Louis & O'Fallon Coal Co. St. Pierre Chain Corp. Stucki Co., A. Sturm & Dillard Co., The. Summer & Co. Sumter Lumber Co., Inc. Sunbeam Electric Mfg. Co. Sunday Creek Coal Co. Superheater Co., The. Superheater Co., The. Superheater Co., M. B. Survelo Co.	Staten Island, N. Y. New York, N. Y. Philadelphia, Pa Pittsburgh, Pa St. Louis, Mo. St. Louis, Mo. Worcester, Mass. Pittsburgh, Pa Columbus, Ohio Electric Mills, Miss. Evansville, Ind. Columbus, Ohio New York, N. Y. Pittsburgh, Pa.
Standard Varnish Works. Steamship Fuel Corp. Steers, Inc., Henry Sterling Coal Co. Sterling-Wasser Box Co. St. Louis & O'Fallon Coal Co. St. Louis & O'Fallon Coal Co. St. Louis Car Co. St. Pierre Chain Corp. Stucki Co. Sturm & Dillard Co., The Summer & Co. Sumter Lumber Co., Inc. Sunday Creek Coal Co. Superheater Co., The Suydam Co., M. B. Swank's Sons, Hiram	Staten Island, N. Y. New York, N. Y. Philadelphia, Pa Pittsburgh, Pa St. Louis, Mo. St. Louis, Mo. Worcester, Mass. Pittsburgh, Pa. Columbus, Ohio Clectric Mills, Miss. Evansville, Ind. Columbus, Ohio New York, N. Y. Pittsburgh, Pa. Johnstown, Pa.
Standard Varnish Works. Steamship Fuel Corp. Steers, Inc., Henry Sterling Coal Co. St. Louis & O'Fallon Coal Co. St. Louis & O'Fallon Coal Co. St. Jeirer Chain Corp. Stucki Co., A. Sturm & Dillard Co., The Summer & Co. Sumter Lumber Co., Inc. Sunbeam Electric Mfg. Co. Sunday Creek Coal Co. Superheater Co., The Suyeam Co., M. B. Swank's Sons, Hiram Swind Machinery Co. Sumiser Con.	Staten Island, N. Y. New York, N. Y. Philadelphia, Pa Pittsburgh, Pa St. Louis, Mo. St. Louis, Mo. Worcester, Mass. Pittsburgh, Pa. Columbus, Ohio Columbus, Ohio Clectric Mils, Miss. Evansville, Ind. Columbus, Ohio New York, N. Y. Pittsburgh, Pa. Johnstown, Pa. Philadelphia, Pa. Beobecter N. Y.
Standard Varnish Works. Steamship Fuel Corp. Steers, Inc., Henry Sterling Coal Co. St. Louis & O'Fallon Coal Co. St. Louis & O'Fallon Coal Co. St. Louis & O'Fallon Coal Co. St. Pierre Chain Corp. Stucki Co., A. Sturm & Dillard Co., The. Summer & Co. Sumter Lumber Co., Inc. Sumber Belectric Mfg. Co. Sunday Creek Coal Co. Superheater Co., The. Suydam Co., M. B. Swand Machinery Co. Symington-Gould Corp., The.	Staten Island, N. Y. New York, N. Y. Philadelphia, Pa Pittsburgh, Pa St. Louis, Mo. St. Louis, Mo. Worcester, Mass. Pittsburgh, Pa. Columbus, Ohio Electric Mills, Miss. Evansville, Ind. Columbus, Ohio New York, N. Y. Pittsburgh, Pa. Johnstown, Pa. Priladelphia, Pa. Rochester, N. Y.

Т

Talmadge Mfg. Co., The	Cleveland, Ohio
Tar Distilling Co., Inc	New York, N. Y.
Taylor Chain Co., S. G.	Hammond, Indiana
Taylor Fibre Co	Norristown, Pa.
Taylor Lumber Co., Gardner W , The	New York, N. Y.

Taylor-Wharton Iron & Steel Co	High Bridge, N. J.
Templeton Coal Co	Terre Haute, Ind.
Tennessee Tie Corp	Pittsburgh, Pa.
Terre Haute Gravel Co	Terre Haute, Ind.
Timken Roller Bearing Co., The	Canton, Ohio
Titan Metal Mfg. Co	Bellefonte, Pa.
Townsend Co.	New Brighton, Pa.
Treat-Nantke Co., Inc.	North Tonawanda, N. Y.
Triplex Screw Co., The	Cleveland, Ohio
Tuco Products Corp	New York, N. Y.
Turner & Seymour Mfg. Co	Torrington, Conn.
Turtle & Hughes, Inc	New York, N. Y.
Tyler Co., The W. S.	New York, N. Y.

U

Ulster Iron Works	New York, N. Y.
Union Asbestos & Rubber Co.	Chicago, Ill.
Union Collieries Co.	Pittsburgh, Pa.
Union Lumber Sales Co	New York, N. Y.
Union Metal Products Co	New York, N. Y.
Union Switch & Signal Co., The	Swissvale, Pa.
Unitcast Corp	Toledo, Ohio
United Mine Workers of America, District 6	Cleveland, Ohio
United Railway Signal Co	Woodbridge, N. J.
United States Coal Co., The	Cleveland, Ohio
United States Metallic Packing Co., The	Philadelphia, Pa.
United States Steel Corp	New York, N. Y.
Universal Atlas Cement Co	New York, N. Y.

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Valley Camp Coal Co., The	Cleveland, Ohio
Valve Pilot Corp	New York, N. Y.
Anadium-Alloys Steel Co	Latrobe, Pa.
Vanderbilt Coal & Coke Co	.Connellsville, Pa.
Vang Crushed Stone Co	Pittsburgh, Pa.
Vermilion Equipment Co	Chicago, Ill.
Vermont Tap & Die Corp	Lyndonville, Vt.
Virginia & Pittsburgh Coal & Coke Co., The	Fairmont, W. Va.
Virginia Bridge Co	Roanoke, Va.
ulcan Crucible Steel Co	Aliquippa, Pa.
ulcan Iron Works	Wilkes-Barre, Pa.
ulcanite Portland Cement Co	. Philadelphia, Pa.

Wagner Quarries Co.	Sandusky, Ohio
Walker Lumber Co., R. D.	Mobile, Ala.
Walworth Co., Inc.	New York, N. Y.
Ward Co., D. L.	Philadelphia, Pa.
Warner & Co., Inc., W. H.	
(Warner Collieries Co.)	Cleveland, Ohio
Warner Co	Philadelphia, Pa.
Wasson Coal Co.	Harrisburg, Ill.
Watson-Standard Co., The	Pittsburgh, Pa.
Waugh Equipment Co	New York, N. Y.
Weaver & Co., J. H	Philadelphia, Pa.
Weir Kilby Corp.	Cincinnati, Ohio
Weirton Steel Co	Weirton, W. Va.
Western Chain Products Co	Chicago, Ill.
Western Railroad Supply Co	Chicago, Ill.
Western Railway Equipment Co	St. Louis, Mo.
Westinghouse Air Brake Co., The	Wilmerding, Pa.
Westinghouse Elec. & Mfg. Co	Pittsburgh, Pa.
Westmoreland Mining Co.	Blairsville, Pa.
Weston, Dodson & Co., Inc.	Bethlehem, Pa.
west Virginia-Pittsburgh Coal Co	Cleveland, Ohio
weyerhaeuser Sales Co	St. Paul, Minn.

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wen knoy corp	Oncinnati, On
Weirton Steel Co	Weirton, W. V.
Western Chain Products Co	Chicago, Il
Western Railroad Supply Co	Chicago, Il
Western Railway Equipment Co	
Westinghouse Air Brake Co., The	Wilmerding, P
Westinghouse Elec. & Mfg. Co	Pittsburgh, P
Westmoreland Mining Co.	Blairsville, P
Weston, Dodson & Co., Inc.	Bethlehem, P
West Virginia-Pittsburgh Coal Co	Cleveland, Ohi
Weyerhaeuser Sales Co	St. Paul. Minu
Wheeling Steel Corp.	Wheeling, W. V.
Whitehall Cement Mfg. Co	
Whitehead & Kales Co	Detroit, Micl
White Oak Coal Co	New York, N. Y
Wieman & Ward Co., The	Pittsburgh, Pa
Williams & McKeithan Lumber Co. of Va.,	The Lynchburg Va
Winslow-Knickerbocker Coal Co.	Philadelphia, Pa
Wire Rope Manufacturers of the U.S.A.	
Woodhouse Chain Works	Trenton, N.
Woodings-Verona Tool Works	Verona, Pa
Wood Preserving Corp., The	Pittsburgh, Pa
Wood Steel Co., Alan	Pittsburgh, Pa
Worthington Pump & Machinery Corp.	Harrison, N.
Worth Steel Co	Claymont, De
Wright Bros., Inc.	Philadelphia, Pa
Wrought Iron Co	Lebanon Pa
Wyoming Tie & Timber Co.	Chicago, II

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Yale & Towne Manufacturing Co	Philadelphia, Pa
Youghiogheny & Ohio Coal Co	Cleveland, Ohi
Youngstown Sheet & Tube Co	Youngstown, Ohio
Youngstown Steel Door Co., The	Youngstown, Ohi

This co-operative exhibit has been a graphic demonstration of united efforts to develop railroad systems of which it can well be said, "Neither snow, nor rain, nor heat, nor gloom of night stays these couriers from the swift completion of their appointed rounds."

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