

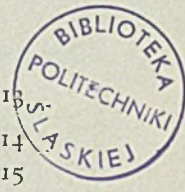
STEEL

PRODUCTION • PROCESSING • DISTRIBUTION • USE

For forty-eight years—IRON TRADE REVIEW

Contents August 31, 1936

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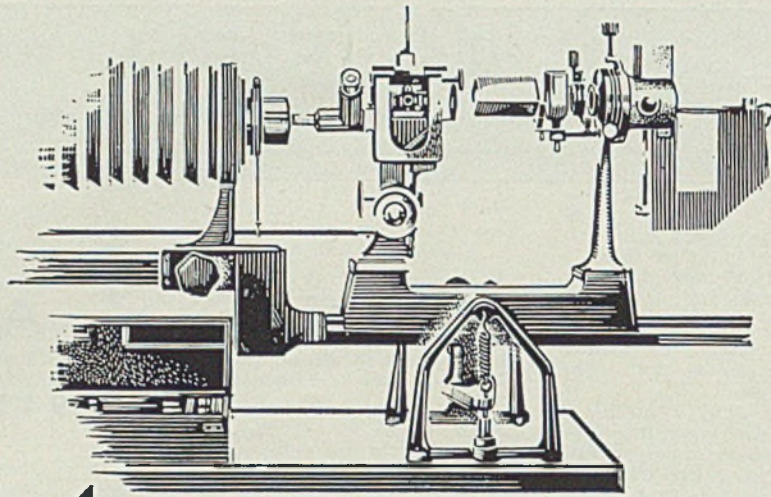
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As the Editor Views the News

IN A PAMPHLET entitled "More Goods For More People," the National Machine Tool Builders' association presents a strong argument against the foolish but somewhat prevalent belief that if industry could be de-mechanized the unemployment problem would be solved for all time. It is a good answer to the absurd request contained in House Resolution 49 in the recent session of the seventy-fourth congress that the secretary of labor furnish estimates of the number of persons unemployed by reason of "labor-saving devices, mechanical or otherwise, put in operation in the United States after Dec. 31, 1912."

• • •

The association bases its case upon the economic principle that efficiency of production attained through the use of machinery lowers the cost of products and brings their price down to levels which permit persons of moderate income to purchase them.

If We Had No Machines . . .

It contends mechanization has stimulated consumption and thereby increased production which in turn has created employment. The report cites competent opinion to the effect that if it were not for modern mechanical equipment (p. 23), an automobile now selling for \$600 would cost at least \$3500, a \$100 radio would sell for \$1000 and a \$110 typewriter would be priced at \$1000.

• • •

Most well informed persons appreciate the extent to which mechanization has contributed to employment in the United States. They understand fully the application of the mass production—mass consumption principle. However, millions of our citizens are not so well informed. Many

Public Gropes for Truth

of them do not understand how much production (and with it employment) would be curtailed if we went back to old methods whereby a motor car now selling for \$600 would have to be priced at \$3500. Politicians in high places

have encouraged the man in the street to feel antagonistic against mechanization. It is no wonder so many of our people are misinformed. Industry faces a tremendous task in focusing the light of sanity upon the numerous fallacies which are being created and kept alive by political demagogues. Industrial executives should give every possible aid to candidates for public office who hold sound views on vital economic problems.

• • •

Employees now have a splendid opportunity to acquaint their employees with the implications of the 1936 federal tax law. Politicians

Tell Who 1936 Tax Law Hits

tried to create the impression that this law, and particularly the provisions for a levy on undistributed profits, favors wage earners and put a burden on "rich" corporations and individuals. The exact opposite is so true that employers should have little difficulty in convincing their employees that this law is a distinct threat to their interests. Industrial executives have a definite obligation to do their utmost to explain the devastating character of this world's worst tax law. It endangers the stability of employment and persons holding jobs should be made to realize this fact.

• • •

References from two disassociated articles in this issue can be combined to emphasize a fact that is often overlooked by manufacturers. F.

Lower Price, Higher Quality!

A. Shick of Bethlehem states (p. 23) that the price of strip and sheet steel declined 50 per cent from 1923 to 1935. In an interview on developments in the pressed steel industry, a manufacturer of sanitary ware (p. 34) states that one of three important factors in the improvement of pressed steel enameled products during the past several decades has been the "marked improvement in workability and surface finish" of flat rolled steel. Here is testimony of progress in two directions—price and quality. We believe that an exhaustive study of values would show that in the case of many important steel products, the buyer gets more for his money today than at any previous time.

E. L. Shaner

Industries Prepare for Shortage In Skilled Labor and Houses

THE "summer without a slump," as midyear 1936 has come to be known, has brought with it unmistakable signs of an impending skilled labor shortage in many branches of the iron and steel and metalworking industries—and also indications of a scarcity of workmen's homes.

Carnegie-Illinois Steel Corp., and other steel companies are expanding the scope of their apprentice training; in regard to the housing shortage, more inquiries have been received recently by manufacturers of low-cost steel buildings suitable for workers' homes than in many years, and from a diversity of industries.

The Carnegie-Illinois plan is being set up on a broad scale to include four major training programs. Because in recent years this type of activity has been retarded by the depression, and because its importance cannot be minimized now, the company's present plans call for renewed efforts, directed primarily at apprentice training for the immediate present. The other three divisions of employe training are to be divided into attention for the college graduate, preparing individuals for the supervisory field, and in educating for specialized training.

In all four instances the extent and details of the proposal work in setting up training courses have precluded its immediate general functioning, since the company announced the plan in mid-July. However, some employe classes are already being formed in apprenticeships. Recently the Homestead, Duquesne and Braddock divisions of the company issued calls for apprentices. Over 250 have been accepted at the Homestead division.

Requirements for Training

This type of training appeals to the younger man, and wherever possible, first consideration is given to those already in Carnegie-Illinois' employ, or to sons of employes. Requirements for selection include: The individual must be at least 18 years of age; he must be a graduate of a four-year high or approved vocational school; must be physically, morally and mentally sound. Tests and interviews are given to determine the individual's fitness for a particular trade.

The apprentice course runs four

years, and offers the applicant opportunity to learn the trade of machinist, electrician, boilermaker, pipe-fitter or other work requiring skill. Actual shop experience is supplemented by instructions in related subjects such as mathematics, drawing, sciences and theory. The Carnegie-Illinois plan provides for the continuance of planned and co-ordinated application of theory, rather than the old order of hit-and-miss application.

The second division is for the college graduate. Courses have been in progress for several months, although the projected plan is to include more individuals than have been enrolled in recent years. Training this group is accomplished by progressing from one job to another in a single department, or by rotation through every department of the entire company. Pre-determined periods of actual work in each department permits application of the theoretical side to the practical side. At various intervals the student in this group is called into the home office for examination. Upon evidence of successful completion of this type of training he is placed in a permanent sales or operating department position.

Advanced Work Is Offered

In the supervisory field, Carnegie-Illinois is planning to work out a more general understanding of men and methods. In all probability the successful graduate from the apprentice group will be picked to complete his training eventually in this third group, preparing him for supervisory positions. Classes in foreman training, plant management, psychology and economics have been conducted at some of the plants and have proven valuable. These classes are now to be extended to all plants of the company.

As the program develops it is hoped to work out the fourth division, that of specialized training for every new employe in any trade or occupation. In addition, a further branch will aid the foreign-born employe who wishes to become naturalized and to make possible additional training for the employe who wishes to improve himself by learning more about the manufacture of steel.

Inability to obtain sufficient skilled labor to meet needs of machine tool manufacturers in the Cincinnati district is causing some plants to operate only one turn, 44 hours per week, although orders are

sufficient to provide a second shift with employment. As a result orders are piling up faster than they can be filled. Deliveries now vary from ten weeks to six months. Both foreign and domestic demand for equipment is in strong demand, aside from requirements of the automotive industry.

See Impetus to Construction

PROSPECTS for an unusually large volume of fall and winter construction, with increasing emphasis on the need for workmen's homes, are seen by many building authorities as a result of housing shortages in most American cities.

Fall campaigns for modernization, conducted by individual industries and the federal housing administration, will be extensive.

Makers of prefabricated steel houses report the problem of housing workers has brought numerous inquiries from industrial executives.

Last week in Washington construction work was going forward on the first of a group of copper houses with steel frames furnished by Berger Mfg. Co. division of Republic Steel Corp. The project is sponsored by the Kennecott Copper Corp. through its subsidiary, Copper Houses Inc., and it is hoped eventually 100 houses will constitute the development.

Heating and cooling systems are being furnished by Airtemps Inc., a subsidiary of the Chrysler Corp. Plumbing is by the Briggs Mfg. Co., Detroit. R. B. Warren is in charge of construction. The development is known as Warren-Teed homes.

The shortage is not so much apparent in the large cities as it is in the smaller industrial towns, where increasing operations that have come with recovery disclose the fact that there are literally no homes for additional men, according to George T. Trundle Jr., president, Trundle Engineering Co., Cleveland.

"Up to Business Interests"

"Typical of this," he said, "is the experience of a company with which I happen to be familiar. The company is located in a small town in the Middle West. This spring it decided to enlarge its plant, put up a new building and install additional machinery. But it found that it could not get enough mechanics and assemblers to operate the enlarged plant, and that if it could, there would be no place for these men to live. The company, therefore, did not go ahead with its plant enlargement.

"There is no question but what industry will be adding thousands of young men for training and work within the next few years. But neith-

er they, nor thousands recently re-employed after long idleness, will be in a position to finance the homes they need. We cannot expect the initiative in this respect to come from them. It is up to the business interests of the communities nourished by these industries—the home builders, owners of real estate, bankers and other investors to do it. If they fail, higher rents will increase the fixed expenses of the man whose wages are paid by industry, without giving him anything in return.

"It is my opinion that the next few years will see the development of various plans for industrial housing. This may prove a tremendous stimulus to industry, especially because such housing would afford an excellent opportunity for putting into practice the modern methods and materials perfected for residences.

Calling attention to the housing shortage, the American Federation of Labor recently asserted 1,320,000 new homes should be built each year to care for existing need.

The federal housing administration met with regional officers last week as a prelude to the fall campaign for modernization under Title I of the national housing act. Already 1,086,432 loans of that kind have been made, totaling \$395,382,687, covering every phase of building repair and equipment.

Republic Enlarging Furnace; Bethlehem Financing Expansion

REPUBLIC STEEL CORP. late last week began to award contracts for rebuilding blast furnace stack No. 4, and other improvements, at its Corrigan, McKinney plant, Cleveland, at an estimated cost close to \$1,000,000.

Each of the four Corrigan, McKinney stacks now has capacity for 600 tons daily. Early this year Republic announced a program for rebuilding two of them, and reconstructing the iron ore dock. The dock improvement went ahead immediately, and one of the stacks was given a quick relining—the pressure for pig iron from this plant being strong so far this year.

The capacity of No. 4 stack which was built in 1915-16, will be increased to 1000 tons daily, or to 325,000 tons annually instead of present 240,000 tons. The hearth will be enlarged from 22 to 25 feet; changes will be made in two of the four existing stoves and in the gas washing equipment. New boilers

and a large turbo blower will be installed.

Enlarging stack No. 3 may be undertaken later this year. Work on stack No. 4, which is to start shortly, it is believed will be the forerunner of a series of improvements at Corrigan, McKinney plant. In February Republic announced its intention to plow back into improvements to various plants \$4,600,000—which, as STEEL pointed out, was more than all the profit it had made in the six years of its organization. Resumption of operation of the stack at Republic's Upson-Nut division, Cleveland, is not considered. This stack, with 80,000 tons annual capacity, is one of the country's smallest.

The improvements at Corrigan, McKinney plant are in line with others to blast furnaces now contemplated by the steel industry, as a result of wear and tear and obsolescence during the depression. (See STEEL, Aug. 24, page 16.)

Funds totaling approximately \$40,000,000 are earmarked for future acquisitions and improvements, it is revealed in a registration statement covering \$55,000,000 of 3¾ per cent bonds which Bethlehem Steel Corp. filed last week under the securities act of 1933. Of the total, only \$14,682,800 is specifically set aside for refunding.

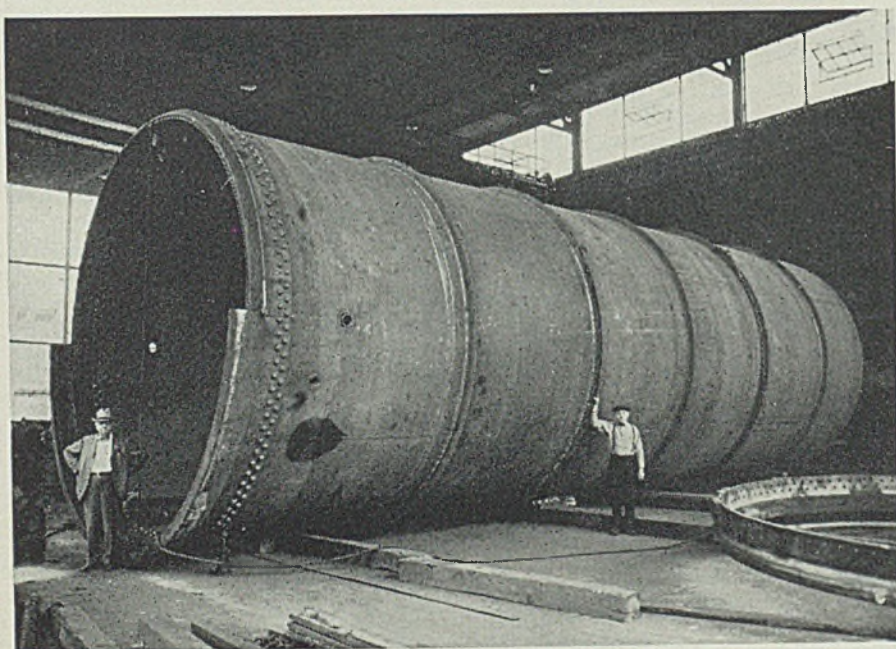
New Finishing Facilities

A somewhat extensive development was indicated by the statement which sets up \$20,000,000 for additional finishing mill facilities at various plants. The part of the prospectus giving these details, after refunding is provided for, reads as follows:

"The estimated balance of the net proceeds will be deposited with the trustee under the consolidated mortgage to be withdrawn from time to time to provide for the cost of future acquisitions, betterments and improvement (including additional finishing facilities at certain of the steel plants owned by the corporation or one or more of its subsidiaries), which it is estimated will cost approximately \$20,000,000, and to such extent, if any, as may be desirable to replenish working capital which has been applied to the cost of acquisitions and improvements since Jan. 1, 1935, and to provide additional working capital."

In releasing Bethlehem's 1936 first half financial report, President E. G. Grace indicated (STEEL, Aug. 3, page 15) that the company will spend \$13,000,000 this year in capital improvements. Of this, \$6,800,000 was spent in the first half.

110 Tons of Steel in "Largest Vulcanizer Ever Built"



THIS steam vulcanizer, said to be 75 per cent larger than any similar unit, is being installed by B. F. Goodrich Co., Akron, O., for manufacturing rubber-lined tanks used in steel, chemical, electroplating and other industries. Fabricated by Adamson Machine Co. and Biggs Boiler Works, Akron, it weighs 110 tons, is 45 feet long, has a clear inside diameter of 15 feet. Designed to operate at 100 pounds steam pressure, this 65,000-gallon unit is of welded steel construction, except for cast steel door rings and door head, attached by rivets. A standard railroad track is installed to move tanks in and out on steel cars

200,000 Tons of Steel for Ships; Building on Upgrade

TRANSPORTATION by water has brought to steel mills in 1936 an unusual tonnage, largely plates. Shipbuilders on the coasts and the inland rivers have had a volume of business not approached in many years. This was topped in July by award of eight tankers by Standard Vacuum Transportation Co., New York, valued at \$13,000,000, considered the largest ship order ever placed by a private corporation in the United States. The ships will require about 36,000 tons of hull steel, in addition to other tonnages for fittings and equipment.

Craft placed with builders this year divide themselves into two classes, oil tankers for use on the ocean, and steel barges for use on rivers and inland waters. Oil companies developed a need for greatly enlarged water transport facilities and have awarded no less than 18 tankers since the beginning of 1936, requiring a total of about 84,000 tons of steel plates.

In addition to the eight tankers by Standard Vacuum, of which two each were awarded to Sun Shipbuilding & Dry Dock Co., Chester, Pa., and Bethlehem Steel Co., Bethlehem, Pa., and four to Federal Shipbuilding & Dry Dock Co., Kearny, N. J., five others were awarded to Sun Shipbuilding & Dry Dock Co., as follows: Sun Oil Co., one; Atlantic Refining Co., one; Gulf Refining Co., two; Texas Co., one placed and one pending; Pan American Oil & Transportation Co., four. The war department awarded a dredge, requiring about 1000 tons, to Bethlehem Steel Co., for construction at its Pacific coast yards.

Many Vessels Contemplated

Bethlehem Steel Co.'s subsidiary Calmar Steamship Co., has plans for construction of six freighters, which, of course, would be built by Bethlehem Shipbuilding Corp.

A number of vessels have been under consideration, on which delays have been encountered, bids being taken in several instances without an award following. The Matson Line has taken bids on two freighters, requiring about 12,000 tons of hull steel for which Newport News Shipbuilding & Dry Dock Co. was low bidder. American South African Line Inc., has taken bids on two passenger-cargo ships, requiring 10,000 tons of steel, for which Sun Shipbuilding & Dry Dock Co. was low, but on which award has been de-

layed from month to month. Gulf Refining Co. has been in the market for two additional tankers, 9000 tons of steel.

Bids have been taken several times on a passenger ship for the United States Lines. The navy may be awarded construction of this ship, instead of a private yard. Bids will be taken again Sept. 15.

The navy has a program under way in which it is expected 12 destroyers and six submarines will be awarded to private yards, requiring in all about 10,800 tons of steel. Bids were opened Aug. 19.

Barge transportation on inland rivers has been taking steel in large measure, no less than 162 such craft having been awarded this year, for a total of about 30,000 tons of steel. In addition, considerable steel has been purchased for tanks to be fitted in barges, for transportation of oil and other fluids.

With a total of 85,000 tons in-

volved in hulls for tankers, 40,000 tons in vessels being negotiated, but not yet awarded, and 30,000 tons in barges and small craft, a total of 155,000 tons is reached, which is a definitely helpful tonnage to mills, as ship plate steel is a special grade.

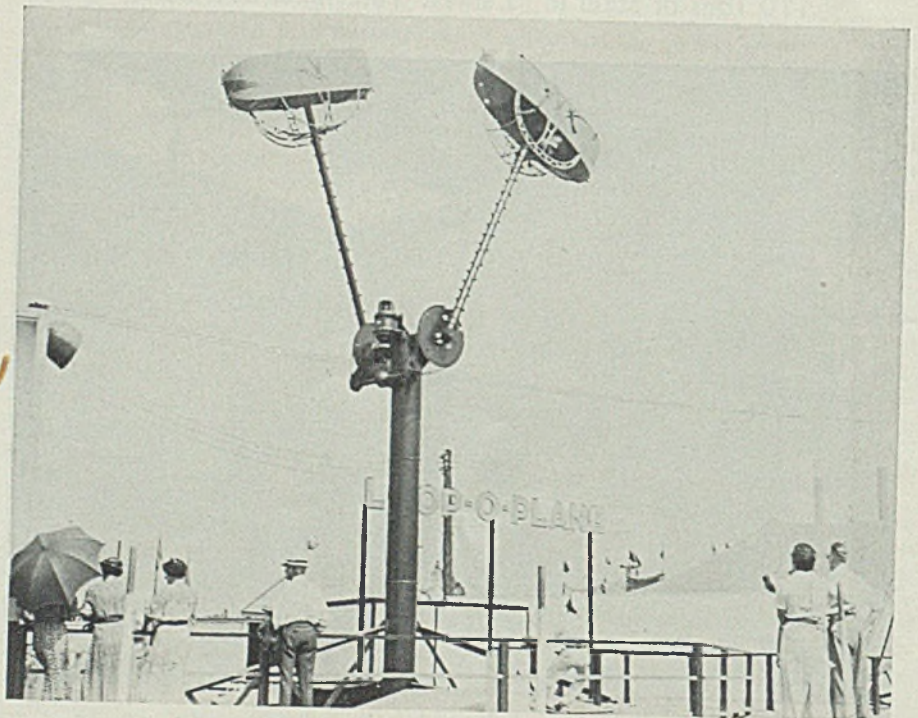
These tonnages account only for the ship hulls and decks. In addition, the ships require considerable more steel for boilers, tanks, pipe, pumps and many other appliances. This additional material doubtless would carry the total well over 200,000 tons for the present year to date.

With 115,000 tons of plates already awarded for ships and barges in eight months of 1936, more plates have been placed for ship purposes than in any full year since 1930:

Year	Tons
1936 (8 mos.)	115,000
1935	92,027
1934	93,835
1933	59,928
1932	49,396
1931	102,949
1930	192,112
1929	186,617
1928	82,421
1927	133,283
1926	117,748
1925	70,701
1924	92,219
1923	79,122

Figures are from STEEL's annual report of distribution of rolled steel to consumers.

Heavy Steel Safeguards Thrill-Seekers



LIFE is a dizzy whirl for some of the customers after a few inside loops in this amusement machine at Great Lakes Exposition, Cleveland. The main column is rolled and welded from $\frac{3}{8}$ -inch boiler plates. The pendulums are 5-inch standard steel pipe. The cars, each containing four persons, are fabricated from stainless steel tubing. Approximately 130 lineal feet of electric welding is used in the assembly. The machine weighs approximately 6300 pounds and is about 40 feet high when cars are at the top. The "Loop-o-plane" is made by Eyerly Aircraft Corp., Salem, Ore., which says it has some 200 machines in service

Financial

BOARD of directors of Republic Steel Corp., Cleveland, has declared a dividend of \$1.50 per share on the corporation's 6 per cent cumulative convertible prior preference stock, series A, payable Oct. 1, to stockholders of record Sept. 12.

* * *

Wheeling Steel Corp., Pittsburgh, declared a dividend of \$1 a share on preferred stock, payable Oct. 1, to record Sept. 12.

* * *

As the Youngstown Steel Door Co., Youngstown, O., filed application recently in listing its new common stock on the New York curb market exchange, directors announced declaration of an initial dividend of 25 cents. Earlier this year the company ordered a distribution of \$1.25 per share on the old common, and at the same time declared a 300 per cent stock dividend.

Ingot Iron Ordered for Two Atom Disintegrators

More than 115 tons of ingot iron, recently ordered, will be used in the construction of two cyclotrons for scientific research, according to American Rolling Mill Co., Middletown, O. Disintegration of the atom is accomplished with the cyclotron (STEEL, June 22, page 56).

Both the biochemic research laboratory of the Franklin institute, Philadelphia, and the University of Chicago will have the new apparatus in operation within the next year, according to officials of the institutions.

The cyclotron for the Franklin institute will be erected at Swarthmore, Pa. Weight of the frame and pole pieces will be 60 tons. Diameter of the pole pieces will be 45 inches. At the University of Chicago the frame will weigh 55.8 tons, and the pole pieces will be 50 inches in diameter.

Join Exhibitors Council

Jeffrey Mfg. Co., Columbus, O., and Snap-On Tools Inc., Kenosha, Wis., have been elected to membership in the Exhibitors Advisory Council Inc., 330 West Forty-second street, New York. These companies will participate in the show services of the council which for the past 11 years has been the clearing house for information on all types of industrial, trade, business and professional shows and expositions.

District Steel Rates

	Percentage of Open-Hearth Ingot Capacity Engaged in Leading Districts		Same week	
	Week ended Aug. 29	Change	1935	1934
Pittsburgh	74	+ 2	44	10
Chicago	72½	None	57	27½
Eastern Pa....	50½	None	33	18½
Youngstown...	79	+ 5	62	18
Wheeling	98	+ 3	78	26
Cleveland	79½	None	56	15
Buffalo	81	None	37	19
Birmingham...	64	None	40½	30
New England ..	85	+ 7	73	25
Detroit	100	None	94	77
Cincinnati ...	76	None	†	†
Colorado	63	None	†	†
Average.....	73	+ 1	52½	18½

G-Men in Bidding Case "Just Cost Accountants"

Considerable publicity was given last week to the statement emanating from the department of justice that G-men had been put on the alleged collusive steel bidding investigation.

It is stated at the department, however, that G-men are always called in on Sherman law investigations, whether they are criminal or civil. Many so-called G-men connected with the bureau of investigation do not do criminal work, but merely cost accounting, and it is these latter who have been put on the collusive bidding job.

Tin Consumption Grows

World tin consumption for first half of 1936 shows an increase of 7.5 per cent compared with first half of 1935 and of 24 per cent over the similar period of 1934. Apparent consumption for first half of 1936 is reported as 73,348 tons, against production of 79,440 tons.

For 12 months ending June 30 world apparent consumption at 147,720 tons showed an increase of 16.4 per cent over a year ago.

Sheet Sales Decreased

Daily average sheet sales in July, as reported by the National Association of Flat Rolled Steel Manufacturers, Pittsburgh, amounted to 6429 net tons, compared with 8715 tons in June. Production averaged 7255 tons, against 7015 tons in June, while shipments were 7124 tons in July and 6715 tons in June. Totals for July: Sales 192,873 tons; production, 217,651 tons; shipments, 213,373 tons.

Total sheet capacity in the United States for July was approximately 500,000 tons, and capacity on which the association's figures are based was 304,000 tons.

Production

STEELWORKS operations last week advanced 1 point to 73 per cent, establishing a new peak since May, 1930. The 2-point rise at Pittsburgh is attributed to producers stepping up schedules to meet deliveries, while resumption of operations at an important plant in the Youngstown district resulted in a 5-point increase there.

Pittsburgh—Up 2 points to 74 per cent last week, as the United States Steel Corp.'s local operating units made steel at an average of 73 per cent, and the independents at an average of 76 per cent. Thirty-seven steelworks blast furnaces are on.

Wheeling—Up 3 points last week to 98 per cent, as 36 out of 37 open-hearth furnaces were making steel.

Detroit—Unchanged at 100 per cent last week. Nineteen open-hearth furnaces are now making steel, representing an advance of two melting units from the former capacity. Great Lakes Steel Corp. last week commenced operations in two of its new open hearths which have been under construction for the past several months and have just been completed.

Chicago—Unchanged at 72½ per cent, with 24 of 41 blast furnaces active, and open hearths producing as much steel as finishing capacity can accommodate. An increase is expected in October when four new open hearths will be completed.

Buffalo—Held at 81 per cent last week, with no sign of a major change soon. Mills have heavy orders on hand and in prospect. Thirty open hearths are producing.

Birmingham—Unchanged at 64 per cent last week, with 14 open hearths melting.

Colorado—Ingot production in this district averaged 63 per cent last week, with ten furnaces operating.

Cincinnati—Held at 76 per cent, with 19 to 24 open hearths operating. Sheet mill backlogs indicate continuance at or near this level.

Cleveland—Remained at 79½ per cent last week, with 31 open hearth furnaces continuing in production. Corrigan, McKinney division of Republic Steel Corp. took one furnace off to operate 12; Otis Steel Co. added one to its active list and is now operating all eight, while National Tube Co. at Lorain continued with 11.

Youngstown—Up 5 points last week to 79 per cent, due to resumption of operations at plant of Sharon Steel Corp., following a vacation shutdown. This schedule is expected to hold this week.

New England—Gained 7 points to 85 per cent last week, with expectations that this rate will be continued.

Central eastern seaboard—Unchanged at 50½ per cent, with little change indicated for this week.

Hopeful for Business Gains To Justify Steel Wage Advance

REPORTS current in Pittsburgh and New York last week concerning an impending wage advance in the steel industry apparently were premature—as were the rumors to similar effect circulated more than a month ago.

Few steel companies commented on them publicly. Republic Steel Corp. issued a denial, but added, "We hope that this upward trend (in business) will continue long enough to enable us not only to give a wage advance, but also to pay some dividends to our 42,000 stockholders, as well."

Calling attention to the fact that the company's earnings have improved "but only after an accumulated loss of \$33,000,000," its statement said: "For the present there is no economic justification for an increase in wage in our company."

This, it is believed, expresses the position of the industry in general—some profits after years in "the red"; hopeful for continued gains, to benefit all.

"Business in general is still in a zone of considerable uncertainty," says Republic. "Until there is more assurance that the present rate of activity in the steel industry is going to continue it would be inadvisable for us to make any change in

present wage rates. . . . Meanwhile, we will continue to study the situation carefully, both from the standpoint of business prospects and living costs, and frank and free discussion will continue to be held with employe representatives."

From the CIO's publicity bureau last week went what purported to be copies of a letter signed by employe representatives of Carnegie-Illinois Steel Corp. in Pittsburgh, Youngstown, Chicago and Gary—"speaking for upward of 60,000 workmen"—addressed to President Fairless. This letter demanded a 25 per cent increase in wages immediately; a 40-hour week, permanent vacations with pay plan; weekly paychecks, seniority rights; more safety measures, and a "national wage agreement under direction of the Steelworks Organizing Committee."

Earning Rates Are Higher

Average hourly earnings during the last seven years have been higher in the iron and steel industry than the general average in manufacturing, an analysis by the National Industrial Conference board showed last week. Weekly earnings likewise have been higher, except in the years 1932 and 1934.

In 1929 hourly earnings in the

iron and steel industry averaged 65.4 cents, compared to 59 cents for 25 manufacturing industries. Last year the rates were 65.5 and 60 cents, respectively. In the first quarter of this year they were 65.3 and 60.7 cents.

Weekly earnings averaged \$35.90 in the iron and steel industry in 1929, compared to \$28.55 for the manufacturing industries. Last year the iron and steel industry's average of \$22.42 a week was only 14 cents ahead of the \$22.28 rate in manufacturing, but in the first quarter of this year iron and steel wages averaged \$24.13 a week, compared to \$23.20 in manufacturing.

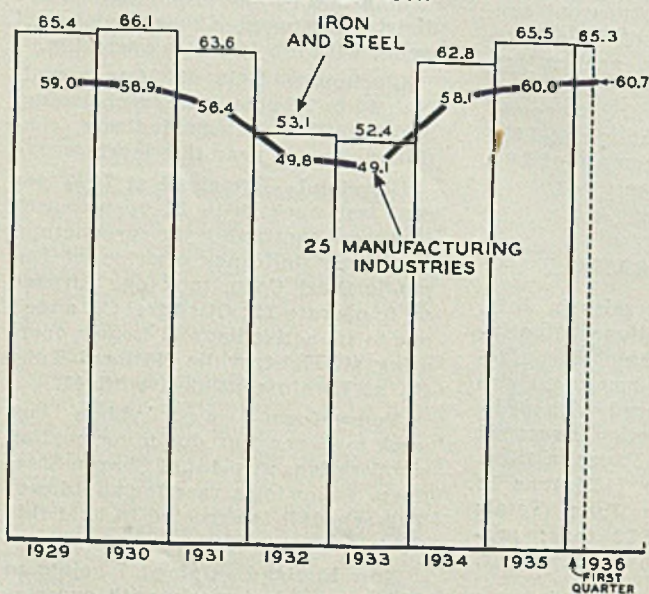
"During the depression," said the conference board, "the number employed in proportion to production in the iron and steel industry was considerably above the average in all manufacturing industry and is still more than 10 per cent above that average."

Standard Steel Spring Co. Closes Coraopolis Plants

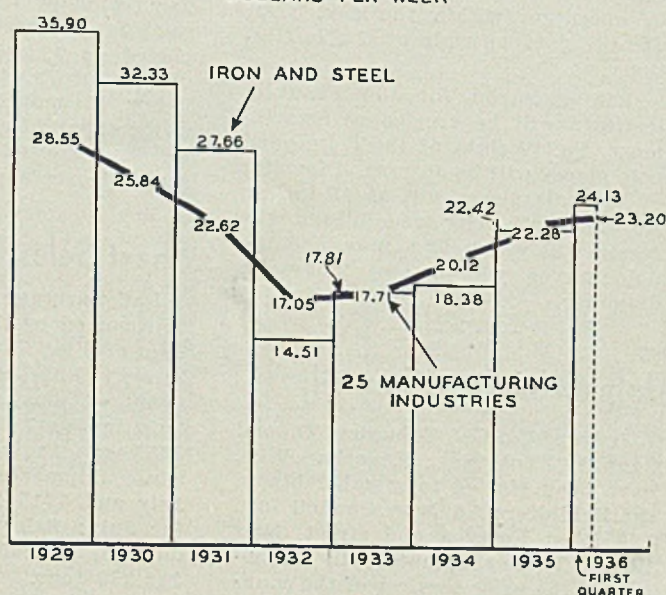
Standard Steel Spring Co. decided last week to close permanently its two plants at Coraopolis, Pa., near Pittsburgh, due to continued labor disturbances. At mid-week seven carloads of dies belonging to an important automobile concern were shipped from the Coraopolis plants.

About 750 employes of the company have been without jobs since the Amalgamated Association of Iron, Steel and Tin Workers called a second strike at the plant on Aug. 17. At that time the Amalgamated demanded

AVERAGE HOURLY EARNINGS
CENTS PER HOUR



AVERAGE WEEKLY EARNINGS
DOLLARS PER WEEK



Hourly earnings of employes in the iron and steel industry, shown in the chart at the left, have kept at a higher level through the depression than the general average in 25 major manufacturing industries. Last year, average rates in both groups were above their 1929 levels. Weekly earnings of iron and steel workers likewise have been higher than the general average in manufacturing, although they have not returned to the 1929 levels

a 40-hour week, a 30 per cent increase in base rate, and other adjustments, although a previous strike in June had been settled when the company granted a 10 per cent increase, which placed common labor at 48 cents an hour, or above that paid by steel mills for the same class of help. The Standard Steel Spring Co. operates another plant at Racine, Wis., which has been unaffected by strike, and is reported negotiating for other plant facilities at Toledo, O., and possibly Gary, Ind.

Metal Trades Employment Index Drops Slightly

Metal trades employment in 22 cities during July was 84.3 per cent of the 1925-27 monthly average, according to the National Metal Trades association, Chicago. This was a decrease of 1.2 per cent from the June average for the same cities.

The average of metal trades em-

ployment in 14 industries in June was 91.4 per cent of the same monthly average, an increase of 1.1 per cent over May.

World Business Activities Increase; Prices Firm

Business activities throughout the world are increasing slightly and prices are steady or advancing, according to National Industrial Conference board, New York. World industrial production in June exceeded by about a point the previous high recorded in November, 1935. Capital goods industries were material in boosting Great Britain to a new high in business activity.

The gold value of world trade during May increased to 36.5, the index of 75 countries based on 100 in 1929. World prices of raw material and foodstuffs remained substantially unchanged in June, the

index for nine commodities hovering at 67.4, with 1928 in this instance representing 100. Wholesale commodity prices advanced in the major countries in June. World security prices showed an upward trend in July.

Great Lakes Lights Two New Open Hearths

Great Lakes Steel Corp., Detroit, has started to operate two of its four new open-hearth furnaces at Ecorse, Mich. The other two will be ready for production at an early date.

The two which have started are similar to the eight stationary 150-ton oil fired open hearths which were built in 1929-1930. The capacity of the original eight furnaces was listed at 920,000 tons of basic steel annually, and the addition of the present four will therefore increase capacity to about 1,400,000 tons annually.

Bicycle Boom Taking 15,000 Tons of Steel This Year

AMERICANS in increasing numbers are returning to the saddle — the bicycle saddle — for fun and exercise, and the fad has resulted in a sales boom far beyond expectations of the nation's bike makers.

Conservative estimates place 1936 production at 1,000,000 machines, about 25 per cent ahead of last year. With about 30 pounds of steel in each bicycle, the industry will consume about 15,000 tons this year.

Frames on the modern bicycle are about 19 gage, electrically welded tubing, while the frame connections are 12 gage metal stampings. Many of the manufacturers have gone in for streamlining and given their product larger fenders and more accessories.

Several factors have contributed to the current boom, which finds many of the leading makers from 30 to 90 days behind on delivery dates.

Several years ago motion picture stars in Hollywood adopted the bicycle as an aid to health and for keeping down weight. Considerable credit is also given to Cycle Trades of America, trade association, which has promoted bicycling extensively. Roadside stands renting bikes for 25 cents an hour also have helped popularize the sport.

Production Behind Demand

One prominent manufacturer recently was reported to have turned down a voluntary \$15,000 order because he could not make a satisfactory delivery date. Another firm which started into production eight months ago has nearly doubled its original payroll of 400 employees.

At the height of the bicycle craze between the years 1890 and 1900 there were about 50 cycle manufacturers in the United States. At the present time, there are ten leading

makers. Until 1896 a high grade bicycle sold at retail for \$100. Today \$40 will buy a better machine and one which is more fully equipped. The modern bicycle has a coaster brake, mud guards, electric lights, a chain guard, speedometer, a parking stand and numerous other accessories. A good bicycle not so fully equipped can be purchased for about \$25.

No present day manufacturer makes all his parts. Thus the parts-makers will share in this year's general business volume which will include 1,000,000 saddles, 2,000,000 grips, 1,000,000 coaster brakes, 2,000,000 tires, 2,000,000 rims, about 3400 miles of tubing, 72,000,000 spokes, 946 miles of chain, some 30,000,000 assorted bolts, nuts and rivets, etc. If the average retail price of bicycles is \$32 the annual business for 1936 will equal some \$32,000,000.



With cycling parties drawing more adults back to the handlebars, bicycle manufacturers anticipate sales will reach the 1,000,000-mark this year

Men of Industry

JAMES K. SUTHERLAND has been named assistant general superintendent of the Youngstown Sheet & Tube Co., Youngstown, O., in charge of the Brier Hill works. Mr. Sutherland entered the steel business in 1905 in the electrical department of the Republic Iron & Steel Co. He joined Youngstown Sheet & Tube in 1916 as pit craneman in the blooming mill of its East Youngstown works. In 1919 he went with the Brier Hill Steel Co., as a heater in the blooming mills, later becoming roller and turn foreman.



James K. Sutherland

In 1924, shortly after Youngstown Sheet & Tube acquired the Brier Hill company, Mr. Sutherland was made superintendent of the blooming mill at the Brier Hill plant. Three years later he was transferred to the Campbell works as superintendent of the blooming and billet mills. In 1929 he was also given charge of the skelp mill and upon completion of the continuous hot strip mill, late in 1935, he was made superintendent thereof in addition to his other duties.

Alexander A. Motherwell, former general manager of the Chevrolet Motor Co.'s forging division, has been appointed superintendent of operations of the Detroit Forging Co., Detroit. Mr. Motherwell has been associated with General Motors Corp. subsidiaries for the past 21 years.

George S. Denithorne has been appointed sales representative in the Philadelphia area by the Medart Co., St. Louis, manufacturer of power transmission machinery, with headquarters at 1224 Commercial Trust building, Philadelphia.

John M. Titzel, 412 Westinghouse

building, Pittsburgh, has been named sales representative for the company in the Pittsburgh territory, while James W. Anderson, of Dallas, Tex., has been transferred to Chicago where the company will open a district office, effective Sept. 1. Walter G. Kessling, of the home office, has been transferred to the Dallas, Tex., office, replacing Mr. Anderson.

Glen J. Christner, heretofore in charge of the New York insulation division of the Eagle-Picher Lead Co., Cincinnati, has been transferred to Cincinnati as manager of the entire insulation division.

H. R. Belding, associated with the United States Steel Corp. for more than ten years, has been made assistant chief metallurgist of the Gary sheet and tin plate division of the Carnegie-Illinois Steel Corp. Mr. Belding was transferred from the Vandergrift works to Gary two years ago.

Ralph C. Smith, for many years connected with the Chicago office of the hoist and crane division of Robins & Myers Inc., Springfield, O., has been made manager of hoist sales in the Chicago district.

Bert L. Wood, formerly New York manager of sales for Kalman Steel Corp., subsidiary of Bethlehem Steel Co., has joined the sales force of Carnegie-Illinois Steel Corp. in the New York district office.

Hoyle Jones has been appointed district sales manager at Tulsa, Okla., for the Republic Steel Corp., Cleveland, succeeding the late C. S. Powers. Prior to this appointment he was president of the Superior Tube Co., which company he organized in 1919. Mr. Jones began his career in



Hoyle Jones

1904 with the United Zinc & Chemical Co., Kansas City, Mo., and when this company was absorbed by the American Zinc Co., he was appointed assistant manager, with offices in Chicago. He then went to St. Louis in 1908 as manager, remaining there until 1910 when he returned to Kansas City as secretary of the Jacques Steel Co.

In 1911 he started in business for himself as manufacturers' agent for a number of eastern steel companies, including LaBelle Iron Works, Detroit Steel Products Co., Superior Steel Co., Chicago Bridge & Iron Works, and Wheeling Sheet & Tin Plate Co.

R. B. Nichols has been appointed manager of the industrial bearing division of the Bantam Ball Bearing Co., South Bend, Ind. Mr. Nichols has



R. B. Nichols

been identified with the bearing industry for over 12 years, most of this time having been with Bantam. For the past eight years he served as manager of the Chicago office, and four years before had been factory superintendent at South Bend.

Bennett Chapple Jr., formerly secretary and sales manager of the Insulated Steel Construction Co., has been placed in charge of sales promotion of the commercial division of Carnegie-Illinois Steel Corp., Pittsburgh.

William Hogenson has been named special representative on Toncan iron enameling stock, by the Republic Steel Corp., Cleveland. His work will be in conjunction with that department under the new product development division. Mr. Hogenson formerly was associated with Chicago Vitreous Enamel Products Co.

D. M. Fraser, president, D. M. Fraser Ltd., Toronto, Ont., has been appointed motor sales representative for Canada by the Ohio Electric Mfg. Co., Cleveland. Mr. Fraser, with whom is now associated H. Vearncombe, has

been operating his own business since 1921, handling electrical and mechanical equipment.

Alexander Haigh, 141 Milk street, Boston, has been appointed representative in the New England states by the W. W. Sly Mfg. Co., Cleveland, manufacturer of foundry cleaning room equipment, sandblast equipment and dust control equipment.

Leonard J. Buck, iron and manganese ore importer, 74 Trinity place, New York, is expected to return about Sept. 15 from a trip to Europe.

C. D. Hollins, 2132 Morse avenue, Chicago, has been appointed special sales representative for the Campbell-Hausfield Co., Harrison, O., maker of agricultural implements, in the states of Illinois, Iowa and Wisconsin.

Earl A. Tanner has been appointed general sales manager of the Milcor Steel Co., Milwaukee, effective Sept. 1. For the past six years Mr. Tanner has been general manager of the company's eastern plant at Canton, O., and prior to that was manager of jobbing sales. He was made a vice president in 1931.

A. R. Ellis, vice president since 1929 of the Pittsburgh Testing Laboratories, Pittsburgh, has been elected president, succeeding B. H. Witherspoon who recently became an executive with the American Optical Co., Southbridge, Mass. He has been connected with the organization 31 years and during this time served as laboratory technician, inspector of engineering, chief engineer, manager of the New York branch office, assistant general manager, general manager, and vice president. He is a member of the American Society for Testing Materials, American Welding Society, American Society of Civil Engineers, among numerous other societies and clubs.

Frank Cordes, senior vice president, Blaw-Knox Co., Pittsburgh, has been elected president, succeeding the late Irvin F. Lehman. Chester H. Lehman has been elected senior vice president, and George L. Dumbauld has been made a vice president in addition to the position of treasurer which he now holds. All other officers remain the same.

Mr. Cordes has been elected chairman of the board of each of the Blaw-Knox subsidiaries, and Mr. Lehman, vice president of those companies in which he heretofore has been secretary. D. V. Sherlock has been elected president of the Union Steel Casting Co.; L. D. Smith, president, and John Mille, a director and vice president of Lewis Foundry & Machine Co.; Robert F. McCloskey, president of Blaw-Knox Construction Co. and Hoboken Land Co., vice president of Blaw-Knox International Corp., National Alloy Steel



Thomas J. Dillon

Who, as noted in STEEL, Aug. 17, page 26, is president of Edge Moor Iron Works Inc., Edge Moor, Del., manufacturer of water tube boilers and air preheaters, which he and associates purchased recently

Co. and A. W. French & Co., and a director of Union Steel Casting and Pittsburgh Rolls Corp.; H. B. Loxtermann, vice president of Blaw-Knox Construction, Blaw-Knox International, and Hoboken Land.

Mr. Smith has also been elected president, and F. A. Beatty vice president of the Groveton Land Co. W. W. Holsinger has been elected secretary of Lewis Foundry & Machine, and Albert L. Cuff has been made a director and secretary of the Blaw-Knox Construction, Blaw-Knox International, Hoboken Land, National Alloy Steel, Union Steel Casting, Pittsburgh Rolls, Groveton Land, and A. W. French companies.

Died:

JOHN C. HASWELL, 69, long an active and outstanding figure in the foundry industry, at his home in Dayton, O., Aug. 27, following a brief illness. His first employment was with Walter A. Wood Co., Hoosick



John C. Haswell

Falls, N. Y. In 1897 he was made general manager of the Marion Malleable Iron Co., and in 1915 he became president and general manager of the Dayton Malleable Iron Co. Recently he became chairman of the board of that organization. He also was identified with Pratt & Letchworth Co., Buffalo, and the Gartland, Haswell, Rentschler interests. He was active in the Malleable Iron Research institute and the Malleable Founders society, and also was a director of the latter organization and the Ohio Manufacturers association.

H. Sanborn Smith, identified with the Gulf States Steel Co., for more than a quarter of a century, in Los Angeles, Aug. 13, from injuries sustained in an automobile accident. At one time he was vice president in charge of sales for Gulf States Steel, and later assistant to the president. He retired in February of this year.

Andrew Lanz, 70, president, M. Lanz Bolt Co., Pittsburgh, at Pittsburgh, Aug. 18.

Harry E. Pierce, 63, former vice president of the Ewald Iron Co., Louisville, Ky., in Louisville, Aug. 10.

George W. Pegg, general superintendent, Accurate Tool Co., Detroit, at Detroit, Aug. 21.

Oliver H. Mellum, assistant to the vice president of the American Car & Foundry Co., Chicago, at Lake Bluff, Ill., Aug. 14.

Tylor Field, 61, founder in 1903, and most recently president of the Ferro Concrete Construction Co., Cincinnati, at Cincinnati Aug. 13. He was formerly with the Bullock Electric Mfg. Co.

Edward Weston, 86, internationally known scientist and inventor in the field of electricity, at his home in Montclair, N. J., Aug. 20. Mr. Weston established the Weston Electrical Instrument Co. and was its president until 1925.

Proctor Carr, 55, vice president in charge of sales, Buffalo Bolt Co., Buffalo, in that city, Aug. 17. At one time he was secretary and sales manager of the United States Hame Co., and later vice president and sales manager for the North & Judd Mfg. Co., New Britain, Conn.

Carl C. Hinkley, 53, prominent designer of diesel engines, at Detroit, Aug. 23. He began his business career with the Peerless Motor Car Co. in 1900, later was chief engineer of the Olds Motor Co. and at subsequent times was identified with other car builders. His last identification was with the Buda Co., Harvey, Ill. Mr. Hinkley helped found the Detroit chapter of the Society for Automotive Engineers.

Meetings

PORCELAIN ENAMEL institute will hold its sixth annual meeting at Hotel Statler, Cleveland, Oct. 1-2. The first day will be taken up with sectional meetings of the educational bureau and group meetings of various divisions; the annual meeting proper will convene on the second day.

The meeting will feature an address, "What the Rest of the World Thinks About Porcelain Enamel," by George F. Taubeneck, editor, *Electric Refrigeration News*, R. W. Staud, Benjamin Electric Mfg. Co., Desplains, Ill., chairman of the institute's legislative committee, will discuss the Robinson-Patman act. Provisions of this act, it is stated, will in all probability have pronounced effect on the porcelain enameling and associated industries.

Most of the annual meeting session will be devoted to discussion of results and plans of the institute's educational bureau, with E. L. Lasier, Titanium Alloy Mfg. Co., Niagara Falls, N. Y., and chairman of the bureau, presiding. George P. MacKnight, who recently returned as secretary of the institute, will report on accomplishments of the six years since the organization was established and outline activities for 1937. A board of trustees, officers and members of the executive committee will be elected for the coming year.

Headquarters of the institute are at 612 North Michigan avenue, Chicago.

LOOK FOR LARGE ATTENDANCE AT BOLT AND RIVET MEETING

Plans have been completed for a meeting of the American Institute of Bolt, Nut and Rivet Manufacturers at Hotel Cleveland, Cleveland, Sept. 3. A. F. Jensen, president, Hanna Engineering Works, Chicago, will address the meeting on "Are We Just Selling Hunks of Iron?" He will also show a film titled "The Age of Riveted Steel." A large attendance is expected.

INDICATIONS POINT TO POWER SHOW AS RECORD BREAKER

Interest in replacing obsolete power equipment with new is having a salutary effect upon the twelfth National Exposition of Power and Mechanical Engineering to be held in Grand Central Palace, New York, Nov. 30-Dec. 5. The amount of exhibit space reserved at this date indicates that this year's show will be a record breaker.

Equipment to be displayed will include the following classifications: Fuels, combustion, refractories, steam generating, steam distribution, piping and fittings, prime movers, pumps and hydraulic machin-

ery, electric generators and motors, electrical transmission, distribution, control, power transmission, control apparatus and precision instruments, power-driven machinery, tools and machine tools, material handling equipment, heating, ventilating, refrigeration, air conditioning, lubricants, operation and maintenance materials.

Convention Calendar

- Sept. 3—American Institute of Bolt, Nut and Rivet Manufacturers.** Meeting at Hotel Cleveland, Cleveland. James D. Eggers, 719 Guardian building, Cleveland, is secretary.
- Sept. 4-5—American Ceramic society.** Summer meeting of refractories division at Bedford Springs hotel, Bedford Springs, Pa. Dr. W. C. Rueckel, 1424 Koppers building, Pittsburgh, Pa., is chairman of the program committee.
- Sept. 7-11—American Chemical society.** Semiannual meeting in Pittsburgh. Charles L. Parsons, 728 Mills building, Washington, is secretary.
- Sept. 7-12—Third World Power Conference and Second Congress on Large Dams.** To be held in Washington with headquarters at Mayflower hotel. O. C. Merrill, Interior building, Washington, is director.
- Sept. 8-10—American Gear Manufacturers association.** Nineteenth semi-annual convention aboard S. S. SEANDBEE sailing from Chicago to Cleveland. J. C. McQuiston, Penn Lincoln hotel, Wilkensburg, Pa., is manager-secretary.
- Sept. 9—Institute of Scrap Iron and Steel.** Midyear conference at Hotel Statler, Detroit. Benjamin Schwartz, 11 West Forty-second street, New York, is director general.
- Sept. 14-15—Plain Washer Manufacturers' association.** Quarterly meeting at Hotel Statler, Cleveland. Eugene Caldwell, 2100 South Bay street, Milwaukee, is secretary.
- Sept. 14-18—British Institute of Metals.** Twenty-eighth autumn meeting in Paris, France. G. Shaw Scott, 36 Victoria street, Westminster, London, S. W. 1, is secretary.
- Sept. 16-19—American Society of Mechanical Engineers.** Sectional meeting at Hotel Niagara, Niagara Falls, N. Y. P. T. Wetter, 29 West Thirty-ninth street, New York, is assistant secretary.
- Sept. 21-26—Iron and Steel institute (British).** Autumn meeting in Dusseldorf, Germany. K. Headlam-Morley, 23 Victoria street, London S.W.1, is secretary.
- Sept. 22-25—Association of Iron and Steel Engineers.** Thirty-second annual convention at Hotel Statler and Iron and Steel exposition at Convention Hall, Detroit. Brent Wiley, Empire building, Pittsburgh, is managing director.
- Sept. 28-Oct. 3—American Mining congress.** Conference of metal mining industries at Civic auditorium, Denver under auspices of Western division. Stanly A. Easton, president, Bunker Hill & Sullivan Mining & Concentrating Co., San Francisco, is chairman of the program committee.
- Oct. 1-2—Porcelain Enamel institute.** Sixth annual meeting at Hotel Statler, Cleveland. George P. Mac Knight, 612 North Michigan avenue, is secretary.
- Oct. 5-7—National Industrial Advertisers association.** Annual conference at Benjamin Franklin hotel, Philadelphia. M. R. Webster, 100 East Ohio street, Chicago, is secretary.
- Oct. 5-9—National Safety council.** Twenty-fifth annual safety congress in Atlantic City, N. J. William H. Cameron, 20 North Wacker drive, Chicago, is managing director.
- Oct. 5-10—Fourth Annual Industrial Materials exhibit.** At Hotel Roosevelt, New York. S. S. Kahn, Parker-Kalon Corp., 200 Varick street, New York, is secretary.
- Oct. 8-10—Electrochemical society.** Fall meeting at Hotel General Brock, Niagara Falls, Ont. Dr. Colin G. Fink, Columbia university, New York, is secretary.
- Oct. 15-17—Society of Automotive Engineers.** First National Aircraft Production meeting at Ambassador hotel, Los Angeles. John A. C. Warner, 29 West Thirty-ninth street, New York, is general manager.
- Oct. 19-22—American Institute of Mining and Metallurgical Engineers.** Fall meeting of Institute of Metals and Iron and Steel divisions at Hotel Statler, Cleveland. Louis Jordan, 29 West Thirty-ninth street, New York, is secretary.
- Oct. 19-22—National Wholesale Hardware association.** Forty-second annual convention at Marlborough-Blenheim hotel, Atlantic City, N. J. George A. Fernley, 505 Arch street, Philadelphia, is secretary.
- Oct. 19-22—Wire association.** Annual meeting at Hotel Cleveland, Cleveland. Richard E. Brown, 17 East Forty-second street, New York, is secretary.
- Oct. 19-23—American Society for Metals.** Eighteenth annual National Metal congress and exposition in Public Auditorium, Cleveland. W. H. Eisenman, 7016 Euclid avenue, Cleveland, is secretary.
- Oct. 19-23—American Welding society.** Seventeenth annual meeting at Hotel Cleveland, Cleveland. M. M. Kelly, 33 West Thirty-ninth street, New York, is secretary.
- Oct. 19-23—American Gas association.** Annual meeting and exhibition at Auditorium, Atlantic City, N. J. Kurwin R. Boyes, 420 Lexington avenue, New York, is secretary.
- Oct. 20—National Association of Sheet Metal Distributors.** Twenty-fifth annual meeting at Marlborough-Blenheim hotel, Atlantic City, N. J. George A. Fernley, 505 Arch street, Philadelphia, is secretary.
- Oct. 21-23—American Institute of Steel Construction.** Fourteenth annual meeting at Greenbrier, White Sulphur Springs, W. Va. V. G. Iden, 200 Madison avenue, New York, is secretary.
- Oct. 22-23—American Society of Mechanical Engineers.** Fall meeting of Iron and Steel, Machine Shop Practice and Applied Mechanics divisions at Hotel Cleveland, Cleveland. P. T. Wetter, 29 West Thirty-ninth street, New York, is assistant secretary.

Congress Told How Machine Tools Benefit the World

A \$500 automobile would cost \$3500; a \$110 typewriter, \$1000; a \$100 radio, \$1000; and it would take \$1040 to buy a watch no better than one that now sells for \$1.50—if it were not for modern machine tools.

Purchase of food in tin cans would be out of the question except for the wealthy, not because of the cost of the food, but the expense of the container. The price of safety pins would be at least ten times higher than they are today; a four-ounce toilet bottle now \$1.65, would be \$6.95. Many products now in ordinary use could not be made without automatic machinery.

Mechanization Is Necessary

In writing a defense of machine tools, the National Machine Tool Builders' association, Cleveland, obtained data from many industries which computed costs by old-time machine shop means, and by up-to-date production methods. It is a reply to the resolution introduced in the last session of congress directing the secretary of labor to compile a list of labor-saving devices, mechanical and otherwise, put in operation in this country after Dec. 31, 1912, and still in use, and to estimate the

number now unemployed by reason of such devices.

A sidelight on why automobile prices are so low can be deduced from information furnished by the Bethlehem Steel Co. on the steady decrease in steel prices. In this business of getting products to market cheaply it is necessary for all branches to be highly mechanized. F. A. Shick, vice president and controller, points out that the price of steel strip and sheets has gone down 50 per cent in the period from 1923 to 1935; and that the automobile industry is the largest single consumer of these products of the steel industry. At the same time the quality and size and uniformity of the products of steel mills have been steadily rising.

"Without cost-reducing mechanized production in steel, automobile manufacturers could not today turn out \$600 machines either in dozen, or in million lots," says the association.

"The airplane of today," states C. N. Monteith, vice president, Boeing Aircraft Co., "could not be produced according to the shop methods of earlier days—and, yet there is no such thing as mass production in our industry. So far, the largest order for aircraft placed by the

United States since the World war totaled but 200 units, and consequently the term mass production is not applicable to aircraft.

"One of our recent military models was carefully analyzed as to probable production costs in various quantities. We obtained an indicated selling price of \$50,000 for one; \$22,500 each for 10; \$9775 each for 100 and a projected selling price of \$4500 each were we to produce 1000 units. In these computations, at least half of the saving results from the increased mechanization of operations."

M. B. Gordon, vice president, Wright Aeronautical Corp., says: "Aircraft engines if made piecemeal by machine shop methods, would cost from four to six times their cost when made with modern production equipment. This difference would be greater if the volume of our production warranted the adoption of extreme quantity production measures such as are used in the motor-car field."

Similarly, an electric refrigerator manufacturer, Louis Ruthenberg, president, Servel Inc., reports that refrigerators made experimentally cost approximately six times as much as those made on production assembly. "Quite obviously," he states, "except for modern production methods, automatic refrigeration would cost so much as to command an extremely limited market."

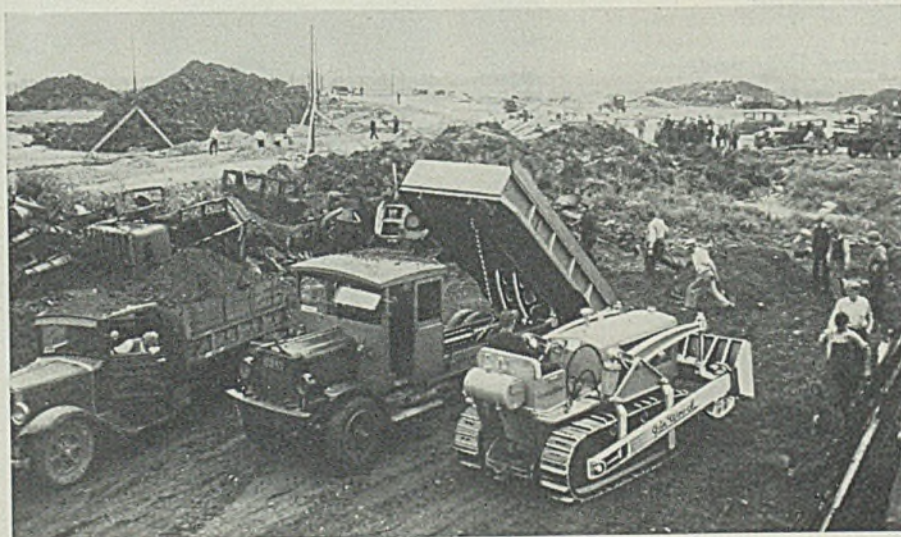
Tin Can Manufacture

If it were not for the advanced status of machine tools and the "cleverness" of the machines made by them, another product almost indispensable to the modern home throughout the civilized world, the tin can, would, from a practical point of view, be non-existent today.

"The first tin containers were manufactured by a tinsmith almost wholly by hand, and a production of 60 cans per day per man was considered a good day's work," states O. C. Huffman, president, Continental Can Co. "Canned foods were then a luxury enjoyed by only the rich. The improved tin container of today, manufactured on lines of machinery each producing 200 to 500 cans per minute, could not be produced by hand. Any machine shop which might undertake to make a modern tin container would first have to build equipment specifically for that purpose. Whether made by hand or under piecemeal machine-shop methods, the cost would no doubt be many times that of the modern can manufacturer, with the result that the cost to the consumer of canned foods and the many other products now packaged in tin containers would be prohibitive."

"The reason why machinery does not take the count is basically because cost-reducing machinery is job-making machinery," concludes the association. "Low prices create a demand, and demand creates jobs."

Steel Begins Work on 1939 World's Fair



TO PREPARE 1000 acres of Long Island terrain for New York's world's fair of 1939 steel is called in for first aid. Steam shovels and bulldozers slice off the hills and fill in dales in suit the purpose. The giant bulldozer in the illustration batters, pushes, spreads and levels stubborn ground or whatever else is in its way. Ten of these, built by Gar Wood Industries Inc., Detroit, are moving mountains of material

THE OBSERVING EYE



*Studies
FOR*

FUTURE REFERENCE

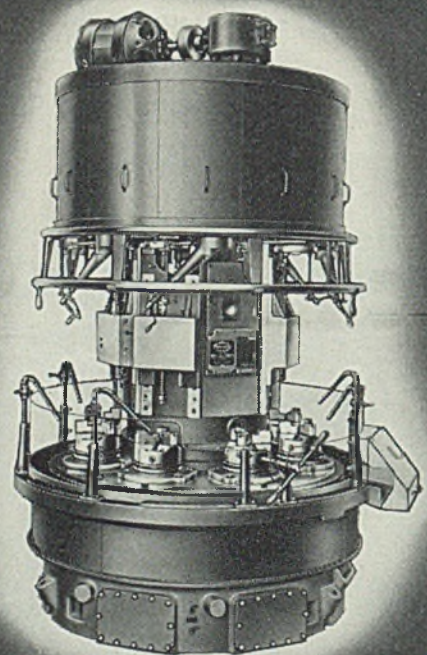
OBSERVATION is an elementary and fundamental factor in Progressive plant operation. Therefore, the Observing Eye studies facts on plant equipment with a view towards more Profitable manufacturing.

The Observing Eye studies Bullard Engineering Estimates and sees Bullard Multi-Au-Matics in the light of Cost Saving Equipment. It Observes the Multi-Au-Matic in Profitable operation in competitive plants.

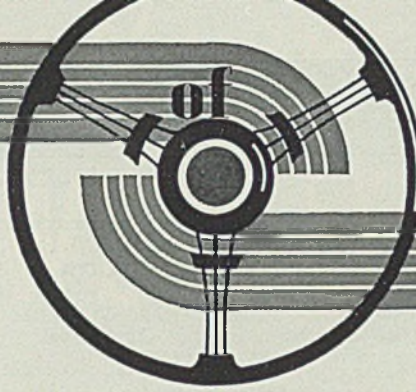
Send prints or samples of your Problem jobs to Bullard Engineers for Observation and Analysis. Let them submit Time and Cost Estimates for your Observation and Reference.

Multi-Au-Matics in sizes to meet your requirements for multiple operations of Turning, Boring, Facing, Drilling, Reaming, Threading, and other miscellaneous special operations.

THE BULLARD COMPANY
Bridgeport Connecticut



**TYPE "D"
MULT-AU-MATIC**



DETROIT

EVER since annual model changes have been the vogue, the automobile industry pulls up at this time of the season, takes out paper and pencil and begins to figure how quickly the production changeover can be made.

Mis-calculation on even a few days, or one idle week too long, starts the motor executives running a fever. Bringing out a new car calls for delicate precision and advance planning both within the plant and in the light of retail sales. Yet fixed charges keep rolling along, whether it's Sunday or Monday.

The industry this year is sold on making the changeover process painless. In no year of the past five or six will the headache be by-passed so efficiently.

For one thing, die and tool work for 1937 models was first bought as long ago as April. Secondly, flushed with the success of a rising automobile demand all this year, there has been less temerity to build up field stocks. This relaxation means that many a maker can now devote much energy to the 1937 jobs.

The case of Ford serves to exemplify, for it mirrors the entire industry. With details of the 1937 V-8 virtually settled, Ford has been a free specifier of new materials and parts from tributary sources. Deliveries have been set up on the following basis: one-third to be within the plant gates at Dearborn on Sept. 1, another third by the 15th, and the remaining third by Oct. 1.

Fords May Be Out Oct. 15

This buying, initiated early in August, was against 160,000 assemblies roughly, thus indicating stocks will be on hand to swing over into the new series promptly at the proper time, likely in late September. The "proper time" is construed to be when the sales department flashes word to cease work on the present style models.

Work has picked up on the 1936 jobs since Ford took out ten days early in August for vacation, but liberal parts banks are mushrooming on the new car to make, the line of demarcation hardly visible.

It is a safe assurance that there will be no more Ford shutdown this year, as there was Aug. 6-17, and equally as

good a bet that the new Fords will be out around Oct. 15.

Lusty retail sales, of course, make this policy easier for Ford, as the field gives indication of still absorbing a good volume of 1936 jobs. Furthermore, profits so far from the 1936 season react in approval from the treasurer's office to turn more cash into parts banks. For example, Ford is laying the groundwork to carry at least a 30-day bank this fall, against 20 to 25 days' supplies not long ago.

General Motors' current position, at least as far as Chevrolet goes, closely approximates Ford. The Flint assembly line continues to run, last week turning forth some 30,000 models, but all the parts divisions are turning toward 1937 banks.

Testing Body Draws

Last week, most of the Fisher Body plants were buzzing with first tests on trial sheets to try out new dies and to work on the new body draws. The same sort of practice has been taking up Chrysler's time, not only at Budd and Briggs, but also at Dodge.

These concerns have indicated they will begin wanting steel deliveries in substantial quantity in another three weeks, once all the bugs have been worked out of new equipment. In not a few cases, expediter's letters from General Motors and Chrysler have gone out to suppliers asking them to prepare for this condition.

Most all of the dies for 1937 are now about finished and by Sept. 1 practically all of them for the first 1937 runs will have been delivered. Little wonder then, that the situation has eased for the die shops, and, believe it or not, there are free predictions that another four to six weeks will see an easing in the scarcity of this type of skilled help.

Since the motor people have yet to come to the point where they will begin ordering spares and replacements, indications are that Fall die business will be due for a rather sharp pickup starting along in October after the present lull runs out.

A few of the motor plants are still buying, but they are conspicuous. When Murray Body took bids the early part of last week on a list of 75 to 100 dies, it proved the exception rather than the rule. For the only near-general inquiry abroad now is in small dies for such as miscellaneous

brackets and splash guards, and these are quickly made when compared with dies for stamping out intricate body panels.

Steel breakage may logically be linked with these new 1937 dies, not from their own fault but from the persistent efforts of some motor manufacturers, chiefly Ford, to lean toward lighter sheet gages.

Ever mindful of the economy angle and figuring a lighter car is cheaper to run, Ford has been an interested party to any proposition that clips off dead weight. In next year's car, for example, 20-gage steel sheets will supplant 18-gage at a number of points.

Ford has also worked out a one-piece, all-steel floor for the 1937 line. This is said to dispose of a lot of assembly problems, reduce costs and point the way for a concise selling point.

Weight-saving can best be discussed by specific examples. For instance, take ordinary fender stock, the usual sheet size specified for the part on a small car, 36 x 72 inches. In 19-gage steel this steel weighs .0129 pounds per square inch whereas in 20-gage it weighs .0111 pounds to the square inch. On a set of fenders the weight saved is something like 6 pounds, on all four fenders, 12 pounds.

Translated into dollars and cents, the material saving is around 40 cents, and as one body plant figures it today, there is an overhead saving of 23 cents.

Steel Tops Gain Converts

From an overall slant, steel's 1937 stake in the motorcar should not be seriously threatened. Removal of all of the wood out of General Motors' Fisher bodies starting with Chevrolet and up through Pontiac, Olds and Buick, but excluding LaSalle and Cadillac, will be a fact coupled by the universal use of steel top in 1937, numbering new converts in Plymouth, Dodge, Ford, and Willys.

Ford's use of steel, even in greater weight per car since the present 1936 models came out, is worthy of mention. Most of the ten important improvements added since they came out last October, favor steel.

The new design of cast alloy steel crankshaft, new crankshaft bearings of steel-backed type, changed design of the leaf springs and improved wa-

ter-pump design, not to overlook the revised dual down-draft carburetor, are all to steel's credit side of the ledger. Revision in the rear axle ratio from 4.11 to 3.78 to one and a change in the oil-pump design also have a favorable angle on this point.

The new Ford springs adopted this summer and about which little has been written are a subject of interesting commentary. Since General Motors came out with knee-action and therefore divorced the flat leaf type for coiled springs, Ford took the occasion to dig in all the deeper as an advocate of transverse, and therefore, leaf springing.

Now, to cope with lubricating problems, the Ford spring is being made with each leaf having a narrow notch cut lengthwise down the middle. The leaves are bolted together, but instead of the bolt fitting into a round-threaded hole, it goes into a rectangular cut in each of the leaves. When in use a touch of grease will run down the bolt, into each leaf and flow lengthwise down the notch.

Speaking of Willys a few paragraphs back, that subject must have earned some commendation from a few of their competitors for the way they have ambitiously faced the coming year. Emergence from receivership a few months ago was hardly over before they borrowed Amos Northrup, one of Murray Body's ablest designers, to draw up a new line of cars.

The 1937 Willys, to be announced Nov. 5, so Detroit has it, will be something worth looking at a second time. Most of the old Willys criticism, that previously was directed at Austin due to its size, won't be apropos, for the new job is of conventional tread and consequently wider body. Even though on a 100-inch wheelbase, the new Willys has the semblance of sleeker lines through a novel hood interpretation.

There are those in Detroit who are enthusiastic over Willys' chances, which if it can put out something acceptable with present company, has a strong sales point on operating performance of 30 to 35 miles per gallon, plus a low initial cost, likely around \$400, f.o.b. factory.

Like many another the week preceding, Hudson and Plymouth went down last week for the changeover. Plymouth had accounted for 10,400 assemblies two weeks ago, Hudson for 1300, but through last week the wheels at these two plants had slowed to a stop.

Plymouth will be down this week and part of next, whereas Hudson's present plans call for resuming in a modest way about Sept. 1. However,

Automobile Production

Passenger Cars and Trucks—U. S. Only
By Department of Commerce

	1934	1935	1936
Jan.	155,666	289,728	364,004
Feb.	230,256	332,231	287,606
Mar.	338,434	425,913	420,971
Apr.	352,975	452,936	502,775
May	330,455	361,107	460,565
June	306,477	356,340	*452,955
July	264,933	332,109	440,999
7 mo.	1,979,196	2,550,364	2,929,875
Aug.	234,811	237,400	.....
Sept.	170,007	87,540	.....
Oct.	131,991	272,043	.....
Nov.	83,482	395,059	.....
Dec.	153,624	404,528	.....
Year	2,753,111	3,946,934	.....

Estimated by *Oram's Reports*

Week ended:

Aug. 8	\$1,804
Aug. 15	56,679
Aug. 22	73,709
Aug. 29	53,937

*Revised.

delivery on certain important Hudson die work, which was late being placed in the first place, is now indicated for between Sept. 5-10, so ostensibly it will be mid-September before other than hand-built jobs are made.

Many Assembly Lines Idle

Assembly lines of all of the General Motors' passenger cars, except aforementioned Chevrolet, remained closed last week. Either Buick or Olds will be the first to get into quantity runs on 1937 lines, but this will not be recorded before several weeks.

Thus Ford and Chevrolet are battling it out as the month closes, the only two active plants in the volume-producing field. At present levels Chevrolet will make around 110,000 cars in August, while Ford, due to the early August shutdown, will account for 65,000 models.

Incidentally, the Ford-Chevrolet race this year brought out an interesting detail in August. Chevrolet made its 1,000,000th 1936 model on Aug. 5, but the ink was hardly dry on the announcement before Ford came out with its 1,000,000th assembly for the year on Aug. 20.

Delco has already met one of the problems imposed by the trailer and its large electricity requirements by marketing a portable charger called "Little Joe". . . . Employees of Ternstedt Mfg. Co., hardware-making division of General Motors, took time off Aug. 26 for their annual outing. . . . A number of plant-renovating contracts are

attractive items to contractors in this business today. One at Dodge, closed on last week, was an unusually large one. . . . Reynolds Spring Co., Jackson, Mich., has just contracted for a new plant addition. . . . Great Lakes Steel Corp. has two of its battery of four new open-hearth furnaces at Ecorse, Mich., now ready for making steel. . . . Edsel Ford returned to Detroit last week after a five-week trip in Europe. . . . The Pontiac parts division reports sales of 50,000 heaters this year broke all records, comparing with 16,000 in 1935. . . . Chevrolet laid claim last week to the world's low-mileage record, citing a truck owned by Eastern Air Lines that has been in service 12 months but has gone 38 miles. Used for refueling airplanes, it makes eight round trips daily, each one 35 feet long. . . . A new way to buy part of an electric-welding outfit cheap — do as an individual of Litchfield, Ill., shop in acquiring a 20-year old Detroit Electric for that purpose recently. . . . Standard Steel Spring Co., Coraopolis, Pa., besieged by strikers, is preparing to shift some of its equipment to its plant at Racine, Wis., and possibly engage other capacity at either Toledo, O., or Gary, Ind. . . . Pontiac has worked out a service policy permitting free new-car inspections at the three regular intervals at any one of its country-wide dealers, rather than from the original sales agency. . . . Ford last week announced receipt of an order for 500 busses from the Detroit Street Railway Co., said to be largest of its kind. . . . Pontiac has been mindful of holding its employes over the present stocktaking period and recently came out with a plan permitting each man to draw \$7.50 weekly and up to \$60 maximum, the amount to be deducted from pay envelopes when operations recommence.

Stainless Streamlined Bus Trailers for Syrian Desert

Edward G. Budd Mfg. Co., Philadelphia, has been given an order for two light-weight streamlined stainless steel bus trailers to be used in the desert between Bagdad, Iraq, and Damascus, Syria. They will be drawn by a 150-horsepower tractor to be built by Van Dorn Iron Works, Cleveland, and will make the 530-mile run in 15 hours, against 35 hours by the present heavy buses. One trailer will be a first-class day coach for 19 passengers and the other a sleeper with berths for 14 passengers. Both will be air-conditioned. The unit will be 57½ feet long.

We welcome

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HOUSTON, TEX.
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DETROIT, MICH.
ST. LOUIS, MO.
WASHINGTON, D.C.
SAN FRANCISCO, CALIF.

MILWAUKEE, WIS.
BOSTON, MASS.
LOUISVILLE, KY.
BIRMINGHAM, ALA.

To the Trade:

The entry of West Leechburg Steel Company into the Allegheny family is a logical move of two adjacent, non-competitive producers, each of whom supplements the other.

Our lack of facilities for the production of hot and cold rolled strip has been accentuated by the rapid development of, and demand for, Allegheny Stainless and Magnetic Steels in strip form. In remedying the need, we have acquired an organization of specialists in the production of quality strip, whose mechanical facilities are second to none, and whose valuable experience is reinforced by long practice in working with all grades of Allegheny Stainless. We, in turn, will supply West Leechburg's lack of facilities for the production of raw steel.

Thus, with benefit to all concerned, we materially increase the scope of our service to users of Allegheny Products. Our flat rolled steel products now include a complete line of strip in all grades and sizes up to 24", and finished sheets up to 72".

Sincerely yours,

Harry E. Sheldon
President



ALLEGHENY STEEL COMPANY

Activities of Steel Users and Makers

A NEW management engineering company has been formed under the name of Hopf, Kent, Willard & Co., 500 Fifth avenue, New York. The new company is a partnership which has resulted from the merger of H. A. Hopf & Co., New York, and Bigelow, Kent, Willard & Co., Boston. Both companies were founded in 1922.

Members of the new firm are Harry and Arthur Hopf, Robert W. Kent, George W. Stidstone, John A. Willard and Rita H. Hopf. The firm will offer professional services in the fields of managing engineering and accounting for industrial and business corporations. The company will maintain a branch at 10 Post Office square, Boston.

Groov-Pin Corp., Long Island City, N. Y., will move its factory and office to new and larger quarters at 411-413 Kerrigan avenue, Union City, N. J., Sept. 1.

Bixler Coal & Coke Co., Pittsburgh, has been appointed exclusive sales agent for the output of the Mammoth mine, Mammoth, Pa., producing Connellsville low sulphur coking coal, which plant was formerly owned and operated by the H. C. Frick Coke Co.

Timken Roller Bearing Co., Canton, O., has been given an order for bearings and boxes for nine new coaches which the Temiskaming & Northern Ontario railroad has awarded to the National Steel Car Corp., Hamilton, Ont. The same type bearings were used on four baggage cars built by the same company recently for the Canadian National railroad.

International Business Machines Corp., New York, has purchased a 20-story building at 578-590 Madison avenue, at Fifty-seventh street, for main offices. All departments now at various locations, including the main offices now at 270 Broadway, the sales rooms at 310 Fifth avenue and the service bureau at 95 Madison avenue, will be housed in the new location.

Porcelain Metals Corp., Louisville, Ky., a leading jobbing plant doing a large variety of porcelain enameling work for manufacturers of ranges, refrigerators, signs, etc., recently signed a contract with Ferro Enamel Corp., Cleveland, to convert one of its large porcelain enameling furnaces to the gas-fired radiant tube

type. This is a new principle of enamel firing recently introduced in the porcelain enameling industry.

Reed-Prentice Corp., Worcester, Mass., has appointed Sterling-French Machinery Co., New Center building, Detroit, as exclusive sales agent in Detroit for its line of machine tools including engine, toolroom and production lathes, vertical milling and die sinking machines, die casting machines, and special production equipment.

Timken Roller Bearing Co., Canton, O., has booked an order from the Union Pacific railroad for bearings and boxes to completely equip all axles, including driving axles, on a 4-6-2 and a 4-8-2 locomotive, both existing units. These locomotives will also be equipped with Timken design light weight main and side rods, pistons and piston rods.

Phillips & Brooks has been organized to conduct an export business in steel products, with headquarters at 114 Liberty street, New York. Those engaged in this business are John H. Phillips, formerly of F. R. Phillips & Sons Co., Philadelphia, and A. O. Brooks, who for 30 years conducted an export business to the Far East, with headquarters in New York.

Central Foundry Co., Anniston, Ala., which has been closed for the past seven years, resumed operations

Aug. 17. According to E. F. Cooper, president, 150 men will be employed when all departments get going full time.

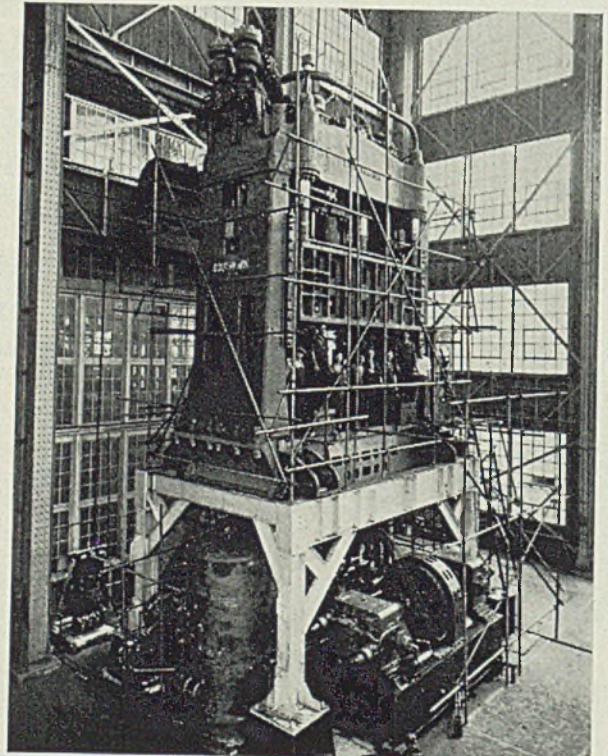
Cooper Alloy Foundry Co., Elizabeth, N. J., producer of stainless steel castings, has organized a new service to be conducted under the title of Stainless Engineering & Machine Works. It will be devoted to specialized machine work on stainless and heat resisting alloys and is thoroughly equipped for such work. Officers of the Stainless Engineering & Machine Works division are: President, Harry A. Cooper; vice president and general manager, M. J. Robert.

Patton & Bruce, St. Louis, has been formed to represent the boiler water conditioning and combustion control interests of the Hagan Corp., Pittsburgh, and its affiliates, Hall Laboratories Inc., and the Buromin Co. Members of the firm are Russell Patton and Warren C. Bruce, located at 526 North Vandeventer avenue. With the new firm will be associated W. Scott Wilkie, formerly with S. Thomas Engineering Co., St. Louis, who for many years represented the Hagan Corp. and its affiliates in St. Louis.

The organization is prepared to render service to engineers and power plant owners in all matters concerning boiler water conditioning and the automatic control of combustion in connection with boilers and metallurgical furnaces.

Huge Gears Shape Steel Like Paper

EXERTING pressures aggregating 1000 tons, this four-story triple-acting hydraulic press has been built by Baldwin-Southwark Corp., Philadelphia. It stands 28 feet above ground and is 14 feet below floor level. It weighs 325 tons. It will be installed in the plant of the Fisher Body Corp. at Cleveland. Clear distance between housings is 191 inches and vertical "daylight" of the inner slide is 140 inches. Four cylinders with 42-inch stroke and 400 tons pressure exert clamping pressure at the corners. Cylinders acting on the inner slide produce pressure totaling 600 tons





WINDOWS OF WASHINGTON

DURING the past week representatives of industry in Washington centered their discussions on taxes, the government contract law, the Robinson-Patman law and the labor situation. The way to get the inside on all of these matters is to seek out the man who thinks as you do, and then proceed to interview him. It is a fact, however, that you can find as many opinions as you want on these various subjects. As a consequence those lawyers who serve industry and the trade associations are very busy.

There are whisperings here in connection with the CIO and the labor situation that it won't be long before his opponents will be after the scalp of William Green of the A. F. of L. and that an effort may be made toward replacing him with George Harrison of the railway mail clerks. Mr. Harrison is said to have a more conciliatory nature than Mr. Green.

The Lewis crowd, according to inside information, is having a hard time trying to organize the automobile industry. The automobile unions are supposed to put up some \$125,000 for the drive and reports indicate they are going to have a mighty hard time trying to raise this amount. It is claimed that the automobile unions have doubled their strength since they joined the Lewis outfit.

Suspension Is Condemned

Since John Lewis left for Europe there has been a great deal of speculation over his action, ranging all the way from saying he wanted to get away from administrative pressure to the fact that he did it as a gesture to show his strength.

CIO propaganda headquarters is pushing out all kinds of material to show that the unions over the country are incensed at the suspension action taken by the A. F. of L. executive committee. They say that "the storm of labor protest against this suspension is becoming a regular hurricane."

"In a period of two weeks," says

the CIO, "following the council's suspension order, three international union conventions, a state federation, scores of central labor bodies and hundreds of local unions passed resolutions condemning the A. F. of L. council for splitting the labor movement."

The CIO says further that "many of the resolutions contain praise for the constructive work of the CIO organizing the mass production industries and endorse its steel and other drives. Nearly all point out that the council acted illegally and undemocratically is not deferring the matter to the next convention."

Berry in Labor Post?

There is talk that Major Berry, in the event Mr. Roosevelt is re-elected, may make an effort to get the secretaryship of labor. The rumor does not say what is likely to happen to Miss Perkins, who likes her job. It would take something to pry her loose from it, even if the President wanted to, which is not so certain despite the talk.

Trade association executives last week called attention to the safety and health provision of the Walsh-Healy law, asserting industry had not paid enough attention to them. The federal government may assert that it has control of these two features despite state laws on the subject. These sections, say the trade experts, give labor a hand in state legislation on this subject.

In connection with the Walsh-Healy act, it is openly stated by those who have been in close touch with the situation that the further labor department officials go into the law the less they like it. In fact, it is said that Miss Perkins will ask for drastic amendments at the coming session of congress. The question of subcontractors is one that is causing a great deal of trouble.

Federal trade commission members and their experts simply do not know where they are at regarding the Rob-

inson-Patman law and they say privately that it is an "impossible" bill to administer. They have gone so far as to tell their close friends that some sections of the law are unconstitutional.

There also are jokers in the bill and stories which have been printed to the effect that one or two test cases will tell the story, simply are not so. Every case is going to have to rest on its own bottom. The law has given members of the commission, and its experts, many headaches and kept several of them from their vacations this summer.

It is being predicted freely that adjustments will be necessary in interpretations of the new tax law. There will be opportunities for this because there will be a new tax bill at the coming session of congress. A number of excise and nuisance taxes expire next year and it will be essential to enact some legislation because not all of them will be allowed to go by default. Letters reaching government officials now indicate the many hardships that the corporations are up against in connection with the new tax act and it is practically certain something will have to be done to ease the situation.

Financial Position Improved

At the first press conference which the President has held in this city for some weeks he stated that the financial situation is increasingly better. Incoming revenue, he said, is in much larger volume than expected, while the outgo is much less. He did not enlarge on this statement.

The President also announced last week that he had allocated \$1,500,000 to the department of labor, to make a check on all PWA employes regarding their occupational training. The present records, he stated, are unsatisfactory.

There is further talk here that a branch of the administration is now working on some kind of a more definite and satisfactory trade agreement with Germany. As the mat-

ter stands at this time all transactions have to be made in currency and both countries feel that this will curtail trade between the two countries.

FINDS U. S.-CANADA PACT AROUSING INTEREST ABROAD

At a press conference last week on his return from a vacation trip to England and Germany, Secretary of Commerce Roper expressed renewed interest in trade agreements between the United States and foreign countries.

Concerning such an agreement with England, Mr. Roper said that "there are many angles as to that, in my opinion, from the British viewpoint. One should consider the position of the dependencies of Great Britain, and the greatly interwoven responsibilities of the United Kingdom. Speaking as a result of contacts I made on this trip, I'd say that the trade agreement with Canada—between the United States and Canada—has aroused great attention in other countries, and the general impression appears to be that the operation of that particular agreement is satisfactory to both Canada and our own country."

Secretary Roper has always been "sold" on the question of trade agreements and at the press conference said that in his opinion trade agreements are one of the best ways in which to increase our foreign trade. These agreements, he said, tend toward taking the tariff out of politics and making the foreign trade more permanent and lasting.

CHARGES DECEPTION IN SALE OF RAZOR BLADES

Complaint has been issued against R. H. Macy & Co., New York, because of alleged deception in the sale of razor blades purchased from the Utility Blade Corp., Maplewood, N. J.

The manufacturer, says the complaint, packs the blades at the request of the respondent company in small containers of ten blades each and upon the package prints "Made of English Razor Steel." In advertising its safety razor blades, the complaint sets out, the respondent company makes the following representation:

"We went to Pennsylvania for a new secret-process, high speed steel. In ingots, we took it to England to be rolled to a ribbon, because the British armorers roll steel with unbeatable accuracy. We brought the ribbon reels back from England and had them cut into blade shapes, then honed and stropped with more loving care than we've ever seen put into such a job."

The complaint states that in fact the blades are stock blades made by the Utility Blade Corp., are made for sale and are sold to retailers generally; are not made under the respondent's supervision; are not made

of English razor steel but of steel made and fabricated in the United States, except that the steel is rolled in England. The complaint says that there are other retailers of safety razor blades who purchase blades from the same manufacturer, and from other manufacturers, who do not misrepresent them and that the misrepresentations alleged have the capacity and tendency to divert business to the respondent company from its competitors, to the injury of such competitors.

PREPARES LIST OF FEDERAL PURCHASING OFFICERS

A list of government purchasing officers, both in Washington and in the field, has been prepared by the machinery division of the department of commerce.

Contained also in the pamphlet is a section on government purchasing procedure, with instructions concerning the proper methods of soliciting inquiries and submitting bids.

EMPLOYMENT IN MACHINERY AHEAD OF OTHER INDUSTRIES

The machinery industries did their share in re-employment for the first six months of this year, according to the United States bureau of labor statistics.

The indices for "all industry" employment were, by months in the period: 83, 83.1, 84.1, 85.1, 85.7 and 86, with the 1923-1925 employment average taken at 100. The indices for the machinery manufacturing group were much higher than for "all industry." For the first half of this year employment in the machinery industries was 92.5, 92.6, 93.6, 96.2, 99.1 and 100.3. The machine tool industry employment series for this period was 102.4, 103.6, 104.5, 105.9, 107.8 and 109.8. Since activity in the machine tool industry usually reflects business sentiment for the future, it seems reasonable to assume that industry considers future prospects bright.

REVISION FOR HACKSAW BLADES IS APPROVED

The current revision of simplified practice recommendation R90-29, hacksaw blades, has been accorded the required degree of acceptance by the industry, and is to become effective Oct. 1, according to the division of simplified practice, national bureau of standards, department of commerce. The revised recommendation will be identified as simplified practice recommendation R90-36.

The original recommendation, which became effective July 1, 1929, covered length, width, thickness and number of teeth per inch of tungsten and carbon steel and high-speed blades, hand and power sizes. The current revision lists the length, width, thickness, number of teeth per inch, and other dimensions of

tungsten alloy steel blades, double hardened blades, high speed steel blades, and special alloy blades.

RUSSIA STILL A LIKELY MARKET FOR MACHINERY

Russia is still a great potential market for American machinery exports, according to some government officials who have looked into this angle of Russian trade.

Government figures show that in 1930 we bought \$21,000,000 worth of goods from Russia and shipped more than six times that amount to that country. By 1934, American purchases of Russian products had shrunk to \$12,000,000 and exports from the United States were only \$15,000,000. Of this latter amount \$3,880,000 was for American-made machinery. Russia, in comparison with our other machinery export markets, ranked fourth in 1929, second in 1930, first in 1931, third in 1932, tenth in 1933, seventh in 1934 and fourth last year.

Considering the potential machinery market in this country as a yardstick, the probable potential Russian market for American equipment would seem to be unlimited.

A study of the obsolescence made several years ago in this country showed that 65 per cent of our metal equipment was more than ten years old and that because of postponed replacements during the years 1930 to 1935, the accrued demand for that type of equipment at the end of the period was \$822,500,000. A comparable survey by MAPI indicated an immediate need for \$724,400,000 worth of machine tools. Adding 19 other categories of machinery, among them railroad equipment, which is 71 per cent over ten years old; textile machinery, which is 72 per cent over ten years old, and industrial electrical equipment, which is 63 per cent over ten years old, the theoretical pent-up demand for machinery of all types in American industry seemed to be \$18,500,000,000.

Russian figures point to the fact that coal mining in 1932 was 65 per cent mechanized and 70 per cent the following year; that tractors in agriculture numbered 2560 in 1924, 66,332 in 1930, and 278,413 in 1935; and freight traffic on Russian railroads increased from 156,000,000 tons in 1928 to 317,000,000 tons in 1934.

The statistics administration of the U. S. S. R. state planning commission in its 1935 yearbook states that on Jan. 1, 1934, there were 118,487 metal cutting machines and 25,913 metal shaping machines in the Soviet union. Their own obsolescence records show that on April 10, 1932, 37.4 per cent of the Russian metal cutting machines and 27.4 per cent of their metal shaping machines were over ten years old. This compares with the survey showing 48 per cent of American metal working machinery over ten years old in 1930.

Handling Materials Cheaply Is Offset to Rising Costs

IF IT were possible for one pair of human eyes to follow every step in mining, production, fabrication and manufacture from the time ore, fuel and limestone are taken from the earth until, as steel, they become a part of a finished product, the possessor of those eyes would appreciate the fact that the handling of materials is one of the most important problems confronted by industry. He would be ready to admit that the estimate that the movement and handling of materials account for 22 per cent of the unit labor cost of manufacturing is ultra conservative.

The iron, steel and metalworking branches of industry have been particularly fortunate in the benefits they have realized from progress in materials handling. It is impossible to estimate the tremendous advantages these industries have enjoyed through the combination of nature's contribution of a chain of convenient lakes and man's development of bulk freighters and efficient loading and unloading equipment for raw materials. This remarkable system of transportation on the Great Lakes not only served to lower the cost of iron, steel and subsequent products, but it also provided to American industry an early demonstration of the possibilities in economical methods of materials handling.

Spectacular Handling Technic Is Traditional Characteristic of Metalworking Industries

It probably was a factor in the development of handling equipment for blast furnaces and steelworks. Skip hoists, ore bridges, car dumpers, open-hearth charging machines, ingot strippers and numerous other mechanical aids to iron and steel production all seem integral parts of a spectacular handling technic which the industry had developed at the turn of the century.

Noteworthy progress in materials handling in manufacturing came at a later date. Improvements in intra-plant handling progressed to a climax which was reached when the assembly line became a recognized feature of the automobile industry. This device now is common to many branches of the metalworking industries. It is a necessary facility in the assembly of

stoves, refrigerators, washing machines, and numerous similar products. Today it is an essential part of the equipment required for modern mass production.

But these examples afford a woefully inadequate idea of the extent to which materials handling enters into every phase of industrial activity. The crane family, including everything from gantrys to hoists and tramrails, serves every branch of industry. Conveyors of numerous types; floor trucks, trailers and accessories; and automatic feeders for machines and furnaces all play important parts in the scheme of production and manufacture.

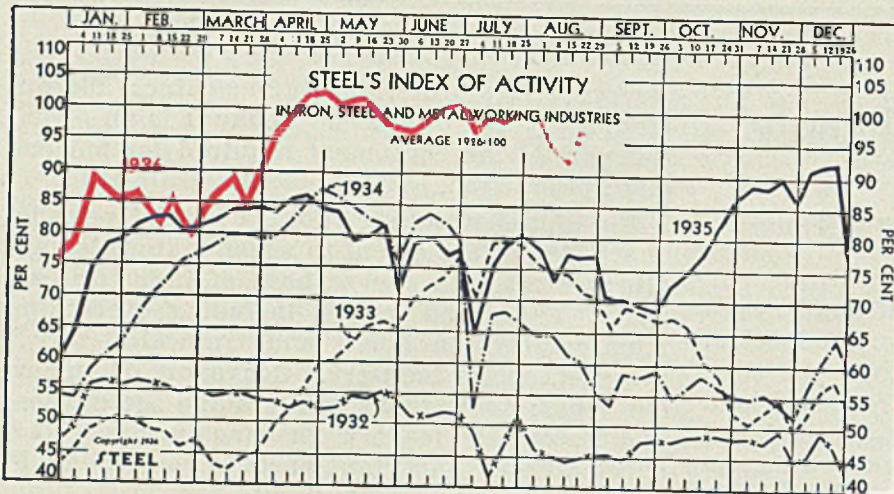
Every Advance in Processes of Manufacture Necessitates Changes in Handling Methods

Although the types of material handling equipment now are clearly defined and their applications seem to be fairly well standardized, it is a mistake to assume that all handling problems have been solved satisfactorily. The requirements of industry never remain static. Every time an advance is made in the development of equipment or methods for production, fabrication or manufacture, new handling problems are introduced. Almost every day witnesses a new challenge to materials handling engineers.

A good example of suddenly imposed changes in handling methods is found in the recent ascendancy of continuous mills for sheets and strip. The advent of the new process involved an entirely new array of materials handling problems. Handling coils instead of flat material required a changed technic and essential modifications in equipment. The rapidity with which the new conditions were met by the introduction and co-ordination of special handling devices is a fine commentary upon the resourcefulness of the materials handling equipment industry.

The present pace of recovery, coupled with the necessity of combating rising production costs, lends a constantly increasing importance to efficient handling methods. In view of this condition, STEEL inaugurates in this issue a department devoted exclusively to materials handling problems. It will permit this publication to place greater emphasis upon this subject and to keep its readers accurately informed of important new developments in this important branch of industrial activity.

THE BUSINESS TREND



STEEL'S index of activity in the iron, steel and metalworking industries gained 5.1 points to 97.7 in the week ending August 22:

Week ending	1936	1935	1934	1933
June 6	98.8	79.3	82.3	89.9
June 13	99.4	80.0	83.6	72.1
June 20	101.0	77.3	81.8	73.9
June 27	101.9	78.4	79.4	77.0
July 4	97.5	64.1	52.3	71.4
July 11	100.9	76.5	67.8	79.1
July 18	99.9	79.8	68.1	79.4
July 25	102.1	80.8	66.4	78.8
Aug. 1	102.5	78.4	64.8	75.9
Aug. 8	98.7	73.4	64.6	74.7
Aug. 15	92.6†	77.5	61.4	74.2
Aug. 22	97.7*	77.0	60.3	71.6

†Revised. *Preliminary.

The index charted above is based upon freight car loadings, electric power output, automobile assemblies (estimated by *Cram's Reports*) and the steelworks operating rate (estimated by STEEL). Average for 1926 equals 100, weighted as follows: Steel rate 40, and car loadings, power output and auto assemblies each 20.

August Witnesses Unusual Off-season Business Records

THE month now drawing to a close stands out as one of the most unusual Augusts in recent industrial history. Ordinarily the eighth month is marked by a seasonal dullness. This year, on the contrary, it has ushered in a number of remarkable business records.

For instance August is the first month in 1936 and the first month since October, 1931, in which revenue freight car loadings have remained above the 700,000 mark weekly. The total number of car loadings for the month will surpass that of any previous month of 1936 by a comfortable margin.

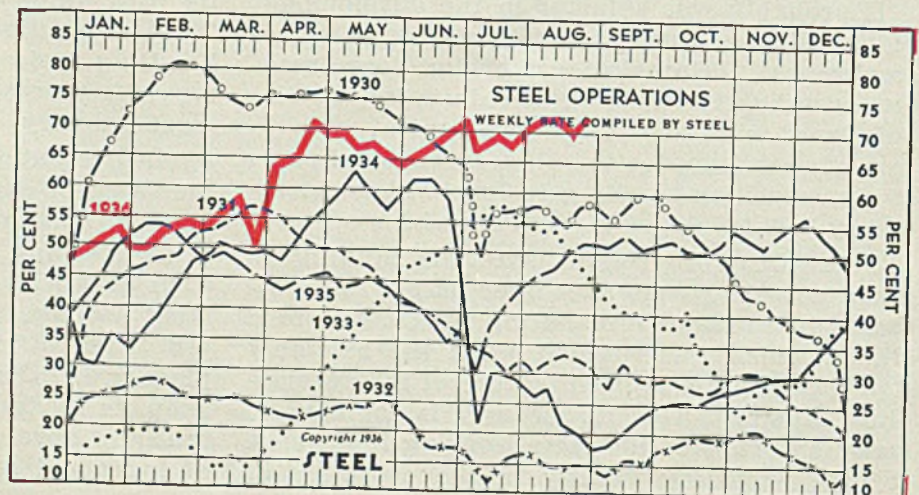
The record of steelworks operations is equally

impressive. August is the first month in the current year in which the rate of operations has remained above the 70 per cent mark. On the basis of estimated rates of operation, the production of steel ingots for August, when announced officially early in September, should establish a new high for 1936.

Weekly electric power output has been establishing new all-time records so frequently that the announcement of a new high has become almost routine. Nevertheless the output of 2,125,502,000 kilowatt-hours in the week ending Aug. 22 is nothing short of phenomenal. Recording weekly production at this high level in the off-peak midsummer season means that STEEL and other charters of power output will be obliged to redraw their charts to accommodate a figure of 2,500,000,000 or more for the annual peak which will come in week ending Dec. 19 or Dec. 26.

Automobile production eased off in mid-Au-

	1936	1935	1934
Aug. 22	72	52.5	20.5
Aug. 15	70.5	51	21.5
Aug. 8	71.5	48	27.5
Aug. 1	71.5	47	26.5
July 25	70.5	45	29.5
July 18	68.5	43	30
July 11	69.5	38	30
July 4	66	31	22
June 27	71.5	37	46
June 20	70.5	35.5	59
June 13	68	39	62
June 6	67	41	62
May 30	66	42.5	60
May 23	66.5	44	57
May 16	68.5	45.5	59
May 9	68.5	44.5	62
May 2	69.5	44	60



gust, but recovered some of the lost ground in the week ending Aug. 22 when resumption of assemblies by Ford and Lincoln helped to lift total output from 56,638 to 73,709. The slackening in automobile activity, heretofore almost immediately reflected in recessions in general industrial activity, this time had no appreciable adverse effect in other lines of business.

This has been due largely to a strong surge of demand from many industries, some of which until recently had been lagging behind in the

Where Business Stands

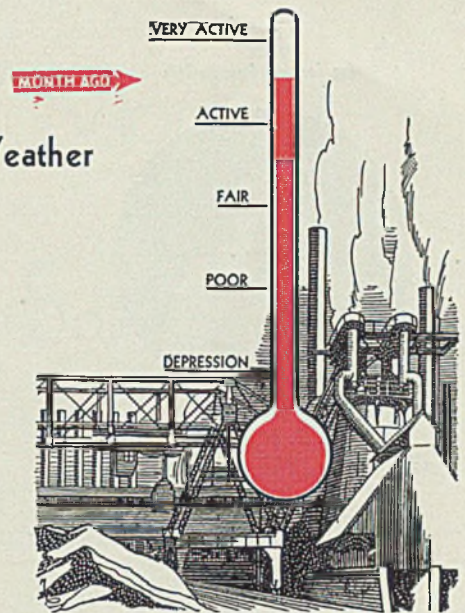
Monthly Averages, 1935=100

	July, 1936	June, 1936	July, 1935
Steel Ingot Output	140.4	142.6	81.1
Pig Iron Output	144.6	150.9	85.0
Freight Movement	116.5	114.8	91.8
Building Construction	185.0	175.9	102.9
Automobile Output	129.5	134.7	99.1
Wholesale Prices		98.6	99.3

march of recovery. While demand today probably is more evenly distributed than at any previous time in the recovery period, there still is room for improvement. Building construction, while up encouragingly, still is far behind other important branches of industrial activity.

Early September may furnish a hint as to

Industrial Weather



TREND:

Steady

the probable trend of business during the remainder of the year. Since the expected summer breathing spell has not materialized, the only interruption for present activity in sight is a let-down over the Labor day holiday. By mid-September the influence of price and demand factors probably will be clearly apparent. On the basis of present indications, these influences should make for an increasingly active business situation throughout the fall and early winter.

The Barometer of Business

Industrial Indicators

	July, 1936	June, 1936	July, 1935
Pig iron output (daily average, tons)	83,404	86,529	49,043
Machine tool index	132.6	124.5	94.7
Finished steel shipments.....	950,851	886,065	547,794
Ingot output (daily average, tons)	150,874	153,263	87,224
Dodge building awards in 37 states (sq. ft.)	38,762,500	36,883,900	21,565,900
Automobile output	451,474	469,355	345,297
Coal output, tons	32,113,000	29,300,000	24,869,000
Business failures, number		773	931
Business failures; liabilities		\$9,177	\$20,446
Cement production, bbls.....		11,273,000	8,021,000
Cotton consumption, bales.....	603,000	556,000	391,771
Car loadings (weekly av.)	706,387	696,753	556,218

Financial Indicators

	July, 1936	June, 1936	July, 1935
25 Industrial stocks	\$220.37	\$201.52	\$171.78
25 Rail stocks	\$39.60	\$36.83	\$26.05
40 Bonds	\$87.27	\$87.07	\$82.36
Bank clearings (000 omitted)		\$26,148,000	\$26,170,000
Commercial paper rate (New York, per cent)....	3/4	3/4	1
*Commercial loans (000 omitted)	\$8,294,000	\$8,396,000	\$7,327,000
Federal Reserve ratio, per cent	79.2	78.7	74.5
Railroad earnings	†\$50,312,580	\$41,842,147	\$34,102,703
Stock sales, New York stock exchange	34,786,729	21,428,377	29,429,387
Bond sales, par value.....	\$281,873,100	\$221,879,500	\$233,990,900

*Leading member banks Federal Reserve System.
†June, May and June, respectively.

Foreign Trade

	July, 1936	June, 1936	July, 1935
Exports	\$178,324,000	\$185,188,000	\$173,371,000
Imports	\$193,409,000	\$192,233,000	\$177,698,000
Gold exports	\$695,000	\$77,000	\$59,000
Gold imports	\$16,074,000	\$277,851,000	\$16,287,000

Commodity Prices

	July, 1936	June, 1936	July, 1935
STEEL'S composite average of 25 iron and steel prices	\$33.49	\$32.79	\$32.44
Bradstreet's index		\$9.85	\$9.92
Wheat, cash (bushel)	\$1.25	\$1.13	\$1.03
Corn, cash (bushel).....	\$1.02	81c	\$1.02
Petroleum, crude (bbl.)....	\$1.04	\$1.04	94c

PRESSED STEEL BATHTUBS —

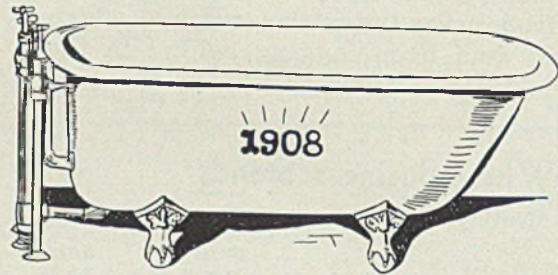
An interview with



C. J. Rodman
Chairman, Alliance Porcelain
Products Co.

By A. H. ALLEN
Engineering Editor

Three Decades of



WHILE recent developments in the manufacture of pressed steel sanitaryware, including steel bathtubs, far overshadow earlier work (STEEL, June 15, p. 19), the idea of the steel bathtub is not new by any means — in fact, it was proposed as early as 1908.

No less a personage than Charles M. Schwab, genial chairman of the board of Bethlehem Steel, wrote in a letter dated April 10, 1908: "In

reference to seamless steel bathtubs, I will say that the proposition as a whole is very interesting to me, as it carries out my opinion and prediction when I first saw the experimental tub produced. At that time I thought a mistake would be made if the proposition was handled in a small way, and have no reason to change my views . . . I should like to know if it is possible for you to get a price from your associates at which they would sell the plants and patents. . . ."

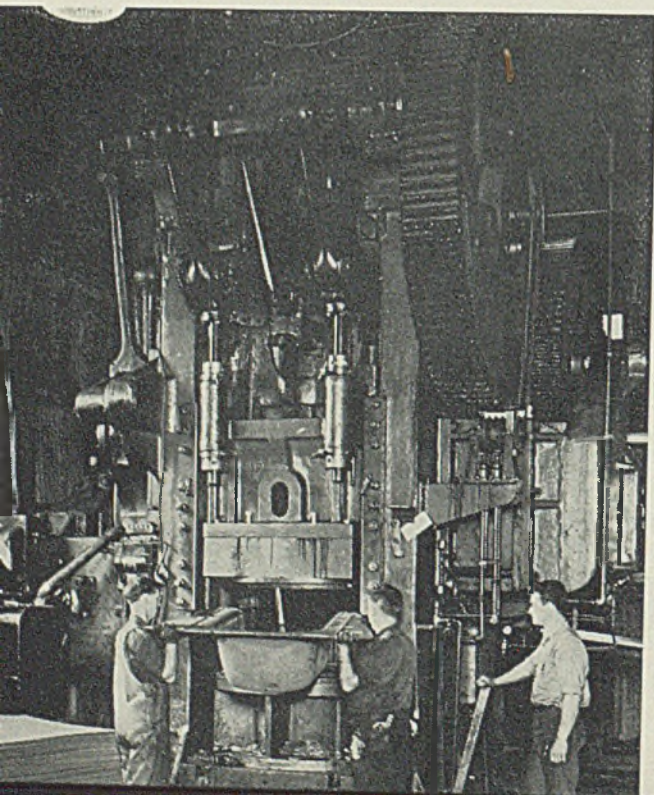
This letter is part of a prospectus

distributed in 1908 by the Seamless Steel Mfg. Co., Detroit, which was organized to manufacture such steel bathtubs, lavatories and other sanitaryware. This company's activities followed the somewhat earlier development of the Seamless Steel Bathtub Co. which patented a porcelain enameled steel tub but which, through lack of sufficient capital, was unable to provide for proper development and turned over plant, equipment, patents and trade relations to the new company. The latter, in its prospectus, termed the project "a revolutionized industry and economical manufacturing proposition."

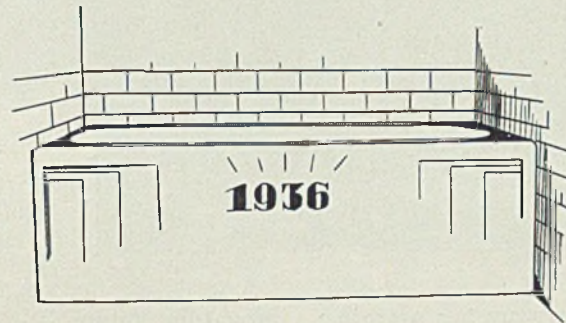
Apparently Mr. Schwab took no further action in acquiring the business, but at least he seemed to recognize the potentialities and probably today can look with "I told you so" satisfaction upon the present development of this industry.

Reverting to some of the historical sidelights, the Seamless Steel organization set up a rather ambitious program of production, involving some 500 tubs per day or about 150,000 yearly. In view of the fact that in 1907 there were only approximately 400,000 porcelain tubs of various descriptions produced and sold in the United States, the above production figure represented about 37½ per cent of yearly consumption at that time. Such an output was estimated to require about 15,000 tons of low-carbon basic open-hearth steel sheets, which today would be reeled out by a modern continuous strip-sheet mill in something under six days or about 17 eight-hour turns.

STAMPING one section of the body of the tub from 12-gage enameling stock. Flexible die designs permit varying contour and size of the tub



Development Climaxed by Modern Enameled Sanitaryware



The company made no hollow claim as to what would be accomplished with steel tubs, for they said, "Using the sanitaryware attained by enameled cast iron manufacturers as a basis for improvement, the inventors of the seamless steel process have succeeded in supplying the market with an article possessing all the advantages of its predecessor, eliminating its ills, and having almost all the unlimited advantages of steel over cast iron." The latter statement of course may be open to serious question, but there is no place here for debate along these lines.

Remember that these claims were advanced some 30 years ago. Surprisingly enough, in general they hold true today. It was claimed a plumber could install a steel tub more easily and at less cost; that the tub had a smooth finish which could be painted if desired, without the expense of grinding or firing; that the steel shell supplied ample strength at less weight, and almost instantly took the temperature of the water admitted to it — a break for any bather who has been shocked by the chilly sides of a bathtub in cool weather.

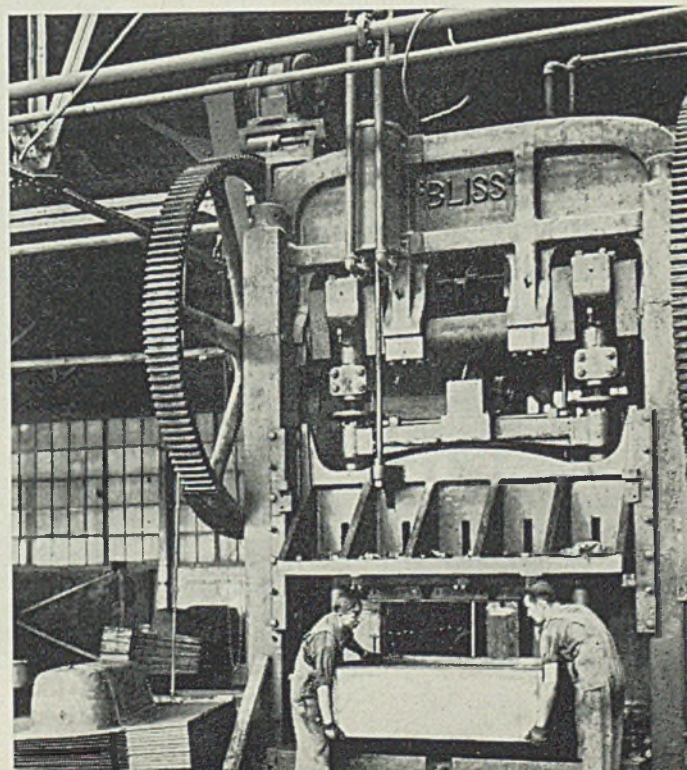
Enamel used in these early tubs was hard, glossy and nonabsorbing. The tub's rolled rim was about 3 inches in diameter and turned under at the edge. The tubs were drawn from a single sheet of steel in three press operations, with annealing between draws. An illustration on page 36 shows presses used in this early work. After forming, the tubs were punched for plumbing connec-

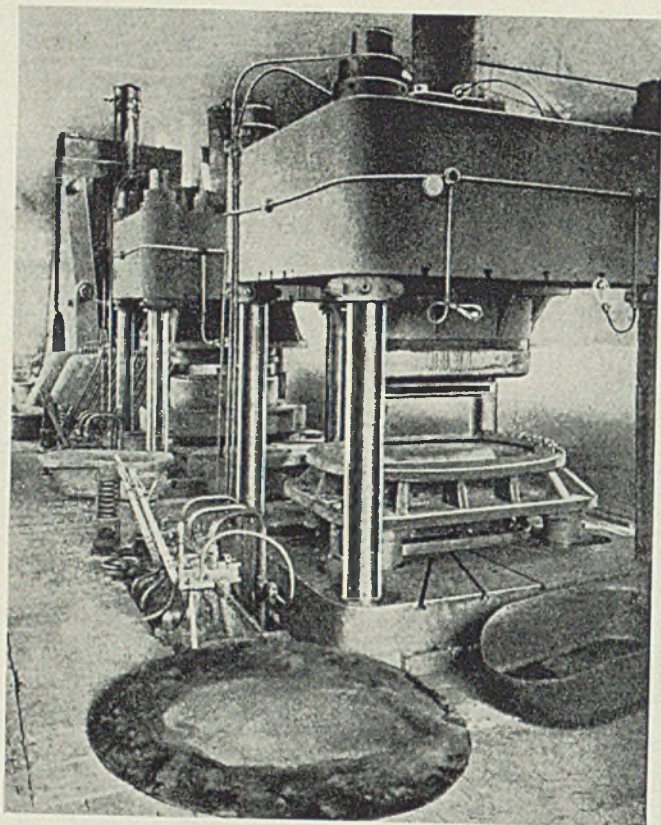
tions, sandblasted, covered with a "slush" coat of enamel, then "dredged" with powdered porcelain enamel on the inner surface and rim, and finally fired. Legs of the tub were bolted to clips which had previously been spot welded in place.

For a time these pioneers in steel bathtub manufacture met with mod-

erate success, but unfortunately were destined to failure, chiefly because of the poor qualities of steel sheets produced at the time, which led to unforeseen difficulties in drawing and enameling. Progress in production of high quality enameling stock, and in the design of efficient machinery and equipment to process the

AFTER the three pieces of the tub are flash welded together, a final press operation bends up edges and folds down the front apron





THESE were the principal presses used in 1908 for forming seamless steel bathtubs. Specimens of the work in its various stages also are shown

into seven or more pieces, welding them together by hand and subsequently enameling them. The tubs were of 19-gage steel and were claimed to be a proved success in the German domestic market and also in some export markets, although few were ever sold to American buyers.

Technical Developments Noted

Next in the development, Mr. Cromwell with the assistance of W. H. Purcell, president of the Alliance Machine Co., organized the Steel Sanitary Co. in Alliance to develop and manufacture what was known as the Cromwell bathtub. Numerous patent applications were made and patents granted on welding together steel sections of a certain shape, subsequently porcelain enameled. Welding was done on a special type of automatic gas welding machine. This work was interrupted by the death of Mr. Cromwell in 1932.

Skipping over 30 years from early experiments of the Seamless Steel Mfg. Co. to the present steel bathtub industry, three important technical developments stand out. First, marked improvement in workability and surface finish of steel sheets; second, perfection of automatic electric welding methods for flash welding of sheets; and third, the building of heavier presses, working to closer limits, and design of suitable dies for the drawing of bathtub shells in which no serious thinning

sheets in recent years has overcome the troubles which beset the first fabricators of steel bathtubs.

Nevertheless, a number of installations of steel tubs were made throughout the United States. For instance, at Hotel Pontchartrain of Detroit, which on Nov. 5, 1908, wrote the Seamless Steel Bathtub Co. that the tubs installed in the hotel were the cause of much favorable comment among guests, adding that "The quality of the enameling is very beautiful and the claim you make that they take the temperature of the water almost instantly owing to the lesser amount of material in the tub is well borne out by experience."

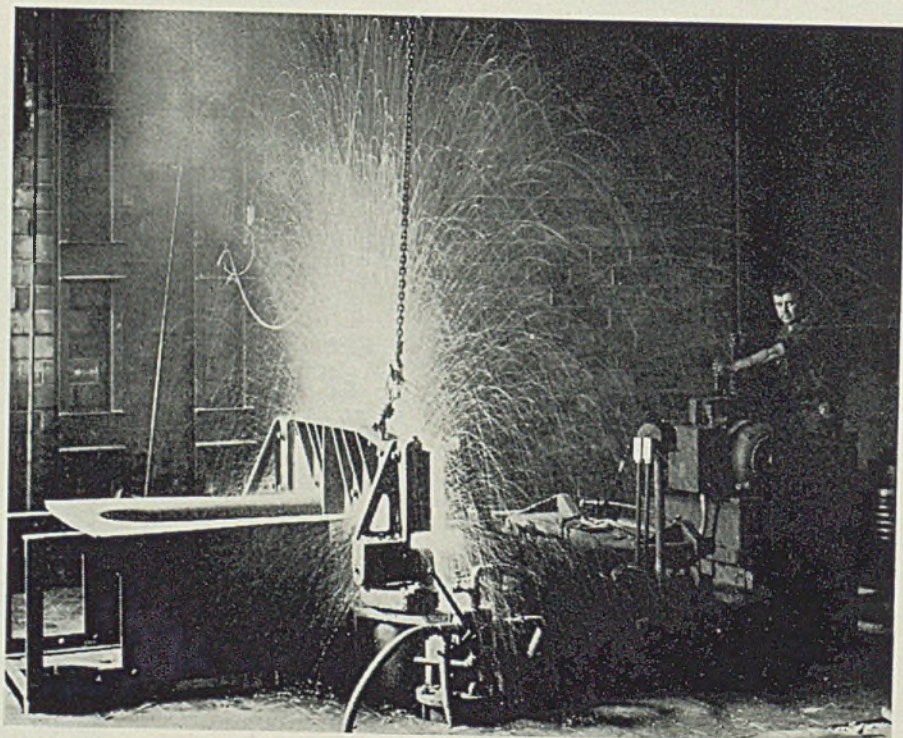
Enamel Has Long Life

The Hotel Rochester in Rochester, N. Y., also installed a number of these early tubs, and in 1928 when they were removed for more modern designs, the 20-year old steel tubs were said to look practically like new, the enamel having suffered no ill effects in service. Numerous physical and chemical tests made on the tubs after they had been taken out of service substantiated many of the claims originally made for them.

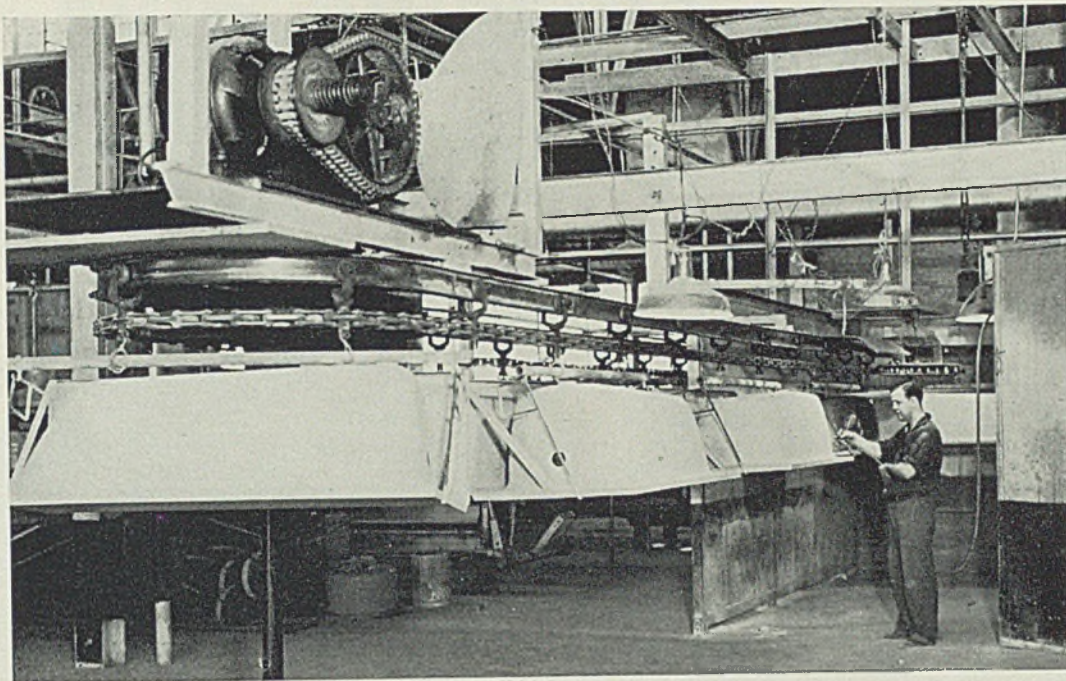
Turn the pages of the years now down to 1924. Early in this year John C. Cromwell, a partner of the old Garrett-Cromwell Engineering Co. which developed a number of rolling mill improvements, and others interested with him conducted an extensive research into American methods of producing porcelain enameled steel ware and saw in it a

promising future. Mr. Cromwell, a former director and stockholder of the Alliance Machine Co., Alliance, O., traveled to Germany subsequently and observed some of the laborious methods used there in the manufacture of roll-rim leg-type steel bathtubs by cutting sheets of steel

FLASH welding machine similar to those used in welding steel automobile bodies joins the three sections of the steel tub



TUBS are moved through the drier on chain conveyors after being sprayed with enamel, prior to firing



down of the metal is found and in which no critical stresses are set up at corners and bends. These three advances hold the key to the present perfection of the pressed steel bathtub.

Changes and improvements in the Cromwell method were made later by C. J. Rodman, W. W. Galbreath and R. M. Chesney who subsequently organized the Alliance Porcelain Products Co. which is now launched on a program of production of a full line of enameled steel sanitaryware. Mr. Rodman is chairman of the company, Mr. Galbreath president, and Mr. Chesney vice president in charge of production. This discussion is concerned mainly with development of the steel bathtub; production methods for other items in the line, such as lavatories and cabinets, are similar in general.

Permits Design Flexibility

The so-called Rodman method of bathtub construction permits flexibility in size and design of the tub, 16 different models being possible with one set of dies. Each tub comprises three pieces — the long, or rear section; a front section, somewhat shorter; and the apron for one side. In the standard or 5-foot size tub, with apron, approximately 40 square feet of 12-gage enameling stock is required for the three component parts. Depth of the tub is 17 inches, width 30 inches and pitch of the bottom 1 inch. Slope of the back varies according to the design specified.

Operations in the assembly of a tub are briefly as follows: First the two main sections are formed on a large press, each in one 42-inch stroke of the press. The apron then is blanked out and the three pieces

set in special fixtures in the flash welding machine. The latter is a specially built unit for this work and is designed so that after the first kickup of the current the pieces being welded are jolted together slightly with just enough upsetting action to insure that only pure metal remains in the weld and any impure or porous material is driven into the bead. Following the welding operation, the bead is ground off flush and the weld peened automatically.

Another press operation is required before enameling work is started. In this final press operation, edges of the tub and apron are kicked up to facilitate installation, and the apron is folded down over one side to the proper degree. The tub is then placed on a rack which accommodates eight units, the rack being carried by monorail through washing, pickling and rinsing tanks and back out to the production floor. The pickling room is separate from the rest of the plant. Over each tank the monorail track is split, permitting lowering of the track with its load so that the latter is completely immersed in the large solution tanks.

Standard enameling practice is used, with the tubs hung on conveyors and given a ground coat of cobalt blue which is dried thoroughly in a return type of oven heated by waste gases from the enameling furnaces. When the ground coat has dried and been fired the first finish coat is applied in special spray booths designed to exhaust all excess enamel through ports in the rear. A gas-fired batch-type enamel furnace is used, with two tubs being fired at a time. Production speed is set at a rate of 150 tubs per 24-hour day per furnace.

After firing of the first coat, :

second finish coat of enamel is sprayed on and fired. This brings total thickness of enamel on the steel to 0.025-0.029-inch, in comparison with the 0.069-0.120-inch coating on cast iron tubs. The 5-foot steel tub weighs only 130 pounds enameled.

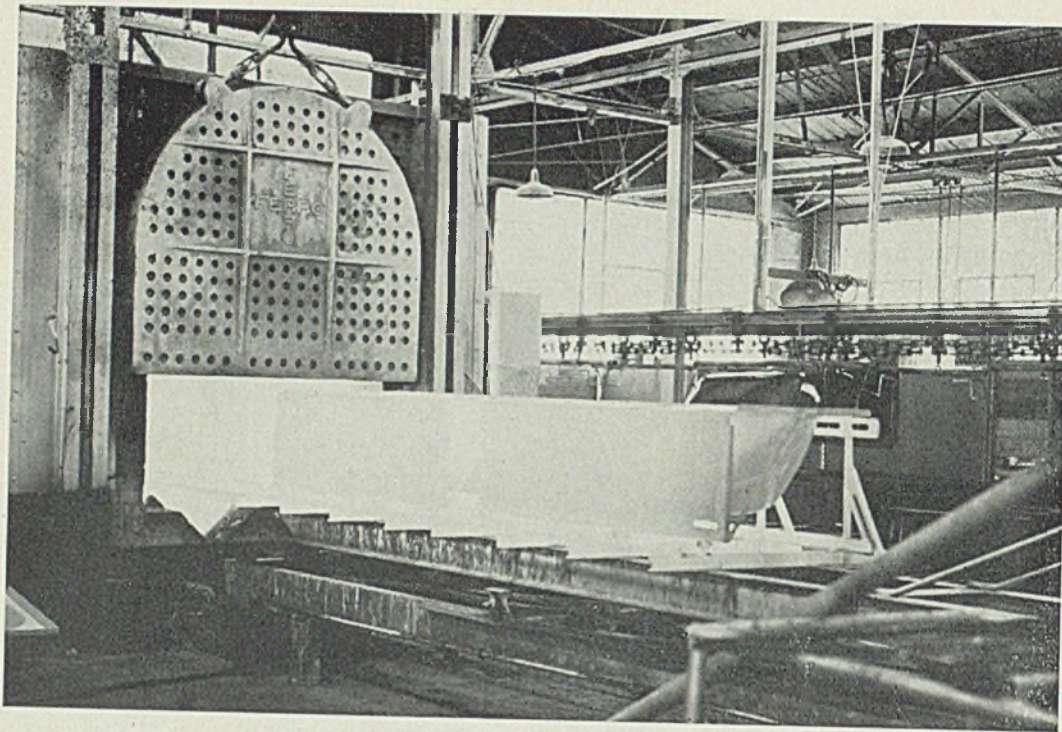
The question may be asked: Why make the tub in two or even three pieces and then go to the expense of welding them together? Especially when it is now possible to do unusually heavy and large-size drawing work as typified by the automobile body. According to Mr. Rodman, there are several answers to this question, but the most important one is in regard to cost savings.

Economies of Welded Design

These savings are headed by appreciable reduction in die costs for the two-piece design, over those for a single-piece tub. Further savings are accounted for by the avoidance of extras charged by steel producers for large-size sheets required in the one-piece design. Scrap losses are not heavy with the welded type of tub, averaging 4 to 5 per cent overall. By this is meant scrap metal from press operations.

Further savings are represented in the reduced burden of capital investment, since the equipment required for fabricating the welded tub is of smaller size than that used in the one-piece style. Against this reduction in press size, of course, is the investment in welding equipment which the two-piece tub requires. Some saving also is possible by virtue of the lesser amount of space required because of easy handling and storage of the composite tub.

The enameled steel tub is surprisingly sturdy. A person can stand in one and jump with full force on



TWO tubs are fired simultaneously in a gas heated enameling furnace. Production is at the rate of 150 tubs per day per furnace

the bottom, without any perceptible flexing of the metal or scratching of the enameled finish. In fact, it is difficult to detect the difference between the steel tub and other types even by pounding on the surface with the fist. Apparently the 12-gage metal and effective enameling methods have been combined to produce a tub with all the rigidity and solidity required by even the most portly of bathers.

It appears that production problems of the steel bathtub have been licked, widespread installation of such equipment now being a matter of consumer acceptance. Naturally, manufacturers well appreciate this, and are planning extensive campaigns to put across merits of the steel bathtub in the eyes of the ultimate user. At least one such merchandising effort already has been started, using extensive advertising space in daily newspapers.

At any rate, after some 30 years of experiment, marked by both success and failure, the development has been brought to new heights by careful designing and careful engineering — not to mention the expenditure of several millions of dollars by far-sighted manufacturers. The future looks bright!

A.S.M.E. Planning Welding Forum

TWELVE technical papers are listed for presentation at the four-session welding symposium to be held by the American Society of Mechanical Engineers at Hotel Cleveland,

Cleveland, Oct. 22-23, during the eighteenth annual National Metal congress and exposition. The program has been arranged in co-operation with the American Welding society which will participate in the morning and afternoon sessions on Oct. 22.

Divisions of the A.S.M.E. which are contributing to the program are the Machine Shop Practice, Iron and Steel, Applied Mechanics, and Petroleum and Process Industries.

The tentative A.S.M.E. program, listing papers and speakers, is as follows:

Thursday, Oct. 22

MORNING

Joint Session with American Welding Society

"Welding Design," by C. H. Jennings, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

"Alloy Steels and Their Weldability," by A. B. Kinzel, Union Carbide & Carbon Research Laboratories Inc., New York.

"Welding of Alloy Steels," by W. L. Warner, Watertown Arsenal, Watertown, Mass.

AFTERNOON

Joint Session with American Welding Society

"Rolled Steel in Machine Construction," by H. G. Marsh, Carnegie Steel Co., Pittsburgh.

"Welding Heavy Machinery and Equipment," by C. A. Wills and F. L. Lindemuth, William B. Pollock Co., Youngstown, O.

Discussions by E. E. Tross, United Engineering & Foundry Co., Youngstown, O., and F. O. Leitzell, Lewis Foundry & Machinery Co., Pittsburgh.

"Discussion of Modern Resistance Welding Developments—Especially Automobiles and Refrigerators," by A. E. Hackett, Thomson-Gibb Electric Welding Co., Detroit.

EVENING

Dinner of American Welding society

with American Society of Mechanical Engineers participating.

Friday, Oct. 23

MORNING

"Application of Copper Alloy Welding," by I. T. Hook, American Brass Co., Ansonia, Conn.

"Welding of Monel Metal and Pure Nickel," by F. A. Flocke, International Co. Inc., New York.

"Welding the Aluminum Alloys," by G. O. Hoglund, Aluminum Co. of America, New Kensington, Pa.

AFTERNOON

"Casting or Welding in Machine Design," by J. L. Brown, industrial motor department, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

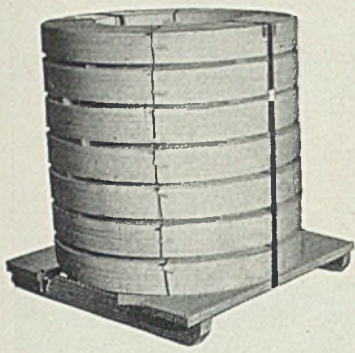
"Radiographic Inspection of Welded Refinery Equipment and Steel Plate Construction," by H. R. Isenburger, St. John X-Ray Service Inc., Long Island City, N. Y.

"Magnaflex Inspection to Locate Faults in Welds."

Gear Makers Add Another Paper to Meeting Program

An additional technical paper, "Eliminating Waste," by T. H. Owens, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has been added to the program for the nineteenth semiannual meeting of the American Gear Manufacturers association, to be held on board the S. S. SEEBREE, sailing from Chicago on the morning of Sept. 8 and arriving in Cleveland on the evening of Sept. 10.

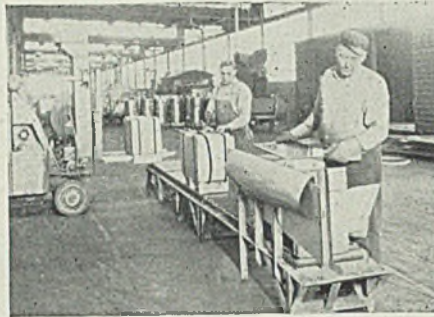
Five papers were scheduled on the tentative program announced in STEEL, Aug. 24, page 38. Aside from the acquisition of the sixth paper, the title of the paper of J. H. Jackson, Pittsburgh Gear & Machine Co., Pittsburgh, has been changed to "Increasing Our Earnings."



SKID SHIPPING provides Safety and Ease of Handling for Acme Superstrip DELIVERIES



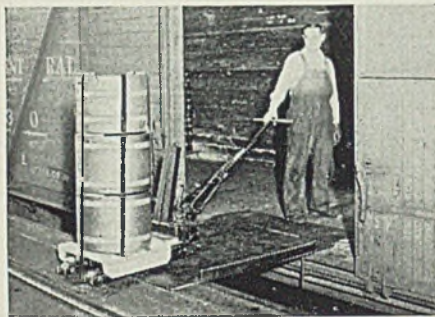
Placing coils of Acme Superstrip on skid — with complete load being pulled away to car.



Cut lengths of high finish cold-rolled Acme Superstrip with protective waterproof paper being packed on skids.



Tiered storage of Skid-Loaded Superstrip — saving space.



Pulling complete load into car — one man.



Motor trucks, too, are loaded in same manner with Skid-Loading.



Skid-Loads tied into one unit in boxcar by Acme Unit-Load method.

● Not only is Acme Superstrip made to fit your particular manufacturing requirements and provide fast, economical production, but—

Acme Superstrip is packed and shipped to facilitate operations in your plant. Strapped to non-returnable wood skids your shipments of Acme Superstrip provide the following advantages:

1. Only 5 to 10 minutes to prepare car for unloading.
2. Unloading costs reduced by as much as \$1 a ton.
3. Skid-Loads can be stored or trucked direct to the fabricating equipment.

4. One man can handle 700 to 3,000 lbs. at a time—10 to 40 times the usual.

Further advantages include: better storage due to uniform packing and use of mechanical stackers; elimination of damage to material from handling; reduction of personal injuries.

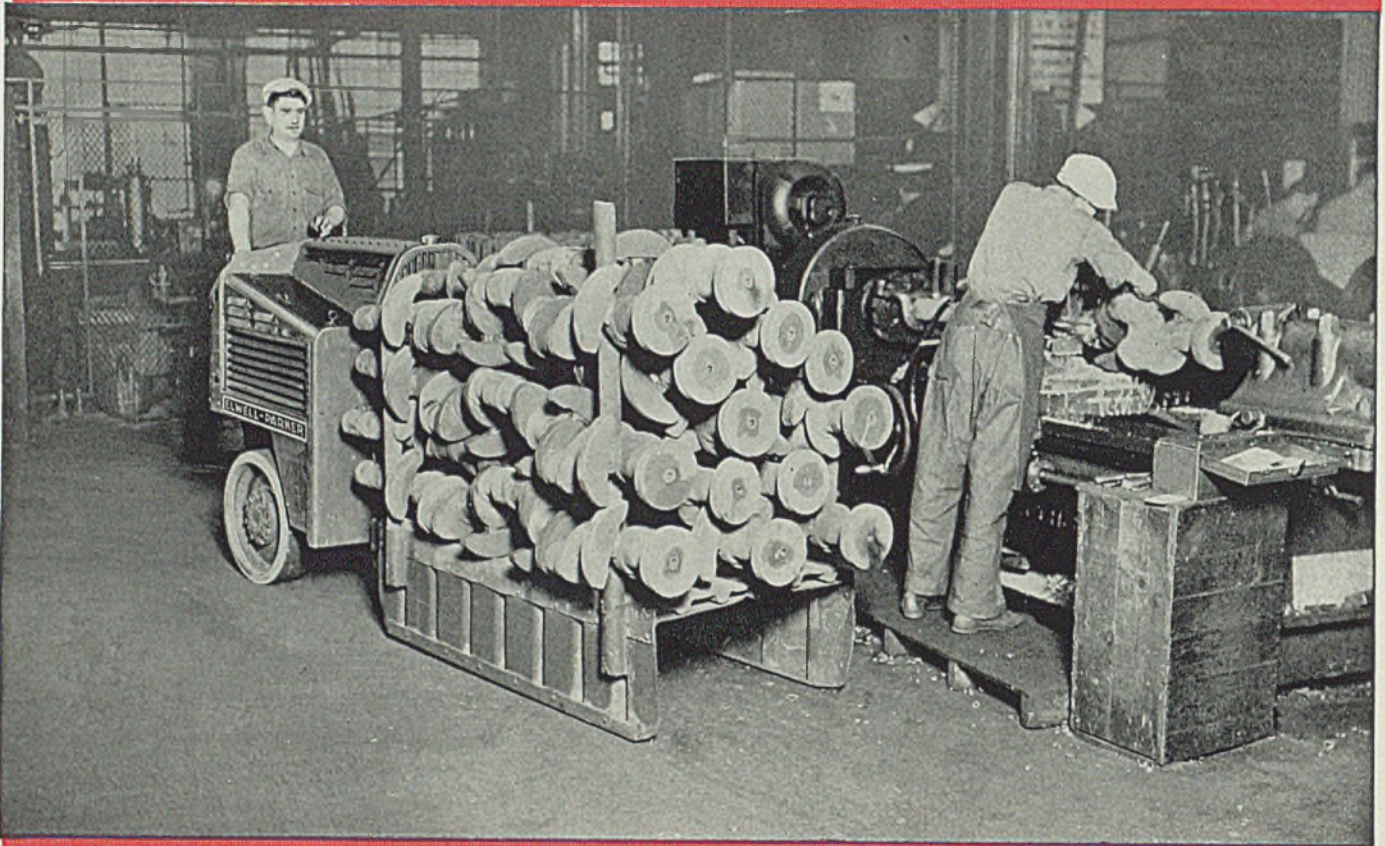
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"Bottlenecks" ARE TO BE OPENED UP, NOT TOLERATED



Elwell-Parker Gas Power Truck delivering load of unmachined crankshafts to lathe. Load is spotted at machine, leaving aisle clear. Net weight of load, 5200 lbs. The Ohio Crankshaft Co. Cleveland, Ohio, owner.

A "BOTTLENECK" is the place in a plant where the flow of goods in process slows down and piles up to no good purpose, while succeeding operations are "starved." Of course that means unreasonably high costs.

You are looking down an aisle crowded with heavy traffic both ways, which *might* be a "bottleneck" but *isn't!*

Even with the heaviest loads to be transported from storage to machines to shipping department, an Elwell-Parker Gas Truck keeps passageways clear 24 hours a day.

"Bottlenecks" are *costly*—usually *preventable*.

Right now, when thousands of plants are at their busiest and profits *should* be the largest in years, there is danger that such slowing down may seriously curtail net earnings.

Are *you* harboring "bottlenecks"—those chiselers of the profits that belong to you? Widely-experienced Elwell-Parker Engineers can show you how to open them up with Truck, Tractor or Crane, *without changing your plant layout*.

Gas, Gas-Electric or Electric power is optional with Elwell-Parker Trucks. The Elwell-Parker Electric Company, 4501 St. Clair Avenue, Cleveland, Ohio.

New Type **ELWELL-PARKER** *Trucks*

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MATERIALS HANDLING

MODESTLY, but with high hopes, the new Materials Handling section makes its initial appearance in this issue of STEEL. Modestly, because the subject to be treated editorially comprises such an important part of all business, and particularly those divisions which are grouped into the steel and metalworking industries, that to do otherwise would be presumption; with high hopes, because the increased activity in American industry has once more placed a premium on those practices which contribute to cost reduction and to the elimination of waste. Materials handling methods and equipment, when properly applied, constitute one of the most powerful weapons for attaining these desirable ends.

It will be the aim to focus the attention of readers on the economic advantages of utilizing materials handling equipment wherever it can be efficiently dovetailed into the production or distribution systems; to keep them posted on how such equipment is being used in various industries; and in general to furnish them with a forum where possibly they may find the answers to their daily handling problems.

Suggestions and advice on how to make this Materials Handling section more valuable will always be welcome. At all times we shall be highly appreciative of co-operation to the end that we may not overlook installations of real merit.—JOHN A. CRONIN.

It's a Never-Ending Job — This Selection and Co-ordination of Handling Equipment

WHEN manufacturing is at low ebb, the problems of materials handling are not bothersome. On the other hand, speed up operations and it is no time at all before handling of materials becomes a major source of worry in countless mills and factories. Therein lies the explanation for the recent renewal of activity among the manufacturers of materials handling equipment. That is why more top executives in the steel and metalworking industries are devoting more personal thought and attention to this phase of operations.

Materials handling today, more than in the past, is the co-ordinator that keeps all other departments of the plant in or out of step. Just as the supply department of an army is the one without which a sustained advance is impossible, so the materials handling system operates for industry. Until it brings up the raw materials to the plant receiving station, production equipment stands idle. Until it distributes those raw materials to the various processing or manufacturing departments, no start can be made in adding other than place value to them. Again, it is essential in taking partly finished materials from operation to operation, in the distribution of the finished parts to the assembly line, in the carrying of the finished goods to storage or to shipping departments, and again out from the shipping departments and into the various ve-

A Look Ahead

IN subsequent issues the Materials Handling section will present articles dealing with materials handling applications in typical steel and metalworking plants throughout the country. Here are just ten of the subjects which will be considered during coming weeks:

- 1—What Time-Study Has Shown One Manufacturer About His Materials Handling Operations
- 2—Recent Application of Conveyors in a Metalworking Plant
- 3—Use of Ram Trucks in Steel Mills
- 4—Speeding Shipments by an Efficient Materials Handling System
- 5—Handling Incoming Materials Efficiently
- 6—Interplant Handling Methods in Modern Industry
- 7—How Cranes, Conveyors, Lift-Trucks and Scales are Co-ordinated in a Typical Operation
- 8—Bulk Handling as It Is Done Today
- 9—Bringing Your Battery-Charging Station Up to Date
- 10—Materials Handling Equipment as a Safety Device

hicles of transportation that intervene between maker and user.

It's a never-ending job, this materials handling. What its exact mathematical relationship to the total cost of manufacturing and distribution is cannot be stated because it differs not only as between one industry and another, but as between one unit in an industry and another in the same industry. Just before the business depression, an engineer who had been employed for many years in metalworking plants expressed the opinion that 22 per cent of the unit labor cost of manufacturing is chargeable to materials handling. Nobody ever publicly disputed the statement. Probably it is conservative. The writer, during many years of association with the materials handling field, was unable to locate many instances in which materials handling costs were known. The reason for this lack of informative cost data is to be found, presumably, in the lack of appreciation, at least until recent years, of the importance of segregating cost of materials handling operations from general production costs.

For several years some leaders of thought on industrial problems have been convinced that the physical distribution of materials—which, after all, is what materials handling in its broadest sense means — has never been accorded its place as a boon to employers and employes alike.

One of the shining examples of

MATERIALS HANDLING

courage and general business acumen during the depression years is the American automobile industry. When skies were darkest, the manufacturers in that group did not lose faith; instead they used the sound doctrine of giving the prospective customer something better for less money and making the appeal as irresistible as possible. This is mentioned because the automobile industry, even during the depression, never lost interest in materials handling departments.

Why? Because the industry found out long ago that to give a better product at a lower price and still remain in business, and to continue to protect both its invested capital and its army of employes, waste must be eliminated, and there are few sources of greater waste than those inherent in materials handling. The reason? Because waste in the latter adds unnecessarily to the cost of production and of distribution; it does not add to the value of the manufactured products — and it is the value added to raw materials in the process of manufacture that constitutes the source of return both to employers and to employes.

Waste Elimination Counts

During the depression years, a study of several hundred organizations which were still successful in business in spite of conditions, indicated that in the vast majority of instances, a large share of the credit could be accorded to plants from which this unnecessary waste had been eliminated.

The steel industry similarly has

been tackling this problem of waste in no uncertain fashion in the past few years. The advance to new methods of continuous production has brought new problems of materials handling. As a consequence, the industry today stands as the leading factor in the adoption of new materials handling methods.

While there are no essentially new classes of materials handling equipment being utilized, there is indication on all sides that the depression period brought many refinements in existing classes and many new applications of established lines. The general trend has been in the direction of attaining the greatest flexibility of the materials handling system and the greatest co-ordination of different classes of equipment. There is a distinct trend toward the use of higher quality machines. Naturally, the change to newer production methods in steel mills has demanded heavier conveyors and lift-trucks than were common in other industries.

Probably the most striking development in any one class of equipment during the past year has been the astonishingly rapid progress in the use of fork trucks and ram trucks. In earlier applications, the lift truck was a transportation device. Today, in addition to service for carrying materials, it also provides the rapid loading and unloading by automatic means, as well as such services as stacking and stowing. This is in line with the requirements of good practice, effecting greater utilization of equipment and

fewer costly periods of waiting while the truck is being loaded and unloaded. Advantages include the reduction in cost of handling and increase in the speed of materials movement.

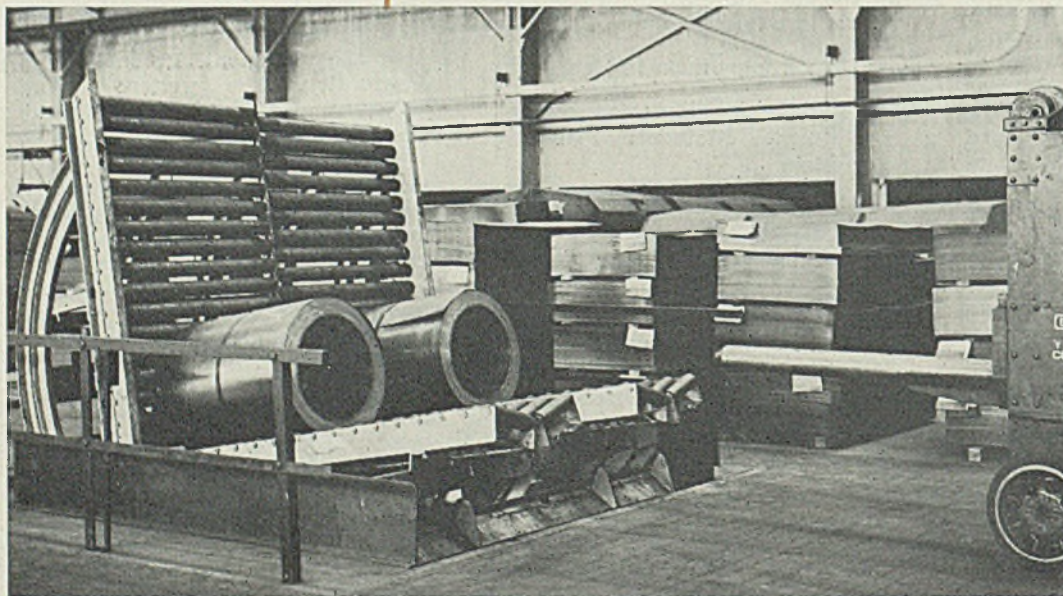
The latter is particularly essential when present-day conditions are studied. Demand for immediate delivery of manufactured products has been in evidence in recent months. This pressure on plants has made the time element a greater factor than ever. There must be a minimum of delay in getting semifinished materials to the next operation. There must be an efficient use of the machinery and tools in the plant; this means that the skilled workers and their expensive machines must have an adequate supply of materials at all times so that the continuity of flow of parts throughout the manufacturing operation shall not be impeded.

Example of Co-ordinated Handling

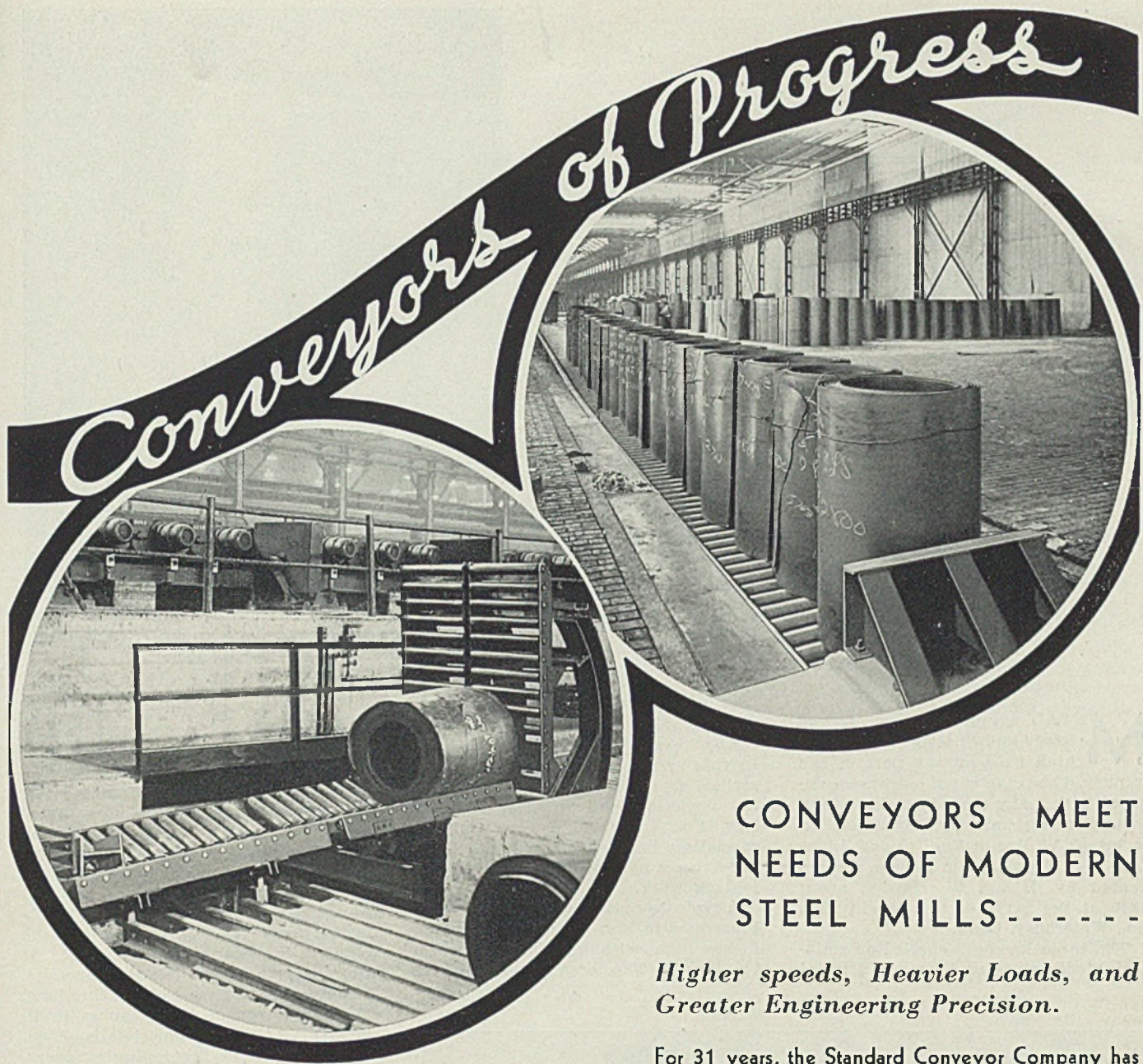
To illustrate the principles of co-ordinated handling found today in the steel industry, the following example is typical in many of the mills today:

An overhead electric traveling crane equipped with electrically controlled magnet deposits coils of strip steel, on end, on a heavy roller conveyor which carries them along to a special coil up-ender which is built into the conveyor at a convenient point. This up-ender automatically deposits the coil on its side in position to travel through a

(Please turn to Page 58)



CO-ORDINATION of a roller conveyor, coil up-ender and an electric industrial ram truck in a steel mill typifies recent innovations in materials handling



Complete information on steel mill conveyor equipment will be available at Booth No. 37, at the Iron and Steel Exposition which is to be held in Detroit, Sept. 22, 23, 24 and 25.

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Fig. 1—Three spun metal sections make up the body of this novelty lamp

METAL spinning is one of the lesser known trades calling for high skill on the part of the spinner. The trade is not old when compared with many other branches of the metalworking industry, for according to Joseph W. Roe in *English and American Tool Builders* the process was invented by Hiram W. Hayden about 1846 at the plant of the Scovill Mfg. Co., Waterbury, Conn.

The trade has been carried on uninterruptedly since that time and metal

spinning shops are to be found in practically every manufacturing center. In this article are illustrated and described a few operations performed at the Artistic Metal Spinning & Lamp Mfg. Co., Cleveland. The company specializes in electric lamps and lighting fixtures and also does considerable jobbing work.

A typical product of this company is illustrated in Fig. 1, a metal lamp 13½ inches high with a base diameter of 4½ inches. The lamp is spun in three

pieces, base, column and column cap. The top and bottom members are copper, nickel plated, while the column is steel, finished in black. Each spun section is formed over a hard maple chuck turned to the contour desired. In some instances, especially on long production runs, steel chucks are used.

An idea of the several steps followed in spinning a simple piece can be obtained from Fig. 2. The part at the right in the foreground is finished. It is a copper cylinder, closed at one end, 3 inches in diameter and 4 inches long. It is spun from a disk 7 inches in diameter. At the extreme left is shown the result of the first spinning operation, the piece having been spun over a chuck the exact shape desired. The next two parts show progressive steps. The third piece has a shoulder at the top which is later cut off with a diamond point tool.

Fig. 3 shows how the spinner holds the tools. He places the spinning tool against a plug inserted in the tool rest. As the illustration shows, he holds the tool under his arm and also against the plug by hand. Thus with the work rotating toward him, he forces the metal to conform to the shape of the chuck. Several spinning tools are shown on the lathe at the right foreground. They are about 24 inches long overall and are made of a good grade of tool steel hardened in water and drawn to a dark straw color.

Lathe speeds for spinning run up to 1700 revolutions per minute, depending on the size of the work. In some instances the parts must be annealed between spinning operations but copper, brass and aluminum can be spun

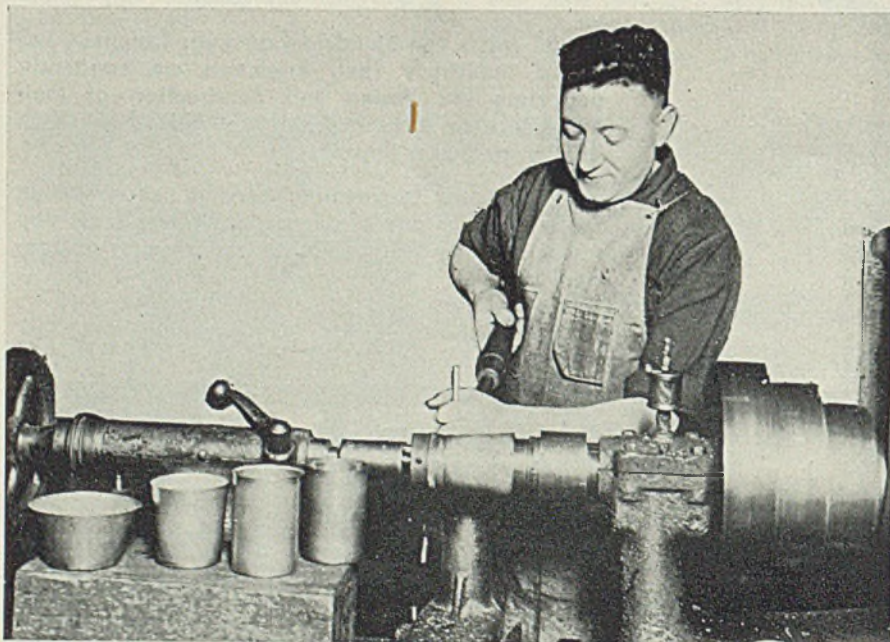


Fig. 2—Metal spinner at work, four pieces in left foreground showing various steps in forming a cylindrical cup

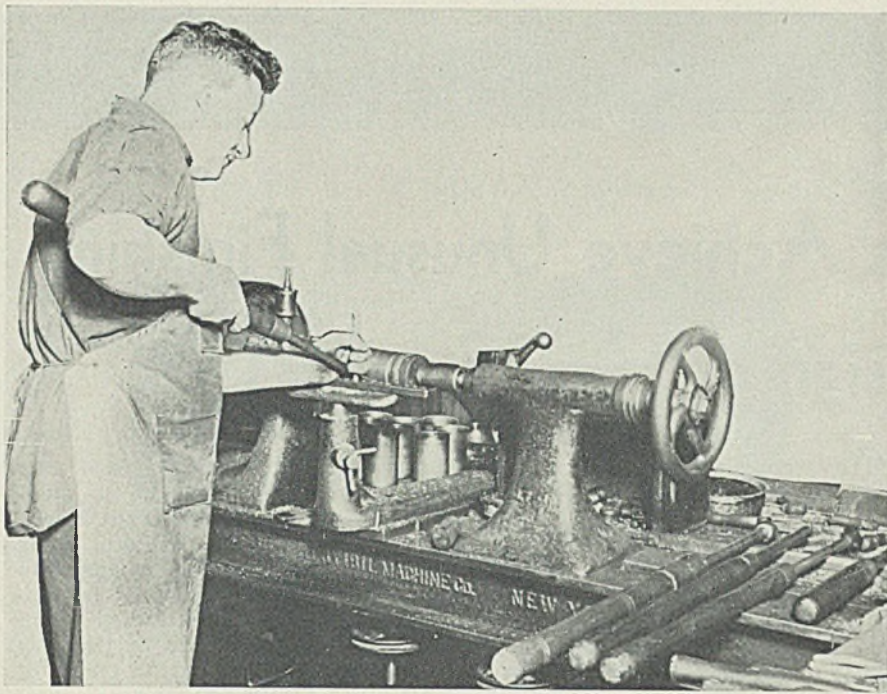


Fig. 3—Spinning tool is placed against a plug inserted in the toolrest. Work rotates toward the operator

generally without annealing. Work as it comes from the spinning lathe is comparatively smooth and generally requires no further surface finishing beyond buffing on muslin wheels.

In Fig. 4 are shown from left to right three steel chucks for spinning the piece shown at the extreme right, a steel part for a lighting fixture 2½ inches high. Attention is called to the centers on the chucks. These fit into depressions punched in the disk from which the part is spun. Centers can be used only in cases where the center portion is to be punched out afterward. In the operation previously described, the spinning of the copper pieces, no center mark is permitted. When it is necessary to spin the parts without center marks the operation is difficult and somewhat dangerous until the disk has been folded partly over the chuck.

While operations herein described are comparatively simple, the field of metal spinning takes in a number of other details which are more complicated. For example, the spinner often rolls over the end of the work into a bead. This is done first by using two spinning tools to force the end of the spun piece outward at an angle from the body of the work. Then by means of a beading tool, which is a small hardened steel roller, the bead previously started is rolled readily into shape.

Another interesting spinning operation is performed on aluminum coffee pots of the type with a neck smaller than the body and rim. In this case the neck is spun into shape over a chuck inserted in the work. Then the bead is rolled in place. To remove the chuck from the finished piece it is necessary to use one made in several pieces so that by removing the center

core the other members which make up the chuck can be collapsed for removal.

Those conversant with the working of sheet metal of course realize that it takes longer to spin a typical part than it does to form it in drawing dies. To make a comparison between the two processes, refer again to Fig. 4. Let it be assumed that this part were to be formed by drawing in dies. At least three sets of punches and dies would be required, and an initial expense of several hundred dollars thus would be involved. On the other hand, the three steel chucks necessary for spinning the part are not expensive. The metal spinner turns these himself directly in his lathe with a hand diamond point tool. Another advantage in favor of the spinning process is that when slight changes are necessary the chucks can be re-turned at slight expense.

Hence the metal spinner is in a po-

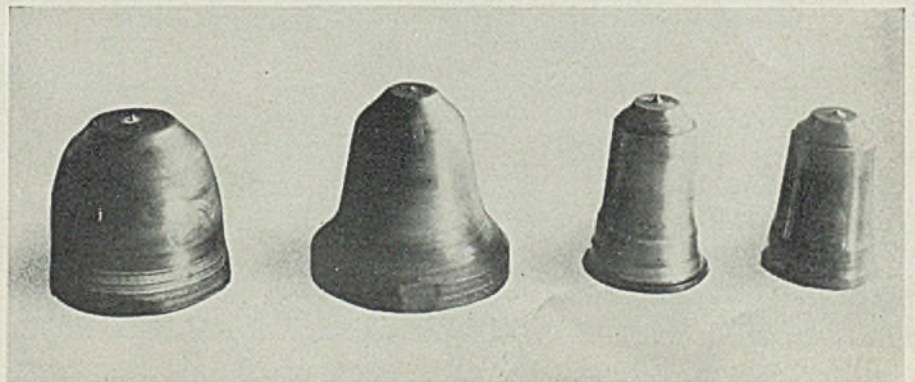


Fig. 4—From left to right, three steel chucks for spinning the piece at the extreme right. Note centers to hold the disk as it is spun over the chuck

sition to furnish anywhere from 100 to 1000 parts or more at a nominal cost. He has no investment in expensive dies or in heavy presses.

Brass, copper, aluminum, and steel from a few thousandths of an inch thick up to 0.030-inch can be spun readily. A comparatively soft metal such as pewter can be spun from stock as thick as 3/32-inch. Gold and silver pieces are spun occasionally, but owing to the comparatively high cost of these materials the work can be entrusted only to a master craftsman. Automatic spinning has been tried in a few instances, but the process never proved economical. For example, steel automobile brake drums, 3/16-inch thick, have been spun to shape, but in working this comparatively thick metal, no economy is shown over drawing in dies, especially when long production runs are considered.

The question often is heard: Who designs the hundreds of small spun lamps and novelties seen in all department stores, novelty shops and electrical supply stores? The answer is that the metal spinner himself designs them as he goes along. He gets an idea for a lamp and proceeds to turn some hard maple chucks over which to spin the parts. He spins a few sample parts and if he does not like the result he keeps on altering chucks until he is satisfied. Of all the lamp designs seen, not one out of a thousand ever was laid out on a drawing board. The metal spinner originated them as he went along, and considering the artistic results, it must be admitted, the average metal spinner has an eye for beauty as well as for business.

Flame Cutting Is the Term

"Flame cutting" is a much better descriptive term of oxyacetylene cutting than "burning." To executives who sometimes know little about the process, the word "burning" immediately brings to mind the thought that the steel has been damaged. They think, of course, as steel men do, of what happens to a charge in the open-hearth furnace when the steel is burned.

Industrial Stylists Achieve Unusual Finishing Effects in Design of High-Speed Train

MODERN trend toward streamlining and increasing efforts by manufacturers to meet competition by use of color and beauty of design have caused industry to call upon art for assistance. No longer do many metal products designed for popular appeal take their first form on the drafting tables of engineering departments but rather on the easels of artists to whom industry has turned. Telephones, household utilities, automobiles, and even railroad trains have felt the influence of this trend and the demand for artistic talent in industry continues to grow daily.

Many Limitations Imposed

Industrial stylists, as these artists are termed, are not permitted the free play of imagination that characterizes the field of pure art. Their ideas must be translatable in terms of steel, concrete, wood, commercial paints, lacquers and varnishes, and other materials of construction. They are also limited to designs and colors of commercial feasibility, which entails a broad engineering knowledge of mechanical limitations and avail-

able materials as well as artistic talent and creative genius.

An interesting example of the part played by industrial stylists and the manner in which desired color effects are achieved by the producers of finishing materials is illustrated in the case of the MERCURY, New York Central Railroad's new seven-car streamlined, Cleveland-Detroit flyer, (STEEL, July 20) in which maximum use is made of the delicate colors which can be obtained with modern lacquers and enamels. To get a complete picture of the manner in which design and production are coordinated, the story was obtained from two sources. First, the designer, Henry Dreyfuss, New York, was asked to describe the train from the artist's standpoint and outline his color schemes. Then Sherwin Williams Co., Cleveland, which supplied the finishing materials, was asked to describe how the materials were selected and applied. The designer's story follows:

In designing this train, Mr. Dreyfuss ignored hitherto standard treatment. In place of conventional combinations such as green plush and

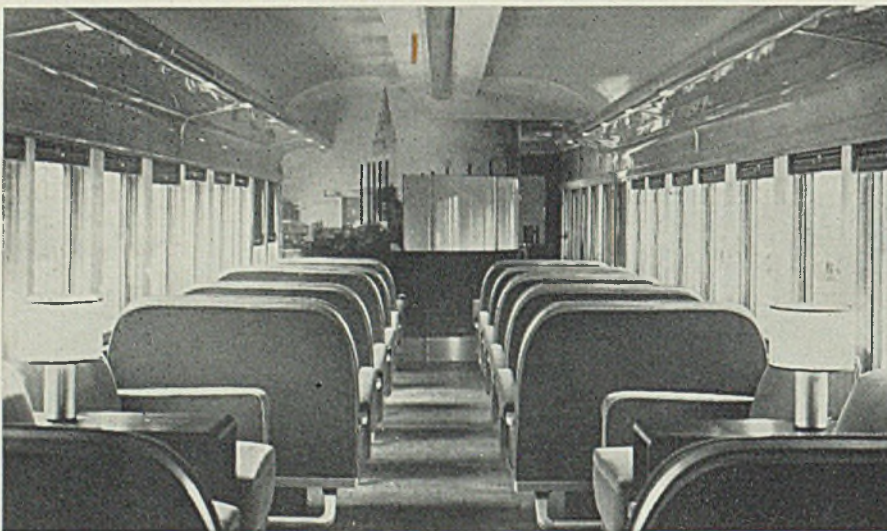
red mahogany, he employed the varied warm colors found in modern fine homes, clubs and hotels. The purpose was to use color psychologically in an attempt to make each car inviting in appearance. The result, though found in a high-speed passenger train, is of interest to manufacturers of metal products requiring ornamental as well as protective treatment, in that it reflects a prevailing trend.

Throughout all the cars warm, rich tones of brown and rust have been contrasted with varied light shades of tan and distinctive gray greens and blues. Much of the upholstery and carpet was specially dyed to provide exactly the right harmony and contrast. The silver of the aluminum trim throughout adds a bright flash. Use of the same colors but in varying shades and hues, and combined in different ways, stamps each car as a part of the MERCURY but gives variety. In other words, Mr. Dreyfuss started with a certain degree of uniformity of treatment to tie up the train as a whole and then created the variations which completely eliminate any tendency toward monotony.

Wide Variety in Materials

Among materials used in the MERCURY for both utilitarian value and decorative effects are cork, flexwood, aluminum, leather, specially woven fabrics, rubber tile, linoleum, glass, mirror, sponge rubber in seats instead of hair and springs, photomurals, and many others. The result is a series of textures and finishes new in train interiors. All materials were selected to provide maximum comfort as well as durability and ease of maintenance.

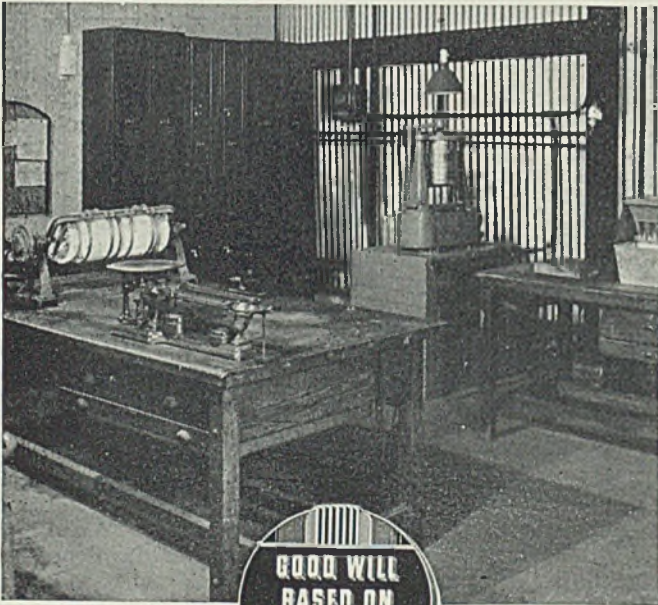
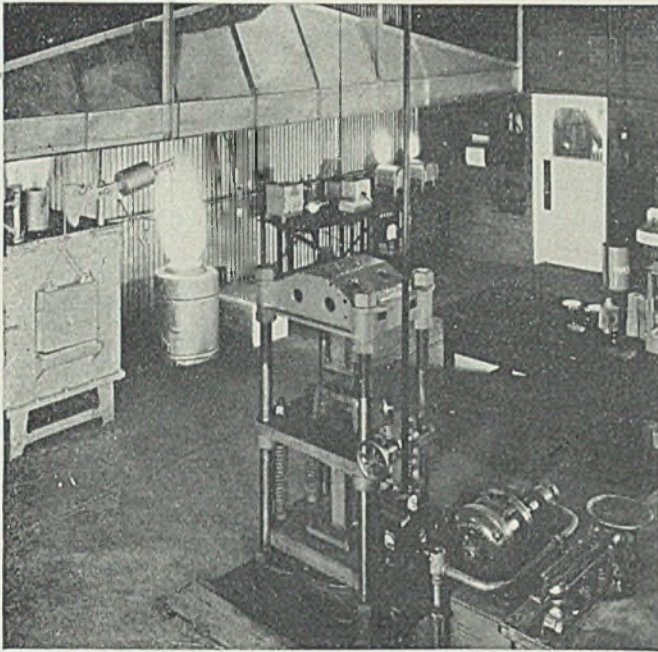
Appearance of the newly designed circular vestibule is assisted by a distinctive color scheme. The floor is covered with blue rubber tile with a light gray rubber tile circular inlay in the middle. Brilliant red is used for the inlaid rubber tile lettering in the gray circle, and the doors are painted in the same red color. A medium gray paint is used for the dado and brushed aluminum



Adorning the ends of the full coach are photomurals of Detroit and Cleveland. Indirect lighting bulbs and conditioned air diffusers are concealed by broad aluminum band stretching length of ceiling, while direct lighting bulbs are placed in louvres mounted in the rolled edges of the baggage racks

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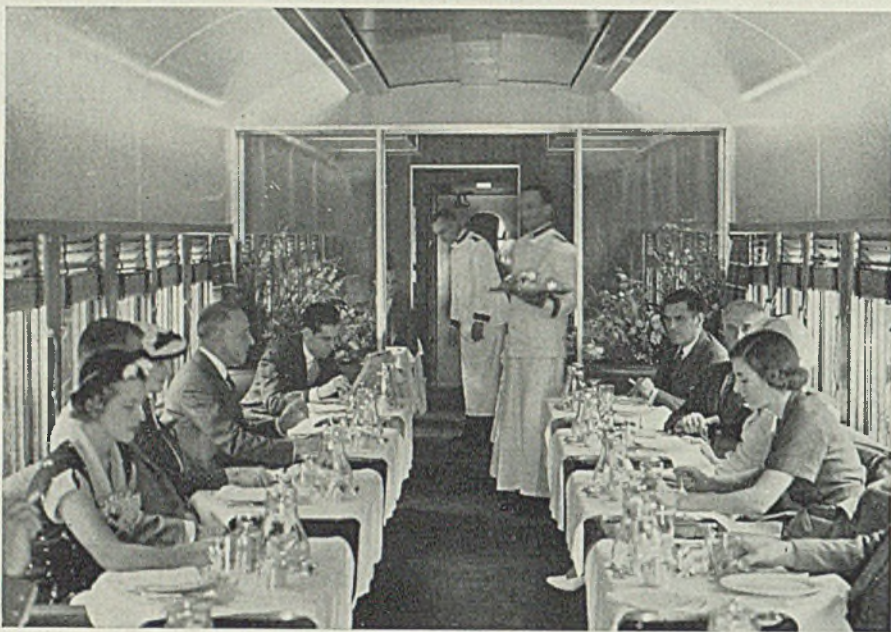
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is used for the walls from the dado to the ceiling and also for the ceiling.

The coaches are done in medium browns, pale tans and metallic blue. The walls are of soft medium browns, the ceilings of a very pale tan which is almost cream. The floors are mottled blue green rubber tile. The seat upholstery is of medium brown, diagonal weave mohair, with tan linen slip covers at top of back. Special built-in chairs are upholstered in blue green diagonal weave mohair. The window treatment comprises the use of blue green shades. Baggage racks and trim are of scratch-brushed aluminum.

Main color scheme in the coach smoking compartment is in green and tan. Walls are of metallic blue ceiling of buckskin tan, floor of dark brown rubber tile. Built-in couches are upholstered in tan, fine grained leather and loose chairs in smooth blue leather. The windows are provided with tan shades and blue curtains of rather coarse weave material with an uneven white and tan course woolen strips. Trim is of scratch-brushed aluminum.

Dining Car in Three Sections

The dining car is broken up into three sections for appearance. Coloring of the two end diners is soft and warm in browns and tans, to give a grille-room atmosphere. Walls are of medium brown walnut flexwood—thinly shaved wood cemented to canvas, in turn cemented to the metal walls—while the paint used is medium brown. Ceilings are of tan and the floors covered with rust colored carpets. Chairs are up-

holstered in coarse grained tan leather. Windows have tan venetian blinds with brown tapes, and window curtains of orange tan color is a coarsely woven uneven horizontal weave, with some light tan brown threads. Trim and molding are scratch-brushed aluminum.

The center diner with banquet type seating—a new idea in trains—is separated from the two end diners by glass partitions between which are flowers. Coloring in the center diner is bright and light in tan and blue, in an attempt to create a cafe atmosphere. Below the window space are built-in smooth, blue leather semi-circular seats. Above the window space the walls are light tan. Ceiling is in light tan with a broad blue stripe in the middle. Floor is covered by a rich rust colored carpet. Windows are provided with brown and tan venetian blinds. Trim is of walnut flexwood and scratch-brushed aluminum.

Deep rich coloring in browns, rust and green and gold predominate in the lounge car. Walls are covered with bleached brown walnut flexwood. The bar is of dark brown butt walnut, with a mirror behind it to create an illusion of width and spaciousness. The ceiling is finished with dull gold metal treated paper and the floor with herringbone stripe rust colored carpet. Chairs and couches are upholstered in smooth grained, blue green and red leather and pebble grained, tan leather. Windows are provided with tan venetian blinds with rust straps and curtains of course woven green fabric with uneven stripes of thick tan and white wool. Trim and molding are scratch-brushed aluminum.

The ceiling immediately above the bar is covered by a semicircle of cream colored paper and the bar is brilliantly lighted, directly by lens fixtures in louvres in the ceiling, and indirectly by bulbs in a suspended semicircular aluminum trough.

In the pullman cars and observation compartment, browns, tans, reds, and greens are the main colors but different shades and materials and combinations were employed to make them distinctive from the other cars. The walls are covered with brown walnut flexwood above a wainscoting of brown cork. Ceiling is finished in tan. Floors are covered by herringbone striped green carpets. Chairs are variously upholstered in light brown and tan checkered material, brown stripe, silky henna and green blue nubby materials. The observation couches are upholstered in pebble grained, tan leather. Windows are provided with green shades and curtains of a coarsely woven, striped material of tans, brown and red. Trim and molding are scratch-brushed aluminum.

The above description covers in a general way the various units comprising this train. There are numerous instances of special treatment. In the middle of the pullman car, for instance, is a semicircular compartment. Its inside walls are covered with brown walnut flexwood, its ceiling is finished in tan. The floor is covered with the same kind of carpet used in the remainder of the car. The upholstery is pebble grained, tan leather. Windows have tan shades and coarsely woven rust colored curtains. Trim and molding are scratch-brushed aluminum. An unusual feature is that the outside wall of the compartment is decorated with a photomural of clouds.

Photomurals Used Effectively

In the same way, photomurals of Cleveland and Detroit, respectively, adorn the ends of the full coach. The women's salons are done in various shades of musk and tan with light rust brown rubber floor tile, and with mirror and aluminum trim. The men's salons are done in rust colors with black and rust rubber tile floor and rust upholstery. Rockwell Kent original lithographs and fine reproductions of Gauguin water colors are used as decorations. Cezanne still life reproductions adorn one end of the diner which is used as a waiting lounge.

Streamline design is employed in a pronounced manner throughout as an aid in enhancing the appearance of the train. One of the spectacular devices is a smoke deflector within the streamlined shell of the locomotive; it causes the smoke to flow off in a straight line about the top of the train roof and past the front of the locomotive and cars and

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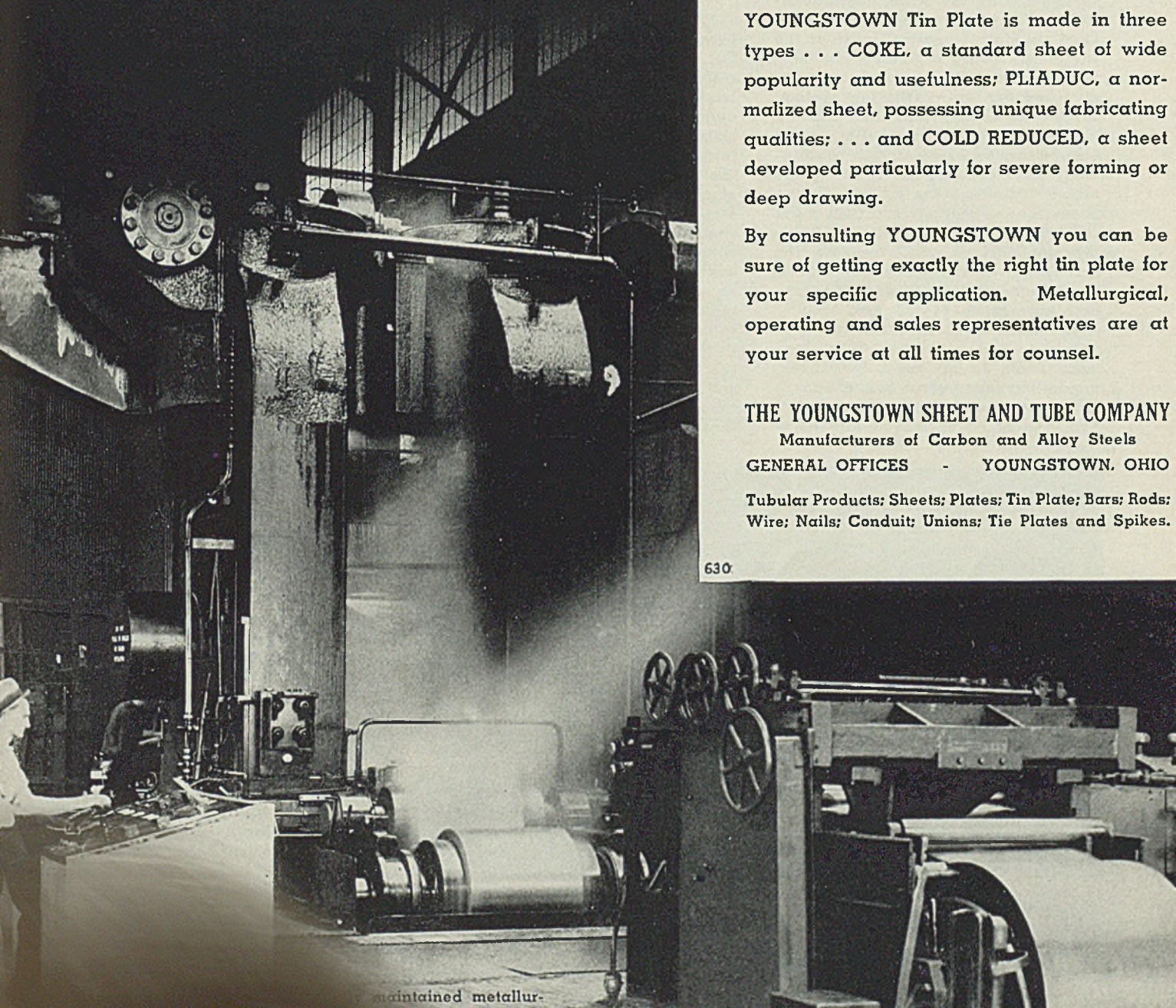
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630.



lated as to present the appearance of an unbroken train. The exterior is painted throughout in a medium gray, this color also being maintained in the rubber buffers which separate the units. Window posts and the outside of the window shades and blinds are aluminum to create a broad stripe running the entire length of the train. This gives a distinctive exterior effect to the train and furthers the impression that all the cars are tied up as a single unit. The locomotive exterior has aluminum and stainless steel trim; steps and handrails are of stainless steel. All lettering is in palladium leaf. The outside appearance is further enhanced by two plaques on each side showing the figure of Mercury; these are of cast aluminum with alumilite finish.

Lighting Is Large Factor

Streamline effects have been incorporated on an extensive scale in the interior design. In the coaches, for instance, indirect general illumination is located in a broad aluminum band running the entire length of the car in the center of the ceiling. This same ceiling section also conceals the air conditioning ventilation system. In the same way, individual reading lamps are placed in louvres in the baggage racks which stretch continuously from one end of the car to the other. The lighting system on the MERCURY was worked out with great care, with the result that the lighting not only is effective from the standpoint of the passenger, but it is a big factor in enhancing the general appearance of the new train.

In selection of the various materials and effects mentioned, provisions were made in all cases to provide maximum passenger comfort and to meet mechanical requirements. Reduction of vibration and noise

through improved cushioning gives increased riding comfort. For example, cork flooring is used for sound deadening qualities and insulation. Heavy carpets are laid over sponge rubber floor cushioning in some cases. Rubber or fabric pads eliminate metallic contacts. With the new telescopic diaphragm closure between car seals, the train starts and stops as a unit, without shocks. The old doorknob struggle, a common irritant to passengers in the past, has been eliminated by using specially designed lever type handles.

While the new train is described as being light weight, this does not imply that any of the new high-yield strength, low alloy steels are used in its construction. The train is built throughout of plain carbon steel and other standard materials. The only noteworthy departure is the use of aluminum for the construction of partitions and other sections in which strength is not a factor.

Material Selection Begins

When the design of the train had been completed, Sherwin Williams Co. was furnished with a plan and color scheme and the problem of selecting the finishing materials was under way. Since the type of materials to be used was largely predetermined by custom and preference, the problem became essentially one of reproducing the desired colors in standard commercial lacquers and enamels. Thus far, the train existed only on paper and coloring was done by means of water colors and an artist's brush. Color chips done in water colors were furnished to the color experts of the Sherwin Williams Co. who were then faced with the problem of reproducing the color and gloss of artist's materials in commercial lacquers and enamels. Only those familiar with the difficulties of

color and gloss control in the manufacture of lacquers and enamels can truly appreciate the difficulties which immediately beset them. They will also appreciate the fact that the first materials submitted for approval were accepted, with the exception of one material in which case it had been decided to change the original color.

The color selected for the exterior of the train was a semi-gloss gray. Lacquer was selected as the finishing medium mainly because it was preferred by the railroad company but also because it lent itself most readily to the production of the desired color and gloss.

Prior to applying the finish the exterior shells of the locomotive and cars were thoroughly cleaned by sandblasting. Following this an oil base primer, suitable for use under lacquers, was applied, after which sufficient surfacer to fill all irregularities was used. The surfacer was then sanded to a uniformly smooth surface with dry sandpaper. Next a lacquer sealer coat was applied to afford the finishing coats a good bond to the surfacer, after which two finish coats of gray lacquer were applied with suitable drying intervals between coats. No clear lacquers or subsequent surface treatments were used.

It was necessary to apply an aluminum lacquer on exterior panel parts to conform with the scratch-brushed aluminum sash. This lacquer was especially developed to match the metallic sash. It also was used on the driving wheels of the locomotive.

Enamels Used in Interior

Enamels have been found to be the most suitable finishing material for the interiors of trains and the practice was continued in the MERCURY. Sherwin-Williams Co. selected semigloss enamel as the most suitable type. Sample lots of this enamel were pigmented to match the color chips, submitted for approval, and accepted.

Since sheet aluminum was used for the interior panels to save weight, it became necessary to use some special surface preparation method to insure a good bond between finish and metal. A proprietary product, "Metal Prep No. 10," manufactured by the Nielson Chemical Co., Detroit, was selected to prepare the surface. This material is applied smoothly to the surface and allowed to stand for a short time, after which it is wiped off. In this manner a slight etch is produced on the aluminum surface which affords the finish a firm bond.

The finishing system used for the interior was one coat of primer followed by two light surfacer coats which were sanded smooth as in the

(Please turn to Page 58)



Semicircular bar in lounge is backed by mirrors to create illusion of width and spaciousness. Brilliant lighting provided directly from lens bulbs is enhanced by indirect lighting from bulbs in suspended aluminum trough. Ceiling plates and trough are of scratch brushed aluminum, with paper finish on ceiling

POWER DRIVES

Compressor Power Units Contain Many Possible Locations of Power Waste

IN MANY metalworking plants the drive to the air compressor is the largest single power consuming unit. Therefore, it presents the greatest opportunity for power saving or power waste. However, providing an efficient motor drive is only the beginning in the economical use of power.

As is usually the case, the waste in power is seldom in the driving unit, unless operated at very low load or much too large for the load, but in the connections and in the driven equipment. This is particularly true of air compressors.

Air compressor losses which increase power consumption are usually caused by worn or faulty operation of the valves, improper piping (generally using pipe lines too small for the amount of air handled) or in leaks. Frequently all of these wastes occur in the same installation and are hidden from observation.

Small Feeders Reduce Pressure

Often complaints of insufficient air or air pressure at the end of the line indicates pipe line feeders too small to handle the air. This may result where an old installation is added to repeatedly with the growth of the plant. In some extreme cases the pressure drop, due to insufficient feeders, amounts to 20 or 25 per cent. This waste can be prevented only by increasing the size and arrangement of the air distribution system, which also takes care of leaks.

Sticking or improper operation of inlet or outlet valves is the most common and expensive power waster and is not easily detected. Leaking valves frequently result from abrasive dusts taken in at the inlet. In one case compressor trouble was traced to the inlet which was located near the cyclones in which the exhaust from grinding and polishing wheels is collected. Sufficient fine dust escaped to require replacement of the valves. Changing the location of the inlet and the addition of an air filter prevented recurrence of the wear.

Synchronous motors on air compressors are not only efficient in operation but also offer an opportunity

to correct the power factor, in some cases having ample capacity to prevent penalty charges.

With the operation and maintenance of the compressor and its drive ordinarily under separate maintenance supervision, a check of the complete installation is seldom made at one time. In many cases the report of the electrical department regarding suspected difficulty with the compressor, as shown by excessive power consumption or motor operating at full load too much of the time, is resented by the other department and treated as an alibi.

Gear Wear

UNDoubtedly poor lubrication is often responsible for excessive wear and faulty operation of gears. This may be due to the use of unsuitable or poor quality lubricant or incorrect application. Of these, proper application is usually of the greater importance because even an unsuitable lubricant will serve, at least partially, if properly applied. Incorrect application often results in no lubricant, or an insufficient quantity, where and when needed.

Sometimes the trouble lies in the installation. Occasionally this may be due to incorrect machining or imperfection in the gears. This seldom occurs with gears manufactured in quantity production unless rebored. There is somewhat greater likelihood of errors in shopmade gears; especially where gears are not a common item in the toolroom. In such cases improper cutting or insufficient clearance may not give an easy running mate to a companion gear.

The greater possibility of trouble lies in improper mounting. This may be due to misalignment of shafts which causes a concentrated load at one end of the gear teeth and results in excessive wear and eventual breakage due to increased spot pressure and crushing out the oil film. Misalignment may be caused by localized heating, a gear housing distorted by unequal stresses created in unequal bolting-up or by an uneven foundation.

All types of gears, except spur

and herringbone, must also be protected against thrust. On motor drives, for example, the float of the motor to its magnetic center in operation results in end thrust on direct connected gears. Therefore, bevel, helical, worm, spiral, hypoid and skew gears are usually placed in separate gear reduction units connected to the motor through a flexible coupling. The ends of the shafts must not be set tight against each other or the thrust is transmitted into the gear unit or bearings.

This indicates the necessity of care in the installation as well as in the operation and servicing of gears and gear units. Also, with so many possible sources of trouble snap judgment as to the probable cause is dangerous.

When laying out a quarter-turn belt drive, a practical rule-of-thumb is to make the distance in feet between the pulleys twice the width of the belt in inches. For example, with a 4-inch belt a minimum center distance of 8 feet is recommended for longer life and greater freedom from operating trouble.

Improper installation is one of the more common causes of antifriction bearing failure. Loosening of the sleeve on the shaft not only ruins the shaft but often the bearings too. This was found to be the only cause of bearing failure in a large installation after a number of years in service.

Belts may be installed so tight as to cause undue load on the bearings, thus increasing power consumption and bearing wear. If a wider belt cannot be installed, try using a special belt, a balanced motor base or some other type of drive which operates at lower tension.

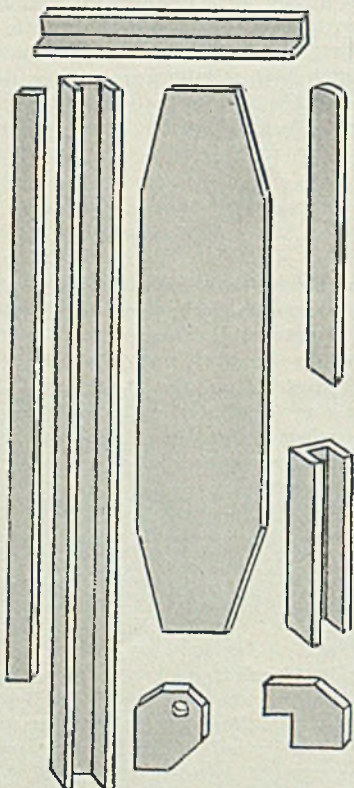
When putting in an emergency makeshift drive, be sure that it is only temporary and not left that way. In many cases temporary installations become permanent troublemakers.

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GUILTY PART
 Now it "**CLICKS**"
 INSTEAD OF CRACKS



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You can start now. Change one part at a time to "*Shield-Arc*" welded construction and thus reduce your costs and improve your product. Simply take standard mill shapes and cut them to proper size, like this—



Then assemble and fuse these shapes into a single unit by "*Shield-Arc*" welding.

The Lincoln man nearby can show you how. He is at your service without obligation. Photo courtesy of The Hilton Steel Co., Warren, Ohio.

THIS frame for a wire-reel truck is built from standard mill shapes by "*Shield-Arc*" welding. Of this construction, it is 100% stronger and 30% lighter than the old design. In addition to the elimination of breakages, the new design has no bolted members to come loose. It is permanently rigid—a solid unit.

No wonder this new "*Shield-Arc*" welded frame has "clicked" with the users and boomed business for its manufacturer.

Why not analyze your product, part by part? The odds are five to one that there is at least one Guilty Part that can be made stronger, lighter and more rigid—made quicker and at less cost—by "*Shield-Arc*" welding. Do you know what it is?

Our men, experienced in problems of this kind can give you valuable assistance in locating Guilty Parts and in reforming them for profits. May we be of service to you? THE LINCOLN ELECTRIC COMPANY, Department Y-300, Cleveland, Ohio. Largest Manufacturers of Arc Welding Equipment in the World.

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LINCOLN
 "SHIELD-ARC" WELDING

Management of Welders

FROM time to time we are called on to straighten out welding departments which have fallen into difficulties. The snarls they develop often involve human relationships rather than the engineering and technique of welding. Situations which appeared desperate have, in many cases, yielded to treatment which involved merely getting some man out of the plant who had "lost his head."

The most successful management of a welding department always is founded on recognition of the fact that welding operators are individuals who want to do good work. If they are not doing good work, it is because they do not know how or management has made grievous blunders in handling them. Two cases of actual experience illustrate these facts.

Problems Involve Personalities

A steel fabricator found himself with welding that was so poor his customers would not accept it. He asked for help to get the shop out of difficulty. We asked the foremen and superintendent to "lay-off" the welders while we were on the job. A big strapping bruiser among the welders seemed to be the center of trouble. The first step was to teach him methods and technique which were new to him. Within an hour he slammed down his tools and headed for the front office to get his money.

His comment was: "Any damned fool who says you can weld that way is crazy." We got to a shop telephone and made it necessary for him to come back two days later for his pay. After cooling off, he came back and became the best operator of the new technique in the shop and was welding foreman within three months. The shop's troubles were over.

A second case was more difficult. Absolutely everything was wrong with the welding in that shop. After listening to everyone call everyone else various kinds of a so-and-so, we found out that a new general manager, who knew nothing of the business, was on the job and was trying to run that shop according to some ratios the bank had given him as guides to good management. The superintendent was in a pitiful condition, bordering on nervous prostration.

We succeeded in getting the general manager to put the responsibil-

IN THIS column, the author, well-known consulting engineer in welding, is given wide latitude in presenting his views. They do not necessarily coincide with those of the editors of STEEL.

ity for the welding on us for a few weeks and send the superintendent on a week's trip out among the sales offices. With the superintendent out of the way, we sat in the office and did nothing for two days. Finally three of the welders came in and said they had a plan for improving the welding. And they did correct the troubles within a week, with only casual suggestions from us.

Welders want to do the right thing. If they know how to do it and are not mishandled, they will come through every time. A simple formula for good management, but often difficult to carry out.

♦ ♦ ♦

Production Welding

THE current political melee has already resulted in numerous high sounding phrases and handy little epithets which prove to be efficient missiles to hurl at the opposition. Among the more recent of these is "economic insanity," which the demagogues have been throwing at the spellbinders and vice versa. However, this is an excellent term when applied to many welding practices.

The term is applicable to any pro-

duction welding operation requiring such a degree of manual skill that only five out of ten employable men can perform it successfully with two weeks' training. Intelligence and judgment are the valuable qualities in a workman, not manual skill. Many arc and gas welding operations on production work require not only a high degree of manual skill, but physical endurance that only a man in his prime can have. These two processes are cited as promising fields for engineers and inventors rather than as horrible examples of "economic insanity."

The evidence is that on production jobs in the automotive and allied industries, the necessity for high manual skill is not tolerated. Yet these industries have the largest number of highly paid welding operators in the country.

A branch of the transportation system of the country requires the highest manual skill in welding operators, yet the wages earned are 30 per cent below those in the automotive group. The average wage of naval construction welding operators, where exceptional manual skill is required, is likewise correspondingly low.

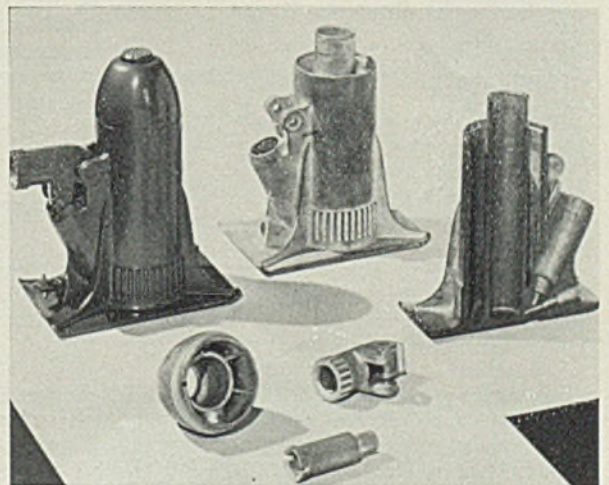
Poor engineering, high manual skill requirement and low wages are "economic insanity."

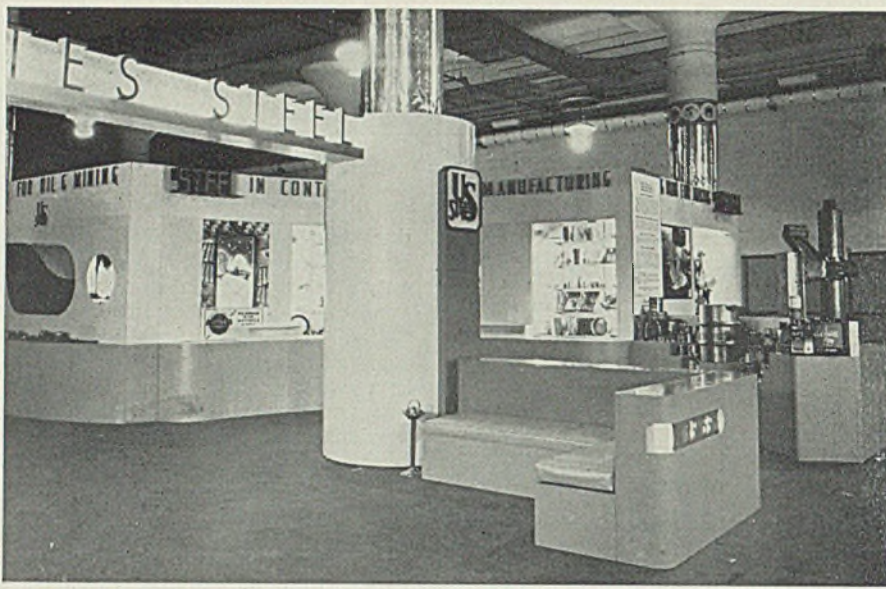
♦ ♦ ♦

A CALIFORNIA SHOP welds 1½-inch thick steel plate at the rate of 8 inches per minute, feeding about 90 inches of ¼ inch diameter rod per minute at 2000 amperes. That is speed in welding.

"Get a Lift" with Die Castings

PURELY utilitarian in design, this hydraulic jack built by the Blackhawk Mfg. Co., Milwaukee, becomes a streamlined unit. Cylinder, reservoir and pump chamber are a single zinc alloy die casting. The sectionalized view of the body shows how parts are reduced to a minimum. Illustration courtesy New Jersey Zinc Co., New York





Here is shown one corner of the United States Steel Corp.'s extensive exhibit which demonstrates how steel is the basic material of many industries. Some 20 subsidiaries of the corporation occupy 6000 square feet of space, the largest area in the iron and steel section

Further Observations at the Great Lakes Exposition

APPROXIMATELY 2,250,000 people have passed through the gates of the Great Lakes exposition in Cleveland in the 63 days it has been open. With attendance rising steadily, the goal of over 4,000,000 by the closing date of Oct. 4 appears within reach.

With the Romance of Iron and Steel the dominant theme of the exposition, metal producing and consuming interests of the Great Lakes area are represented with elaborate exhibits which demonstrate the importance of their industry to the dominant economic position of this expansive region. Even the most casual visitor is captivated by the wide sweep of industrial displays.

STEEL BARS TENSILE TESTED

Because chemistry and metallurgy play an important part in the manufacture of iron and steel, the Romance of Iron and Steel section includes equipment to be found in metallurgical laboratories. In the space devoted to this equipment are to be found bottles of chemicals used in the analysis and microscopic examination of iron and steel. A standard metallographic outfit, manufactured by the Bausch & Lomb Optical Co., Rochester, N. Y., for making photomicrographs, is set up ready for use. A 60,000-pound

Southwark-Emery universal hydraulic testing machine built by the Baldwin-Southwark Corp., Philadelphia, is operated by an attendant in making tensile tests on 1-inch steel bars.

STAINLESS STEEL FOR TRIM

Stainless steel sheet and strip is used to good advantage as decorative effects and trim in the exhibit of the Republic Steel Corp., Cleveland, and its various subsidiary companies. All pillars are encased in mirror-finished sheets of this material. This company has made effective use of overhead space by an enclosure extending to the roof of the exposition hall. Placed at the four corners of this enclosure are eight attractive insets depicting application of the company's steel products in transportation, agriculture, petroleum, construction and the home.

LARGEST LAMP IS LIGHTED

A 50,000-watt lamp, which uses more current than the average lighting load of 600 homes at once, is an attraction for passersby in the Hall of Progress. This lamp, a product of the General Electric Co., Schenectady, N. Y., is of the same type as smaller lamps used in lighting motion picture studios, airports, and other large outdoor areas.

Claimed to be the largest practical lamp in the world, it is similar except in size to the present-day Mazda lamp.

Every 15 minutes some exposition visitor is permitted to operate the magnetic switch which lights the lamp; incidentally, this is the first exposition at which power facilities were adequate to permit operation of the lamp. Current of 400 amperes at 120 volts is required to light it to full brilliancy at which it gives approximately 1,500,000 lumens. This is the equivalent of 2000 60-watt lamps.

The bulb, some 18 inches in diameter, is made of pyrex heat-resisting glass, and is filled with an inert gas. The filament weighs 3 pounds and contains sufficient material to manufacture 150,000 40-watt lamps. Operating temperature is 5600 degrees Fahr., thus intermittent service of only 5 to 10 minutes is recommended. Costing \$500, a lamp of this size has an expected service life of 100 hours.

PLATING IS DEMONSTRATED

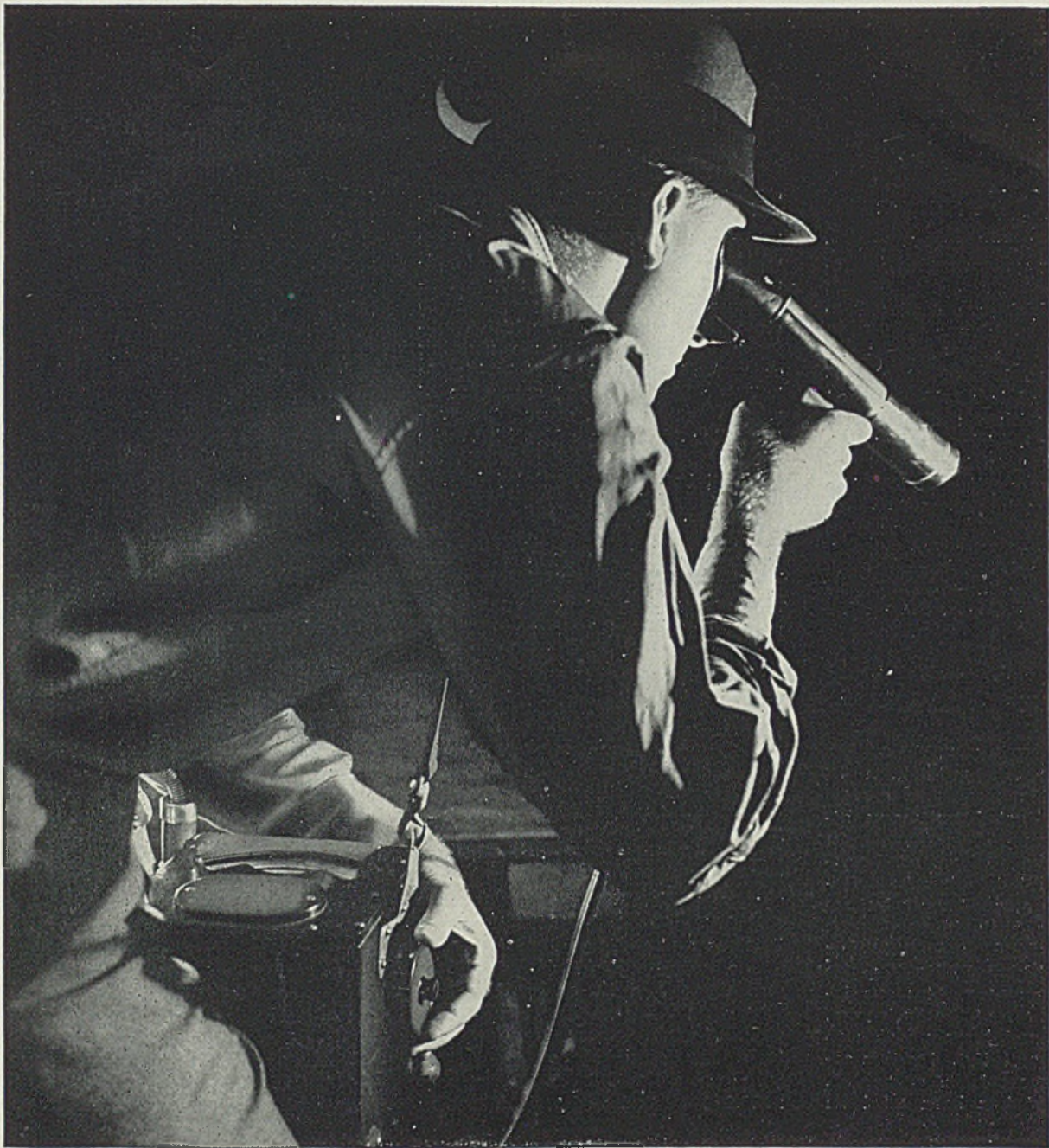
A complete miniature metal finishing plant comprises one section of the exhibit of the Graselli Chemical Co. Inc., Cleveland. This model plant consists of an automatic electroplating unit in operation. Tanks and arms used in the process are visible and show different steps of plating procedure. Also displayed by the company are important chemicals utilized in the iron and steel and automotive industries.

COLOR CONTRASTS IN METAL

The natural colors of copper and brass in a wide array of semifinished and finished products furnish an attractive tone to the extensive exhibit of the Chase Brass & Copper Co., Cleveland. In the center of this display is a 12-foot section of 12-inch diameter copper tube surmounted at the top by the company's winged-horse trademark cut out of copper plate.

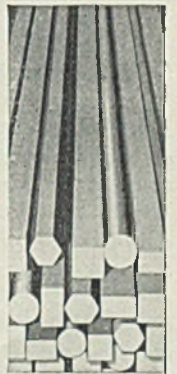
DRAMATIZES USE OF NICKEL

To illustrate the most important applications of nickel in the metals industry, International Nickel Co. Inc., New York, has adopted a unique method of dramatization. A heroic-sized cut-out of a man is shown pouring a ladle of molten nickel. At his feet is a mechanically-operated sign which successively illuminates eight segments captioned "brass and bronze," "aluminum," "chromium," "copper," "steel," "stainless steel," "cast iron," and "iron." Eight miniature men are placed four on each side of the heroic man and each holds a ladle. As segments of the sign become illuminated in turn, one of the small men is made to appear pouring molten nickel into an ingot mold.



Holdin' a tight rein on carbon bar manufacture

FROM its beginning in the open-hearth to the cooling beds the steel for Bethlehem Carbon Bars moves through production under the critical eyes of metallurgical observers. These men, agents of the division metallurgist, guide each step of manufacture in a way to provide the qualities needed for the intended processing and service. They make the steel plant for the time being practically a part of the customer's organization. Melting, pouring, soaking, rolling, inspecting are all carried out with a view to producing Bethlehem Carbon Bars that accurately conform to the needs of the customer.



BETHLEHEM STEEL COMPANY

PROGRESS IN STEELMAKING

Maintains High Pressure

An important and novel feature of the greasing system serving a recently completed strip-sheet mill is the pumps, which are designed to maintain line pressures of 5000 pounds per square inch. Each of four pumps are located at a convenient point and is a self-contained unit equipped with a special barrel handling device. This innovation permits one man to handle all operations in connection with the storage and pumping of grease. The pumps are of a double acting piston type, so arranged that repairs can be made to either set of pistons without interrupting the service of the other, thus insuring continuous operation.

Condensation Is Prevented

Buildings housing cold rolling equipment for the production of deep drawing black plate at a steel plant in the East have many attractive features incorporated in their design. To prevent condensation forming and dripping on material in the process of manufacture insulated roofs with internal sash gutters are provided on the buildings in which the 4-high cold mills, the skin pass mills and motors are located. All sash are of the flush type, made of steel and have no sills to collect cinders and dirt. By this arrangement corrosion is prevented. Aluminum paint has been used on

all interior surfaces in the cold rolling and skin pass buildings to facilitate lighting. Since these buildings will be heated in winter hand-operated shutters, reached by a continuous platform, are provided to close the ventilators, which incidentally have the louvres running crosswise instead of parallel with the building. As an added assurance of proper temperature, corrugated rubber filler has been adjusted to the corrugated metal wall sheet at all top and bottom horizontal joints.

Protects Refractories

Firebrick and other fireclay units may be protected by a new coating which is claimed to withstand in excess of 3000 degrees Fahr. Because it forms a smooth, hard surface with high thermal conductivity, to which clinkers, ashes and soot will not adhere, it increases hot gas velocity, seals cracks preventing infiltration of air and escape of hot gases, will prevent spalling and extend the life of firebrick units. The material is suitable for protecting the sidewalls, bridgewalls, door arches and jambs of steam boiler furnaces; bottoms and walls of forge welding and billet heating furnaces; target and frontwalls in oil-burning furnaces; and, nose ring and walls in powered coal furnaces. It will air dry in a few hours and when heated will form a hard, thin film that will not chip off and will resist abrasion

and mechanical injury to a large extent at lower temperatures.

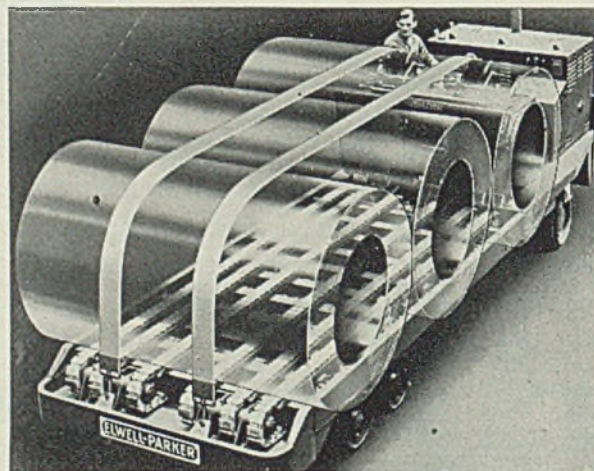
The material is made from a special grade silicon carbide which is converted by the Stowell process into a paste that can be reduced with water and applied by brush or spray to the brick or other units which are to be used for the furnace. Or the refractory can be immersed in a viscid mixture for a certain time. The material also may be applied to the exposed surfaces of furnaces already built. Usually a layer of 0.078-inch will protect the brick from the attack of the highest temperature produced in modern combustion methods. At 2200 degrees Fahr. the coating develops into a silicon carbide glaze that will remain hard and strong at temperatures up to 3300 degrees Fahr.

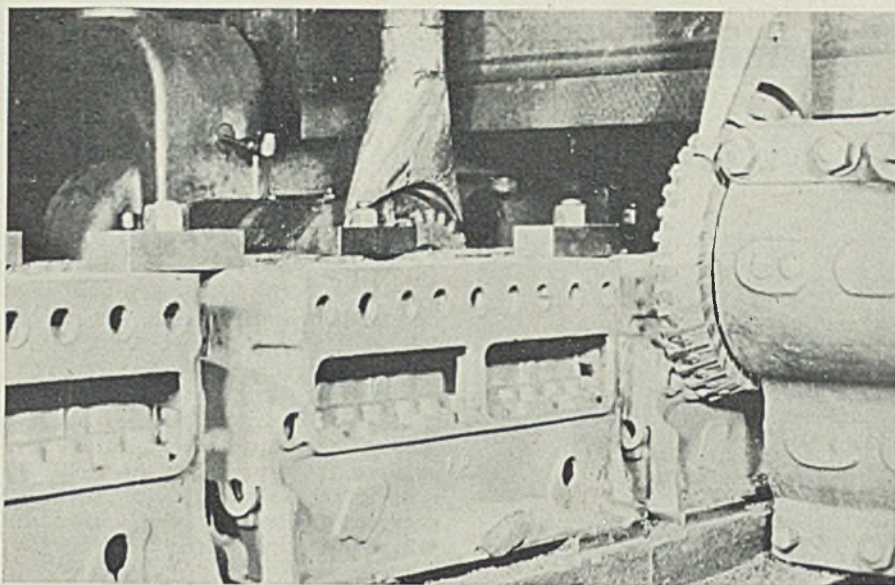
All Chains Are Inspected

Several months have been devoted exclusively by an Ohio steelmaker to an investigation and inspection of chains used through the plant. A record now is kept of each chain from the time it is placed in service, metallic tags being employed for identification purposes. Definite recommendations for the proper and safe use of chains in the various operations in the plant have been made. A schedule of safe loads for chains and suggestions for their safe use have been posted in all departments of the works.

Industrial Truck Equipped with Chain Conveyor Bed Will Handle 20-Ton Loads of Strip

TWO identical gas-electric trucks recently delivered to a manufacturer of strip steel in the Chicago district are of unique design. It is expected their high power will permit transporting coils of broad strip steel at satisfactory speed and low cost. Each truck, as shown in the accompanying illustration, is designed to handle three coils of strip up to 76 inches wide and 60 inches diameter. From the loading station at the continuous pickler the truck will receive the coils on power chain conveyor belts and transport them to the cold rolling department, nearly ½-mile away. The trucks, made by the Elwell-Parker Electric Co., Cleveland, have a capacity of 40,000 pounds, weigh 23,000 pounds each, are 21 feet overall, and can travel 4½ miles per hour under load. They are the first trucks to be equipped with chain loading conveyors, it is claimed, and to have larger overall dimensions than any industrial truck previously manufactured





Milling cutter with inserted blades of new tungsten-cobalt-chromium base alloy being used in milling, cover sides of cylinder blocks on line-type milling machine. Length of cut is $23\frac{1}{8}$ inches; depth $\frac{1}{16}$ to $\frac{1}{8}$ -inch. Actual cutting time: Two blocks in 1 minute and 4 seconds

High-Speed, Intermediate-Cost Cutting Alloy Now Available Nationally

DEVELOPED originally around 1924, Crobalt cutting alloy has just been placed on the market nationally both in bulk and in the form of cutting tools by Michigan Tool Co., Detroit. The material has been in limited production in the Detroit area during the past two years and has found rapidly increasing application, particularly in the automotive industry for lower cost, higher speed cutting of cast irons.

Relatively low cost makes possible manufacture of the entire cutting tool from the metal. This applies particularly to smaller or medium sized tools. However, it is claimed, the alloy is relatively easy to braze onto steel shanks, an important consideration, for instance, in the manufacture of some types of milling cutters.

Crobalt is a nonferrous alloy in which major ingredients—tungsten, cobalt and chromium—are combined with certain other constituents said to provide high cutting efficiency and long life. These latter ingredients are further said to possess the faculty of making possible high standards of uniformity and purity in its manufacture.

The alloy itself is melted in electric furnaces and cast in permanent molds at temperatures of around 3000 degrees Fahr. and it is claimed that its qualities are not affected by cooling after preheating to any tem-

perature below that of its 2800-degree melting point.

Productivity per grind is apparently not affected within a wide range by cutting speed or tool temperature. This makes possible marked stepping up of production per hour without sacrificing tool life.

Michigan Tool Co. has announced that the metal will be available in the form of both standard and special cutting tools, and also in bulk to other manufacturers. In addition to turning, forming, facing tools and the like a complete line of straddle and face-milling cutter blades and assemblies is offered.

Cutting speeds up to three times those conventionally used with high-speed steels are reported to have been found to represent a good average in the cutting of cast irons, the best operating speed depending, of course, upon the character of the material being cut, the type and age of machines, etc.

Grinding of the new tools involves no special problems, it is said. Along this line the only major recommendations made are that in grinding the tool, the wheel should not be allowed to ride on the work and that in dressing wheels the latter should not be trued too smooth with diamonds. A slightly coarser or possibly softer wheel has sometimes been found to provide even easier grinding.

In general, the field the new ma-

terial is designed to cover comprises that wide range between high-speed steels and cemented tungsten carbides—although, of course not offered as a substitute for the latter.

Mining Problems of West To Be Discussed in Denver

A number of addresses of interest are scheduled for presentation at the annual Metal Mining convention and exposition to be held in Denver, Sept. 28-Oct. 3, under auspices of the Western division of the American Mining congress. Both convention and exposition will be in the Civic Auditorium.

A wide variety of mining machinery, equipment and supplies will be shown in the exposition in which more than 50 manufacturers have engaged space. An outstanding phase of the exposition will be the Mineral State exhibit.

Among addresses to be made at the convention are the following:

Monday, Sept. 28

AFTERNOON

- "Bureau of Mines and Metal Mining," by John W. Finch, director, United States bureau of mines.
- "Appraisal of the Social Security Act," by George B. Logan, general counsel, Associated Industries of Missouri.

Tuesday, Sept. 29

MORNING

- "Recent Developments in Western Mining:"
- "Molybdenum," by W. J. Coulter, general manager, Climax Molybdenum Co.
- "Tungsten," by Charles H. Segerstrom, president, Nevada-Massachusetts Co.
- "Potash," by T. M. Kramer, manager, United States Potash Co.
- "Concentration of Minnesota Low-Grade Iron Ore," by Grover J. Holt, chief mining engineer, Butler Bros.
- "Cast Iron Paving Blocks," by E. W. Davis, superintendent of mines, experiment station, University of Minnesota.

Wednesday, Sept. 30

MORNING

- "Practical Problems Under 1936 Revenue Act," by Henry B. Fernald, chairman, national tax committee, American Mining congress.
- "Legal Features of the 1936 Revenue Act," by Ellsworth C. Alvord, tax attorney.
- "Tax Problems of Western Minerals," by John T. Barnett, Denver.

Thursday, Oct. 1

AFTERNOON

- "Government and Industry," to be discussed by R. C. Allen, vice president, Oglebay, Norton & Co.; Charles H. Segerstrom, president, Carson Hill Gold Mining Corp.; Stanley A. Easton, president, Bunker Hill & Sullivan Mining & Concentrating Co.; Eugene McAuliffe, president, Union Pacific Coal Co.; Max Schott, president, Climax Molybdenum Co.; L. E. Geohegan, vice president, Gulf States Steel Co.; Arthur Roeder, president, Colorado Fuel & Iron Corp.; A. E. Bendelari, president, Eagle-Picher Lead Co.

A.I.M.E. Announces Program for Fall Meetings of Divisions in Cleveland

FIVE technical sessions embracing 18 technical papers, a two-session roundtable listing eight discussions and a dinner constitute features of the fall meetings of the Institute of Metals and Iron and Steel divisions of the American Institute of Mining and Metallurgical Engineers to be held in Cleveland, Oct. 20-22, in connection with the eighteenth annual National Metal congress and Exposition.

A.I.M.E. headquarters will be at the Statler hotel and all sessions will be held there except two on Wednesday afternoon, Oct. 21, which will be at Public Auditorium. The annual joint dinner of the two divisions will also be at the Statler with Dr. Albert Sauveur, Gordon McKay professor of metallurgy, Harvard university, Cambridge, Mass., as the principal speaker.

Sessions on blast furnace practice, open-hearth steel plant, and X-ray metallography are scheduled by the Iron and Steel division; the Institute of Metals will devote major attention to aging of metals and constitution of alloy systems. The two divisions participate jointly in the morning and afternoon roundtable on Thursday, Oct. 22, devoted to physical tests and their significance.

In connection with the National Metal exposition the A.I.M.E. will sponsor an exhibit of metallic minerals, common and rare metals, typical uses of metallic elements, a series of charts showing the sources of the more important commercial metals and their flow in world trade, all illustrating the ramifications of the mineral and metal industries.

Tentative program for the meetings has been announced as follows:

Tuesday, Oct. 20

MORNING

Institute of Metals Division
Aging of Metals

- "Aging Phenomena in Silver-Copper Alloys," by Morris Cohen.
- "Age Hardening of Aluminum Alloys," by W. L. Fink and Dana Smith.
- "Precipitation Hardening and Double Aging," by R. H. Harrington.

Iron and Steel Division
Blast Furnace Practice

- "Recovery of Fine Flue Dust from Scrubber Water," by T. B. Counselman.
- "Improvement in Quality of Southern Pig Iron," by J. M. Hassler.
- "Blast Furnace Operation and Refractories," by R. A. Lindgren.
- "Character of Raw Materials for French Blast Furnaces," by Francois Clerf.

NOON

Luncheon meeting of Open Hearth ex-

ecutive committee.

AFTERNOON

Iron and Steel Division
Open-Hearth Steel Plant

- "Factors Affecting Life of Ingot Molds," by W. J. Reagan.
- "Open Hearth Practice," by author to be named.
- "Resume of Reports of British Heterogeneity Committee," by R. C. Good.

Wednesday, Oct. 21

NOON

Luncheon meeting of Institute of Metals executive committee.

AFTERNOON

Institute of Metals Division
Constitution of Alloy Systems

- "Solid Solubility of the Elements of the Periodic Subgroup Vb in Copper," by J. C. Mertz and C. H. Mathewson.
- "Equilibrium Relations in the Ni-Sn System," by William Mikulas, Lars Thomassen and Clair Upthegrove.
- "Equilibrium Relations in Al-Mg-Zn Systems," by W. Fink and L. A. Willey.
- "Note on Etching and Microscopic Identification of Constituents of Cu-Zn Alloys," by J. L. Rodda.

Iron and Steel Division

X-Ray Metallography

- "Preferred Orientation in Hot-Rolled, Low-Carbon Steel," by M. Gensamer and P. A. Vukmanic.
- "Preferred Orientations Produced by Recrystallizing Cold-Rolled Low-Carbon Sheet Steel," by M. Gensamer and B. Lustman.
- "The Parameter of the Gamma Iron Lattice in the Stable and Metastable Solutions of Carbon at High Temperature," by C. Nusbaum and H. A. Schwartz.
- "X-Ray Studies of Constitution of Fe-Si," by E. R. Jette and E. S. Greiner.

EVENING

Dinner of Institute of Metals and Iron and Steel divisions, Statler hotel. Address: "Metallurgical Reminiscences," by Prof. Albert Sauveur.

Thursday, Oct. 22

MORNING

Joint Session of Iron and Steel and Institute of Metals Divisions
Roundtable Discussion of Physical Tests and Their Significance

- "Tensile Testing:"
- "Stress-Strain Relations," by C. H. Gibbons.
- "Yield-Tensile Ratio," by R. L. Hempelin, Jonathan Jones and Rudolph Bernhard.
- "Poisson's Ratio," by Robert W. Vose.
- "Fatigue," by H. F. Moore.

NOON

Luncheon meeting of Iron and Steel division executive committee.

AFTERNOON

Joint Session of Iron and Steel and Institute of Metals Divisions
Roundtable Discussion of Physical Tests and Their Significance (Continued)
"Impact Testing:"
"Transverse Notched Bar Test," by S. L. Hoyt.

- "Tension Impact," by H. C. Mann.
- "Bend Testing;"
- "General Discussion of Bend Tests," by J. R. Townsend.
- "Bend Testing as Applied to Welds," by Wilber B. Miller.

Industrial Stylists Achieve Striking Finish Effects

(Concluded from Page 50)

case of the exterior finish. This was followed in turn by two finish coats of semigloss enamel. The enamels used were of the synthetic type and no wax or clear coats were used to produce abrasion or perspiration resistance. To preserve the delicate tints of these enamels a specially prepared linseed oil soap known as "Flaxsoap" is used for cleaning the cars.

There are a few instances of special treatment which warrant attention. In one case metallic blue tint was required and was attained by a combination of aluminum powder and a standard blue semigloss enamel. To prevent scratch-brushed aluminum surfaces from becoming tarnished, they were protected with two coats of a clear synthetic which was then rubbed to a uniform dull gloss, with pumice and water.

The MERCURY is a typical example of the co-ordination between artistic talent and industrial ingenuity which characterizes the production of modern metal products which depend upon popular appeal for their success, be they railroad trains or cocktail shakers. Not only are the paint and lacquer manufacturers showing their mettle in this new race for beauty but every branch of industry, including metal fabricators, electroplaters, textile producers and others, is co-operating as well.

Materials Handling

(Concluded from Page 42)

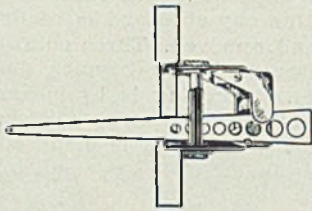
continuous pickling line. Here is co-ordination of crane, magnet and conveyor with a special device for uninterrupted service.

Another typical example of co-ordination is to be found in the joint use of conveyor, up-ender, industrial ram truck and crane. In this application, the coil is delivered on its side in convenient position for immediate pick-up by the ram truck. The long ram is driven into the hole in the coil, the ram is then tilted to an angle to assure safe handling and the machine then transports it to the storage bay for handling by crane and magnet.

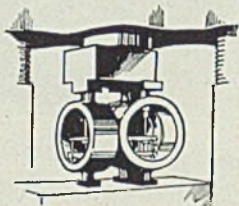
In the selection of the individual classes of materials handling equipment to insure the proper co-ordination, there is seen the adoption of the principle that there is a "place for everything and everything in its place."

In RESEARCH
PRODUCTION
FABRICATION

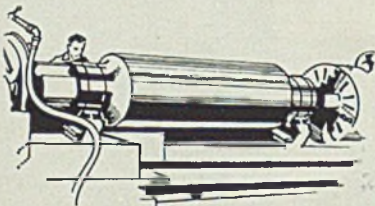
Southwark Serves the Metal Industry



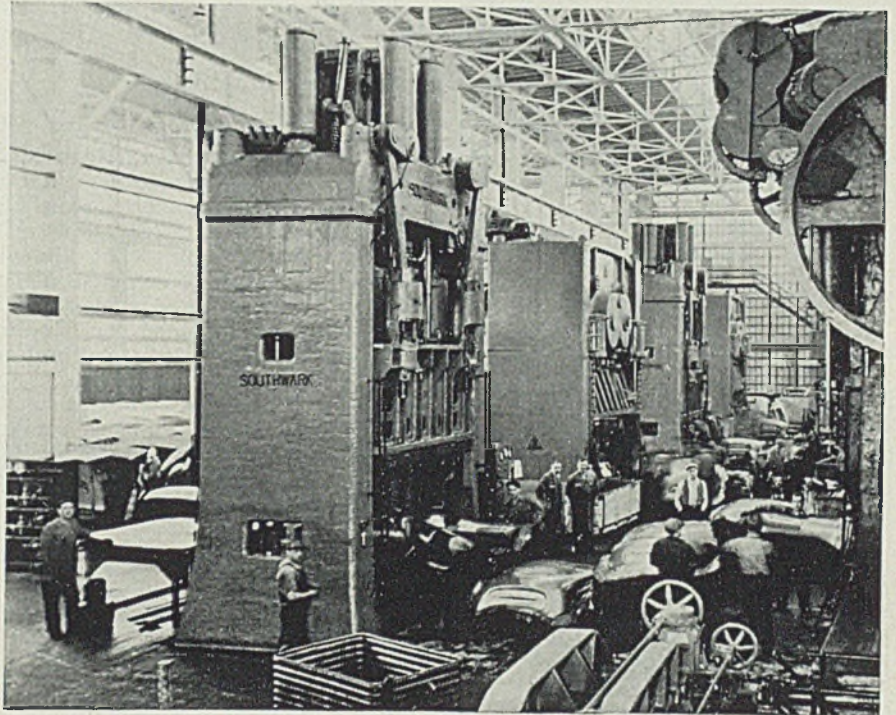
Accurate determination of the deep-drawing characteristics of sheet metal. Southwark offers the means in the Kenyon Extensometer which has been used to define many properties of materials such as yield point, uniform elongation and other values of the plastic range—as well as to determine the relation of yield point elongation to the severity of stretcher strain.



A nation-wide Testing Machine Calibration Service—a unique service for users of testing machines in all parts of the United States—provided by Southwark scientists—supported by Southwark's leadership in this field.



Hydraulic Press Rams, and Rolls for Steel Mills—Southwark grinds from rough forgings or castings to accurately finished products, up to thirty-six inches in diameter and twenty-four feet long.



Southwark Hy-Speed Presses for forming and drawing, etc., are used by the largest manufacturers of automobile bodies, chassis and parts in the world. Reasons: Production capacity equal to or better than competing presses; less expense in design and construction of dies; quicker, more convenient die setting; longer die life; no waste of product in adjustment after die change; uniform pressure on every piece; fewer rejects; fewer returns for repressing; less tearing of metal in sharp changes in contour; no possibility of machine breakdown due to incorrect die setting. Ask for bulletin No. 127.

BALDWIN-SOUTHWARK CORP.

SOUTHWARK DIVISION • PHILADELPHIA

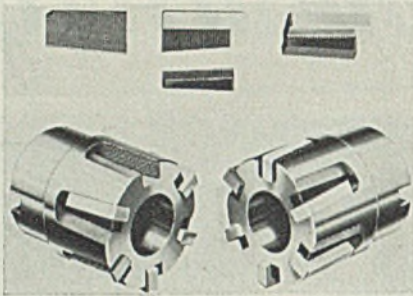
Pacific Coast Representatives — Pelton Water Wheel Co., San Francisco



NEW EQUIPMENT

Serrated Tools—

Kelly Reamer Co., 3775 Ridge road, Cleveland, announces a new line of serrated tools having three



Kelly serrated tools supplied for finishing or roughing

component parts—body, blades and wedges. The body is made of alloy steel, carburized, hardened and drawn. The blades may be supplied in cobalt high-speed steel, Stellite J-metal or cemented carbide types. The wedges are of heat treated alloy steel. The blade and wedge re-

ceiving slots are tapered longitudinally. The rear surface of the blade is serrated longitudinally for engagement with matching serrations in the slot. The opposite side of the blade is equipped with radial serrations for engagement with matching serrations on the wedge. Models varying in size from 1½ inches to 6 inches are available in either straight or taper hole, roughing or finishing styles.

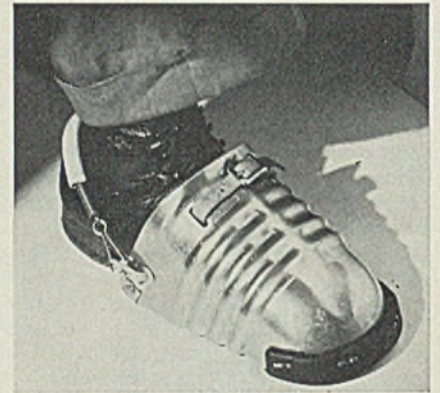
Welding Machine—

Eisler Engineering Co., 740-770 South Thirteenth street, Newark, N. J., has recently introduced a line of large press-type electric resistance welding machines. Press-type welders are available up to 250 kilovolt-amperes and can be supplied in foot, motor or air operated models. These machines are intended for handling various thicknesses of metal and are made in throat depths from 16 inches to 48 inches. They are available with speed changes ranging from 30 to 100 welds per minute. One of the features most important to the manufacturer is that the weld-

er is a self-contained unit, the timer, contactor and switch all being mounted in the welder.

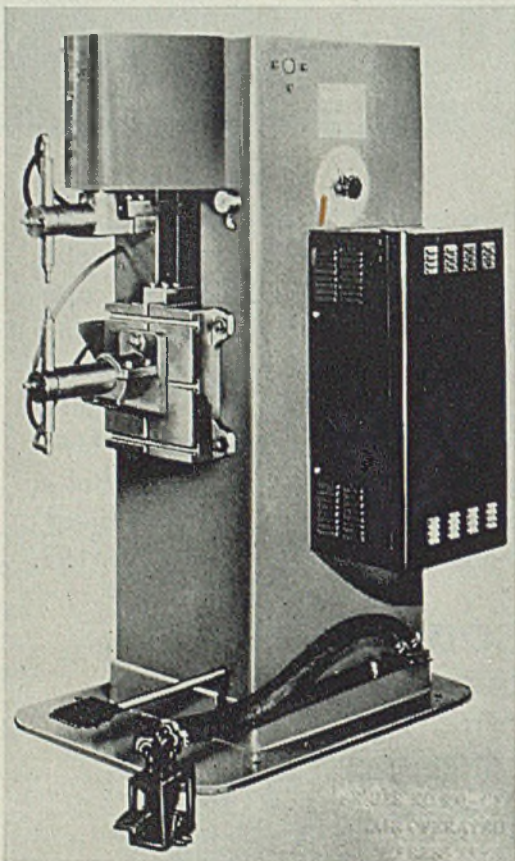
Foot Guard—

Ellwood Safety Appliance Co., 209 Fountain avenue, Ellwood City, Pa., announces a safety device known as the Sankey foot guard, designed for use in industries where it is necessary to cope with foot hazards. The device fits any shoe and is easily applied and removed. Three point contact assures better balance and a snug fit. Fastening is by means of adjustable cowhide strap and spring fastener. The guard is made either of aluminum alloy or galvanized



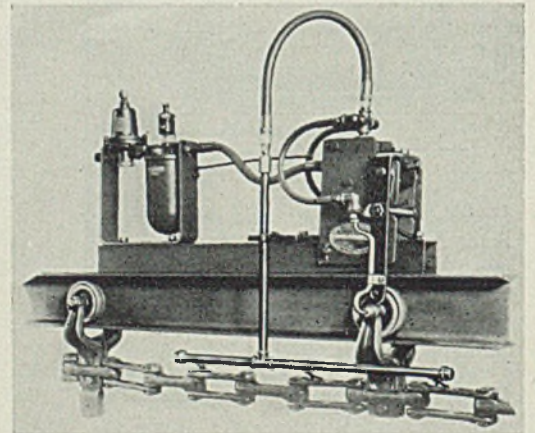
Sankey foot guard which is built of either aluminum alloy or corrugated steel

steel, corrugated for resistance to impact. Guillotine tests show the guard to be effective under impacts of 500 foot-pounds. Heavier blows have struck the guard glancing



Left—Press type electric resistance welding machine announced by the Eisler Engineering Co. which is a self-contained unit

Right—Fauver automatic oiler for conveyor trolley wheel bearings and chain links. Description on page 61



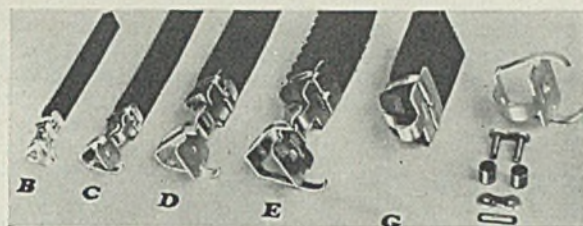
blows with no damage to the foot and little to the guard. A single aluminum alloy guard weighs 12 ounces.

♦ ♦ ♦

Trolley Oiler—

J. N. Fauver Co., 91 Selden avenue, Detroit, announces a device which automatically applies lubrication in the form of an oil fog to conveyor trolley wheel bearings as they pass a given point, and in the same manner lubricates pins in the chain links. The self contained assembly is mounted on the conveyor rail at any convenient point, and air pressure from the plant air line is fed through a regulating valve to form a fine mist with oil which is dropped in the stream. The trolley

Shippert roller bearing coupler for V-belts



which is particularly suitable for the grinding and polishing of bronze tablets, aluminum castings, brass castings and the like. Flat work up to 46 inches long and 26 inches wide can be supported directly on the table and ground or polished at one setting, and wider work can be ground and polished by setting the material over on the table. The table will lower to allow a height

system of the plant where the grinder is installed.

♦ ♦ ♦

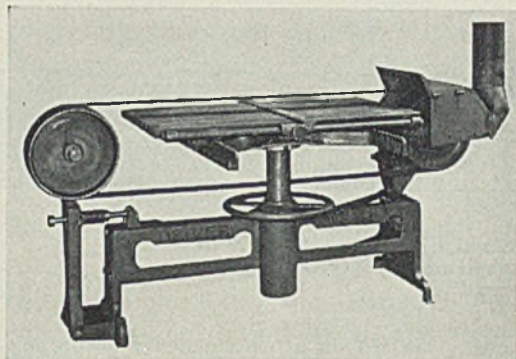
Thermometer Tubing—

Taylor Instrument Cos., Rochester, N. Y., announce a new tubing for use in mercury-in-glass thermometers which has twice the angle of vision of conventional tubing, making readings with both eyes simultaneously possible at normal distances. Triple lens construction gathers more light and makes the mercury column stand out in greater relief. Empty bore reflections are reduced by the new lens angle and by extension of the opaque background. The product is known as Binoc tubing.

♦ ♦ ♦

Assembling Press—

Oilgear Co., 1403 West Bruce street, Milwaukee, has recently designed a 15-ton assembling press for accurate assembly of four camshaft bushings in a six-cylinder motor or five camshaft bushings in an eight-cylinder motor on a production basis. Both the horn-type pressing bar and the fixture for raising and lowering the cylinder block are hydraulically operated, the bar being controlled by a hand lever and the fixture by the foot pedal. This machine has simplified the assembling of camshaft bushings inasmuch as it has relieved the operator of handling the block, bar, key and split collars. Capacity is 15 tons, stroke 1 1/4 inches adjustable, conveyor height 34 inches, length 96 inches and width 52 inches. The pump and motor base are integral with the frame. A pump direct connected to a 10-horsepower motor operates the



Oliver self contained belt grinder and polisher equipped with dust exhaust

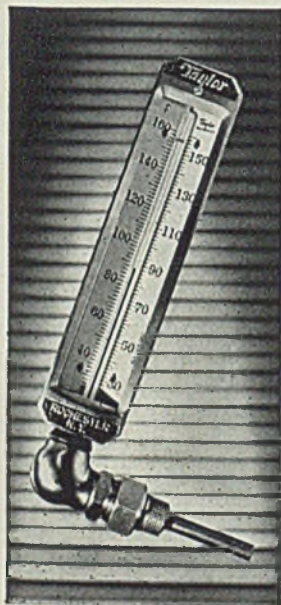
wheel trips a trigger which releases a jet of oil fog directly on the bearing. At the same time the links are subjected to similar jets. Direction and volume of the jets is adjustable.

♦ ♦ ♦

Belt Grinder—

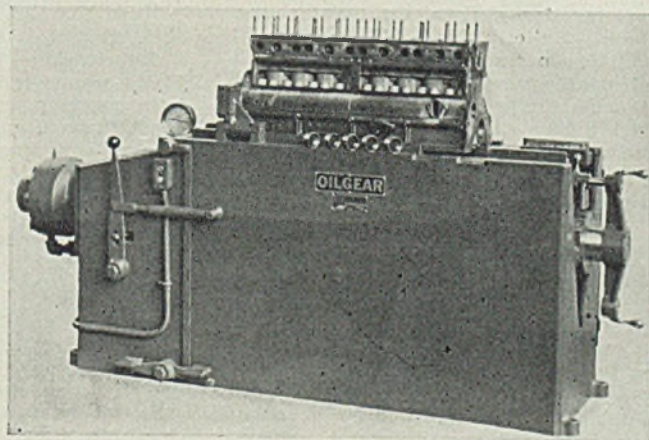
Oliver Machinery Co., Grand Rapids, Mich., announces a new self contained belt grinder and polisher

of 9 inches from the top of the table to the bottom of the top belt. Grinding and polishing belts up to 5 inches in width may be used, but a 4-inch belt is recommended. Pulleys are of aluminum 14 inches in diameter with 5-inch face, and are equipped with rubber tire. Main frame consists of two end castings with a cross girt frame casting. Total footing on the floor is 5 feet long by 20 inches wide. Machine is powered with a 2-horsepower motor mounted on the frame of the machine. A suitable enclosing dust hood is furnished over the driving pulley, fitted with connecting pipe which leads to the dust collection



Left—Mercury-in-glass thermometer equipped with Binoc tubing developed by Taylor Instrument Cos.

Right—Oilgear 15-ton camshaft bushing assembling press of horn type. Bushings to be assembled are shown on top of press



pull bar, and an auxiliary low-pressure pump with tetrope drive operates the cylinder which raises and lowers the cylinder block.

V-Belt Coupler—

Shippert Mfg. Co., 414 South Galena avenue, Dixon, Ill., has commenced manufacture on a new line of belt couplers for V-belts. The new coupling is being introduced into the market under the name of "Grip-Flex." Five standard types are being manufactured, and special sizes can be made to order. Features of construction of these new couplers include anchor plates surrounding the belts in order not to lose strength in the joint, trailer pins to ease the strain of heavy loads and shocks, side plates and replaceable

roller bearings. Linkage in size A is of the hook type and the friction pin is of self lubricating rawhide type. Size B is fitted with case hardened bearings for the link pins, housed in a belt and bale of tough steel. The bearing is made larger than the pin so that the pin may have a rocking motion in the bearing. Sizes C, D and E have trailers and main coupler parts keyed to the belt ends. Heavy-duty roller bearings are employed in these sizes and operate without oil.

Flexible Shaft Hanger—

Swartz & White Mfg. Co., 243 Water street, Binghamton, N. Y., has developed a new clamp-type flexible shaft holder for installation on its machines equipped with the B-type

handpiece and wheel arbor. The new clamp prevents damage to wheels and attachments by falling shafts and also provides a rigid head for grinding and polishing. The clamp action is simple, having no adjustments to make and operating by hand pressure.

Plugs and Receptacles—

Pyle-National Co., 1334-58 North Kostner avenue, Chicago, announces a new series of 6-pole multiple circuit plugs and receptacles, rated at 10 amperes, 250 volts. Of substantial construction, these units are designed for heavy-duty work. Housings are heavy-gage drawn steel, cadmium plated, and the contacts are fully protected by bakelite insulation within the steel housing.

RECENT PUBLICATIONS OF MANUFACTURERS

Copies of any of the literature listed below may be obtained by writing directly to the companies involved, or by addressing STEEL, in care of Readers' Service Department, 1213 West Third Street, Cleveland.

Stainless Welded Tubing—Carpenter Steel Co., 347 Madison avenue, New York. Folder giving helpful data on properties and use of Carpenter stainless welded tubing.

Hand Grinders—Dumore Co., Racine, Wis. Second of its catalog series—"Dumore Hand Grinders," describes and illustrates Dumore mounted wheels and points, as well as the newly added line of abrasive bands.

Heat Treating Furnaces—Surface Combustion Corp., Toledo, O. Folder No. SC-75, illustrating some installations of standard rated furnaces, for high or low pressure, with accompanying operating data.

Flexible Couplings—Diamond Chain & Mfg. Co., Indianapolis. Bulletin No. 12 describing and illustrating its flexible coupling line; illustrations of installations are included as well as capacity ratings, dimensions, and other data necessary for proper selection.

Controller—Bristol Co., Waterbury, Conn. Bulletin No. 447 on model 6088V process cycle controller, with adjustable features which makes it suitable for use particularly in industries where variable speed controllers are required.

Gears—Ohio Gear Co., 1333 East 179th street, Cleveland. Catalog describing its complete line of spur, bevel, worm and other gears and motorized speed reducers; useful technical data on gearing and S.A.E. standard heat treatment methods.

Floor Trucks—Lewis-Shepard Co., 244 Walnut street, Watertown, Mass. Circular No. 220 on easy rolling floor trucks for factory and warehouse; new types of caster trucks, rubber-

tired trucks and shelf trucks are shown.

Truck Frames—Lukenweld Inc., division of Lukens Steel Co., Coatesville, Pa. Folder No. 23-AV on welded steel truck frames for Brooklyn Manhattan Transit lines' multi-section cars, with illustrations and detailed descriptions.

Unit Heater—Modine Mfg. Co., Racine, Wis. Bulletin No. 836 describing and illustrating a unit heater especially designed for use where lint or other foreign matter is present, with special condenser construction to eliminate clogging where air is laden with foreign particles.

Crane—Link-Belt Co., 300 West Pershing road, Chicago. Bulletin No. 1569 on its recently announced Speed-O-Matic shovel-dragline-crane, setting forth advantages of the new power control with its short, fast, easy-throw levers, as compared with operating the conventional long, hard-throw levers.

Lubrication—Texas Co., 135 East Forty-second street, New York. Bulletin covering protected lubrication in blast furnace equipment, mixers, bessemer converters, open-hearth furnaces, electric furnaces, stripping cranes, ingot and ladle cars, power equipment, finishing equipment, rolling mills, accessory equipment, power equipment, and miscellaneous bearing lubrication.

Steel—Alan Wood Steel Co., Conshohocken, Pa. Folder on A.W. 70-90 steel, developed for strength with less weight, increased corrosion resistance, fabrication facility by all the usual methods, welding properties, and

priced on a basis which puts no penalty on its use; includes physical properties, maximum sizes, permissible reductions in thickness of sheets and plates when using, and chemical properties.

Potentiometer Pyrometer—Foxboro Co., Foxboro, Mass. Bulletin No. 194-1, describing principles, operating details and methods of application of the control pyrometer. Related equipment for automatic temperature control, specifications and ranges of thermocouples, resistance bulbs and other accessories, are also covered thus providing reference guide for selection of modern equipment for continuous temperature control.

Asbestos and Magnesia Products—Keasbey & Mattison Co., Ambler, Pa. Catalog covering properties and uses of asbestos and magnesia products; a reference booklet for all who contemplate plant additions, repairs or new construction, the building materials and insulation trade, illustrated with drawings, diagrams, and photographic reproductions of the materials, and a number of typical installations.

Seamless Steel Products—Seamless Steel Equipment Corp., 39 Broadway, New York. Catalog K, showing seamless steel products for high pressure and high temperature requirements, as manufactured by the forged, rolled, and drawn processes; contains information regarding the various processes and illustrates numerous high pressure seamless steel vessels of special design; tables of standard sizes of seamless steel containers and seamless steel square and rectangular tubes are listed.

Steelworks Activity Unabated; Rate Is 73

Auto Output Down

But Miscellaneous

Demand Still Strong

STEELWORKS operations last week advanced 1 point to 73 per cent of capacity, a new six-year high, under heavy miscellaneous demand, and with new specifications in some lines showing slight increases.

This rate was maintained despite a decline of 19,772 units in automobile production.

Operations increased in four districts, including Pittsburgh and Youngstown, while all of the other steel centers held at the rates prevailing during the previous week.

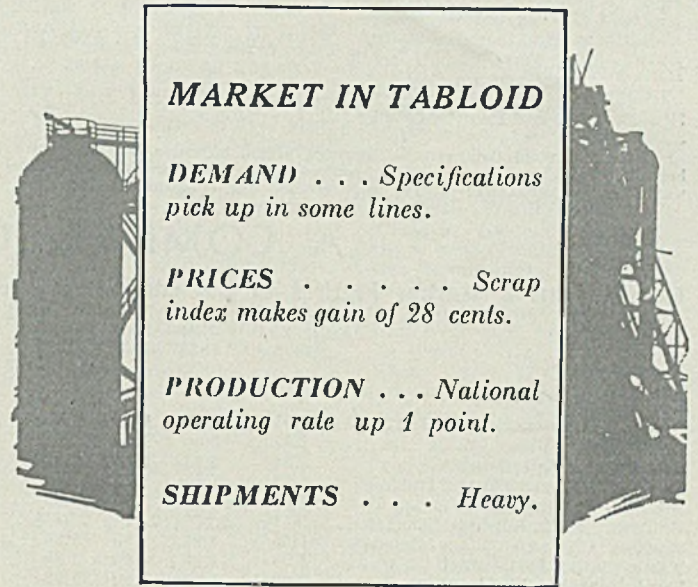
Although scrap prices continued upward there was a more settled tone in the markets of several districts. STEEL's index of scrap prices made a 28-cent increase to \$15.41, highest level since the middle of October, 1929. In some quarters it is believed further price advances are likely.

Demand for pig iron has been strong and a nonintegrated Pittsburgh steel producer recently negotiated the purchase of 25,000 tons of basic material to be shipped via all-water route over the next four or five months. There is some discussion of the possibility of advancing pig iron prices about Sept. 1.

Coke operations have been holding at their high level. Since beehive ovens in the western Pennsylvania district are almost sold out, plans of a few blast furnace operators to resume on this grade of fuel have been hampered.

Backlogs of some producers have not been reduced materially. Tin plate mills are still six to eight weeks behind on deliveries. Heavy demand for material to be fabricated into general line cans has been a steadying factor. Packers' can requirements have been enlivened by a record salmon and fruit pack on the west coast.

A number of sheet producers also have had difficulty cutting down their backlogs, especially those in the Pittsburgh district, where delivery promises on cold-reduced sheets range from six to eight weeks. Specifications for elec-



MARKET IN TABLOID

DEMAND . . . *Specifications pick up in some lines.*

PRICES *Scrap index makes gain of 28 cents.*

PRODUCTION . . . *National operating rate up 1 point.*

SHIPMENTS . . . *Heavy.*

trical sheets have been driven in by the recent announcement of a \$2 price advance.

Total output of automobiles was 53,937 units, compared with 73,709 in the preceding week.

The awarding of contracts for ten destroyers and five submarines will result in the purchase of a large amount of steel. For the destroyers about 450 tons of plates each will be required, while the submarines will take between 200 and 250 tons each. A large number of orders for barges in lots of one and two apiece is expected to develop in the fall.

Including pending tonnage and ships built so far this year, shipyards have required about 200,000 tons of steel, a much larger tonnage than in any full year since 1930.

Prospects for railroad equipment buying in the fall are excellent. Indications are that at least 100 locomotives will be ordered by five or six eastern railroads within the next few months and that western roads also will be active buyers. Inquiries for 41 locomotives enlivened the market last week.

Shape awards totaling 30,731 tons were about even with the previous week's 31,418 tons. Reinforcing awards also held up at 7302 tons, compared to 7720 in the preceding week.

The increase in scrap prices resulted in an advance of 9 cents in the iron and steel composite compiled by STEEL. It is now at \$34.03. The finished index is unchanged at \$53.40.

In the Pittsburgh district the rate was up 2 points to 74 per cent; Wheeling 3 to 98, Youngstown 5 to 79, and New England 7 to 85. No declines were registered.

COMPOSITE MARKET AVERAGES

	Aug. 29	Aug. 22	Aug. 15	One Month Ago July, 1936	Three Months Ago May, 1936	One Year Ago Aug., 1935	Five Years Ago Aug., 1931
Iron and Steel	\$34.03	\$33.94	\$33.88	\$33.49	\$32.92	\$32.68	\$30.73
Finished Steel	53.40	53.40	53.40	53.40	52.20	54.02	48.72
Steelworks Scrap....	15.41	15.13	14.83	12.89	13.40	12.05	8.79

Iron and Steel Composite:—Pig iron, scrap, billets, sheet bars, wire rods, tin plate, wire, sheets, plates, shapes, bars, black pipe, rails, alloy steel hot strip, and cast iron pipe at representative centers. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate, pipe. Steelworks Scrap Composite:—Heavy melting steel and compressed sheets.

A COMPARISON OF PRICES

Representative Market Figures for Current Week; Average for Last Month, Three Months and One Year Ago

	Aug. 29, 1936	July 1936	May 1936	Aug. 1935		Aug. 29, 1936	July 1936	May 1936	Aug. 1935
Finished Material					Pig Iron				
Steel bars, Pittsburgh	1.95c	1.95c	1.85c	1.80c	Bessemer, del. Pittsburgh	\$20.8132	20.81	20.81	19.81
Steel bars, Chicago	2.00	2.00	1.90	1.85	Basic, Valley.....	19.00	19.00	19.00	18.00
Steel bars, Philadelphia	2.26	2.26	2.16	2.11	Basic, eastern del. East. Pa.....	20.8132	20.81	20.81	19.81
Iron bars, Terre Haute, Ind.....	1.85	1.85	1.75	1.75	No. 2 fdy., del. Pittsburgh	20.3132	20.31	20.31	19.31
Shapes, Pittsburgh	1.90	1.90	1.80	1.80	No. 2 fdy., Chicago	19.50	19.50	19.50	18.50
Shapes, Philadelphia	2.11½	2.11½	2.01½	2.01½	Southern No. 2, Birmingham.....	15.50	15.50	15.50	14.50
Shapes, Chicago	1.95	1.95	1.85	1.85	Southern No. 2, del. Cincinnati...	19.44	20.2007	20.2007	19.38
Tank plates, Pittsburgh	1.90	1.90	1.80	1.80	No. 2X eastern, del. Phila.....	21.6882	21.68	20.81	20.68
Tank plates, Philadelphia	2.09	2.09	1.99	1.99	Malleable, Valley	19.50	19.50	19.50	18.50
Tank plates, Chicago	1.95	1.95	1.85	1.85	Malleable, Chicago	19.50	19.50	19.50	18.50
Sheets, No. 10, hot rolled, Pitts....	1.95	1.95	1.85	1.85	Lake Sup., charcoal, del. Chicago	25.2528	25.2528	25.2528	24.25
Sheets, No. 24, hot ann., Pitts....	2.50	2.50	2.40	2.40	Ferromanganese, del. Pitts.....	80.13	80.13	80.13	90.13
Sheets, No. 24, galv., Pitts.....	3.20	3.20	3.10	3.10	Gray forge, del. Pittsburgh	19.6741	19.67	19.67	18.67
Sheets, No. 10, hot rolled, Gary....	2.05	2.05	1.95	1.95	Scrap				
Sheets, No. 24, hot anneal., Gary..	2.60	2.60	2.50	2.50	Heavy melting steel, Pittsburgh..	\$16.75	14.15	14.75	13.25
Sheets, No. 24, galvan., Gary.....	3.30	3.30	3.20	3.20	Heavy melt. steel, No. 2, east. Pa.	13.50	11.50	11.71	10.50
Plain wire, Pittsburgh	2.40	2.40	2.40	2.30	Heavy melting steel, Chicago	15.75	13.25	13.05	12.35
Tin plate, per base box, Pitts.....	5.25	5.25	5.25	5.25	Rail for rolling, Chicago	16.75	14.00	14.65	13.65
Wire nails, Pitts.	2.10	2.10	2.10	2.55	Railroad steel specialties, Chicago	16.75	14.75	14.65	13.55
Semifinished Material					Coke				
Sheet bars, open-hearth, Youngs. \$30.00	30.00	30.00	28.00	28.00	Connellsville, furnace, ovens.....	\$3.65	3.45	3.50	3.25
Sheet bars, open-hearth, Pitts.....	30.00	30.00	28.00	28.00	Connellsville, furnace, ovens.....	4.25	4.25	4.25	4.00
Billets, open-hearth, Pittsburgh....	30.00	30.00	28.00	27.00	Chicago, by-product foundry, del.	9.75	9.75	9.75	9.25
Wire rods, Pittsburgh	38.00	38.00	40.00	38.00					

Steel, Iron, Raw Material, Fuel and Metals Prices

Except when otherwise designated, prices are base, f.o.b. cars. Asterisk denotes price change this week.

Sheet Steel

Prices Subject to Quantity Extras and Deductions (Except Galvanized)	Tin Mill Black No. 28	
	Pittsburgh	2.75c
	Gary	2.85c
	St. Louis, delivered	3.08c
	Cold Rolled No. 10	
Pittsburgh	2.60c	
Gary	2.70c	
Chicago, delivered..	2.80c	
Detroit, del.	2.80c	
New York, del.	2.91c	
Philadelphia, del....	2.91c	
Birmingham	2.95c	
St. Louis, del.	3.20c	
Pacific ports, f.o.b. cars, dock	3.20c	
	Cold Rolled No. 20	
Pittsburgh	3.05c	
Gary	3.15c	
Detroit, delivered....	3.25c	
Philadelphia, del....	3.36c	
New York, del.	3.40c	
	Enameling Sheets	
Pittsburgh, No. 10..	2.45c	
Pittsburgh, No. 20..	3.05c	
Gary, No. 10	2.55c	
Gary, No. 20	3.15c	
	Tin and Terne Plate	
	Gary base, 10 cents higher.	
Tin plate, coke base (box) Pittsburgh	\$5.25	
Do., waste-waste..	2.75c	
Do., strips	2.50c	
Long ternes, No. 24 unassorted, Pitts.	3.50c	
Do., Gary	3.60c	

Corrosion and Heat-Resistant Alloys

Pittsburgh base, cents per lb.			
Chrome-Nickel			
	No. 302	No. 304	
Bars	23.00	24.00	
Plates	26.00	28.00	
Sheets	33.00	35.00	
Hot strip	20.75	22.75	
Cold strip	27.00	29.00	
Straight Chromes			
	No. 410	No. 430	No. 442 446
Bars	17.00	18.50	21.00 26.00
Plates	20.00	21.50	24.00 29.00
Sheets	25.00	28.00	31.00 35.00
Hot strip	15.75	16.75	21.75 26.75
Cold stp.	20.50	22.00	27.00 35.00

Structural Shapes

Pittsburgh	1.90c
Philadelphia, del.	2.11½c
New York, del.	2.16¼c
Boston, delivered....	2.30¼c
Bethlehem	2.00c
Chicago	1.95c
Cleveland, del	2.10c
Buffalo	2.00c
Gulf Ports	2.30c
Birmingham	2.05c
Pacific ports, f.o.b. cars, dock	2.45c

Bars

Soft Steel	
(Base, 3 to 25 tons)	
Pittsburgh	1.95c
Chicago or Gary....	2.00c
Duluth	2.10c
Birmingham	2.10c
Cleveland	2.00c
Buffalo	2.05c
Detroit, delivered....	2.10c
Pacific ports, f.o.b. cars, dock	2.50c
Philadelphia, del....	2.26c
Boston, delivered....	2.37c
New York, del.	2.30c
Pitts., forg. qual....	2.20c

Rail Steel

To Manufacturing Trade	
Pittsburgh	1.80c
Chicago or Gary....	1.85c
Moline, Ill.	1.85c
Cleveland	1.85c
Buffalo	1.90c

Iron

Terre Haute, Ind....	1.85c
Chicago	1.90c
Philadelphia	2.16c
Pittsburgh, refined..	2.75-7.50c
Reinforcing	
New billet, straight lengths, quoted by distributors.	
Pittsburgh	2.05c
Chicago, Gary, Buffalo, Cleve., Birm., Young...	2.10c
Gulf ports	2.45c
Pacific coast ports f.o.b. car docks	2.45c
Philadelphia, del.....	2.26c-2.36c
Rail steel, straight lengths, quoted by distributors	
Pittsburgh	1.90c
Chicago, Buffalo, Cleve- land, Birm., Young.....	1.95c
Gulf ports	2.30c

Wire Products

(Prices apply to straight or mixed carloads; less carloads \$4 higher; less carloads fencing \$5 over base column.)

Base Pitts.-Cleve. 100 lb. keg.	2.10c
Stand. wire nails....	2.10c
Cement c'd nails....	2.10c
Galv. nails, 15 gage and finer	4.10c
do. finer than 15 ga. (Per pound)	4.60c
Polished staples.....	2.80c
Galv. fence staples	3.05c
Barbed wire, galv....	2.60c
Annealed fence wire	2.65c
Galv. fence wire.....	3.00c
Woven wire fencing (base column, c.l.)	\$58.00
To Manufacturing Trade	
Plain wire, 6-9 ga..	2.40c
Anderson, Ind. (merchant products only) and Chicago up \$1; Duluth up \$2; Birming- ham up \$3.	
Spring wire, Pitts. or Cleveland	3.05c
Do., Chicago up \$1, Worc. \$2.	

Cold-Finished Carbon Bars and Shafting

Base, Pitts., one size, shape, grade, shipment at one time to one destination	
10,000 to 19,999 lbs.	2.25c
20,000 to 59,999 lbs.	2.20c
60,000 to 99,999 lbs.	2.15c
100,000 lbs. and over.....	2.12½c
Gary, Ind., Cleve., Chi., up 5c; Buffalo, up 10c; Detroit, up 15c; eastern Michigan, up 20c.	

Alloy Steel Bars (Hot)

(Base, 3 to 25 tons.)

Pittsburgh, Buffalo, Chi- cago, Massillon, Can- ton, Bethlehem	2.55c		
Alloy			
S.A.E. Diff.	S.A.E.	Alloy	Diff.
2000.....0.25	3100.....	0.55	
2100.....0.55	3200.....	1.35	
2300.....1.50	3300.....	3.80	
2500.....2.25	3400.....	3.20	
4100 0.15 to 0.25 Mo.		0.50	
4600 0.20 to 0.30 Mo. 1.25- 1.75 Ni.		1.05	
5100 0.80-1.10 Cr.		0.45	
5100 Cr. spring		base	
6100 bars		1.20	
6100 spring		0.70	
Cr., Ni., Van.		1.50	
Carbon Van.		0.95	
9200 spring flats		base	
9200 spring rounds, squares		0.25	

Piling

Pittsburgh	2.25c
Chicago, Buffalo	2.35c

Strip and Hoops

(Base, hot rolled, 25-1 ton)
(Base, cold-rolled, 25-3 tons)

Hot strip to 23½-in.

Pittsburgh	1.95c
Chicago or Gary	2.05c
*Birmingham base	2.10c
Detroit, del.	2.15c
Philadelphia, del.	2.26c
New York, del.....	2.30c
Cooperage hoop, Pittsburgh	2.05c
Chicago	2.15c
Cold strip, 0.25 carbon and under, Pitts., Cleveland..	2.60c
Detroit, del.	2.81c
Worcester, Mass..	2.80c
Carbon	
0.26-0.50....	2.60c
0.51-0.75....	3.45c
0.76-1.00....	4.95c
Over 1.00....	6.50c
Worces- ter, Mass.	
Pitts.	2.80c
Cleve.	2.80c
Worces-	3.65c
ter, Mass.	5.15c
	6.70c

Rails, Track Material

(Gross Tons)

Standard rails, mill	\$36.37½
Relay rails, Pitts.	
20-100 lbs.	25.50-28.00
Light rails, billet qual. Pitts., Chi....	\$35.00
Do., reroll. qual....	34.00
Angle bars, billet, Gary, Ind., So. Chi.	2.55c
Do., axle steel....	2.10c
*Spikes, R. R. base	2.70c
*Track bolts, base..	3.70c
*Tie plates, base....	2.00c
Base, light rails 25 to 40 lbs.; 50 to 60 lbs. inclusive up \$2; 16 and 20 lbs., up \$1; 12 lbs. up \$2; 8 and 10 lbs., up \$5. Base railroad spikes 200 kegs or more; base tie plates 20 tons.	

Bolts and Nuts

Pittsburgh, Cleveland, Bir-
mingham, Chicago. Discounts
to legitimate trade as per Dec.
1, 1932, lists:

Carriage and Machine

½ x 6 and smaller.....	70-10 off
Do. larger	70-5 off
Tire bolts	50 off
Plow Bolts	
All sizes	70-5 off
Stove Bolts	
In packages with nuts at- tached 75 off; in packages with nuts separate 75-5 off; in bulk 82½ off on 15,000 of 3-inch and shorter, or 5000 over 3-inch.	
Step bolts	65 off
Elevator bolts	65 off
Nuts	
S. A. E. semifinished hex.:	
½ to ¾-inch.....	60-20-15 off
Do., ½ to 1-inch.....	60-20-15 off
Do., over 1-inch.....	60-20-15 off
Hexagon Cap Screws	
Milled	80-10-10 off
Upset, 1-in., smaller	85 off
Square Head Set Screws	
Upset, 1-in., smaller.....	75-10 off
Headless set screws	75 off

Rivets, Wrought Washers

Struc., c. l., Pitts- burgh, Cleveland	3.05c
Struc., c. l., Chicago	3.15c
¾-in. and smaller, Pitts., Chi., Cleve. 70 and 5 off	
Wrought washers, Pitts., Chi., Phila.	
to jobbers & large nut, bolt mfrs....	\$6.25 off

Cut Nails

Cut nails, Pitts.; (10% discount on size extras)	\$2.75
Do. less carloads, 5 kegs or more, no discount on size extras	\$3.05

Do., under 5 kegs; no
disc. on size extras..... \$3.20

Pipe and Tubing

Base \$200 net ton, except on
standard commercial seamless
boiler tubes under 2 inches and
cold drawn seamless tubing.

Welded Iron, Steel Pipe

Base discounts on steel pipe,
Pitts., Lorain, O., to consumers
in carloads. Gary, Ind., 2 points
less. Chicago, del. 2½ points
less. Wrought pipe, Pittsburgh.

Butt Weld Steel

In.	Blk.	Galv.
¼ and ¾.....	60	44½
½.....	64½	55
¾.....	67½	59
1-3.....	69½	61½
Iron		
½.....	31½	15
¾.....	36½	20½
1-1½.....	39½	25½
2.....	41½	26
Lap Weld Steel		
2.....	62	53½
2½-3.....	65	56½
3½-6.....	67	58½
7 and 8.....	66	56½
9 and 10.....	65½	56
Iron		
2.....	37	22½
2½-3½.....	38	25
4-8.....	40	28½
Line Pipe Steel		
¾, butt weld.....	56	
¾ and ¾, butt weld.....	59	
½, butt weld	63½	
¾, butt weld	66½	
1 to 3, butt weld	68½	
2, lap weld	61	
2½ to 3, lap weld.....	64	
3½ to 6, lap weld.....	66	
7 and 8, lap weld.....	65	
Iron		
¾-1½ inch, black and galv. take 4 pts. over; 2½-6 inch 2 pts. over discounts for same sizes, standard pipe lists, 8-12- inch, no extra.		

Boiler Tubes

C. L. Discounts, f.o.b. Pitts.		
Lap Weld Steel		Charcoal Iron
2-2¼.....	33	1¾..... 8
2½-2¾.....	40	2-2¼.....13
3.....	47	2½-2¾.....16
3¼-3½.....	50	3.....17
4.....	52	3¼-3½.....18
4½-5.....	42	4.....20
		4½.....21

In lots of a carload or more,
above discounts subject to
preferential of two 5% and one
7½% discount on steel and
10% on charcoal iron.
Lapwelded steel: 200 to 9999
pounds, ten points under base,
one 5% and one 7½%. Under
2000 pounds 15 points under
base, one 5% and one 7½%.
Charcoal iron: 10,000 pounds to
carloads, base less 5%; under
10,000 lbs., 2 points under base.

Seamless Boiler Tubes

Under date of May 15 in lots
of 40,000 pounds or more for
cold-drawn boiler tubes and in
lots of 40,000 pounds or feet or
more for hot-finished boiler
tubes, revised prices are quoted
for 55 cold-drawn boiler tube
sizes ranging from ¼ to 6-inch
outside diameter in 30 wall
thicknesses, decimal equivalent
from 0.035 to 1.000, on a dollars
and cents basis per 100 feet
and per pound. Less-carloads
revised as of July 1, 1935, card.

Hot-finished carbon steel boiler
tube prices also under date
of May 15 range from 1 through
7 inches outside diameter, in-
clusive, and embrace 47 size
classifications in 22 decimal
wall thicknesses ranging from
0.109 to 1.000, prices also being
on a lb. and 100 ft. basis.

Seamless Tubing

Cold drawn; f.o.b. mill disc.

100 ft. or 150 lbs.	32%
15,000 ft. or 22,500 lbs.....	70%

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

6-in. & over, Birm.....	\$39.00-40.00
4-in., Birmingham....	42.00-43.00
4-in., Chicago	50.40-51.40
6 to 24-in. Chicago.	47.40-48.40
6-in. & over, east. fdy.	43.00
Do., 4-in.	46.00

Class A pipe \$3 over Class B
Std. ftgts., Birm. base..\$100.00

Semifinished Steel

Billets and Blooms

4 x 4-inch base; gross ton	
Pitts., Chi., Cleve., Buffalo & Young.	\$30.09
Philadelphia	35.67
Duluth	32.00
Forging Billets	
6 x 6 to 9 x 9-in., base	
Pitts., Chi., Buff.....	37.00
Forging, Duluth	39.00
Sheet Bars	
Pitts., Cleve., Young., Chi., Buff., Can- ton, Sparrows Pt.	38.00
Slabs	
Pitts., Chi., Cleve., Young.	30.00

Wire Rods

Pitts., Cleve., No. 4 to 5	\$38.00
Do., No. 5 to ¾-inch	40.00
Do., over ¾ to ¾-inch	42.00
Chicago up \$1; Worcester up \$2	

Skel

Pitts., Chi., Young., Buff., Coatesville, Sparrows Point....	1.80c
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Coke

Price Per Net Ton

Beehive Ovens	
*Connellsville, fur..	\$3.65- 3.75
Connellsville, fdry..	4.25- 4.50
Connell. prem. fdry.	5.50
New River fdry.....	6.90
Wise county fdry....	4.45- 5.80
Wise county fur....	4.00- 4.50

By-Product Foundry

Newark, N. J., del.	9.70-10.15
Chi., ov., outside del.	9.00
Chicago, del.	9.75
New England, del....	11.50
St. Louis, del.	10.00-10.50
Birmingham, ovens	6.50
Indianapolis, del.	9.40
Cincinnati, del.	9.50
Cleveland, del.	9.75
Buffalo, ovens	7.50- 8.00
Detroit, ov., out. del.	9.00
Philadelphia, del.	9.38

Coke By-Products

Per gallon, producers' plants.

Tank lots	
Pure and 90% benzol.....	16.00c
Toluol	30.00c
Solvent naphtha	30.00c
Industrial xylol	30.00c
Per lb. f.o.b. Frankford, Phenol (200 lb. drums)..	15.50c
Do. (450 lbs.)	14.50c
Eastern Plants, per lb.	
Naphthalene flakes and balls, in bbls., to jobbers	7.25c
Per 100 lbs. Atlantic seaboard Sulphate of ammonia.....	\$1.25
†Western prices, ½-cent up.	

Pig Iron

Delivered prices include switching charges only as noted. No. 2 foundry is 1.75-2.25 sil.; 25c diff. for each 0.25 sil. above 2.25; 50c diff. for each 0.25 below 1.75. Gross tons.

Basing Points:	No. 2 Fdry.	Malleable	Basic	Bessemer
Bethlehem, Pa.	\$20.50	\$21.00	\$20.00	\$21.50
Birdsboro, Pa.	20.50	21.00	20.00	21.00
Birmingham, Ala., southern del.	15.50	15.50	14.50	21.50
Buffalo	19.50	20.00	18.50	20.50
Chicago	19.50	19.50	19.00	20.00
Cleveland	19.50	19.50	19.00	20.00
Detroit	19.50	19.50	19.00	20.00
Duluth	20.00	20.00	.....	20.50
Erie, Pa.	19.50	20.00	19.00	20.50
Everett, Mass.	20.50	21.00	20.00	21.50
Hamilton, O.	19.50	19.50	19.00	.....
Jackson, O.	20.25	20.25	19.75	.....
Neville Island, Pa.	19.50	19.50	19.00	20.00
Provo, Utah	17.50	.....	17.00	.....
Sharpsville, Pa.	19.50	19.50	19.00	20.00
Sparrows Point, Md.	20.50	.....	20.00	.....
Swedeland, Pa.	20.50	21.00	20.00	21.50
Toledo, O.	19.50	19.50	19.00	20.00
Youngstown, O.	19.50	19.50	19.00	20.00

Delivered from Basing Points:

Akron, O., from Cleveland	20.76	20.76	26.26	21.26
Baltimore from Birmingham	21.08	.....	19.96	.....
Boston from Birmingham	20.62	.....	20.50	.....
Boston from Everett, Mass.	21.00	21.50	20.50	22.00
Boston from Buffalo	21.00	21.50	20.50	22.00
Brooklyn, N. Y., from Bethlehem	22.93	23.43	.....	.....
Brooklyn, N. Y., from Bmghm.	22.55	.....	.....	.....
Canton, O., from Cleveland	20.76	20.76	20.26	21.26
Chicago from Birmingham	19.72	.....	19.60	.....
Cincinnati from Hamilton, O.	19.82	20.58	20.08	.....
Cincinnati from Birmingham	19.44	.....	18.44	.....
Cleveland from Birmingham	19.62	.....	19.12	.....
Indianapolis from Hamilton, O.	21.17	21.77	21.27	.....
Mansfield, O., from Toledo, O.	21.26	21.26	20.76	21.76
Milwaukee from Chicago	20.57	20.57	20.27	21.07
Muskegon, Mich., from Chicago	.....	.....	.....	.....
Toledo or Detroit	22.60	22.60	22.10	23.10
Newark, N. J., from Birmingham	21.61	.....	.....	.....
Newark, N. J., from Bethlehem	21.99	22.49	.....	.....
Philadelphia from Birmingham	20.93	.....	20.81	.....
Philadelphia from Swedeland, Pa.	21.31	21.81	20.81	.....
Pittsburgh district from Neville Island	.....	Neville base plus 67c, 81c and \$1.21 switching charges	.....	.....
Saginaw, Mich., from Detroit	21.75	21.75	21.25	21.25
St. Louis, northern	20.00	20.00	19.50	.....

Delivered from Basing Points:	No. 2 Fdry.	Malleable	Basic	Bessemer
St. Louis from Birmingham	\$19.68	.....	19.50	.....
St. Paul from Duluth	21.94	21.94	.....	22.44

†Over 0.70 phos.

Low Phos.

Basing Points: Birdsboro and Steelton, Pa., and Standish, N. Y., \$24.00, Phila. base, standard and copper bearing, \$25.13.

Gray Forge

	Valley furnace	Lake Superior fur.
Pitts. dist. fur.	19.00	.....
Do., del. Chicago	19.00	25.25
Lylees, Tenn.	.....	22.50

Silvery†

Jackson county, O., base; 6-6.50 per cent \$22.75; 6.51-7—\$23.25; 7-7.50—\$23.75; 7.51-8—\$24.25; 8-8.50—\$24.75; 8.51-9—\$25.25; 9-9.50—\$25.75. Buffalo \$1.25 higher.

Bessemer Ferrosilicon†

Jackson county, O., base: Prices are the same as for silveries, plus \$1 a ton.
†The lower all-rail delivered price from Jackson, O., or Buffalo is quoted with freight allowed.

Manganese differentials in silvery iron and ferrosilicon, 2 to 3%, \$1 per ton add. Each unit over 3%, add \$1. per ton.

Refractories

Per 1000 f.o.b. Works

Fire Clay Brick	.....	timore bases (bags)..	\$45.00
Super Quality	.....	Domestic dead - burned	.....
Pa., Mo., Ky.	\$55.00	grains, net ton f.o.b.	.....
First Quality	.....	Chester, Pa., and Bal-	.....
Pa., Ill., Md., Mo., Ky.	\$45.00	timore bases (bags)....	40.00
Alabama, Georgia..	\$38.00-45.00	Domestic dead - burned	.....
Second Quality	.....	gr. net ton f.o.b. Che-	.....
Pa., Ill., Ky., Md., Mo.	40.00	welah, Wash. (bulk)..	22.00
Georgia, Alabama...	35.00	Basic Brick	.....
Ohio	.....	Net ton, f.o.b. Baltimore, Ply-	.....
First quality	\$40.00	mouth Meeting, Chester, Pa.	.....
Intermediary	37.00	Chrome brick	\$45.00
Second quality	28.00	Chem. bonded chrome....	45.00
Malleable Bung Brick	.....	Magnesite brick	65.00
All bases	50.00	Chem. bonded magnesite	55.00
Silica Brick	.....	Fluorspar, 85-5	.....
Pennsylvania	\$45.00	Washed gravel, duty	.....
Joliet, E. Chicago...	54.00	paid, tide, net ton.....	\$21.50
Birmingham, Ala....	48.00	Washed gravel, f.o.b. Ill.,	.....
Ladle Brick (Dry Press)	.....	Ky., net ton, carloads,	.....
Pa., O., W. Va., Mo.....	\$24.00	all rail	\$18.00
Do., wire cut.....	22.00	Do., for barge	\$19.00
Magnesite	.....	Ferroalloys	.....
Imported dead - burned	.....	Dollars, except Ferrochrome	.....
grains, net ton f.o.b.	.....	Ferromanganese,	.....
Chester, Pa., and Bal-	.....	78-82% tidewater,	.....

Nonferrous

METAL PRICES OF THE WEEK

Spot unless otherwise specified. Cents per pound

Copper			Straits Tin		Lead	Lead	Zinc	Alumi-	Antimony	Nickel
Electro, Lake, del.	del.	Casting, refinery	New York	Futures	N. Y.	East St. L.	St. L.	num 99%	Spot, N. Y.	Cath-odes
Aug. 22	9.75	9.87½	42.25	41.12½	4.60	4.45	4.80	*19.00	12.50	35.00
Aug. 24	9.75	9.87½	42.20	41.25	4.60	4.45	4.80	*19.00	12.50	35.00
Aug. 25	9.75	9.87½	42.00	41.12½	4.60	4.45	4.80	*19.00	12.50	35.00
Aug. 26	9.75	9.87½	42.50	41.62½	4.60	4.45	4.80	*19.00	12.50	35.00
Aug. 27	9.75	9.87½	42.62½	41.87½	4.60	4.45	4.80	*19.00	12.50	35.00
Aug. 28	9.75	9.87½	43.00	42.37½	4.60	4.45	4.80	*19.00	12.50	35.00

*Nominal range 19.00 to 21.00c.

MILL PRODUCTS

F.o.b. mill base, cents per lb. except as specified. Copper brass products based on 9.75c Conn. copper

Yellow brass (high)	15.37½
Copper, hot rolled....	17.25
Lead cut to jobbers..	8.25
Zinc, 100-lb. base....	9.50
Tubes	
High yellow brass....	17.62½
Seamless copper....	17.75
Rods	
High yellow brass....	13.37½
Copper, hot rolled....	14.00
Anodes	
Copper, untrimmed	14.75
Wire	
Yellow brass (high)	15.62½

OLD METALS

Deal. buying prices, cents lb.

No. 1 Composition Red Brass	
New York	6.12½-6.37½
Cleveland	6.40-6.75
Chicago	6.12½-6.37½
St. Louis	5.75-6.25
Heavy Copper and Wire	
New York, No. 1....	7.75-8.00
Chicago, No. 1.....	7.50-7.75
Cleveland, No. 1....	7.25-7.75
St. Louis, No. 1....	7.50-7.75

Composition Brass Borings

New York	5.87½-6.12½
Light Copper	
New York	6.50-6.62½
Chicago	6.12½-6.75
Cleveland	6.00-6.25
St. Louis	6.00-6.50

Light Brass

Chicago	3.62½-3.87½
Cleveland	3.40-3.60
St. Louis	3.40-3.90
Lead	
New York	3.62½-3.87½
Cleveland	3.75-3.80
Chicago	3.25-3.75
St. Louis	3.25-3.75

Zinc

New York	2.37½-2.62½
St. Louis	2.25-2.50
Cleveland	2.25-2.50
Aluminum	
Borings, Cleveland..	9.00-10.00
Mixed, cast, Cleve..	12.75-13.00
Mixed, cast, St. L..	11.25-11.75
Clips, soft, Cleve....	15.00-15.50
SECONDARY METALS	
Brass ingot, 85-5-5	9.75
Stand. No. 12 alum.	16.50-17.00

Ferroalloys

Dollars, except Ferrochrome	
Ferromanganese,	
78-82% tidewater,	.....
duty paid	75.00
Do., Balti., base....	75.00
Do., del. Pittsb'gh	80.13
Spiegeleisen, 19-	.....
20% dom. Palmer-	.....
ton, Pa., spot.....	26.00
Do., New Orleans	26.00
Ferrosilicon, 50%	
freight all. cl.....	69.50
Do., less carload..	77.00
Do., 75 per cent..	126-130.00
Spot, \$5 a ton higher.	.....
Silicomane, 2½ carb.	
2% carbon, 90.00; 1%.	100.00
Ferrochrome, 66-70	
chromium, 4-6 car-	.....
bon, cts. lb. del....	10.00
Ferrotungsten,	
stand, lb. con. del.	1.30-1.40
Ferrovanadium, 35	
to 40% lb., cont....	2.70-2.90
Ferrotitanium, c. l.	
prod. plant, frt.	.....
allow., net ton....	137.50
Spot, 1 ton, frt.	
allow., lb.	7.00
Do., under 1 ton....	7.50
Ferrophosphorus,	
per ton, c. l., 17-	.....
19% Rockdale,	.....
Tenn., basis, 18%,	.....
\$3 unitage	58.50
Ferrophosphorus,	
electrolytic, per	.....
ton c. l., 23-26%	.....
f.o.b. Anniston,	.....
Ala., 24% \$3	.....
unitage	75.00
Ferromolybdenum,	
stand, 55-65%, lb.	0.95
Molybdate, lb. cont.	0.80
†Carloads. Quan. diff. apply.	.....

Iron and Steel Scrap Prices

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated; † indicates brokers prices

<p>HEAVY MELTING STEEL Birmingham† 9.00-12.00 Bos. d'ck, No. 1, exp. †12.00 N. Eng. del. No. 1. 11.75 Buffalo, No. 1..... 14.50-15.00 Buffalo, No. 2 13.00-13.50 Chicago, No. 1 15.50-16.00 Cleveland, No. 1..... 14.50-15.00 Cleveland, No. 2..... 13.50-14.00 Detroit, No. 1 13.00-13.50 Eastern Pa., No. 1. 14.50-15.00 Eastern Pa., No. 2. 13.50 Federal, Ill. 11.75-12.75 Granite City, R. R. 13.25-13.75 Granite City, No. 2. 11.25-11.75 New York, No. 2..... †9.50-10.00 N. Y. d'ck, No. 1, exp.†11.50-11.75 Pitts., No. 1 (R. R.) 17.50-18.00 Pitts., No. 1 (dlr.).. 16.50-17.00 Pittsburgh, No. 2..... 15.00-15.50 St. Louis, R. R. 13.00-13.50 St. Louis, No. 2 11.50-12.00 Toronto, dealers 7.50 Valleys, No. 1..... 14.75-15.25</p> <p>COMPRESSED SHEETS Buffalo, dealers 13.00-13.50 Chicago, factory 14.50-15.00 Chicago, dealer 14.00-14.25 Cleveland 13.50-14.00 Detroit 13.50-14.00 E. Pa., new mat..... 13.50-14.00 E. Pa., old mat 11.00-11.50 Pittsburgh 16.50-17.00 St. Louis 11.00-11.50 Valleys 14.50-14.75</p> <p>BUNDLED SHEETS Buffalo 11.50-12.00 Cincinnati, del. 8.50- 9.00 Cleveland 10.50-11.00 Pittsburgh 15.00-15.50 St. Louis 8.25- 8.75 Toronto, dealers 4.50</p> <p>SHEET CLIPPINGS, LOOSE Chicago 10.00-10.50 Cincinnati 7.25- 7.75 Detroit 9.50-10.00 St. Louis 7.50- 8.00</p> <p>STEEL RAILS, SHORT Birmingham 11.50-12.00 Buffalo 15.75-16.25 Chicago (3 ft.) 17.25-17.75 Chicago (2 ft.) 17.75-18.25 Cincinnati, del. 15.50-16.00 Detroit 16.50-17.00 Pitts., open-hearth, 3 ft. and less 19.00-19.50 St. Louis, 2 ft. & less 16.00-16.50</p> <p>STEEL RAILS, SCRAP Boston district †8.75- 9.00 Buffalo 14.50-15.00 Chicago 15.50-16.00 Pittsburgh 17.25-17.75 St. Louis 14.50-15.00 Toronto, dealers 8.50</p> <p>STOVE PLATE Birmingham 8.00- 9.00 Boston, district †7.50- 7.75 Buffalo 10.00-10.25 Chicago 9.00- 9.50 Cincinnati, dealers.. 8.50- 9.00 Detroit, net 9.00- 9.50 Eastern Pa. 12.00-12.50 New York, fdry..... † 7.25- 7.75 St. Louis 8.50- 9.00 Toronto, dealers, net 5.50</p>	<p>COUPLERS, SPRINGS Buffalo 15.25-15.75 Chicago, springs..... 17.75-18.25 Eastern Pa. 18.00-18.50 Pittsburgh 19.50-20.00 St. Louis 14.50-15.00</p> <p>ANGLE BARS—STEEL Chicago 16.50-17.00 St. Louis 15.00-15.50 Buffalo 14.50-15.00</p> <p>RAILROAD SPECIALTIES Chicago 16.50-17.00</p> <p>LOW PHOSPHORUS Buffalo, billet and bloom crops 15.25-15.75 Cleveland, billet, bloom crops 18.00-18.50 Eastern Pa., crops. 17.50-18.00 Pittsburgh, billet, bloom crops 19.50-20.00 Pittsburgh, sheet bar crops 19.00-19.50</p> <p>FROGS, SWITCHES Chicago 14.00-14.50 St. Louis, cut 14.00-14.50</p> <p>SHOVELING STEEL Chicago 15.50-16.00 Federal, Ill. 11.75-12.25 Granite City, Ill. 11.25-11.75 Toronto, dealers 6.50</p> <p>RAILROAD WROUGHT Birmingham 7.50- 8.00 Boston district †7.25- 7.50 Buffalo, No. 1 13.00-13.50 Buffalo, No. 2 14.50-15.00 Chicago, No. 1, net.. 14.00-14.50 Chicago, No. 2 15.50-16.00 Cincinnati, No. 2..... 12.50-13.00 Eastern Pa. 14.50-15.00 St. Louis, No. 1..... 11.75-12.25 St. Louis, No. 2 12.50-13.00 Toronto, No. 1 dlr. 7.00</p> <p>SPECIFICATION PIPE Eastern Pa. 12.50 New York †8.75- 9.25</p> <p>BUSHELING Buffalo, No. 1 13.00-13.50 Chicago, No. 1 14.50-15.00 Cincinnati, No. 1, deal... 9.75-10.25 Cincinnati, No. 2..... 5.50- 6.00 Cleveland, No. 2..... 9.50-10.00 Detroit, No. 1, new 12.50-13.00 Valleys, new, No. 1. 14.50-14.75 Toronto, dealers 6.00</p> <p>MACHINE TURNINGS Birmingham 4.00- 5.00 Buffalo 7.00- 7.50 Chicago 8.50- 9.00 Cincinnati, dealers.. 6.50- 7.00 Cleveland 8.75- 9.00 Detroit 8.00- 8.50 Eastern Pa. 9.00- 9.50 New York †5.25- 5.50 Pittsburgh 12.00-12.50 St. Louis 6.00- 6.50 Toronto, dealers 4.00 Valleys 10.25-10.75</p> <p>BORINGS AND TURNINGS <i>For Blast Furnace Use</i> Boston district †4.25- 4.50</p>	<p>Buffalo 8.75- 9.25 Cincinnati, dealers.. 5.50- 6.00 Cleveland 9.50-10.00 Detroit 8.25- 8.75 Eastern Pa. 7.50- 8.00 New York †4.75- 5.00 Pittsburgh 12.00-12.50 Toronto, dealers 4.00</p> <p>CAST IRON BORINGS Birmingham, plain.. 4.00- 5.00 Boston dist. chem.. †6.25- 6.75 Boston dist. for mills †5.50- 6.00 Buffalo 8.75- 9.25 Chicago, dealers..... 8.00- 8.50 Cincinnati, dealers.. 5.50- 6.00 Cleveland 9.50-10.00 Detroit 8.25- 8.75 E. Pa. chemical..... 10.00-13.00 New York †5.50- 5.75 St. Louis 4.50- 5.00 Toronto, dealers..... 5.00</p> <p>PIPE AND FLUES Cincinnati, dealers.. 8.00- 8.50 Chicago, net 8.00- 8.50</p> <p>RAILROAD GRATE BARS Buffalo 10.50-11.00 Chicago, net 10.00-10.50 Cincinnati 8.00- 8.50 Eastern Pa. 12.00 New York †7.25- 7.75 St. Louis 10.50-11.00</p> <p>FORGE FLASHINGS Boston district †8.25- 8.75 Buffalo 13.00-13.50 Cleveland 13.00-13.50 Detroit 11.50-12.00 Pittsburgh 15.00-15.50</p> <p>FORGE SCRAP Boston district †6.50- 7.00 Chicago, heavy 18.00-18.50 Eastern Pa. 14.00</p> <p>ARCH BARS, TRANSOMS St. Louis 15.50-16.00</p> <p>AXLE TURNINGS Boston district †7.00- 7.25 Buffalo 11.00-11.50 Chicago, elec. fur... 14.00-14.50 Eastern Pa. 12.50-13.00 St. Louis 9.50- 10.00 Toronto 4.50</p> <p>STEEL CAR AXLES Birmingham 11.50-12.50 Boston district †12.00-12.50 Buffalo 15.50-16.00 Chicago, net 18.00-18.50 Eastern Pa. 17.50-18.00 St. Louis 15.50-16.00 Toronto 8.50</p> <p>SHAFTING Boston district †14.75-15.00 Eastern Pa. 20.00-21.50 New York †15.00-15.50 St. Louis 14.00-14.50</p> <p>CAR WHEELS Birmingham 11.00-11.50 Boston dist. iron... †10.25-10.50 Buffalo, iron 13.50-14.00 Buffalo, steel 15.50-16.00 Chicago, iron 15.50-16.00</p>	<p>Chicago, rolled steel 17.50-18.00 Cincinnati, iron..... 12.25-12.75 Eastern Pa., iron.... 16.00-17.00 Eastern Pa., steel... 18.00-18.50 Pittsburgh, iron.... 17.00-17.50 Pittsburgh, steel 19.50-20.00 St. Louis, iron 13.50-14.00 St. Louis, steel 14.50-15.00 Toronto, net 8.50</p> <p>NO. 1 CAST SCRAP Birmingham 11.00-12.00 Bos. dist. No. 1 mch.†10.25-10.75 N. Eng., del. No. 2. 10.00-10.50 N. Eng. del. textile.. 11.50-12.00 Buffalo, cupola 13.00-13.50 Buffalo, mach. 14.50-15.00 Chicago, agri. net.. 12.00-12.50 Chicago, auto..... 13.25-13.75 Chicago, mach. net.. 13.50-14.00 Chicago, rail'd net.. 12.50-13.00 Cincinnati, mach. cup... 12.75-13.25 Cleveland, mach. 15.25-15.75 Eastern Pa., cupola 16.00-16.50 E. Pa., mixed yard.. 14.00 Pittsburgh, cupola.. 16.50-17.00 San Francisco, del.. 13.50-14.00 Seattle 10.00-11.00 St. Louis, No. 1..... 11.50-12.00 St. L., No. 1 mach. 12.50-13.00 Toronto, No. 1, mach., net 9.00</p> <p>HEAVY CAST Boston dist. break.. †10.00-10.25 New England del.... 10.00-10.25 Buffalo, break 12.00-12.50 Cleveland, break. 12.50-13.00 Detroit, No. 1 mach. net 13.00-13.50 Detroit, break. 11.50-12.00 Detroit, auto net... 13.00-13.50 Eastern Pa. 15.50-16.00 New York breakable†11.00-11.50 Pittsburgh 14.00-14.50</p> <p>MALLEABLE Birmingham, R. R... 11.50-12.50 New England del.... 15.00-16.00 Buffalo 15.50-16.00 Chicago, R. R. 17.00-17.50 Cincinnati, agri. del. 13.00-13.50 Cleveland, rail 16.00-16.50 Detroit, auto, net... 14.50-15.00 Eastern Pa., R. R... 17.50 Pittsburgh, rail 16.50-17.00 St. Louis, R. R..... 14.50-15.00 Toronto, net 7.00</p> <p>RAILS FOR ROLLING <i>5 feet and over</i> Birmingham 11.50-12.50 Boston district †10.50-11.00 Buffalo 14.50-15.00 Chicago 16.50-17.00 Eastern Pa. 15.50 New York †11.50-12.00 St. Louis 15.00-15.50</p> <p>LOCOMOTIVE TIRES Chicago (cut) 16.00-16.50 St. Louis, No. 1.... 12.50-13.00</p> <p>LOW PHOS. PUNCHINGS Buffalo 15.25-15.75 Chicago 17.50-18.00 Eastern Pa. 18.00-18.50 Pittsburgh (heavy) 19.00-19.50 Pittsburgh (light).. 18.00-18.50</p>
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Iron Ore

Lake Superior Ore	
Gross ton, 51½%	
Lower Lake Ports	
Old range bessemer	\$4.80
Mesabi nonbess.	4.50
High phosphorus	4.40
Mesabi bessemer	4.65
Old range nonbess.	4.65

Eastern Local Ore	
<i>Cents, unit, del. E. Pa.</i>	
Foundry and basic	
56-63% con. (nom.)	8.50- 9.00
Cop.-free low phos.	
58-60% (nom.)	10.00-10.50
Foreign Ore	
<i>Cents per unit, f.a.s. Atlantic ports (nominal)</i>	
Foreign manganiferous ore, 45.55%	

iron, 6-10% man.	11.00
No. Afr. low phos.	11.00
Swedish basic, 65%	9.50
Swedish low phos..	10.50
Spanish No. Africa basic, 50 to 60%.	nom.
Tungsten, spot sh. ton unit, duty pd.	\$15.85-16.00
N. F., fdy., 55%	7.00
Chrome ore, 48%	
gross ton, c.i.f.	19.50-19.75

Manganese Ore

<i>(Nominal)</i>	
Prices not including duty cents per unit cargo lots	
Caucasian, 50-52%	26.00
So. African, 50-52%	27.00
Indian, 50-52%	26.00

Warehouse Iron and Steel Prices

Cents per pound for delivery within metropolitan districts of cities specified

STEEL BARS	Cincinnati	3.25c	Buffalo	3.47c	Pittsburgh (h)	3.05c	St. Louis	3.65c
Baltimore*.....	Houston	3.25c	Chattanooga..	3.66c	San Francisco	3.60c	St. Paul	3.65c
Boston††	Los Angl., cl..	2.45c	Chicago	3.30c	Seattle	3.85c	COLD FIN. STEEL	
Buffalo	New Orleans	3.50c	Cincinnati ...	3.52c	St. Louis	3.40c	Baltimore (c)	3.88c
Chattanooga..	Pitts., plain (h)	3.05c	Cleveland, ¼-		St. Paul	3.40c	Boston*	4.05c
Chicago (j)	Pitts., twisted		in. and over	3.41c	Tulsa	3.80c	Buffalo (h)....	3.70c
Cincinnati	squares (h)	3.175c	Detroit	3.52c	NO. 24 BLACK		Chattanooga*	4.28c
Cleveland	San Francisco	2.45c	Detroit, ½-in.	3.85c	Baltimore*†....	3.70c	Chicago (h)...	3.65c
Detroit	Seattle	3.50c	Houston	3.10c	Boston (g)	4.05c	Cincinnati	3.87c
Houston	St. Louis	3.35c	Los Angeles..	3.60c	Buffalo	3.35c	Cleveland (h)	3.65c
Los Angeles..	Tulsa	3.25c	Milwaukee ...	3.41c	Chattanooga*	3.41c	Detroit	3.74c
Milwaukee 3.21c-3.36c	Young.....	2.30c-2.60c	New Orleans..	3.65c	Chicago	3.95c	Los Ang.(f) (d)	5.85c
New Orleans..	SHAPES		New York†(d)	3.50c	Cincinnati	4.12c	Milwaukee	3.76c
New York†(d)	Baltimore*....	3.10c	Philadelphia*	3.10c	Cleveland	3.91c	New Orleans..	4.45c
Pitts. (h)....	Boston††	3.29c	Phila. floor...	4.95c	Detroit	4.04c	New York†(d)	3.96c
Philadelphia*	Buffalo	3.35c	Pittsburgh (h)	3.25c	Los Angeles..	4.35c	Philadelphia*	3.91c
Portland	Chattanooga..	3.66c	Portland	3.60c	Milwaukee ...	4.06c	Pittsburgh ...	3.50c
San Francisco	Chicago	3.30c	San Francisco	3.25c	New Orleans	4.50c	Portland (f) (d)	6.30c
Seattle	Cincinnati ...	3.52c	Seattle	3.65c	New York†(d)	3.99c	San Fran.(f) (d)	5.95c
St. Louis	Cleveland	3.41c	St. Louis	3.55c	Philadelphia*†	3.75c	Seattle (f) (d)	6.25c
St. Paul.....	Detroit	3.52c	St. Paul	3.55c	Pitts.** (h)	3.55c-4.85c	St. Louis	3.90c
Tulsa	Houston	3.10c	Tulsa	3.60c	Portland	4.20c	St. Paul	4.17c
IRON BARS	Los Angeles..	3.60c	NO. 10 BLUE		San Francisco	4.20c	Tulsa	4.80c
Portland	Milwaukee ...	3.41c	Baltimore*....	3.10c	Seattle	4.50c	COLD ROLLED STRIP	
Chattanooga..	New Orleans..	3.65c	Boston (g) ...	3.40c	St. Louis	4.20c	Boston	3.245c
Baltimore*....	New York†(d)	3.47c	Buffalo	3.72c	St. Paul	4.00c	Buffalo	3.39c
Chicago	Philadelphia*	3.10c	Chattanooga..	3.46c	Tulsa	4.85c	Chicago	3.27c
Cincinnati ...	Pittsburgh (h)	3.25c	Chicago	3.15c	NO. 24 GALV. SHEETS		Cincinnati (b)	3.22c
New York†(d)	Portland (l)...	3.60c	Cincinnati ...	3.32c	Baltimore*†....	3.90c	Cleveland (b)	3.00c
Philadelphia*	San Francisco	3.25c	Cleveland	3.21c	Buffalo	4.10c	Detroit	3.18c
St. Louis	Seattle (l).....	3.65c	Det. 8-10 ga.	3.24c	Boston (g)....	4.00c	New York†(d)	3.36c
Tulsa	St. Louis	3.45c	Houston	3.45c	Chattanooga*	3.96c	St. Louis	3.41c
REINFORCING BARS	St. Paul	3.55c	Los Angeles..	3.70c	Chicago (h)...	4.65c	TOOL STEELS	
Buffalo	Tulsa	3.60c	Milwaukee ...	3.26c	Cincinnati	4.82c	(Applying on or east of	
Chattanooga..	PLATES		New Orleans..	3.65c	Cleveland	4.61c	Mississippi river; west	
Chicago.....	Baltimore*....	3.10c	New York†(d)	3.41c	Detroit	4.82c	of Mississippi 1c up)	
Cleveland (c)	Boston††	3.31c	Portland	3.85c	Houston	4.50c	Base	
			Philadelphia*	3.20c	Los Angeles..	4.40c	High Speed	59½c
					Milwaukee ...	4.76c	High carbon, high	
					New Orleans	4.95c	chrome	39c
					N. Y.† (d)	4.30-4.50c	Oil hardening	23c
					Philadelphia*†	4.50c	Special tool	21c
					Pitts.** (h)	4.30c-5.55c	Extra tool	17½c
					Portland	4.60c	Regular tool	14½c
					San Francisco	5.00c	Uniform extras apply.	
					Seattle	5.10c	BOLTS AND NUTS	
					St. Louis.....	4.90c	(100 pounds or over)	
					St. Paul	4.60c	Discount	
					Tulsa	5.20c	Chicago (a)	65
							Cleveland	70
							Detroit	70
							Milwaukee	70
							Pittsburgh	65-5

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, Aug. 27

Export Prices f. o. b. Ship at Port of Dispatch—(By Cable or Radio)

Description	British gross tons		Continental Channel or North Sea ports, metric tons	
	U. K. ports	£ s d	Quoted in dollars at current value	**Quoted in gold pounds sterling
PIG IRON				
Foundry, 2.50-3.00 Silicon	\$15.69	3 2 6*	\$13.89	1 15 0
Basic bessemer	15.69	3 2 6*	11.51	1 9 0
Hematite, Phos. .03-.05..	18.86	3 15 0	.....	.....
SEMIFINISHED STEEL				
Billets	\$29.49	5 17 6	\$18.65	2 7 0
Wire rods, No. 5 gage....	44.93	8 19 0	35.73	4 10 0
FINISHED STEEL				
Standard rails	\$41.41	8 5 0	\$43.67	5 10 0
Merchant bars	1.90c	8 10 0	1.17c	3 5 0
Structural shapes	1.84c	8 5 0	1.11c	3 1 6
Plates, ½ in. or 5 mm....	1.93c	8 12 6	1.53c	4 5 0
Sheets, black, 24 gage or 0.5 mm	2.24c	10 0 0	2.17c	6 1 0††
Sheets, galv., 24 gage, corr.	2.63c	11 15 0	2.17c	6 1 0
Bands and strips	2.07c	9 5 0	1.43c	4 0 0
Plain wire, base	2.18c	9 15 0	1.89c	5 5 0
Galvanized wire, base....	2.58c	11 10 0	2.10c	5 17 6
Wire nails, base	2.69c	12 0 0	1.71c	4 15 0
Tin plate, box 108 lbs....	\$ 4.71	0 18 9	.....	.....

British ferromanganese \$75 delivered Atlantic seaboard, duty-paid. German ferromanganese £9 0s 0d \$(43.74) f.o.b.

Domestic Prices at Works or Furnace—Last Reported

Description	£ s d		French Francs		Belgian Francs		Reich Marks	
	1911	1912	1911	1912	1911	1912	1911	1912
Fdy. pig iron, Si. 2.5	\$18.83	3 15 0(a)	\$19.11	290	\$15.16	450	\$25.36	63
Basic bessemer pig iron...	18.83	3 15 0(a)	12.52	190	12.64	375	27.97 (b)	69.50
Furnace coke	5.40	1 1 6	6.85	104	4.63	137	7.65	19
Billets	30.75	6 2 6	30.12	457	19.53	580	38.84	96.50
Standard rails	1.85c	8 5 0	2.01c	671	1.68c	1,100	2.42c	132
Merchant bars	2.09c	9 7 0	1.89c	650	1.06c	700	2.01c	110
Structural shapes	2.10c	9 7 6	1.86c	620	1.06c	700	1.96c	107
Plates, ½ in. or 5 mm....	2.17c	9 13 9	2.37c	790	1.29c	850	2.32c	127
Sheets, black								
Sheets, galv., corr., 24 ga.	2.69c	12 0 0	2.39c	800†	1.45c	925†	2.64c	144†
or 0.5 mm	3.14c	14 0 0	3.60c	1,200	2.28c	1,500	6.77c	370
Plain wire	2.18c	9 15 0	3.30c	1,100	1.90c	1,250	3.17c	173
Bands and strips	2.26c	10 2 0	2.21c	735	1.29c	850	2.32c	127

*Basic. †British ship-plates. Continental, bridge plates. \$24 ga. †1 to 3 mm. basic price. British quotations are for basic open-hearth steel. Continent usually for basic-bessemer steel. a del. Middlesbrough. b hematite. ††Close annealed.

**Gold pound sterling carries a premium of 63.00 cent per cent over paper sterling.

Bars

Bar Prices, Page 64

Pittsburgh—The miscellaneous run of bar orders maintains a steady flow, with practically all consuming sources frequent participants in the market. Over the past week the aggregate of bar orders has improved in tonnage from the week preceding. August was under July from the standpoint of new specifications, but it closed encouragingly. In the immediate offing is the heavier demand from the automotive industry. The alloy bar market is finding chief support from makers of oil refining equipment and farm implements. The market is quoted firmly at 1.95c for hot-rolled merchant bars and 2.45c, base, Pittsburgh, for alloy quality bars.

Cleveland—New business declined last week, due to changeovers in automobile plants. Miscellaneous demand, however, has kept the tonnage almost up to the July level. Backlogs remain at four to six weeks.

New York—Although buying of bars generally is quiet compared with several weeks ago, buying of bar sized angles continues active. Jobbers are beginning to come into the market for material to replenish stocks. Railroads are making some increase in their purchases, largely in connection with repair programs.

Chicago—While buying of common steel bars shows no change from recent weeks a fair volume is being booked, production and deliveries remain at a high level. Cold bar finishers are pushing hard for deliveries as their customers in turn seek material for fabrication.

Philadelphia—Railroad buying is for maintenance and ordinary shop repairs, and a substantial amount of miscellaneous business was placed last week. The new orders were sufficient to prevent any marked improvement in the delivery situation. The continuance of a flow of orders at a time when no sizable tonnage was received from car builders, has created optimism over the outlook for fourth quarter.

Youngstown, O.—Users of carbon steel bars maintain such a steady demand that finishing mill operating rates continue to rise. Concrete reinforcing bar demand is second only to miscellaneous bar requirements for further manufacture. Alloy steel bars also are in better demand from auto partsmakers engaged on new model parts.

Cold Finished

Cold Finished Prices, Page 65

Pittsburgh—The smaller volume

of specifications for cold-finished carbon steel bars which were placed by consumers during August as compared with July, has had some indirect beneficial effects to cold-drawn bar producers. This is due to the fact that backlogs were built up to such a point late in July that delivery promises were difficult to arrange satisfactorily. Mill backlogs are being worked down in anticipation that new orders in the fall may prove a repetition of the July experience. The 2.25c, Pittsburgh, base on cold-drawn carbon bars is quoted firmly.

Plates

Plate Prices, Page 64

Pittsburgh—A large number of orders for barges in lots of one and two units apiece is expected to develop over the coming fall in view of present widespread inquiry of this nature. Most barge shops are working on sizable backlogs which have been made up of larger sized barge orders placed over the last month or two. Union Barge Lines has placed an order for four all-welded barges with its affiliate, Dravo Contracting Co. Plate demand from railroad car shops and for small tanks continues a market highlight. The present price of 1.90c, f.o.b. Pittsburgh, is firm.

Cleveland—Backlogs remain heavy, making the delivery situation an important problem in view of the constant influx of new business from miscellaneous consumers. Prices are firm. Some producers believe no price change will go into effect for the fourth quarter.

Chicago—Mills find difficulty in meeting requirements of plate fabricators. Fabricators have good order books but are not booking further business at the brisk rate of a few weeks ago. Prospects of additional car buying in the fall hold probabilities of additional demand for plates.

Boston—Bethlehem Shipbuilding Corp. began work last week at its Fall River plant on the construction of the largest sea-going dredge in the country. It will be delivered to the United States Army engineer's office, New York district for work in New York harbor.

New York—New plate specifications are lighter, but deliveries are still a problem. Manufacturing schedules at consuming plants continue heavy. Considerable optimism prevails in connection with railroad prospects. Awarding of contracts for 10 destroyers and five submarines will result in the purchase of a large amount of steel. For the destroyers about 450 tons of plates

each will be required, while the submarines will take between 200 and 250 tons each.

Philadelphia—Announcement of awards for construction of navy destroyers and submarines brings speculation as to whether there will be a decision soon regarding the possibility of the Philadelphia Navy Yard receiving the award for a battleship. While business in plates was not as brisk this week as in other classes of steel, the aggregate of new orders is satisfactory.

Birmingham, Ala.—Steady operation of mills throughout the remainder of the year seems assured. Fabricators have healthy backlogs and new business, though not in large tonnages, bespeaks future activity. Barge, pipe and other work will bolster requirements.

San Francisco—Awards were limited to lots of less than 100 tons. Bids have just been opened on approximately 1000 tons for the Hayfield pumping plant, metropolitan water district, Los Angeles. Bethlehem Shipbuilding Corp., Union plant, San Francisco, submitted bids on two 1500-ton destroyers involving nearly 400 tons of plates.

Seattle—Plate tonnages are increasing as the pulp industry is making heavy replacements and extensions. The largest job pending involves 6000 tons for the Everett water system improvement, bids expected to be called in September. For the Soundview Pulp Co. plant additions at Everett, more than 500 tons of plates are pending to be used in digesters. Other pulp industry projects pending will call for approximately 500 tons additional.

Contracts Placed

340 tons, pressure holder, Peoples Water & Gas Co., Miami Beach, Fla., to Chicago Bridge & Iron Works, Chicago.
304 tons, two oil barges for St. Paul federal engineers, to Charles J. Hegewald Co., New Albany, Ind., at \$36,500.
240 tons, 10 tanks, Koppers Construction Co., Follansbee, W. Va., to Hammond Iron Works, Warren, Pa.
200 tons, 2,000,000-gallon tank, Petroleum Wholesale Corp., Rochester, N. Y., to Hammond Iron Works, Warren, Pa.
125 tons, pulp plant digester and steamer furnaces, to Commercial Boiler Works, Seattle.
Unstated tonnage, four all-welded steel barges for Union Barge Lines, to Dravo Contracting Co., Neville island, Pittsburgh.

Contracts Pending

6000 tons, water system extension, Everett, Wash.; bids expected in September.
1000 tons, pulp plant additions in Washington state; awards soon.
138 tons, wrought iron plates, construction of Emsworth, Pa., dam lock gates; bids to federal engineers at Pittsburgh, Sept. 25.
100 tons, 48-inch pipe line, Everett, Mass., for metropolitan district commission, Boston.

Sheets

Sheet Prices, Page 64

Pittsburgh — Sheet producers have not yet made any appreciable reduction in backlogs and the delivery situation in many cases has been acute. For cold-reduced sheets delivery promises range from six to eight weeks. The \$2 a ton increase in electrical sheets for the fourth quarter has already started a wave of buying that promises to continue over this month. In hot-rolled sheets the diversity to buying is still a subject of comment. Prices now quoted, f.o.b., Pittsburgh, on hot-rolled No. 24 sheets are 2.50c, on 10 gage, 1.95c, and on galvanized, 3.20c. The cold-rolled sheet base for 10 gage remains 2.60c, Pittsburgh, and on 20 gage, 3.05c.

Cleveland—While new business declined slightly last week, most of the orders were for immediate shipments. Stove and refrigerator manufacturers are the largest consumers at present. Backlogs still remain heavy. Six weeks on cold-rolled has been reported by some mills, even though they have been running over 70 per cent of capacity for some time now.

Chicago—New orders for steel sheets are slow but this is attributed to the lull in automotive needs ending change of models. Some preliminary orders for 1937 models are coming in and large requirements are expected to appear before long.

New York — Operations at plants making furniture, door bucks, window frames, cabinets and many other fabricated steel products continue at a high level. Demand for wide sheets in coils, both hot and cold-rolled, to be slit into strips, continues good. Prices are unchanged.

Philadelphia—The flow of new orders continues, indicating the general activity in all lines of manufacturing in the metalworking industries. August volume in this territory will exceed that of either June or July, and is the busiest August in several years.

Buffalo—Sheet works are pressed for deliveries and are operating at rates not far from capacity. The Seneca mill production is estimated at 80 to 85 per cent of capacity while the new strip mill is broadening its output steadily.

Youngstown, O.—Mills in this district continue to operate at capacity, but their backlogs show little diminution. New business continues to come in even. While makers of parts for certain new model automobiles have tapered off in demand, yet others are pressing for deliveries.

Cincinnati—Ordering of sheets in this district shows a slight recession

from July and early August rates, particularly the shrinkage of automobile manufacturers' demand. However, rolling schedules are being maintained between 89 and 85 per cent of capacity.

St. Louis—Deliveries continue deferred, and demand is generally active. Requirements of stove makers and the general manufacturing trade are holding up. Hesitation has been noted on the part of tin container makers, and some cancellations have come from small canneries in the typical dry areas.

Birmingham, Ala.—Mills on sheets in the Southern territory have kept a steady pace now for many months, and prospects are that production will continue good.

Pipe

Pipe Prices, Page 65

Pittsburgh—Inquiry for line pipe in eastern districts now indicates that the 1936 season has been about completed. Barring the 14-inch gas pipe line for the Godfrey-Cabot Co., Boston, there is little prospect of any further lines developing to the contract stage this year. Demand for oil country goods continues steady, and fall prospects for mechanical tubing and standard pipe are encouraging. Consideration of pipe discounts for the fourth quarter will be taken up by producers within the next week or two.

Cleveland—Butt weld pipe is in strong demand for new buildings, both private and industrial, and for general repair work. While new business has declined somewhat, the mills are still running near capacity and cutting down their backlogs a little.

New York—Sales of butt welded steel pipe in this territory continue active. While the so-called secondary market is not entirely firm, price shading is less pronounced than a year ago.

Youngstown, O. — Standard wrought pipe demand has been so steady, especially from the building construction industry, that district mills now find their August shipments equal those of July. There is a bit more demand for smaller seamless pipe, and several fair-sized prospects for line pipe of the larger sizes for the Southwest oil and gas fields appear likely to materialize within a short time.

Birmingham, Ala.—Pipe shops are getting their share of the business developing throughout the southwest and far-West and production is being maintained at a steady pace. This year's production will total most favorably. Shipments are steady.

Bartlesville, Okla.—Phillips Pe-

troleum Co., Bartlesville, has awarded contract to White Deer Pipe Line Construction Co. for approximately nine miles of various sized pipe to be laid in connection with the natural gasoline plant to be built near Edmond, Okla. This line will be welded by the Linde oxyacetylene method.

San Francisco — City of Los Angeles has been the largest buyer of cast pipe so far this year, having already purchased over 18,000 tons. Bids will be opened Sept. 1 on 4000 tons of 16 to 24-inch, Class 200 and 250 pipe, American Cast Iron Pipe Co., and National Cast Iron Pipe Co., both at Birmingham, Ala., received 500 and 128 tons, respectively, in addition to the tonnage allotted them on bids opened by Los Angeles on Aug. 3.

Seattle—No improvement is noted in demand for cast pipe municipal projects developing slowly because of inability to finance. Marci & Co., Seattle, is low at \$19,466 for the Rainier avenue extension involving 180 tons of 16 inch. Hutchinson irrigation district, Spokane county, Wash., will open bids Sept. 10 for 23,000 lineal feet of wood pipe, including a tonnage of cast iron accessories.

Cast Pipe Pending

4000 tons, 16 to 24-inch, class 200 and 250, Los Angeles, specification X-46; bids Sept. 1.
2920 tons, 48-inch, Atlantic City, N. J.; bids Sept. 3 by treasury department, Newark, N. J.
2000 tons, New York; bids taken by treasury department, New York.
180 tons, 16-inch for Rainier avenue improvement, Seattle; Marci & Co., Seattle, low.
160 tons, 30-inch, Trenton, N. J.; bids Sept. 3, treasury department, Newark, N. J.
125 tons, 16-inch, Bethlehem, Pa., bids by treasury department, Harrisburg, Pa.
Unstated tonnage, water supply, town Preble, Brown county, Wis.; special election Sept. 17 on \$181,000 bond issue.

Transportation

Track Material Prices, Page 65

Prospects for railroad equipment buying in the fall are excellent. Several roads are outlining plans for buying cars and rails. The Kansas City Southern is said to be considering an inquiry for 950 freight cars and 10 locomotives. A Chicago rail mill has closed for 5000 tons of rails and 1500 tons of fastenings for an unstated western road. Rail mills in the Chicago district are operating at about 35 per cent of capacity.

Several locomotive inquiries in the eastern section have come out in tentative form. Indications are that a total of at least 100 locomotives will

be ordered by five or six railroads in the next two or three months. Prospects for new car buying in the fall also are brighter with the appearance of inquiries for 225 freight cars and with plans on the part of various railroads to buy additional rolling stock.

Youngstown & Northern railroad, Carnegie building, Pittsburgh, has placed an order for 100 gondolas with the Greenville Steel Car Co. Advance of \$2 a ton on railroad tie plates, track spikes and bolts becomes effective on specifications not placed prior to Aug. 31. Incorporating the advance, railroad spikes are now quoted 2.70c; track bolts, 3.70c, and tie plates, 2.00c, base. A number of railroads placed specifications on these products late last week to take advantage of the lower price.

Car Orders Placed

State Railways of Uruguay, three rail motor cars to American Car & Foundry Co., New York.

Youngstown & Northern railroad, Pittsburgh, 100 gondolas, to Greenville Steel Car Co., Greenville, Pa.

Locomotives Placed

Conemaugh & Black Lick railroad, Johnstown, Pa., two switching locomotives, to American Locomotive Co., New York.

Mexican National Construction Co., two articulated locomotives, to American Locomotive Co., New York.

Monessen Southwestern railroad, one switching locomotive, to American Locomotive Co.

Rail Orders Placed

5000 tons, rails and 1500 tons fastenings, for unstated western railroad, to Carnegie-Illinois Steel Corp., Chicago.

New York, Chicago & St. Louis, 5800 tons to Bethlehem Steel Co., Carnegie-Illinois Steel Corp., and Inland Steel Co.

Car Orders Pending

Missouri Pacific, equipment of 150 freight cars with automobile loading devices and modernizing all such equipment on 208 other box cars.

Locomotives Pending

Birmingham Southern, 10 diesel electric locomotives.

Carnegie-Illinois Steel Corp., Pittsburgh, one switching locomotive.

Detroit & Toledo Shore Line railroad, three locomotives.

Kansas City Southern, 10 locomotives.

Unidentified railroad, 13 locomotives.

Western Pacific, seven locomotives.

Buses Booked

Twin Coach Co., Kent, O.; Eighteen 36-passenger for Trenton Transit Co., Trenton, N. J.; sixteen 23-passenger for Tri-City Railway Co. of Iowa, Davenport, Iowa; nine 23-passenger and one 31-passenger for Wichita Transportation Corp., Wichita, Kans.; ten 37-passenger for Peoples Motor Bus Co., St. Louis; ten 30-passenger for Milwaukee Electric Railway & Light Co., Milwaukee; eight 40-passenger for East Bay Street Railways Ltd., Oak-

land, Calif.; two 40-passenger and two 31-passenger for Pittsburgh Motor Coach Co., Pittsburgh; three 25-passenger for Indiana Railroad system, Indianapolis.

Strip

Strip Prices, Page 65

Pittsburgh—Specifications for cold-rolled have picked up over the past week compared with two weeks ago, owing chiefly to buying from automotive partsmakers. Some of this specifying has been driven in by the realization that even though deliveries are delayed today they may be more difficult to obtain two weeks to a month hence. Hot-rolled strip steel reflects a steady run of miscellaneous orders.

Cleveland — Cold-rolled, narrow width strip is in greatest demand here, most consumers buying for immediate shipment. Automobile manufacturers are expected to come into the market within the next two weeks. Stocks of most consumers remain normal, but generally they have been estimating their requirements further ahead.

Chicago—Cold-rolled strip producers are operating close to capacity and are able to keep consumers fairly well supplied, but look forward to shortage when automobile demand is resumed. Deliveries are four or more weeks in arrears.

New York—While new buying of cold-rolled strip has fallen off somewhat in this territory, mills continue to have difficulty in making satisfactory shipments against orders on books. There has been some let-down at plants affected by the automobile changeover period.

Philadelphia—New business in both hot and cold-rolled has come largely from miscellaneous consumers. Strip for the most part is going into immediate consumption and there appears to be no extensive stocking. On cold-rolled, there has been little change in delivery dates.

Youngstown, O. — Both hot and cold-rolled strip users keep urging their needs upon mills, with an increasing number of new model partsmakers replacing those who have sagged off in their requirements. Miscellaneous consumers are asking for increased tonnages.

Wire

Wire Prices, Page 65

Pittsburgh—Wire product buying maintains an unabated volume, now especially sustained by better orders for manufacturers' wire. Low status of most jobbers' inventories has led

to replenishment of their stocks in merchant items, largely nails, staples, fencing and fence wire. Plain manufacturers' wire, 6-9 gage base, is quoted 2.40c, Pittsburgh.

Cleveland—Wire nails prices continue to show general weakness, but this is not the case in any of the other wire products. Inventory conditions of most consumers remain about normal. New business this month has fallen a little below July, but backlogs have forced shipments to continue at the pace set during the previous month.

Chicago—Wire demand and production are holding up well and manufacturing requirements seem sufficient to make up for whatever is lost as a result of the drought.

New York—While demand for steel manufacturers' wire has dropped off somewhat with consumers using up their inventories, there has been a marked improvement in the demand for fine wire specialties. Mills continue to have heavy backlogs of unfilled orders. The business of certain manufacturers such as spring makers is affected somewhat by the letdown in automobile production. The market on wire nails continues easy at \$1.80 to \$1.90 per 100-pound keg, base, Pittsburgh.

Philadelphia — Wire specialties were again firm with the exception of wire nails on which quotations of \$1.85 were noted. This price was below the one noted in this territory a week ago, and there is a widespread feeling that a more stable situation will be welcome.

Tin Plate

Tin Plate Prices, Page 64

Pittsburgh — Lengthy delivery promises still prevail in tin mill products as all reports from producers indicate that around eight weeks' delivery is the earliest obtainable on cold-reduced plate and that shipments cannot be promised much earlier on hot plate. Heavy demand for material to be fabricated into general line cans constitutes a leading cause for failure of tin plate demand to react downward. Packers' can requirements have been enlivened by a record salmon pack and fruit pack on the Pacific Coast, both of which are now drawing to a close. The market holds unchanged at \$5.25 per base box, Pittsburgh. Tin mill sizes of black sheets are quoted 2.75c, Pittsburgh, and No. 24 unassorted long ternes, 3.50c.

New York—Specifications for tin plate are heavy. With some consumers inability on the part of mills to make prompt shipment is a matter of concern. In view of present heavy consumption, fair contracting is expected in September for fourth-quarter shipment.

Shapes

Structural Shape Prices, Page 64

New York—Awards aggregated around 8000 tons. A strong volume of business continues on the pending list and many new apartment buildings are in the planning stage. Prices are firm on the basis of 2.00c, Bethlehem, Pa., for plain structural material. Due to heavy mill schedules, fabricators are buying heavily from jobbers. New business booked by the industry during July was the largest in volume for any month since the beginning of the depression, according to the American Institute of Steel Construction. Bookings amounted to a tonnage equal to 80.4 per cent of normal, i.e., the yearly average from 1928 to 1931, inclusive. For the seven months of the current calendar year, bookings averaged 57.3 per cent of normal.

Pittsburgh—American Bridge Co. closed on the contract for the Cincinnati postoffice and court house, involving 4900 tons of structural shapes. Otherwise, contracts largely included highway bridges. Federal engineers' office opens bids Sept. 27 on 2600 tons of structural steel and 240 tons of manganese steel for new lift gates and other changes to the Emsworth dam at Sewickley, Pa. Plain structurals are quoted firmly at 1.90c, base, Pittsburgh. General Motors Corp. has made plans for construction of an assembly plant at Linden, N. J., representing an outlay of approximately \$5,575,000. This project is to be started at once and completed in December. Packard Motor Co. has plans for plant expansion involving an expenditure of \$5,100,000.

Cleveland — Fabricators have enough orders in the aggregate to keep most of them running close to capacity for two or three months. Some have had considerable difficulty in getting steel from the mills.

Chicago — Private construction seems hesitant and a number of projects on which bids have been taken are in the negotiation stage. Allis-Chalmers Mfg. Co., Milwaukee, has placed 1600 tons for an addition at Springfield, Ill., and a number of bridges for highways in the West are on inquiry.

San Francisco—Among the larger awards was over 1000 tons for sheds for the Union station, Los Angeles, placed with Consolidated Steel Corp. Total tonnage placed during the week amounted to 3289 tons bringing the aggregate for the year to 121,523 tons, compared with only 72,940 tons for the corresponding period in 1935.

Seattle—With few exceptions fabricating plants have heavy orders on

hand, some having withdrawn from general bidding until they clean up present commitments.

Shape Contracts Placed

4900 tons, postoffice and courthouse, Cincinnati, to American Bridge Co., Pittsburgh, through Great Lakes Construction Co., Chicago.
 4100 tons, shapes and machinery, dam, Saverton, Mo., to Independent Bridge Co., Pittsburgh.
 2800 tons, steel piling for La Grange dam at Beardstown, Ill., to Carnegie-Illinois Steel Corp., Chicago.
 2600 tons, Rockland state hospital building, Orangeburg, N. Y., to American Bridge Co., Pittsburgh, through Turner Construction Co., New York.
 1900 tons, five buildings, department of sanitation, New York, Ward's island, to Harris Structural Steel Co., New York, through Cauldwell-Wingate Co., New York.
 1800 tons, exposition and convention hall, Houston, Tex., to Mosher Steel & Machinery Co., Dallas, Tex.
 1700 tons, hospital building, Jersey City, N. J., to Lehigh Structural Steel Co., Allentown, Pa.
 1600 tons, plant addition for Allis-Chalmers Mfg. Co. at Springfield, Ill., to Worden-Allen Co., Milwaukee.
 610 tons, addition to Union plant, Hercules Powder Co., Parlin, N. J., to Belmont Iron Works, Eddystone, Pa.
 600 tons, bridge, Milwaukee, to Milwaukee Bridge & Iron Co., Milwaukee.
 600 tons, two buildings for Aluminum Co. of America, Arnold, Pa., to Bethlehem Steel Co., Bethlehem, Pa.
 526 tons, bridge, Sherman, Ill., to Mississippi Valley Structural Steel Co., Decatur, Ill.
 500 tons, bridge, Hardtner, Kans., to Patterson Steel Co., Tulsa, Okla.
 465 tons, state highway bridge, Long Eddy, N. Y., to American Bridge Co., Pittsburgh, through Howes & Farrell, Delhi, N. Y.
 440 tons, rayon plant addition, Buffalo, for E. I. du Pont de Nemours & Co., to Lackawanna Steel Construction Corp., Buffalo.
 400 tons, Aluminum Co. of America plant, Alcoa, Tenn., to Fort Pitt Bridge Works, Pittsburgh.
 333 tons, building for Goodman Mfg. Co., Chicago, to R. C. Mahon Co., Detroit.
 330 tons, addition to California Corrugated Culvert Co., Berkeley, Calif., to Golden Gate Iron Works, San Francisco.
 300 tons, addition to Griesdick Brewery Co., St. Louis, to Stupp Bros. Bridge & Iron Co., St. Louis.
 270 tons, mill, United States Gypsum Co., East Chicago, Ind., to Joseph T. Ryerson & Son Inc., Chicago.

270 tons, state highway bridge, Harvey, N. Dak., to Bethlehem Steel Co., Bethlehem, Pa.
 250 tons, curb angles, to Bethlehem Steel Co., Bethlehem, Pa., through department of purchase, New York.
 240 tons, grade crossing elimination, Smithtown, N. Y., for Long Island railroad, to American Bridge Co., Pittsburgh, through Tully & De Napoli, Long Island City, N. Y.
 210 tons, manufacturing building, National Pneumatic Co., Rahway, N. J., to Lehigh Structural Steel Co., Allentown, Pa.
 200 tons, bakery, Bridgeport, Conn., to Bethlehem Fabricators Inc., Bethlehem, Pa.
 200 tons, Jane Addams housing project, heating plant, Chicago, to Mississippi Valley Structural Steel Co., Decatur, Ill.
 200 tons, steel joists, apartment house, Hudson House Inc., Arslay-on-Hudson, New York, to Concrete Steel Co., New York.
 200 tons, superstructure for dredge for Yuba Mfg. Co., Yuba City, Calif., to Herrick Iron Works, Oakland, Calif.
 190 tons, state highway bridge, Strasburg, Va., to Bethlehem Fabricators Inc., Bethlehem, Pa.
 180 tons, state highway bridge, Henderson, N. C., to Southern Engineering Co., Charlotte, N. C.
 180 tons, Pennsylvania state highway bridge, Salunga, Pa., to Bethlehem Steel Co., Bethlehem, Pa.
 177 tons, dormitory, Kent school, Kent, Conn., to Ingalls Iron Works Co., Birmingham, Ala.
 175 tons, building No. 53, Crown Cork & Seal Co., Baltimore, to Maryland Steel Products Co., Baltimore.
 170 tons, state highway bridge, Yanktown, S. Dak., to Bethlehem Steel Co., Bethlehem, Pa.
 150 tons, hotel, Bermuda, to Belmont Iron Works, Eddystone, Pa.
 140 tons, hospital addition, Petersburg, Va., to Richmond Structural Steel Co., Richmond, Va.
 140 tons, state bridge, Ontario county, New York, to Bethlehem Steel Co., Bethlehem, Pa., through A. S. Wikstrom, Newark, N. J.
 140 tons, bridge PWS R-56-C, Lowdes county, Mississippi, to Virginia Bridge Co., Roanoke, Va.
 125 tons, plant addition, Allis-Chalmers Mfg. Co., at West Allis, Wis., to American Bridge Co., Chicago.
 110 tons, bridge 141, Tate county, Missouri, to Nashville Bridge Co., Nashville, Tenn.
 110 tons, bridge, SH 1-A, Atchison county, Missouri, to Kansas City Structural Steel Co., Kansas City, Mo.
 100 tons, postoffice, Glastonbury, Conn., to Bethlehem Fabricators Inc., Bethlehem, Pa.
 100 tons, postoffice, West Haven, Conn., to Bethlehem Fabricators Inc., Bethlehem, Pa.

Shape Contracts Pending

4300 tons, six hospital buildings, Welfare island, New York; low bidder, Harris Structural Steel Co., New York.
 2840 tons, including 2600 tons of plain structural steel and 240 tons of special manganese steel, 13 lift gates for Emsworth dam, Ohio river, near Pittsburgh; bids to federal engineers at Pittsburgh, Sept. 25. Project also includes 138 tons of wrought iron plates and 35 tons of aluminum.
 2440 tons, armory, West Point, N. Y.; A. D. Ottaviano, Croton, N. Y., low.
 1200 tons, aggregate group of highway projects, state department of highways, Harrisburg, Pa.; bids about Sept. 4.

Shape Awards Compared

	Tons
Week ended Aug. 28	30,731
Week ended Aug. 21	31,418
Week ended Aug. 14	22,628
This week, 1935	22,805
Weekly average, 1935	17,081
Weekly average, 1936	23,021
Weekly average, July	27,757
Total to date, 1935	547,501
Total to date, 1936	805,737

1250 tons, gymnasium, West Point, N. Y.; C. T. Wills, New York, low.
 900 tons, plant building and alteration, Republic Steel Corp. division, Niles, O.
 610 tons, state highway bridge, Toledo, O.
 600 tons, government printing office warehouse No. 4, Washington.
 550 tons, building for Civa Pharmaceutical Products Co., Summit, N. J.
 400 tons, Pennsylvania railroad bridge, Columbus, O.; bids received.
 400 tons, state bridge, Lewiston, Me.; low bidder, Phoenix Bridge Co., Phoenixville, Pa.
 370 tons, state highway bridge, Thornton, W. Va.
 260 tons, garage, West Point, N. Y.; George A. Fuller Co., New York, low.
 250 tons, Capitol bus terminal, Fifty-first street and Seventh avenue, New York; low bidder, Dreier Structural Steel Co., New York.
 200 tons, foundry building for Elyria Foundry Co., Elyria, O.
 195 tons, five separate requirements of plain structural steel, Pennsylvania; bids to state highway department, Harrisburg, Pa., Sept. 11.
 150 tons, postoffice, Auburn, N. Y.; bids Sept. 10.
 150 tons, postoffice, Canandaigua, N. Y.; bids Sept. 10.
 150 tons, bridge, Clinton, Me.; American Bridge Co., Pittsburgh, low.
 140 tons, paper mill, Sonoco Products Co., Garwood, N. J.
 125 tons, Suring bridge, Oconto, Wis.; bids Sept. 4.
 125 tons, highway bridge, Helper, Utah; bids Aug. 31.
 113 tons, bridge, Colorado Springs, Colo.; bids Sept. 2.
 100 tons, state bridge, Montgomery county, New York; low bidder, D. A. Barton Co., Burlington, Vt.
 100 tons, highway bridge, Mill Creek, Ill.; bids Aug. 28.
 100 tons, bridge, Idaho Springs, Colo.; bids Sept. 2.
 100 tons, bridge, Mount Royal, Gloucester county, New Jersey; Gray Construction Co., Morristown, N. J., contractor.
 Unstated tonnage, 4200 square feet steel sheet piling, repairs to dam No. 4, Braeburn, Pa.; bids to federal engineers at Pittsburgh, Sept. 18.

stage. The market continues at 2.05c base, Pittsburgh, for billet rolled material but this level is shaded materially on large lots.

Pittsburgh—Numerous specific building jobs plus active distributor buying of bars for stock maintains the recent high level. The recent market on new billet reinforcing steel bars holds officially at 2.05c, Pittsburgh, but continues to be subjected to shading.

Cleveland—New business has been light, consisting of a number of jobs from private sources requiring less than 100 tons. Jobbers' stocks are

showing a fair turnover. Little reinforcing material has been used in road repair work and the like, but in the fall a marked change for the better is expected.

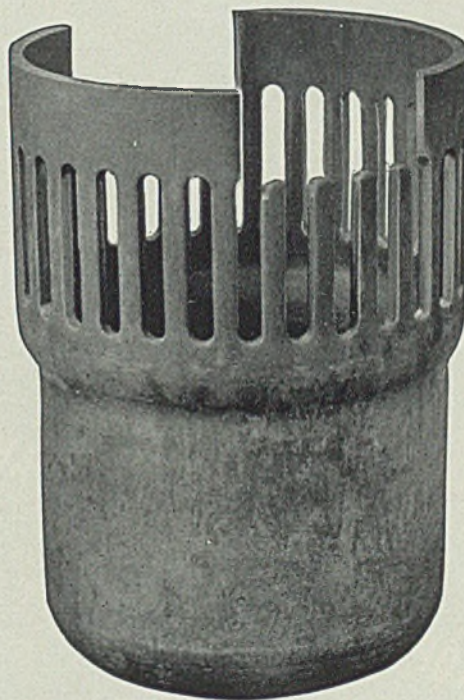
Chicago—Public works have furnished most recent tonnages and several important projects have been awarded. The lock and control works at the mouth of Chicago river and a dam at Beardstown, Ill., in the Illinois river, are of most importance. Both were taken by Carnegie-Illinois Steel Corp.

Philadelphia—Awards made for both the Camden, N. J., and Wayne,

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Reinforcing

Reinforcing Bar Prices, Page 65

New York—While many small orders are being placed there is a dearth of important tonnages. Large-tonnage business is reaching the closing

Concrete Awards Compared

	Tons
Week ended Aug. 28	7,302
Week ended Aug. 21	7,720
Week ended Aug. 14	8,316
This week, 1935	4,037
Weekly average, 1935	6,862
Weekly average, 1936	6,768
Weekly average, July	8,510
Total to date, 1935	153,464
Total to date, 1936	236,895

Pa., housing projects gave a more active tone to the market. The bulk of the business, however, is featured by small lots.

San Francisco—The bureau of reclamation, on fifteen projects located at Potholes, Calif., Odair, Wash., and Riverton and Casper, Wyo., has placed over 3000 tons. Bids have just been taken on 555 tons for a bridge over the Los Angeles river at Atlantic avenue, near Long Beach, Calif.

Seattle—The market was less active, new specifications failing to come out. However, local mills are

running at capacity, reporting a considerable tonnage in lots of less than 100 tons. Prices are steady.

Reinforcing Steel Awards

2300 tons, Chicago river lock and water diversion works, Chicago, to Carnegie-Illinois Steel Corp., Chicago.

950 tons, Camden, N. J., housing project to Bethlehem Steel Co., Bethlehem, Pa.; Anthony P. Miller, general contractor.

944 tons, invitations 38,289-A, 38,275-A and 38,276-A, bureau of reclamation, Odair, Wash., to Gulf States Steel Co., Los Angeles.

660 tons, invitations 38,263-A, A42,034-A, A42,060-A and A42,057-A, bureau of reclamation, Potholes, Calif., and Odair,

Wash., to Republic Steel Corp., Cleveland.

618 tons, invitations 22,337-A and 29,033-A, bureau of reclamation, Casper, Wyo., to Colorado Fuel & Iron Co., Pueblo, Colo.

438 tons, La Grange dam, Beardstown, Ill., to Carnegie-Illinois Steel Corp., Chicago.

251 tons, invitation 38,257-A, bureau of reclamation, Odair, Wash., to Youngstown Sheet & Tube Co., Youngstown, O.

248 tons, invitation 38,279-A, bureau of reclamation, Odair, Wash., to Midwest Iron & Steel Co., Denver.

248 tons, invitation 38,278-A, bureau of reclamation, Odair, Wash., to Tennessee Coal, Iron & Coke Co., Birmingham, Ala.

228 tons, approaches, state bridge, Pasco, Wash., to Columbia Steel Co., Seattle.

210 tons, department of sanitation building, Ward's island, New York, to Fireproof Products Co., New York.

107 tons, invitation A42,048-A, bureau of reclamation, Potholes, Calif., to Colorado Fuel & Iron Co., Pueblo, Colo.

100 tons, Wayne, Pa., housing project, to Bethlehem Steel Co., Bethlehem, Pa.; Edward Fay & Son, general contractor.

Reinforcing Steel Pending

1200 tons, Federal jail, San Pedro, Calif.; general contract to Robert E. McKee, Los Angeles.

600 tons, substructure for viaduct in Cincinnati; Penker Construction Co., Cincinnati, general contractor.

413 tons, low level, Broadway tunnel, Oakland, Calif.; bids Sept 11.

270 tons, New Jersey state paving, route 25, section 26; bids Sept. 14.

222 tons, state hospital, Ukiah, Calif.; bids rejected.

100 tons, procurement division, treasury department, New York; W. Ames & Co., Jersey City, N. J., low bidder.

Semifinished

Semifinished Prices, Page 65

Pittsburgh — Sheet bar requirements to keep apace with near-capacity rolling schedules in tin plate and sheets have been in heavy volume. Wire rods are also enjoying a marked rate of activity, as are skelp and tube rounds. Despite the prevalence of second-quarter \$28, Pittsburgh, sheet bar business, the third-quarter price of \$30 is receiving some test on current specifying. Re-rolling billets are quoted \$30, base, Pittsburgh, and wire rods, \$38, \$40, and \$42, Pittsburgh, for the three respective size bases.

Youngstown, O. — A number of rolling mills have been operating in part for several months on "cold" steel, or on stored ingots that must be reheated for rolling. Several steelworks continue to pile ingots in their yards against the day when they will be needed.

Timken Roller Bearing Co., Canton, O., has booked an order from the Chicago, Burlington & Quincy railroad for bearings and boxes to equip all driving axles, crank pins and cross

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General Offices: First National Bank Bldg., Pittsburgh, Pa.
Mills at Ambridge, Pa. and Chicago, Ill.
Manufacturers of Carbon and Alloy Steels
Turned and Polished Shafting

heads of one of its existing class 4-6-4 passenger locomotives.

Pig Iron

Pig Iron Prices, Page 66

Pittsburgh — A nonintegrated Pittsburgh district mill recently negotiated the purchase of 25,000 tons of basic pig iron to be shipped via all-water over the next four to five months. Demand from smaller outlets appears to be maintaining its improved rate. Davison Coke & Iron Co., Pittsburgh, which has not operated its Sharpsville, Pa., merchant blast furnace in approximately seven years, will resume blast with this stack Sept. 8. In addition, the only other merchant furnace in this or the Mahoning Valley district, the Struthers Iron & Steel Co., Struthers, O., will also resume blast at an early date in September. Prices are unchanged.

Cleveland—No price change has been announced for the fourth quarter, but some persons expect an increase because of the rise in scrap prices and the fact that there was no change for the third quarter. Consumers continue to buy in small lots with the exception of a few who are coming to realize that producers are not in the position to make as prompt shipments as formerly.

Chicago—Buying of pig iron is in small lots and no tonnages are being placed, melters apparently awaiting decision as to prices for fourth quarter. Some sentiment exists for an increase in price, especially if wages are advanced. Deliveries are steady, but foundries making automotive castings are not as active as recently, pending model changes. Prospects are for heavy melt during the final quarter when assemblies are resumed.

New York—Appearance of several inquiries for fourth quarter features the market here. So far no producer has announced a fourth quarter price, but such action is expected this week. Fourth quarter inquiries aggregate close to 6000 tons. Current buying, however, continues mostly in small lots for prompt shipment.

Philadelphia — New orders are for small tonnages and no great activity is evident. An inquiry for 2000 tons of basic iron was reported last week. There is a feeling that the general outlook for a busy fourth quarter in the steel industry augurs well for an increase in business for pig iron dealers.

Buffalo—Demand for pig iron is far above midsummer averages of recent years. Consumers are taking deliveries steadily and are back with repeat orders sooner than expected in

many cases. Large tonnage has moved this month by barge canal for eastern melt.

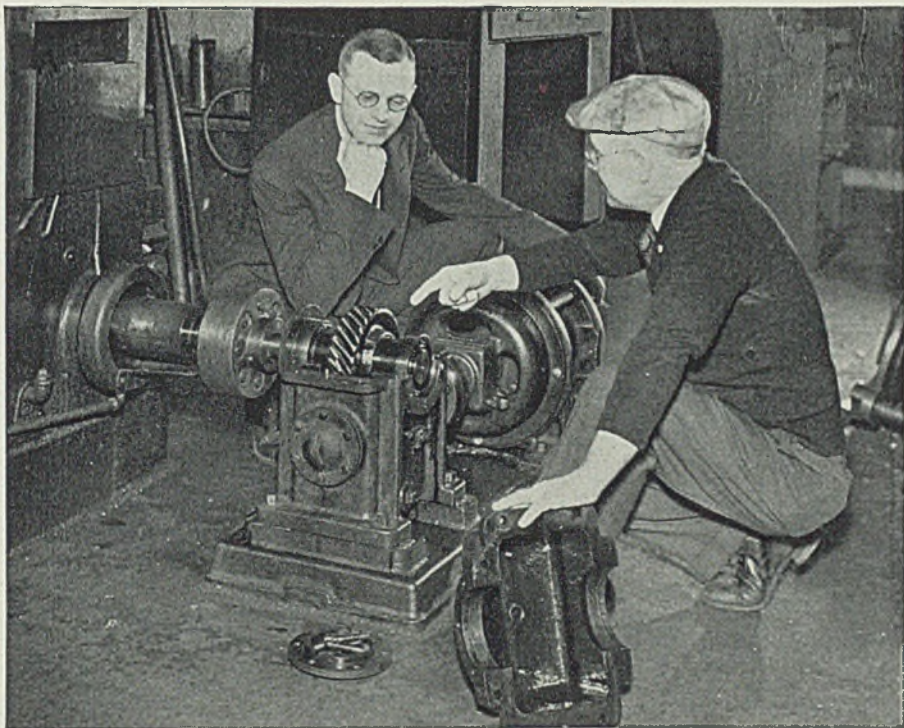
Cincinnati—New buying of pig iron for the past few weeks has been confined to immediate requirements. Foundry operations are steady excepting on automobile parts.

St. Louis—New buying has receded somewhat, although a number of melters are still taking small lots for prompt shipment. Major melters for the most part are well covered for the rest of this quarter. The melt as a whole is steady, recessions at certain shops being

counterbalanced by heavy schedules at steel mills and casting plants. The total movement for August, according to preliminary estimates, will run moderately ahead of July.

Birmingham, Ala.—Market continues strong with many small orders being filled. Melters such as pipe shops, stoves foundries, culvert manufacturers and others are consuming much iron. Shipments are being rushed. Stove and other producers will have much stock to build up.

Toronto, Ont.—Merchant pig iron sales are beginning to show improvement, and while melters are not



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placing forward delivery contracts they are entering the market at more frequent intervals. Awards the past week totaled 700 tons. Production continues steady and prices are firm and unchanged.

Scrap

Scrap Prices, Page 67

Pittsburgh — Consumer buying interest on No. 1 steel at \$17 a ton for delivery in this district became

evident last week and forced the quotable market 25 cents a ton higher to \$16.50 to \$17. Scrap sellers in this district all appear wary of selling melting steel at \$17 a ton and have turned down railroad steel orders at \$17.50. On a sizable sale, machine shop turnings have moved up to \$12 to \$12.50 whereas cast iron borings are now \$11.50 to \$12; railroad heavy melting steel, \$17.50 to \$18; and railroad specialties, \$19.50 to \$20.

Cleveland—Recent price advances are operating as expected in bringing out somewhat larger supplies of

iron and steel scrap both in northern and eastern Ohio. New business in the heavier lines is outstanding as to tonnage needs. Cast scrap continues in fair demand, showing gray iron foundries are doing some better, but supplies of heavy cast are restricted. Bloom and billet crop ends are up half a dollar to \$18 to \$18.50, while low-phos punchings are \$16 to \$16.50 and short rails \$17 to \$17.50.

Chicago—Strength continues in the steel and iron scrap market, though steel grades have slackened their upward movement after. A tonnage of heavy melting steel purchased by a leading independent interest moved at \$16 and this price is expected to be exceeded on the next tonnage sale. While scarcity continues this condition is being modified by fairly good offerings by railroads.

Boston — Brokers again have moved up their buying prices on various grades of iron and steel scrap, in an effort to obtain material for shipment against unfilled contracts.

Philadelphia—A more settled tone was the distinguishing characteristic of the scrap market in this territory. The general opinion was that brokers and other short interests have covered most of their commitments and that the prices will now reflect more truly the current market conditions. No large tonnages have been passing to the mills.

Buffalo — Scrap prices are rising rapidly and short interests are being squeezed as they attempt to cover needs. Sale of about 2500 tons of No. 1 heavy melting steel was booked for local delivery at \$15 while larger tonnages of No. 2 steel were contracted for at \$13.50. The largest melter continued to bid \$14 for scrap and got no tonnage.

New York—Brokers again have moved up their prices on iron and steel scrap for export. There has been an abrupt halt, however, in the recent spectacular upward movement in the prices on material for shipment to domestic consumers. The fact is that brokers and dealers have advanced their buying prices to about the highest level consistent with the prices which they have been obtaining from consumers. In numerous instances they are paying higher prices for scrap than they are getting from the customer.

Detroit—Further advances of 25 and 50 cents on the average have placed No. 1 melting steel here at \$13 to \$13.50; hydraulic compressed sheets, \$13.50 to \$14; No. 2 steel, \$12 to \$12.50; and blast furnace scrap, \$8.25 to \$8.75. Although late in the week a quieter pace to trading was evident, the market's inherent strength has not diminished.

Cincinnati—Dealer anxiety to obtain iron and steel scrap continues to create a strong market. Some ma-

Behind the Scenes with STEEL

Guff Slinger

LETTERS accompanying publicity material received for publication in STEEL are usually most perfunctory in tone. Usually the gist is: "Here's some stuff you can print if you want. But don't hold it against us."

A new trend appears to be jelling however, as the publicity boys really buckle down and try. Here is the latest letter received from a Detroit office:

"The boy who stands at some point near the conveyor line swabbing goo on almost every trolley wheel as it goes by is going to get a different job somewhere else in the plant—a job on which he can make himself more economically valuable.

"The reason is revealed in the attached masterful yet restrained description of a Under separate cover we're sending you a nice glossy print to use if you find the item interesting and want to illustrate it. If your treasurer is Scotch we'll be glad to furnish you with a cut tailored to your specifications.

"It seems to us that this squib should interest your readers. The thought that its publication would be of benefit to our client is something that of course has never entered our minds and probably won't occur to you either. Well, here it is. Let your conscience be your guide, etc."

Philosopher

RECENT issue of a certain trade magazine cynically observes that "If ten fat ladies sit in a conference to determine dress styles with 90 thin ones, they are going to come out of it wearing 'boyish form' garments instead of 'stylish stouts'. A vote is a vote."

While this casual observation has little bearing on the iron and steel and metalworking industries, still newshawk Don James insists if this is true he trusts once and for all it will disillusion fat women old fashioned enough to think that destiny shapes our ends.

Play, Don!

Interruption

WE HOPE young Teddy Gartner who is supposed to be connected with the Gartner Iron Co. or something in New York won't mind our telling everybody that he is a pretty busy lad these days. By some strange mischance of clerical efficiency, he was sent a STEEL questionnaire inquir-

ing about his status. Was he a manufacturer? Was he a distributor? Was he an employee? Teddy lost no time in returning the questionnaire pointing out that "I go to high school and my time is occupied."

Sorry to have been a bother, Ted. Let us know whether you make the football team this fall.

Duke Steps Out

OUR alert contemporary, Time, the Weekly Newsmagazine, takes special pains to inform us that His Royal Highness the Duke of Kent is vacationing at Yugoslavia and has just ordered the first new Phantom III model 12.

INQUISITIVE CAMERA DEPT.—XV



R. C. "Bob" Wellman, a recent newcomer to the STEEL staff, who devotes many of his waking hours to editing and compiling figures on new business in structural shapes and reinforcing bars. In tennis circles, he is known as the Terror of the Courts.

cylinder Rolls-Royce. Ripping, eh wot?

Not only that, but the second of these handsome little runabouts is now enroute to the Viceroy of India. But leave it to the Duke to go the Viceroy one better. The former stipulated that his pigskin-upholstered black sedan should be equipped with what London dealers advertise as "The Genuine American Police Siren Heard in the Talking Pictures."

Headstrong

HEADLINE of the week: GOOD TO THE LAST DROP—Erie drop hammers in the Aug. 17 issue. We hope it's O. K. with the Maxwell House people.

SHRDLU

terial is being sent out of the district. District outlets have taken in miscellaneous lots, for a substantial aggregate tonnage, but continue to resist the upward price push by withholding commitments on future needs.

St. Louis—The market still manifests great strength despite a temporary decrease in new buying. Material is extremely scarce. While some sellers claim to have material to cover their part of the sale of 20,000 tons of steel and steel specialties two weeks ago, it is known that much of the tonnage was sold short.

Birmingham, Ala.—While sales are not numerous, the scrap iron and steel market is showing a little improvement with higher prices being asked by dealers. Heavy melting steel is being quoted at from \$10.50 to \$12.50, a small amount being sold at the latter price. Because of high freight rates scrap cannot be shipped from here to territories where much higher prices obtain.

Seattle—Japan is showing more interest and small lots have been sold for export. Freight rates and scarcity of ship space are hampering business, increasing c.i.f. prices above levels at which Japan will do a normal business. Domestic demand continues active, mills taking No. 2 scrap in volume but the better grades, including railroad offerings, are going to eastern markets where returns are more attractive. Prices here are unchanged at \$10.50 for good export, \$10 for No. 1 and \$8 for No. 2.

Toronto, Ont.—Business in iron and steel scrap is increasing but sales are specialized and only a few grades are active. Local dealers state there is good movement of steel lines to mills in the Hamilton district and sales of heavy melting steel have increased recently. Montreal dealers also report good demand for heavy melting, rails and steel axles.

Warehouse

Warehouse Prices, Page 68

Cleveland—General requirements for warehouse products during August show a marked increase over July and there is reason to believe the improvement will continue. Prices are firm at the increased figures set a month ago.

New York—Sales by iron and steel jobbers are at an even higher daily average rate than in the record breaking month of July. Jobbers report that this active demand is well diversified. The outstanding feature is the big demand for structural shapes out of warehouse stocks. Prices are firm.

Philadelphia—While there was a

slight lull reported in the last week's business in one warehouse, the industry as a whole exhibited signs of continuing activity. There was some indication that stocks need replenishing and that heavy buying on the part of the warehouse will add to the delivery problems of the mills. Prices are unchanged. Volume for the month was higher than in any preceding August for several years.

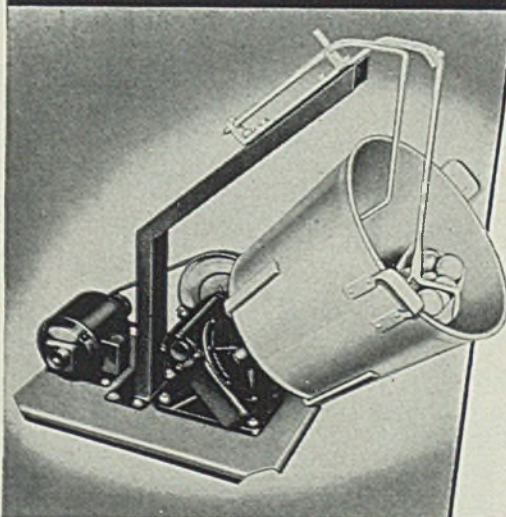
Detroit—Jobbing sales in this district established a year's peak during August, and according to all prospects, September should show little

or no recession. So insistent has been demand that many jobbers find themselves short of stocks. Prices are unchanged.

St. Louis—Business recently has been extremely active. One leading interest reported that the third week of August was the largest in point of sales in its history. Coal companies in the adjacent Illinois fields, which are working on high schedules, are accounting for sizable tonnages, including light rails.

San Francisco—Movement of out-of-stock items has shown a decided

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114 Sansome Street

improvement over a year ago. Mild steel bars, plates and shapes have been reduced 10 cents. No. 10 blue annealed is now quoted at 3.70c in Los Angeles and 3.25c in San Francisco. Cold finished steel has been reduced 15 cents in both cities.

Cincinnati—Sales of warehouse products were maintained exceptionally well during August, showing a decline of only a few points from the levels of June and July. Demand continues broad, including building materials. Prices are steady.

Seattle—Bars, shapes and plates are in fair demand, with sheets more active than other items. Volume is lower than July. Prices are firm and unchanged.

Coke By-Products

Coke By-Product Prices, Page 65

New York — Despite the let-down in automobile production, demand for coke by-product distillates is of record breaking proportions. Shippers are having great difficulty in keeping consumers supplied. When the new automobile models get into production, the present shortage will be intensified. Demand for all other coke by-products continues

heavy. No price changes are reported.

Iron Ore

Iron Ore Prices, Page 67

Cleveland — Stocks of iron ore at the lower lakes ports and furnaces Aug. 1, were approximately 4,300,000 tons less than on the comparable date last year, reflecting the increase in consumption this year. The Lake Superior Iron Ore association's report follows:

	Tons
Consumed in June	3,763,289
Consumed in July	3,826,050
Increase in July	62,761
Consumed in July, 1935.....	2,198,189
On hand at furnaces Aug. 1....	21,193,980
On Lake Erie docks Aug. 1.....	4,016,613
Total on hand at furnaces and Lake Erie docks Aug. 1.....	25,210,593
Reserve total Aug. 1, 1935.....	29,508,834

In an effort to keep pace with the demand for iron ore, Interlake Steamship Co., Cleveland, will put its steamer **ELRON HOYT II** now at Ashtabula, into commission Monday.

New York—Prices on eastern local iron ores are showing a tendency toward advancing. Some business in Russian ore of the 65 per cent grade

for basic or foundry iron is reported to have taken place recently at around 90 per unit alongside docks at Atlantic ports. Some of the iron ore business recently closed is for shipment through the first quarter of 1937.

Metallurgical Coke

Coke Prices, Page 65

The sold-out condition of all available beehive coke ovens in the Western Pennsylvania district continues to hamper the plans of a few blast furnace operators to resume on this grade of fuel. Sellers are firm in quoting \$3.65 to \$3.75 per ton, f.o.b. Connellsville, Pa., ovens, for standard furnace coke, but state they cannot comply with requirements of some inquiries which run as high as 20,000 tons to be shipped monthly beginning in September. Brisk trade features other grades of beehive coke for metallurgical purposes. Both by-product and beehive coke producers are beginning to build up depleted dealers' stocks on domestic sizes. Hillman Coal & Coke Co., Pittsburgh, expects to resume operations about Sept. 1 in the Tower Hill No. 2 mine of the Hecla Coal & Coke Co., which has been closed for over five years.

Reports persist of the possibility of a coke shortage as blast furnaces continue to be relighted. Connellsville beehive coke ovens idle for several years may be rebuilt.

Fluorspar

Fluorspar Prices, Page 66

New York—While imported fluorspar continues at around \$21.50 per net ton, duty paid, tidewater, for the 85.5 per cent grade, this figure is largely nominal, due to difficulties in connection with getting shipments from foreign ports. There is hope that shipments soon will be resumed from Barcelona but the situation there is highly uncertain.

Nonferrous Metals

Nonferrous Metal Prices, Page 66

New York—The final week of the month marked a continuation of optimistic sentiment in nonferrous metals over the outlook for fall. Consumption of most metals is the heaviest in years and producing companies generally are back in the profit-making class to the extent where some return to stockholders now is possible.

Copper—August sales were approximately 25,000 tons, which was an excellent showing in view of the record tonnage of 175,000 booked in

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July when consumers covered just prior to the last ¼-cent advance to 9.75c. August consumption was between 65,000 and 70,000 tons or the heaviest in more than six years. Sellers now are willing to take business for December delivery.

Lead—Books now are open for October delivery and sellers expect a lift in buying from the comparative slowness of last week, which was not unexpected in view of the fact that consumers are well covered on needs through September. Clinton Crane, St. Joseph Lead Co. president, on sailing for Europe last week, said no immediate advance in prices is expected.

Zinc—Consumers have continued to place only moderate orders with the result that unfilled business on sellers' books has dropped several thousand tons in the past month or so to around 36,000 tons. Foreign prices on zinc have risen slightly.

Tin—The adviser to the Siamese government on tin now is on his way to London to discuss further Siam's quota under the proposed extension of the international tin restriction scheme which is due to expire Dec. 31. Resumption of conversations and better American buying resulted in higher prices toward the end of the week.

Antimony — American prices moved up further last week on a stronger market in China. Demand continued routine.

Steel in Europe

Foreign Steel Prices, Page 68

London — (By Radio) — With the holiday period closing, manufacturing activities being resumed and greater demand for domestic and export shipments, steelworks in Great Britain are busy with heavy specifications against contracts. Quieter demand for pig iron has allowed some accumulation of stocks and some export shipments. Some Russian pig iron is being imported. Domestic demand for sheets is active and for tin plate it is fair.

The Continent reports lively export trade with all markets, including America.

Quicksilver

New York — Quicksilver prices advanced \$3 today with small lots of 15 to 25 flasks quoted \$78 per 76-pound flask and some sellers asking \$80. Numerous inquiries have been received during the past few days but sales have been limited due to the shortage of supplies. Pacific Coast interests have small stocks on hand while others have

oversold their quota. Reports reaching this country on the Spanish situation are vague, however, little relief is anticipated from that source.

tations are that bolt, nut and rivet makers will open their books for fourth quarter immediately after Labor Day.

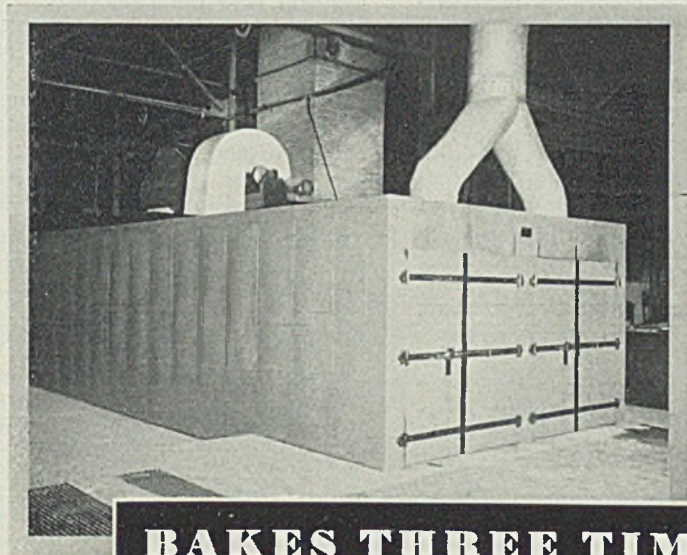
Bolts, Nuts and Rivets

Bolt, Nut, Rivet Prices, Page 65

New York—Demand has improved. Requirements now being placed are of a miscellaneous character, and the only large business placed during the week comprised five to six carloads of bolts for WPA work. Expec-

Swedish Steel Is Imported

Imports at Philadelphia during the week ended Aug. 22 include 46 tons of cold-drawn steel wire, 29 tons of steel billets, 54 tons of steel tubes, four tons of steel forgings and 43 tons of steel bars from Sweden. Also 77 tons of steel bands and 71 tons of structural shapes from Belgium.



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THIS two-alley Morrison rod baker is doing the work of older six-alley equipment; doing it with one-third the fuel; actually turning out more work per day than the bank of ovens three times its size which it replaced. Furthermore, every inch of rod is baked perfectly no matter how tightly stacked on the truck. Morrison rod bakers have often paid for themselves out of the first year's savings. These advantages may be available to you also. A frank, conservative estimate is yours for the asking.

Other Morrison equipment is designed for annealing, heat-treating, and galvanizing; tank and pot heating; and other industrial process heating applications utilizing the recirculating forced convection method.

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Steel Improves Safety Records

FROM 1926 to the end of 1935 the steel industry reduced its frequency of disabling accidents 66 per cent, according to current data from the National Safety Council, Chicago. In the same period the severity rate was reduced 25 per cent. The frequency rate for all industries in the same period was reduced 61 per cent, and the severity rate 43 per cent.

From 1934 to 1935 the steel industry reduced its frequency rate 18 per cent, and severity rate 1 per cent. This compares with improvement for all industry of 10 per cent in frequency, and 11 per cent in severity.

Reports from 106 steel companies whose employes worked 422,327,000 man-hours showed an average frequency rate of 8.86, which is the number of disabling injuries per million man-hours of exposure. The corresponding average severity rate was 2.04, the number of days lost per 1000 man-hours of exposure. This was 1 per cent below the 1934 rate.

The steel industry ranks seventh in accident frequency among 30 major industries reporting to the council and twenty-fifth in severity. Average rates for all industries are 14.02 for frequency and 1.58 for severity.

Frequency rates are lowest in large steel mills and severity rates are lowest in small plants. Large companies made most improvement in frequency, but middle-sized plants attained greatest reductions in severity, in comparison with 1934. Skelp mills have the highest frequency rates,

averaging 19.88; open hearths have the highest severity rate, 4.85. Among major departments, merchant mills made the largest reduction in frequency in comparison with 1934, about 38 per cent, and wire mills improved most in severity, 44 per cent from 1934.

Reduces Temporary Disabilities

The steel industry has improved its frequency rate more than the average, but is 18 per cent lower than the average in severity improvement. Greatest success in its safety campaigns has been attained in reducing the frequency and severity of temporary disabilities, the rate for other serious injuries, permanent partial disabilities, has increased 29 per cent over the 1926 rate.

Relative success in reducing frequency and severity over the period 1926-1935 and during 1935, compared with 1934, in the various departments of the steel industry is shown in the following table:

Department	Frequency		Severity	
	Per Cent Change			
	1934 to 1929	1934 to 1929	1934 to 1929	1934 to 1929
	1935 to 1935	1935 to 1935	1935 to 1935	1935 to 1935
Sheet mills.....	-26	-67	-8	-46
Open hearth.....	-21	-59	+28	-77
Rod, wire mills	-18	-50	-44	-49
Genl. mechanical	-14	-44	+27	-26
Blooming, billet mills	-36	-39	-28	+12
Blast furnaces....	+1	-37	-1	-50
Pipe mills	-11	-37	+14	+44
Merchant mills....	-38	-29	-29	-20
Coke plants	-12	+18	-25	-9

Aircraft Builders To Hold Production Meeting

With the aircraft industry expanding rapidly this year, manufacturers will convene in Los Angeles, Oct.

15-17, for a national aircraft production meeting, the first of its kind to be held. The meeting is being arranged by the Society of Automotive Engineers with the co-operation of its four Pacific Coast sections, the Aeronautical Chamber of Commerce of America and the Air Transport Association of America.

Estimates for the first six months of 1936 indicate that commercial aircraft manufacture will show an increase of 50 per cent over the like period of 1935, and army and navy airplane orders will show more than a 200 per cent gain. This record-breaking demand, it is said, is introducing mass production methods in aircraft manufacture, heretofore largely consisting of hand operations. More than \$3,000,000 has been spent by airplane factories this year in plant expansions.

The meeting will be conducted as a forum in which technical papers and discussions will assist aircraft executives in ironing out problems accompanying rapid growth of their industry.

Detroit Engineers Outline Vocations for 123 Youths

Opportunities of the engineering profession were outlined recently to 123 high school boys and their parents at a vocational guidance meeting arranged by the Associated Technical Societies of Detroit. It was typical of guidance meetings which the Engineers' Council for Professional Development is promoting in other areas through local associations of engineers.

E. A. Danse, chief metallurgist, Cadillac Motor Car Co., presided at the session. Principal address was given by C. F. Hirshfeld, chief of research, Detroit Edison Co. He distinguished between the fields of engineering, leaving detailed consideration of professional divisions to take place in separate conferences.

London Chosen for 1937 Testing Materials Congress

Second international congress of the International Association for Testing Materials will be held in London, April 19-24, 1937, according to announcement of the permanent committee. The first congress was held in Zurich in 1931.

Approximately 150 papers are promised. Subjects to be considered by the metals group include: Behavior of metals as dependent upon temperature, particularly high temperature; progress of metallography; light metals and their alloys; and wear and machinability. K. Headlam-Morley, 28 Victoria street, London S.W.1, is honorary secretary of the congress.



Whitey Sez:

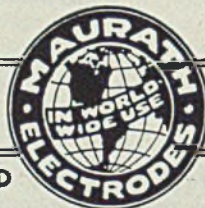
The average man's intelligence can be materially improved by reading the definition in Nickel Steel Topics August issue.

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Canada's First Half Output Gains Over 1935

Canada produced 578,700 gross tons of steel ingots and castings in the first half of 1936; 388,163 tons in the corresponding period of 1935. Pig iron production was 340,335 tons, compared with 259,777 tons in first half of last year. Ferroalloy output was 30,550 tons against 22,192 tons in first half last year.

June production fell off slightly from May, steel ingot and casting production in June being 82,196 tons and in May 94,602 tons, a decline of 13 per cent, but 12 per cent larger than June, 1935. Pig iron production in June, 56,362 tons, was 5 per cent under that of May, 58,832 tons, but 24 per cent greater than the 44,555 tons made in June, 1935. Ferroalloys produced in June totaled 5307 tons, compared with 6171 tons in May and with 3845 tons in June, 1935.

100 College Graduates in Training Course at G.-E.

One hundred graduates from 55 colleges and universities have been selected by the General Electric Co. to enter its business training course this year. The students will spend three years in training.

Since 1919, when the course was founded, 911 graduates from 142 different colleges have been enrolled in it. Of these, 570 are still with General Electric or affiliated companies.

Of the 100 men taken into the training course this year, approximately two-thirds will be employed in Schenectady, N. Y., and the rest in Bridgeport, Mass.

The subjects offered range from elementary accounting up to cost accounting and industrial analysis and control. A course in business law is given.

Aid Sales to Uncle Sam

Guide books for those desiring to participate in sale of products to the United States government have been made available by the machinery division and forest products division of the bureau of foreign and domestic commerce, department of commerce, Washington. They cover every kind of merchandise consumed by the government, it is stated. Leads and short-cuts for contractors and for prospective bidders on products for government use are included.

Purchasing offices, including those outside Washington are listed and a section is included on govern-

ment purchasing procedure and methods of soliciting inquiries and submitting bids. The books may be obtained at 5 cents each from the bureau of foreign and domestic commerce, department of commerce, Washington.

British Institute Aids Metallurgical Research

Council of the Iron and Steel institute (British), announces a limited number of grants from the research fund founded by the late Andrew Carnegie in aid of metallurgical work. Candidates must be under 35 years of age and must apply before Sept. 30 on a special form obtained from the secretary of the institute, 8, Victoria street, London, S. W. 1.

Grants will depend on the nature of the proposed research but the maximum in any one year will, as a rule, not exceed £100. Further grants may be made at discretion of the council for work which seems sufficiently meritorious to justify further assistance.

Disston Employe Honored

Henry Disston & Sons Inc., Philadelphia, has honored George Metzger, an employe for 66 years by pre-

senting him an engrossed resolution of the company's directors, a pipe, which he preferred to cigars, and a check. Mr. Metzger has been a member of the American Society for Steel Treating and its successor, American Society for Metals, since 1925 and is said never to have missed a meeting since then. He started work for the Disston company at the age of 12 years as utility boy and rose to superintendent of blacksmith work.

Ohio Scrap Industry Wins Lower Compensation Basis

Compensation insurance rates for scrap iron yards in Ohio have been reduced from \$14 to \$11 per \$100 of payrolls by the Ohio industrial commission, the result of a joint campaign by the Cleveland and Cincinnati chapters of the Institute of Scrap Iron and Steel Inc. A safety code has been adopted for Ohio and further reductions in the basic rate depend on its effectiveness.

The Ohio plan is part of a national program for lowering compensation insurance costs for members of the institute. In New York city a pool is in operation, with cooperation of the state insurance fund, with a total of over \$60,000 in premiums, including only members of the institute.

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Construction and Enterprise

Ohio

BEDFORD, O. — Sheffield Bronze Powder & Stencil Co., Sheffield, O., plans to move its plant from Cleveland to here, if local capital assists. The company would move into the former Best Foundry Co. plant on Forbes road.

BEREA, O. — City, E. L. Wing service director, has authorized selection of an engineer to make a survey of the light plant with a view to future expansion and development. John Baesel is mayor.

BLOOMVILLE, O. — Village is con-

templating construction of a \$50,000 waterworks system with aid of WPA. C. E. Pettis, engineer, 3535 Watson avenue, Toledo, O., has submitted preliminary estimate.

CLEVELAND — Art Metal Co., 1800 East Thirty-eighth street, has leased part of former Multigraph building at East Fortieth street and Kelley avenue, Northeast, and will carry on part of the manufacture of lighting fixtures there. George E. Glatthar is president.

CLEVELAND — Murray-Ohio Mfg. Co., 1115 East 152nd street, will take mechanical bids later for work involved in a general contract let to Lundoff-Bicknell Co., Terminal Tower, for construction of a 2-story, 85 x 110 feet, addition. C. W. Hannon is president.

CLEVELAND, O. — Ohio Gravel Co. plant was damaged by fire recently. Fred W. Connell president, said the plant will be rebuilt.

COLUMBUS, O. — City, L. Lewis service director, is taking bids due Sept. 29 for furnishing and installing nine pumps, together with motors, valves and fittings estimated to cost \$33,000. (Noted STEEL Aug. 24).

CORNING, O. — Village, L. C. Gibson WPA director for district No. 4, Zanesville, O., is considering construction of a \$75,000 waterworks plant. Walter W. Graf, Lancaster, O., is engineer. (Noted STEEL July 27).

DEFIANCE, O. — Lectrolite Corp. is constructing a 46 x 56 foot addition to the factory building housing the heat treating, buffing, and welding departments. New equipment is to be installed by the company, maker of double-end wrenches for the automotive trade. Harold L. Schlosser is president and general manager.

ELMORE, O. — Village board of public affairs, Edward J. Avers clerk, takes bids due noon, Sept. 19 for converting local lighting system from 25 cycles to 60 cycles. Replacement of private motors, and repair damage is included in the \$28,000 project. (Noted STEEL Aug. 10).

GALION, O. — American Steel Abrasive Co., Sherman and East streets, is enlarging the cupola room and will add new equipment, including a motor and a water pump. I. T. Armstrong is superintendent.

GALION, O. — Central Ohio Steel Products Co. is asking bids for construction of 10,000 square feet additional manufacturing space.

GALION, O. — Village, L. Cline service director, may submit a \$60,000 bond issue to a vote in November for construction of a sewage disposal plant. American Solvent Recovery Corp., 83 South High street, Columbus, O., is surveying engineer.

GENEVA, O. — Village has submitted report to PWA for a sewage disposal plant estimated to cost \$80,000. George B. Gascoigne, Leader building, Cleveland, is consulting engineer.

MASSILLON, O. — Board of education of the Massillon school district has plans for the purchase of new heating boilers.

RUSHSVLVANIA, O. — Village has engaged Carl Simon, Van Wert, O., to draw plans for a proposed \$65,000 waterworks. Ralph Geiser, Springfield, O.,

is WPA director for district No. 14. (Noted STEEL Aug. 24).

TIFFIN, O. — Midland Wire Corp., recently formed with capital of \$150,000 has purchased the plant of Monarch Products Co., here. Equipment for the manufacture of bare and insulated copper wire is to be installed. Arthur A. Mueller is president. David H. Detweiler, Edward Lossman, plant superintendent and production manager, are other incorporators.

TOLEDO, O. — Standard Electric Stove Co., 1718 North Twelfth street, has leased additional space for fabricating, welding and assembling its products.

TROY, O. — Gummed Products Co. has purchased Schafer Machine shop, Mulberry and Walnut streets, and will operate it.

WEST UNITY, O. — Village will pass Sept. 24 on a bond issue of \$28,000 to help finance construction of a \$70,000 waterworks system. Champe, Finkbeiner and associates, 1025 Nicholas building, Toledo, O., is consulting engineer. (Noted STEEL Aug. 24).

Michigan

CHARLOTTE, MICH. — Beach Mfg. Co., maker of road building machinery, was damaged by fire Aug. 11.

DETROIT — Federal Motor Truck Co., M. L. Pulcher president, 5780 Federal street, has entered the house trailer field.

DETROIT — Hydraulic Duplicator Co., maker of numerous types of machinery, has been incorporated. Edmund L. Wall, 3315 Butternut street, is interested.

DETROIT — A-1 Plumbing & Heating Co. has been incorporated to engage in general manufacturing. Louis Bresler, 1603 Taylor avenue, is interested.

DETROIT — McClelland Equipment Co., 3740 Cass avenue, has been incorporated to manufacture and sell automotive equipment, tools, and parts. Stewart S. McClelland, 14640 Faust avenue, is interested.

DETROIT — Knight Screw Products Co., 6510 Epworth street, purchased plant of McAleer Mfg. Co., Lyndon and Prairie avenues. William C. Knight, president, says an addition will be built at the McAleer plant and new equipment installed to increase production.

KALAMAZOO, MICH. — Brundage Co., maker of furnace blowers and domestic air washers, will carry on increased manufacturing in 5000 square feet of space recently acquired.

MUSKEGON, MICH. — City commission has approved proposed extension of the water system to supply residents of North Muskegon. This \$56,000 project is being delayed, pending PWA approval.

PONTIAC, MICH. — American Forging & Socket Co. has engaged L. J. Heenan, architect, to prepare plans for a power plant, 30 x 50 feet. (Noted STEEL July 13).

SOUTH LYON, MICH. — City proposes to construct a \$56,000 sewage plant with aid of PWA. Hayden & Kunzi, 705 Lawyers building, Detroit, is engineer.

Illinois

MORRIS, ILL. — Western Foundry Co., East Armstrong street, has taken over the property of the Illinois foundry and will operate it after an idleness of 10 years. Gray iron and alloyed cast-

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ings for building hardware, stoves, automobiles and agricultural machines will be poured.

SPRINGFIELD, ILL.—City proposes to build a second power plant this year at an estimated cost of \$800,000 to \$1,000,000. Burns & McDonnell, 107 West Linwood boulevard, Kansas City, Mo., is consulting.

Indiana

ANGOLA, IND. — Cox Mfg. Co. has been formed to manufacture tools and equipment for automobiles. Cleon Wells is resident agent. Theodore T. Wood, L. P. Cox, are the other incorporators.

INDIANAPOLIS—T. & T. Bakery, 2465 Cornell avenue, has engaged D. A. Boehlen & Son, Majestic building, as architects for a 1-story addition to the boiler plant. New equipment is to be purchased.

INDIANAPOLIS—Indianapolis Railways Inc. proposes to construct a steam power house on West Washington street. Bevington-Williams Inc., Indiana Pythian building, is mechanical engineer for this \$750,000 project.

Pennsylvania

EAST ALTOONA, PA.—Pennsylvania Railroad Co., E. Temple chief engineer, Broad street station, Philadelphia, has plans for an addition to the machine shop here.

PHILADELPHIA—Henry Levis & Co., dealer, Commercial Trust building, is in the market for a 125 to 150 horsepower horizontal, stationary boiler for use in Maryland.

SHARON, PA.—Carnegie-Illinois Steel Corp., Carnegie building, Pittsburgh, has appropriated funds for installation of machinery in the Farrell works to make steel slabs for the Youngstown district. This new capacity is to be in effect Nov. 1.

WEST BRIDGEWATER, PA.—Penny-Rye Distilleries Inc. is accepting bids for two 200 horsepower boilers or for one 400 horsepower boiler and equipment. Cost is estimated at \$1000.

New Jersey

BELLEVILLE, N. J.—Wallace & Tiernan Co. Inc., Mill street, plans to spend \$125,000 for conveyors, motors and controls and other equipment for new additions to liquid chlorine control apparatus. Fletcher-Thompson Inc., 1336 Fairfield avenue, Bridgeport, Conn., is consulting engineer.

DOVER, N. J.—Commanding officer, Pocatiny arsenal, asks bids until Sept. 2 for furnishing a motor driven power gap shears, invitation 672-37-72; and until Sept. 3 for miscellaneous twist drills, nuts, nails and washers, invitation 672-37-77.

New York

GREENWICH, N. Y. — Greenwich Union Water Works Co. is having surveys made for additions to the water-works system. Cost is estimated at \$23,000. Barker & Wheeler, 36 State street, Albany, N. Y., is engineer.

HORNELL, N. Y.—Hornell Gas & Electric Co., 42 Broadway, may spend more than \$37,000 on an addition to the plant at 186 Main street. Haskell & Considine, Hulett building, Elmira, is consulting.

NEW YORK—Grumman Aircraft Engineering Corp., Farmingdale, N. Y., has bought 122 acres in Central Park, and

will improve it with a plant devoted to the construction of aircraft.

NEW YORK—Leicester Contracting Co., 875 Sixth avenue, is in the market for 80-horsepower single or double drum gasoline hoisting engines for use in Maine.

TARRYTOWN, N. Y.—Chevrolet Motor Co., with headquarters at 3044 West Grand boulevard, Detroit, proposes to install electric hoists, conveyors, motors and controls and other equipment in new additions to assembly plant here. Cost is approximately \$350,000.

Alabama

BIRMINGHAM, ALA.—W. M. Smith, dealer, Forty-fifth to Forty-eighth streets, First avenue, North, is in the market for a conveyor belt, 30 inches wide, 222 feet long, with or without troughing and return idlers.

LEEDS, ALA. — City receives bids Sept. 10 for furnishing pumps, a pump-house, and other buildings and equipment in a \$89,091 sewer construction program. J. W. Goode, Martin building, Birmingham, Ala., is engineer.

District of Columbia

WASHINGTON — Navy department, bureau of supplies and accounts asks bids until Sept. 8 for 5 portable electric drills delivered at Mare Island, Calif., schedule 8643; and until Sept. 15 for seamless steel tubing delivered at Mare Island, schedule 8685.

WASHINGTON — Navy department, bureau of supplies and accounts, asks bids until Sept. 8 for furnishing miscellaneous portable, submersible pumps delivered at various points, schedule 8631; and miscellaneous corrosion-resisting sheet steel delivered at Mare Island, Calif., schedule 8633.

WASHINGTON — Treasury department, procurement division, federal warehouse, H. E. Collins assistant director, asks bids until 10 a. m. Sept. 4 for furnishing a motor driven wood-working machine delivered to W. H. Minor, WPA warehouse, Cuyahoga Falls, O., invitation 222-458-A-9-4; and a centrifugal pump with capacity of 10,000 gallons per hour delivered to R. D. McGill, Youngstown, O., invitation 22-459-A-9-4.

WASHINGTON—General purchasing officer, Panama Canal zone, asks bids for furnishing as soon as possible two main diesel engines, each complete with generator and exciter; one double armature propulsion motor; one alternating-direct current motor generator set; one thrust bearing; one diesel auxiliary generator and air compressor set; two motor driven circulating water pumps; one vertical, motor driven high pressure air compressor; one motor driven bilge water pump; one motor driven sanitary water pump; one motor driven fresh water pump; and other equipment for a tug. Equipment is to be delivered either at Cristobal or Balboa, Panama Canal.

Louisiana

CLINTON, LA. — City has engaged A. Blakewood, Baton Rouge, La., engineer, to make plans for a \$60,000 sewage system.

Mississippi

VICKSBURG, MISS. — United States engineer, Box 667, asks bids until Sept. 14 for 150 globe valves, proposal 42;

9740 pounds of galvanized copper bearings, and sheet steel.

North Carolina

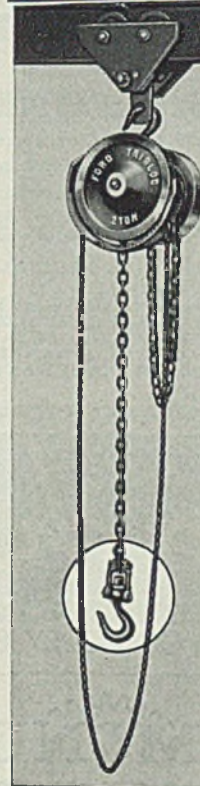
SMITHFIELD, N. C.—Johnson County Electric Membership Corp. will receive bids until Sept. 22 for erecting a complete rural distribution system. Spoon & Lewis, Greensboro, N. C., is engineer.

SOUTHPORT, N. C.—Town, planning a \$40,000 electric light plant, has applied to PWA for a loan and grant to help finance the project.

WEST JEFFERSON, N. C.—Town,

(Please turn to Page 85)

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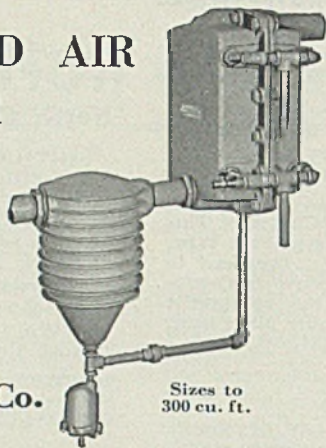
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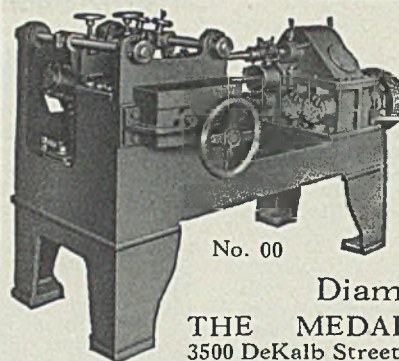
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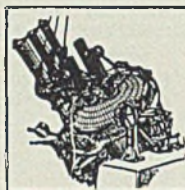
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(Continued from Page 83)

planning a \$80,960 electric power plant, has filed a PWA application for a loan and grant. H. C. Tucker is mayor.

WASHINGTON, N. C.—Municipality proposes extensions and improvements in the electric power plant to cost \$64,000. Federal aid secured.

Tennessee

MEMPHIS, TENN. — City expects to proceed on plans for erecting a distribution system using TVA power. Estimated cost is \$2,500,000. Thomas H. Allen is chairman of light and water division. (Noted STEEL July 27).

West Virginia

HUNTINGTON, W. VA. — United States engineer asks bids until Sept. 8 for furnishing a haulage engine, invitation 516-37-27.

Virginia

CLARENDON, VA.—Arlington county has report from Wiley & Wilson, Lynchburg, Va., consulting engineer, on proposed establishment of a power system here. Frank G. Hanrahan is county manager.

ORANGE, VA.—Snead & Co., maker of steel office equipment, will establish a factory at the fairgrounds. R. C. Slaughter, vice president of the Citizens National bank, made the announcement.

RICHMOND, VA.—Tidewater Electric Service Co., with capital of \$50,000, has been incorporated by Edgar A. Feldtkeller, 6613 Three Chopt road.

WEST POINT, VA. — City receives bids Sept. 4 for furnishing pumps, constructing a pumphouse and making other improvements in the waterworks. R. Stuart Royer, Builders Exchange building, Richmond, Va., is engineer.

WINCHESTER, VA.—City will vote Sept. 29 on whether to issue \$500,000 worth of bonds with which to finance construction of an additional water supply.

WYTHEVILLE, VA. — R. P. Johnson, dealer, is in the market for locomotive boilers and engines on wheels.

Missouri

GOLDEN CITY, MO.—City has approved issuance of \$30,000 worth of bonds for the waterworks.

SPRINGFIELD, MO. — City is awaiting comprehensive surveys by Black & Veatch, 4706 Broadway, Kansas City, on a proposed municipal water supply system.

Arkansas

EL DORADO, ARK.—Lion Oil Refining Co. may spend \$100,000 for electric pumping machinery, motors and controls, conveyors and other equipment in expansion of the lubricating oil division.

Texas

LANCASTER, TEX.—City has approved issuance of \$20,000 worth of bonds for the waterworks.

PORT ISABEL, TEX. — City seeks PWA funds for immediate repairs and improvements at the Rio Grande river pumping station and enlarging and modernizing existing plant. A. Tamm, Harlingen, Tex., is engineer.

ROXTON, TEX. — Lamar County

Water Control & Improvement District No. 1 will call for a new election for issuance of waterworks and sewer bonds; bonds were defeated at previous election. Freese & Nicholas, Capps building, Fort Worth, Tex., is engineer.

SAN ANTONIO, TEX. — City is seeking PWA aid to finance purchase of 5 miles of 6 inch pipe, an elevated steel tank, and pumping equipment to cost a total of \$15,000. A. A. Ririe, 655 East Woodlawn, is engineer.

Oklahoma

PERRY, OKLA. — City council will accept bids until Sept. 2 for purchase of \$118,000 worth of waterworks bonds.

STRONG CITY, OKLA. — City proposes to install new water pumping equipment in an extension of the waterworks at a cost of \$5454. PWA has approved the project. G. F. Brown, 3028 North Harvey street, Oklahoma City, is engineer.

Wisconsin

MARSHALL, WIS. — Marshall Mfg. Co. plans to build a 1-story manufacturing addition, 50 x 66 feet, Frank B. Gray, 73 South LaSalle street, Chicago, is architect.

MILWAUKEE — Ampco Metal Inc., 3830 West Burnham street, maker of copper alloys, bronze tools, and the like, is starting work on a 1-story shop addition, 50 x 80 feet. Carl J. Zaiser is president and general manager.

MILWAUKEE—Allis-Chalmers Mfg. Co.'s \$500,000 expansion program for additional tractor production facilities has been indefinitely postponed due to the drouth. However, the \$1,000,000 expansion at Springfield, Ill., is to be completed.

WISCONSIN RAPIDS, WIS.—Hydro-Electric Power Co. proposes to construct three hydroelectric generating plants on the Wisconsin river. Transmission lines in Wood, Marathon, Portage, Adams and Juneau counties, and power substation facilities are planned. W. F. Thiele, chief engineer, Consolidated

Water Power & Paper Co., is interested in the project.

Minnesota

BOVEY, MINN.—Village, C. Olson clerk, is considering plans for a municipal light and power plant to cost more than \$40,000.

BUFFALO, MINN. — Village, E. L. Thomesen clerk, has engaged G. M. Orr & Co., 408 Baker building, Minneapolis, engineer, to make a survey for a proposed municipal electric light plant. Cost is to exceed \$50,000.

DETROIT LAKES, MINN. — City calls for bids Sept. 8 for a sewage and trash pump, complete with motor and appurtenances. E. J. Bestick is city clerk.

KENNEDY, MINN. — Village is undertaking surveys for a proposed \$25,000 waterworks. Federal aid is sought. E. L. Lium, Grand Forks, N. Dak., is engineer.

KETTLE RIVER, MINN.—Northern Co-Operative Power association plans to take bids soon for 200 miles of rural lines in Kettle River, Moose Lake and Cromwell. A fund of \$350,000 has been secured through federal aid. Thomas Ross is secretary.

LAKE CRYSTAL, MINN.—City, G. M. Champlin clerk, proposes to erect a power house and equip with a generating plant with a distribution system. G. M. Orr & Co., 408 Baker building, Minneapolis, is engineer for this proposed \$90,000 project.

LAKEFIELD, MINN.—Village, E. P. Whitney clerk, expects to purchase one 450 and one 280 horsepower diesel engine at a cost of \$45,000 for the municipal light plant. (Noted STEEL July 27).

THIEF RIVER FALLS, MINN. — City is studying surveys for a proposed disposal plant expected to cost \$25,000. Federal aid is sought. E. L. Lium, Grand Forks, N. Dak., is engineer.

VIRGINIA, MINN. — City contem-
(Please turn to Page 87)

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Better Steel Castings

—Construction and Enterprise—

(Concluded from Page 85)

plates purchasing new generating equipment at a cost of \$100,000 for the municipal power plant. H. E. Bielford is city clerk.

Kansas

RUSSELL, KANS.—City has sold \$112,000 worth of bonds with which to finance construction of a municipal light and power plant. F. A. King is clerk.

South Dakota

BIG STONE CITY, S. DAK.—City plans to spend \$50,000 to construct a new water system. Equipment will include a tank, pumphouse, pumps, and mains. Federal aid is sought. Dakota Engineering Co., Mitchell, S. Dak., is engineer.

JAVA, S. DAK.—City is considering preliminary plans for construction of a new water system, including purchase of pumps, mains, and an elevated steel tank. Total cost is to be \$40,000. Dakota Engineering Co., Mitchell, S. Dak., is engineer.

LAKE PRESTON, S. DAK.—Municipality is considering purchase of a tank for the waterworks. J. Emburg, Madison, S. Dak., is engineer.

Iowa

DENISON, IOWA — South Crawford Rural Electric Co-operative has secured \$217,000 from the Rural Electrification administration for erection of 123 miles of lines in Shelby, Carroll, and Crawford counties.

MUSCATINE, IOWA — Northern Gravel Co. plant recently damaged by fire will be rebuilt.

RED OAK, IOWA—Iowa-Nebraska Light & Power Co., Lincoln, Nebr., has applied for permission to erect 17 miles of lines in this vicinity.

Nebraska

COLUMBUS, NEBR.—Loup River Public Power & Irrigation district, Charles W. Fricke, president, is advertising for bids Sept. 22 for construction of 15 miles of transmission lines and 15 miles of telephone lines. Harza Engineering Co., 20 North Wacker drive, Chicago, Ill., is special engineer for this PWA project.

OMAHA, NEBR.—Herbert B. Loper, United States engineers corps, City National bank building, asks bids until Sept. 3 for furnishing 10,000 lineal feet of strand wire, 200 pounds of staples, 3208 machine bolts, 142 structural bars, and other supplies to be delivered free on board at Mondamin, Iowa, for use on the Missouri river projects.

Wyoming

BUFFALO, WYO.—City expects to spend \$100,000 for a municipal light and power plant. (Noted STEEL June 22).

CASPER, WYO.—Bureau of reclamation, Denver, asks bids until Sept. 14 (bid date extended from Aug. 27) for hydroelectric generating equipment for the Seminole power plant, Casper-Alcova project. Two 15-horsepower hydraulic turbines and auxiliaries are to be purchased on specification 691. (Noted STEEL Nov. 25, 1935).

Montana

FORT PECK, MONT.—United States engineer asks bids until Sept. 3 for fur-

nishing a centrifugal pump, invitation 631-37-98.

Idaho

MOSCOW, IDAHO — Idaho Dairy Products Co., through L. W. Korter, is taking bids for a \$30,000 plant, to include a diesel plant and cooling equipment.

SODA SPRINGS, IDAHO—City plans to spend \$45,000 for a power house and equipment, including a 137.5 kilowatt ampere generator, 8 per cent power factor, 150 kilowatts 3 phase, 60 cycles, 2400 volts, 720 revolutions per minute, directly connected to the turbine wheel.

Arizona

WILLIAMS, ARIZ. — City proposes to spend more than \$76,000 secured from PWA for a sewage system.

Pacific Coast

CAMARILLO, CALIF.—State hospital department, George B. McDougall, Public Works building, Sacramento, Calif., state architect, is to purchase conveyors, motors and controls, and other equipment for a new dairy building here. General contract bids are due Aug. 26 for this \$100,000 project.

HEALDSBURG, CALIF. — City is considering plans calling for replacement of existing septic tanks and other work on the sewage system. H. N. Jenks, Berkeley, Calif., is engineer for this \$25,000 project.

PLACERVILLE, CALIF. — City has engaged H. N. Jenks, engineer, Berkeley, Calif., to make plans for installing sewer mains and construction of a sewage disposal plant. Total cost is estimated to be \$65,000.

PORTERVILLE, CALIF. — City proposes to purchase a deep well pump for the municipal waterworks. F. M. Primer is manager.

SAN JOSE, CALIF. — City is considering voting \$500,000 worth of bonds to construct a complete waterworks, or to purchase existing facilities from private concern.

SAN PEDRO, CALIF.—Van Camp Sea Food Co. proposes to erect a 1-story factory boiler plant. William F. Durr,

128½ West Sixth street, is architect.

PORTLAND, OREG.—Pacific Coast Steel Corp. has been incorporated by R. E. McMath and W. J. Brown to manufacture and deal in steel and other products.

SPRAGUE RIVER, OREG.—California-Oregon Power Co., Medford, Oreg., proposes to erect 22 miles of line from here to Bly, and to construct a new substation at Bly.

COULEE CITY, WASH.—Centennial Milling Co.'s grain elevator, damaged by fire, will be rebuilt at once.

EVERETT, WASH. — City has approval of an application to obtain water from the Sultan river, assuring consummation of a proposed \$2,000,000 water system extension.

SEATTLE — City is planning erection of 100 miles of towers between here and the Skagit river project. Transmission wire was purchased several years ago.

SEATTLE — Standard Steel Fabricating Co. & Boiler Works, 1640 West Hanford street, has been organized with capital of \$50,000. William J. and Kenneth Duthie, formerly operating Steel Fabricators Inc., are the incorporators.

TOPPENISH, WASH. — Utah-Idaho Sugar Co., R. D. Howard state manager, plans construction of a refinery here with a capacity for 1500 tons of beets daily.

Canada

GLACE BAY, N. S.—Dominion Steel & Coal Corp. is in the market for a 6000 volt turbogenerator to install in a plant addition. H. J. Kelley is general manager.

NEW GLASGOW, N. S. — Picton County Power board, G. R. Saunders manager, proposes to spend \$250,000 for a new power generating plant.

SAULT STE. MARIE, ONT.—Great Lakes Power Co. proposes to erect a hydroelectric generating plant, including switching and power substations, at a cost of \$1,000,000. (Noted STEEL Aug. 10).

WALLACEBURG, ONT. — Schultz Die Casting Co. of Canada proposes to construct a new \$50,000 factory. A. St. Clair Gordon is manager.

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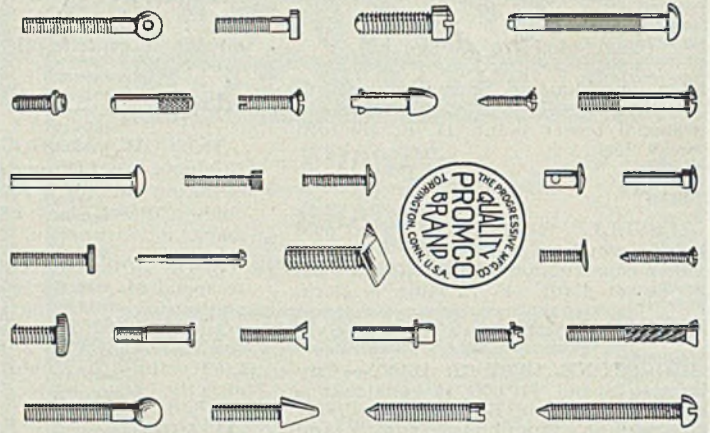
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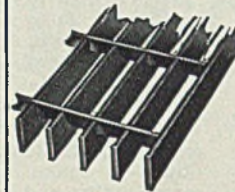
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