

STEEL

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Reader Comments	17
As the Editor Views the News	17
By-Product Coke Output Pointing to Record	19
Financial News of the Steel Industry	21
Hearing on Scrap Embargo Postponed to January	23
Steelworks Operations for the Week	25
U. S. Steel Sells Canadian Plants	25
Men of Industry	26
Obituaries	26
Activities of Steel Users and Makers	27
Meetings	27
Mirrors of Motordom	29
Windows of Washington	33
Are Some Metals "Too Good" for Their Intended Uses? <i>Editorial</i>	35
The Business Trend—Charts and Statistics	36
Co-ordinating Sales with Production	38
Prefabricated Stations Built of Unit Sections	40
New Outlets Found for Malleable Castings	42
International Foundry Conference	43
Materials Handling	49
Surface Treatment and Finishing of Metals	53
Power Drives	59
Welding, etc.— <i>Robert E. Kinhead</i>	62
Progress in Steelmaking	64
New Equipment Descriptions	70
Recent Publications of Manufacturers	73
Market Reports and Prices	77-98
New Construction and Incorporations	99
Index to Advertisers	122

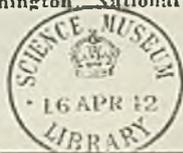


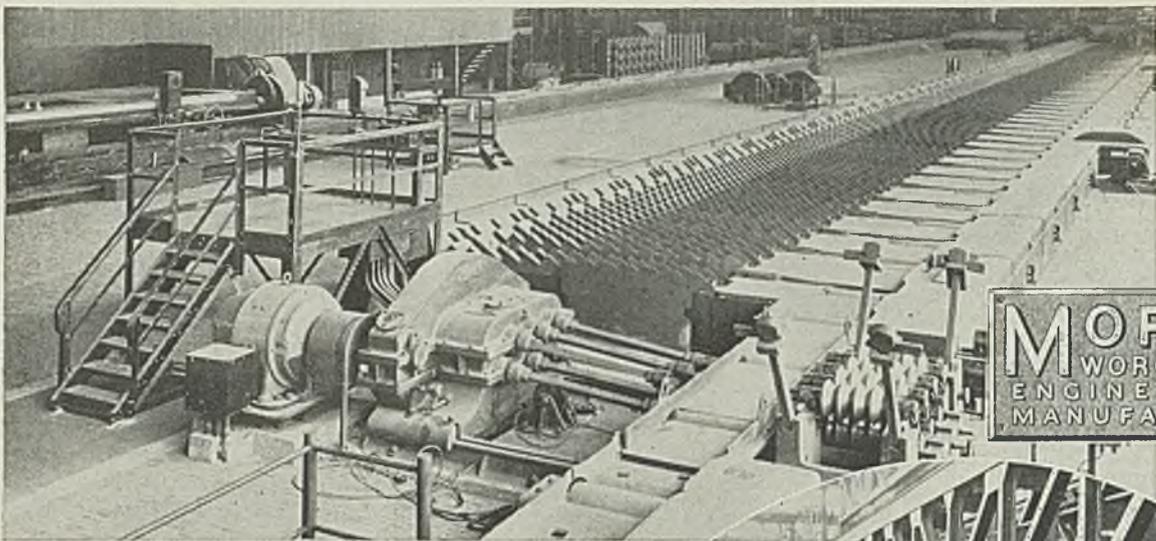
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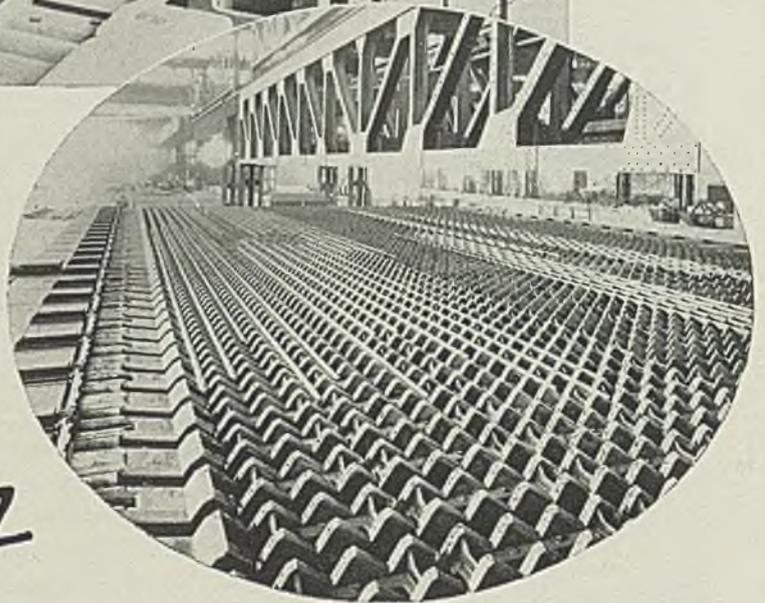
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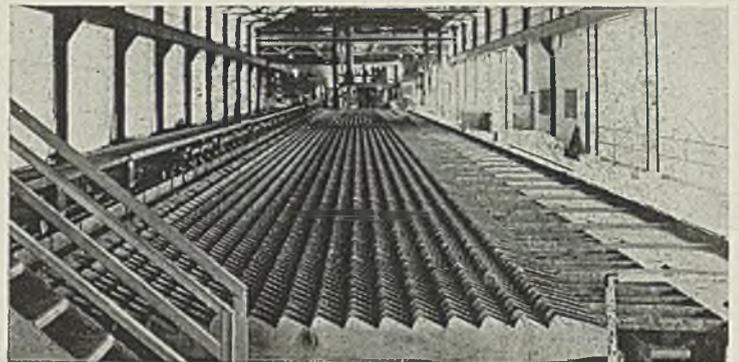
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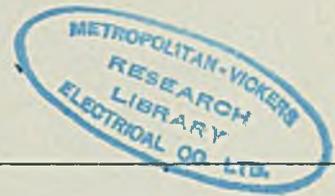
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As the Editor Views the News

A LONG with the advent of the dog days last week came a rush of vacation spirit, which pervaded a large portion of the iron, steel and metalworking industries. The practice of shutting down for a brief period, prevalent in the automobile industry for many years, is gaining favor in the steel and metal manufacturing industries. Last week we reported the vacation shutdown of National Tube at Lorain. This week Warner & Swasey will begin a vacation period (p. 24), during which time the plant will be repainted, equipment overhauled, etc. This is typical of what scores of companies are doing in July and August.

• • •

The urge for relief from arduous duty in uncomfortable weather also has descended upon Washington. At this writing opposition seems to be growing in congress to the administration's desire to enact "must" or "preferred" legislation at this session. From industry's standpoint, the decision of congressmen on this point will be important. The fate of the Black labor standards or "hours and wages" bill (p. 33) hangs on the outcome. If it is jammed through this session it will be a half-baked, dangerous expedient, ill-fitted to the purpose intended. Every industrialist hopes that the lawmakers will return it to committee and go home.

Send Bill Back And Go Home!

Reports of steel company earnings for the second quarter are being scanned with more than usual interest. Net profits of 13 leading producers (p. 21) totaled \$69,949,271 for the second quarter compared with \$65,633,836 in the preceding quarter. This moderate increase was earned in spite of the strike against "Little Steel," which involved four major independents and caused three of them to sustain substantial reductions in profits. On the face of these reports, the cost of the strike in terms of diminished profit was

Steel Strike Cost Heavy

something like \$10,000,000. The brunt of the burden of cost seems to have been borne by Republic, with Youngstown and Inland also sharing heavily. Bethlehem's gain in profit over first quarter obscures the extent of its participation in the cost of repelling CIO's attack. Considering the circumstances, the great majority of stockholders directly affected probably feels that the money was invested wisely.

• • •

Activity in the construction of new by-product coke making ovens is attracting attention to the spectacular growth of this branch of the fuel industry in the recovery period. In 1936, the output of by-product ovens (p. 19) accounted for 96.3 per cent of the coke produced in this country. Total production of by-product coke in that year was 44,569,121 tons compared with 53,411,826 in the record year of 1929. Output in the first five months of 1937 was 21,666,213 tons compared with 16,926,889 tons in the same period of 1936. If production during the remainder of this year continues in the same ratio in relation to that of 1936, the total for 1937 will be around 56,000,000 tons—a new all-time record.

By-product Coke Gains

• • •

Proponents and opponents of the bills pending in the senate to prohibit the export of iron and steel scrap (p. 23) are due for a rest from their active lobbying. On Friday the senate military affairs committee acted to defer hearings on the bills until next January A machine tool builder declares that in most sales conferences the emphasis is turned outward—the stress is upon spreading the company's message through salesmen to the customers. He believes (p. 38) that emphasis also should be placed on information passing in the opposite direction. He would utilize sales conferences to bring the messages of customers back through the salesmen to the company. It is a good point. A sales conference should not be reserved for one-way traffic.

Not a One- Way Street

E. L. Shaner



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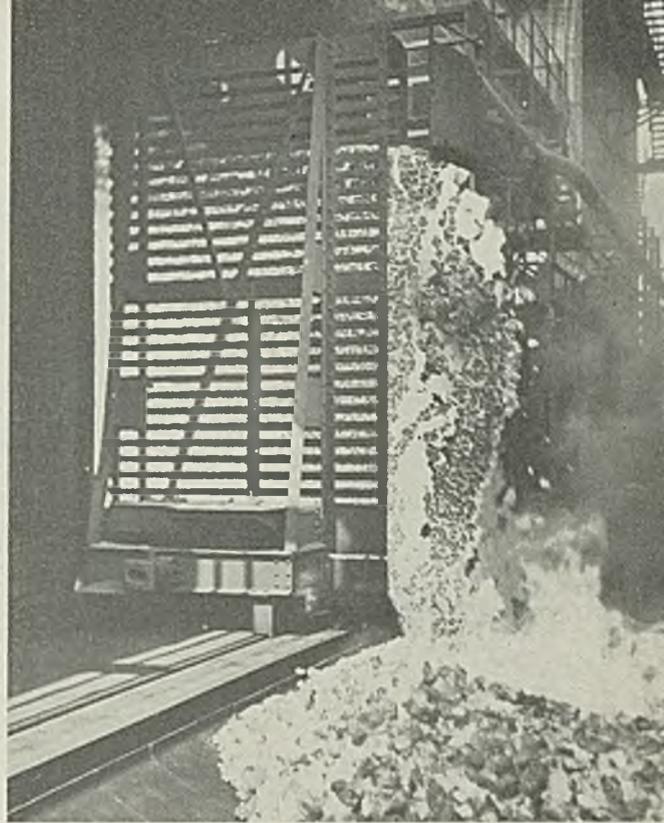
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RYERSON STEEL-SERVICE

By-Product Coke Output

Pointing Toward an

All-Time Record



DRAWING a by-product oven. The incandescent coke is quenched by water spray to stop combustion. During the coking process gas and tar for fuel, oils and chemicals have been drawn off and reclaimed

IN 1929 the by-product cokemaking process accounted for the record total of 53,411,826 net tons of coke, 89.2 per cent of this nation's total coke output.

Last year by-product production had come back to a point only 8-842,000 tons below the 1929 record but representing 96.3 per cent of total coke output.

In the first five months of this year by-product production of 21,666,213 tons was 28 per cent ahead of the comparable period last year.

Construction of new batteries is in the ascendancy again. Contracts completed or awarded since the first of the year providing for 571 ovens.

From 1932 to 1935 there was no construction of new by-product ovens. During the World war construction was at such a peak that one company, Koppers, was building and placing in operation an average of one coke plant every 60 days, and one plant for the production of toluol every six weeks.

In 1910 there were 4078 by-product ovens in this country, compared to 100,362 beehive ovens; in 1919 there were 10,379 by-product ovens, compared to 82,560 beehive; in 1929 there were 12,649 by-product and 30,082 beehive, and at the close of 1936 there were 12,849 by-product and 13,012 beehive.

Current construction includes 122 Koppers ovens completed this year for Ford Motor Co.; a battery of 53

ovens recently awarded to Wilputte Coke Ovens Corp., New York, by Algoma Steel Corp.; 146 Koppers ovens for Tennessee Coal, Iron & Railroad Co.; 59 Koppers ovens for Inland Steel Co.; and 130 Semet Solvay ovens for Great Lakes Steel Corp. Ford Motor Co. recently placed an order for 61 additional ovens with the Koppers Co., its third order within two years. More than 76 per cent of the 12,982 by-product ovens operating in the United States in June, 1936, were designed and built under the Koppers name.

The growth of this valuable asset

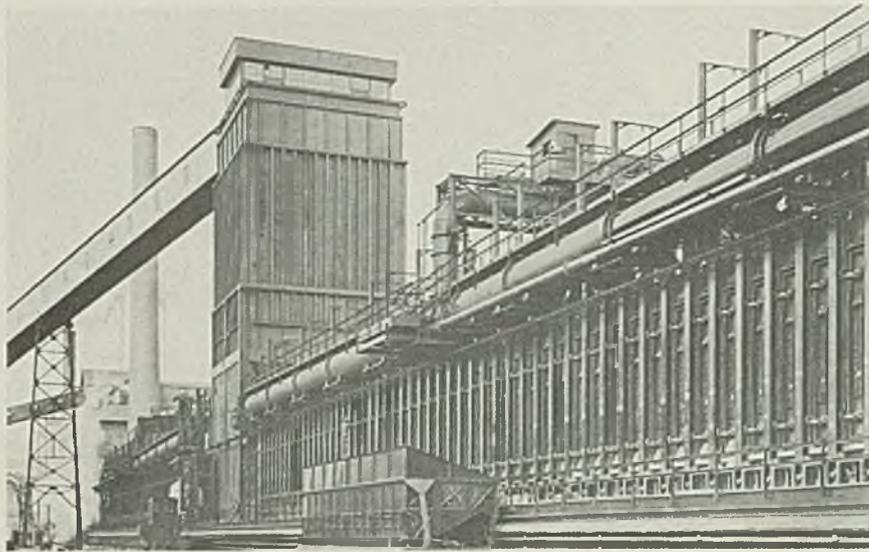
of the steel industry to the point where it produces more than 95 per cent of the total coke output is one of the most interesting stories recorded in the industrial history of the United States.

In 1893, the first by-product coke ovens in the United States, erected at Syracuse, N. Y., accounted for 12,850 net tons of coke, or 0.1 per cent of the total coke production, according to the United States bureau of mines, which compiles extensive sta-

Growth of By-Product Coke Industry

United States Production of Coke and Coke Breeze in Net Tons
By U. S. Bureau of Mines

Year	By-Product Production	Beehive Production	Total Production	% of Total Production from By-Product Ovens	Number Ovens in Existence	
					By-Product	Beehive
1892	.....	12,010,829	12,010,829	...	.....	42,002
1893	12,850	9,464,730	9,477,580	0.1	12	44,189
1894	16,500	9,187,132	9,203,632	0.2	12	44,760
1895	18,521	13,315,193	13,333,714	0.1	72	45,493
1900	1,075,727	19,457,621	20,533,348	5.2	1,085	57,399
1905	3,462,348	28,768,781	32,231,129	10.7	3,103	84,405
1910	7,138,734	34,570,076	41,708,810	17.1	4,078	100,362
1915	14,072,895	27,508,255	41,581,150	33.8	6,268	93,110
1918	25,997,580	30,480,792	56,478,372	46.0	9,279	84,635
1919	25,137,621	19,042,936	44,180,557	56.9	10,379	82,560
1920	30,833,951	20,511,092	51,345,043	60.0	10,881	75,298
1925	39,912,159	11,354,784	51,266,943	77.9	11,290	57,587
1929	53,411,826	6,472,019	59,883,845	89.2	12,649	30,082
1932	21,136,800	651,900	21,788,700	97.0	13,053	19,440
1935	34,224,053	917,208	35,141,261	97.4	12,860	13,674
1936	44,569,121	1,706,063	46,275,184	96.3	12,849	13,012



Batteries of modern by-product ovens recently erected at a steelworks, providing coke for blast furnaces, gas and tar for fuel. The other by-products are sold, reducing cost of coke

tistics on the industry, and whose figures are used throughout this article.

From this inauspicious start, the by-product process grew steadily, with the World war providing the greatest impetus. In the latter part of 1918, monthly coke production surpassed beehive output for the first time. The beehive industry had reached its peak in 1916.

The war greatly increased the demand for the valuable benzol products, dye-stuffs, and other chemicals recovered. From 1918 on, the by-product process steadily extended its predominance over the beehive industry.

In 1918 more than 36,500,000 net tons of coal was charged into by-product ovens; in 1929 more than 76,700,000 tons, and in 1936 more than 63,200,000 tons. In the first five months of this year more than 31,126,000 net tons was charged, compared with a total of 24,376,164

tons in the corresponding period of last year.

More than 71 per cent of the by-product coke is produced by furnace plants, as shown in the following table in net tons:

	—Coke Produced—		Furnace Plants Per- centage
	Furnace Plants	Other Plants	
1913...	9,277,832	3,436,868	73.0
1918...	19,220,342	6,777,238	73.9
1926...	34,714,462	9,662,124	78.2
1929...	41,224,387	12,187,439	77.2
1935...	23,034,261	11,189,792	67.3
1936...	32,076,089	12,493,032	72.0

Last year, 26,014,701 tons of coke was consumed in merchant blast furnaces. Consumption of coke for each ton of pig iron produced has been reduced slowly. In 1936, according to the American Iron and Steel institute, 0.895-gross ton of coke was used for each ton of pig iron produced, compared to 0.907-gross ton in 1929. This increase is due largely to experiments by Koppers which developed the proper

blend of coal to produce coke with higher carbon content.

The valuable by-products recovered in the retorts include: Gas, coal tar, ammonia, light oils, including benzol and toluol, and naphthalene. Among the new by-products developed is sodium phenolate, output of which was first significant in 1935, when 184,819 gallons was produced.

In the modern oven, for every ton

Coke This Year

(Five Month)

By U. S. Bureau of Mines

	1937		1936	
	Net tons	Net tons	Net tons	Net tons
By-product output.	21,666,213	16,926,889		
Beehive output....	1,550,100	580,700		
Coal Charged:				
In beehive ovens.	2,480,100	923,000		
In by-product ovens	31,126,996	24,376,164		
Benzol production..	51,391,000	40,742,000		
Ammonia production	346,794	268,209		

of coal carbonized, 8 to 10 gallons of tar is produced.

It is expected by some by-product coke experts that 550,000,000 to 600,000,000 gallons of coal tar may be produced this year, about 140,000,000 gallons to be used in roadmaking materials and 120,000,000 gallons in wood preservation materials.

Materials recovered in the by-product process are used in dyes, perfumes, insecticides, disinfectants, roofing compositions, plastics, drugs, paints and numerous other products. Some 1500 out of 2000 commercial chemicals made in this country were never produced commercially before the development of the modern coke oven. It has been estimated that almost two-thirds of the companies in the synthetic organic chemicals industry are engaged in the manu-

(Please turn to Page 98)



Once beehive ovens like these were the only means of making coke in the United States. Nothing but coke was obtained, gas, tar and other products being wasted into the air. The by-product oven made possible reclaiming great values from the coal and has generally replaced the beehive. All illustrations courtesy of the Koppers Co., Pittsburgh

Steel's First-Half Profits Up 208%;

Strikes Level Off Second Quarter

LABOR difficulties in the second quarter left their impress on steel's financial picture for that period as revealed in earnings statements last week.

The quarter held to a high level, as a general average, aggregate net profits for 13 leading producers being \$69,949,291, or \$4,315,455 more than in the first quarter. This showing was made despite the barrage of strikes that afflicted consuming as well as producing industries.

In detail, however, while it was a remarkably good period for some steelmakers, best since 1929 and early 1930 as they point out, for others, chiefly those involved in the strike, it was disappointing.

A partial effect of the strike is indicated in the aggregate earnings of Republic, Sheet & Tube and Inland amounting to \$5,687,746 for the second quarter, as compared with \$15,461,858 in the first quarter.

It is in comparisons of the overall net earnings in the first half of the year with those in the first half of 1936 that the sweep of improve-

ment, notwithstanding the retarding influence of labor troubles, is indicated. For example, the aggregate for the 13 producers, representing 85.7 per cent of the nation's ingot capacity, was \$135,583,127, or 203 per cent higher than the \$43,952,270 for the identical 13 producers in the first half of 1936.

Higher Profits Per Ton

Assuming that the experience of these 13 was typical, net profit on the basis of 100 per cent ingot capacity was \$158,100,000 in the first half this year. This is equal to net profit of \$5.50 per ton of ingots produced by the industry. A similar comparison for the first half of 1936 shows a net profit of \$2.42 per ton of ingots produced in that period.

Relating each company's net earnings to its own ingot capacity, National Steel Corp. leads the list for the first half of 1937. Its earnings are approximately equivalent to \$4.33 per ton. Inland Steel is second, with \$3.50. Last year in the

first half, Inland led with \$2.61, and National was second with \$2.31. United States Steel Corp.'s net earnings per ton of its ingot capacity for the first half this year is \$2.51, while in the first six months last year it was only 61 cents. Further comparisons:

	1937	1936
National Steel Corp.	\$4.33	\$2.31
Inland Steel Co.	3.50	2.61
Allegheny Steel Co.	2.97	1.99
American Rolling Mill Co.	2.62	.95
United States Steel Corp.	2.51	.61
Sharon Steel Corp.	2.51	.47
Youngstown Sheet & Tube Co.	2.21	1.44
Wheeling Steel Corp.	2.15	.50
Otis Steel Co.	2.10	1.08
Bethlehem Steel Corp.	1.96	.43
Continental Steel Corp.	1.91	1.16
Jones & Laughlin Steel Corp.	1.21	.05
Republic Steel Corp.	1.00	.50
For all	2.28	.74

EFFECT OF STRIKE IN SHEET & TUBE STATEMENT

Net profit of Youngstown Sheet & Tube Co. for the second quarter amounted to \$2,022,112, after all charges but without deduction for

Steel Producers' Financial Statements Summarized

	Second Quarter 1937	First Quarter 1937	Second Quarter 1936	First Half 1937	First Half 1936	Ingot Capacity gross tons
United States Steel Corp.	\$36,173,682	\$28,561,533	\$12,862,423	\$64,735,215	\$16,238,727	25,772,400
Bethlehem Steel Corp.	10,022,874	8,293,833	3,431,391	18,316,707	4,034,456	9,360,000
Republic Steel Corp.	487,251	5,567,064	2,661,062	6,054,315	3,022,094	6,053,000
Jones & Laughlin Steel Corp.	2,451,976	1,982,394	1,115,733	4,434,370	182,454	3,660,000
Youngstown Sheet & Tube Co.	2,022,112	4,886,020	2,588,089	6,908,132	4,485,388	3,120,000
National Steel Corp.	6,013,077	5,695,819	2,805,570	11,708,896	5,182,714	2,700,000
American Rolling Mill Co.	4,321,854	2,320,917	1,561,162	6,642,771	2,305,064	2,531,120
Inland Steel Co.	3,178,383	5,008,774	3,298,191	8,187,157	5,232,823	2,340,000
Wheeling Steel Corp.	2,463,034	1,308,807	871,277	3,771,841	882,199	1,750,000
Otis Steel Co.	1,040,424	702,396	751,674	1,742,820	900,349	828,000
Allegheny Steel Co.	334,440	551,054	610,805	1,415,503	947,769	476,000
Sharon Steel Corp.	655,000†	475,778	268,336	1,130,778†	212,615	450,000
Continental Steel Corp.	255,175	279,447	238,389	534,622	325,618	280,000
Totals	\$69,949,291	\$65,633,836	\$33,064,102	\$135,583,127	\$43,952,270	59,320,520
FINISHING CAPACITY ONLY						
Acme Steel Co.	669,441	1,094,941	513,774	1,764,382	905,627	.....
Superior Steel Corp.	120,648	86,120	58,726	206,768	87,814	.....
PIG IRON CAPACITY ONLY						
Interlake Iron Corp.	572,835	372,202	48,978*	945,037	31,677*	1,215,000
Virginia Iron, Coal & Coke Co.	33,125*	29,708*	60,508*	62,833*	81,955*	200,000

*Loss. †Estimated.

federal surtax on undistributed profits. This compared with a net profit of \$4,886,020 for the first quarter of 1937, and \$2,588,089 for the second quarter of 1936. Frank Purnell, president, said:

"The second quarter drop in earnings reflects loss of production caused by the strike. Operations during the second quarter were at the average rate of 57.6 per cent, as compared to an average of 86.7 in the first quarter."

REPUBLIC'S SECOND QUARTER PROFIT DOWN TO \$487,251

Consolidated net profit of Republic Steel Corp. and subsidiaries for the second quarter of 1937 after deduction of all charges, including estimated federal income tax and surtax on undistributed profits, amounted to \$487,251. Net profit for the first half of 1937 amounted to \$6,054,315, compared with a net profit of \$3,022,094 for the first half of 1936.

The provision for estimated federal tax for the six months' period ended June 30, 1937 was \$2,400,000, including \$950,000 for estimated surtax on undistributed profits.

The company's statement adds:

"The substantial rate of operations and earnings of the corporation was interrupted by the steel strike, which affected the principal plants."

INLAND STEEL DECLARES EXTRA DIVIDEND

Inland Steel Co. declared an extra dividend of 50 cents and a regular quarterly dividend of \$1, both payable Sept. 1 to stock of record Aug. 13. Like amounts were paid June 1 for first quarter.

Second quarter earnings were \$3,178,383, compared with \$5,008,774 in the preceding quarter and \$3,298,191 in the June quarter last year. In the first six months this year earnings totaled \$8,187,157 against \$5,182,714 in the period a year ago.

Inland, well known for efficient production, chalked up a new operating record since resuming July 1. The 76-inch hot strip mill crew produced 1677 tons in an 8-hour shift. Inland's 13,000 men came back after the recent strike to put the mill in capacity operation once more, with a remarkable spirit of pride in workmanship.

BETHLEHEM'S QUARTER BEST SINCE FIRST IN 1930

Bethlehem Steel Corp. directors last week declared a dividend of \$1.50 per share of common stock, plus \$1.75 on 7 per cent and 25 cents on 5 per cent preferred stock. This payment was based on net income

for the second quarter of \$10,022,874, equal to \$2.56 per share of outstanding common stock, best since the first quarter of 1930.

For the first quarter of 1937 net income was \$8,293,833, and for the second quarter of 1936, \$3,431,391. First half earnings of \$18,316,657 this year compare with \$4,034,456 in the period last year.

President Eugene G. Grace said Bethlehem spent approximately \$25,000,000 on new construction during the first half of 1937, with an additional \$23,000,000 authorized but unexpended. Last week the new mill for production of cold reduced tin plate went into operation at Sparrows Point, Md., with a monthly capacity of 15,000 tons.

Other improvements at Sparrows Point, including a 56-inch continuous hot sheet and strip mill, are scheduled for initial operation in November. Most of the unexpended construction funds will be used at Sparrows Point, Mr. Grace said.

Bethlehem paid wages to 101,989 employes during the second quarter, against 73,603 in the same period last year. Average employe earnings per hour, exclusive of selling and administrative expenses, were 89.1 cents, against 70.8 in 1936. Weekly working hours averaged about 41.

U. S. STEEL WIPES OUT PREFERRED ARREARAGES

All arrearages on United States Steel Corp. preferred stock, which amounted to \$18.25 a share less than a year ago, were liquidated last week when directors declared a dividend of \$1.25 on account of accumulations, in addition to the regularly quarterly dividend of \$1.75. No action was taken on common stock on which dividends have not been paid since March, 1932.

Net income in the second quarter was \$36,173,682, equal to \$3.43 a common share, largest since the first quarter of 1929 when net was \$42,185,447. This compares with \$28,561,533, or \$2.55 a common share, in the first quarter of 1937, and \$12,862,423, or 75 cents on common, in the second quarter of 1936. Net income for the first half of 1937 amounted to \$64,735,215, against \$16,238,727 in the corresponding period last year. Further details are given in an accompanying table.

Operations in the second quarter as measured by finished product output averaged 88.4 per cent. For the first six months this year shipments totaled 7,614,274 tons, being at the rate of 85.2 per cent of capacity. This is the highest point reached since the first half of 1929, when shipments were made of 8,340,738 tons, or 98 per cent at that time.

During the first half, expenditures

made for additions and betterments and for payment of maturing bonds and other capital obligations of subsidiary companies, amounted to approximately \$53,600,000. July 1 unexpended balances for additions and betterments on authorized appropriations made to that date stood at about \$153,000,000.

In June approximately 272,000 employes were carried on the payroll, a total well in excess of the number reached in the high 1929 period. The average number of employes in the first half was 257,168, or 23.6 per cent more than in the first half of 1936, while the total payroll was \$229,676,854, up 50.3 per cent.

ARMCO'S FIRST HALF BETTER THAN ALL 1929

Consolidated second quarter net earnings of \$4,321,854, highest of any quarter in the company's history, are reported by the American Rolling Mill Co.

This is equal to \$1.50 a share on the 2,868,513 common shares outstanding, after all charges except provision for federal undistributed profit taxes. In the second quarter last year the company earned \$1,561,161, which amounted to 68 cents a common share.

Net earnings for the first half, totaling \$6,642,770 also established a new record for any six-month period, and exceeded net earnings for the entire year of 1929. After provision for preferred dividends this is equal to \$2.30 a common share for the half.

Payrolls for the first half also set a new all-time record, 18,000 employes receiving \$16,775,000.

NATIONAL MORE THAN DOUBLES ITS EARNINGS

National Steel Corp. reports its net income after all charges, except federal surtax on undistributed profits, for second quarter amounted to \$6,013,076, equal to \$2.77 a share on 2,167,777 outstanding shares of capital stock. This compares with \$2,805,570 in the second quarter of 1936, equal to \$1.30 a share on 2,156,977 shares then outstanding.

Net profit for the first half is \$11,708,896, equal to \$5.40 a share, against \$5,182,714, equal to \$2.40 a share, for the period last year.

OTIS DIVIDEND ON CONVERTIBLE STOCK

Otis Steel Co. directors declared a dividend of \$1.37½ a share on convertible first preferred stock, payable Sept. 15 to record of Sept. 1.

A dividend of \$1.37½ a share also was declared on the convertible first preferred stock payable Sept. 15, which may at any time subsequent to Sept. 1 be issued upon surrender of outstanding prior preference

stock, pursuant to the plan of recapitalization previously approved by shareholders, which provides that in exchange for each share of prior preference stock there would be issued 1.28 shares of convertible first preferred stock and one-half share of common. On the convertible first preferred stock issued in this exchange there is therefore accumulated as of Sept. 15 a dividend of \$8.25 in addition.

Directors also extend time to Sept. 30 for the exchange of prior preference stock pursuant to the plan of recapitalization of the company declared operative on Dec. 3, 1936.

WHEELING QUADRUPLES LAST YEAR'S FIRST HALF

Wheeling Steel Corp. reports second quarter net profit of \$2,463,034, compared with \$1,308,807 in the first quarter. Earnings in the June quarter were equal to \$4.87 a share on common stock after quarterly dividend requirement on the 6 per cent preferred, on which there are accumulated dividends of \$24. For first half its profit was \$3,771,841, equal to \$6.77 a share on common, against \$882,199 or \$2.31 a share last year.

WORTHINGTON'S UNFILED ORDERS LARGEST IN 17 YEARS

Unfiled orders of Worthington Pump & Machinery Corp. on July 1 were 81 per cent greater than on that date last year, and were at the highest level in 17 years, H. C. Beaver, president, announced.

Hearings on Scrap Embargo Bills Postponed to January

IT IS a great mistake to regard scrap steel as junk. Technically it is a precious metal and constitutes about 60 per cent of the raw material requirements of the steel industry."

Senator Bridges, New Hampshire, made this statement to a subcommittee of the senate committee on military affairs, at a hearing last Thursday on the bills pending in the senate to prohibit iron and steel scrap exports except by license.

Proponents of the various bills, represented by Louis J. Brann, former governor of Maine, and opponents of the bills, represented by Benjamin Schwartz, director general of the Institute of Scrap Iron and Steel Inc., informed the committee that they were not ready to go ahead with their testimony at this time.

The committee Friday deferred hearings until next January so that both sides may have ample time in which to prepare their cases.

Senator Thomas, Utah, acted as chairman. Among others who appeared Thursday were: Senators Schwellenbach, Washington; Schwartz, Wyoming; Representative Kopplemann, Connecticut; and Dr.

J. C. Maguite, New York, who said he represented Chinese scrap importers.

Senator Schwellenbach, who introduced the original resolution calling for a prohibition of steel scrap exports except through license, told the committee that during the past January and February he had received many communications from small foundries in the state of Washington complaining that large amounts of scrap were being purchased for export to foreign countries. This, he contended, caused the price to increase and he was informed that it also caused a shortage of scrap. The bill was introduced, he stated, without any conclusions in the matter on his part.

Excessive Exports Dangerous

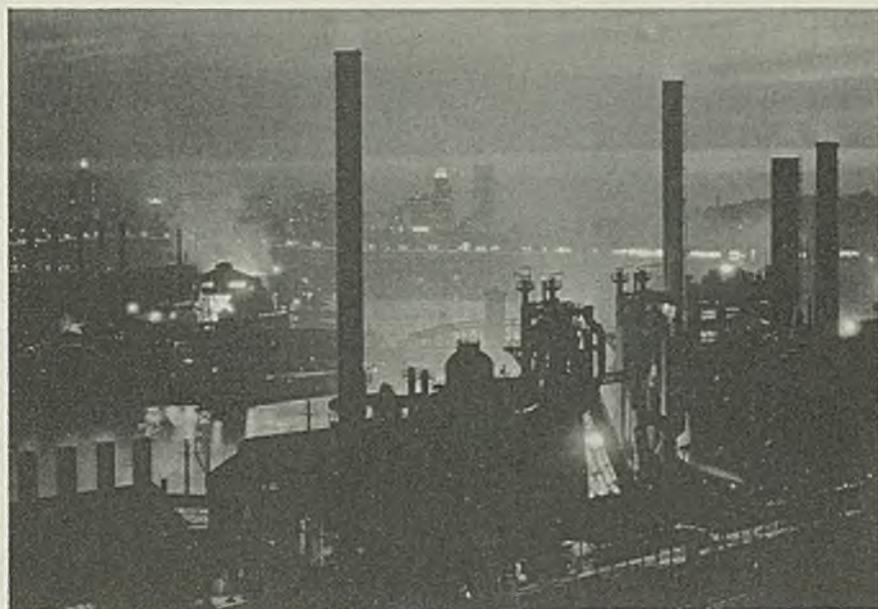
Senator Bridges, who introduced a resolution with Senator Berry asking for a study of scrap and iron ore resources said:

"The policy that this country should pursue in the matter of exports of scrap steel and iron is of national importance and has international complications. . . . A continual drain on any such natural resource is a danger to the country. In the case of scrap steel and iron it is a double danger because we may get the same steel and scrap back on our hands some day, and if that sounds gringoistic perhaps I had better state that our continuous tremendous exports are nothing more than an encouragement to war.

"In the 11 years from 1923 to 1933 our exports of scrap iron and steel averaged less than 300,000 tons a year, while during the last six months we have exported nearly seven times as much as we shipped in any one of those normal years. At that rate if no restriction is placed on the export of scrap iron and steel we will send abroad this year more than we exported in all of those 11 years. This is an export of a basic material for war, and over 50 per cent of this export is going to one foreign country.

"The fact that scrap might be said to be the raw material of war is not alone the reason that this problem today demands our study. The foreign nations who export scrap manufacture other materials than scrap, using cheap labor and perhaps having access to cheaper transportation. They are able to export their finished product to the United States and thus sell our own

Camera Catches Spirit of Pittsburgh



IN THE foreground are Jones & Laughlin's Eliza blast furnaces, on the north side of the Monongahela river. The hot metal bridge is in the center of the illustration, and at the left is the glare from a J & L bessemer converter. The Boulevard of the Allies and downtown Pittsburgh stretch across the background

scrap right back to us in a different form in such a way as to compete with the products of American industry and American labor in its own market.

"Without scrap exports from us the shortage abroad would force a rise in the price of those materials in the purchasing country, which would cause a rise in price of the finished product to a point more nearly equal to that of the American made product.

Exports Make War Possible

"The position of the navy in this matter should be considered. I understand that the navy does not sell for export its obsolete ships. If that is true then we should be advised of the reason. The same applies to used army materials.

"As we look around us we see war on every side. Spain, marching men in middle Europe and thundering guns in the Orient. It is not the study of these things that I ask but it is the study of an American product whose export makes these things possible."

Representative Kopplemann, who has introduced two bills in the house somewhat similar to the senate bills, made a short statement in which he said he was not interested from an economic standpoint but from the point of whether the United States will aid other countries in preparation for war.

He contended that the scrap now being exported is used for war purposes.

Kopplemann said that the export of scrap steel is only about 6 per

cent of the scrap bought and sold. He proposed that only the scrap be embargoed which is for war purposes and said that if 60 per cent of the 6 per cent exported is used for war purposes it would mean that only 4 per cent would be embargoed.

He asked the committee for an investigation by the federal trade commission or the munitions board instead of by congress, saying these fact finding bodies have more time.

Governor Brann made a suggestion of a possible quota system, based on exports over a period of years. He stated that the United States is the only country allowing unrestricted scrap exports.

Dr. Maguite made a brief statement and asked to be heard later. The committee then adjourned.

Representative Crawford, Michigan, introduced a joint resolution in the house last week providing that whenever the President shall issue a proclamation under the neutrality law declaring an embargo on export of arms, ammunition or other implements of war that he shall include scrap iron and pig iron, in addition to other items already enumerated in the President's proclamation of April 10.

Plant and Office Forces On Vacation at Same Time

The entire plant force and general office staff of Warner & Swasey Co., Cleveland, began their annual two-weeks' summer holiday period at

midnight last Friday, under a new plan which this year grants vacations with pay to 82 per cent of the company's employees.

Vacation provisions range from four days with pay for employes with eight to 12 months of service, to two weeks for those with more than three years of service.

The shops will be cleaned and painted and inventory taken before operations are resumed Aug. 16.

\$356,741 VACATION PAY

Vacation pay amounting to \$356,741 will be distributed this year to more than 10,000 employes of Weirton Steel Co. President T. W. Millisop said 75 per cent of the workers would spend \$260,424 on vacations and the remainder would pocket the money and stay on the job.

Strikes Off at Mines, 8000 Return to Work

Strikes at the mines of Bethlehem Steel Co. and Youngstown Sheet & Tube Co. were called off July 24 and last week some 8000 miners returned to the pits. First to reopen was Youngstown's Buckeye mine at Nemaquin, Pa., where 1000 men returned last Wednesday. Work also was resumed at Bethlehem's mines in Dakota, Barrackville and Richard, W. Va., and at Youngstown's mine at Dehue, W. Va., and other properties of the companies.

Meanwhile, although the strike at the Republic Steel Corp. mines had not been canceled, operations continued uninterrupted.

Federal mediators sought to end the dispute which resulted in the closing of the plant of the Heppenthal Co. at Lawrenceville, Pa.

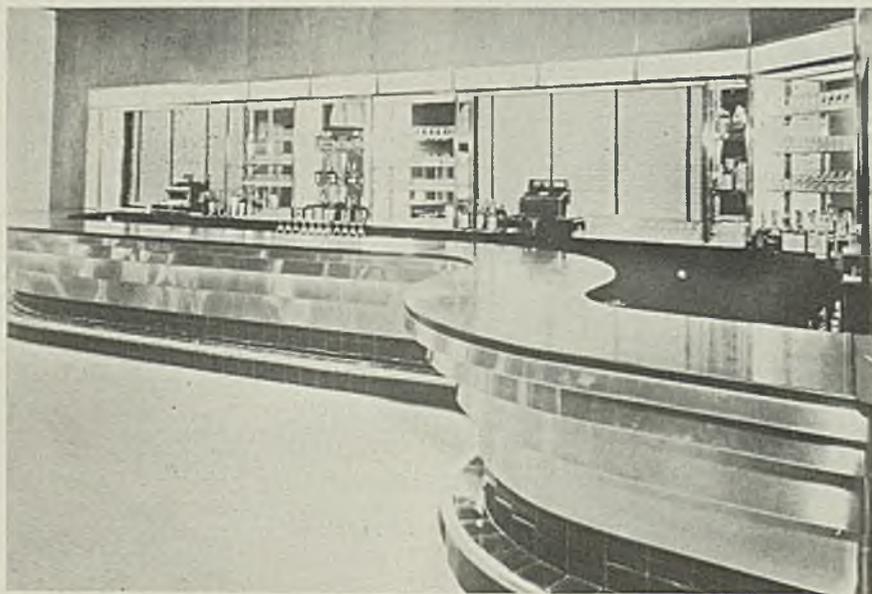
Green Urges Wage-Hour Bill, Despite Disapproval

The wage-hour bill under discussion in the senate ran into considerable controversy last Friday. Misunderstanding concerning the American Federation of Labor's position was partly cleared when President William Green made this statement:

"The bill in the form in which it is now before the senate does not meet the expectations of labor. However, we recognize the need for the enactment of wages and hours legislation.

"For that reason, rather than recommit the senate bill for further committee consideration, it would seem advisable to pass the best wages and hours bill possible in the senate, with the hope that it can be revised and amended in the house, in such a way as to make it more nearly satisfactory to labor."

Ultra-modern Bar of Stainless Steel, Illuminated



SHEATHED in stainless steel, this bar in the Holyoke (Mass.) hotel glistens like silver. Soft, indirect lighting changes continually in color and intensity in all three tiers which form the face. The designer is William Withill, Holyoke sheet metal worker. American Rolling Mill Co. photo

Production

HIGHER rate of operations at Cleveland, Youngstown, Chicago and eastern Pennsylvania, brought the national rate up 3 points to 84 per cent of capacity. Resumption of National Tube Co. plant at Lorain, O., was a factor in the improvement.

Youngstown—Up 2 points to 80 per cent, with schedules for the same rate during the current week. Active blast furnaces number 21, bessemer converters three and open hearths 71. Carnegie-Illinois Steel Corp. will blow in No. 5 blast furnace at its Ohio works Aug. 9.

Central eastern seaboard—Up 1 point to 70 per cent on slightly accelerated activity among smaller independents.

Chicago—Increased 1 point to 85 per cent, which is only 1 point below the best rate of the year. Most mills are at capacity; 32 of 39 blast furnaces are in.

Cincinnati—Unchanged at 93 per cent, which is scheduled for the current week.

Detroit—Off 3 points to 92 per cent, two open hearths being down for repairs most of week.

Buffalo — Unchanged at 88 per cent, making July one of the best in the district's history.

Cleveland — Resumption of production by National Tube Co. at its Lorain, O., plant and better activity by plants in Cleveland have brought the rate up 31 points, to 82 per cent. This is the same as the week of May 22, just before labor difficulties started, at the best level of the year.

New England — Unchanged at 90 per cent. Repairs to open hearths will bring a drop to 65-70 per cent the week of Aug. 2.

Pittsburgh—Unchanged at 83 per cent, with the leading interest at about 85 per cent and the leading independent about 82. Carnegie-Illinois Steel Corp. is blowing in No. 2 blast furnace at Clairton, adding about 500 tons a day to Clairton iron production. The furnace went out of blast April 10, 1930.

Wheeling — Operations remain unchanged at 92 per cent of capacity as mills work off accumulated backlogs.

St. Louis — Down 13 points to 80 per cent after six weeks at 93 per cent. An East Side mill has closed three open-hearth furnaces and one or two more are scheduled to be out within a fortnight.

Birmingham, Ala. — Unchanged at 96 per cent with all mills at capacity.

District Steel Rate

Percentage of Open-Hearth Ingot Capacity Engaged in Leading Districts

	Week ended		Same week	
	July 31	Change	1936	1935
Pittsburgh ..	83	none	69	41
Chicago	85	+1	71	52
Eastern Pa. . .	71	+1	50 1/2	31 1/2
Youngstown . .	80	+2	78	53
Wheeling	92	none	92	76
Cleveland ...	82	+31	82	54
Buffalo	88	none	81	37
Birmingham . .	96	none	58	31 1/2
New England . .	90	none	78	25
Detroit	92	-3	100	94
Cincinnati . . .	93	none	76	†
St. Louis ...	80	-13	†	†
Average ..	84	+3	71 1/2	47

†Not reported.

Canada Increases First Half Iron, Steel Output

Canada produced 118,744 tons of steel ingots and castings in June, slightly less than the 120,843 tons made in May, but far greater than the 82,196 tons produced in June, 1936. June pig iron production was 78,278 tons, compared with 68,138 tons in May and 56,362 tons in June, 1936. Ferroalloy output was 2635 tons, a sharp drop from 5965 tons made in May and 5307 tons in June, 1936.

For the first six months steel ingot and casting production was 713,177 tons, compared with 578,700 tons in the corresponding months of 1936. Pig iron production for six months totaled 423,944 tons, compared with 340,335 tons in the first six months of 1936. Ferroalloy production in six months of 1937 was 30,856 tons, compared with 30,550 tons in the same period of 1936.

At the end of June, six blast furnaces were active, with daily capacity of 2525 tons, 64 per cent of capacity.

Government Expenses \$17 Billion in 1936

Total expenditures of all governmental units in the United States in 1936 were approximately \$17,000,000,000, according to the National Industrial Conference board.

This figure represents an approximate increase of \$2,069,000,000 over the \$14,931,000,000 spent in 1935, the latest year for which complete information is available. In 1934 expenditures were \$14,449,000,000.

Federal spending totaled \$8,576,000,000 in 1936, an increase of \$1,732,000,000 over 1935. The rise resulted chiefly from soldiers' bonus payments of \$1,673,000,000.

U. S. Steel Sells Canadian Plants

COMPLETION of an agreement for purchase of four Canadian subsidiaries of the United States Steel Corp. was announced last week by Dominion Steel & Coal Corp., Montreal, Que. The companies are the Canadian Steel Corp Ltd., Canadian Bridge Co. Ltd., Essex Terminal Railway Co. and Canadian Steel Lands Ltd.

For these properties the Dominion Steel & Coal Corp., which formerly was the British Empire Steel Corp. and operates properties at Sydney and Trenton, N. S., Montreal, and St. John, N. B., and the Wabana iron ore mines in Newfoundland, is handling the United States Steel Corp. bonds and debentures secured by these properties.

In 1913, when the tariff on imports of iron and steel from the United States to Canada was unfavorable, the Steel corporation formed its Canadian subsidiary and undertook to build up an integrated property at Ojibway, Ont., on the Detroit river, just below Detroit. It completed a large slip and shells of two blast furnaces but no other iron and steelmaking equipment.

In the finishing end, capacity was installed for drawing 15,000 tons of plain wire, 9000 tons of galvanized wire, 1800 tons of barbed wire, and 18,550 tons of wire fencing annually; also some capacity for coating tin and terne plate and galvanized sheets.

This construction was largely under the direction of Ward B. Perley, as president of the Canadian Steel Corp.

When Canada made changes in its tariff structure, the expansion program at Ojibway was suspended. J. W. Seens, who succeeded Mr. Perley as president, died last Jan. 25 and no successor was appointed.

Confirms Sale to Bethlehem Of Williamsport Wire Rope

An order confirming the sale of Williamsport Wire Rope Co., Williamsport, Pa., to Bethlehem Steel Co. for \$3,300,000 was signed last week by federal judge Albert W. Johnson at Lewisburg, Pa.

Stockholders who protested the purchase price have ten days in which to file an appeal. They declared the sale would pay off only mortgage interest and other indebtedness but would leave nothing for them.

Men of Industry

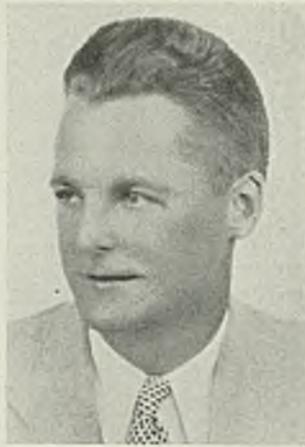
G F. AHLBRANDT and W. W. Lewis have been appointed assistant vice presidents, American Rolling Mill Co., Middletown, O., and H. M. Richards has been appointed manager of the sheet and strip sales division.

Mr. Ahlbrandt joined the company in 1904 as chemist in the open-hearth department. He later became assistant superintendent of open hearths, and in 1909 entered sales work, ultimately becoming general manager of sales.

Mr. Lewis joined the company in 1917 as assistant superintendent, open hearths. In 1922 he took up sales work and in 1925 was made manager of the London branch of Armco International Corp. Returning to this country in 1927 he was named assistant to the vice president in charge of commercial activities.

Mr. Richards has been identified with the company since 1913, beginning as a clerk in the order department and later becoming assistant manager of that department. In 1916 he was made a salesman and in 1924 was appointed district manager of the Cleveland office, remaining there until 1931 when he was appointed assistant general manager of sales.

Neal J. Crain has been appointed purchasing agent of United Engineering & Foundry Co., Pittsburgh. He was formerly assistant to G. Walter Sanborn, who continues as vice president in charge of purchases



Neal J. Crain

and traffic. Mr. Crain has been with the company over 20 years, except for a period during the World war.

Owen C. Jones has been appointed assistant to president and in charge of sales promotion, Laminated Shim Co. Inc., Long Island City, N. Y. Mr. Jones for the past six years had been associated with the general publicity department of Linde Air Products Co., New York, a unit of Union Carbide & Carbon Corp.

Clark M. Robertson, Milwaukee, has been elected a director and president, Federal Steel Sash Co., Waukesha, Wis., to succeed Charles J. McIntosh, who died July 22. Mr. Robertson was personal attorney for Mr. McIntosh and represents his estate. R. E. Huppert, present secretary and treasurer, has also been elected general manager.

C. S. Munson, vice president, has been elected president of Air Reduction Co. Inc., New York. He succeeds C. E. Adams, who has been elected chairman and who will remain in general charge of all operations of the company. F. B.

Adams, formerly chairman, has been elected chairman of the executive committee.

A. R. Ludlow, formerly first vice president, has been named vice chairman of the board, while C. D'W. Gibson has been made vice president in charge of sales. W. C. Keeley, formerly assistant vice president, has been elected vice president.

Died:

MAJ. ROBERT ALEXANDER BULL, foundry consultant, Chicago, July 29, in Anniston, Ala. He was a past president and honorary member, American Foundrymen's association; past research director, Electric Steel Founders Research group, and a leading personality in the foundry industry for many years.

Major Bull was born in New Albany, Ind., June 28, 1874. He attended Depauw university, Greencastle, Ind., and later was graduated from Butler university, Indianapolis, with the bachelor of arts degree. Subsequently he received the degree of master of arts from St. Louis university.

He held important positions with the Leighton & Howard Steel Co., East St. Louis, American Steel Foundries, Commonwealth Steel Co., Chicago Steel Foundry Co., being vice president and general manager for the last two firms. He was commissioned a major in the ordnance department, United States army and served in the division of construction and maintenance of the A.E.F. He was the author of many technical papers.

William C. Stettinius, 41, a director of Worthington Pump & Machinery Corp., Harrison, N. J., and other organizations, in Baltimore, July 20. He was the son of the late Edward R. Stettinius, former assistant secretary of war and partner of J. P. Morgan & Co. Mr. Stettinius was a captain in the army during the World war and was wounded twice in France.

Frank D. Chase, 60, architect and specialist in industrial plant design and construction, at his home in Evanston, Ill., July 23. A graduate of Massachusetts Institute of Technology, since 1913 he had been president of Frank D. Chase Inc., Chicago. For several years Mr. Chase was architect for the Western Electric Co., Chicago, later serving in the same capacity for the Illinois



H. M. Richards



G. F. Ahlbrandt



W. W. Lewis

Central railroad. He was a former president, Western Society of Engineers, and a member, American Society of Civil Engineers.

William L. Trimble, 74, president, W. F. Trimble & Sons Construction Co., Pittsburgh, July 26.

Charles J. McIntosh, 58, founder and president, Federal Steel Sash Co., Waukesha, Wis., in Milwaukee, July 22.

R. R. Huggins Jr., vice president, Thermal Products Corp., Pittsburgh, in that city, July 16. He had been associated with the company since its formation.

F. W. Sargent, 87, chief engineer of American Brake Shoe & Foundry Co., New York, since 1902, at his home in Mahwah, N. J., July 25. He was a member, American Society of Mechanical Engineers.

Edgar B. Ober, 71, former president, Minnesota Mining & Mfg. Co., St. Paul, manufacturer of abrasives, at his summer home at White Bear Lake, Minn., July 22. He became interested in the company in 1903 and was made president two years later, holding that position until his retirement in 1929. He was president of the Motor Power Equipment Co., St. Paul, distributor of industrial, mining and construction machinery.

Activities of Steel Users and Makers

STEIN-BRILL CORP., New York, has changed its corporate name to Brill Equipment Co. It also has announced the opening of an office and warehouse in the Mart building, St. Louis.

National Cylinder Gas Co. has acquired voting control of Carbo-Oxygen Co., Pittsburgh.

Thomas Spacing Machine Co., Etna, Pa., has changed its name to Thomas Machine Mfg. Co.

Iron & Steel Products Inc., Hege-wisch station, Chicago, has established an office in the Investment building, Pittsburgh, in charge of C. W. McKirdy.

Mercoid Corp., maker of automatic controls, Chicago, has opened a new office at 1035 Cathedral street, Baltimore, with John Jex Jr. in charge.

Charles H. Cuno, president and treasurer, Cuno Engineering Corp., Meriden, Conn., announced recently that the company had accepted delivery of a new Stinson Reliant airplane, to be used in experimental work for oil and fuel filters produced

in Meriden, and also for contacting customers.

Lincoln Electric Co., Cleveland, manufacturer of arc welding equipment, has opened a sales engineering office at 1508 Watervliet avenue, Dayton, O., in charge of R. P. Sharer.

Momsen-Dunnegan-Ryan Co., El Paso, Tex., has been named distributor of Enduro stainless steel, and Odell Hardware Co., Greensboro, N. C., has been appointed distributor of Toncan iron sheets, for Republic Steel Corp., Cleveland.

Meetings

FOUNDRYMEN'S CONVENTION, SHOW IN CLEVELAND

CLEVELAND has been selected by the board of directors of the American Foundrymen's association for the forty-second annual convention and exhibition, May 14-19, 1938. The Northeastern Ohio chapter of the organization will be the host. The convention and exhibition was held in Cleveland in 1930.

The exhibition, in Public auditorium and Lakeside Exhibition hall, will be set up and opened for benefit of local and neighboring foundrymen on Saturday, May 14. Technical sessions, also to be held in the auditorium group of buildings, will start Monday morning, May 16 and conclude with closing of the exhibition, Thursday, May 19.

Central location and prominence of the city as a castings center, with 118 foundries making a wide diversity of all classes of castings, thereby providing unusual facilities for plant visitations, were factors influencing the choice of Cleveland as the convention city. The region of the lower Great Lakes is the metal-working center of the United States and Cleveland is the focal point of production and use of castings.

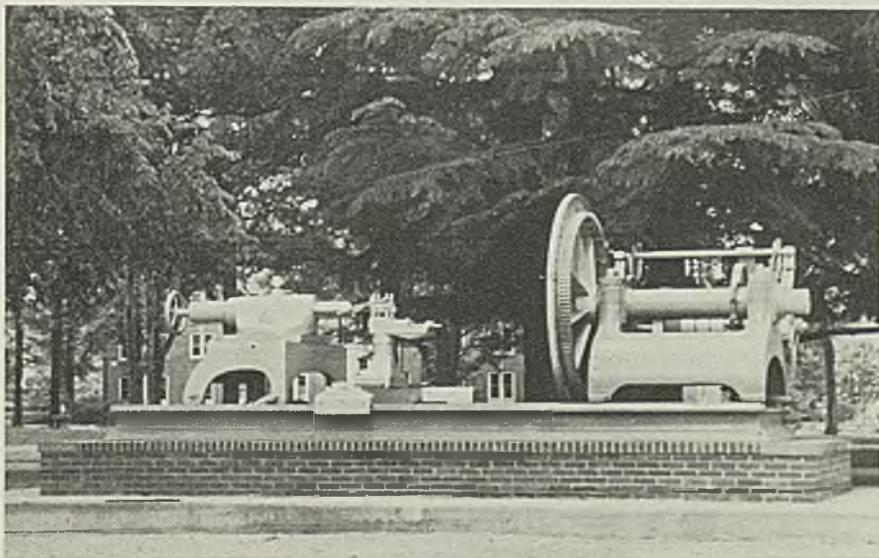
ELECTROCHEMISTS TO HOLD FALL MEETING IN ST. LOUIS

Seventy-second meeting of the Electrochemical society will be held at Hotel Chase, St. Louis, Oct. 13-16. Two symposiums are being organized as part of the program, one will deal with "pH Determination and Process Control," the other with "Rectifiers and Direct-Current Transmission." An exhibit of electrochemical products and apparatus also is being planned.

Two plant visitations are scheduled, the first to the Monsanto Chemical Co. and the second to the Wagner Electric Corp.

Dr. Colin G. Fink, Columbia university, New York, is secretary of the society.

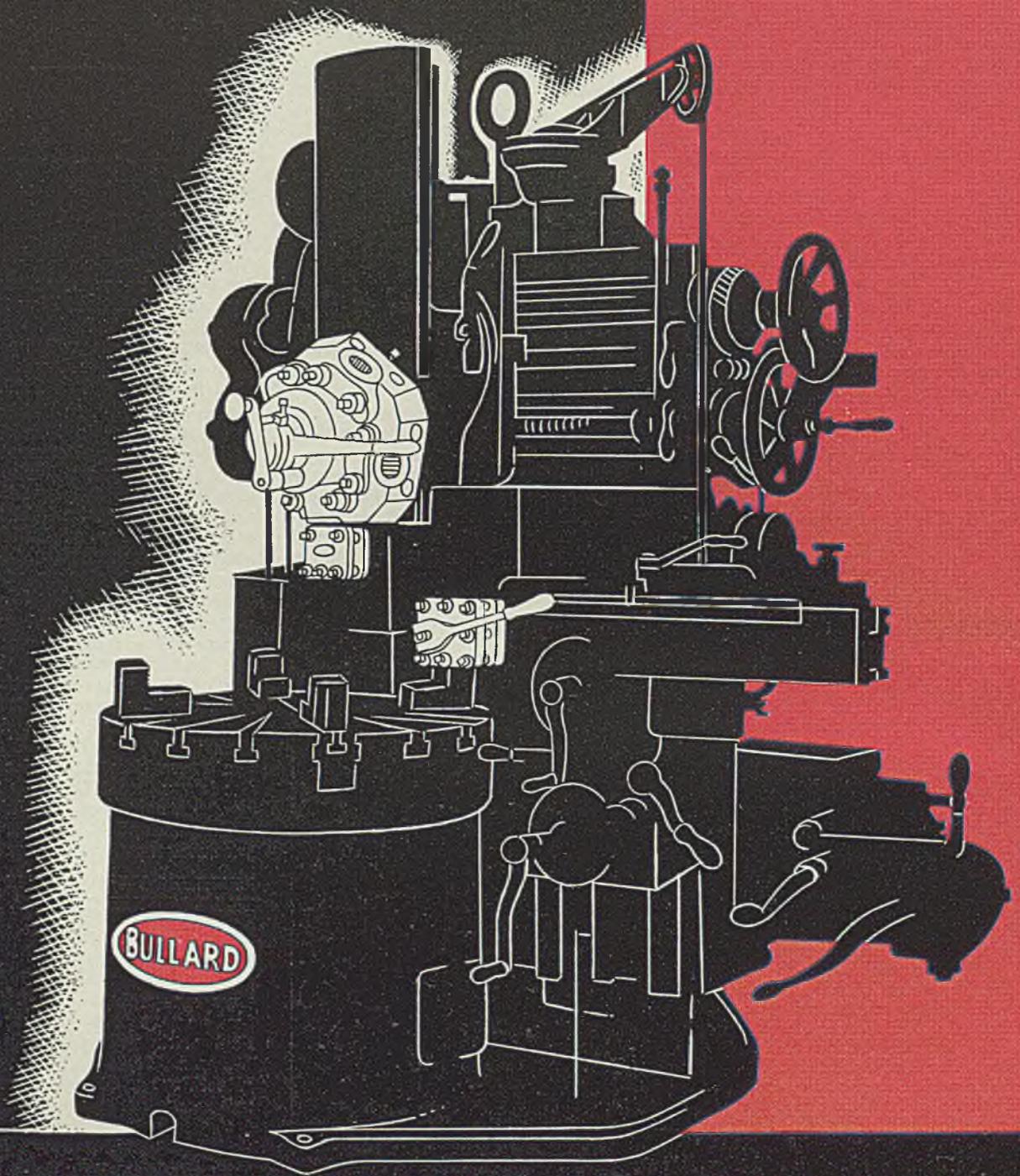
Old Lathe Is Monument on Southern University Campus



MORE than 70 years old, but still in good condition, this lathe was presented by the Tennessee Coal, Iron & Railroad Co., to the Alabama Polytechnic institute, Auburn, Ala., and now occupies a place of honor, as a monument, on the institute's campus. The lathe was used to bore cannons for the Confederate army at the gun works in Selma, Ala. Then for 50 years it was used to turn locomotive tires at the Linn Iron Works, Birmingham, which was dismantled in 1929

The Bullard Vertical Turret Lathes are built in four sizes —24", 36", 42", 54" Two heads, main and side head, cutting simultaneously eliminate much lost time between cuts. The main head turret provides for five sets of tooling, and is quickly indexed for successive operations. The side head accommodates four tool bits and may also be quickly indexed to meet requirements.

Multiple tooling combined with methodical operation and use affords a machining method with Cost Saving Ability.



THE BULLARD COMPANY
BRIDGEPORT, CONNECTICUT



MIRRORS OF MOTORDOM

DETROIT

WHILE it is still a little early to get any complete picture of details on 1938 models, especially as far as General Motors and Chrysler divisions are concerned, among the independents is a bustle of activity as production lines are revamped and a thousand and one minor matters are finally decided upon preparatory to scheduling the first of next year's run.

Hupmobile, for example, is now turning out about 50 cars per day for export, mainly of the right-hand drive type and of the 1937 design, but chief activity in the plant is concerned with preparation for the sixes and eights to appear early in September. Parts releases have been issued to a score or more leading suppliers, including Spicer for axles, Carter carburetors, Warner transmissions and overdrives, Budd wheels, Midland Steel frames, Motor Products window ventilators, American Forging & Socket tubular steel seat frames, Sheller steering wheels, and a good many others.

Hupp to Use Plastic Panels

Instrument panels for Hupp will be of translucent molded plastic—Tenite—a light tan in color, and will be made in three sections, a central portion in which instruments are mounted, a glove compartment section on the right, and a matching panel on the left. The three sections will be decorated with inserts of stainless steel and will be mounted to give the appearance of a single solid panel. The molding, to be produced by Perfection Industries Inc. at Capac, Mich., will be mounted on the skeleton body frame on the reverse side, and will mark a distinct departure in instrument panels. They will be in production about Aug. 15.

According to present information, both Nash and Studebaker likewise will adopt this type of panel on 1938 models. Being a translucent material, lights can be placed behind it to give a soft illumination to the entire panel at night, but the distinc-

BY A. H. ALLEN

Detroit Editor, STEEL

tive feature will be the light color and not the illumination.

As related in these pages before, more plastics will appear on new models than ever before. A good many of the new jobs will be equipped with a new type of sun visor produced from a built-up phenolic plastic, specially treated after molding to give the appearance of cloth. The design is reported to be somewhat less expensive and less subject to dirt and deterioration than present visors. Molded plastics also are being proposed for glove compartment boxes, radio housings, door panels and the like. It is certain such innovations will appear on more than one model this fall.

Hupp last week released its first financial report since the recent recapitalization, showing net loss of \$212,241.32 for the three-month period ended June 30. This still leaves well over \$2,000,000 in cash in the Hupp treasury, however, into which to dip for expenses incident to resuming production. The big question in Detroit today is: Can Hupp make the grade and re-establish dealer relationships and public favor to absorb its proposed 15,000-car production for next year? Starting after a year in which production probably will eclipse any total registered before or since 1929, and with all signs pointing toward continuation of boomtime markets for automobiles, it is not difficult to answer in the affirmative, but the automotive industry throughout its history has been notorious for the frequency and severity of its fatalities, so anything can happen.

ANOTHER participant in revival day is the American Bantam Car Co. at Butler, Pa., former home of the Austin car, where within the next couple of months pro-

duction will be started on $\frac{1}{4}$ -ton panel and pickup trucks, coupes and roadsters. Last week this company, too, placed orders for material and equipment to a long list of suppliers. Hayes Body will produce body stampings; Spicer, axles; Motor Wheel, wheels; Detroit Body Die, fender dies; Rockford Drilling Machine Co., clutches; Electric Auto-Lite, electrical equipment; and Morrison Steel Products, Marquette Metal Products, Murray-Ohio, National Bronze & Aluminum, Western Automatic Machine Screw, miscellaneous parts.

Backers of the new company proclaim the new American Bantam will ramble along at 60 miles an hour, with economy up to 60 miles per gallon of gasoline. Operating a plant capable of turning out some 40,000 cars a year, new officers are probably looking forward to good profits, especially after noting the fact Willys has been able to sell about 50,000 of its small jobs in only six months of this year.

Finishing touches are being applied to the Nash and Lafayette lines for 1938. Exteriors will differ from the old models in only a minor degree, with such parts as grilles and louvres coming in for altered treatment. Interiors will be snapped up considerably and much of the "gingerbread" — designer's term for small die cast ornaments and other decorative treatment — eliminated in the interest of simplification.

ARTISTS and designers who daily toy with new ideas in streamlines and front-end contours for automobile builders can give some interesting slants on trends in design. For instance, Chrysler designers, in working out the front ends for this year's models were trying their best to develop a profile which would give the idea of motion. The rounded top of the radiator shell giving way to a vertical front line left something lacking, as did sloping the front line outward.



MIRRORS OF MOTORDOM

Finally this front line was sloped inward and the nose or top of the radiator shell left to jut outward from the car a few inches. This gave just what designers were looking for, and this treatment will be noted on the Chrysler line for 1937, except that the front line of the grille, still viewing it from the side, is curved somewhat.

Next year the trend will be toward increasing the slope and bringing the top further outward, but straightening out the front line to get away from the appearance of excessive overhang which some front ends appear to have now.

Many designers consider the Lincoln Zephyr to be the best current example of streamline design. In fact, the director of one of the large "design factories" here brought a Zephyr into his shop and told his assistants to take a good look at it and start working from there. For the best balanced all-around design, these same designers award the palm to Buick this year.

Seek Front Contour Beauty

Slight changes in the front end contour of a car can be achieved without great expense and make all the difference in the world as far as appearance is concerned. This is why so many changes are now in process of being worked out on grilles for new models. Pontiac, for example, is understood to be planning a refinement of the present Olds treatment which involves a series of horizontal "shelves" about 2 inches apart, formed of light-gage stainless steel, instead of the present closely spaced narrow bands of bright metal which curve away from the center strip of the grille.

NEW facilities for production of cold-rolled strip will be installed shortly at McLouth Steel Corp. here which hitherto has confined its operations to production of hot-rolled strip on reversing-type mills, with reels in heating furnaces. The new equipment, of United Engineering & Foundry Co. design, will include a 4-high reversing cold mill of 22-inch width, powered by a 1250-horsepower motor; a 2-high tension skin pass mill of Bliss design; and radiant-tube annealing equipment of Surface Combustion Corp. type.

Unusual feature of the new mill,

Automobile Production

Passenger Cars and Trucks—United States and Canada
By Department of Commerce

	1935	1936	1937
Jan.....	300,335	377,244	399,634
Feb.....	350,346	300,810	383,698
March ..	447,894	438,943	*519,177
April....	477,059	527,625	553,415
May.....	381,809	480,518	540,357
June....	372,085	469,368	521,139
6 mos....	2,329,528	2,594,508	2,917,420
July.....	35,297	451,206	†452,309
Aug.....	245,075	275,934	.....
Sept....	92,728	139,820	.....
Oct.....	280,316	230,049	.....
Nov.....	408,550	405,799	.....
Dec.....	418,317	519,121	.....

Year 4,119,811 4,616,437

Estimated by *Ward's Automotive Reports*

Week ended:		
July 3	122,890	
July 10	100,981	
July 17	115,380	
July 24	88,055	
July 31	86,448	
	Week ending	July 24
General Motors	48,892	50,040
Ford	655	655
Chrysler	26,550	26,550
All others	10,351	10,810

†Estimated. *Revised.

which will produce up to 5000 tons monthly and will cost about \$500,000, is an extensive system of conveyors which will eliminate all manual operations in handling and processing.

During the past year, McLouth production on its hot mill has increased steadily, reaching 6062 tons one month, and it is estimated the new cold mill will boost output of the present hot mill by about 30 per cent because of increased widths and heavier gages required for the cold rolling operations.

This is another step in down-river steel mill expansion and one which gives further impetus to the prediction of many that Detroit will in years to come be one of the leading steel mill districts of the country. Both Ford and Great Lakes Steel are now adding to open-hearth and blast furnace capacity.

There is still the possibility American Rolling Mill may erect plants on its down-river property—probably a rolling mill at first with the likelihood of some open hearths later. Rotary Electric Steel is turning out about 6000 tons of hot-rolled

and cold-rolled steel monthly, and is reported on the verge of installing a new electric melting furnace. Republic's sheet mill at near-by Monroe is operating at capacity, and expansion there is not held unlikely. A few more years may see a further important expansion in this district as far as steelmaking and rolling are concerned.

At Toledo, O., only 55 miles distant, are the blast furnaces of Interlake Iron Co. which, incidentally, in the last four months has been exporting large tonnages of pig iron to Europe. In this time, about 42,000 tons of iron has been taken out in Canadian ships bound for Montreal where the cargo is transhipped for England, France and Switzerland. The Toledo Furnace plant is one of the largest merchant iron stacks in the country. In the three months that ore has been coming into the docks there, 756,821 tons has been handled, compared with 435,993 tons last year in the same period.

UAW Office Help Organizes

* Office help in the UAW headquarters here gave the city a laugh when they formed their own union—the United Office and Professional Workers of America—and demanded negotiations over working conditions with union officials, who themselves were busy drawing up demands for negotiations to present to other executives.

* Independent Association of Chrysler Employees, incorporated under state laws, claims a membership of 26,000 in Chrysler plants, asserts it is entirely independent of company or outside union, and condemns tactics of the UAW.

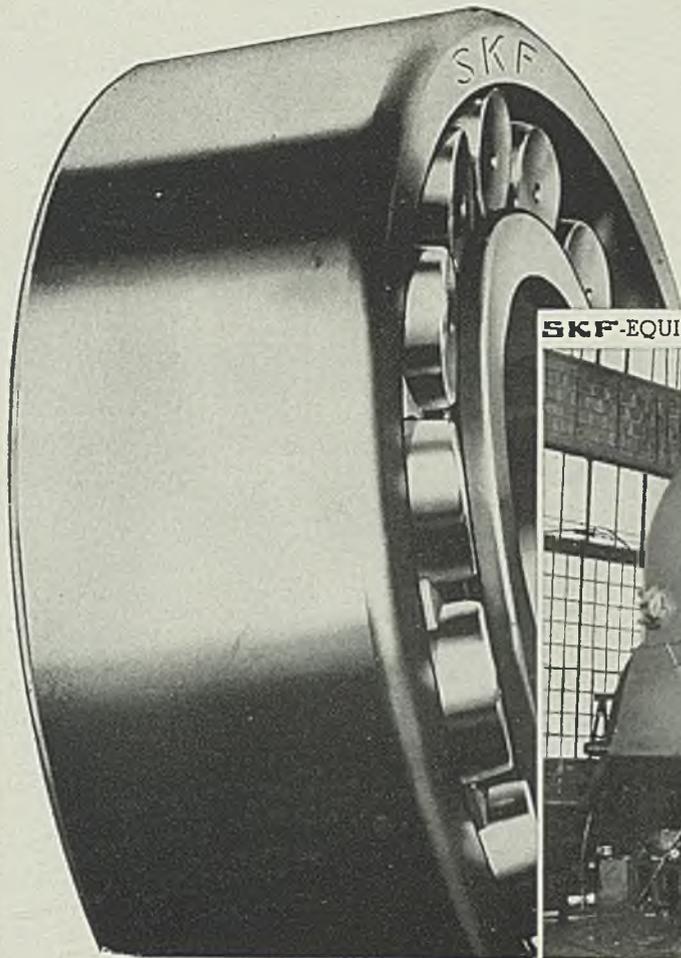
* Drop of \$22,377,277 in second-quarter earnings of General Motors is ascribed by President Sloan to materially higher costs and inability to make full use of production facilities, meaning the inability of UAW leaders to prevent unauthorized strikes.

* Chevrolet has announced two new truck models, of $\frac{3}{4}$ -ton and 1-ton capacity, available in three body styles and featuring all-steel construction.

* The type of automatic gearshift to appear on several of the 1938 models is the Evans Products Co. vacuum powered shifting mechanism and not the Bendix type as previously reported.

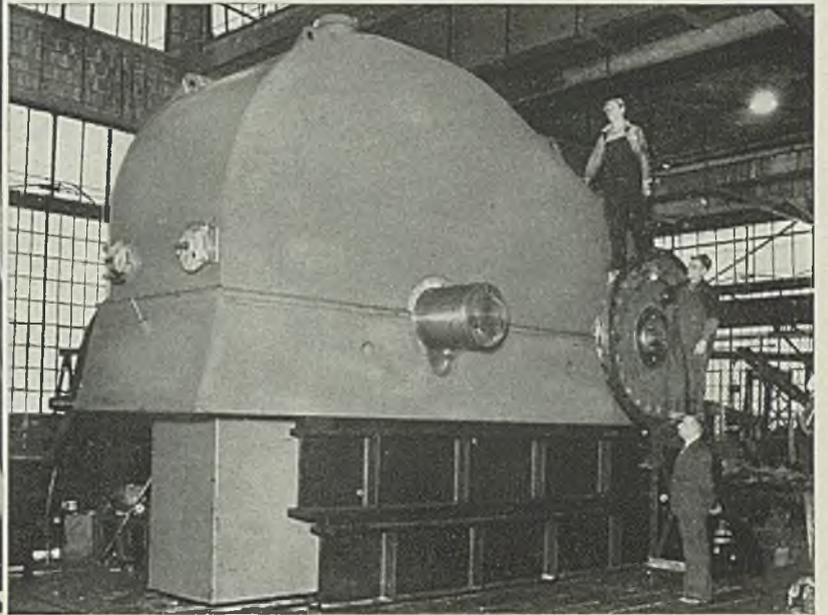
*An eastern manufacturer has introduced an automatic oil drainer which through an arrangement of die cast valves and copper tubing permits draining motor oil without crawling under the car to remove the crankcase plug.

*Willys is now offering a coupe model, in production both at Toledo, O., and Los Angeles. A commercial car will appear shortly.



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	Bore	O. D.	Width
High Speed Shafts	13 $\frac{3}{4}$ "	23 $\frac{1}{4}$ "	7 $\frac{9}{16}$ "
Low Speed Shafts	19 $\frac{11}{16}$ "	28 $\frac{3}{4}$ "	6 $\frac{7}{8}$ "

DWARFED by this Falk Single Reduction Gear Unit, one of three driving the first three finishing stands of a wide continuous strip mill, the three men in this picture demonstrate the mammoth size of this 4,500 to 9,000 H.P. unit—gear ratio 125/182 to 29.4/66.5 R.P.M.

That this unit is SKF-equipped throughout is recognition for the dependability, self-alignment, load-carrying ability and long life of SKF Spherical Roller Bearings. If you will acquaint us with your requirements, we will send you at once the engineering data you need to lay in SKF Bearings in your design.

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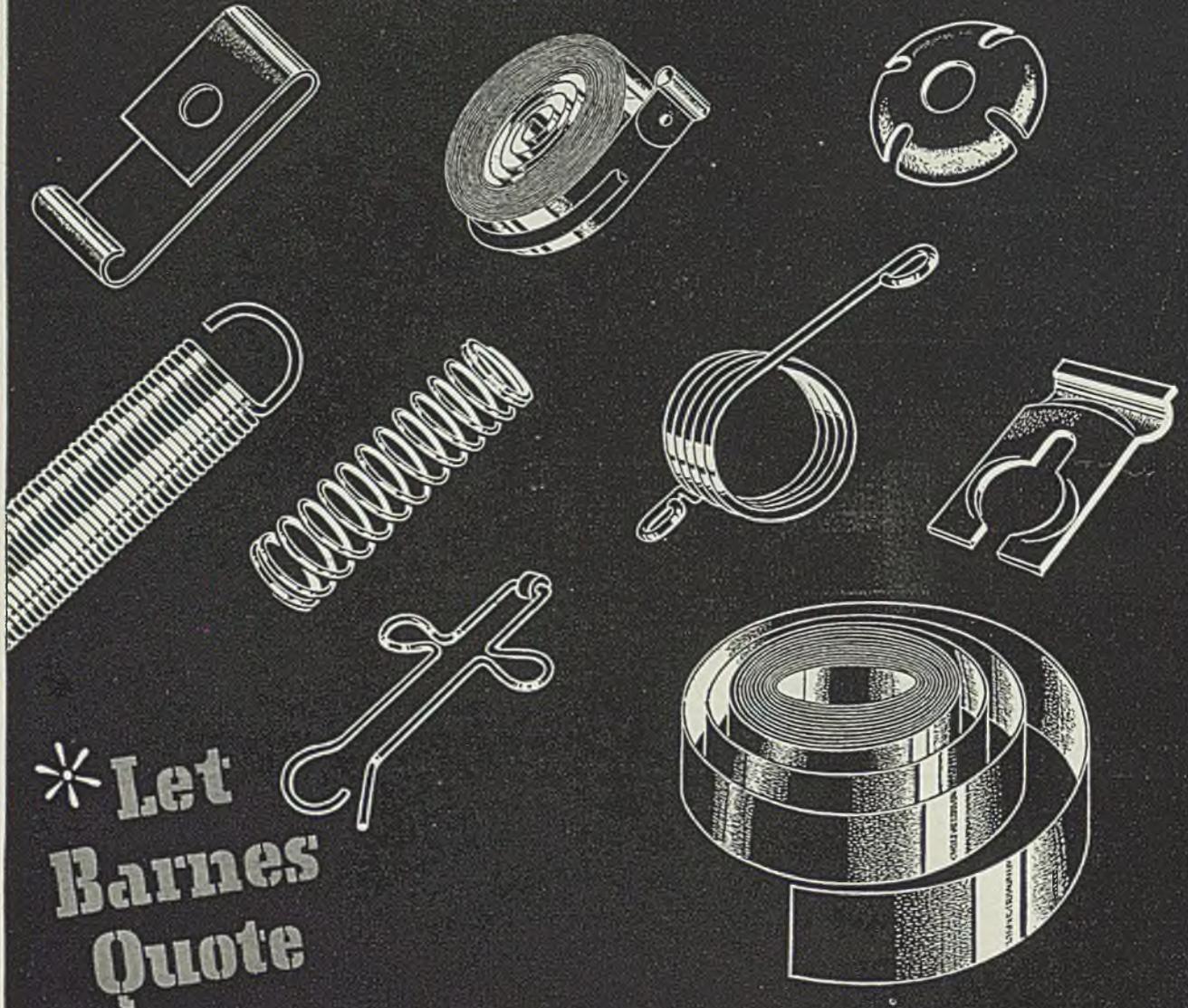
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COMPLETE HEAT TREATING EQUIPMENT OIL, GAS, ELECTRIC · ALL STANDARD FINISHES
SPECIAL DEPARTMENT FOR SMALL ORDERS · EXPERIMENTAL DESIGN CO-OPERATION



WINDOWS OF WASHINGTON

WASHINGTON

THERE is indication that the bureau of standards will make a study of pre-fabricated steel houses in connection with a survey and test the bureau will make of building materials, as a contribution toward the promotion of low cost housing. An appropriation of \$200,000 has been made for this purpose. Details of the study have not entirely been worked out.

The program of the bureau calls for a special study, in co-operation with the building industry, of materials suitable for low cost housing as far as the plan has progressed. From these tests and research, it is intended to develop information that will be useful as a guide in selection of materials. It is quite possible that many iron and steel products going into the building of a house will be taken up during the course of the investigation.

"Studies are to be made as to the stability of materials for walls, partitions, floors, roofs, heating and ventilating equipment and plumbing," the secretary of commerce announced at a recent press conference. "They will be studied from the standpoint of strength and fitness, fire resistance, thermal insulation and durability," he continued.

"Entirely new materials and methods of building, as well as those already in use, will be included, with simplification of the plumbing layout in the interest of maximum efficiency and durability at lowest cost.

"This research is intended to provide technical information necessary to set up minimum standards that will insure safety and durability. The results of this program will be made available to those interested. Provision for this study was made in the new fiscal year appropriation by Congress."

SENATOR NYE LASHES NLRB FOR PARTISAN POSITION

"The national labor relations board seems to have gone out of its way to demonstrate to the public that it

BY L. M. LAMM
Washington Editor, STEEL

is a partisan body rather than a judicial institution," said Senator Gerald Nye, North Dakota, last week, in censuring that agency for taking sides with labor and for acting as a recruiting office for the CIO.

The senator stated that the board "has disqualified itself as a referee between management and workers." Speaking further, the senator said that it is "far better to scrap a government bureau than to let that bureau make hash of our national welfare. * * It is up to the referee to bring about accord between the disputants but this is most emphatically not being accomplished."

Senator Nye contended that the three members of the board "clearly indicate that they are not only partisans but that they have also taken sides in labor's internal disputes, at a time most injurious to the cause of the labor movement." He said further that "the NLRB has such a pronounced pro-CIO bias that the average man regards it as an adjunct."

Decisions Not Consistent

In connection with the labor board the United States chamber of commerce has made an analysis of the more important rulings of the body in which it points out the lack of consistency in the interpretation of the act.

"It is apparent," says the national chamber, "the board's decisions have not yet provided definite and consistent interpretations of the act which will enable employers to understand clearly the extent of their obligations and their rights under the act."

For instance, it is pointed out that the board has ruled that "an employer has no right himself to request a proceeding by the board for an election among employes to ascertain the majority choice of a rep-

resentative for collective bargaining, but if the employer joins with an outside labor organization in making such a request, he is given standing by the board."

It is pointed out again that "an employer has a right to refuse to accept demands made upon him in the course of collective bargaining, but not to terminate collective bargaining for that reason, or because the labor organization involved is violating an existing agreement." Many similar briefs of decisions are contained in the report of the chamber.

The President went out of his way at one of his press conferences last week to defend the labor board against the Nye criticism. He said that labor people had complained that the board operated against them; that industrialists complained of the same thing and that therefore the board must be doing a pretty good job.

CIO BLAMES NEW DEAL FOR STEEL STRIKE DEFEAT

For the first time CIO last week criticized the Roosevelt administration. The steel workers' organizing committee reported to the executive board of the United Mine Workers that the government, both state and federal, did not look out for the interests of the strikers during the midwest steel strikes.

"The federal government," said the steel workers' union, "throughout this entire situation has not displayed the slightest interest in protecting the rights of the steel workers on strike, which have been so flagrantly disregarded.

"Violations of the national statutes, such as the national firearms act, by the steel corporations have produced no activity on the part of national officials."

The steel workers' union made a long protest to the mine workers' board, all along the lines of that quoted above; after receiving it the mine workers adopted a resolution, unanimously, in which it protested the "complete lackadaisical and un-

concerned attitude of national and state authorities."

This resolution of the mine workers further condemned "anti-labor practices and policies of local and state officials who have so gladly cooperated with Tom Girdler and Eugene Grace in an attempt to break the steel strike."

NEW HOUR-WAGE BILL NO IMPROVEMENT OVER OLD

It was contended last week by George H. Davis, president of the United States Chamber of Commerce, that relative to the hours and wages bill, which was being discussed by the senate early last week, the revised legislation then being taken up is subject to the same objections as the original measure.

"In fact," he said, "this revised bill omits a desirable feature of the original, a section through which Congress would properly protect the states from defeat through interstate commerce of the action they may take in relation to maximum hours, minimum wages, and child labor."

BRITAIN MAY SUBSIDIZE STEEL GOODS FOR EXPORT

For about a year the British import duties advisory committee has been making a study of the present position and further development of the British iron and steel industry, according to a report to the department of commerce from Assistant Commercial Attache Homer S. Fox, London.

The subsidizing of goods for export is put forward as a possibility in exceptional cases but not as a generally applied policy. In this connection and in connection with price control generally, the report states that a scheme has now been adopted by the executive committee and the council of the Iron and Steel federation for the establishment of a central stabilization fund collected by a levy on the output of ingot steel, which is to be used either directly or as supplementary to funds raised by affiliated associations for any or all of the following purposes:

"1. To assist and expand export trade in steel products and the export trade of manufacturers using steel products as their raw material.

"2. To establish and maintain a reasonable price level, by making grants to meet the position of certain high cost plants whose output is essential in busy periods but whose costs are too high by which to determine the price level.

"3. To make provision for eliminating redundant or inefficient plants, thereby bringing efficient producing capacity into relationship with market demand.

"4. To maintain on a 'care and maintenance' basis in less busy pe-

riods plants which might well be necessary to meet the peak demands of busy periods.

"5. To establish greater equality of delivery charges to the consumer, in connection with schedule prices.

"6. To assist associations in the development of new uses for steel and market research.

"7. These and any other purposes which the council may approve in conjunction with the associations concerned as being to the benefit of the industry and in the public interest."

TREND OF SCRAP EXPORTS SHOWN BY MONTHLY TOTALS

Interesting export figures are available at the department of commerce, showing the trend of exports of iron and steel and tin plate scrap, as well as pig iron, and "all other" iron and steel. These figures show the monthly exports from January, 1936, up to and including the May figures for this year, the latest available.

It will be noted from the following table that scrap exports were much less during the time of the maritime strike on the west coast late last year. These exports advanced sharply following the strike and some government officials seem to feel that the sharp increase in exports following that strike are partially due to the fact that it was impossible to move the scrap and that all of the shipments taken together probably will not greatly increase over the period of a year. The export figures are as follows:

1936	Gross Tons		
	Iron and steel and tin plate scrap	Pig Iron	All other Iron and steel
Jan.	158,962	186	82,416
Feb.	145,002	51	68,749
March ...	167,453	260	96,624
April ...	196,906	215	104,866
May ...	217,439	121	97,390
June ...	191,173	91	103,687
July ...	197,805	125	98,808
Aug. ...	199,649	320	95,372
Sept. ...	157,135	321	78,115
Oct.	125,357	246	136,279
Nov.	76,042	289	126,966
Dec.	109,026	3,091	132,039
1937			
Jan. ...	72,849	13,329	115,514
Feb.	151,271	17,118	122,598
March ..	362,249	14,436	193,899
April ...	427,886	38,177	217,611
May ...	638,108	117,598	213,516

SCRAP EMBARGO IS LIFTED

Announcement was made last week by the Association of American Railways of the cancellation July 23 of an embargo placed in February on iron and steel scrap for export at Houston and Texas City, Tex.

At the same time the association stated that it had suggested to various roads which had similar embargoes on scrap to Atlantic coast and Gulf ports that they also lift the ban.

It is understood that the action was

taken following conferences between representatives of railroads and scrap dealers.

Association officials stated that the embargo was lifted because the roads feel they now have sufficient cars and dealers promised to unload the cars quicker than formerly. In April, according to the association, some 5000 cars were held up at ports but at present this number has been reduced to 2000.

MACHINERY EXPORTS SHOW HEAVY INCREASE IN VALUE

Exports of industrial and printing machinery during the first five months of this year amounted to \$96,118,545, according to the machinery division of the department of commerce. This was an increase of 34 per cent over the corresponding period of last year.

The largest proportional gain was made in construction and conveying machinery, which was 103 per cent greater; but mining, well and pumping machinery had the largest actual increase, measured in dollar value, gaining more than ten million dollars, 73 per cent above the figures for the first five months of last year.

Six of the eight principal groups showed larger exports. Moderate declines, however, were registered in "other" metal working machinery and in textile, sewing and shoe machinery. Exports for the first five months of this year have amounted to more than 56 per cent of the foreign shipments for the whole of last year.

MACHINE TOOL ORDERS SOAR

Machine tool orders are at capacity levels, with no more than a slight seasonal drop, Secretary of Commerce Roper said last week at a press conference, when asked regarding the business outlook.

"The main worry in this field," he said, "is inability to obtain skilled help. Foreign business alone could keep machine tool manufacturers busy for many months."

The secretary said that the frame of mind in railroad circles is reported as being distinctly better. Orders in the electrical equipment field are running ahead of billings and are about 30 per cent better than a year ago.

FOX ON TARIFF BOARD

A. Manuel Fox, former director of research of the United States tariff commission, last week took oath of office as a member of the commission. The President named Mr. Fox a member of the commission for the term ending June, 1942, to fill the vacancy caused by the resignation of Robert Lincoln O'Brien. He has been a member of the staff of the commission since 1923, in various capacities.

Are Some Metals 'Too Good' For Their Intended Uses?

TWO items in recent news of the iron, steel and metalworking industries emphasize the subtle changes that are taking place constantly in the application and use of iron and steel.

One item was the "letter to the editor" in the July 26 issue of *STEEL*, in which a steel user called attention to the fact that the steel ingot output of the first half of 1937—while only 1 per cent below the all-time record tonnage of the first half of 1929—actually represents a far greater accomplishment in production and finishing, because the 1937 steel was in lighter form and sold in a higher degree of refinement. The second item was the report of the American Iron and Steel institute to the effect that the 34,000,000 tons of finished steel in the United States in 1936 will have an average life of 33½ years, compared with an average life of only 15 years attributed to the 2,500,000 tons of steel in 1886.

The two points suggest interesting possibilities in a thorough-going analysis of probable trends in the application of iron and steel in all forms. They raise the significant question as to whether durability or long life is as important a factor today as it was say 20 or 30 years ago. If, on one hand, the tendency is toward lighter forms of steel—such as strip, sheets and tin plate—how is this trend to be reconciled with the apparent increase in the life of steel products?

Heavy Steels Have Long Life Span in Some Uses While Many Lighter Forms Are Discarded Sooner

At one time, as pointed out frequently in this column, the preponderance of steel went into heavy products—plates, shapes, bars and rails. Some of these forms are long-lived. Steel going into bridges and into the frames of large buildings has a life of 40 years or more. Plates in ships are good for 30 or more years. Plates and bars in railroad locomotives and cars are good for perhaps 20 years or more. In locomotives the obsolescence in design is likely to scrap the metal before its life is exhausted. Traffic conditions govern the life of steel rails, but here again factors other than the longevity of the steel may decide the time of scrapping.

Today the lighter forms of steel are in the ascendancy. Strip, sheets and tin plate have made marked progress in the depression and recovery periods. These forms of steel go into consumers' goods

to a greater extent than into capital or durable goods. The principal market outlets are automobiles, refrigerators and other household appliances, metal containers including tin cans, and similar articles.

Steel in automobiles may be good for several decades, but the average life of a car today is something under a decade. Some household appliances enjoy a long life, but in this case the period of usefulness is governed by the life of the mechanical apparatus rather than by the durability of the steel. Tin plate going into containers, which in 1936 accounted for 8.44 per cent of the total finished steel output, obviously is destined to a short life.

However, a considerable portion of light steel products go into use where resistance to deterioration is extremely important. Sheets for roofing, hot air furnaces and flues, eaves trough, culverts, etc. are selected primarily for their ability to withstand corrosion. The same is true of practically all the steel which finds its way to American farms. Farmers are intensely critical of the life of wire fencing, galvanized sheets, etc.

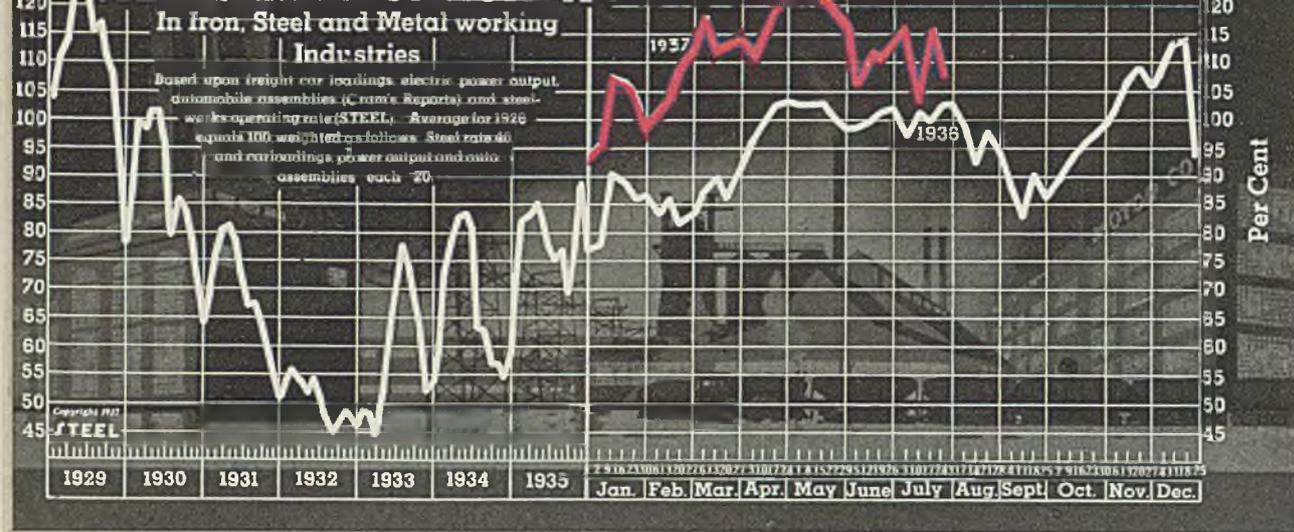
Diversity in Requirements May Repay Study To Match Needs and Save by Utilizing Cheaper Grades

From this sketchy resume, it is apparent that the uses of steel present conflicting requirements. Tin plate for a can of beans or beer may be thrown away in three months. Tin plate for a roof may be expected to serve for numerous decades. A steel sheet for an office file cabinet will last a century or more, if necessary. A similar sheet—galvanized and in a garbage can—may go out of use in two years. In short, the average form of steel is more durable than necessary for many of the short life applications and not durable enough for many of the uses where life is the main consideration.

It goes without saying that the producing, fabricating, manufacturing and user interests are working constantly and diligently to improve iron, steel and nonferrous metals for more exacting applications. Also it is fair to say that the forces of research, metallurgy and testing technique are devoting as much thought and energy to extending the life of these metals as to improving their properties in other directions.

Such effort is desirable. For many applications the world still is crying for metals of better quality.

But while striving for progress in improvement, should we not also give attention to the uses where less exacting requirements exist. Is it not possible that we are wasting good steel in places where an ordinary grade would suffice? Perhaps research on cheaper materials for short life uses is in order.



The

STEEL'S index of activity declined 7.7 points to 108.0 in the week ending July 24:

Week ending	1937	1936	1935	1934	1933	1932	1931	1930
May 29	115.6	98.6	71.9	75.7	65.3	54.2	75.7	94.9
June 5	105.1	98.8	79.3	82.3	69.9	51.0	73.5	97.9
June 12	111.4	99.4	80.0	83.6	72.1	51.1	73.2	96.2
June 19	110.3	101.0	77.3	81.8	73.9	51.3	70.9	95.0
June 26	112.8	101.9	78.4	79.4	77.0	51.6	70.6	94.0
July 3	115.3	97.5	64.1	52.3	71.4	49.2	64.1	75.0
July 10	103.8	100.9	76.5	67.8	79.1	41.7	69.4	86.9
July 17	115.7†	99.9	79.8	68.1	79.4	46.9	70.0	79.1
July 24	108.0*	102.1	80.8	66.4	78.8	51.5	69.7	78.7

*Preliminary. †Revised.

Index of Activity Reflects Seasonal Influences

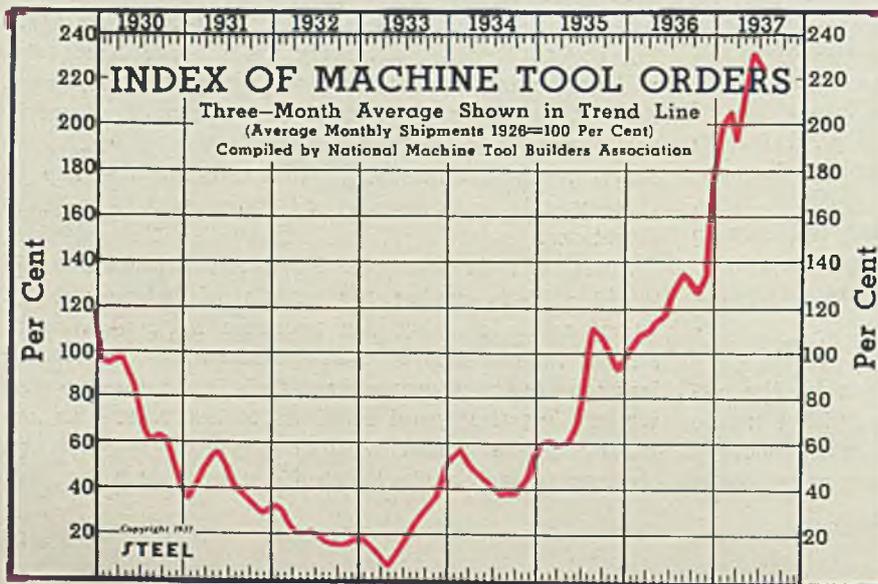
NORMAL seasonal factors are beginning to be reflected in business barometers for the first time in several months. After observing weekly reports which showed the effect of labor difficulties, holidays, floods or other abnormal events, it is something of a relief to see indicators which are not distorted by the unusual.

STEEL'S index of activity for the week ending July 24 probably mirrors a situation in industry that is less disturbed by out-of-the-ordinary factors than that existing at anytime since the first quarter. Strike trouble

was at a negligible point, no holiday intervened and no other similar influence was felt.

The index was down sharply from 115.7 to 108, but this decline of 7.7 points can be attributed to normal, expected seasonal factors. The principal cause was a recession in automobile production from 115,380 to 88,055 units, which represents the first marked evidence of the summer vacation period in motordom. A loss of a point in the rate of steelworks operations also reflected a two-week shutdown in an important plant.

Car loadings and electric power output—indicators of broader sweep—continue at or slightly above the levels of May and June. While electric power output at 2,258,776,000 kilowatt hours shows a decline from the all-time record in the preceding week, it still ranks as the fifth highest weekly output on record.



	1937	1936	1935	1934
Jan.....	201.7	102.6	61.3	56.5
Feb.....	207.7	107.1	61.5	58.2
March....	192.4	109.4	60.3	50.9
April.....	219.8	114.4	60.3	48.5
May.....	234.2	116.6	67.1	46.8
June.....	227.6	124.5	76.7	42.6
July.....	.....	132.6	94.7	38.6
Aug.....	.....	135.5	112.2	37.1
Sept.....	.....	132.0	108.5	37.4
Oct.....	.....	127.5	102.9	40.5
Nov.....	.....	134.0	93.8	44.2
Dec.....	.....	180.4	89.9	54.1

BUSINESS'S TREND

June Building Construction Registers Moderate Gain

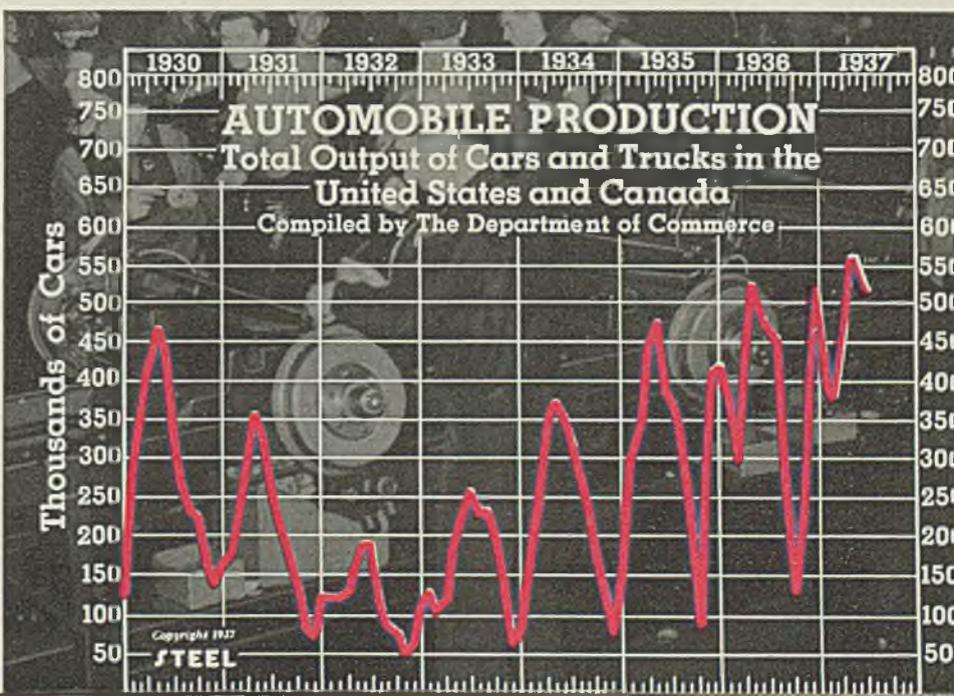
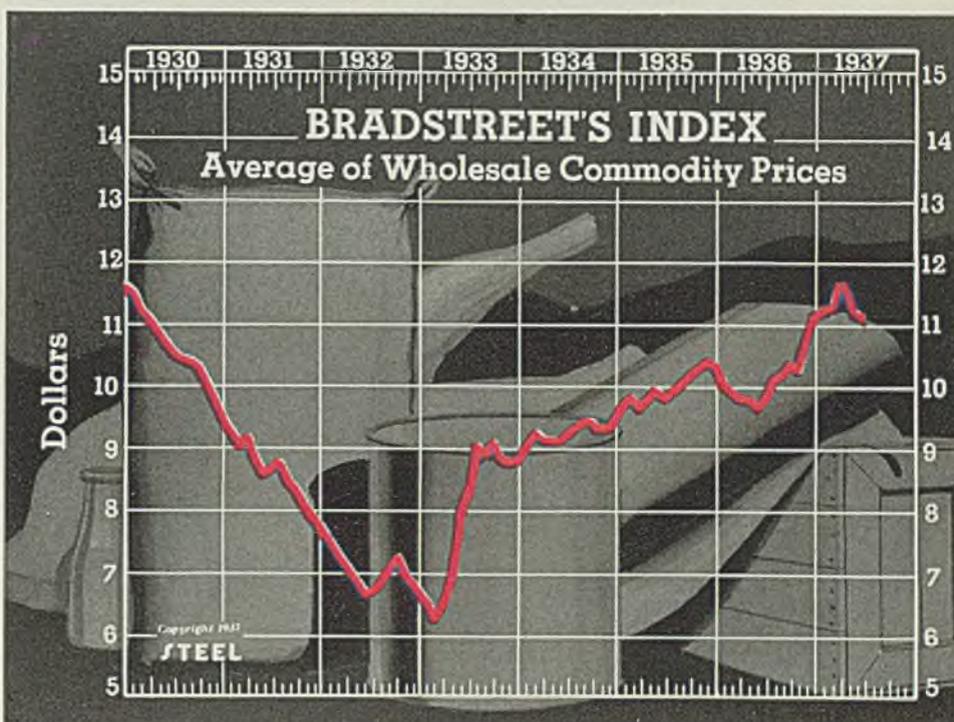
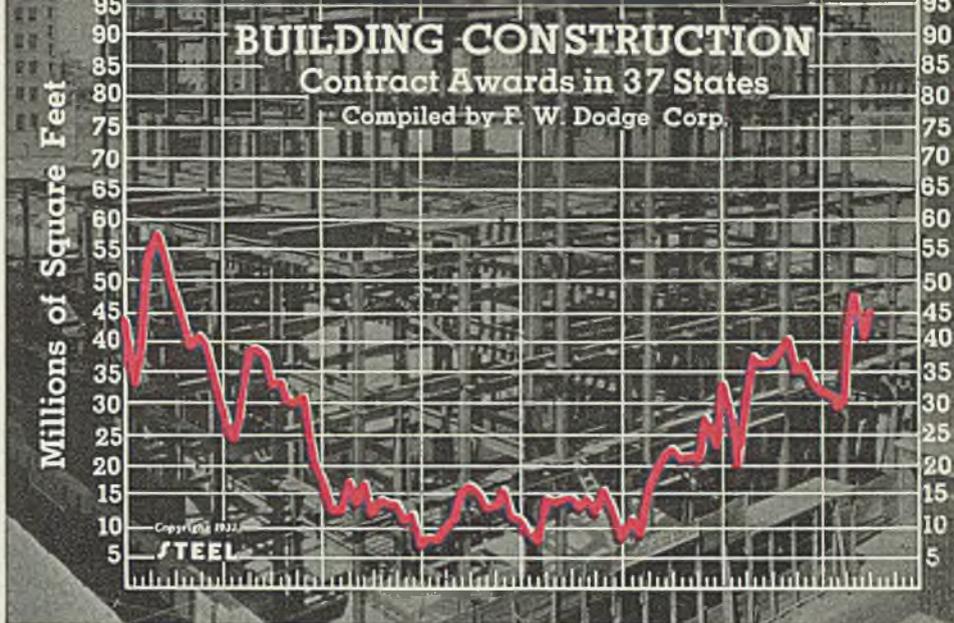
	Square Feet		
	1937	1936	1935
Jan.	33,470,000	27,053,300	11,245,100
Feb.	29,942,100	20,856,700	9,670,300
Mar.	41,567,800	31,257,900	15,845,300
Apr.	48,396,100	37,490,200	19,917,300
May	40,287,900	36,362,100	22,276,200
June	46,393,100	36,883,900	22,878,000
July	38,762,500	21,565,900	
Aug.	40,285,100	21,545,400	
Sept.	35,448,000	21,365,700	
Oct.	36,718,900	27,775,900	
Nov.	34,947,500	24,120,700	
Dec.	33,632,600	33,441,900	

Commodity Price Index Off Slightly on July 1

	1937	1936	1935	1934
Jan. 1	\$11.13	\$10.36	\$9.49	\$9.01
Feb. 1	11.23	10.02	9.78	9.26
Mar. 1	11.34	9.92	9.79	9.17
Apr. 1	11.81	9.85	9.66	9.16
May 1	11.51	9.81	9.79	9.14
June 1	11.33	9.73	9.90	9.24
July 1	11.27	9.85	9.84	9.32
Aug. 1	11.27	10.14	9.91	9.48
Sept. 1	11.27	10.19	10.00	9.45
Oct. 1	11.27	10.27	10.17	9.27
Nov. 1	11.27	10.22	10.28	9.29
Dec. 1	11.27	10.78	10.40	9.49

Automobile Production Down Slightly in June

	1937	1936
January	399,634	377,244
February	383,698	300,810
March	518,977	438,943
April	553,415	527,625
May	540,357	480,571
June	521,139	469,868
July		451,474
August		275,951
September		159,785
October		229,989
November		405,702
December		519,132



Coordinating



FOR years, in sales conventions, salesmen have been listening to much the same routine — predictions, instructions, “pep talks” — glowing descriptions of the new line of merchandise — and of course the final general exhortation to “go out and do your stuff”.

This is all very good, and all very necessary. But it sometimes seems to me that it is growing a bit hackneyed. Furthermore, it often seems to me that the typical sales conference does not dig far enough beneath the surface.

In most sales conferences the entire emphasis is turned outward. That is, the stress is all laid upon taking the message of the company out through the salesman to the customer.

But that covers only one-half of the ground. The other half — which is equally important — should consist of bringing the message of the customer back through the salesman into the company.

The standard theme of a sales convention is always what is to be sold the customer. It would be an interesting innovation if this emphasis were to a degree reversed. What would happen if one of the

major themes of a sales conference were to be, “What can the customers sell the company?”

To my mind, the sales manager of today has a dual responsibility: First, he must push the products of his company through the salesmen to the customers. But another responsibility, almost equally important, is that of bringing the reactions of the customers back through the salesmen into the company — registering customer reactions upon the production side of the business.

Link Markets and Production

Salesmen represent in most businesses the major link between markets and production. This connection is more than a one-way circuit and should work both ways. The customer should be made to know all about the product of the company. But the executive and production sides of the company should also be made just as familiar as are the company salesmen with the preferences, criticisms and reactions of the customers. Unless this is done, how can the production end of the business be expected to gear its operations and design its prod-

uct to suit the constantly changing demands of the consumer?

I am convinced that it is one of the regular jobs of a sales organization to see the production department of a company has constantly before it information with regard to consumer acceptance, which will enable the production department to keep its product and practices in line with current consumer preferences.

In order to accomplish this result effectively, a sales force should be trained not merely as a selling organization, but as an intelligence organization. It is part of the duties of every salesman to report back to the sales manager the reaction of his customers and prospects to his sales presentation. It should be equally a part of the job of a sales manager to correlate such information and pass it back to the production side of the business. And it should be part of the job of the production department to give close heed to the voice of the ultimate consumer — as passed back to the production department by way of the salesmen and the sales manager.

I believe that on the whole, salesmen's comments on what the cus-

Sales With Production

BY C. S. STILWELL

Vice-president, Warner & Swasey Co.,
Cleveland

customer wants or does not want are reliable and worthy of very careful consideration. Most successful, seasoned salesmen are not looking for alibis. Such salesmen are looking for business. When they report that a product is not priced right, is of the wrong design, or is not made of proper materials, this simply cannot be overlooked or disregarded.

For instance — Monday morning, a salesman calls on customer A—a man who has bought from him three months ago and should be ready to place another order. No sale! Conversation discloses that the product is correctly priced and properly designed — but it breaks down under the heavy use desired of it by the buyer. This fact naturally goes back to the sales manager. The vital point is to see to it that it goes from the sales manager back into the production department. It raises immediately the questions—Are we using proper materials? Has our engineering department allowed for the punishment which this product is expected to take in actual use? Very often practical experience may prove quite different from laboratory tests and the product which, in the opinion of a research man, should be expected to hold up under average use, may in fact not hold up under the abuse to which it is subjected in the hands of many a purchaser.

Take another case. A prospect says a salesman's product is correctly designed, is of satisfactory quality, but his price is too high

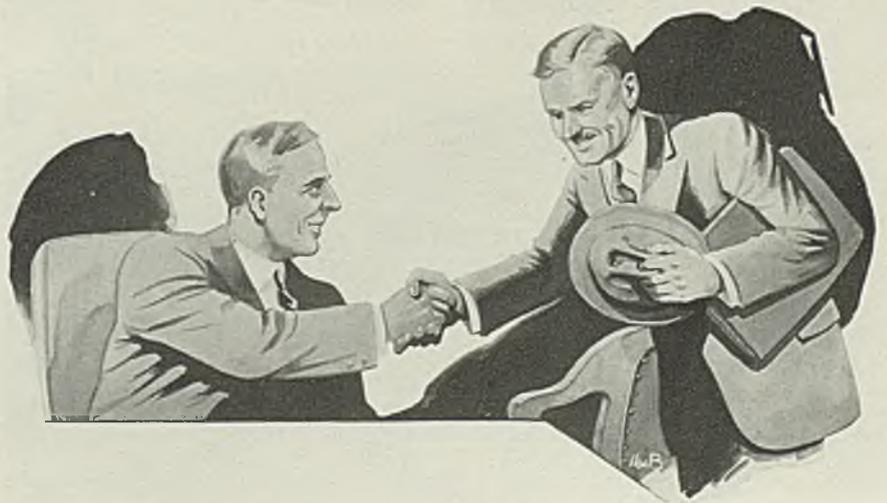
by comparison with competitive products. Certainly this opinion should go right back through the sales manager into the production department. For it immediately raises the question as to what is keeping costs up. Does the company need more effective productive equipment to keep costs down?

Here is another instance. A salesman says his product is satisfactory with respect to price; that it gives good service—but a competitor sells a similar product of a design or appearance which is meeting with greater popularity.

Naturally this item of immediate importance is telegraphed back by the salesman to the sales manager. Here again the vital point is wheth-

er it is passed immediately by the sales manager back into the production department. If several such reports come in—enough to indicate they do not represent coincidences or alibis—they raise at once the question, Are we behind the times in design? How can we make a product of modern design, suited to current public taste, which will retain its quality and its serviceability and involve no increase in production costs? What type of new equipment or new machine tools do we need in order to meet this situation?

Now take one more illustration. Suppose a crack salesman lands a very large order, with delivery date specified within three weeks. The



salesman calls the home office, and finds that the date cannot be met. Here certainly is a situation which calls for a meeting of the minds of the sales and production departments. What's wrong with the plant? Why can't the delivery date be met? Is it because of previous commitments? Because the volume is really extraordinarily large? Or is it because the productive equipment and the machine tools in the plant are too antiquated, or too obsolete, to be able to meet the need for suddenly increased productivity? In these days of rapid expansion of business, with emphasis upon constantly larger volume, capacity to meet quick delivery on large orders is essential to keep pace with present day competition.

There is a very direct relationship between sales and plant equipment—especially machine tools. The adaptability, productivity, and speed of operation of machine tools regulate to a surprising extent the cost, design, delivery date and quality of the product which salesmen

have to sell to their customers.

If the sales and production sides of a company are to be properly co-ordinated, a company's salesmen, getting customer reactions, criticisms, preferences and tastes, must get these facts before the production department. This department in turn must stand ready and willing to accept this news from the front as a reliable weather-vane of buying opinion and adjust its productive facilities accordingly.

The salesmen are the men who are actually out on the firing line. They know economic conditions in their territories; they know consumer habits; they know why certain products are not pulling business; they know when prices get out of line. It is up to the sales manager to see that the wealth of knowledge which the salesmen pick up is reduced to concrete terms and presented to the production department, in the form of a challenge which that department must meet if salesmen are to continue to add to the company's business.

watertight with a specially prepared mastic forced into the seam by a pressure gun. For comfort in extremely hot or cold weather insulation is concealed in the dead air space inside the wall sections.

Special ventilating sash windows, with no vertical mullions, are used. Sash, sill and frame are steel and assembled integrally at the plant. Corner panels are double channel steel sections curved in graceful radius. Main office doors are of steel, are glazed and provided with cylinder locks. Inside doors are of steel, unglazed. Roofs consist of steel ceilings, joists and docks and are completely insulated and silenced by use of deadening felt and other insulating material. Roofs are designed for a 48-pound live and dead load. Parapets are turned back over the ends of the steel roof joists on a radius which conforms to that of the corners. The only departure from steel as building material is in the service doors. These are of wood. In the open position they lay within 6 inches of the ceiling.

These service stations are placed on concrete foundations which are poured in a 16-gage steel template shipped out ahead of the station. The top angle of this form is turned in over the foundation top and is properly punched for anchor bolts which, when placed through these holes and embedded in the concrete, insure an adequate anchorage for the building. Erection prints and complete instructions are included with all shipments so as to facilitate erection of the station by a local contractor.

All steel parts are painted with a shop coat of aluminum primer. In addition to primary protection this affords a base for finish coats of any desired color which are easy to clean and maintain. The company reports these new service stations rapidly are coming into wider use since they are serving to increase the business of service station owners who are now using them.

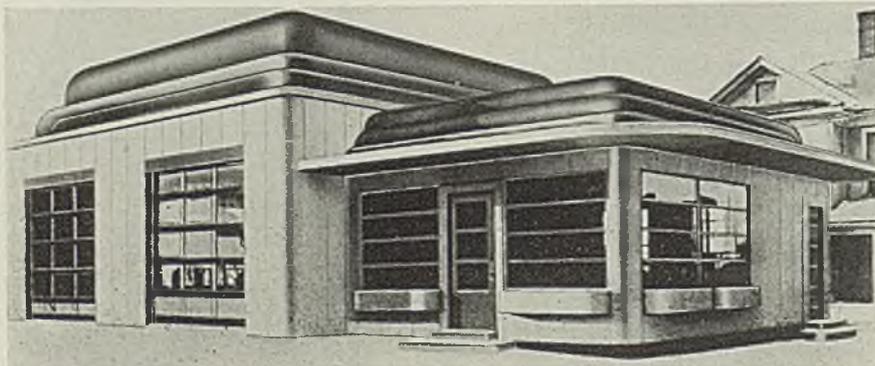
Prefabricated Steel Service Stations Are Built of Unit Sections

BUTLER MFG. CO., Kansas City, Mo., recently developed and placed in production a prefabricated steel, unit section service station.

Known as the Boulevard model, the unit section principle makes it possible to assemble these stations to fit any site and to meet any service requirements. Design has been worked out so that the styling is smooth and complete for any desired assemble. Shown in the accompanying illustration is a typical building of this type, assembled and ready for occupancy and for the installation of the service station apparatus and

equipment necessary for operation.

Walls of these buildings are 3 inches thick and formed of 16-gage black steel sheets into double channel sections 2 feet wide. Sections are joined by bolting through inward flanges of the vertical seams; no bolts are visible. Pipe struts with threaded rods running horizontally reinforce the wall sections. From two to six wall sections, depending on the size of the station, are assembled into units at the factory, leaving a minimum number of units to be handled and connections to be made in connecting. Seams are packed with roofing felt and made



Because of unit section principle of design these prefabricated steel service stations may be assembled to fit any size and meet any service requirements

Reissues Circular on Engineering Materials

Although out of print for several years, Circular C101, "Physical Properties of Materials; Strengths and Related Properties of Metals and Certain Other Engineering Materials," is again available from the superintendent of documents, government printing office, Washington.

Department of commerce announced that the national bureau of standards has reprinted the circular without changes, but is providing a supplement carrying important corrections made in the past 13 years.

Cuts Weight and Increases Strength Of Steel Semi-Trailer Frame

BY J. EDW. TUFFT

IN THE manufacture of frames for semi-trailers the Utility Trailer Mfg. Co., Los Angeles, has tackled the problem of keeping down weight and at the same time increasing strength. The fact that every pound taken from the weight of a vehicle means a pound that can be added to the pay load is obvious and when a large trailer fleet is being operated even a few pounds additional pay load on each vehicle means much in the aggregate and may spell the difference between profit and loss.

Abrupt leaps in taxation at certain equipment weights also make the need of weight control obvious. One firm in the Los Angeles area, for instance, operating a fleet of more than 100 semi-trailers found it practically necessary to keep the chassis weight below 3000 pounds. The Utility Trailer Mfg. Co.'s manufacturing methods kept the weight

down to approximately 2900 pounds, thus achieving a very consequential saving for this firm.

Several methods of weight reduction have been used the chief one being the use of an I-beam frame of chromium-nickel steel in place of the usual channel pressed steel frame. A 10-inch I-beam with a 4-inch flange weighs 11.5 pounds per foot as compared with 13.5 pounds per foot in the channel beam of like height and 3-inch flange. The former has a section modulus strength of 10.5 and the latter of 10.2; the former has a yield point of 55,000 and the latter 35,000, while the total relative strength of the former to the latter is as 160 to 100. Mayari chromium-nickel steel used has low carbon content and welds well.

Weight is further reduced by using a lighter I-beam ahead of the drop. If the beam behind the drop, for instance, is a 10-inch beam the portion ahead of the drop is only 6 inches, the two united with a weld ingeniously located to avoid points of major stress. Differences in the weight of beams ahead and behind the drop in frames of all carrying capacity are comparable to the difference cited in this instance.

The forward and rear sections of the beam are united not with one of two straight line welds but with a V-shape weld, a V-point on the rear portion ahead of the point of major stress projecting into a V-shape cut in the forward portion. A reinforcement plate is also welded to the inside of the beam. This plate is not necessary, according to G. L. Knox, vice president of the company, but is placed there for additional assurance.

Further reduction in weight with additions to strength have been accomplished by welding all parts to the frame which usually are riveted. This includes primarily the shackles. At one time in this plant the

shackles were riveted and that required a weighty shackle built down over the upper flanges and riveted to the perpendicular portion of the I-beam. A 9-pound shackle has been replaced with a 5-pound shackle and a 12-pound shackle by a 5-pound shackle. The reduction in weight on a dual-axle trailer is, therefore, considerable.

Not only has this method of attaching shackles to frame reduced weight but it has reduced trouble. Servicing due to shackles loosening from frames has been reduced to zero, Mr. Knox states. Electric welding is used throughout.

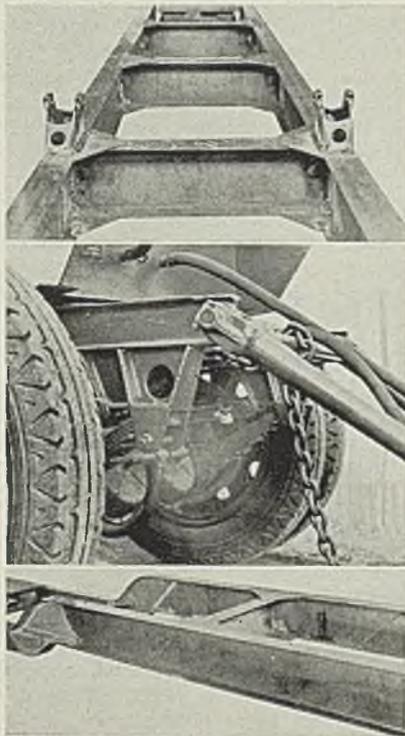
The Utility Trailer Mfg. Co.'s plant is located at Medford and Knowles streets, Los Angeles, and is directed by H. C. Bennett, general manager.

New Handbook Covers Industrial Materials

Materials Handbook, by George S. Brady, fabrikoid, 4 x 6 $\frac{3}{4}$ inches, 661 pages, published by McGraw-Hill Book Co., New York, and supplied by STEEL, Cleveland, for \$5; in Europe by the Penton Publishing Co. Ltd., 416-17 Caxton House, Westminster, London.

This is the third edition of this well-known volume, first published in 1929. Essentially, it is an encyclopedic dictionary of various materials with which the purchasing agent, engineer, executive and foreman come in contact. Materials covered begin with abrasives and end with zirconium-ferrosilicon, arranged in alphabetical order. Pertinent facts about each are included so that the reader can obtain a fairly comprehensive idea.

While not intended as a metallurgical handbook, information on engineering materials includes data on physical properties, and in some cases, compositions. Many patented and trademarked materials are covered and in the case the product is limited to one source, the name of the maker is included. An appendix giving units of measure, conversion tables, etc., is incorporated, as is an index.



THESE views show the design worked out by Utility Trailer Mfg. Co., Los Angeles, for construction of semi-trailers of lower weight and increased strength. The frame is fabricated from I-beams rolled from high strength chromium-nickel steel and other savings in weight are effected by the use of welded construction throughout



Malleable Castings Production Grows; Many New Outlets Have Been Found

PRODUCTION of malleable iron castings, according to Mellott & Snyder, Pittsburgh, has shown a healthy increase during the past four years. In 1936, production totaled 665,000 tons. Reports for the first half of 1937 reveal operations were at 73 per cent of capacity, which is 16 points higher than the figure for the first half of 1936.

Naturally the industry has reflected the general business improvement. However, an active program of research and development work has been carried on within the industry which has done much to improve its position. Manufacturing methods have been improved, new and modern equipment adopted. Perhaps the most typical example of malleable foundry progress is to be found in the improvement of the annealing equipment. Ten years ago the average annealing cycle was around eight to ten days. Today, due to improved equipment, many plants are annealing in four days and a few have so perfected their equipment that they are annealing in 36 to 48 hours. Without question this latter will be standard practice within a few years.

There are numerous instances in which improvements in design and marketability have resulted in new products, uses and engineering conversions. They are found in auto-

mobiles, offices, homes; on farms, railroads, ships and airplanes. Lamp posts, bridge railings, park bench frames, fence posts and various types of agricultural tools represent new adaptations. The manufacture of patented specialties is assuming important proportions within the industry. Line pole supports and cable brackets are examples. The fact that malleable iron has unusual resistance to shock and vibration, high tensile strength, machines readily, is unusually corrosion resistant and may be painted, galvanized, or plated is responsible for this trend.

In 1936, a total of 56 per cent of the entire output of the malleable industry was used by the automotive industry. The strength and machinability of malleable are of great importance to automotive engineers. Also, machining operations are reduced to a minimum by the fact that malleable iron may be cast very true to pattern. Approximately 70 pounds of these castings are used in the construction of the average automobile. The fact that many parts upon which life and safety depend are malleable castings is indicative of the importance of the metal to automobile producers. No other type of product has been able to supplant malleable successfully for many of the vital parts.

During the ten year period from 1925 to 1935, castings devoted to miscellaneous uses rose from 30 per cent to 41 per cent of the total production.

Arc Welding Handbook Has Much New Matter

Procedure Handbook of Arc Welding and Practice, 839 pages, 1000 illustrations, published by Lincoln Electric Co., Cleveland; supplied by STEEL, Cleveland, for \$1.50; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London.

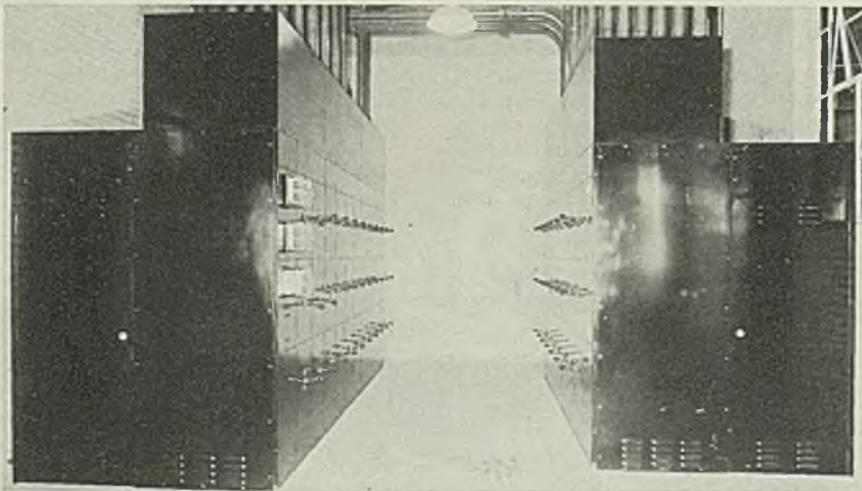
This is the fourth edition, reprinted for the fourth time, and including the latest weld symbols adopted by the American Welding Society. A new introduction to part six has been included, designing for arc welded steel construction of machinery. This material was included rather than held back for the fifth edition.

The new weld symbols occupy 16 pages and are complete as adopted by the Welding Society. The symbols are ideographic and their use as applied to welded design drawings is fully explained. An example is given of how they are applied to a welded design.

The new introduction to the chapter on welded design of machinery emphasizes the fundamental principles the designer should keep in mind. This is discussed under three heads; appearance, scheduling the development proper and modern machinery and technique.

An index covering 13 pages is included.

Installs Compact Distribution Center



TOTAL of 52 distribution circuits is concentrated in this Westinghouse switchboard recently installed in the Philadelphia plant of Crown Can Co. Switchboard on left is a 440 volt, 3 phase, 60 cycle power distribution switchboard, while one on right handles the lighting distribution. Each lighting breaker and power breaker controls a main feeder circuit to a definite plant section

What Government Costs In the United States

Cost of Government in the United States, 1934-1936, cloth, 137 pages, 6 x 9 inches; published by National Industrial Conference board, New York; supplied by STEEL, Cleveland, for \$3.50; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London.

The twelfth in the board's annual analyses of the cost of government, this is a standard source of information on tax collections, expenditures and public debt of federal, state and local governments in the United States.

Special features of the fiscal problem covered in this volume include: Recent developments of federal finances; comparisons of tax and debt burdens in this country and England, France and Germany; tax burdens on various types of business enterprises in the United States.

International Foundry Congress

Reflects Growing Co-operation

FOUNDRYMEN from 17 nations attended the International Foundry congress in Paris, June 17-24. Highlights were the opening session, which afforded an almost complete review of the foundry industry in France; five technical sessions with 46 papers on foundry practice; presentation of several special achievement medals; and formation of a new international committee to define and classify defects in castings. Attendance at the congress was over 600.

The International Committee of Foundry Technical associations, under whose direction the congress had been arranged, conducted a business session with foundry associations of Belgium, Czechoslovakia, France, Germany, Great Britain, Holland, Hungary, Italy, Poland and United States being represented. President Vincent Delpont, European manager of STEEL, London, and European delegate of the American Foundrymen's association, presided.

Announce Future Meetings

It was announced that the next congress would be held in Poland in September, 1938, with the Polish Technical Foundry association as host. An international congress with full American participation is scheduled for 1939 in Great Britain, while Italy is to hold the meeting in 1940.

Report of the committee on the dictionary of foundry terms was received together with a draft copy of a tentative first edition, prepared by the French committee under J. M. Espana.

Dr. Ing. Bannenberg, president of the German Foundrymen's association, was elected president of the International committee for 1938, to succeed Mr. Delpont. Italy was

selected as the country to designate the vice president.

At the closing meeting of the congress, J. Leonard, president of the Belgian Foundry Technical association was awarded a special gold medal of the Association Technique de Fonderie for services rendered over a number of years to the foundry industry in general. The only other recipient of the medal was the late Emile Ramas of the French association.

Other Medals Awarded

The gold medal of the association was presented to Dr. Paul Bastien, in charge of the chemistry course, Ecole Centrale des Arts et Manufactures, Paris; the silver medal to Ch. Dennery, general secretary, Syndicate of Bronze and Brass Foundry Owners; and the bronze medal to Guy Henon, French Centre of Foundry Research.

Addressing the opening meeting, A. Brizon, managing director, Societe des Fonderies A. Brizon, Paris, and president, Association Technique de Fonderie, summarized the present position of the foundry industry from technical and industrial aspects. He mentioned progress achieved in obtaining better iron castings and reducing production costs, and referred to recent investigations with respect to the phenomenon of graphitization.

Mr. Brizon spoke of developments in production of malleable castings, particularly as to heat treatment. Dealing with steel castings, he referred to development of nickel-chromium alloys. He also reviewed present practice in light castings, especially aluminum and magnesium alloys, and heat treatment of certain light alloy castings.

Speaking on behalf of the foreign associations taking part in the con-

gress, Mr. Delpont stated that co-operation is growing, not only among sections of national foundry industries but also among associations in the countries represented on the international committee.

M. Olivier, president, general syndicate of foundry owners of France, reviewed the general organization of the foundry industry in France, where there are over 1000 foundries employing more than 100,000 men. The French foundry industry now has a national syndicate of owners, divided into a number of regional syndicates; there is also a division into syndicates each of which is concerned with the main branches of special classes of products manufactured.

From the technical point of view, the French industry derives its technical heads mainly from the Ecole Superieure de Fonderie; research work is pursued actively at the Institute of Scientific Research of Paris and at the Centre of Foundry Research at Saulnes. Association Technique de Fonderie is the technical institute of French foundrymen and operates similarly to the American Foundrymen's association.

Urges Compulsory Training

Dealing with technical education in French foundries, M. H. Luc, general director of technical education in France, stressed importance of the part played by leading men in the industry, and of the influence these men have on younger men. He emphasized the necessity of starting technical training early and constructively criticized present methods of training in the works. Training, he said, should be compulsory between the ages of 14 and 17.

He stressed the importance of re-

search and laboratory work for engineers and metallurgists. On the whole, technical education should be based on co-operation between various branches of the industry, from the lowest to highest ranks, and it should be based on search for what is new, tempered by wise judgment and tradition.

The 46 technical papers covered almost every aspect of foundry practice and organization, including gray iron, malleable, steel, bronze and brass, and light alloys. Papers were divided into two groups—one comprising 12 exchange and official papers, the other the remaining contributions.

Investigates Grain Size

The gray iron section included the exchange paper of the Belgian Technical Foundry association. The title was "Grain Size in the Foundry." The author, Michel Gevers, Societe Angleur Athus, referring to investigations made on steel by Murphy and Wood in America, described his own experiments with cast iron. In some respects, his conclusions differed from those arrived at for steel.

In discussion, Prof. A. Portevin, director, Ecole Superieure de Fonderie, Paris, explained that in steel there are three kinds of grain size superimposed over one another; one appears in the macrostructure after forging, then comes the austenitic grain size, and then a tertiary structure after the eutectoid point has been passed. If heat treatment is modified, grain size is modified, and for a cast steel size of grain depends upon the influence of the last reheating. In cast iron, the copper reagent brings out the last portion to be solidified, and the significance of the grain in cast iron is not the same as in the case of steel.

T. H. Turner, L. N. E. R. Railway Co. Doncaster, England, made a distinction between grain size as considered by the author and what Americans and British call inherent grain size.

The exchange paper of the Czech technical foundry association, "Some Interesting Remarks on Addition of Silicon and Tin to Gray Iron," by Dr. E. Valenta and N. Chvorinov, showed that addition of a rich ferrosilicon to liquid iron modifies its graphitization and increases the tensile strength, the transverse test figure and fatigue limit. Small additions of tin, from 0.25 to 0.5 per cent, seem to increase resistance of the matrix and correspondingly the physical characteristics. With a higher percentage of tin, the strength of the iron tends to decrease, but resistance to wear ap-

pears to improve. The tin additions were made in the ladle.

Prof. Dr. A. Lissner and Dr. O. Kahl, German Polytechnic school, Brno, Czecho-Slovakia, contributed a paper, "Recent Studies on the Graphitization of a Pure White Iron." The authors carried on investigations on a chemically pure white iron, containing 59/92 per cent Fe,C, and which had first been melted in vacuo. They presented a diagram showing effects of CO and CO₂ on decomposition of the carbide. Certain tentative conclusions concerning malleabilization of iron were drawn.

In the Special Iron section was the American exchange paper by W. P. Eddy Jr., chief metallurgist, Yellow Truck & Coach Mfg. Co., Pontiac, Mich. Titled "Irons for Industrial Motor Vehicles," the paper described various types of irons cast on a production basis and used for certain parts of automobiles. He referred particularly to cylinder blocks, valve seats, manifolds, and brake drums. In discussion, it was mentioned that in France pearlitic iron has been found satisfactory for brake drums, but if the iron contains over a certain percentage of cementite, braking qualities are not good.

Alloying Improves Properties

Jean Challansonnet, Consevatoire National des Arts and Metiers, Paris, contributed a paper, "Study of Martensitic Hardening of Molybdenum-Vanadium and Nickel-Molybdenum-Vanadium Irons," in which he gave results of investigations on iron containing additions of molybdenum and vanadium; or molybdenum, vanadium and nickel, associated together. Such additions in given percentages, improve the mechanical characteristics of the iron after proper heat treatment.

The same author contributed another paper, "Influence of Vanadium on the Nitriding of Iron," in which he compared the influence of vanadium with that of chromium in a nitrided iron containing aluminum and molybdenum. He found that the action of each of the two elements presents little difference.

A contribution to this section from Great Britain was by Dr. A. B. Everest, Mond Nickel Co. Ltd., London, president, London Branch of the Institute of British Foundrymen. In his paper, "Ni-Resist Cast Iron in Great Britain," he gave a number of illustrations of applications of this special iron, particularly for resistance to corrosion, erosion, heat and electrical resistance.

From Great Britain also came a paper from G. T. Lunt, managing

director, Bradley & Foster Ltd., Darlaston, on "The Industrial Production of Refined Irons for High Quality Castings." The author described certain refining methods used in England for the production of irons for special uses. These were divided into four main classes: refined malleable pig iron; refined cylinder pig iron; special refined pig iron qualities; and refined alloy pig iron.

The only paper on malleable iron was the exchange paper of the Institute of British Foundrymen by H. H. Shepherd, chief metallurgist, Crane Ltd., Ipswich. Titled "Malleable Iron Melting Practice—Retrospective and Prospective," the paper considered melting practice as employed for the manufacture of black-heart and white-heart castings. Stress was laid on the necessity for scientific control of raw materials, sand in particular. Progress in the use of steel scrap was dealt with, also the effect of various elements.

One paper dealt specifically with steel castings. Contributed by Jan Obrebski, and entitled "Heat Treatment of Heavy Nickel-Chromium Steel Castings," this paper presented a novel method of heat treatment for heavy steel castings, which combines isothermic softening with a subsequent reheating at 10 to 20 degrees Cent. below the A_c point, followed by as rapid cooling as possible.

Two papers dealt with copper alloys. One was the German exchange paper, "On Segregation Phenomena in Lead Bearing Bronzes," by Dr. W. Claus, Berlin. Two types of segregation are possible: Simple phenomena resulting from alloying conditions of the copper and lead, and inverse segregation "en bloc," due to the fact that during solidification a liquid portion remains within those parts that last solidify, and this liquid portion passes into the first solidified parts, owing to the formation of gases.

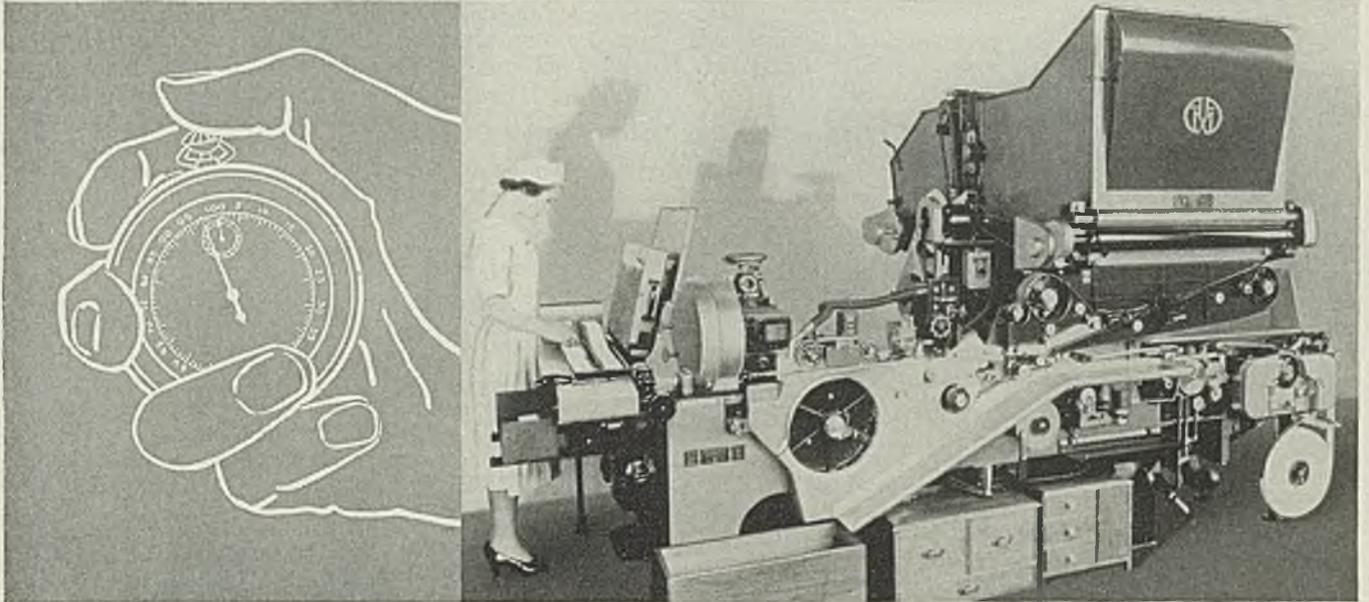
Nonferrous Work Reviewed

Dr. J. Laissus, consulting engineer, Chambre Syndicale des Fondeurs en Cuivre et Bronze de France, Paris, and L. Persoz, civil mining engineer, contributed a paper entitled "Cupro-Gluciniums; Their Interest and Their Prospects, Particularly in Copper Alloys Castings." The most current types of such castings contain from 2 to 3 per cent gluciniums. They acquire interesting characteristics by an aging treatment.

Light alloy castings were considered in a number of contributions. Dr. R. Irmann, S. A. pour l'Industrie de L'Aluminium, Neuchâten, Switzerland, gave a paper

zip zip zip

1300 CIGARETTES PER MINUTE...



Vanadium Steels contribute to the efficiency and dependability of cigarette making machines built by American Machine and Foundry Company, Brooklyn, N. Y.

and a Vanadium Steel Shaft Turns at 7500 R.P.M.

A splendid example of automatic machinery is the cigarette making machine built by American Machine & Foundry Company, Brooklyn, N. Y.

The American machine illustrated is capable of producing 900 to 1,300 cigarettes per minute. It has a number of moving parts which operate at very high speed. The Vanadium Steel shaft on the knife spindle, for example, turns at 7,500 revolutions per minute. Several Vanadium Steel shafts in the tobacco compressing mechanism operate at 3,600 r.p.m. Another severely stressed Vanadium Steel part is the long shaft in the tobacco feed, an application in which ordinary steel proved inadequate.

If you make or use automatic machinery of any kind it will pay you to investigate the advantages of Vanadium Steels. In shafts, gears, spindles and other applications... in small precision parts or in large forgings and castings... the toughness

and stamina of Vanadium Steels insure dependable, low-cost machine operation. Metallurgists of the Vanadium Corporation of America will be glad to counsel with you in the selection of steel for vital parts of automatic machinery.

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420 LEXINGTON AVENUE, NEW YORK, N. Y.

Plants at Bridgeville, Pa., and Niagara Falls, N. Y.
Research and Development Laboratories at Bridgeville, Pa.

Vanadium
Steels



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of vanadium, silicon, chromium, and titanium, produced by the Vanadium Corporation of America, are used by steel makers in the production of high-quality steels.

FOR STRENGTH • TOUGHNESS • DURABILITY

on "Influence of the Conditions of Solidification on Aluminum Castings." The author stated that the unfavorable effects of a large grain structure can be exaggerated, but that such a structure is better avoided; this can be done by the addition of titanium or cerium. Acute angles also are to be avoided.

"Feeding Molds in Aluminum Alloy Castings" was the title of a paper by R. Perret, in which the author indicates that certain defects are due mainly to defective pouring. Gates and runners should be kept filled with liquid metal, the rate of pouring should be under control and not exceed a given speed to avoid formation of oxide films.

J. Castel, engineer, Cie Alais, Froges & Camargue, France, contributed a paper "Remarks on the Light A.P.33 Alloy." This is an aluminum-copper alloy containing between 4 and 8 per cent copper, and a small percentage of titanium. It answers favorably to heat treatment, with a resulting tensile strength of 45,515 to 56,626 pounds per square inch and an elongation of from 6 to 10 per cent. Further developments of this alloy are indicated.

Molding Sands Studied

Molding sand was the subject of three papers, of which one was the exchange paper of the Polish Technical Foundry association, the author being Waclaw Gurycki, Warsaw, and the title, "Contribution to the Standardization of Binders and of the Methods of Determining Their Amount in Molding Sands." The author recommended that particles smaller than 0.01 millimeters be classified as binding particles. He shows that the binding particles can be extracted in relatively short time by agitation in a solution containing 0.025 per cent soda.

A contribution by Mario Olivo, foundry engineer, Milan, Italy, entitled "New Method of Molding and of Preparing Sand." described a molding machine specially devised for vertical castings such as radiators. Molding flasks are kept vertical, and the sand is rammed sideways by a hydraulic piston. When the flasks have been filled with sand, rammed, and the cores have been placed they are carried to the pouring station by means of a special conveyor that keeps them in the vertical position.

Prof. Dr. Fr. Pisek, president of the Czech Technical Foundry association, and B. Holman, submitted a paper, "Relations Between Molding Properties of Sands." Following tests on 48 kinds of molding sands at the Technical high school of Brno, of which Dr. Pisek is director,

the authors arrived at a relationship between cohesion of sand grains, their size and clay content; a relationship between permeability, grain size and clay content; and a relationship between permeability, grain size and cohesion.

Testing of cast iron was a subject attracting much interest, and was treated from different aspects. P. Chevenard, scientific director, Societe Commentry-Fourchamboult et Decazeville, Saint-Etienne, France, discussed the influence of dimensions, shapes and pouring conditions of test pieces on mechanical tests for castings, with special reference to ordinary and special steel castings.

Correlates Physical Properties

A short paper by Ch. Denney, Fonderie L. Hirsch & Cie, Bagnolet, Paris, under title of "Example of the Application of the Apparent Density Test Piece for Castings Working Under Pressure," stressed importance of choosing a test piece made so as to withstand pressure under more unfavorable conditions than the casting.

Dr. G. Meyersberg, Berlin, in a paper, "Relations Between Hardness and Other Characteristics of Cast Iron," stressed that no precise relation exists between hardness and other characteristics; however, machinability enables a general idea to be obtained of the qualities of an iron, account being taken of hard spots, etc. In discussion, L. Girardet pointed out that it is not only the iron that must withstand abrasion, for the iron exercises a wearing effect on the cutting tool.

Prof. Portevin emphasized there can be no relation between hardness and other characteristics, because these factors are completely different, and the resulting stresses are different; furthermore, to be comparable, all test pieces should be identical for the various tests. He drew attention to the part graphite plays by its lubrication qualities when an iron is machined.

"Application of the Pneumatic Micrometer to Control of Castings" was the title of a paper by A. Brizon, Fonderie A. Brizon, Paris, and L. Wattebot, Societe du Carburateur Solex, Paris. The authors described an apparatus based on measurement of the flow of air through the casting to be tested. It is used mostly for castings working under pressure and made by pressure die-casting under mass production conditions.

Two important papers dealt with defects in castings. The first, by Prof. Portevin, was titled "Suggestions for a Logical Classification of Foundry Defects — Introduction — Defects Due to the Metal"; the

second, by A. Debar, professor, Ecole Superieure de Fonderie, Paris, concerned "Defects Due to Molding Operations."

Reading of these papers caused delegates from various countries to express the wish that views relating to and definitions of foundry defects be correlated, and that foundrymen everywhere should employ the same language when referring to foundry defects. It was proposed, therefore, to set up an international committee to study this question, and that Professors Portevin and Debar should prepare a preliminary report on the subject as a starting point. This recommendation was acted upon at a special meeting of the International Committee of Foundry Technical associations, and the new committee was officially appointed with Prof. Portevin as president.

L. F. C. Girardet, foundry proprietor, Saint-Die, Vosges, France, contributed a study on the shape iron castings should be given to derive the most from their mechanical properties, in which he showed that static tests on test pieces are not sufficient to give a precise idea of fatigue in machine components, but that design and shape of such components must be taken into consideration.

Miscellaneous Subjects Covered

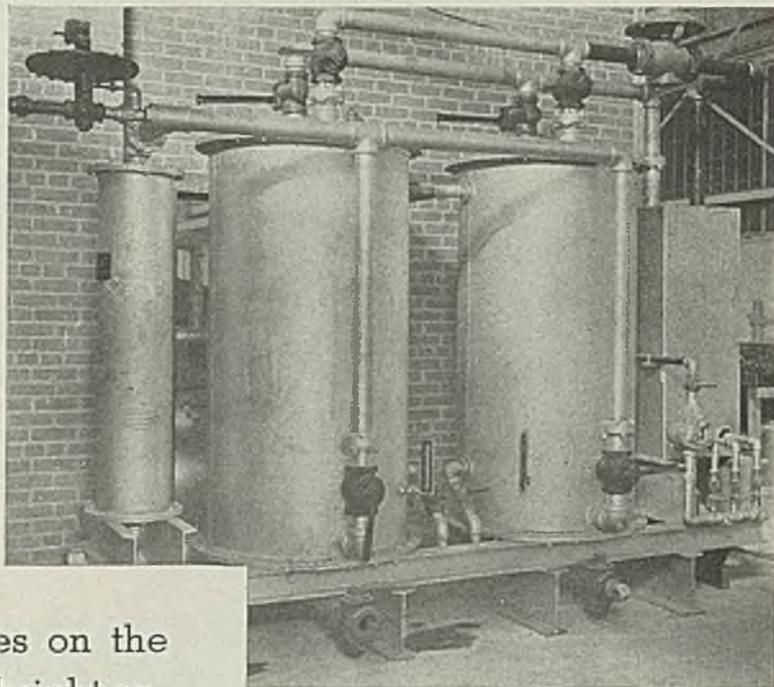
Prof. M. Veron, Ecole Centrale des Arts et Manufactures, Paris, gave a paper, "Superficial Effects in Cylinder Blocks of Internal Combustion Engines and Improvement of Cast Iron Blocks," in which he described a patented process of manufacturing cylinder blocks by combination of specially-chosen iron alloys and of a special finishing method for the interior of the cylinders.

Results of investigations on the permeability and cohesion of the sand-cement composition used for a semipermanent molding method were reported by Louis Maillard, Societe d'Electrochimie, Paris. The investigations were carried out at the French Institute de Recherches de Fonderie.

Summarizing a study on "Corrosion of Cast Iron and Steel Tubes," Ludvick Olsanski indicated that cast-iron tubes resist corrosion better than steel tubes; in cast-iron tubes corrosion will set in quicker if the graphite is in large flakes.

Guy Henon, Centre de Recherches de Fonderie, Paris, described a method of manufacturing coke in which lime is embodied into the coke and gives it the property of removing slag without further addition of lime in the cupola. His paper was titled "Auto-Scorifying Cupola Coke."

ANOTHER 'STAR' *in* 'THE CROWN'



At the right are the activated alumina dryers and auxiliaries for the Kemp Atmos-Gas Producer at Crown Cork and Seal

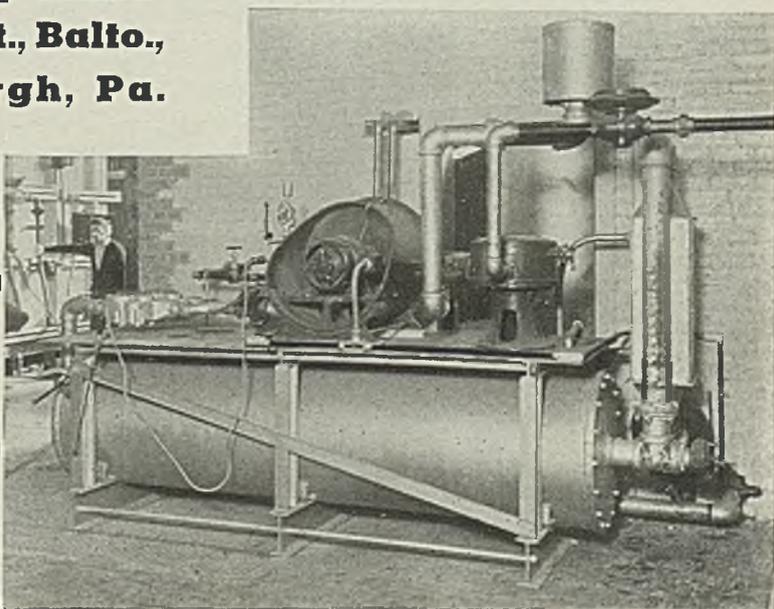
Another quality producer relies on the Kemp Atmos-Gas Producer for bright annealing. The Crown Cork and Seal Co. of Baltimore secures a finish on annealed coils that meets their rigid requirements, secures the added advantages of automatic and continuous operation, low operating cost, accurate gas-air proportioning through the famous Kemp Industrial Carburetor unit.

If you have a problem in bright annealing, write at once for Special Bulletin 101.6. Address the **C. M. Kemp Manufacturing Co., 405 E. Oliver St., Balto., Md., Oliver Bldg., Pittsburgh, Pa.**

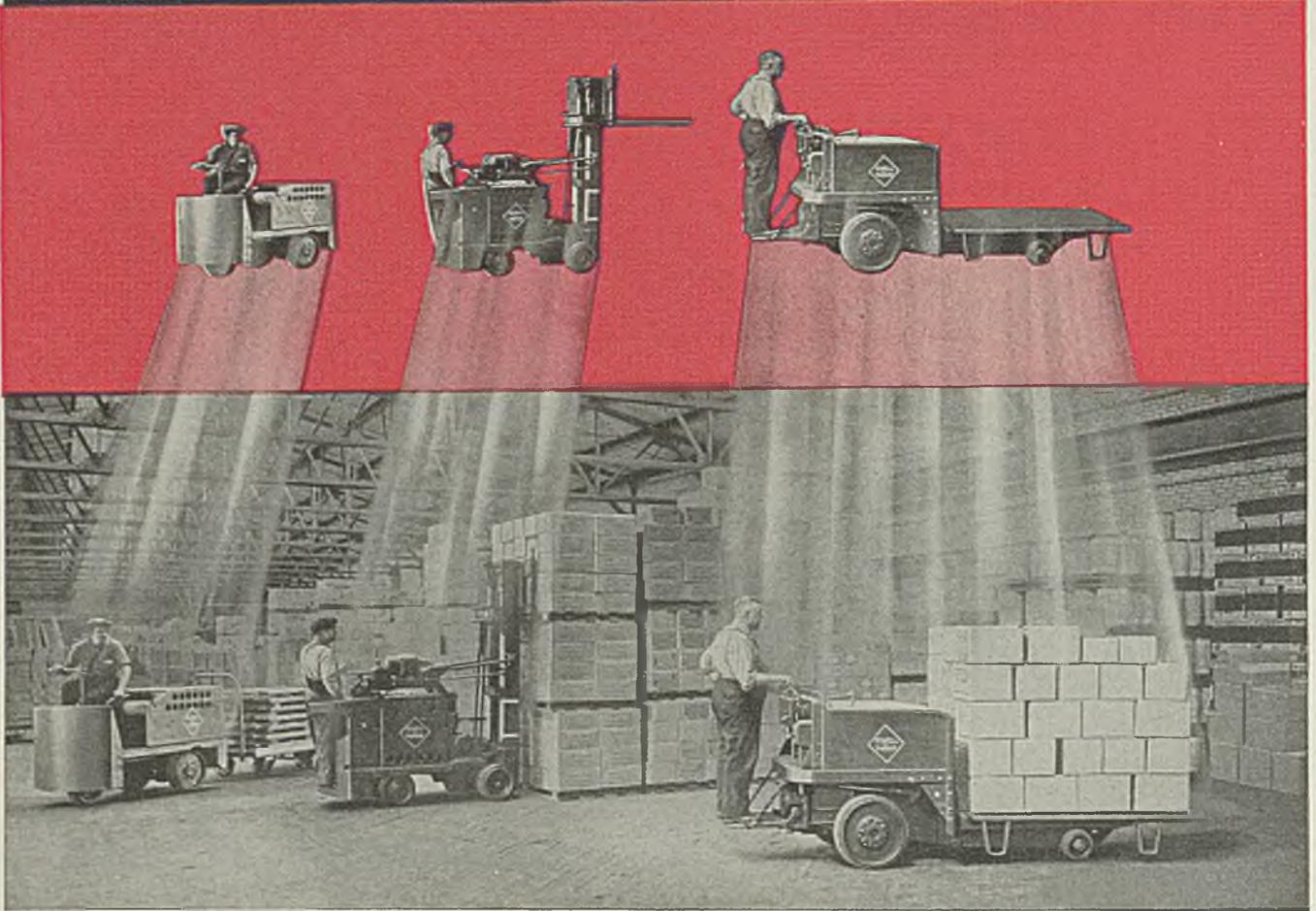
Here you see the proportioning mechanism (Industrial Carburetor) and reaction chamber of the 6,000 cubic feet per hour Atmos-Gas Producer

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MATERIALS HANDLING



Forgings Are Pickled and Delivered To Machine Shop Automatically

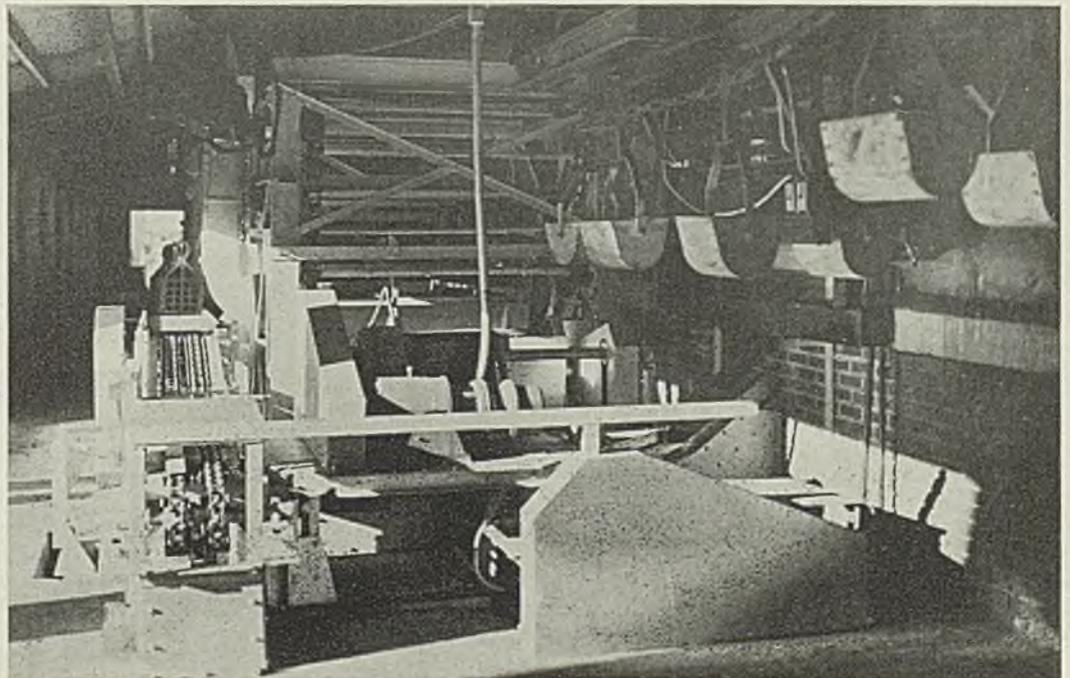
AUTOMATIC handling of automobile transmission forgings from the point where they are discharged from the annealing furnaces, conducting them through the pickling operations and delivering them to the machining department for finishing, is a problem of major proportions. Nevertheless, except for dumping the forgings at the machines and the handling of special lots, this is accomplished in a carefully-planned installation of interlocking, electrically-controlled conveyor systems in the Chevrolet-

Muncie transmission plant of the General Motors Corp., Muncie, Ind.

It is to be recalled that this plant is equipped with an automatic system for transporting forging flash from the trimming presses to storage bins (*STEEL*, July 12, page 55), a system, which, although handling and keeping separate flash of three chemical compositions from 14 loading stations, consists of a single overhead continuous trolley conveyor. The system for handling the forgings is far more complicated than the flash system, yet so care-

fully was it engineered that one man controls and supervises the entire operation of the interlocking conveyors and the pickling operations.

Forgings, varying in weight from 2 to 11 pounds each, are loaded at the trimming presses into corrugated steel boxes on steel lift truck platforms and trucked to the annealing furnaces. Upon discharge from the furnaces when the annealing operation has been completed, the forgings are loaded on trays and automatically dumped into monel metal baskets about 1 foot square in



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FIG. 1 — Discharge
end of pickling basket conveyor with turntable in center, return conveyor for empty baskets at left and first apron conveyor extending through wall at right
◆

MATERIALS HANDLING



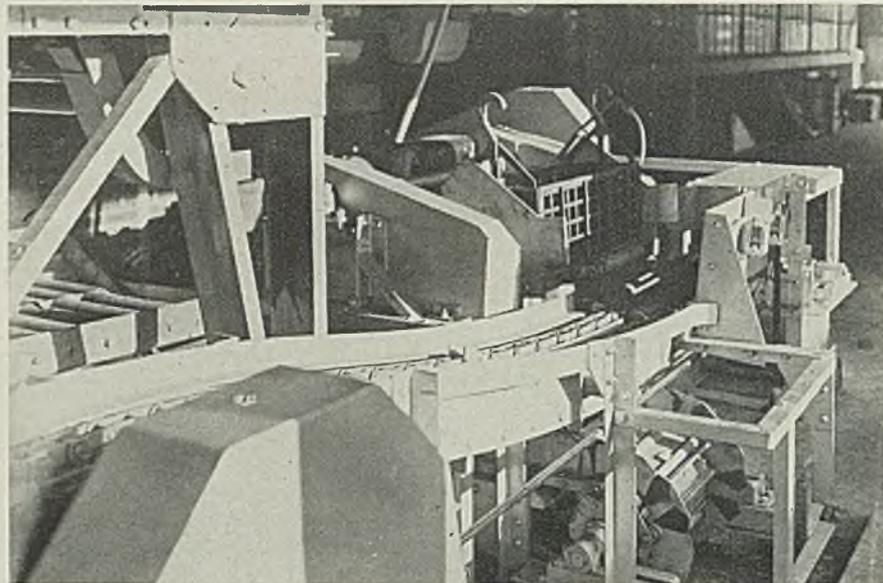
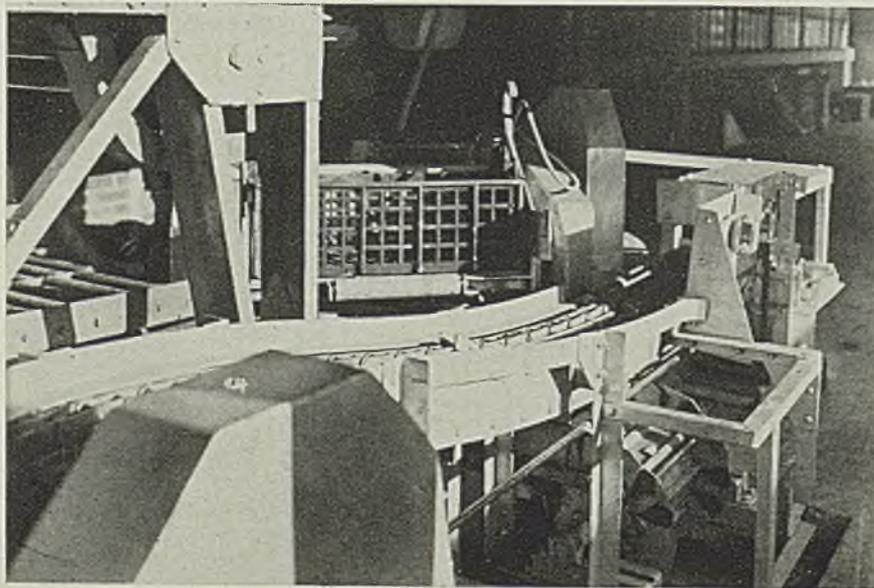
cross section and 3 feet long, holding approximately 600 pounds of work. This loading operation is supervised to make sure that the baskets are properly filled to prevent overloading and spilling.

Through Pickling Operation

The basket, thus filled with forgings, is lifted by a manually-controlled electric hoist and suspended by its two hooks onto an overhead conveyor which carries it through the pickling tank and rinse tank and finally deposits it on a section of gravity roller conveyor. The basket rolls down into a cradle section on a turntable, Fig. 1. In this view, the discharge end of the pickling basket conveyor, the basket cannot be seen but the turntable motor, connected by flexible conduit, may be seen in the middle foreground. The loaded basket comes down the wide conveyor in the central background. The buckets suspended on the conveyor at the right carry forgings to the machining department, as will be described later.

As the basket rolls onto this pivoted cradle-turntable it contacts a limit switch which tips and dumps the basket onto the apron conveyor

FIG. 2—Loaded baskets of pickled forgings travel on the roller conveyor, upper left, and are dumped by the turntable. Here an empty basket is turned about 45 degrees



at the right. The empty basket is righted automatically, the cradle then rotates 90 degrees, Figs. 2 and 3, horizontally, and pushes the empty basket onto the chain conveyor at the left, Fig. 1, which lifts it to a roller conveyor to return to the loading station of the pickling tanks.

Fig. 2 shows the basket rotated about 45 degrees and Fig. 3 the completed turn with the basket ready to push off on the return con-

veyor. The end of the apron conveyor on which the pickled forgings are dumped is shown on the floor in Figs. 2 and 3. The filled basket travels to the right on the roller conveyor in the background, Figs. 2 and 3, and the empty baskets are returned on the chain conveyor in the foreground. Figs. 2 and 3 are of the same equipment shown in Fig. 1, but taken from opposite ends.

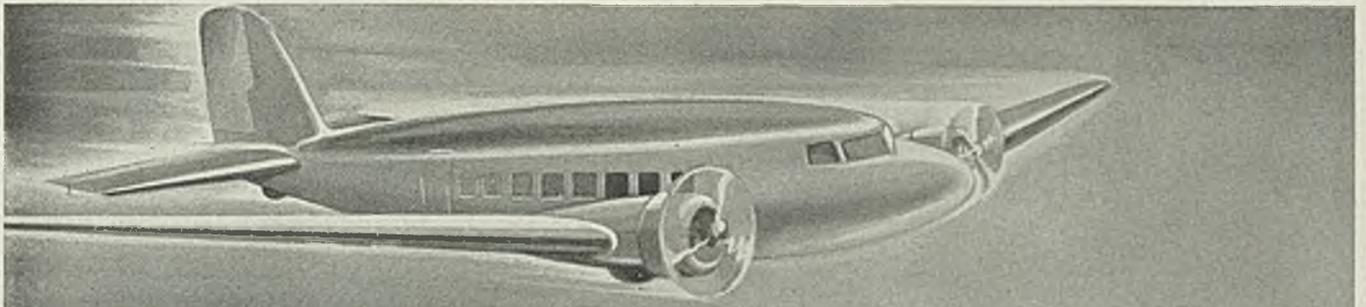
FIG. 3—After the basket is turned 90 degrees, it is pushed onto the chain conveyor in the foreground to return to the loading station. End of apron conveyor is on floor

Returning now to the forgings which have been dumped from the pickling basket onto the apron conveyor, the first step is automatically to divide up the contents of this basket into five parts, each part to load a bucket on an endless chain trolley conveyor circling the machining division.

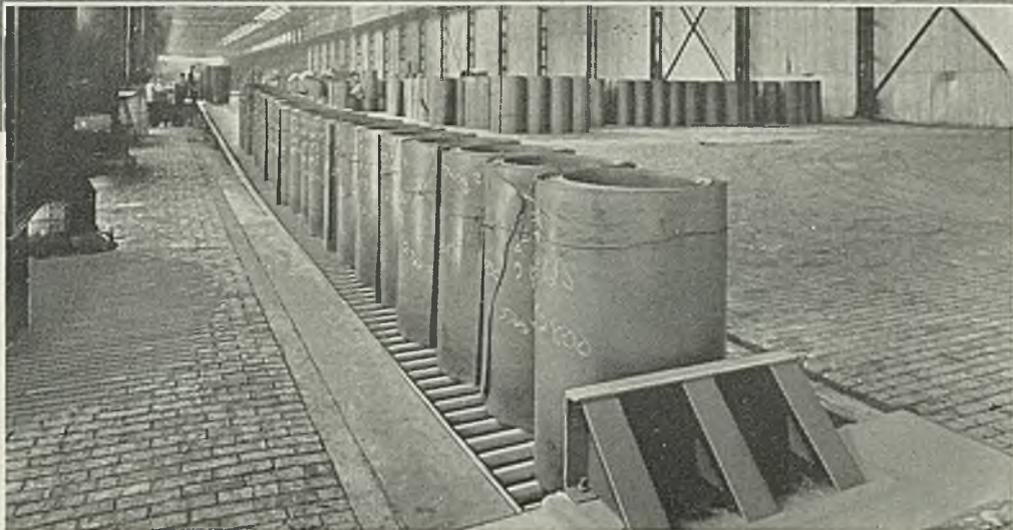
Forgings Are Distributed

This is accomplished by a pair of apron conveyors each with risers or flights spaced so that as the forgings fall on the first conveyor they spread out and are divided into five sections. The first apron conveyor on which the basket is dumped, shown on the floor at the right in Fig. 1, extends to the right and rises to gain height to discharge into the second conveyor, Fig. 4, shown to the right.

Both of these conveyors are idle until a loaded basket of forgings reach the turntable and is dumped. The first conveyor then moves forward the distance between two flights and dumps the first-fifth or portion of the basket load on the second conveyor, Fig. 4, where the separators or flights on the apron are twice as far apart to permit



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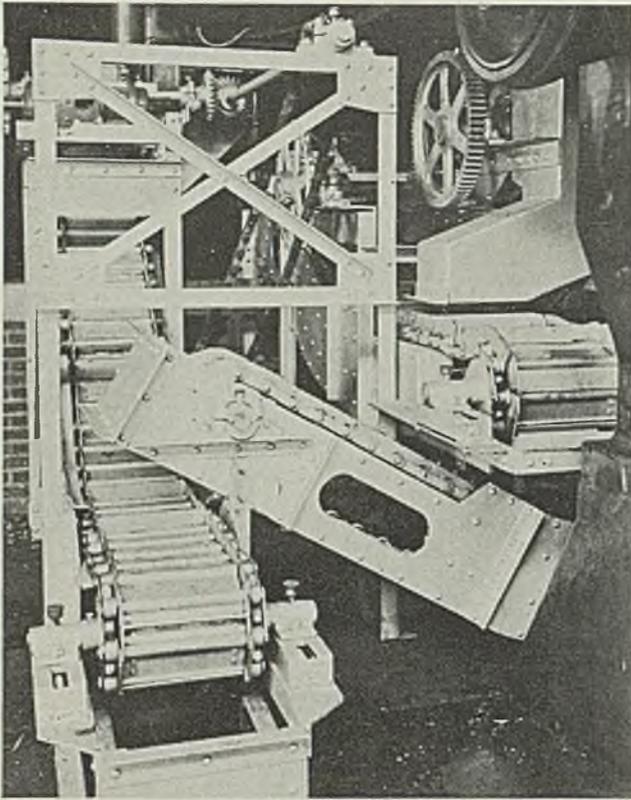
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◆

FIG. 4 — After being dumped, the pickled forgings are carried through the wall and discharged on to the second conveyor, at right, for loading buckets. Work from the coin press is handled on the conveyor at the left

◆

conveyors are free to receive it and a bucket is in position. Also, if the apron conveyor is empty it does not contact the lugs on the baskets and stop the trolley conveyor.

Forgings which are to go through the special coin press after pickling and before machining are noted by the control operator who resets a two-way discharge in the chute from the first apron conveyor. This discharges the entire load into a steel tote box (not shown) for lift-truck handling to the special press. Shifting this valve disconnects the second apron conveyor so that it does not operate. Also, this first apron conveyor continues in operation until discharged. The operator then resets the discharge. This is the only manual operation in the control of the entire unit, except dumping the buckets at the machines.

Some Forgings Are Coined

Forgings from the coin press are loaded into trolley buckets from a similar set of apron conveyors, shown at the left in Fig. 4. These load only in buckets set with a special lug so that they do not interfere with the loading of the other buckets.

The endless trolley conveyor into the machine shop travels overhead, Fig. 5, until it gets to the machining section, then dips, except over aisles, so that the buckets travel just above the line of steel tote boxes on lift-truck platforms used for receiving and temporary storage at the machines. These buckets are low enough so that the machine operator can see what is coming and dump the bucket by a release at the end which permits the bucket to tip.

(Please turn to Page 74)

greater spread and less possibility of mixing forgings.

The second conveyor also moves the distance between two flights and discharges one-fifth of a basket load into a bucket on the trolley conveyor which automatically stops to receive its load. Then both apron conveyors stop and the trolley moves on 4 feet, the spacing of the buckets, to load the next bucket, and so on.

These buckets are fitted with either of two types of lugs. One

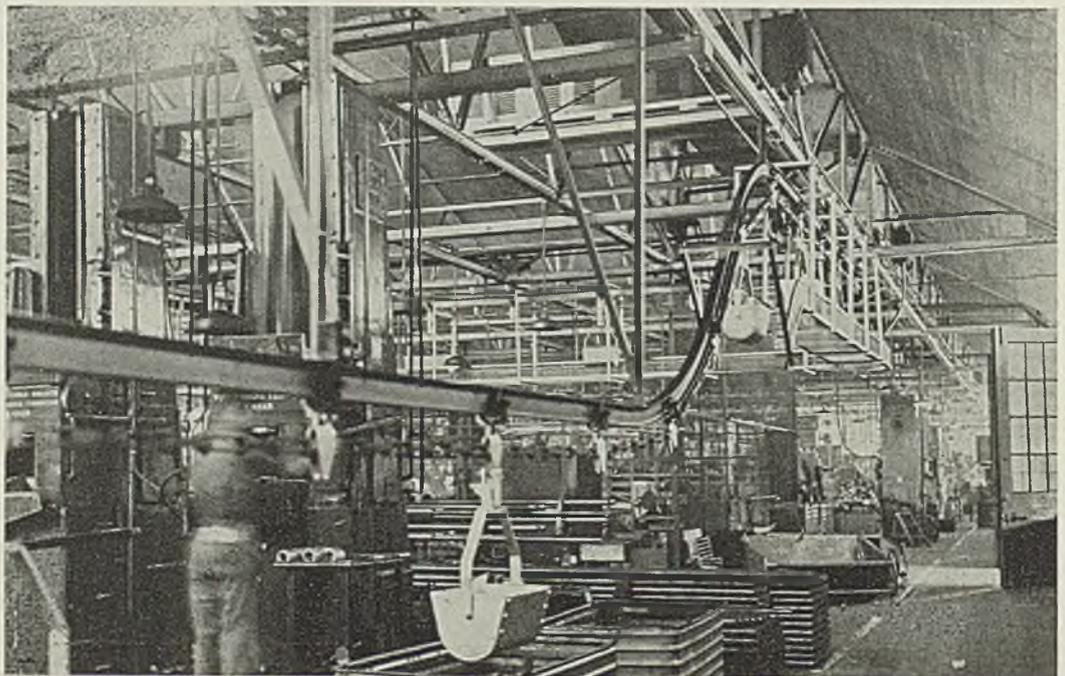
type indicates a bucket to carry forgings from this second elevator to the machine shop; the other lug indicates buckets for forgings which first must go through a coin press before machining. How these are handled will be discussed later. All buckets are spring suspended so that if even one-half filled the lugs do not contact and receive another load, thus preventing overloading.

The interlocking control of the entire unit is such that a basket is held and not dumped until the apron

◆

FIG. 5 — Buckets loaded with about one-fifth of a pickling basket load are carried to receiving boxes at the first operation machines and manually dumped by the operators

◆





SURFACE TREATMENT AND FINISHING OF METALS

Prefinished Electroplated Metals Open Way to New Cost Reductions

OPPORTUNITY to reduce finish costs without sacrificing quality by use of prefinished steel, brass, copper and zinc sheet and strip is now afforded to many manufacturers of electroplated metal products. Electroplating methods and equipment have been developed to the point where deposits ductile and adherent enough to withstand severe drawing and forming operations can be applied to long strip as well as sheet metal. The coatings available include brass, copper, nickel and chromium polished to any desired degree of luster.

Apollo Metals Works, 66th Place at South Oak Park Ave., Chicago, offers a wide variety of electroplated metal in both coils and sheet. Within reasonable limits this company can plate sheet or strip in any form supplied by the mills. Nickel-chromium plated brass strip 0.014-inch thick and 3 inches wide has been

supplied in lengths up to 2700 feet by this company. Strip up to 12 inches in width is supplied regularly and can be furnished in widths up to 20 inches maximum. This applies to any metal which is supplied in strip form by the mills. To date this includes only steel and brass. Copper, zinc and tin plate in sheet form are plated with any of the above mentioned metals in all standard sizes up to 36 x 96 inches maximum.

Gage of Metal Is Limited

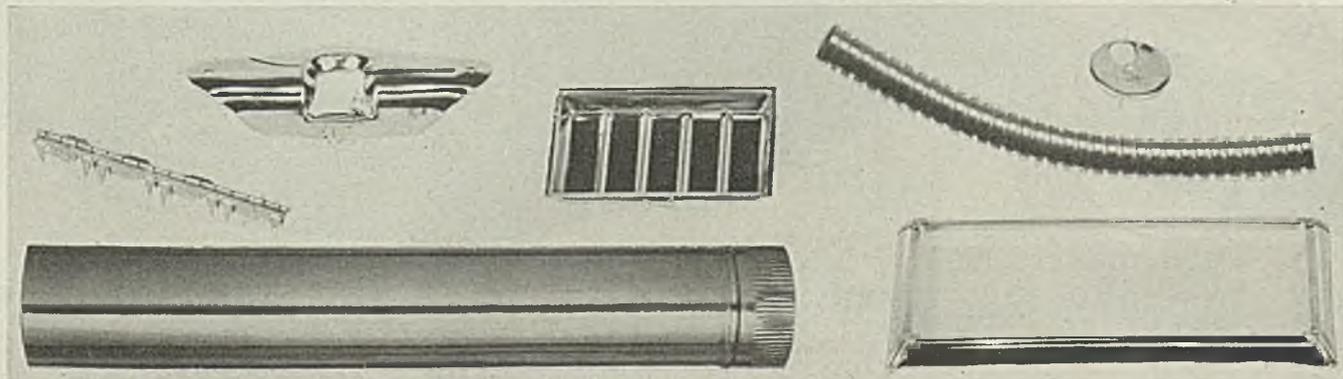
In sheets there is no limitation upon the gage of metal which can be plated. In strip however, some limitation is placed upon gage since present equipment will not handle heavy gages either in the bath or the

coilers. Many companies are conducting research on the plating of continuous strip and indications are that wide strip will soon be successfully electroplated.

Deposits available on the various metals are as follows:

Steel sheet and strip can be obtained coated with brass, copper, copper-nickel and copper-nickel-chromium. Tin plate can also be obtained with these coatings. Tin plate, of course, is furnished only in sheets. Sheet zinc is furnished with all these coatings. Copper is plated only with nickel and nickel-chromium; this is also true of brass. Average thickness of coating in each case is: copper—0.0001-inch; nickel—0.00025-inch and chromium—0.00002-inch. The thickness of composite coatings is the sum total of the individual coatings in each case. It can be readily seen that a copper-nickel-chromium coating is of adequate thickness for

FLEXIBLE tubing, stove pipe, trays, picture frames and trim for radios are only a few of the many applications for prefinished electroplated metal strip



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almost every practical purpose.

To protect the coatings against possible injury in forming or drawing dies these prefinished metals can be obtained coated with a protective paper which is cemented to the finished surface with a specially formulated adhesive. This adhesive remains soft and fresh and permits the paper to be removed after forming without difficulty. The surface need not even be wiped after removing the paper since the adhesive has no effect upon the luster of the plated surface.

These prefinished metals are also offered with a coat of transparent, clear or colored, crystallizing lacquer. They can be furnished with the electrodeposit on one or both sides, and with the backs bare or coated with protective lacquer or enamel.

The applications of this type of prefinished metal are innumerable. They are being used in the manufacture of seamless tubing, stove pipe, electrical equipment, stoves, table tops, drain boards, sinks, range hoods, fishing tackle, moldings, decorative strip, architectural panels and many other articles.

The elimination of cleaning and finishing costs after fabrication should appeal to many manufacturers whose products will permit the use of these metals.

Expands Enamel Department

Cribben & Sexton Co., Chicago, are making extensive improvements in their porcelain enameling depart-

ment, including the installation of a gas-fired radiant tube type continuous furnace. Installation of the furnace is being handled by the Ferro Enamel Corp., Cleveland. The improvements are expected to be completed in about four months.

Desk Top Kits Demonstrate Flexible Lacquer Quality

Product summaries in the form of attractive folders describing the Blue Knight line of cellulose-type flexible lacquer enamel are being issued by Roxalin Flexible Lacquer Co., Elizabeth, N. J. Each summary is equipped with a desk top demonstration kit which contains finished samples and directions for testing. Copies of these summaries may be obtained gratis by writing to the manufacturer.

Small Steel Stampings Cleaned by Blasting

Small metal stampings weighing as little as 1/283 of one ounce are being cleaned successfully in American Wheelabrator Tum-Blast equipment, manufactured by the American Foundry Equipment Co., 555 South Byrkit St., Mishawaka, Ind., preparatory to nickleplating.

These stampings are cleaned in cylindrical wire mesh baskets which roll over and over in the abrasive blasting zone, causing a constant turning and cascading of the tiny stampings and exposing them to the scrubbing action of the blast. Wire

baskets are constructed of number six mesh wire with solid ends made of 14 gauge steel. A gate for filling or emptying the baskets is firmly bolted to one end. The wire mesh used in the design of the basket is large enough that it will not retard the efficiency of the blast to any great extent and is small enough to prevent the escape of the tiny metal parts. Theoretically these wire baskets are used as auxiliary, horizontal barrels in conjunction with the American Wheelabrator Tum-Blast. Fine number ninety steel grit is the abrasive used for the cleaning of these small parts. A surface suitable for nickleplating is obtained after only thirty minutes of wheelabrating.

Centrifugal force replaces compressed air as the driving agent in whipping abrasive onto the material to be cleaned. Abrasive is fed into the center of the Wheelabrator by means of gravity from an overhead storage bin. After blasting the abrasive drops through holes in conveyor plates into a hopper below where refuse is automatically screened out. The cleaned abrasive drops into the boot of a bucket elevator and is lifted back to the storage hopper for reuse. Steel grit may be used over and over until it is reduced to a dust that is carried out of the housing by an American Dustube dust collector which is operated in conjunction with the machine. Abrasive cycle used in wheelabrating is constant until the machine is shut off for loading and unloading.

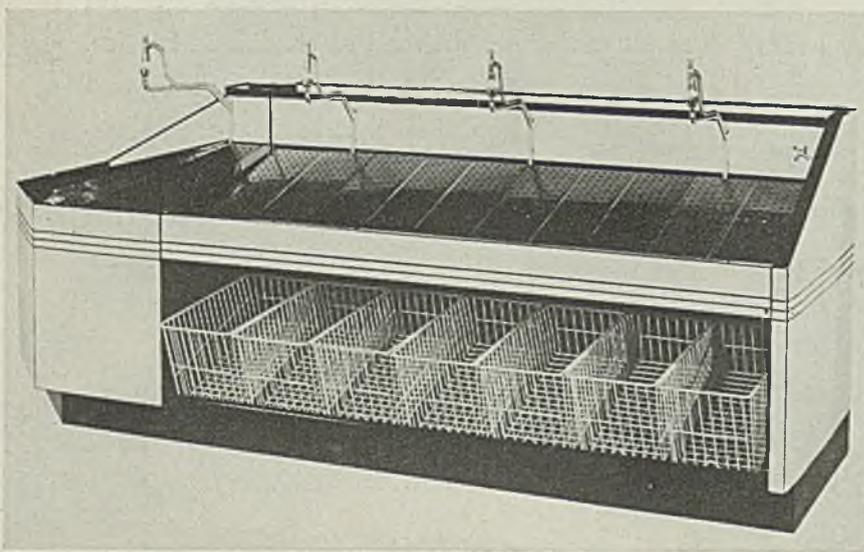
Rust Inhibiting and Heat Resisting Maintenance Paint

An entirely new type of aluminum paint known as Chromastic Aluminum Paint is now being offered by Wailles-Dove-Hermiston Corp., New York. This paint, designed specifically for industrial maintenance use, has a vehicle containing rust inhibitive pigments. It is claimed that if the protective aluminum leaf in the paint film is injured the vehicle will continue to protect the base metal.

This company also offers a primer recommended for use under the aluminum paint. This primer is known as Chromastic Metal Primer and contains several rust inhibitive pigments.

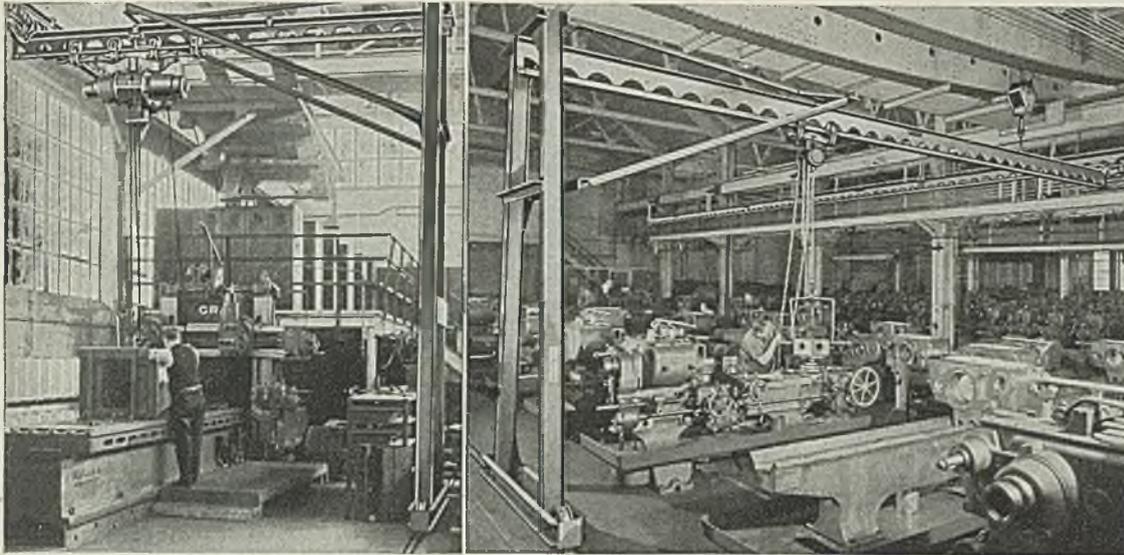
In addition to the above a heat resisting aluminum paint known as Thermastic High-Heat Aluminum is recommended by this company for use on outdoor and indoor surfaces where the temperature is greater than 375 degrees Fahr. This material can be applied to metal, fire brick or any other refractory material.

Porcelain Enamel Protects All Steel Produce Rack



THIS all steel produce rack, manufactured by Toledo Porcelain Enamel Products Co., Toledo, is completely finished with porcelain enamel. Not only the face but also the structural frame work and drain pans are completely coated with this finish. The rack is white, trimmed with black, and the produce trays are finished with a lettuce green acid resisting enamel. The wire baskets at the base are the only painted articles on the rack

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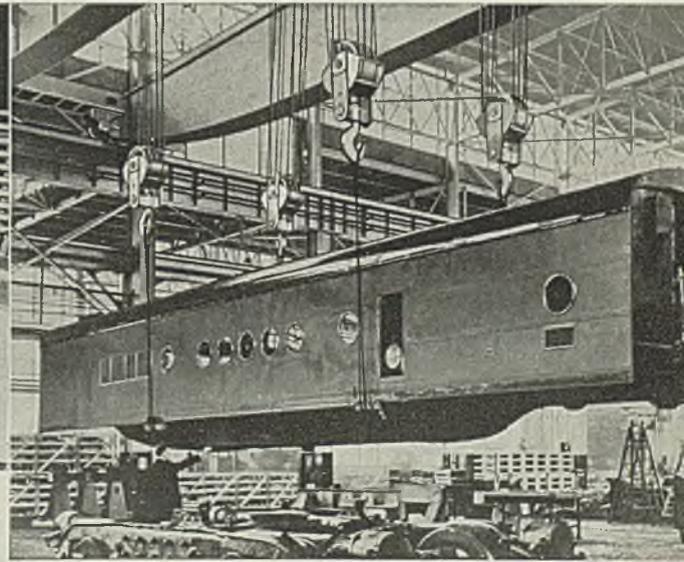
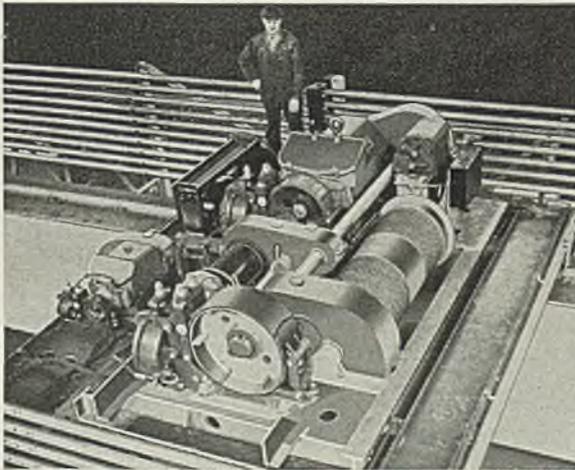
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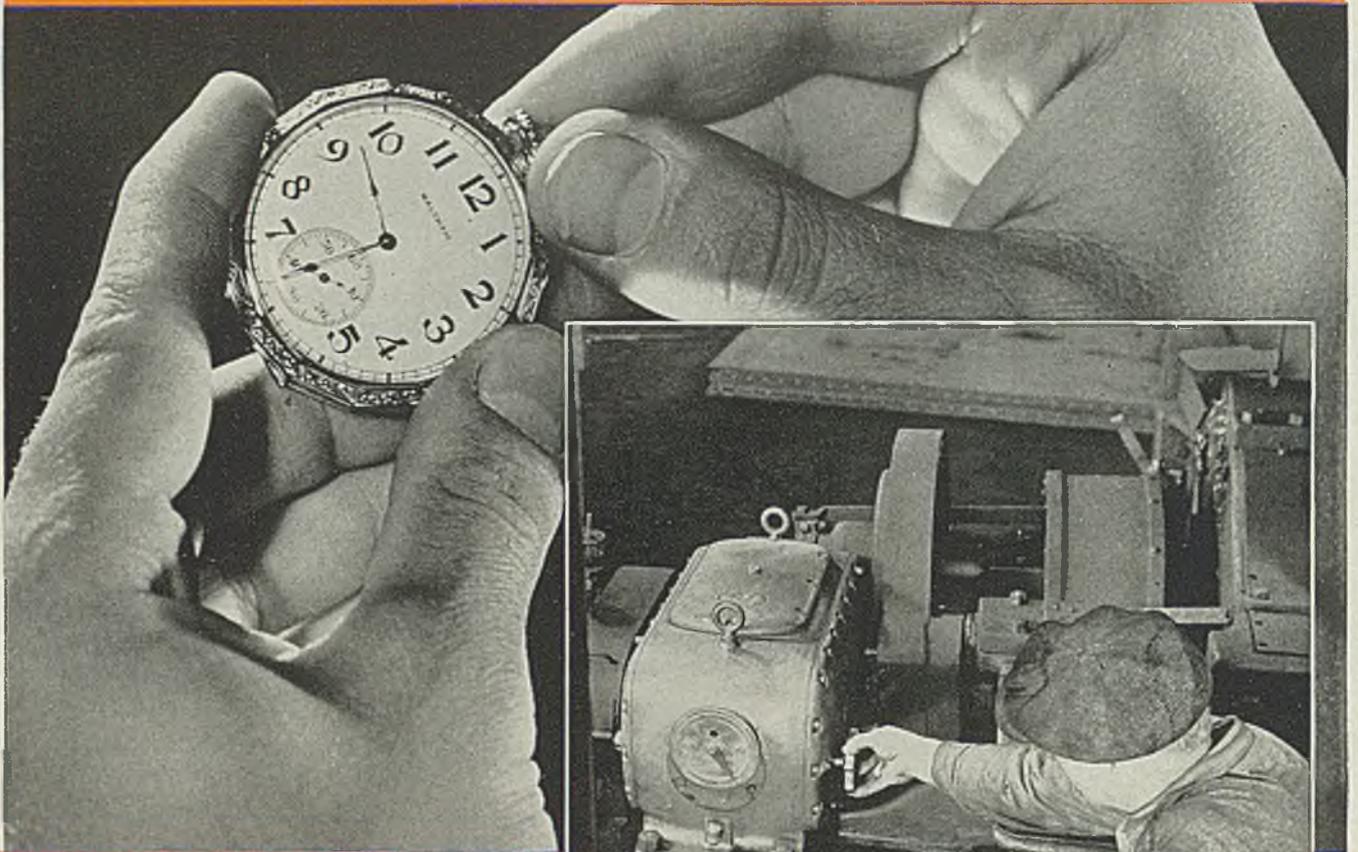
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Infinitely
Variable
Speed Control*



POWER DRIVES



Graphic Meters Disclose Defects in Equipment and Power Leaks

REDUCING power costs approximately \$10,000 per year will pay for a lot of time and thought and electrical testing equipment in connection with a study of the use and application of power in any industrial plant. However, it has been done and corresponding savings are possible in many other plants. All of this was accomplished in what was considered to be a well operated plant.

To accomplish this, or comparable savings, it is necessary to know how much power is used throughout the day and night, and where it is used, down to the individual power-consuming unit. All power wastes are hidden in a monthly power bill or in the lumped costs of a power plant.

Totalizing meters on the entire load, or even on department consumption, indicate only the total power paid for and serve only for

comparison of one month with another. As power wastes are in many cases intermittent these totals fail to indicate where or when individual losses occur.

The particular plant where these savings were made uses about 200 motors and a connected load of approximately 2200 horsepower. Electrical power is purchased on a demand-energy contract. Part of the plant is operated both day and night.

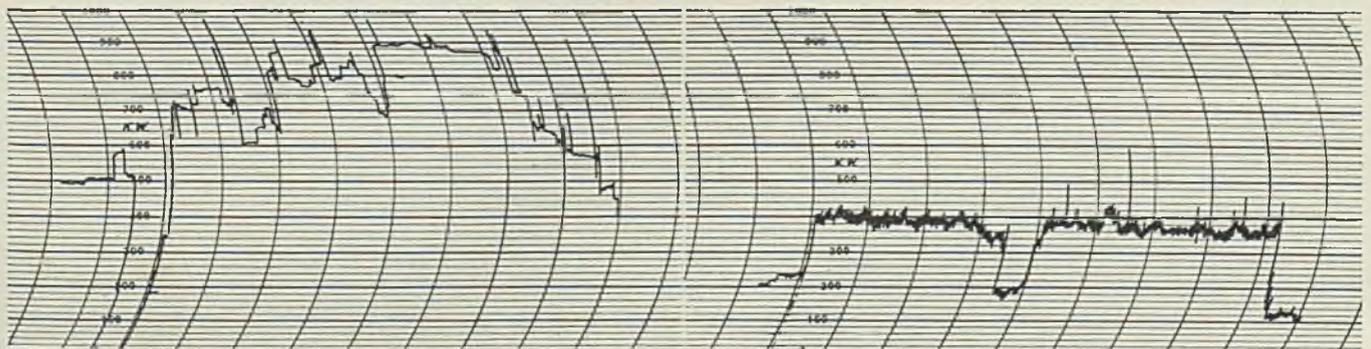
The plan of power survey adopted was to start at the incoming power lines to obtain power consumption

throughout the day and night. This was recorded on graphic meters. The first test, Fig. 1, indicates the daytime power consumption from 7 a.m. to 4 p.m. Further study of charts taken over idle periods indicated a continuous power loss in permanent grounds of 26 kilowatts. Removing these saved 227,760 kilowatt-hours per year, the approximate equivalent of the power bill for about 6½ weeks.

This chart indicated that large loads were thrown on the line at any time without any consideration of their effect upon the maximum demand. For example, between 10 and 11 a.m. the maximum load was built up to about 930 kilowatts.

Investigation of power rates revealed night off-peak demand charges to be lower than charges for similar requirements during the day. Since a number of the heavy

FIG. 1—(left) The daytime peak load represented a 15-minute maximum demand of 930 kilowatts in 1931 when the survey was begun. **Fig. 2—(right)** Graphic record after rearranging operation and correcting difficulties indicated a maximum daytime load of 430 kilowatts



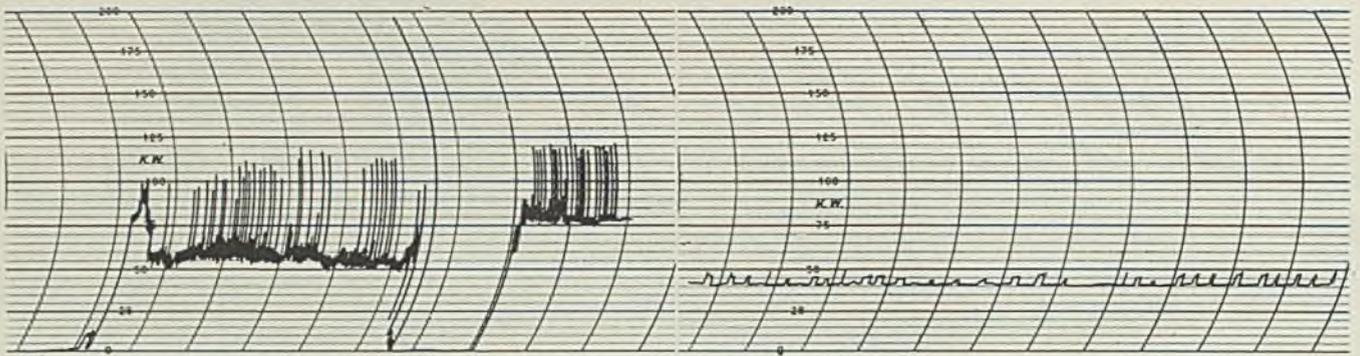


FIG. 3—(left) Evidently something is wrong with the operation of this mixing unit driven by a 50-horsepower motor. Fig. 4—(right) When the accumulations which adhered to the shell of the mixer were removed every night this chart resulted

power consuming drives could be operated just as well at night (in this particular case night operation had some advantages) these power loads were transferred to the night shift.

Having thus reduced the maximum demand during the day at the higher rate, the next step was to determine what safe maximum day and night limits could be established for a new contract with the power company. This was determined by consulting a series of graphic charts over a period of time and a corresponding check on the plant operation.

With these maximums established it was necessary to provide means for keeping within these limits by preventing the pyramiding of peak loads. Contacts were placed on a graphic meter in the main power circuit, set so they would close upon reaching a predetermined load within the maximum. These contacts operate signal lights at strategic points in the plant so that the operators know whether they may increase the demand by adding machines or not. The record shows if the specified load is exceeded.

The results of this and other changes in individual drives and operation has produced the daytime graphic record shown in Fig. 2. The maximum day demand has been

reduced from 930 kilowatts to 430 kilowatts.

Before and After Costs

The effect on the power cost has been a reduction in total power consumption of over 21 per cent, as shown by a comparison of two monthly "before" and "after" power bills. This saving amounted to about \$250 per month in energy charges. The greater saving is in the decreased demand charge by transferring more of the load to the better night off-peak demand rate. This made a saving of about \$800 per month, or a total saving of over \$1000 in the months compared. The total savings in power costs are approximately \$10,000 per year.

Some of the power savings resulted from improvements in operation, such as the removal of grounds and changes in drives. These were made possible by individual studies on the graphic record of each drive.

For example, the record showed that on a group drive of a number of machines driven by a 25-horsepower motor, a small machine was operated continuously whereas the other machines were shut down at night. Installing a 1-horsepower motor on this machine permits shutting down the larger motor during the longer night run.

In another case a rotary drying oven driven by a 5-horsepower motor gave considerable trouble. The graphic meter showed a 2-horsepower load when operated cold. When operated hot the load gradually rose to 7 horsepower whereupon the overload relay cut off the motor.

Investigation showed that insuffi-

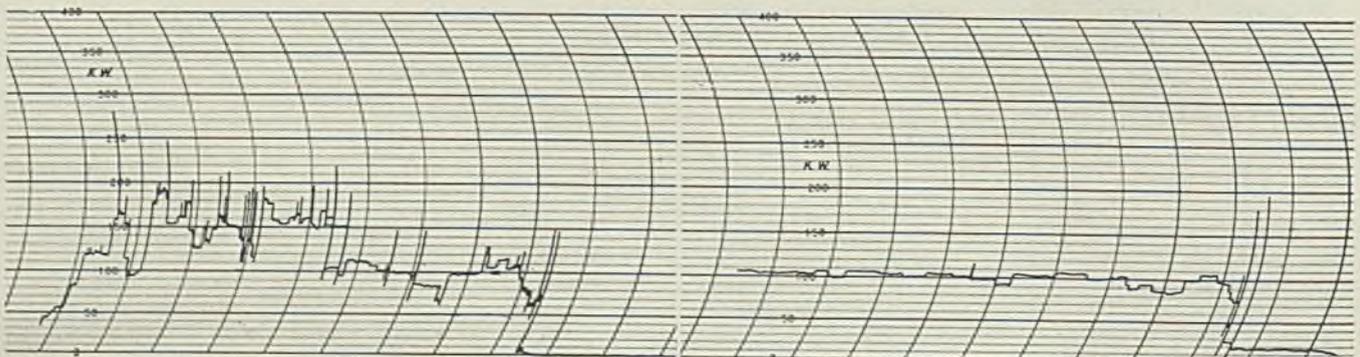
cient clearance had been provided between the end of the oven and the stationary bearing plates. When the oven expanded, the thrust on these plates acted as a brake and increased the load. Increasing this clearance permitted using a 2-horsepower motor, while frequent interruptions and much maintenance were eliminated.

Fig. 3 shows a chart made on a mixing unit driven by a 50-horsepower motor. Because of the heavy overload and the wide fluctuation of power required something evidently was wrong with the operation of this unit. Investigation showed that the material mixed caked and accumulated on the inside of the shell of the mixer. This dried during the night when idle and the next day another layer adhered until finally the mixing blades would be scraping on this, causing an excessive overload.

The remedy was to clean this mixer thoroughly each night before the layer deposited hardened. Fig. 4 shows the operation of this unit after inaugurating the regular nightly cleaning practice. This resulted in not only a large reduction in power consumption but gave a more steady load without the excessive overloads.

It is on such loads as this where
(Please turn to Page 63)

FIG. 5—(left) A defective unit for removing the material from a mill driven by a 150-horsepower motor permitted the machine to choke. Fig. 6—(right) When this defect was corrected the capacity of the mill was increased 50 per cent with decreased power consumption





MODERN PROCEDURE IN ALLOY STEEL PRODUCTION

A Series of Advertisements based on Timken Methods



No. 8

TEMPERATURE *Control*

Temperature is as important to the alloy steel maker as it is to the doctor. In both cases it is an indication of normal or abnormal conditions.

Accurate knowledge of steel temperatures during manufacture is imperative in producing alloy steel that consistently conforms to chemical and physical specifications.

Temperature control in routine practice in the Timken steel plant, involves the extensive use of the optical pyrometer. Pyrometer readings are taken during the progress of each heat, also while the steel is being poured into the ladle and the ingot molds filled.

The pyrometer observers are men of long experience who are completely conscious of their responsibility—hence the meticulous care with which their observations are made.

In addition to the use of the optical pyrometer, silicon-carbide-carbon electric thermocouples—the latest development in temperature recording apparatus for steel production—are frequently used in recording ladle temperatures where this extra precaution is considered necessary or desirable. Timken temperature control leaves nothing to chance.

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TIMKEN

ALLOY STEELS





WELDING, ETC.

BY ROBERT E. KINKEAD

Lowering Machinery Costs By Welding Methods

THE end of cost reduction has not been reached when a rolled steel machinery part is well designed, welded with all the heat the job will stand on a manipulator or position finder, and all the unnecessary frills eliminated.

Many manufacturers have reached this point and do not know where to go from there.

Next major development in the building of welded steel machinery parts will be elimination of part of the machine work by design and by method of welding.

A start has been made in this direction by some companies which have large machine tool equipment. Instead of making large machinery parts of a considerable number of relatively small machined details bolted together they make the whole machine, as nearly as possible, in one piece. This reduces machine work—but it is impossible of execution if only small machine tools are available.

The promising field lies in development of methods of controlling warping caused by welding so that the necessity for machining the finished piece as a whole is reduced or eliminated.

Any good machine shop man or machine designer will profanely deny that such a possibility exists,

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.

but the plain fact is that it does exist. An ordinary hot rolled surface is good enough for practically any mounting pad if it is in the proper plane after welding and will stay there.

Any mild steel detail of a welded assembly that gets shorter after welding can be returned to its proper dimension by plastic flow, if it is possible to get at it to apply cold working. These principles are as old and respectable as the idea that steel is stiffer than cast iron. The field of cold working welded assemblies into true dimensions is abhorrent to the machine shop man for the reason that he never had any experience with any method except machine tools which cut, and does not know what the steel mills do with the steel before he sees it and what the boiler maker has been doing with steel in the line of cold working for the last 50 years.

There are few welded steel machinery parts on which the machine shop work does not cost as much as the steel plus the welding. Reduction of machine shop work reduces

Welds Large Fractionating Tower



RECENTLY shipped in one completely fabricated unit, this fractionating tower is 12½ feet in diameter, 91 feet long and weighs 220,000 pounds. Built by Wyatt Metal & Boiler Works, Houston, Texas, it has been installed at a large Texas oil refinery. Welded throughout according to the API-ASME code, the tower has 26 flanged trays made of ½-inch steel, while the heads are of ¾-inch and the shell of ⅝-inch plate. The company now is fabricating a 13-foot diameter tower

overall costs radically and immediately.

Welded Hook Is Lighter

A roll changing hook recently designed for a large steel producer weighs only 60 per cent as much as previously built hooks made of welded steel construction. Republic RDS steel, grade No. 1, is used to effect weight and cost reduction. The saving in welding alone is sufficient to justify the high tensile steel.

Reader Comments

(Concluded from Page 13)

arc is dangerous, but so are gas welding, automobiles, locomotives, trains or airplanes or any of the other useful developments. As a matter of fact, it seems to be a fact that the more useful a thing is the more dangerous. So now the arc system is being assailed from two sides, by locked up stresses and gas mask sales managers and this is the cause of this article. There is no such thing as locked up stress in mild steel, occasioned by welding, after the plastic aging redistributes the molecular arrangement.

Another attack on welding being revived by people who have not the experience to know differently is that a weld may corrode. As far as mild steel goes, I can show anyone who is interested, from this satisfactory evidence, that the weld will outlast the steel.

To start with, I have some welded clothespoles in our back yard. The poles are nearly gone but the welds are intact at their original size. Commander Knox of the U. S. navy, during the war, welded plates on various ships and boats, for both salt water and fresh water use. After several inspections covering a period of 15 years, they found them untouched by corrosion. When the modest edifice in which this letter is being written was built in 1920 I put all sorts of welded construction in the exposed roof and no corrosion of the welds has resulted. Deliberately, there has been no painting, red leading, or any care whatsoever.

During the eleven years I was working for the New York Central we made many welds in shop and engine houses, on transmission poles, signal bridges, etc. I have examined those welds during the 20 years I have been away from the railroad and the welds are perfectly good, whereas the steel surrounding has been corroded by the prevailing conditions.

C. J. HOLSLAG
Electric Arc Cutting & Welding Co.,
Newark, N. J.



"The orders are coming in herds, Lad, but what I want is a steer on how to make more profits!"

"Change over your machine parts to welded steel and you'll round-up a long-horn of plenty, Pop!"

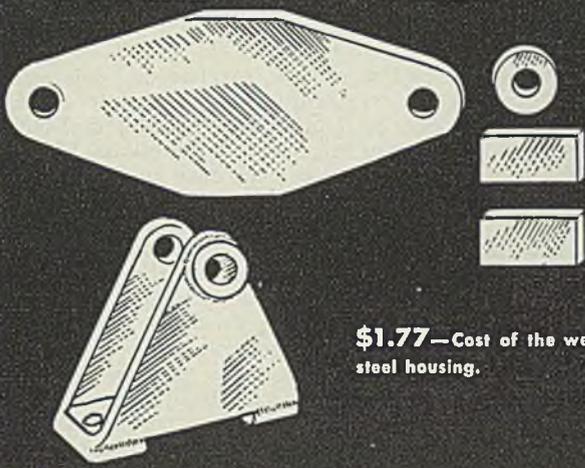


Sketchbook of Welded Parts

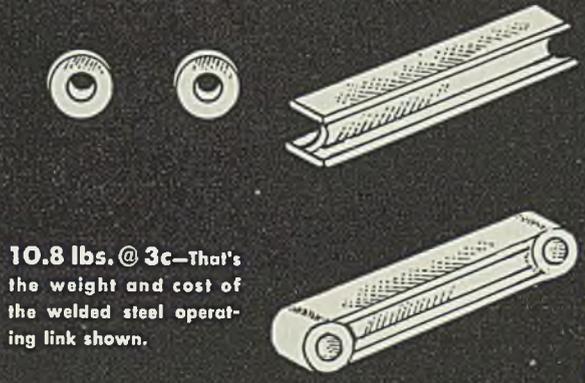
\$2.65—Cost of the superseded cast iron sheave housing for a gas reducing valve. Pattern cost is additional. Parts which comprise the welded design. They are laid out on stock steel plate and cut with minimum waste, then formed as shown.



15 lbs. @ 10c—That's the weight and cost of this cast steel operating link. The component parts of the welded design—2 bosses and an I beam—flame cut at the ends.



\$1.77—Cost of the welded steel housing.



10.8 lbs. @ 3c—That's the weight and cost of the welded steel operating link shown.

AND—THESE CHANGE-OVERS HAVE PUT ADDITIONAL WORK IN THE MANUFACTURERS' SHOPS—HELPING TO ABSORB THEIR FIXED CHARGES

Write for Machine Design Application Sheets. Issued Periodically.
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PROGRESS IN STEELMAKING

Belt Wrappers Applied to Reels of Wide Strip Mills Rolling Heavy Gages

TWO belt wrappers for use with wide strip mills recently have been shipped by United Engineering & Foundry Co., Pittsburgh. Instead of having a single belt, as is the case with wrappers built for cold reduced, tandem, tin plate mill reels, these two wrappers have two belts each, enabling them to handle heavier gages as well as widths above 38 inches.

Fig. 1 shows a dual belt unit developed for a 56-inch, 3-stand, tandem, cold mill reel. The reel is 30 inches in diameter. The mill finishes an average of 20 to 22-gage strip up to 48 inches wide. This unit was developed for threading the reel from the top in the conventional manner. The illustration shows the two arms dropped for clearance of the tension reel; the arms are in this position when the wrapper is retracted from the reel. The same wrapper with arms up in position to receive the strip from the mill when mounted in combination with the reel is shown in Fig. 2. Fig. 3 is a side view of the same unit showing arrangement of the belt, tension spring and the position for the motor which drives the unit into and out of position at the reel through a pinion and rack mounted in the framework and base slides.

Fig. 4 shows an upside-down unit for a 24-inch diameter reel that threads from the bottom. This unit now is in operation in connection with the 60-inch, 4-high, temper pass mill in the Chicago district. The difference between this unit and that shown in Figs. 1, 2 and 3 is the upside-down arrangement and the movement into and out of position at the reel through the use of an

air cylinder device similar to that used in operating wrappers with cold reduced tin plate mills. Fig. 4 shows the arms extended and balanced by counterweights, whereas Fig. 5 shows the arms dropped as when in position at the reel. Fig. 6 is a side view showing connection for the air cylinder piston below.

A third unit, similar to that shown in Figs. 1, 2 and 3, now is under construction for a 30-inch diameter reel to be used in connection with a 3-stand, 77-inch, 4-high, cold mill.

Of the single-belt wrappers, for use on reels operating in conjunction with cold rolled tin plate mills, 12 have been shipped by United Engineering & Foundry Co. and eight now are in regular production. The company reports that tonnage in each case has been stepped up about 15 per cent, so that the units have paid for themselves in a few days or weeks after installation. This increase tonnage is obtained through elimination of the necessity to slow down or stop the mill in order to enter the leading end of the strip in the reel gripper. The belt wrapper takes the strip from the mill at threading speed and automatically wraps the leading end around the reel and establishes the tension. When the coil has been rolled and the reel head collapsed, there is no end sticking in the gripper to catch and hinder the stripping operation and the reel head can be rotated backward to further aid this process of stripping.

Fig. 7 is a view of a typical view of an 18 x 49 x 42-inch, 4-inch, cold tin plate mill equipped with collapsible reel head and belt wrapper.

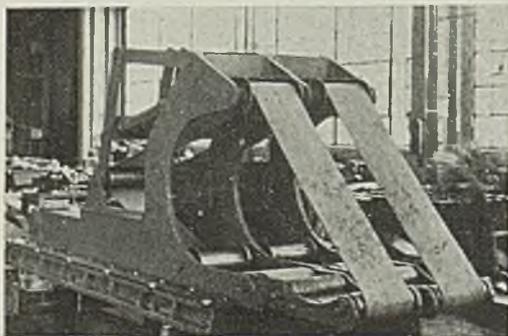
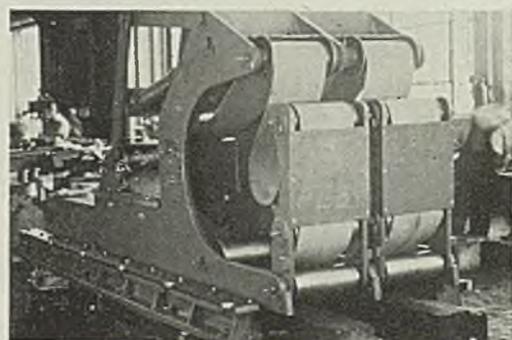


FIG. 1—(left) Dual belt wrapper for serving 30-inch diameter reel for a 56-inch 3-stand cold mill which finishes 20 to 22-gage strip up to 48 inches wide. Fig. 2—Same wrapper with arms up in position to receive strip from the mill when mounted in combination with reel



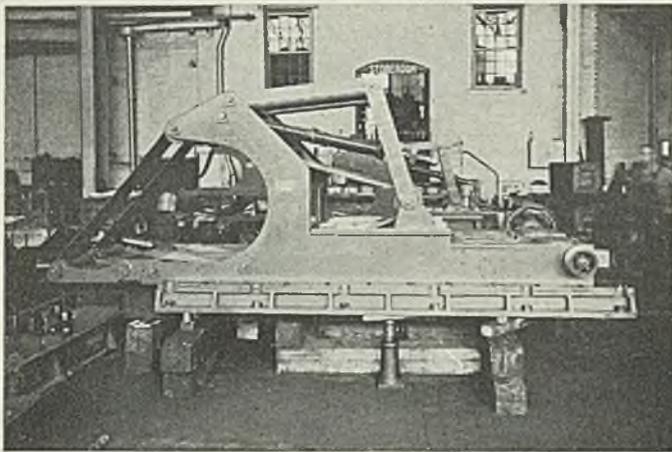


FIG. 3—Side view of the same unit showing arrangement of belt, tension spring and position for motor which drives the unit into and out of position at the reel through a pinion and rack mounted in the framework and base slides

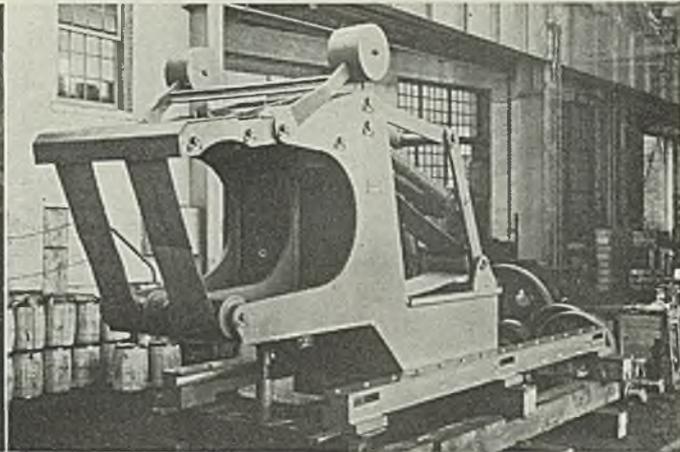


FIG. 4—Upside-down, dual belt wrapper for 24-inch reel that threads from bottom. This unit is now in operation in connection with a 60-inch, 4-high, temper pass mill in the Chicago district

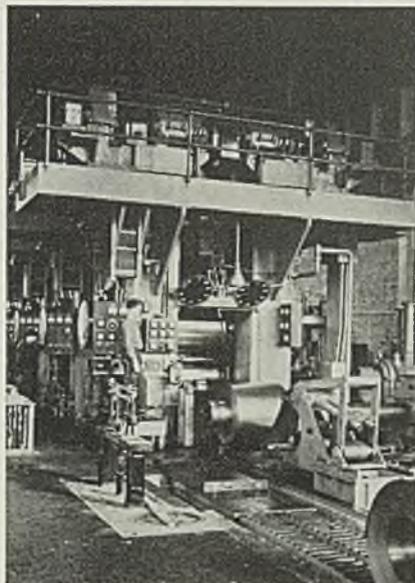


FIG. 7—Typical view of 18 x 49 x 42-inch, 4-high, cold tin plate mill equipped with collapsible reel head and belt wrapper

FIG. 5—Same dual belt wrapper with arms dropped as when in position at the reel

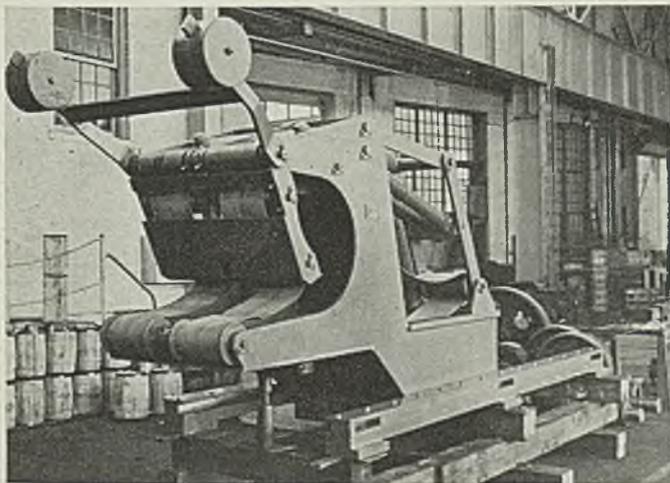
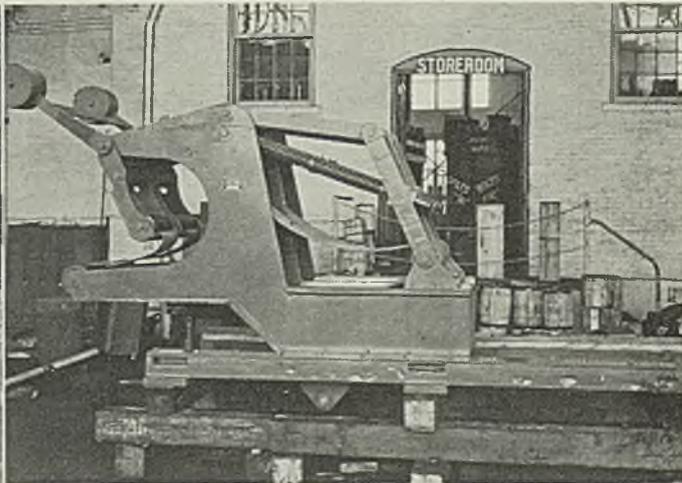
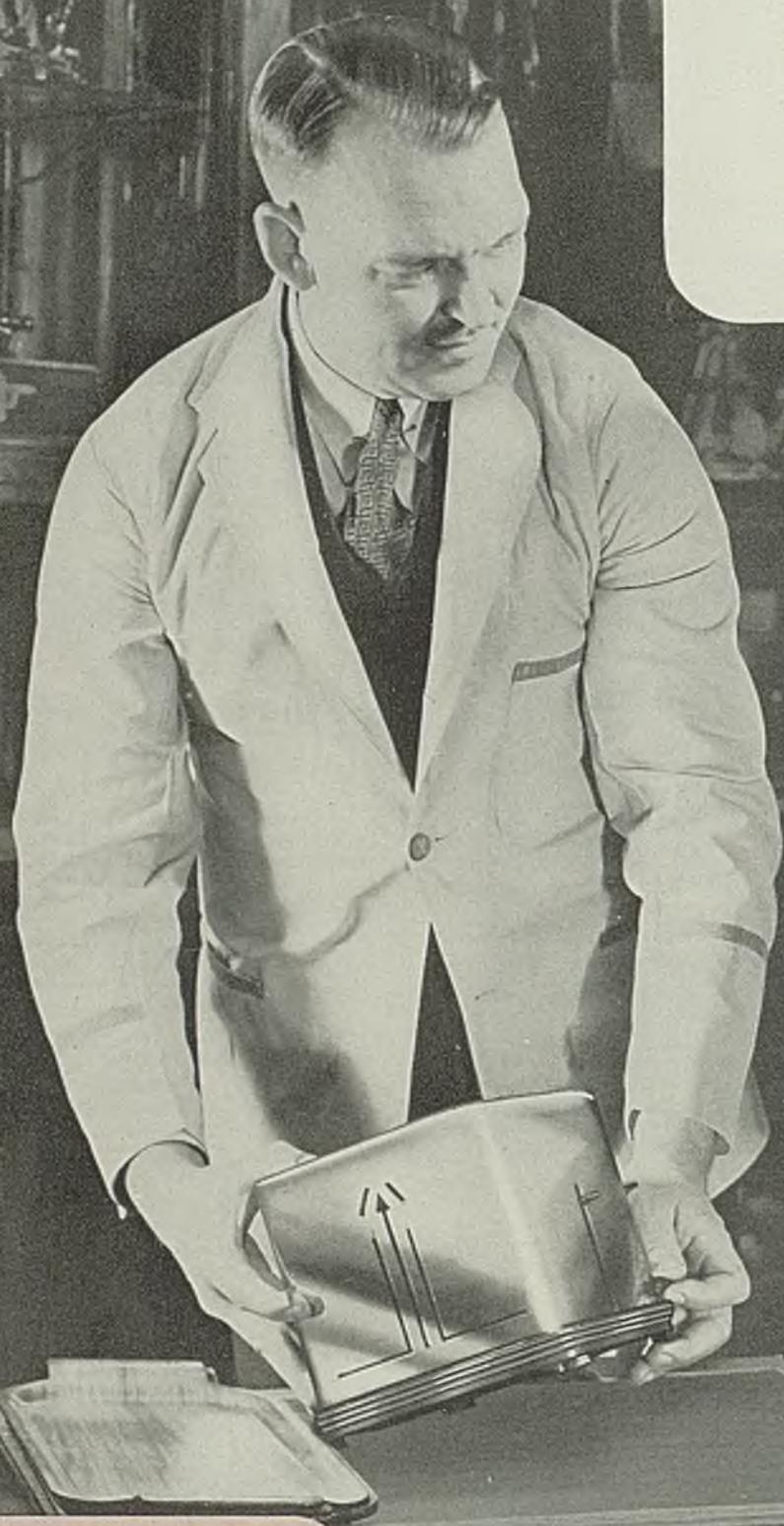


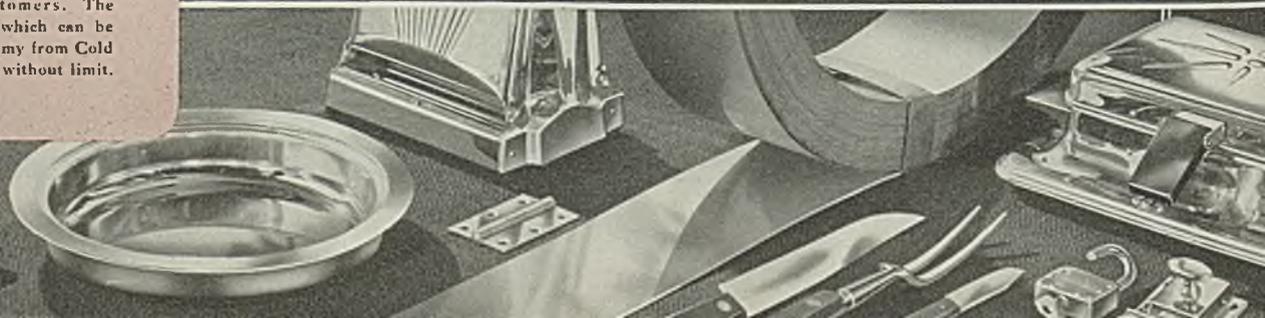
FIG. 6—Side-view of upside-down, dual belt wrapper showing connection for the air cylinder piston below the slide rails



Whose



HERE ARE a number of products made from Cold Rolled Strip Steel. Note the smooth, shining finish which attracts customers. The variety of products which can be fabricated with economy from Cold Rolled Strip Steel is without limit.



Product

WILL THIS CUSTOMER BUY?

THIS customer wants a piece of merchandise that has an attractive appearance, that is designed to give efficient service, and is priced to suit the pocketbook. All customers have those things in mind when they buy. Cold Rolled Strip Steel offers fabricators the shortest route to these consumer demands.

American Quality Cold Rolled Strip Steel has the smooth, shining finish that is sure to catch the customer's eye. This product is easy to fabricate because it is made in a complete range of widths, edges, tempers and finishes to meet the manufacturing requirements and the design of fabricated products. And American Quality Cold Rolled Strip Steel can lower your production costs, because this material ranges lower in cost than some of the more expensive metals.

Examine your own products. Perhaps there are several places where you can improve them at worthwhile savings by using parts fabricated from American Quality Cold Rolled Strip Steel. Our sales representatives will be glad to give you any necessary assistance in working out the application of Cold Rolled Strip Steel to your needs.



AMERICAN QUALITY Cold Rolled Strip Steel is available in a complete range of widths, edges, tempers and finishes. It can be produced either in coils or in cut lengths to suit your particular requirements.

UNIFORMITY, which is so important in Cold Rolled Strip Steel, is constantly checked in our product. Our laboratories and skilled craftsmen join in producing a product of the highest uniformity. You are assured of the same high quality whether you buy a few coils or a full carload of American Quality Cold Rolled Strip Steel.

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AMERICAN STEEL & WIRE COMPANY

Cleveland, Chicago and New York

Columbia Steel Company, San Francisco, Pacific Coast Distributors • United States Steel Products Company, New York, Export Distributors

UNITED STATES STEEL



Two Units Run by Motor of Truck

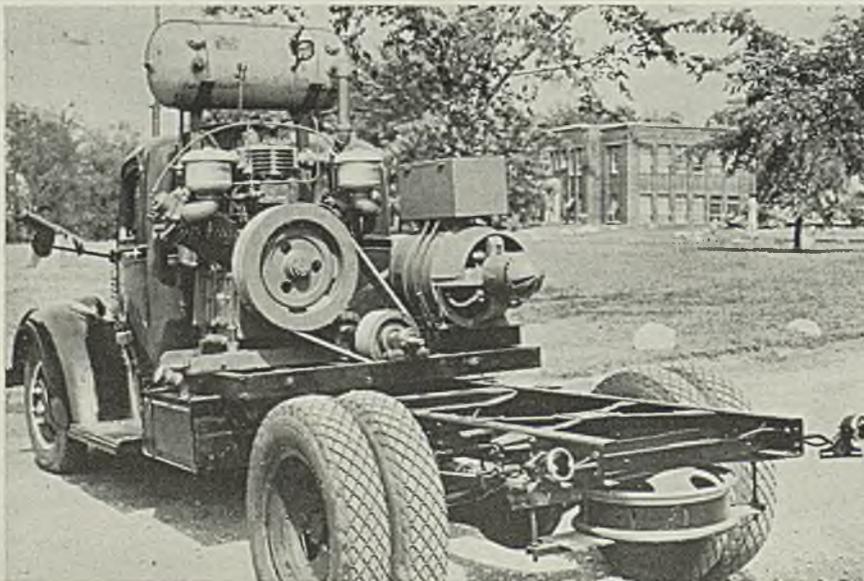
TWO pieces of equipment, a 105-cubic foot, two stage air compressor and a 400-ampere electric welder, have been mounted on a two-ton Dodge truck and are operated directly from the motor by means of a model SD-700 split-shaft power take-off manufactured by Hercules Steel Products Co., Galion, O.

The air compressor is a product of Worthington Pump & Machinery Co., Harrison, N. J., and the welder was manufactured by Lincoln Electric Co., Cleveland. Both units are mounted on a large frame that supports a line shaft drive and to this are attached two pulleys with jaw clutches. One pulley is connected to the air compressor by five Section B V-belts, and the other pulley is connected to the electric welder by four Section C V-belts.

The jaw clutches allow the operator to engage either piece of equipment separately or to operate both at the same time. Levers are attached to the clutches so it is easy for the operator to engage or disengage either piece of equipment.

A tapered end is made on the shaft to attach a universal joint and operate additional units directly from the line shaft. An engine slow-down device for the air compressor is attached to the carburetor of the truck; when additional air is not needed the truck motor is allowed to idle. When air is required the motor is acceler-

BOTH an electric welder and an air compressor, mounted on this truck, are operated directly from the motor by means of a Hercules split-shaft power take-off



ated, while a governor controls the speed of the truck motor when operating the air compressor.

Also connected to the carburetor is a slow-down device for the welder, which causes the motor to idle when the welder is not in use and to accelerate when welding is resumed. There is a delayed time control that, for approximately 40 seconds, prevents the motor from idling, allowing the welding operator time to change wires before the motor starts to idle.

Graphic Meters

(Continued from Page 60)

the operation of the equipment is entirely enclosed and the condition of the unit is not readily inspected that improper conditions may easily result unnoticed until the power losses are pictured on graphic meter records.

A machine driven by a 150-horsepower motor also gave trouble from overloads. Observing the operation of the unit along with the graphic record, Fig. 5, as recorded, indicated that the part of the unit designed to take away the finished material was not operating properly and permitted the machine to choke. Correcting this difficulty decreased the consumption, Fig. 6, and permitted increasing the capacity 50 per cent.

This work has been carried on over a period of 6 years and has resulted in a decrease in energy consumed, lowered demand charges, increased power factor from 0.62 to 0.83, increased average load factor to 81 per cent and greatly reduced the number of interruptions to operation. Graphic instruments and data used in this work were supplied by Esterline-Angus Co., Indianapolis.

Locomotives to Have Electric Speedometers

New alternating current speedometer for steam, diesel and electric locomotives has been announced by Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. The device is ruggedly built and consists of a simple electric generator suitable for axle mounting, an indicating instrument mounted in the cab and a junction box with a variable resistance to compensate for wheel wear.

Generator produces a voltage and frequency proportional to speed and is connected to the indicator by armored cable and wire well protected in conduit, while the junction box is designed to be mounted at some convenient point in the electrical circuit.

Rubber Motor Mountings Silence Unit Heaters

In order to provide circulating unit heaters which operate silently, Fedders Mfg. Co., Buffalo, now is using rubber as a silencing material. The use of rubber mountings built concentric with the motor bearings provides a simple and effective method of absorbing and isolating motor and fan vibration. By being concentric with the motor shaft bearings this mounting further prevents the possibility of setting up magnified deflection and vibration throughout the length of the fan blades as could be the case if mountings were in any plane not at right angles to the plane of rotation of the fan. The rubber mountings, by eliminating all solid metal-to-metal contact between motor and fan assembly and the cabinet prevents amplification and transmission of any motor hum or fan or motor vibration.

Extra Springs Are Aid

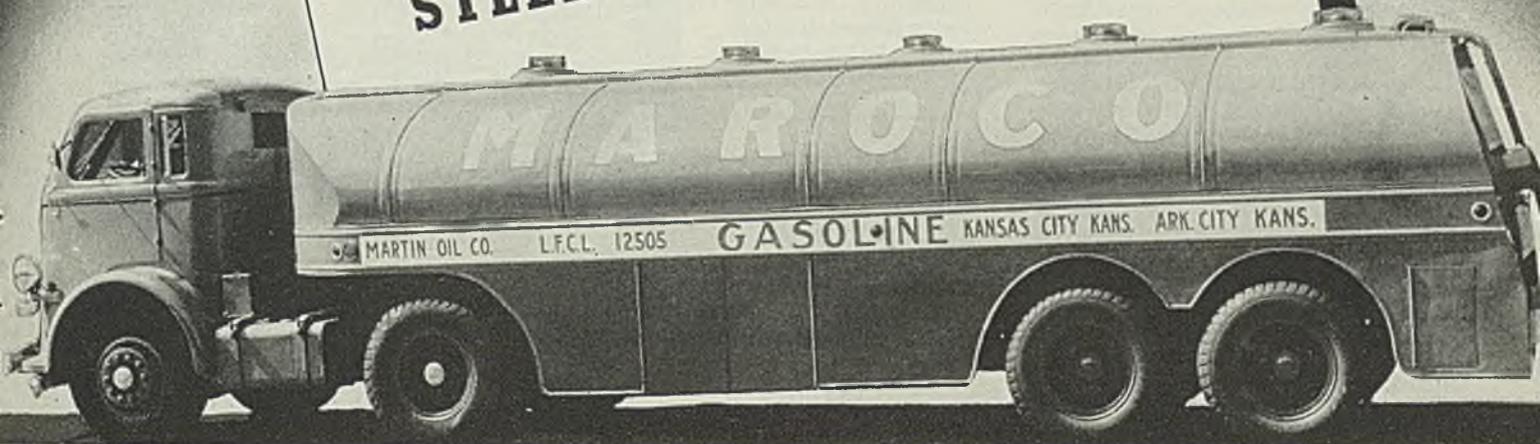
Especially designed for passenger cars towing trailers or carrying extra heavy loads are several types of helper springs being manufactured of alloy steel by Maremont Automotive Products Inc., Chicago. This line of springs includes an auxiliary type with frame brackets, an auxiliary type with pads riveted to spring, a traverse type for Fords and a cantilever type. Easily installed or removed, these springs reduce spring breakage by carrying up to 1500 pounds extra. Units that will fit practically all cars are made in universal and progressive types. The latter is a spring that does not interfere with riding qualities under light loads, not beginning to function until overload is carried.

ONE TRIP

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out of every 20 . . .

**WITH YOLOY HIGH TENSILE
STEEL FOR TANK SHEETS**



Yoloy high tensile steel sheets solved a serious problem for the Columbian Steel Tank Co. when they built the husky semi-trailer shown here. It is not easy to produce a design for 4500 gallon capacity, keep total weight below 34,000 pounds, and still meet I. C. C. specifications.

How well this was done by Columbian and Yoloy is shown by the results. Shell sheets were reduced from 10 to 13 gauge, head sheets from 8 to 11 gauge yet the strength was increased by 10%. This saved 1700 pounds dead weight, equivalent to 225 gallons of

gasoline. For a tank capacity of 4500 gallons this is 5%, so that in every 20 trips, one trip is free because of that extra capacity. A fine tribute to the Columbian Steel Tank people and a credit to Yoloy.

Ask our engineers what we can do on your particular problem, and find out for yourself the savings we can make for you.

**THE YOUNGSTOWN SHEET
AND TUBE COMPANY**

Manufacturers of Carbon and Alloy Steels
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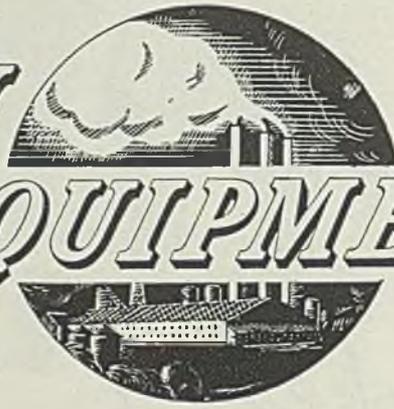
High Tensile Steel Yoloy is available in sheets, strips, plates, bars, shapes, manufacturer's wire, welding wire, seamless pipe and electric weld pipe.

3-3

YOUNGSTOWN



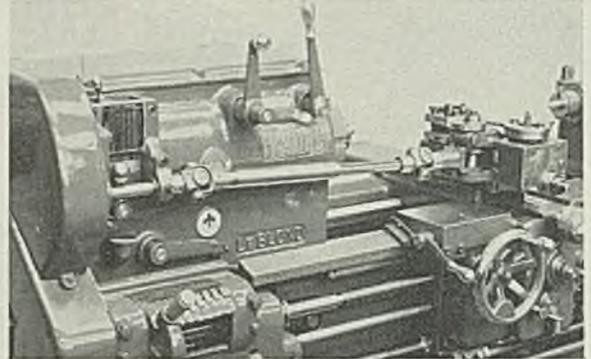
NEW EQUIPMENT



Cut-Off Machine—

Cincinnati Electrical Tool Co., Cincinnati, has announced a new wet abrasive cut-off machine suitable for straight or angle cutting and which produces a cut with a minimum of burr and eliminates burning, as coolant is directed on the sides of the wheel as well as on the point of contact of the cut. The new unit cuts solids up to 2¼ inches and tubing up to 3½ inches in diameter, the same vise being suitable for the various cuts. In cutting angles up to 45 degrees, however, the maximum capacity is 2¼-inch diameters. Material is held in the vise by spring tension on the jaws and is released by the foot lever after the cut is made. Abrasive wheel is moved into the work by hand lever and the arm which carries the abrasive wheel pivots on the pedestal with a counterbalance

LeBlond relieving attachment for tool room lathes is fully universal



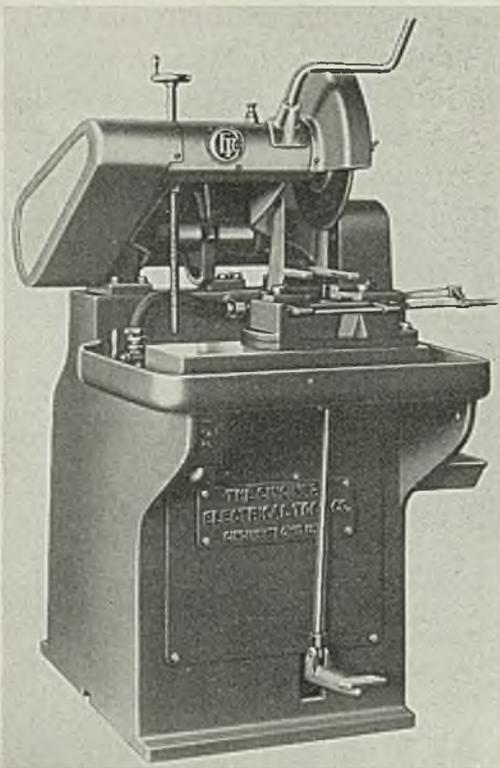
for easy operation. For protection to the operator, abrasive wheel is completely guarded except for the portion necessary for the actual cutting operation. Coolant system consists of a ¼-horsepower, direct motor driven centrifugal pump with a ten gallon tank, piping and conven-

iently located control valve. Spindle is driven by multiple V-belts from a 7½-horsepower ball bearing, drip-proof motor at 1800 revolutions per minute, although a 10 or 15-horsepower motor can also be furnished.

• • •

Relieving Attachment—

R. K. LeBlond Machine Tool Co., Cincinnati, is manufacturing a new, fully-universal relieving attachment for tool room lathes. With the use of only two cams any relief from zero to ¼-inch can be obtained. The majority of work within the range of the attachment can be handled without angularity of the knuckle joints, which under the most extreme conditions assume only a slight angle. External, cylindrical, internal, end, side, angular and spiral relief are accurately accomplished with the new attachment. No supporting blocks or additional knuckle joints are necessary to change from external, internal or end relief, and for spiral relief it is only necessary to make a simple adjustment of the change gear combinations. With the built-in, coarse threading attachment furnished, most of the change gear combinations can be obtained directly from the quick change box. The driving mechanism is rigidly attached to the headstock and in no way interferes with the operation of the lathe for ordinary work. The drive from the



Cincinnati wet abrasive machine cuts with a minimum of burr and eliminates burning

gears on the end of the lathe is through a telescopic shaft to the actuating mechanism on the tool slide. This slide replaces the regular compound rest and incorporates the same swivel feature, enabling the operator to swivel the slide to the proper angle for angular, side and end relief. The swivel is large in diameter and accurately graduated so the setting may be quickly read. To move the regular compound rest and apply the relieving attachment slide requires but a few moments.

♦ ♦ ♦

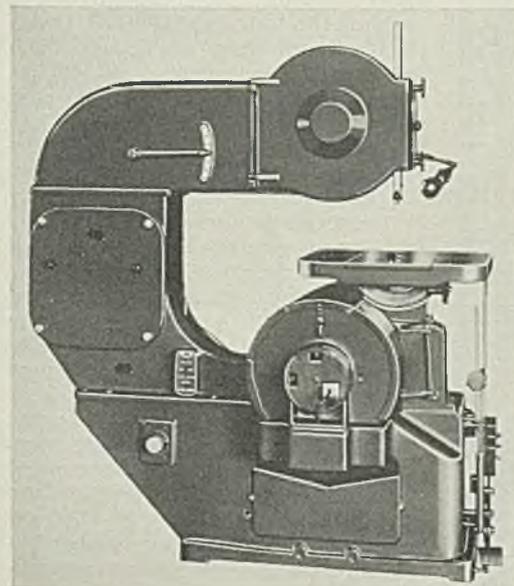
Storage Racks—

Stackbin Corp., Providence, R. I., is manufacturing sectional steel racks known as Stackracks which, although originally designed for orderly arrangement and easier handling of stockroom boxes, are proving ideal, it is claimed, for parts storage in process of machining or assembly. This application takes advantage of the easy set-up, rigidity, and easy disassembly of the racks. A Stackrack may be set up quickly without tools anywhere in the plant and as easily taken down and moved elsewhere. Built in single units, each of which holds a tote pan, Stackracks are said to save space, save time spent in piling or unpling pans, and permit use of lighter, cheaper pans. Units are built to fit tote pans or boxes of any size, and any number of units may be used to provide a Stackrack of any size or shape.

♦ ♦ ♦

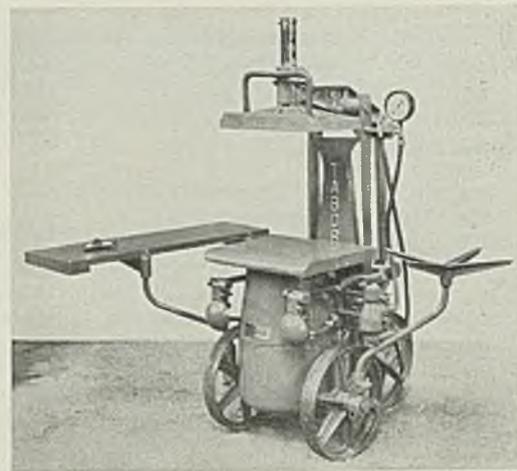
Open-End Band Saw—

Grob Bros., Grafton, Wis., have placed on the market a new open-end bandsaw with a throat of 36 inches, designed to be set up for



Grob Bros. band saw has positive instead of friction drive

Tabor jar squeezer is of the cantilever type with valveless-type jarring unit



internal sawing in 20 seconds, since no brazing or welding of the saw band is required. Machine has positive instead of friction drive and large throat is obtained by means of a third 20-inch diameter pulley mounted on a swivel block in the upright column of the frame. By means of a hand lever on the left of the machine the upper guide pulley is raised and lowered and proper tension to the saw band is provided. Work up to 8 1/4 inches high can be sawed, while floor space required by the machine is 24 x 60 inches.

♦ ♦ ♦

Jar Squeezer—

Tabor Mfg. Co., 6225 Tacony street, Philadelphia, has developed a new jar squeezer of the cantilever type with a "tripod" design assuring absolutely equalized pressures and a counter-balanced yoke enabling more speedy operation. On this cantilever squeezer there is no tendency to shift sideways, regardless of the condition of the support-

ing bearings. Ramming block can be changed to different heights by removing a single pin and there is no necessity for tools or for removal of cotter pins that may not be replaced. Jarring unit is of the valveless type with an effective long stroke. Squeezing piston is, in effect, the Tabor top squeezer turned bottom side up, a design which makes almost endless the life of a cup leather washer on a smooth drawn steel cylinder. Piston rod is the jarring cylinder and the guide for the table, rod being 4 1/2 inches in diameter and having a 13-inch guide even at the top of the squeezing stroke. Other features include a pop-throttle valve, and the open sides and easy portability of the machine.

♦ ♦ ♦

Heat Treating Box—

American Manganese Steel Co., Chicago Heights, Ill., has introduced the Hoffman Flexbox for use in carburizing, annealing, and other heat treatment processes. The Flexbox is made in six separate parts of heat and abrasion resistant Amsco alloy. Corrugated sides are tongued to fit into grooves in the corrugated ends and may be keyed in place. The frame thus formed nests on a flanged bottom plate with legs for batch-type furnaces and has a flanged cover which fits over the box. A special type of Flexbox is made with the bottom plate fitting end plates for use where the contents must be lifted with the box. It is claimed the Flexbox does away with the distortion or cracking ordinarily brought about by alternate heating and cooling. Sufficient clearance is provided between tongue and groove to absorb expansion from heating of the parts and to allow contraction in cooling. With this new design, however, there is no appreciable gas leakage at the joints. Flexboxes are lighter and easier to handle than ordinary boxes it is claimed, while, if a section of

the box fails, it can easily and quickly be replaced at a fraction of the cost of the entire box.

♦ ♦ ♦

Typewriter Ribbon—

Ozalid Corp., 354 4th avenue, New York City, has announced a new Ozalid opaque typewriter ribbon designed especially for photo-reproduction work, making master copies from which blue prints, photostats, photo-engravings and photo-litho-prints are to be made. Bills of material, specifications and other important data are said to be dupli-

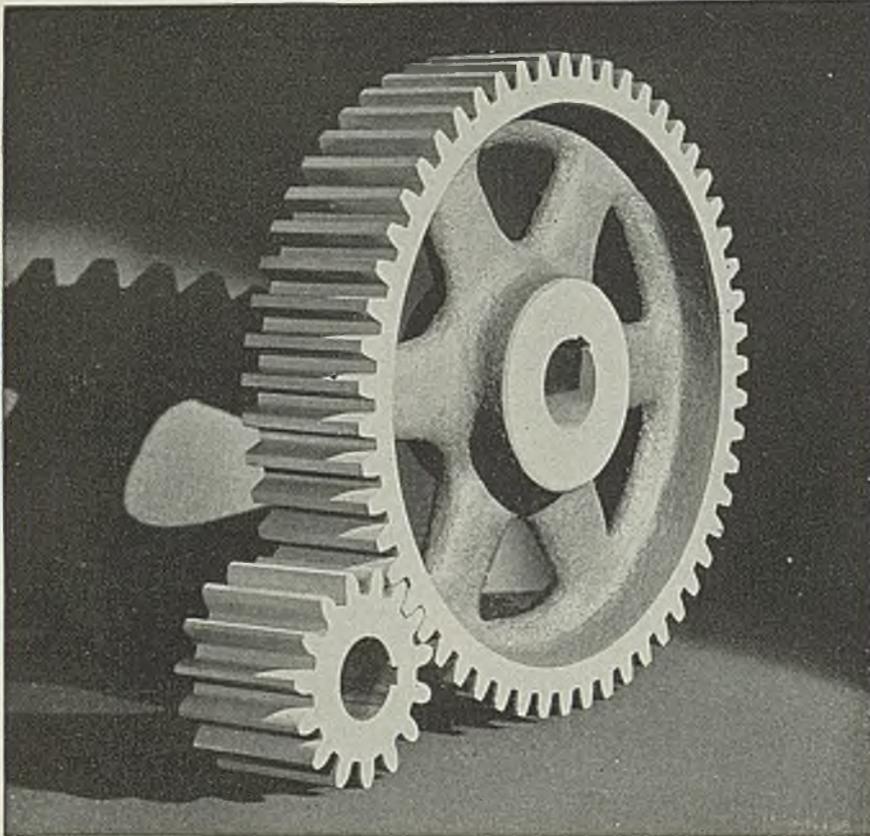
cated more quickly when the Ozalid ribbon is used, as the greater opacity tends toward faster printing and more legible prints. Carbon backing is eliminated, while typing can be easily erased.

♦ ♦ ♦

Lever Motor—

Taylor Instrument Companies, Rochester, N. Y., have placed on the market the new Motosteel Even-action lever motor, a new type of lever motor designed to have a broader field of application. Of all steel welded construction, its pre-

cise operation characteristics are said to insure a uniform relation between the air pressure applied to its diaphragm motor and the resulting lever travel throughout its stroke. It is claimed to be practically free from hysteresis. A deeper diaphragm with larger area gives greater power and smoothly modulated action. Ball bearing roller bearings guide the full stroke of the push rod. The lever is pivoted in phosphor-bronze bushings which are alignment-reamed in the same



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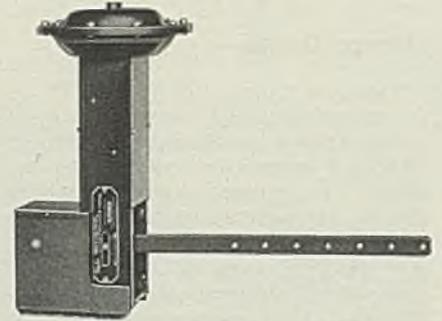
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Taylor Motosteel Even-action is a new type lever motor of all steel welded construction for a broader field of application

manner as automobile engine bearings. A number of take-off holes are provided throughout the length of the lever so that the force or travel of the motor may be adjusted. Power of either up-stroke or down-stroke can be increased or decreased by spring adjusting nut. The lever action can be reversed by substituting another lever and transposing the fixed and movable pivots. Limit stops are provided for both up-stroke and down-stroke. Base is drilled for mounting on floor, wall or ceiling, making possible an infinite number of mounting positions, motor working equally well in any one. There are three sizes of the unit available—in terms of maximum damper areas which can be accurately positioned—25, 50, or 120 square feet. Damper areas may be appreciably increased when a Taylor Valv-Previsor or Duple-Response control unit is used in conjunction with the motor. Units may be operated by remote manual control, by an electro-pneumatic switch or by a pneumatically operated controller. They may also be operated in parallel with a diaphragm valve or other pneumatic equipment. The manufacturers recommend the new motor for operation of dampers, lever operated valves, butterfly valves, electrical rheostat for variable speed motors, for the control of electrical equipment or for the operation of any device by the conversion of pneumatic energy to linear or angular mechanical motion.

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

Grinder—Pratt & Whitney, Hartford, Conn. Circular describing the Keller cutter and radius grinder, illustrated and containing useful information on operation.

Over-Running Clutches—Hilliard Corp., Elmira, N. Y. Bulletin explaining functions of Hilliard over-running clutches, with engineering drawings and photographs of installations.

Foundry Equipment—Pangborn Corp., Hagerstown, Md. Illustrated folder dealing with the Pangborn Airless Rotoblast, air blast appliances, dust collectors and miscellaneous foundry equipment.

Welding Fittings—Bonney Forge & Tool Works, Allentown, Pa. Bulletin WT23, illustrating and describing WeldOlets and ThreadOlets, drop-forged pipe fittings for making branch pipe connections by welding.

Bakelite—Bakelite Corp., 247 Park avenue, New York City. Booklet entitled "The Versatile Service of Bakelite Materials", giving the story of the development of various Bakelite resinous materials, their general characteristics, properties and applications.

Engineering Material—E. I. du Pont de Nemours & Co., rubber chemicals division, Wilmington, Del. Handbook dealing with "Neoprene," du Pont's chloroprene rubber engineering material, its development, application, and other information.

Laboratory Furnaces—Hevi Duty Electric Co., Milwaukee, Wis. Two bulletins on laboratory furnaces, HD-537 describing the type HD-92, Hevi Duty, muffle furnaces; bulletin MU-637, describing type MU-55, multiple unit furnaces.

Thread Cutting—Landis Machine Co., Waynesboro, Pa. Bulletin covering the uses of Landis thread cutting equipment for railroad shops.

Construction Equipment—Caterpillar Tractor Co., Peoria, Ill. Booklet of 32 pages with illustrations giving a pictorial record of the many types of construction jobs for which Caterpillar tractors, road machinery and engines are suited.

Welded Piping Design—The Linde Air Products Co., New York. Handbook of 200 pages entitled "Design of Welded Piping", containing complete information on design and layout for welded connections: contains over 100 figures and tables.

Power Shovels—Universal Crane Co., Thew Shovel Co., Lorain, O.

Nine publications dealing with shovels are available, including a booklet covering the Lorain-40 $\frac{3}{4}$ -yard machine; booklet covering Lorain-30, $\frac{1}{2}$ -yard; folder on Lorain-37, $\frac{5}{8}$ -yard; and a bulletin dealing with

the Lorain-27, $\frac{3}{4}$ -yard, universal, Ford V-8 powered shovel; these four put out by Universal Crane Co. Other five include booklet on Lorain-77, 1 $\frac{1}{2}$ -yard machine; booklet on Lorain-57, 1 $\frac{1}{4}$ -yard, diesel, gasoline or electric; booklet on Lorain-95, long range dragline machine; booklet covering the Lorain-87, 2-yard machine; and a folder covering the Lorain-55D, 1-yard, diesel, gasoline or electric machine—these available from Thew Shovel Co.

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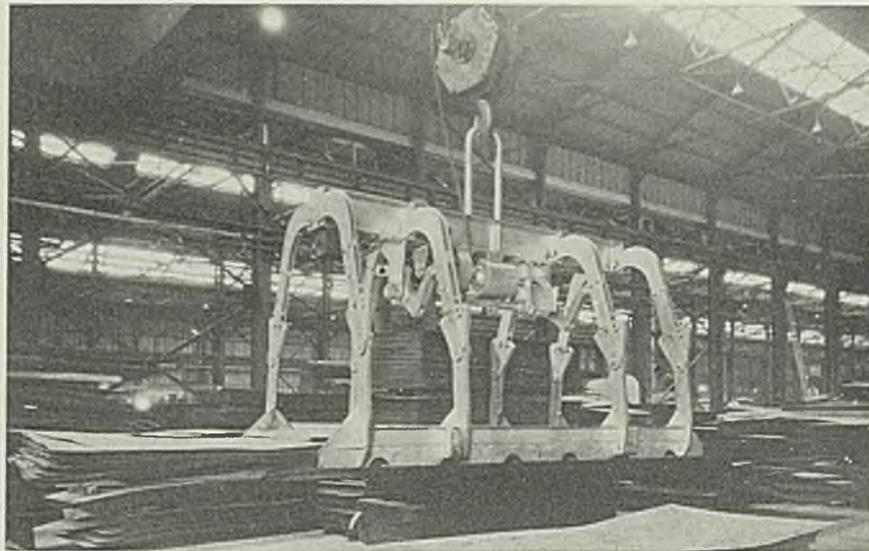
(Concluded from Page 52)

He then resets the bucket, which continues on around for a second load. In case he should miss a bucket the spring suspension drops the bucket sufficiently so that it will not contact and overload on the next round trip.

First-operation machines are set at the outside of the groups along the aisle and alongside the bucket conveyor line, thus permitting straight travel of the bucket conveyor. Little trouble is experienced in the operation of these somewhat complicated interlocking conveyor systems. However, when anything does happen the unit stops. Usually the cause is obvious, but only an electrician is intrusted to check up and start up the system again.

Lifts Sheet Steel Packs Weighing Up to 20 Tons

SINCE the advent of days of higher production schedules throughout the steel industry, accessories for speedier handling of sheets and



coiled strip have become more important as instruments of transportation into and out of storage.

A description of a new type of crane hook for use in lifting and other incidental operations in movement of large and heavy coils appeared in STEEL, Sept. 21, 1936, page 50. The accompanying illustration shows a special lifter re-

cently installed in a large steel mill. This particular unit is of 20-ton capacity, motor-operated, with opening range from 12 to 76 inches. It is 13 feet long and will handle sheets 16 or 17 feet in length.

The illustration furnishes an inadequate idea of tasks at which this lifter operates, the reason being that only a partial load had

PACKS of sheets from 12 to 76 inches wide and 17 feet long can be picked up by this motor-operated lifter. Capacity is 20 tons. Photo courtesy Cullen-Friedstedt Co.

been picked up by the operator. Ordinarily the lifter picks up and carries a full pack of sheets. Introduction of 20-ton capacity units is simply another indication of the heavier lifting work now being done mechanically in the steel industry.

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WIRE ROPE

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1857

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Steel Clad

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Hemp Center

Wire Rope Center

Metallic Core

Seale - Filler Wire

Warrington

Health of Welders

Complete present-day information on health hazards connected with welding operations has been compiled by the industrial health section of Metropolitan Life Insurance Co. in the form of a report entitled "Health Protection of Welders," copies of which are available from the company's policyholders service bureau at 1 Madison avenue, New York. The report discusses the types of welding and lists as the four principal hazards electric shock and burns; radiant energy, such as ultra-violet rays, infra-red rays and visible light rays of excessive intensity; gases, fumes and dust; and miscellaneous hazards including the possible exhaustion of oxygen in the air breathed due to pollution by products of combustion in confined, unventilated spaces. Protective measures and methods of treatment are also considered in the report.

Steel Output Remains High Despite Buying Lull

Scrap Up Sharply;

Crop Prospects Aid;

Tin Plate at Limit

SIGNS are appearing that the bottom of the summer lull has been reached and that July probably represents the low point in buying. The quiet condition is likely to continue through part of August, with the latter part of the month expected to show an upturn as fall programs get under way.

This opinion is generally held by steelmakers, who are bending every effort to clear their books as far as possible, to provide capacity for new bookings. Steel for 1938 model automobiles is relied on to provide some of the August tonnages. Deliveries are being bettered in practically all lines, and some can be obtained at what is regarded as a normal delay. Bars can be shipped in one to two weeks, but sheet deliveries by some mills are still 15 to 20 weeks on hot-rolled and six to seven weeks on cold-reduced. The latter condition is due to lack of automotive demand. Tin plate producers are being pressed by can-makers and are operating at full capacity, with large tonnages still on books. Plate backlogs extend to four weeks or more in many cases.

While no announcement has been made on fourth quarter price for galvanized sheets the leading southern producer has scheduled a change in jobber allowances on flat merchant galvanized sheets and galvanized roofing and siding. This is viewed as an effort to harmonize northern and southern mill policies.

Farm equipment manufacturers continue activity and profitable crops this summer indicate that this will be continued into the fall. Other steel products used on the farm are also moving well, reflecting the increased buying power from agricultural districts.

Resumption of operations by National Tube Co. at Lorain, O., after a vacation, with advances of 2 points at Youngstown, 1 point at Chicago and 1 point in eastern Pennsylvania brought the national operating rate to 84 per cent, 3 points above the preceding week. The Cleveland district rose 31 points to 82 per cent, equal to the best rate this year. Chicago rose 1 point to 85 per cent, Youngstown 2 points to 80 and eastern Pennsylvania 1 point to 71 per cent. Pittsburgh was unchanged at 83 per cent, Wheeling at 92, Buffalo at 88, Birmingham at 96, New England at



MARKET IN TABLOID

DEMAND *Lighter but probably at summer's low point.*

PRICES *Steady, pig iron prices for fourth quarter not settled.*

PRODUCTION . . *Operations up 3 points to 84 per cent of capacity.*

SHIPMENTS *At high rate, deliveries becoming shorter.*

90 and Cincinnati at 93. Detroit lost 3 points to 92 per cent and St. Louis 13 points to 80 per cent.

Eastern platemakers are interested in new bids on the liner for the United States Lines, which will be taken by the maritime commission. Previous bids have been rejected in each of several openings. The craft will require about 16,000 tons of hull steel.

Virtual absence of the Ford Motor Co. from the automotive picture again last week held down production to a total of 86,448 units. General Motors turned out 48,892, slightly under the 50,040 the previous week. Chrysler and Ford were the same as the former week with 26,550 and 655, respectively.

Scrap prices are rising rapidly, revealing the strength which has been repressed during the mid-summer season when melters remained out of the market. Steelmaking grades rose \$1 to \$1.50 last week at Chicago, \$1 at Pittsburgh and in the eastern Pennsylvania district. During July this market has retrieved two-thirds of the losses encountered in early summer.

Prices have been generally covered for fourth quarter, most producers having followed the lead of Carnegie-Illinois Steel Corp. Pig iron is the exception, makers desiring to watch the course of the scrap and export markets. In some quarters an advance is expected while in others the sentiment is that no change will be made. Melters have not yet been led to cover ahead in expectation of a rise.

Advancing prices of steelmaking scrap in all consuming centers has caused a rise of \$1 in the scrap composite, to \$20. This is an increase of \$3 since the final week of June and brings the composite practically to the level of the end of April and within \$1.08 of the high point of the year, in April. Higher scrap prices raised the iron and steel composite 16 cents to \$40.27. Finished steel composite is unchanged at \$61.70.

COMPOSITE MARKET AVERAGES

	July 31	July 24	July 17	One Month Ago June, 1937	Three Months Ago Apr., 1937	One Year Ago July, 1936	Five Years Ago July, 1932
Iron and Steel	\$40.27	\$40.11	\$40.04	\$39.82	\$40.39	\$33.49	\$28.87
Finished Steel	61.70	61.70	61.70	61.70	61.45	53.40	47.71
Steelworks Scrap ..	20.00	19.00	18.75	17.15	21.67	12.89	6.06

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

Finished Material	July 31	June	April	July	Pig Iron	July 31	June	April	July
	1937	1937	1937	1936		1937	1937	1937	1937	1936
Steel bars, Pittsburgh	2.45c	2.45c	2.45c	1.95c	Bessemer, del. Pittsburgh	\$25.26	\$25.26	\$25.26	\$20.81
Steel bars, Chicago	2.50	2.50	2.50	2.00	Basic, Valley	23.50	23.50	23.50	19.00
Steel bars, Philadelphia	2.74	2.74	2.74	2.26	Basic, eastern del. East Pa.	25.26	25.26	25.26	20.81
Iron bars, Terre Haute, Ind.	2.35	2.35	2.35	1.85	No. 2 fdy., del. Pittsburgh	25.21	25.21	25.21	20.31
Shapes, Pittsburgh	2.25	2.25	2.25	1.90	No. 2 fdy., Chicago	24.00	24.00	24.00	19.50
Shapes, Philadelphia	2.45 ½	2.45 ½	2.45 ½	2.11 ½	Southern No. 2, Birmingham	20.38	20.38	20.38	15.50
Shapes, Chicago	2.30	2.30	2.30	1.95	Southern No. 2, del. Cincinnati ..	23.69	23.69	23.69	20.2007
Tank plates, Pittsburgh	2.25	2.25	2.25	1.90	No. 2X eastern, del. Phila.	26.135	26.135	26.135	21.68
Tank plates, Philadelphia	2.43 ½	2.43 ½	2.43 ½	2.09	Malleable, Valley	24.00	24.00	24.00	19.50
Tank plates, Chicago	2.30	2.30	2.30	1.95	Malleable, Chicago	24.00	24.00	24.00	19.50
Sheets, No. 10, hot rolled, Pitts. .	2.40	2.40	2.40	1.95	Lake Sup., charcoal, del. Chicago	30.04	30.04	30.04	25.2528
Sheets, No. 24, hot ann., Pitts. .	3.15	3.15	3.15	2.50	Gray forge, del. Pittsburgh	24.17	24.17	24.17	19.67
Sheets, No. 24, galv., Pitts.	3.80	3.80	3.80	3.20	Ferromanganese, del. Pittsburgh .	107.29	107.29	99.79	80.13
Sheets, No. 10, hot rolled, Gary .	2.50	2.50	2.50	2.05					
Sheets, No. 24, hot anneal., Gary .	3.25	3.25	3.25	2.60					
Sheets, No. 24, galvan., Gary.	3.90	3.90	3.90	3.30					
Plain wire, Pittsburgh	2.90	2.90	2.90	2.40					
Tin plate, per base box, Pitts.	\$5.35	5.35	5.25	5.25					
Wire nails, Pittsburgh	2.75	2.75	2.75	2.10					

Steel, Iron, Raw Material, Fuel and Metals Prices

Except when otherwise designated, prices are base, f.o.b. cars.

Sheet Steel	Tin Mill Black No. 28	Corrosion and Heat-Resistant Alloys	Structural Shapes
Prices Subject to Quantity Extras and Deductions (Except Galvanized)	Pittsburgh	Pittsburgh base, cents per lb.	Pittsburgh
Hot Rolled No. 10, 24-48 in.	Cold Rolled No. 10	Chrome-Nickel	Philadelphia, del.
Pittsburgh	Pittsburgh	No. 302 No. 304	New York, del.
Gary	Gary	Bars	Boston, delivered
Chicago, delivered	Detroit, delivered	Plates	Bethlehem
Detroit, del.	Philadelphia, del.	Sheets	Chicago
New York, del.	New York, del.	Hot strip	Cleveland, del.
Philadelphia, del.	St. Louis, del.	Cold strip	Buffalo
Birmingham	Granite City, Ill.		Gulf Ports
St. Louis, del.	Pacific ports, f.o.b. dock		Birmingham
Granite City, Ill.			Pacific ports, f.o.b. cars, dock
Pacific ports, f.o.b. dock	Cold Rolled No. 20	Straight Chromes	St. Louis, del.
Hot Rolled Annealed No. 24	Pittsburgh	No. 410 No. 430 No. 442 No. 446	Bars
Pittsburgh	Gary	Bars	Soft Steel
Gary	Detroit, delivered	Plates	(Base, 3 to 25 tons)
Chicago, delivered	Philadelphia, del.	Sheets	Pittsburgh
Detroit, delivered	New York, del.	Hot strip	Chicago or Gary
New York, del.	St. Louis	Cold stp.	Duluth
Philadelphia, del.	Granite City, Ill.		Birmingham
Birmingham			Cleveland
St. Louis, del.	Enamelling Sheets		Buffalo
Granite City, Ill.	Pittsburgh, No. 10	Steel Plate	Detroit, delivered
Pacific ports, f.o.b. dock	Pittsburgh, No. 20	Pittsburgh	Pacific ports, f.o.b. cars, dock
Galvanized No. 24	Gary, No. 10	New York, del.	Philadelph., del.
Pittsburgh	Gary, No. 20	Philadelphia, del.	Boston, delivered
Gary	St. Louis, No. 10	Boston, delivered	New York, del.
Chicago, delivered	St. Louis, No. 20	Buffalo, delivered	Pitts., forg. qual.
Philadelphia, del.		Chicago or Gary	Rail Steel
New York, delivered	Tin and Terne Plate	Cleveland, del.	To Manufacturing Trade
Birmingham	Gary base, 10 cents higher.	Birmingham	Pittsburgh
St. Louis, del.	Tin plate, coke, (base box), Pittsburgh	Coatesville, base	Chicago or Gary
Granite City, Ill.	Waste-waste, 2.75c; strip	Sparrows Pt., base	Moline, Ill.
Pacific ports, f.o.b. dock	Long ternes, No. 24, unassorted, Pitts.	Pacific ports, f.o.b. cars, dock	Cleveland
		St. Louis, delivered	Buffalo
			Birmingham

Iron

Terre Haute, Ind.	2.35c
Chicago	2.40c
Philadelphia	2.64c
Pittsburgh, refined....	3.50-8.00c

Reinforcing

New billet, straight lengths, quoted by distributors	
Pittsburgh	2.55c
Chicago, Gary, Buffalo, Cleve., Birm., Young....	2.60c
Gulf ports	2.65c
Pacific coast ports, f.o.b. car docks	2.95c
Philadelphia, del.	2.84c
Rail steel, straight lengths, quoted by distributors	
Pittsburgh	2.40c
Chicago, Buffalo, Cleveland, Birm., Young....	2.45c
Gulf ports	2.80c

Wire Products

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

Base Pitts.-Cleve. 100 lb. keg. Standard wire nails	\$2.75
Cement coated nails	\$2.75
(Per pound)	
Polished staples	3.45c
Galv. fence staples	3.70c
Barbed wire, galv.	3.40c
Annealed fence wire	3.20c
Galv. fence wire	3.60c
Woven wire fencing (base column, c. 1.)....	\$74.00
Single loop bale ties, (base column, c. 1.)....	63.00

To Manufacturing Trade

Plain wire, 6-9 ga.	2.90c
Anderson, Ind. (merchant products only) and Chicago up \$1; Duluth and Worcester up \$2; Birmingham up \$3.	
Spring wire, Pitts. or Cleveland	3.50c
Do., Chicago up \$1, Worc. \$2.	

Cold-Finished Carbon Bars and Shafting

Pittsburgh	2.90c
Chicago	2.95c
Gary, Ind.	2.95c
Detroit	2.95c
Cleveland	2.95c
Buffalo	3.00c

Subject to quantity deductions and extras. List dated Aug. 26, 1935; revised Oct. 1, 1936.

Alloy Steel Bars (Hot)

(Base, 3 to 25 tons)

Pittsburgh, Buffalo, Chicago, Massillon, Canton, Bethlehem	3.00c
--	-------

Alloy S.A.E. Diff. S.A.E. Diff.	
2000.....0.35	3100.....0.70
2100.....0.75	3200.....1.35
2300.....1.55	3300.....3.80
2500.....2.25	3400.....3.20
4100 0.15 to 0.25 Mo.	0.55
4600 0.20 to 0.30 Mo.	1.50-
2.00 Ni.	1.10
5100 0.80-1.10 Cr.	0.45
5100 Cr. spring	0.15
6100 bars	1.20
6100 spring	0.85
Cr. N., Van	1.50
Carbon Van.	0.85
9200 spring flats	0.15
9200 spring rounds, squares	0.40

Piling

Pittsburgh	2.60c
Chicago, Buffalo	2.70c

Strip and Hoops

(Base, hot rolled, 25-1ton) (Base, cold-rolled, 25-3 tons)	
Hot strip to 23 $\frac{1}{2}$ -in.	
Pittsburgh	2.40c
Chicago or Gary	2.50c
Birmingham base	2.55c
Detroit, del.	2.60c
Philadelphia, del.	2.69c
New York, del.	2.73c
Cooperage hoop, Pittsburgh	2.50c
Chicago	2.60c
Cold strip, 0.25 carbon and under, Pittsburgh, Cleveland	3.20c
Detroit, del.	3.40c
Worcester, Mass.	3.40c
Cleve. Worcester, Mass.	3.40c
Carbon Pitts.	3.40c
0.26-0.50	4.20c
0.51-0.75	4.45c
0.76-1.00	6.30c
Over 1.00	8.50c

Rails, Track Material

(Gross Tons)

Standard rails, mill	\$42.50
Relay rails, Pittsburgh, 20-100 lbs.	32.50-35.50
Light rails, billet qual., Pittsburgh, Chicago.	\$43.00
Do., rerolling quality.	42.00
Angle bars, billet, Gary, Pittsburgh, So. Chicago	2.80c
Do., axle steel	3.35c
Spikes, R. R. base	3.15c
Track bolts, base	4.35c
Tie plates, base	\$46.00
Base, light rails 25 to 60 lbs.; 20 lbs. up \$2; 16 lbs. up \$4; 12 lbs. up \$8; 8 lbs. up \$10. Base railroad spikes 200 kegs or more; base tie plates 20 tons.	

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chicago. Discounts to legitimate trade as per Dec. 1, 1932, lists:	
Carriage and Machine	
1/2 x 6 and smaller	65-5 off
Do. larger, to 1-in.	60-10 off
Do. 1 1/4 and 1 1/2-in.	60-5 off
Tire bolts	50 off
Plow Bolts	
All sizes	65-5 off
Stove Bolts	
In packages with nuts attached 72 1/2 off; in packages with nuts separate 72 1/2-5 off; in bulk 80 off on 15,000 of 3-inch and shorter, or 5000 over 3-inch.	
Step bolts	60 off
Elevator bolts	50-10-5 off

Nuts

S. A. E. semifinished hex.: 1/2 to 3/4-inch	60-10 off
Do., 9/16 to 1-inch	60-5 off
Do., over 1-inch	60 off

Hexagon Cap Screws

Milled	50-10 off
Upset, 1-in., smaller.	60 off

Square Head Set Screws

Upset, 1-in., smaller.	75 off
Headless set screws	75 off

Rivets, Wrought Washers

Structural, Pittsburgh, Cleveland	3.60c
Structural, Chicago	3.70c
3/8-inch and smaller, Pitts., Chi., Cleve.	65-5 off
Wrought washers, Pitts., Chi., Phila. to jobbers and large nut, bolt mfrs.	\$5.75 off

Cut Nails

Cut nails. C. L. Pitts. (10% disc. on all extras)	\$3.60
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Do., less carloads, 5 kegs or more, no discount on any extras... \$3.90
Do., under 5 kegs no disc. on any extras... \$4.05

Welded Iron, Steel Pipe

Base discounts on steel pipe, Pitts., Lorain, O., to consumers in carloads. Gary, Ind., 2 points less. Chicago, del. 2 1/2 less. Wrought pipe, Pittsburgh.

Butt Weld Steel		
In. Blk. Galv.		
1/4	59 1/2	49
3/4	62 1/2	53
1-3	64 1/2	55 1/2
Iron		
%	26	8
1-1 1/4	30	14
1 1/2	34	16 1/2
2	33 1/2	16

Lap Weld Steel		
2	57	47 1/2
2 1/2-3	60	50 1/2
3 1/2-6	62	52 1/2
7 and 8	61	50
9 and 10	60 1/2	50 1/2

Iron		
2	26 1/2	10
2 1/2-3 1/2	27 1/2	12 1/2
4	29 1/2	16
4 1/2-8	28 1/2	15
9-12	24 1/2	10

Line Pipe Steel		
1 to 3, butt weld	63 1/2	56
2, lap weld	56	56
2 1/2 to 3, lap weld	59	59
3 1/2 to 6, lap weld	61	60
7 and 8, lap weld	60	59 1/2
10-inch, lap weld	59 1/2	58 1/2
12-inch, lap weld	58 1/2	

Butt Weld Iron		
%	25	7
1 and 1 1/4	29	13
1 1/2	33	15 1/2
2	32 1/2	15

Lap Weld		
1 1/2	23 1/2	7
2	25 1/2	9
2 1/2 to 3 1/2	26 1/2	11 1/2
4	28 1/2	15
4 1/2 to 8	27 1/2	14
9 to 12	23 1/2	9

Boiler Tubes

Carloads minimum wall seamless steel boiler tubes, cut lengths 4 to 24 feet, f.o.b. Pittsburgh, base price per 100 feet subject to usual extras.

Lap Weld		
Sizes Steel Charcoal Iron		
1 1/2" OD x 13 Ga.	\$10.45	\$23.71
1 3/4" OD x 13 Ga.	11.89	22.93
2" OD x 13 Ga.	13.31	19.35
2" OD x 11 Ga.	15.49	23.36
2 1/4" OD x 13 Ga.	14.82	21.68
2 1/2" OD x 11 Ga.	17.38	26.02
2 1/2" OD x 12 Ga.	17.82	26.57
2 3/4" OD x 12 Ga.	18.86	29.00
3" OD x 12 Ga.	19.73	31.36
3 1/2" OD x 11 Ga.	24.89	39.81
4" OD x 10 Ga.	30.81	49.90
5" OD x 9 Ga.	47.57	73.93
6" OD x 7 Ga.	73.25	.....

Seamless		
Hot Rolled Cold Drawn		
1" OD x 13 Ga.	\$ 8.41	\$ 9.46
1 1/4" OD x 13 Ga.	9.96	11.21
1 1/2" OD x 13 Ga.	11.00	12.38
1 3/4" OD x 13 Ga.	12.51	14.09
2" OD x 13 Ga.	14.02	15.78
2 1/4" OD x 13 Ga.	15.63	17.60

2 1/2" OD x 12 Ga.	17.21	19.37
2 3/4" OD x 12 Ga.	18.85	21.22
2 3/4" OD x 12 Ga.	19.98	22.49
3" OD x 12 Ga.	20.97	23.60
4 1/2" OD x 10 Ga.	40.15	45.19
3 1/2" OD x 11 Ga.	26.47	29.79
4" OD x 10 Ga.	32.83	36.96
5" OD x 9 Ga.	50.38	56.71
6" OD x 7 Ga.	77.35	87.07

Cast Iron Water Pipe

Class B Pipe—Per Net Ton	
6-in. & over, Birm.	\$46.00-47.00
4-in., Birmingham.	49.00-50.00
4-in., Chicago	57.00-58.00
6 to 24-in., Chicago.	54.00-55.00
6-in. & over, east fdy.	50.00
Do., 4-in.	53.00
Class A Pipe \$3 over Class B	
Std. fits., Birm., base \$100.00	

Semifinished Steel

Billets and Blooms	
4 x 4-inch base; gross ton	
Pitts., Chi., Cleve., Buffalo, Young, Bham.	\$37.00
Philadelphia	42.30
Duluth	39.00

Forging Billets	
6 x 6 to 9 x 9-in. base	
Pitts., Chicago, Buffalo.	43.00
Forging, Duluth	45.00

Sheet Bars	
Pitts., Cleve., Young., Sparrows Point	37.00

Slabs	
Pitts., Chicago, Cleveland, Youngstown	37.00

Wire Rods	
Pitts., Cleve., No. 5 to 3/4-inch incl.	47.00
Do., over 3/4 to 1 1/4-inch incl.	52.00
Chicago up \$1; Worcester up \$2.	

Skelp	
Pitts., Chi., Young., Buff., Coatesville, Sparrows Pt.	2.10c

Coke

Price Per Net Ton	
Beehive Ovens	
Connellsville, fur.	\$4.40-4.60
Connellsville, fdry.	5.25-5.50
Connell, prem. fdry.	6.00-6.50
New River fdry.	6.50-6.75
Wise county fdry.	5.75-6.00
Wise county fur.	4.75-5.00

By-Product Foundry	
Newark, N. J., del.	10.85-11.30
Chi., ov., outside del.	10.25
Chicago, del.	11.00
Milwaukee, ovens.	11.00
New England, del.	12.50
St. Louis, del.	11.00-11.50
Birmingham, ovens.	7.25
Indianapolis, del.	10.50
Cincinnati, del.	10.50
Cleveland, del.	11.00
Buffalo, del.	10.50
Detroit, del.	11.10
Philadelphia, del.	10.60

Coke By-Products

Spot, gal. Producers' Plants	
Pure and 90% benzol.	16.00c
Toluol	30.00c
Solvent naphtha	30.00c
Industrial xylo.	30.00c
Per lb. f.o.b. Frankford and St. Louis	
Phenol (200 lb. drums) ..	14.75c
do. (450 lbs.)	14.00c
Eastern Plants, per lb.	
Naphthalene flakes and balls, in bbls. to jobbers	7.25c
Per ton, bulk, f.o.b. oven or port	
Sulphate of ammonia.	\$23.50

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.	Malle-able	Basic	Besse-mer
Bethlehem, Pa.	\$28.00	\$25.50	\$23.50	\$26.00
Birdsboro, Pa.	25.00	25.50	24.50	26.00
Birmingham, Ala.†	20.38	24.00	19.38	25.00
Buffalo	24.00	24.50	23.00	25.00
Chicago	24.00	24.00	23.50	24.50
Cleveland	24.00	24.00	23.50	24.50
Detroit	24.00	24.00	23.50	24.50
Duluth	24.50	24.50	23.50	25.00
Erie, Pa.	24.00	24.50	23.50	25.00
Everett, Mass.	25.75	26.25	25.25	26.75
Hamilton, O.	24.00	24.00	23.50	24.50
Neville Island, Pa.	24.00	24.00	23.50	24.50
Provo, Utah	22.00	24.00	23.50	24.50
Sharpsville, Pa.	24.00	24.00	23.50	24.50
Sparrows Point, Md.	25.00	24.00	24.50	25.00
Swedeland, Pa.	25.00	25.50	24.50	26.00
Toledo, O.	24.00	24.00	23.50	24.50
Youngstown, O.	24.00	24.00	23.50	24.50

†Subject to 38 cents deduction for 0.70 per cent phosphorus or higher.

Delivered from Basing Points:

	25.26	25.26	24.76	25.76
Akron, O., from Cleveland	25.26	25.26	24.76	25.76
Baltimore from Birmingham	25.58	25.58	24.46	25.46
Boston from Birmingham	26.37	26.37	25.87	26.87
Boston from Everett, Mass.	26.25	26.25	25.75	26.75
Boston from Buffalo	26.25	26.25	25.75	26.75
Brooklyn, N. Y., from Bethlehem	27.27	27.27	26.77	27.77
Brooklyn, N. Y., from Bmghm.	27.05	27.05	26.55	27.55
Canton, O., from Cleveland	25.26	25.26	25.76	26.76
Chicago from Birmingham	24.22	24.22	24.10	25.10
Cincinnati from Hamilton, O.	24.07	25.01	24.51	25.51
Cincinnati from Birmingham	23.69	23.69	22.69	23.69
Cleveland from Birmingham	24.12	24.12	23.62	24.62
Mansfield, O., from Toledo, O.	25.76	25.76	25.26	26.26
Milwaukee from Chicago	25.00	25.00	24.50	25.50
Muskegon, Mich., from Chicago	26.90	26.90	26.40	27.40
Toledo or Detroit	26.01	26.01	25.51	26.51
Newark, N. J., from Birmingham	26.39	26.39	25.89	26.89
Newark, N. J., from Bethlehem	25.38	25.38	24.88	25.88
Philadelphia from Birmingham	25.76	25.76	25.26	26.26
Philadelphia from Swedeland, Pa.	25.76	25.76	25.26	26.26
Pittsburgh district from Neville Island	26.25	26.25	25.75	26.75
Saginaw, Mich., from Detroit	26.25	26.25	25.75	26.75
St. Louis, northern	24.50	24.50	24.00	25.00

	No. 2 Fdry.	Malle-able	Basic	Besse-mer
St. Louis from Birmingham	24.12	25.94	23.82	26.44
St. Paul from Duluth	25.94	25.94	23.82	26.44

†Over 0.70 phos.

Low Phos.

Basing Points: Birdsboro and Steelton, Pa., and Standish, N. Y., \$28.50, Phila. base, standard and copper bearing, \$29.63.

	Gray Forge	Charcoal
Valley furnace	\$23.50	Lake Superior fur. \$27.00
Pitts. dist. fur.	23.50	do., del. Chicago 30.04
		Lyles, Tenn. 26.50

Silvery†

Jackson county, O., base: 6-6.50 per cent \$28.50; 6.51-7—\$29.00; 7-7.50—\$29.50; 7.51-8—\$30.00; 8-8.50—\$30.50; 8.51-9—\$31.00; 9-9.50—\$31.50; 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, Net Prices

	Price
Fire Clay Brick	
Super Quality	
Pa., Mo., Ky.	\$64.60
First Quality	
Pa., Ill., Md., Mo., Ky.	51.30
Alabama, Georgia	51.30
New Jersey	56.00
Second Quality	
Pa., Ill., Ky., Md., Mo.	46.55
Georgia, Alabama	41.80
New Jersey	51.00
Ohio	
First quality	43.70
Intermediate	39.90
Second quality	35.15
Malleable Bung Brick	
All bases	\$59.85
Silica Brick	
Pennsylvania	\$51.30
Joliet, E. Chicago	59.85
Birmingham, Ala.	51.30
Ladle Brick	
(Pa., O., W. Va., Mo.)	
Dry press	\$30.00
Wire cut	\$28.00

Magnesite

	Price
Imported dead-burned grains, net ton f.o.b. Chester, Pa., and Baltimore bases (bags)	\$45.00
Domestic dead-burned grains, net ton f.o.b. Chester, Pa., and Baltimore bases (bags)	43.00
Base Brick	
Net ton, f.o.b. Baltimore, Plymouth Meeting, Chester, Pa.	
Chrome brick	\$49.00
Chem. bonded chrome	49.00
Magnesite brick	69.00
Chem. bonded magnesite	59.00

Fluorspar, 85-5

Washed gravel, duty paid, tide, net ton	\$23.50
Washed gravel, f.o.b. Ill., Ky., net ton, carloads, all rail	\$20.00
Do., for barge	\$21.50

Ferroalloys

Dollars, except Ferrochrome

Ferromanganese, 78-82%, tidewater, duty pd.	\$102.50
Do., Baltimore, base	102.50
Do., del. Pittsburgh	107.29
Spiegelisen, 19-21% dom.	
Palmerton, Pa., spot	33.00
Do., New Orleans	33.00
Do., 26-28%, Palmer-ton	39.00
Ferrosilicon, 50% freight allowed, c.i.	69.50
Do., less carload	77.00
Do., 75 per cent	126-130.00
Spot, \$5 a ton higher.	
Silicomane, 2½ carbon	106.50
2% carbon 111.50; 1%, 121.50	
Ferrochrome, 66-70 chromium, 4-6 carbon, cts.	
lb. del.	10.50
Ferrotungsten, stand., lb. con. del. cars	1.80-1.85
Ferrovandium, 35 to 40% lb., cont.	2.70-2.90
Ferrotitanium, c. l., prod. plant, frt. all., net ton	142.50
Spot, carlots	145.00
Spot, ton lots	150.00
Ferrophosphorus, per ton, c. l., 17-19% Rockdale, Tenn., basis, 18%, \$3 unitage	63.50
Ferrophosphorus, electrolytic, per ton c. l., 23-26% f.o.b. Anniston, Ala., 24% \$3 unitage	80.00
Ferromolybdenum, stand. 55-65%, lb.	0.95
Molybdate, lb. cont.	0.80
†Carloads, quan. diff. apply	

Nonferrous

METAL PRICES OF THE WEEK

Spot unless otherwise specified. Cents per pound

Copper				Straits Tin, New York		Lead	Lead	Alumi-num	Antimony	Nickel
Electro, del. Conn.	Lake, del. Midwest	Casting, refinery	Spot	Futures	Lead N. Y.	East St. L.	Zinc St. L.	99%	American Spot, N. Y.	Cath-odes
July 24	14.00	14.12½	59.12½	58.37½	6.00	5.85	7.00	20.00	15.25	35.00
July 26	14.00	14.12½	59.12½	58.37½	6.00	5.85	7.00	20.00	15.25	35.00
July 27	14.00	14.12½	59.00	58.12½	6.00	5.85	7.00	20.00	15.25	35.00
July 28	14.00	14.12½	59.25	58.37½	6.00	5.85	7.00	20.00	15.37½	35.00
July 29	14.00	14.12½	59.00	58.37½	6.00	5.85	7.00	20.00	15.37½	35.00
July 30	14.00	14.12½	58.75	58.12½	6.00	5.85	7.00	20.00	15.37½	35.00
MILL PRODUCTS										
F.o.b. mill base, cents per lb. except as specified. Copper brass products based on 14.00c Conn. copper										
Sheets										
Yellow brass (high) 19.75										
Copper, hot rolled 21.87½										
Lead, cut to jobbers 9.50										
Zinc, 100-lb. base 12.00-13.00										
Tubes										
High yellow brass 22.50										
Seamless copper 22.62½										
Rods										
High yellow brass 16.25										
Copper, hot rolled 18.62½										
Anodes										
Copper, untrimmied 19.12½										
Wire										
Yellow brass (high) 20.00										
OLD METALS										
Nom. Deal, buying prices										
No. 1 Composition Red Brass										
New York 8.75-9.00										
Cleveland 9.25-9.50										
Chicago 9.25-9.50										
St. Louis 8.75-9.00										
Heavy Copper and Wire										
New York, No. 1 11.00-11.50										
Cleveland, No. 1 11.00-11.25										
*Chicago, No. 1 11.25-11.50										
St. Louis, No. 1 10.75-11.00										
Composition Brass Borings										
New York 8.00-8.25										
Light Copper										
New York 9.25-9.50										
Cleveland 9.00-9.25										
*Chicago 9.50-9.75										
*St. Louis 9.00-9.50										
Light Brass										
Cleveland 5.25-5.50										
*Chicago 6.00-6.50										
*St. Louis 5.25-5.75										
Lead										
New York 5.00										
Cleveland 4.50-4.75										
Chicago 5.00-5.12½										
St. Louis 4.50-4.75										
Zinc										
New York 3.00-3.25										
Cleveland 3.00-3.25										
*St. Louis 3.25-3.50										
Aluminum										
Borings, Cleveland 9.75-10.00										
Mixed cast, Cleve. 12.75-13.00										
Clips, soft, Cleve. 14.75-15.00										
*Mixed cast, St. L. 12.25-12.75										
SECONDARY METALS										
Brass, Ingot 85-5-5, 1cl, 14.00										
Stand. No. 12 alum. 18.50-19.00										

Warehouse Iron and Steel Prices

Cents per pound for delivery within metropolitan districts of cities specified

STEEL BARS

Baltimore	4.00c
Boston††	4.05c
Buffalo	3.10c
Chattanooga	4.21c
Chicago (j)	3.85c
Cincinnati	4.05c
Cleveland	3.75c
Detroit	3.93½c
Houston	3.10c
Los Angeles	4.30c
Milwaukee	3.96c-4.11c
New Orleans	4.20c
New York† (d)	4.12c
Pitts. (h)	3.80c
Philadelphia	4.00c
Portland	4.50c
San Francisco	4.20c
Seattle	4.45c
St. Louis	4.09c
St. Paul	4.10c-4.25c
Tulsa	3.35c

IRON BARS

Portland	3.50c
Chattanooga	4.21c
Baltimore*	3.25c
Cincinnati	4.05c
New York† (d)	3.65c
Philadelphia	4.00c
St. Louis	4.09c
Tulsa	3.35c

REINFORCING BARS

Buffalo	2.60c
Chattanooga	4.21c
Cleveland (c)	2.55c
Cincinnati	3.75c
Houston	3.25c
Los Angeles, c.l.	2.97½c
New Orleans*	3.24c
Pitts., plain (h)	2.55c
Pitts., twisted squares (h)	3.95c
San Francisco	2.97½c
Seattle	2.975c
St. Louis	3.99c
Tulsa	3.25c
Young	2.30c-2.60c

SHAPES

Baltimore	3.90c
Boston††	3.92c
Buffalo	3.35c
Chattanooga	4.11c
Chicago	3.75c
Cincinnati	3.95c
Cleveland	3.86c
Detroit	3.95c
Houston	3.10c
Los Angeles	4.30c
Milwaukee	3.86c
New Orleans	4.10c
New York† (d)	3.97c
Philadelphia	3.90c
Pittsburgh (h)	3.70c
Portland (l)	4.25c
San Francisco	4.05c
Seattle (l)	4.25c
St. Louis	3.99c
St. Paul	4.00c
Tulsa	3.60c

PLATES

Baltimore	3.90c
Boston††	3.93c
Buffalo	3.47c
Chattanooga	4.11c
Chicago	3.75c
Cincinnati	3.95c
Cleveland, ¼-in.	3.86c
and over	3.95c
Detroit	3.95c
Detroit, ⅜-in.	4.15c
Houston	3.10c
Los Angeles	4.30c
Milwaukee	3.86c
New Orleans	4.10c
New York† (d)	4.00c
Philadelphia	3.90c

Phila. floor	4.95c
Pittsburgh (h)	3.70c
Portland	4.25c
San Francisco	4.05c
Seattle	4.25c
St. Louis	3.99c
St. Paul	4.00c
Tulsa	3.60c

NO. 10 BLUE

Baltimore	3.95c
Boston (g)	4.00c
Buffalo	3.72c
Chattanooga	4.16c
Chicago	3.85c
Cincinnati	4.00c
Cleveland	3.91c
Det. 8-10 ga.	3.93½c
Houston	3.45c
Los Angeles	4.50c
Milwaukee	3.96c
New Orleans	4.35c
New York† (d)	4.07c
Portland	4.25c
Philadelphia	4.00c
Pittsburgh (h)	3.75c
San Francisco	4.30c
Seattle	4.50c
St. Louis	4.39c
St. Paul	4.10c
Tulsa	3.80c

NO. 24 BLACK

Baltimore*†	4.50c
Boston (g)	4.75c
Buffalo	3.35c
Chattanooga*	4.06c
Chicago	4.45c-5.10c
Cincinnati	4.75c
Cleveland	4.66c
Detroit	4.68½c
Los Angeles	5.05c
Milwaukee	4.56c-5.21c
New York† (d)	4.82c
Philadelphia	4.65c
Pitts.** (h)	4.75c
Portland	5.15c
Seattle	5.35c
San Francisco	5.15c
St. Louis	4.84c
St. Paul	4.75c
Tulsa	4.85c

NO. 24 GALV. SHEETS

Baltimore*†	4.70c
Buffalo	4.10c
Boston (g)	5.30c
Chattanooga*	4.76c
Chicago (h)	5.10c-5.75c
Cincinnati	5.40c
Cleveland	5.31c
Detroit	5.40c
Houston	4.50c
Los Angeles	5.75c
Milwaukee	5.21c-5.86c
New Orleans*	5.75c
New York† (d)	5.47c
Philadelphia	5.30c
Pitts.** (h)	5.40c
Portland	5.90c
San Francisco	5.85c
Seattle	5.90c
St. Louis	5.49c
St. Paul	5.40c
Tulsa	5.20c

BANDS

Baltimore	4.20c
Boston††	4.25c
Buffalo	3.52c
Chattanooga	4.41c
Cincinnati	4.25c
Cleveland	4.16c
Chicago	4.10c
Detroit, ⅜-in.	4.185c
and lighter	4.185c
Houston	4.80c
Los Angeles	4.80c
Milwaukee	4.21c
New Orleans	4.75c
New York† (d)	4.32c

Philadelphia	4.10c
Pittsburgh (h)	4.00c
Portland	5.00c
San Francisco	4.80c
Seattle	4.95c
St. Louis	4.34c
St. Paul	4.35c
Tulsa	3.55c

HOOPS

Baltimore	4.45c
Boston††	5.25c
Buffalo	3.52c
Chicago	4.10c
Cincinnati	4.25c
Detroit, No. 14 and lighter	4.185c
Los Angeles	6.55c
Milwaukee	4.21c
New York† (d)	4.32c
Philadelphia	4.35c
Pittsburgh (h)	4.50c
Portland	6.50c
San Francisco	6.50c
Seattle	6.30c
St. Louis	4.34c
St. Paul	4.35c

COLD FIN. STEEL

Baltimore (c)	4.50c
Boston*	4.65c
Buffalo (h)	3.70c
Chattanooga*	4.86c
Chicago (h)	4.30c
Cincinnati	4.50c
Cleveland (h)	4.30c
Detroit	4.30c
Los Ang. (f) (d)	6.85c
Milwaukee	4.41c
New Orleans	5.10c

New York† (d)	4.57c
Philadelphia	4.53c
Pittsburgh	4.15c
Portland (f) (d)	7.10c
San Fran. (f) (d)	6.80c
Seattle (f) (d)	7.10c
St. Louis	4.54c
St. Paul	4.77c
Tulsa	4.40c

COLD ROLLED STRIP

Boston	3.845c
Buffalo	3.39c
Chicago	3.87c
Cincinnati	3.82c
Cleveland (b)	3.60c
Detroit	3.43c
New York† (d)	3.92c
St. Louis	4.54c

TOOL STEELS

(Applying on or east of Mississippi river; west of Mississippi 1c up.)

Base	
High speed	69c
High carbon, Cr.	45c
Oil hardening	26c
Special tool	24c
Extra tool	20c
Regular tool	16c
Water hardening 12½c	
Uniform extras apply.	

BOLTS AND NUTS

(100 pounds or over)	
Discount	
Chicago (a)	.55 to 60
Cleveland	60-5-5
Detroit	70-10
Milwaukee	60 to 65

New Orleans	65
Pittsburgh	65-5

(a) Under 100 lbs., 50 off.
 (b) Plus straightening, cutting and quantity differentials; (c) Plus mill, size and quantity extras; (d) Quantity base; (e) New mill classif. (f) Rounds only; (g) 50 bundles or over; (h) Outside delivery, 10c less; (i) Under 3 in.; (j) Shapes other than rounds, flats, fllet angles, 0.15c higher.

On plates, shapes, bars, hot strip and blue annealed quantity extras and discounts as follows: Under 100 lbs., add \$1.50; 100 to 399 lbs., add 50c; 400 to 3999 lbs., base; 4000 to 9999 lbs., deduct 10c; over 10,000 lbs., deduct 15c. At Cleveland, under 400 lbs., add 50c, with \$1 minimum invoice.

†Domestic steel;
 *Plus quantity extras;
 **One to 9 bundles;
 *† 50 or more bundles;
 †New extras apply;
 ††Base 10,000 lbs., extras on less.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, July 29

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

	British gross tons U. K. ports £ s d	Continental Channel or North Sea ports, metric tons	
		Quoted in dollars at current value	**Quoted in gold pounds sterling £ s d
PIG IRON			
Foundry, 2.50-3.00 Silicon	\$29.88 6 0 0	\$30.00	3 19 0
Basic bessemer	19.55 3 18 6*	28.84	3 12 0
Hematite, Phos. .03-.05	21.79 4 7 6		
SEMIFINISHED STEEL			
Billets	\$39.22 7 17 6	\$35.04	4 7 6
Wire rods, No. 5 gage	\$3.91 10 16 6	\$2.06	6 10 0
FINISHED STEEL			
Standard rails	\$50.42 10 2 6	\$48.07	6 0 0
Merchant bars	2.44 11 0 0	2.17c to 2.25c	6 0 0 to 6 5 0
Structural shapes	2.36 10 12 6	1.94c	3 7 6
Plates, ½ in. or 5 mm.	2.57c 11 11 3	2.58c	7 2 6
Sheets, black, 24 gage or 0.5 mm.	3.33c 15 0 0	3.16c	8 15 0
Sheets, gal., 24 gage, corr.	4.16c 18 15 0	4.16c	11 10 0
Bands and strips	3.05c 13 15 0	2.35c	6 10 0
Plain wire, base	3.22c 14 10 0	2.53c	7 0 0
Galvanized wire, base	3.77c 17 0 0	3.17c	8 15 0
Wire nails, base	3.10c 14 0 0	2.90c	8 0 0
Tin plate, box 108 lbs.	\$ 6.22 1 5 0		

British ferromanganese \$102.50 delivered Atlantic seaboard, duty-paid.

Domestic Prices at Works or Furnace—Last Reported

	£ s d	French Francs	Belgian Francs	Reich Marks
Fdy. pig iron, Si. 2.5	\$25.15 5 1 0(a)	\$17.32 462	\$27.80 825	\$25.38 63
Basic bessemer pig iron	24.90 5 0 0(a)	10.31 275	14.66 435	27.99 (b) 69.50
Furnace coke	8.72 1 15 0	5.92 158	6.23 185	7.65 19
Billets	39.22 7 17 6	24.96 655	32.25 960	38.87 96.50
Standard rails	2.25c 10 2 6	1.66c 975	1.80c 1,200	2.38c 132
Merchant bars	2.54c 11 9 0	1.50c 885	1.65c 1,100	1.98c 110
Structural shapes	2.45c 11 0 6	1.46c 860	1.65c 1,100	1.93c 107
Plates, ½ in. or 5 mm.	2.60c 11 14 3	1.88c 1,105	2.06c 1,375	2.29c 127
Sheets, black	3.50c 15 15 0‡	2.47c 1,450‡	2.36c 1,575‡	2.59c 144
Sheets, galv., corr., 24 ga. or 0.5 mm.	4.33c 19 10 0	3.66c 2,150	2.85c 1,900	6.66c 370
Plain wire	3.22c 14 10 0	2.31c 1,360	2.48c 1,650	3.11c 173
Bands and strips	2.71c 12 4 0	1.70c 1,000	2.33c 1,550	2.29c 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 64.50 per cent over paper sterling.

Iron and Steel Scrap Prices

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

HEAVY MELTING STEEL

Birmingham†, No. 1	15.00-16.00
Birmingham†, No. 2	14.00-15.00
Bos. dock No. 1, exp.	17.00
N. Eng. del. No. 1.	15.25-15.75
Buffalo, No. 1	19.50-20.00
Buffalo, No. 2	17.50-18.00
Chicago, No. 1	19.50-20.00
Cleveland, No. 1	19.00-19.50
Cleveland, No. 2	17.50-18.00
Detroit, No. 1	16.00-16.50
Eastern Pa., No. 1	19.50-20.00
Eastern Pa., No. 2	17.00-17.50
Federal, Ill.	15.00-15.50
Granite City, R.R.	16.50-17.00
Granite City, No. 2	15.00-15.50
New York, No. 1	†16.50-17.00
N.Y. dock, No. 1 exp.	15.50-16.00
Pitts., No. 1 (R. R.)	22.00-22.50
Pitts., No. 1 (dlr.)	21.00-21.50
Pittsburgh, No. 2	18.50-19.00
St. Louis, R.R.	16.25-16.75
St. Louis, No. 2	15.00-15.50
Toronto, dlrs. No. 1	11.00-12.00
Toronto, No. 2	10.00-11.00
Valleys, No. 1	20.00-20.50

COMPRESSED SHEETS

Buffalo, dealers	17.50-18.00
Chicago, factory	18.00-18.50
Chicago, dealer	17.50-18.00
Cleveland	18.50-19.00
Detroit	18.00-18.50
E. Pa., new mat.	19.50-20.00
E. Pa., old mat.	15.50
Pittsburgh	21.00-21.50
St. Louis	15.00-15.50
Valleys	19.50-20.00

HUNDLED SHEETS

Buffalo	13.50-14.00
Cincinnati, del.	14.00-14.50
Cleveland	14.00-14.50
Pittsburgh	18.50-19.00
St. Louis	14.00-14.50
Toronto, dealers	8.00

SHEET CLIPPINGS, LOOSE

Chicago	13.50-14.00
Cincinnati	13.00-13.50
Detroit	12.75-13.25
St. Louis	12.50-13.00

STEEL RAILS, SHORT

Birmingham	17.00-18.00
Buffalo	23.50-24.50
Chicago (3 ft.)	21.50-22.00
Chicago (2 ft.)	23.00-23.50
Cincinnati, del.	22.25-22.75
Detroit	21.50-22.00
Pitts., 3 ft. and less	26.00-26.50
St. Louis, 2 ft. & less	19.50-20.00

STEEL RAILS, SCRAP

Boston district	†14.50-15.00
Buffalo	19.50-20.00
Chicago	19.50-20.00
Cleveland	21.00-21.50
Pittsburgh	21.50-22.00
St. Louis	18.00-18.50

STOVE PLATE

Birmingham	10.00-10.50
Boston district	†11.50-11.75
Buffalo	15.00-16.00
Chicago	11.00-11.50
Cincinnati, dealers	11.00-11.50
Detroit, net	12.25-12.75
Eastern Pa.	16.00-16.50
New York fdry.	†12.00-12.50
St. Louis	12.25-12.75
Toronto, deal'rs, net	9.50-10.00

SPRINGS

Buffalo	22.00-22.50
Chicago, coil	24.50-25.00
Chicago, leaf	22.50-23.00
Eastern Pa.	24.00-24.50
Pittsburgh	26.00-26.50
St. Louis	20.50-21.00

ANGLE BARS—STEEL

Chicago	21.50-22.00
St. Louis	19.00-19.50

RAILROAD SPECIALTIES

Chicago	22.00-22.50
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LOW PHOSPHORUS

Buffalo, billet and bloom crops	23.00-23.50
Cleveland, billet, bloom crops	24.50-25.00
Eastern Pa., crops	24.00-24.50
Pittsburgh, billet, bloom crops	26.00-26.50
Pittsburgh, sheet bar crops	25.00-25.50

FROGS, SWITCHES

Chicago	19.50-20.00
St. Louis, cut	18.50-19.00

SHOVELING STEEL

Federal, Ill.	15.00-15.50
Granite City, Ill.	15.00-15.50
Toronto, dealers	9.00-9.50

RAILROAD WROUGHT

Birmingham	13.50-14.00
Boston district	†10.00-10.25
Buffalo, No. 1	17.50-18.00
Buffalo, No. 2	19.50-20.00
Chicago, No. 1 net.	16.00-16.50
Cincinnati, No. 2	16.50-17.00
Eastern Pa., No. 1	19.50-20.00
St. Louis, No. 1	15.00-15.50
St. Louis, No. 2	16.50-17.00
Toronto, No. 1 dlr.	15.00

SPECIFICATION PIPE

Eastern Pa.	16.50-17.00
New York	†12.50-13.00

RUSHING

Buffalo, No. 1	17.50-18.00
Chicago, No. 1	17.50-18.00
Cinclin., No. 1, deal.	15.00-15.50
Cincinnati, No. 2	9.50-10.00
Cleveland, No. 2	13.50-14.00
Detroit, No. 1 new.	16.00-16.50
Valleys, new, No. 1	18.50-19.00
Toronto, dealers	9.00

MACHINE TURNINGS

Birmingham	6.00-7.00
Buffalo	11.50-12.00
Chicago	10.50-11.00
Cincinnati, dealers	11.00-11.50
Cleveland	13.00-13.50
Detroit	12.50-13.00
Eastern Pa.	13.50-14.00
New York	†9.50-9.75
Pittsburgh	14.75-15.25
St. Louis	8.50-9.00
Toronto, dealers	8.00-8.50
Valleys	15.50-16.00

BORINGS AND TURNINGS

<i>For Blast Furnace Use</i>	
Boston district	†8.30-9.00

Buffalo	12.75-13.25
Cincinnati, dealers	10.50-11.00
Cleveland	13.50-14.00
Detroit	13.50-14.00
Eastern Pa.	13.00-13.50
New York	†9.50-9.75
Pittsburgh	15.00-15.50
Toronto, dealers	8.00-8.50

CAST IRON BORINGS

Birmingham	8.00-8.50
Boston dist. chem.	†10.00-10.25
Bos. dist. for mills	†9.25-9.75
Buffalo	12.75-13.25
Chicago	12.00-12.50
Cincinnati, dealers	10.50-11.00
Cleveland	13.50-14.00
Detroit	13.50-14.00
E. Pa., chemical	14.50-15.00
New York	†9.50-9.75
St. Louis	8.00-8.50
Toronto, dealers	9.00

PIPE AND FLUES

Cincinnati, dealers	12.50-13.00
Chicago, net	13.50-14.00

RAILROAD GRATE BARS

Buffalo	14.00-14.50
Chicago, net	12.50-13.00
Cincinnati	11.50-12.00
Eastern Pa.	15.50-16.00
New York	†12.00-12.50
St. Louis	12.00-12.50

FORGE FLASHINGS

Boston district	†12.00-12.25
Buffalo	17.50-18.00
Cleveland	17.50-18.00
Detroit	15.00-15.50
Pittsburgh	17.75-18.25

FORGE SCRAP

Boston district	†9.50-10.00
Chicago, heavy	21.50-22.00
Eastern Pa.	16.00-16.50

ARCH BARS, TRANSOMS

St. Louis	19.00-19.50
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AXLE TURNINGS

Boston district	†11.00-11.50
Buffalo	16.00-16.50
Chicago, elec. fur.	17.50-18.00
Eastern Pa.	17.00-17.50
St. Louis	13.50-14.00
Toronto	9.50

STEEL CAR AXLES

Birmingham	19.00-20.00
Buffalo	22.50-23.00
Boston district	†20.00
Chicago, net	25.50-26.00
Eastern Pa.	25.00-26.00
St. Louis	23.50-24.00

SHAFTING

Boston district	†18.75-19.00
New York	†19.00-19.50
Eastern Pa.	24.00-24.50
St. Louis	17.50-18.00

CAR WHEELS

Birmingham	18.00-19.00
Boston dist., iron	†15.00-15.25
Buffalo, iron	19.00-19.50
Buffalo, steel	23.00-23.50
Chicago, iron	20.50-21.00
Chicago, rolled steel	22.00-22.50

No. Afr, low phos.	17.50
Swedish low phos.	nominal
Spanish No. Africa basic, 50 to 60%	*16.00
Tungsten, Nov-Dec. sh. ton, unit, duty pd. \$22.00 to \$23.00; spot non.	
N. F., fdy., 55%	7.00
Chrome ore, 48% gross ton, c.i.f.	\$25.50-26.50
*Nominal asking price for spot.	

Cincinnati, iron	19.00-19.50
Eastern Pa., iron	19.50-20.00
Eastern Pa., steel	24.00-24.50
Pittsburgh, iron	21.00-21.50
Pittsburgh, steel	25.50-26.00
St. Louis, iron	19.00-19.50
St. Louis, steel	20.00-20.50

NO. 1 CAST SCRAP

Birmingham	15.50-16.00
Boston, No. 1 mach.	†15.00-15.50
N. Eng. del. No. 2.	17.00
N. Eng. del. textile.	18.50
Buffalo, cupola	18.00-18.50
Buffalo, mach.	19.00-20.00
Chicago, agri. net.	14.00-14.50
Chicago, auto	15.00-15.50
Chicago, mach. net.	16.50-17.00
Chicago, rail'd net	15.00-15.50
Cinclin., mach. cup.	16.00-16.50
Cleveland, mach.	19.00-19.50
Eastern Pa., cupola	19.50-20.00
E. Pa., mixed yard.	18.00
Pittsburgh, cupola	20.00-20.50
San Francisco, del.	13.50-14.00
Seattle	12.00-13.00
St. Louis, No. 1	14.50-15.00
St. L., No. 1, mach.	15.00-15.50
Toronto, No. 1, mach., net	16.00-17.00

HEAVY CAST

Boston dist. break.	†14.75-15.00
N. Eng. del.	15.00-15.25
Buffalo, break.	15.00-15.50
Cleveland, break.	13.50-14.00
Detroit, break.	14.50-15.00
Detroit, auto net.	16.00-16.50
Eastern Pa.	19.00-19.50
New York, break.	†15.50-16.00
Pittsburgh	17.00-17.50

MALLEABLE

Birmingham, R. R.	12.50-13.50
New England, del.	20.00
Buffalo	20.00-21.00
Chicago, R. R.	21.50-22.00
Cinclin., agri. del.	17.00-17.50
Cleveland, rail	20.50-21.00
Detroit, auto	16.50-17.00
Eastern Pa., R. R.	19.00-20.00
Pittsburgh, rail	20.75-21.25
St. Louis, R. R.	19.50-20.00

RAILS FOR ROLLING

5 feet and over

Birmingham	19.00-20.00
Boston	†17.50-18.00
Buffalo	19.50-20.00
Chicago	21.50-22.00
Eastern Pa., R. R.	21.00-21.50
New York	†17.00-17.50
St. Louis	19.00-19.50

LOCOMOTIVE TIRES

Chicago (cut)	22.50-23.00
St. Louis, No. 1	19.50-20.00

LOW PHOS. PUNCHINGS

Buffalo	22.50-23.00
Chicago	22.00-22.50
Eastern Pa.	24.00-24.50
Pittsburgh (heavy)	23.00-23.50
Pittsburgh (light)	22.50-23.00

Iron Ore

Lake Superior Ore	
Gross ton, 51 1/4%	
Lower Lake Ports	
Old range bessemer	\$5.25
Mesabi nonbess.	4.95
High phosphorus	4.85
Mesabi bessemer	5.10
Old range nonbess.	5.10

Eastern Local Ore	
<i>Cents, unit, del. E. Pa.</i>	
Foundry and basic	
56.63% con.	9.00-10.00
Cop.-free low phos.	
58-60%	nominal
Foreign Ore	
<i>Cents per unit, f.a.s. Atlantic</i>	
Foreign manganiferous ore, 45.55%	
Iron, 6-10% man.	*17.00

Manganese Ore

(Nominal)

Prices not including duty, cents per unit cargo lots.	
Caucasian, 50-52%	
..... non.	52.00 to 53.00
So. African, 50-52%	
..... non.	52.00 to 53.00
Indian, 50-52%	Nominal

Sheets

Sheet Prices, Page 78

Pittsburgh — Excepting cold-reduced sheets, aggregate specifications in this district are larger by a few hundred tons than in other recent weekly periods. Buying of cold-reduced has been off appreciably lately because of shortened automotive operations, and cold-reduced delivery promises are now around six to seven weeks, or slightly earlier in emergency cases. In some quarters here it is believed the start of production on 1938 models is farther in the future than estimated at the start of this month and that the resumption may not be reflected here to any great extent until late August or early September. Order backlogs have prevented any decline in sheet mill activity. Tennessee Coal, Iron & Railroad Co. has made an announcement concerning galvanized roofing sheets which may pave the way for action by northern producers in an attempt to harmonize northern and southern mill policies. This involves changes in allowances to jobbers. It is generally assumed galvanized base prices will be reaffirmed.

Cleveland—At least one mill has recently extended the current mill price on galvanized sheets of 3.80 base Pittsburgh, into fourth quarter. However, there have been some changes in extras and functional allowances, the most important of which is the cancellation of the \$2 per ton jobber's allowance on galvanized flat sheets. Since approximately 50 per cent of the galvanized sheets produced is estimated to be distributed through jobbing channels this recent development is of considerable importance.

Chicago—Deliveries on hot-rolled sheets extend into October, but lighter demand for cold-rolled material permits shipment of this grade within a few weeks. Only small orders for 1938 model automobiles have been received and production exceeds new business, but consumption is heavy for this period among most users. Mill schedules continue full.

Boston—Except in spots new sheet buying is slow, consumption having dropped moderately. Deliveries are improved on some finishes and pressure for deliveries has eased, notably on finishes on which prices have been reaffirmed for fourth quarter.

New York—Demand for sheets has been stimulated recently by opening of books for fourth quarter by some independent producers,

who had not previously been following the general policy of accepting orders for fourth quarter on the basis of prices ruling at time of delivery. However, new business continues to reflect seasonal dullness, with sellers devoting much of their efforts to the handling of specifications against contracts.

Philadelphia—Further talk is heard regarding establishment of a Philadelphia or Eastern Pennsylvania base on sheets, as this sec-

tion is becoming an increasingly important consuming center with the shift of automotive industry eastward. Eastern body makers are expected to get a larger share of 1938 work. A large eastern body maker is expected to place a large tonnage of cold-rolled sheets within the next two weeks. Miscellaneous sheet demand is slower and deliveries are better. Most grades can be obtained in three to five weeks.

Buffalo—Operations in strip mills continued at their capacity through-

The Aristocrat of Bearings



As with all fine things, there can be no greater tribute to the real character of Hoover Ball and Tapered Roller Bearings than a roster of their discriminating buyers. Built too well to be cheap enough for ordinary use, Hoover Bearings are definitely a mark of distinction for the machines they serve.

HOOVER *Ball and Bearing Company*
ANN ARBOR • MICHIGAN

out July, contrary to forecasts made earlier in the year. While backlogs are now somewhat reduced it is practically certain these mills will operate at 85 percent of capacity or better in August.

Cincinnati — District sheet mills, reaffirming prices for fourth quarter, found no reaction in buying. Operations continue near capacity, causing backlogs to be reduced. Shipments for automobiles reflect the drop in assemblies but there are several bright spots in other demand.

St. Louis—Stove and implement manufacturers and railroad equipment builders continue to account for heavy tonnages of sheets, but otherwise there has been a decided tapering in orders. Pressure for delivery has also relaxed, particularly in the case of miscellaneous users.

Birmingham—Demand for sheets continues strong with particular influence being exerted because of sustained requirements of drum manufacturers. Approach of the

roofing season also is having its effect with the result that practically no inroads are being made into tonnage backlogs.

Strip

Strip Prices, Page 79

Pittsburgh—The strip steel market remains quiet, new business showing little change. Specifications from the automotive industry have been negligible. Prices are steady. On the national scale, hot strip mills are operating around 66 percent; cold strip around 61.

Cleveland—Strip mills remain active despite a rather marked recession in backlogs over the last few weeks. However, it is a serious question of how long this rate can be maintained if specifications continue as light as they have been since the first of the month. Little improvement is looked for until the automotive industry starts on new models.

Chicago—Deliveries are slow to improve despite lighter demand. Operations are seasonally brisk, but an increase in backlogs awaits resumption of more active automotive buying. Announcement of fourth quarter prices has been without effect on forward purchasing.

Boston—New buying and specifications for narrow cold strip are more in line with consumption, which is slightly reduced, but widely diversified. Consumers in some instances are dipping into stocks more freely, the result of improved deliveries and reaffirmed prices. This is expected to level the flow of incoming volume for some weeks.

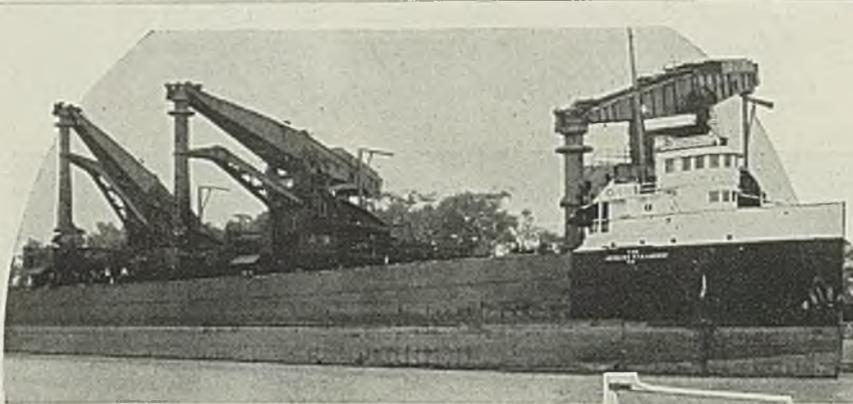
New York—Spotty improvement in buying of narrow cold-rolled strip includes more orders for September delivery, with some customers about to cover on part of fourth quarter needs. This indicates consumer stocks are well cleared. Deliveries are close to normal.

Philadelphia—Specifications and buying of steel strip are lagging, with the radio industry providing one of the bright spots. One stove-maker is still down, due to a strike.

Semifinished

Semifinished Prices, Page 79

Only a slight reduction in semifinished operations was noticeable as July closed, although in the early part of the month activity was hampered by vacation schedules. Necessity for building up stocks and completing shipments against



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STOCKING AND REHANDLING BRIDGES
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CLEVELAND, OHIO



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previous orders kept producers busy. Principal pressure for material has been coming from tin plate mills, although requirements of pipe mills remain good. Wire rods continue in fair demand. Bolt and nut makers are more active than expected.

Plates

Plate Prices, Page 78

Pittsburgh—Plate backlogs have been lowered in this district, due to the recession in new business, but most producers can count upon a full month's uninterrupted production on previous orders. Demand from the railroad equipment field is light. Tank fabricators continue active, however, and miscellaneous repair work is well maintained, due to the seasonal slackening which permits such work to proceed better than in other periods of the year.

Cleveland—Plate mills remain at practical capacity, with some headway being made against backlogs. Most producers can now make deliveries within 10 to 12 weeks, although in some instances sooner if a particularly attractive tonnage is offered. New tonnage is limited to miscellaneous requirements for small structural projects, tank and boiler needs.

Chicago—New plate business is restricted by quiet in railroad equipment orders. Good demand continues from tank fabricators and miscellaneous outlets remain active. Plate mills are well booked for the balance of this quarter, deliveries on some sizes being extended into October. Inland Steel Co. has reduced floor plates \$6 a ton to 3.55c, Chicago, effective immediately and for third and fourth quarter shipment.

Boston—Plate demand continues to taper, miscellaneous buying and shipyard specifications accounting for most activity. Consumers, notably larger users, have considerable undelivered tonnage on order, and are reluctant to place additional business until this is delivered. Pressure for deliveries continues with mills still showing considerable range in ability to make shipments.

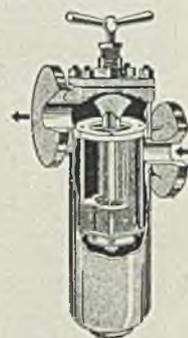
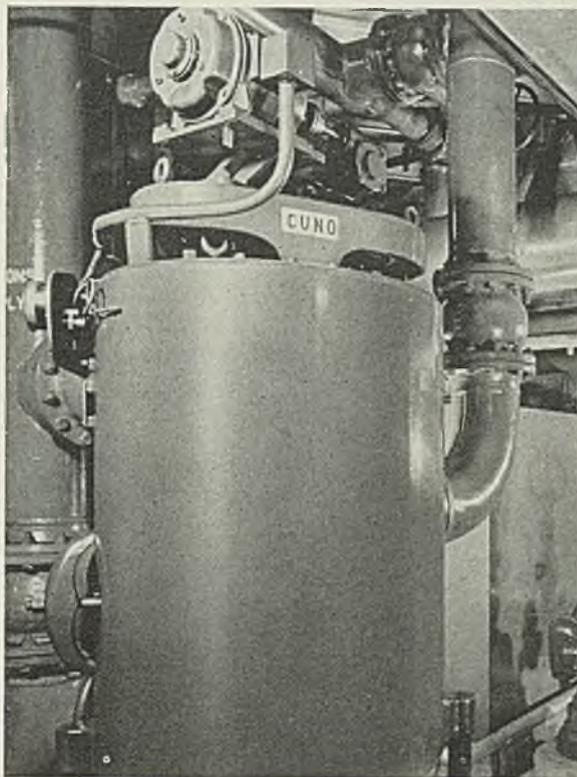
New York—Plate buying still lags, although better specifications against contracts are coming out from local shipyards, which are getting back slowly to normal operations following a period of widespread suspension due to strikes. Deliveries show steady improvement with some eastern

mills able to deliver a good range of specifications within two to four weeks. Due to labor disturbances in local shipyards in recent weeks no bids were submitted on the \$1,000,000 fire boat for New York on which bids were opened July 28.

New bids will be asked soon on a steamer for the United States Lines. Specifications are likely to be issued within the coming week with bids Sept. 15. This craft will require about 16,000 tons of hull

steel. Previous bids have been rejected several times.

Philadelphia—Plate buying has dwindled further with maximum deliveries now eight weeks and some interests can make shipment in two weeks or better. Fall prospects are good though little tonnage is expected from railroads until late fourth quarter. Present carbuilding and repair programs have been delayed and may run into next year. Shipbuilders are reported figuring



Schematic section of a typical CUNO FILTER, showing direction of flow. Your substance enters the filter case and passes under gravity, pressure or suction head through the closely spaced filtering discs which catch the suspended solids. Then, rotation of the entire element, either manual or mechanical, against the stationary cleaning blades, combs out the filter and drops the unwanted substance to the ample sump below. The filtered and cleaned substance rises through the interior of the cartridges and passes out through the outlet indicated.

CLEAN Lubricating Oil Keeps the Plate Mill *Rolling Along!*

Here, as installed by DeLaval on the pressure lubricating system of a 100" semi-continuous sheared plate mill, a rugged CUNO Auto-Klean FILTER steadily filters lubricating oil at 460 GPM.

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on additional tankers. A navy plate tonnage is pending but some producers are unwilling to bid because of the extended period of delivery.

Birmingham—Mills have a heavy backlog on plates and continue capacity operations to fill sustained demand caused by numerous miscellaneous jobs, despite the absence of large single orders.

Seattle—No large tonnages are up for figures but prospective expansion

in the pulp industry will call for considerable quantities of plates in the near future. Meanwhile, fabricators are booking small jobs, which are reasonably numerous. Commercial Boiler Works and Hydraulic Supply Co., Seattle, are furnishing materials and rebuilding a flume and exciter line for Puget Sound Power & Light Co. at Electron, Wash. U. S. engineer, Bonneville, Idaho, has called bids Aug. 20 for lining drainage tunnels, involving

an unstated tonnage of plates for 30 and 36-inch outlet pipe.

Plate Contracts Placed

255 tons, 2,000,000-gallon tank, Belleville, Ill., to Hammond Iron Works, Warren, Pa.

Plate Contracts Pending

200 tons, two derrick barges, 100 tons each, for U. S. engineers' office, New Orleans; bids Aug. 23.

Bars

Bar Prices, Page 78

Pittsburgh—July was the low point in bar bookings. While a continuance of this trend probably will be noted in the early part of August, the expected gradual improvement is likely to make this month somewhat better from the standpoint of new business.

Cleveland—Requirements for commercial and cold-drawn alloy steel bars continue to show the effects of the seasonal decline in the automotive industry, as most parts-makers have curtailed production. However, consumers serving the agricultural trade offer much encouragement to an otherwise dull market. Most mills are able to make deliveries in two or three weeks on standard carbon bars.

Chicago—Steel bar sales are fairly steady and only moderately behind shipments. Automotive demand is quiet, only a few small lots having been placed for 1938 model parts. Miscellaneous buying is well sustained, and farm equipment builders continue to specify freely. Bar deliveries commonly average about 30 days.

Boston—Commercial steel bar buying is sluggish, consumers' specifications falling to a low point, with some slowing in operations. Alloy and forging bars are still relatively more active than other grades, but except for navy yard and government shop requirements, these are also slower.

New York—Commercial steel bar deliveries show continued improvement with deliveries of a week and two weeks offered by some mills on a large range of specifications. New business is negligible, with backlogs of many mills melting rapidly.

Philadelphia—Merchant steel bar demand is slackening seasonally, although requirements of miscellaneous users still hold up well. Little new tonnage is current from railroads and jobbers are well stocked.

Birmingham—A steady backlog is



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When a salesman calls on a customer in China it is good business to talk about everything except the matter in hand.

But there's no time wasted when an A-P engineer is telling you about Jewel Abrasives . . . there are too many good points to talk about.

"Masterpak" . . . an exclusive Jewel package development . . . actually protects coated abrasives in transit . . . brings them to the customer factory new.

And Abrasive Products, Inc. stands back of every order for Jewel Abrasives with a technical advisory service, based on more than twenty-five years' experience . . . with twenty-four hour action on every order and a line that offers an abrasive for every need. Abrasive Products, Inc., South Braintree, Mass.

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"JEWEL GARNET" — Natural garnet, prepared under our exclusive process which preserves the grains' natural cutting edges and intensifies their sharpness. Ideal for general woodworking.

"NEW PROCESS" — Aluminum oxide abrasive paper, cloth and combination for production woodworking, where rapid cutting, smooth finish and performance at high speed are paramount.

"JEWEL EMERY" — A n emery cloth for metal polishing where a very hard abrasive like "Jewelox" is not required.

"JEWEL FLINT" — Made of the best obtainable grade of flint quartz. Supplied in reams of 9" x 11" sheets.

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being built up in bars, due largely to demand from plow manufacturers.

Pipe

Pipe Prices, Page 79

Pittsburgh—Seamless tubing backlogs of six to seven weeks are common with producers in this district and aggregate backlogs are estimated at around four weeks. Jobbers' and mill stocks of standard pipe are large and quick deliveries are obtainable. Demand for oil country goods remains satisfactory, considering all conditions. Prices are steady.

Cleveland—Requirements for standard steel pipe out of jobbers' stocks are limited to small industrial expansion and repairs. However, Industrial Rayon Co. will take bids Aug. 5 for 400 linear feet of 48-inch by 1½-inch steel pipe, for its plant at Painesville, O. Bids on 140 tons of cast pipe for the same project are expected soon. J. B. Clow & Son Co., Cleveland, recently was awarded 100 tons for a sewage disposal project at Barberton, O.

Chicago—Cast pipe demand continues almost entirely of small lots. The volume of orders and inquiries has shown little change and the market lacks the activity prevalent in some lines of building work.

Boston—Cast pipe buying is largely for fill-in lots. Shipments against blanket contracts are steady, but not heavy. The district foundry has booked close to 200 tons of 6 and 8-inch, for Simsbury, Conn. Following a well sustained demand for merchant steel pipe from jobbers, resellers in some instances are ordering new supplies in moderate volume. Wrought steel pipe moves slowly.

New York—Resellers of steel pipe, due to heavy protective buying this spring, are well stocked and in some cases too well stocked, with a result that resale prices are less settled than at any time this year, in the opinion of some trade leaders. Demand for commercial pipe is at a rather low ebb, with the peak of the building season passed.

Inquiry for cast pipe includes 3700 tons of cement-lined, for New York city, closing this week, material being for yard stocks. Another large inquiry is expected out for bids shortly. Buying is light with small fill-in demands accounting for most activity.

Birmingham—Inquiries and orders for cast iron pipe have been noticeably light. Plants are operat-

ing at about 50 per cent, and American Cast Iron Pipe Co., remains on a four-day week.

Cast Pipe Placed

300 tons, Safford, Ariz., to United States Pipe & Foundry Co., Burlington, N. J.

Tin Plate

Tin Plate Prices, Page 78

Pittsburgh—With demand for cans holding at its peak, tin plate producers remain under heavy pres-

sure for shipments. Operations are around 100 per cent. It is now generally believed 50,000,000 to 55,000,000 base boxes will be turned out this year, barring unforeseen developments. While around four months remain before announcement of 1938 contract prices, the \$5.35, Pittsburgh, figure having been reaffirmed for fourth quarter shipments, the relationship of production costs and selling prices continues to be a lively topic. The \$5.35 price, placed in effect in April, has been largely nominal. Contracts

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and you write your OWN **GUARANTEE of 100% SATISFACTION**

Warehouse stocks carried by nationally known distributors.

WYCKOFF DRAWN STEEL CO.
General Offices: First National Bank Building
Pittsburgh, Pa.
Mills at Ambridge, Pa. and Chicago, Ill.
Manufacturers of Carbon and Alloy Steels
Turned and Polished Shafting, Turned and Ground
Shafting, Wide Flats up to 12" x 2"

at \$4.85 had made it impossible for producers to receive much benefit until after Sept. 30 of this year. Meanwhile, sheet bars, tin, palm oil and other materials had advanced and two wage increases had been granted, cutting heavily into profits. Because of competition with other containers, tin plate makers are faced with a difficult problem.

New York—Premiums are again being offered for tin plate for export. However, these offerings apply generally for nearby shipment and American producers being solidly

booked ahead for some weeks are not in position to take advantage. Some tonnage for export is being booked for delivery late this year and the domestic parity is generally done.

Cold-Finished

Cold Finished Prices, Page 79

Pittsburgh — Cold-finished producers are in about the same position as last week, with new business light, due to seasonal condi-

tions and recession in automobile production. July shipments were comparable to June but bookings were down sharply, the decline being around 40 per cent in the case of some producers. Partsmakers' specifications were well represented in incoming business in July.

Transportation

Truck Material Prices, Page 79

Car inquiry is featured by the first sizable list this month, 500 hopper cars for Cambria & Indiana and 100 hopper cars and 500 to 1000 box cars for the Texas & Pacific.

Despite the fact that recent bids on 100 subway cars for the New York board of transportation were \$1575 per car higher than the lowest figure submitted last March on 150 subway cars, early award is expected to be made to the American Car & Foundry Co., New York, and the Pullman-Standard Car Mfg. Co., Chicago, which were low on a joint bid at \$41,950 a car.

Upon the ultimate disposal of the train limitation bill, which recently passed the senate and is designed to reduce the length of freight trains, hinges the placing of substantial locomotive business in coming months, locomotive builders declare. Shorter trains (the limit for loaded trains is 70 cars) will not only eliminate the use of many high-powered locomotives now in operation but also naturally remove the necessity for the purchase of further equipment of this type. Hence, a number of lists under tentative consideration will not develop should this bill become law.

Moreover, increased cost to the railroads in labor expense and in general efficiency, it is claimed, would prove to be a real burden to the carriers, making them more hesitant in the purchase of equipment generally, cars as well as locomotives.

Rail Orders Placed

1500 tons to Bethlehem Steel Co., Bethlehem, Pa.; 3700 tons to Carnegie-Illinois Steel Co., Chicago; 1300 tons to Inland Steel Co., Chicago.

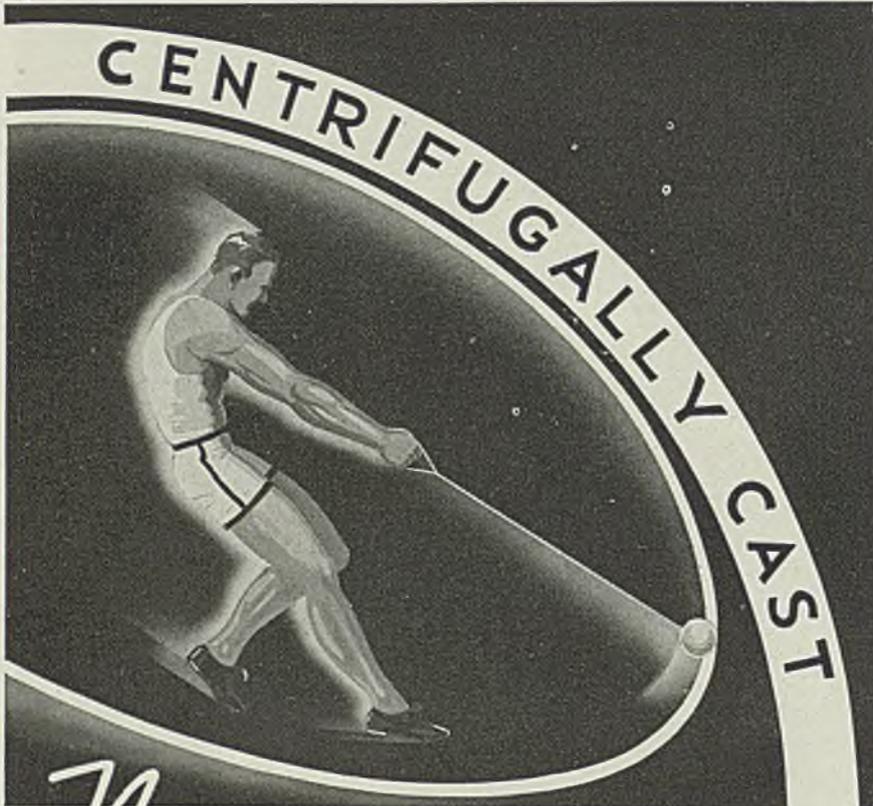
Rail Orders Pending

Missouri-Kansas-Texas, 1250 tons 112-pound rails.

Car Orders Pending

Cambria & Indiana, 500 hopper cars, bids asked.

Illinois Central, 500 hoppers, bids asked. New York municipal board of transportation, 100 subway cars, American Car & Foundry Co., New York, and Pullman-Standard Car Mfg. Co., Chicago.



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—or she *should* be. Employing the centrifugal force of nature, putting it to work in our foundries, is our method of producing a better casting of Bronze Alloy, Monel Metal, Nickel, Iron, or Semi-Steel.

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**SHENANGO-PENN
MOLD COMPANY**

Plant, Dover, Ohio

Executive Offices: Oliver Bldg., Pittsburgh

low on a joint bid, at \$41,950 a car. Peoria & Pekin Union, 25 hoppers, bids asked.
Soo Line, 100 box cars; bids asked.
Texas & Pacific, 100 hopper cars and 500 to 1000 box cars, bids asked.

Wire

Wire Prices, Page 79

Pittsburgh — Bright annealed wire specifications are ahead of last month as a result of automotive business, according to sellers here. Merchants' products continue slow. Export inquiry is scattered. With prices reaffirmed for fourth quarter, it is believed by some that quotations on nails and barbed wire still could be in better adjustment with operating costs.

Cleveland—Specifications for wire and wire products continue to decline seasonally. This is particularly true in manufacturing wire, which follows the trend in automotive production to a considerable degree. Merchant wire products have to-date resisted seasonal influences to some extent, due to the bolstering effect from agricultural sources.

Chicago — New business in wire and wire products has not turned definitely upward, but such a trend is looked for soon. Producers have reduced backlogs sufficiently to give relatively prompt delivery, though production still is fairly heavy for this period. Better automotive demand is in early prospect.

Boston — Wire buying has improved slightly, but spottily, demand for manufacturers' wire being about maintained. Prices are firm. Finishing mill operations continue high, but not at the peak of several weeks ago. Backlogs are lower, and shipments, in tonnage, are off slightly.

Birmingham—A distinct growth in purchases of wire products is reported. Stocks of jobbers and dealers, while still in good shape, are beginning to reflect the approaching fall demand. While there is no considerable backlog of wire products, mills are taking advantage of the situation to build up warehouse stocks.

Metallurgical Coke

Coke Prices, Page 79

Activity in the Connellsville, Pa., beehive coke regions remaining light without much change from the previous week, operators have now begun to appraise prospects for fourth quarter, and it is generally believed that a decided recovery will be felt. Around 200 ovens went in at Griffin and Thompson in July

with resumption of a blast furnace. The first 1000 men entered the pits of the Buckeye mine of Youngstown Sheet & Tube Co. at Nema-colin, Wednesday. The strike against Bethlehem and Youngstown Sheet & Tube was called off July 24. Beehive coke production for the calendar year including the week ending July 17, was estimated by the bureau of mines at 1,982,100 net tons, compared to 720,100 tons in the corresponding period of 1936 and 3,734,800 tons in the comparable period of 1929.

Shapes

Structural Shape Prices, Page 78

New York—Except for a few outstanding projects taking large tonnages, approximating 25,000 tons, structural steel inquiry is light and awards substantially lower. Demand for steel piling, however, is heavier, and more small state bridges are active. Slightly under six weeks delivery is being done by most east-



It is not unusual to hear our customers say that Cold Rolled Precision Strip Steel gives them a larger number of parts per hundred pounds of metal.

The explanation is not difficult to find. This steel is true to gauge across the complete width of the strip. Uniform gauge means maximum square feet of surface per hundred pounds and obviously maximum units of production.

Cold Rolled Precision Strip Steel is also true to specified temper, with straight, smooth edges and a bright finish, free from imperfections. Furnished in sizes as light as .001" in any analysis and temper you require.

The Cold Metal Process Co.

Youngstown, Ohio



ern mills on plain material.

Shipments of 140,125 tons of fabricated structural steel during June were slightly larger than May, and new orders of 169,792 tons far exceeded the average this year, according to American Institute of Steel Construction. Shipments for first half were 54.8 per cent of the average annual volume during 1928-31. Orders booked during first half were 64.8 per cent. Totals in first half were: Bookings, 909,313 tons, shipments 769,560 tons, compared with 761,976 tons and 692,244 tons,

respectively, in 1936.

Boston—Small tonnage contracts are more numerous, current awards approximating 1000 tons, taken mostly by shops outside the district. Labor troubles in the Boston area fabricating shops have held up considerable volume. Bridge inquiry is active with considerable tonnage, on which bids are in, still unplaced. Several new college buildings in various parts of New England, taking a substantial tonnage are being figured.

Philadelphia — Prospects have

brightened somewhat with announcement that Pennsylvania state authority shortly will go ahead with \$65,000,000 building program, involving 80 projects. First projects are the Finance building, at Harrisburgh, taking about 5000 tons and Farview state hospital, Waymart, Pa., and Laurelton state village project, architect is Gehron & Ross, New York.

Pittsburgh—Largest recent inquiry involves 4900 tons for the Port Huron-Sarnia bridge over St. Clair river and 2500 tons for the Michigan approach for the same structure. Prices are steady.

Cleveland—Structural fabricated steel demand remains comparatively inactive, with most projects averaging close to 50 tons. Pending list includes the Lorain avenue bridge, Cleveland, involving close to 600 tons, on which C. B. Moon, Cleveland, is low on the general contract. Considerable headway has been made against backlogs in many mills, although deliveries still average 4 to 6 weeks.

Chicago—Structural business is quiet, and operations of larger fabricators are lighter than those of eastern plants. Placing of 1130 tons for a postoffice garage here is the only outstanding award. Most new inquiries come from southern and western points.

St. Louis—The structural steel situation here has been enlivened by a revival in bridge and highway projects in adjacent states. Oklahoma has awarded 740 tons of structurals and has 795 tons pending. Missouri will shortly award 220 tons of shapes. The outstanding structural project pending is the new Federal Building at Kansas City, which involves 3500 tons.

Birmingham—Production of structural shapes continues heavy, with demand about equal to output, a condition brought about by a steady flow of small business.

Seattle—Demand is slack and no outstanding tonnages are in sight. No action has been taken on bids

Behind the Scenes with STEEL

Oldster

IN THE mailbag this week was one of those subscription cards you have seen inserted in STEEL from time to time. Now this sort of thing is no novelty, as great numbers of them come in regularly. Unique was this one, however, because instead of being inscribed STEEL as were all of its comrades, it bore the name of our worthy predecessor, *The Iron Trade Review*. Further investigation showed a date line from way back in 1927. For ten years that card has been sleeping silently in somebody's file or desk drawer, awaiting the hour when it could bring us its little message. Cost the sender a one cent stamp, too, because business return cards were not known in those days.

Bang

OVER in Germany a couple of inventors named Butter have built what they call a silent rivet. Not only is the thing silent, but it rivets itself. Secret behind the whole thing is a small charge inside the rivet of a silent explosive. After the little devils are placed in correct proximity to the stuff to be welded, say the Nazis, one merely places the end of a hot



soldering iron or similar warm blunt instrument on the end of the rivet and without further ado the charge explodes, flattening the rivet all over the place. If nothing hot is handy, a high frequency sound wave of around 200,000 cycles will do the trick if you happen to have one knocking around in your overalls pocket at the time. We think this is undoubtedly a result of the militaristic ten-

dencies of the Hitler regime. In further applications we can see cannons which will wipe out entire cities without a sound except the groans of the dying and the wails of the living. Quiet, please!

Gumshoe

PORCELAIN Enamel & Mfg. Co. has just sent this department identification order No. 789650, offering a reward for information revealing the whereabouts of "Glass-Eye" Boyle, alias several other things, etc. Donning our oldest detective cap and a large Groucho mustache, we planned our Dick Tracy badge on one side of our chest and our Junior G-man badge on the other to be sure we had our heart well covered and started out on the search. As we write this we are hot on the trail and will undoubtedly have the rascal and all his aliases and accomplices baking in the nearest oven. Pemco gave us only one clew, too — said he hadn't been seen in any of their customers' plants since 1933.

On the Cuff

CHROMIUM plated steel handcuffs have been suggested for Detroit policemen, to supplant the present nickel-plated variety, our motordom mouthpiece tells us. A former patrolman who is now a council member there, made a stirring speech the other night in behalf of the Kromium Kuffs, concluding with, "I don't see why they can't chromium plate them as well as nickel plate them. The nickel wears off and sometimes the prisoners have sore wrists." The big sissies!

Kromium Kuffs for Kontented Konvikts! The council failed to be impressed, approved purchase of 100 pairs of nickel-plated handcuffs at \$8.68 per pair.

Add Ads

THIS week in the book we like the zip-zip-zip of the cigarettes on page 45 . . . the way you wind your watch on page 58 . . . the bovine comments on top of page 63.

—SHIRDLU

Shape Awards Compared

	Tons
Week ended July 31	12,412
Week ended July 24	29,463
Week ended July 17	15,390
This week, 1936	28,282
Weekly average, 1936	16,332
Weekly average, 1937	26,356
Weekly average, July	23,384
Total to date, 1936	693,725
Total to date, 1937	817,034

Includes awards of 100 tons or more.

for Seattle's Ruby dam project, calling for about 400 tons. Bids were opened by reclamation bureau, Denver, July 26, for gates and equipment for Gibson dam, Montana, and the Sun river project, Montana, tonnages unstated.

Shape Contracts Placed

1130 tons, postoffice garage, Chicago, to Duffin Iron Co., Chicago.

910 tons, specification 739, Grand Coulee dam, Washington state, to A. J. O'Leary & Co., Chicago.

830 tons, plant addition, Ford Motor Co., Norfolk, Va., to Bethlehem Steel Co., Bethlehem, Pa.; Virginia Engineering Co., Newport News, Va., general contractor.

750 tons, bridge, Delaware & Hudson railroad, Cobleskill, N. Y., to Bethlehem Steel Co., Bethlehem, Pa., Willson & English Construction Co., New York, general contractor.

650 tons, warehouse, R. J. Reynolds Tobacco Co., Lexington, Ky., to Belmont Iron Works, Philadelphia.

610 tons, transmission towers, Grand Prairie, Tex., to Lehigh Structural Steel Co., Allentown, Pa.

600 tons, shapes and bars, truss bridge, Oklahoma City, Okla., to J. B. Klein Iron & Foundry Co., Oklahoma City; O. T. Tyler, Boise City, Okla., general contractor.

555 tons, 7000-ton coal storage bin, Great Lakes Steel Corp., Detroit, to Fort Pitt Bridge Works, Pittsburgh.

500 tons, oil derricks, McPherson, Kans., to J. A. Werne Steel & Iron Co.

500 tons, oil derricks, Chase, Kans., to Muskogee Iron Works, Muskogee, Okla.

460 tons, manufacturing building, Lady Esther Co., Clearing, Ill., to Worden-Allen Co., Milwaukee.

400 tons, power plant, Tennessee Power Co., Nashville, Tenn., to Nashville Bridge Co., Nashville.

350 tons, state highway grade separation, Clarksburg, W. Va., to Bethlehem Steel Corp., Bethlehem, Pa.

335 tons, theater and office building, Wilkes-Barre, Pa., to Pine Iron Works, Pine Forge, Pa.

320 tons, pier, No. 12, Baltimore & Ohio railroad, to Belmont Iron Works, Philadelphia; McCloskey & Co., Philadelphia, general contractor.

320 tons, gymnasium, University of Buffalo, N. Y., to Buffalo Structural Steel Co., Buffalo.

320 tons, City Mines garage, Tulsa, Okla., to Patterson Steel Co., Tulsa, Okla.

310 tons, state bridge over Western Maryland railroad, Glen Morris, Md., to Bethlehem Steel Corp., Bethlehem, Pa.

250 tons, alterations to paper mill, Beach & Arthur Kleen Products Co., Modena, Pa., to Davis & Averill Inc., Newark, N. J.

225 tons, state overpass, Newport News, Va., to Roanoke Iron & Bridge Co., Roanoke, Va.

190 tons, bridge, contract 1561, Brownstown, Ind., to Midland Structural Steel Co., Cicero, Ill.

170 tons, bridge, Custer county, Idaho, to American Bridge Co., Pittsburgh; D. J. Cavanaugh, Twin Falls, Idaho, general contractor.

170 tons, dye house, Sidney Blumenthal, Shelton, Conn., to Berlin Construction Co., Berlin, Conn.

170 tons, grade elimination, Annondale,

N. J., to Bethlehem Steel Co., Bethlehem, Pa.

167 tons, 3-span I-beam state bridge, 84-foot spans, Norwich, Vt., to American Bridge Co., Pittsburgh; Hagan-Thibodeau Construction Co., Wolfeboro, N. H., general contractor.

165 tons, storage and printing building, Ilchester, Md., to Bethlehem Fabricators Inc., Bethlehem, Pa.

165 tons, bridge B3, Dearborn, Mich., to R. C. Mahon Co., Detroit.

150 tons, three-story addition, Y. M. C. A., Worcester, Mass., to United Structural Steel Co., Worcester, Mass.; J. W. Bishop Co., Worcester, general contractor. Reinforcing awarded George F. Blake Inc., Worcester.

145 tons, underpass, Weld county, Colorado, to American Bridge Co., Pittsburgh.

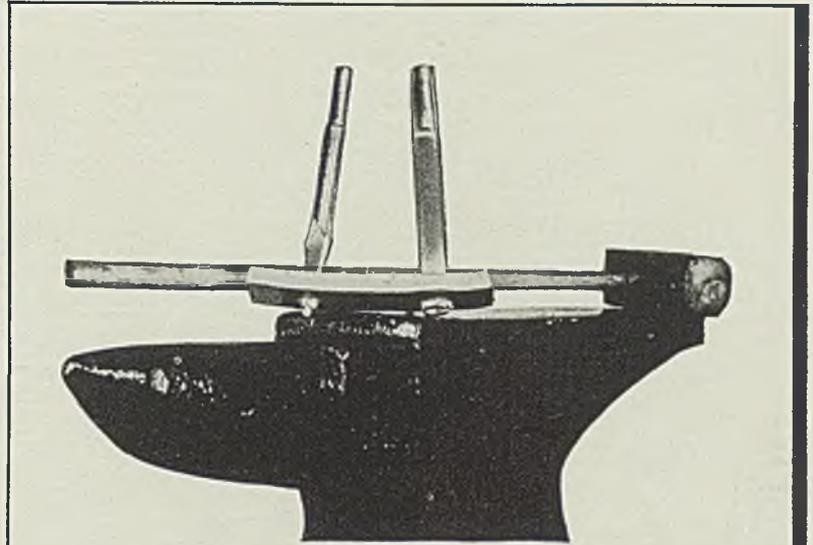
135 tons, bridges 3 and 8, Allegheny county, Pennsylvania, to Ingalls Iron Works, Birmingham.

125 tons, cell block, Attica prison, New York, to F. L. Heughes Co., Rochester, N. Y.

115 tons, Newark Valley bridge, Tioga county, New York, to Genesee Bridge Co., Rochester, N. Y.

110 tons, industrial building, Stroudsburg, Pa., to Morris Wheeler Inc., Philadelphia.

110 tons, viscose plant, Parkersburg, W. Va., to Virginia Bridge Co., Roanoke, Va.



MAGIC CHISEL STEEL

YEARS of research and study of field performance have produced one of the toughest and most durable chisel steels on the market.

Unexcelled shock resistance and its ability to retain a keen cutting edge under the most severe working conditions justify the statement that Magic Chisel Steel is one of the best steels available for pneumatic and hand chisels.

Other uses include punches, dies, pipe cutters, rivet sets, and like tools.

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Carbon, Alloy, Stainless and Composite Steels*

JESSOP STEEL COMPANY

(OF AMERICA)

GENERAL OFFICE AND WORKS, WASHINGTON, PA.

Branches or Agents in all Principal Cities

Shape Contracts Pending

4900 tons, bridge over St. Clair river, Port Huron, Mich., and Ontario, for state of Michigan.
 4500 tons, Trenton plant, for Ternstedt Mfg. Co., Detroit; bids Aug. 10.
 2500 tons, Michigan approach, St. Clair river bridge, Michigan and Ontario, for state of Michigan.
 2300 tons, for Federal building, Kansas City, Mo., bids Aug. 3.
 2000 tons, Bendix, N. J. plant, for Bendix Mfg. Co., Bendix, N. J.; bids Aug. 4.
 1760 tons, warehouse, Firestone Tire & Rubber Co., Memphis, Tenn.
 1300 tons, partial requirements, Flushing river bridge, New York; bids Aug. 10, department of plants and structures.
 1167 tons, building, Cape Girardeau, Mo.
 1000 tons, exhibition building, contract No. 2, New York World's Fair 1939 Inc., Flushing, N. Y.
 800 tons, addition, Waller high school, Chicago; bids Aug. 3.
 750 tons, highway bridge, Clinton county, Illinois; Illinois Highway Commission.
 600 tons, Lorain avenue bridge, Cleveland; C. B. Moon Co., Cleveland, low.
 510 tons, buildings, East St. Louis, Ill.
 500 tons, oil derricks, Russell, Kans.
 450 tons, bridge No. 31.75 over Townsend street, New Brunswick, N. J., for Pennsylvania railroad.
 450 tons, beam spans, First Stono river, Stono, S. C., for Seaboard Air Line railway.
 450 tons, dumping platform pier No. 1, Brooklyn, N. Y.
 420 tons, store, F. W. Woolworth Co.,

Philadelphia; McCloskey & Co., Philadelphia, general contractor.
 350 tons, crane runway, Fisher Body division of General Motors Corp., Cleveland.
 350 tons, bridge over Avenue Z, Brooklyn, N. Y., for New York Rapid Transit Corp.
 350 tons, post office and court house, Paducah, Ky.
 325 tons, highway bridge, Oklahoma county, Oklahoma; M. Swateck, Oklahoma City, general contractor.
 325 tons, bridge, Taunton-Somerset, Mass.
 300 tons, highway bridge, Garfield county, Oklahoma; Assman Construction Co., Enid, Okla., general contractors.
 275 tons, dumping platform, pier No. 1, Brooklyn, N. Y.; Allen N. Spooner & Sons, New York, low.
 240 tons, metal storage addition, for Fisher Body division, General Motors Corp., Grand Rapids, Mich.
 220 tons, highway bridges, Harrison and Gentry counties, Missouri; bids Aug. 6.
 165 tons, bridge, Dummerston, Vt.
 130 tons, Washington state highway projects; bids at Olympia, Aug. 10.
 115 tons, highway bridge, Okmulgee county, Oklahoma; Geo. Taylor, Ada, Okla., general contractor.
 105 tons, state bridge, Oakland, Me.
 Unstated, gates hoists and machinery for Gibson dam and Sun river project, Montana; bids in at Denver.

Atlantic Brass & Copper Co., formerly at 140 Grand Avenue, New York, has moved to 593 Broadway.

Reinforcing

Reinforcing Bar Prices, Page 79

Pittsburgh—Recent large awards include 1200 tons for the Lincoln tunnel approach, Weehawken, N. J., placed with Igoe Bros., Newark, N. J., and 900 to 1200 tons, depending on the type of base chosen, for the Banksville road project, Pittsburgh, placed with Electric Welding Co., McKees Rocks, Pa. Among the larger inquiries are 2400 tons for a Detroit sewage treatment plant and 6500 tons for drainage structures in Los Angeles.

Cleveland—Reinforcing steel requirements are limited to small projects of about 25 tons. In most instances mills are able to make deliveries almost overnight as they have had ample opportunity to build extensive stocks. Prices remain unsteady.

Chicago—Concrete bar inquiries for private work are more numerous and offset quiet in public projects. Pending and prospective business gives a better outlook for shipments during the next 60 days and promises to check the recent shrinkage in producers' backlogs. A malt house and grain elevator here will take 650 tons.

Boston—Although mostly in small lots, aggregate volume is substantial, few large jobs pending. An exception is 500 tons for a new building for Massachusetts Institute of Technology, Cambridge, and a bridge, Fitchburg-Leominster, Mass. For another section, Merritt highway, Connecticut, bids close this week on 500 tons of mesh. Prices on the more attractive tonnages are still shaded.

New York—Reinforcing tonnage moving to mills is heavier, contracts involving several thousand tons having been placed. Most pending mesh tonnage has been placed, with about 1000 tons for New York state highways still to be bought.

Concrete Awards Compared

	Tons
Week ended July 31	7,409
Week ended July 24	8,026
Week ended July 17	2,843
This week, 1936	3,862
Weekly average, 1936	6,005
Weekly average, 1937	5,818
Weekly average, July	6,919
Total to date, 1936	222,134
Total to date, 1937	180,373

Includes awards of 100 tons or more.

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Philadelphia—Principal job before the trade is 2900 tons, experimental basin, for the navy. McCloskey & Co., Philadelphia, general contractor, will take bids shortly for Pennsylvania railroad round house, Harrisburg, Pa., involving 800 tons. Not much new business is coming out currently, but more distant prospects appear fairly good.

St. Louis—Some improvement in reinforcing bar business, actual and prospective, is noted. A number of small jobs have been placed, ranging from 15 tons to 125 tons, a contract for the latter quantity having been awarded to the Missouri Rolling Mills Corp. by the St. Louis Terminal Railway association for a grade separation project in East St. Louis.

Birmingham—A rather light tonnage in reinforcing bars is reported, though there is definite indication in sight of renewed demand in the early fall.

Seattle—Backlogs are out of the way and local mills have cut operating schedules accordingly. New business is of small proportions and no awards in excess of 100 tons are reported. Bids were opened this week for Seattle's Ruby dam project, calling for 400 tons, but award is pending. Washington state will receive bids August 10 for several spans and crossings calling for 250 tons. Industrial construction requires only small lots.

Reinforcing Placed

1510 tons, foundations, Charity hospital, New Orleans, to Connors Steel Co., Birmingham, Ala.; R. P. Farnsworth Co. Inc., New Orleans, general contractor.

1200 tons, Lincoln tunnel approach, Weehawken, N. J., to Igoe Bros., Newark, N. J.

900 to 1200 tons, depending on type of base chosen, Banksville road project, Pittsburgh, to Electric Welding Co., McKees Rocks, Pa.

480 tons, anchorages, Bronx-White-stone bridge, New York, to Fireproof Products Co., New York; through Corbetta Construction Co., New York.

450 tons, bypass, Perth Amboy, N. J., to Truscon Steel Co., Youngstown; through P. Camillo & Co., Westfield, N. J., general contractor.

420 tons, sewer contract 2, Ditmars boulevard, Queens, N. Y., to Capital Steel Co., New York; through Johnson & Necarro, New York, general contractors.

375 tons, building, Iowa Power & Light Co., Des Moines, Iowa, to Laclede Steel Co., St. Louis.

325 tons, state hospital, Ypsilanti, Mich., to Buffalo Steel Co., Tonawanda, N. Y., through McRae Steel Co.

310 tons, sewage disposal plant, Davenport, Iowa, to Bethlehem Steel Co., Bethlehem, Pa.

275 tons, building, Delco Remy Electric Co., Anderson, Ind., to Calumet Steel Co., Chicago.

264 tons, highway project RC 2481 and RC 3883, Washington county, New York, to Bethlehem Steel Co., Bethlehem, Pa.; Warren Bros. Road Co., Cambridge, Mass., general contractor.

210 tons, foundry, for Key Co., E. St. Louis, Ill., to Laclede Steel Co., St. Louis.

180 tons, addition, Ford Motor Co., Norfolk, Va., to Truscon Steel Co., Youngstown, O.; Virginia Engineering Co., Newport News, Va., general contractor.

160 tons, Summer Field housing project, Minneapolis, to Laclede Steel Co., St. Louis.

125 tons, grade separation, East St. Louis, to Missouri Rolling Mills Corp., St. Louis.

125 tons, Iowa State college, Ames, Iowa, to Laclede Steel Co., St. Louis.

100 tons, department store, Rike Kummer Co., Dayton, O., to Pollak Steel Co., Cincinnati, O.

Reinforcing Pending

6500 tons, drainage structures, Los Angeles; bids to U. S. engineers' office Aug. 2.

3000 tons, sewers, two contracts, Queens, N. Y.; bids Aug. 5.

2400 tons, sewage treatment plant, Detroit.

700 tons, building, C. A. Krause Milling Co., Milwaukee.

650 tons, malt house and elevator, Albert Schwill & Co., South Chicago, Ill.



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500 tons, plant, General Foods Corp., Kewanee, Ill.
 368 tons, Port Huron and Sarnia bridge, Michigan.
 360 tons, plant addition, Edison Electric Illuminating Co., South Boston, Mass.
 250 tons, highway projects, state of Illinois. Bids in.
 250 tons, various Washington state road projects; bids at Olympia, Aug. 10.
 190 tons, hospital, soldiers' home, Milwaukee.
 170 tons, bridge, Newington, Conn.
 150 tons, bridge, Windham, Conn.
 125 tons, North Shore day school, Winnetka, Ill.
 100 tons, stadium, State college, Miss.; J. R. Fline Construction Co., Jackson, Miss., general contractors.
 Building, Union Special Machine Co., Chicago.

Pig Iron

Pig Iron Prices, Page 80

Boston — With domestic buying confined to small lots pig iron demand is bolstered by widely diversified foreign inquiry. Premium prices continue to be paid on such business, but a good part of the volume offered remains unplaced. China recently took 3000 tons. Most of the larger consumers in this district are well stocked and users are showing little interest in covering against a possible advance in prices next quarter.

Mystic Iron Works, Everett, Mass., denies a rumor that it has contracted with foreign consumers for a large part of its output the remainder of the year. Officials state only excess iron above needs of regular customers is offered for export. Needs of New England melters will be filled first. The Japanese order for 30,000 tons booked several months ago has been shipped. Japan apparently is not in the market for immediate needs but is expected to buy further. One foreign consumer is feeling the market for tonnage for first half of next year.

New York—Seasonal dullness still prevails in pig iron, accentuated by substantial specifications placed in June against contracts before protections of \$2 to \$3 a ton expired. Threatened strikes at iron foundries in Brooklyn becloud the immediate outlook, molders giving operators until Aug. 1 to comply with the demand for 30 per cent increase in rates.

While some European inquiry, headed by a list of 4000 tons of foundry iron, is active, foreign demand as a whole is probably as quiet as any time this year. This is attributed in part to the fact that Russia a few weeks ago began offering substantial quantities for sale, only to be followed by France, which, upon the further devaluation

of her exchange, found export business attractive.

Pittsburgh — Sellers in this district are noncommittal concerning pig iron prices for fourth quarter. While a few believe that scrap prices will be the deciding factor, no predictions are being made. July shipments were substantially the same as June, possibly a little under. Export movement has been well cleaned up. Domestic consumers apparently are in no great hurry for their requirements. Miscellaneous shipments in August are likely to be slightly higher than in July.

Cleveland—Most sellers expect shipments during July to equal or excel June. However, new business is limited to spot tonnage for immediate delivery, as many foundries have sufficient stocks. Foundry melt, particularly those serving the automotive trade, has declined considerably over the last 30 days.

Chicago—July pig iron shipments were slightly ahead of expectations, bettering June by 15 to 20 per cent. Foundry operations are believed to have passed the summer low, and gradually improving schedules are expected for remainder of the quarter. Pig iron producers still have heavy unfilled orders and are booking occasional new orders. Silence is being maintained by sellers regarding fourth quarter prices.

Buffalo—One of the Hanna furnaces here is down for relining, the second of these units to undergo repairs this summer. It will be back in production sometime next month. Demand is starting slowly this quarter and the trend of consumers toward full use of inventories before buying is becoming more pronounced. Shipments during the past six weeks have been the smallest of any like period of the year.

Philadelphia—Additional specifications at the end of July brought total shipments close to the June level. New business is slow and sellers' books are thin, as consumers apparently are awaiting fourth quarter prices.

Cincinnati — Interest in covering pig iron requirements for the remainder of the year has increased, despite few tonnage bookings. Furnace interests predict considerable buying within the next 30 days, partly predicated on possibility of upward revision of prices.

Birmingham—The pig iron market continues strong, with some contract buying reported. Quotations for fourth quarter are not expected to be made until Sept. 1. Operations are consistent, with 18 furnaces making iron, and only a little being accumulated.

St. Louis—Spot buying of pig iron

continues in fair volume, though individual sales are relatively small, for prompt shipment. During the past week or ten days the melt has receded moderately, reflecting mainly seasonal influences. However, the contraction is measurably less than is ordinarily the case at this time of year.

Toronto, Ont.—Merchant pig iron sales continue to decline with awards for the week between 700 and 900 tons. Melters are interested in spot needs only and current orders are for lots of 50 to 200 tons. There has been no general curtailment in operations and the daily melt is holding around 60 to 65 per cent, with indications of return to the average rate for the year of about 70 per cent within the next three or four weeks. The slowing down is seasonal due to the holiday season and curtailment of operations by the automotive industry. Prices are firm and unchanged.

Scrap

Scrap Prices, Page 82

Pittsburgh—A sale of about 5000 tons of No. 1 heavy melting last week boosted the market a full dollar to a range of \$21 to \$21.50, clearing away much uncertainty which had existed during the lull in mill buying of the preceding two weeks. With this burst of strength, July closed with No. 1 heavy melting exactly \$3 higher than at the start of the month, an unusual midsummer rise. Other grades reflected the sharp advance last week, railroad specialties moving up to \$26 to \$26.50, and railroad heavy melting selling at \$22.50. Material was none too free and dealers were unwilling to sell short because of the proximity of the railroad lists.

Cleveland—Melters are out of the market and no activity is expected until pending railroad lists have been closed. Prices have not been changed and dealers are not buying except to apply on contracts.

Chicago—Scrap continues strong here despite occasional reports of heavier offerings which tend to indicate an early leveling in prices. Brisk bidding for scrap, however, leads some members of the trade to look for still higher quotations. Brokers are offering from \$20 upward for No. 1 heavy melting steel, and a mill tonnage is reported to have been taken at this figure, \$1.50 above the last consumer purchase. A number of other grades are up \$1 to \$1.50 a ton.

Boston—The upward swing in scrap prices continues, practically all steel-making and foundry grades

being stronger. Brokers are now paying \$17, dock, for No. 1 heavy melting steel and attracting tonnage from points well inland in view of the low price being offered for this grade by district consumers.

New York—For domestic shipment most steelmaking grades are up 50 cents with heavy melting steel \$1 higher. Brokers are paying \$17 for the top. This is \$1 higher than is paid for dock delivery. Buying and shipments to eastern consumers is slightly heavier.

Philadelphia—Steel and iron scrap shows additional strength on further moderate sales. Some mills have bought No. 1 steel at \$20, representing a 50-cent advance. Others remain out of the market but are expected to buy soon. Budd Mfg. Co. has closed on its monthly accumulation of 1800 tons of scrap, including 1400 tons of new compressed sheets, at close to \$20, delivered mill, for the latter. Dealers are reported closing against short orders at approximately present quoted levels and consumer buying is expected to bring out higher prices. The scrap trade looks for shortage of materials this fall, especially if renewed export buying develops.

Buffalo—Sales of No. 2 heavy melting steel are holding the center of the stage in current scrap dealings. The price has forged upward steadily until dealers now ask a minimum of \$18 and claim to be getting this figure. On this basis No. 1 heavy melting steel has advanced to \$19.50 as a minimum but dealers decline to sell tonnage at this level. Other grades are moving ahead as sales put into effect nominal quotations previously established by dealers.

Detroit—No slackening in demand for scrap has appeared, but rather a more insistent call, especially from outside mills, for most grades. This, and prospects of greater scarcity of supplies over the next few weeks, has driven prices upward again, in some cases as much as \$1.50 per ton. Chrysler lists involving about 8000 tons closed this week and brought better prices. Demand is strong, notably from the Pittsburgh district.

St. Louis—Reflecting a leveling off in prices in the east, somewhat freer offerings and lack of quantity buying, the market for iron and steel scrap here was considerably less buoyant than during the preceding several weeks.

However, there were additional price advances, ranging from 25 cents on heavy melting railroad steel for Granite City delivery to \$3 per ton on compressed sheets. Other

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Cincinnati—Iron and steel scrap advanced 50 cents in this market last week and even at the higher quotations desirable grades were scarce. Some district mills bought steadily, at lower prices, in excess of a heavy consumption so that recent purchasing has been lighter and deliberate. Other interests show little resistance to the higher market and hold to a policy of liberal buying.

Birmingham—Continued demand for scrap is reported, especially heavy melting steel, with many grades scarce, resulting in two recent price advances of 50 cents and \$1 a ton. Dealers and consumers attribute much of the movement to heavy export demand, and sustained demand from foundries.

Seattle—With export and domestic buying at a standstill, there is practically no turnover in the North Pacific market. No. 1 scrap is nominally \$7 per gross ton. However, the general tone has improved in harmony with the Atlantic situation. Japan is willing to buy but is hampered by license and letter of credit restrictions. Local stocks are

large. Old commitments are nearly out of the way and steamship space is considerably easier.

Toronto, Ont.—Trading in iron and steel scrap is spotty. Steel mills continue to take heavy melting steel and turnings and dealers are supplying some from yard stocks in addition to shipping direct from purchasing points. Montreal dealers also report good market for steel grades. Machinery cast is in strong demand with supplies still running below requirements. Dealers continue to take all the scrap offered with the exception that there will be heavier demand later in the year. Dealers have made no general revision in price lists, but quotations are showing a softer tendency.

Warehouse

Warehouse Prices, Page 81

Pittsburgh—In view of reaffirmation of finished and semifinished steel prices by mills, warehouse prices will probably remain steady through the remainder of this year, according to present indications. The seasonal let-up in July is far from being as sharp as expected

and conditions are considerably better than a year ago.

Cleveland—Shipments out of warehouse continue the downward trend reported since the first of last month. This recession is irregularly spread over all products, as certain finishes of sheets and heavy plates have resisted better than other products, such as bars, strip and tubular goods. Prices remain firm.

Chicago—Sales continue to follow the usual trend for this period in receding gradually from the peak of earlier months. With demand holding well above the levels of recent years, however, business is regarded as satisfactory.

Philadelphia—Warehouse sales in July declined 10 to 15 per cent on a tonnage basis but averaged better than in July last year. Further slackening is expected for the first half of August. Opinion is mixed regarding elimination of the \$2 functional mill differential on galvanized sheets. The move is said to be directed against sellers of extremely small quantities and is not opposed by larger interests. It will also affect jobbers taking carload orders for direct shipment to consumers.

Cincinnati—Warehouse volume for July was below the four excellent months preceding, but failed to show a severe summer curtailment. Improved mill deliveries are enabling jobbers to replenish stocks with some items on which there was recent heavy drain. Prices remain firm.

St. Louis—A moderate recession in new business has been noted but specifications hold up well and shipments so far this month are only slightly below the average rate in June. There is an excellent demand for oil country goods, mainly drilling supplies. Improved mill deliveries have resulted in a lessened demand for sheets, plates and other flat rolled materials.

Seattle—Volume is about on a par with last month but business is spotty, small tonnages predominating, mostly out of stock. Sheets probably continue in best demand. Car lots are bought only occasionally.

Refractories

Refractories Prices, Page 80

Pittsburgh—Activity of refractory manufacturers is at a higher rate, following ending of steelworks strikes, which resulted in numerous stop orders in June. New business, however, is seasonally slow and it is expected that most of the business now on the books will be cleared up

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OTTO K. EITEL, Managing Director

within another month. With no wage change immediately in sight, prices are generally expected to hold steady.

Steel In Europe

Foreign Steel Prices, Page 81

London—(By Cable)—The German government has taken full control of the iron ore industry, forming the Hermann Goering Co., This company will exploit all German ore resources, including lean deposits, and will control and reduce imports. German iron and steelmakers must obtain supplies exclusively from the official company.

British steel and iron markets are in the midst of the summer quiet period. Practically all works are fully booked, many to the end of the year. Some sales for delivery in 1938 have been reported made.

The Continent reports the outlook improving, especially with the British and South American markets.

Ferroalloys

Ferroalloy Prices, Page 80

New York—Ferromanganese shipments for July fell substantially under those for June, at which time contract buyers specified unusually heavily against contracts at \$7.50 under the current market and due to expire at the end of last quarter. Even steel companies badly affected by strikes during June were able to specify freely for shipment before the end of that month and consequently have been fairly well stocked in subsequent weeks.

Domestic spiegeleisen, 19 to 21 per cent, is unchanged at \$33, Palmerston, Pa., and 26 to 28 per cent material at \$39, Palmerton. Specifications over the past month were off substantially, due also to protective covering in June against contracts placed last April, prior to a \$3 advance on new contracts.

Nonferrous Metals

Nonferrous Metal Prices, Page 80

New York—Developments in nonferrous metal markets last week were bullish with some interests believing they signal the start of the expected upturn in buying. Undertone of the markets in general strengthened.

Copper—Sales increased substantially to an average of about 3000 tons per day for the week, making the total for the month through Thursday 51,663 tons, or topping

any full month since February. Electrolytic copper held firm at 14.00c, Connecticut, while export copper advanced to around 14.45c, c.i.f. European ports.

Lead—Demand continued heavy with sales exceeding intakes. Prices held firm to strong at 5.85c, East St. Louis, and 6.00c, New York.

Zinc—With some relief from the prolonged tightness of supplies expected soon, consumers did not press for metal. Shipments held at an active pace and were supplemented by some importations. Prices were unchanged at 7.00c, East St. Louis.

Tin—Tightness of nearby supplies supported prices at a high level. Straits spot ranged from 58.50c to 59.25c during the week contrasted with sharp fluctuations in the London market.

Antimony—Higher prices brought out freer offerings and business was somewhat more active. Spot metal advanced to 15.37½c, New York.

Weirton Steel Corp., Weirton, W. Va., plans to modernize and mechanize its coal mine at Isabella, Pa., at a cost of \$1,500,000, President T. E. Millsop announced recently. Conveyor belts 48 inches wide will carry

coal from mining machines to washing apparatus and thence to barges in the Ohio river.

Giant Sewage Pumps Let

Worthington Pump & Machinery Corp., Harrison, N. J., has been awarded a contract by the New York department of sanitation for pumps and gas engines for the Tallman Island sewage treatment works totaling \$469,000. Two centrifugal pumps will each have capacity of 15,000,000 gallons daily and the other two 35,000,000 gallons each. The contract also calls for eight gas engines of 180 to 800 horsepower, operated on sewage gas developed by the plant. Four will drive centrifugal pumps and the others rotary blowers.

State highway departments placed 28,913 miles of new highway surfacing in 1936, according to the bureau of public roads, department of agriculture. New surfaces consisted of 4706 miles of high-type surfaces such as bituminous macadam, bituminous concrete, portland cement concrete, and brick, and 24,207 miles of lower types of surfacing. Rural primary state systems now include 340,160 miles.

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Convention Calendar

- Sept. 6-10—American Mining congress. Annual metal mining convention and exposition at Salt Lake City, Utah. Julian D. Conover, 439 Munsey building, Washington, is secretary.
- Sept. 6-10—American Chemical society. Fall meeting at Rochester, N. Y. Dr. Charles L. Parsons, 728 Mills building, Washington, is secretary.
- Sept. 6-10—British Institute of Metals. Autumn meeting in Sheffield, England. G. Shaw Scott, 36 Victoria street, Westminster, London S.W. 1, is secretary.
- Sept. 14-17—British Iron and Steel Institute. Autumn meeting in Middlesbrough, England. K. Headlam-Morley, 28 Victoria street, London S.W. 1, is secretary.
- Sept. 19-23—American Transit association. Fifty-sixth annual convention at Greenbrier hotel, White Sulphur Springs, W. Va., Headquarters are at 292 Madison avenue, New York.
- Sept. 23-25—National Industrial Advertisers association. Annual conference at Edgewater Beach hotel, Chicago. M. R. Webster, 100 East Ohio street, Chicago, is secretary.
- Sept. 27-Oct. 1—American Gas association. Nineteenth annual convention in Cleveland. Kurwin R. Boyes, 420 Lexington avenue, New York, is secretary.
- Sept. 28-Oct. 1—Association of Iron and Steel Engineers. Thirty-third convention and exposition at Hotel Stevens, Chicago. Brent Wley, 1010 Empire building, Pittsburgh, is managing director.
- Oct. 4-9—Chicago Exposition of Power and Mechanical Engineering. At International Amphitheatre, Chicago. Charles F. Roth, Grand Central Palace, New York, is manager.
- Oct. 6-7—Farm Equipment Institute. Forty-fourth annual meeting at Palmer House, Chicago. R. A. Jones, 608 South Dearborn street, Chicago, is secretary.
- Oct. 11-15—National Safety council. Twenty-sixth national safety congress at Muehlebach hotel, Kansas City, Mo.,

W. H. Cameron, 20 North Wacker drive, Chicago, is managing director.

- Oct. 12-13—Porcelain Enamel Institute. Seventh annual meeting at Congress hotel, Chicago. George P. MacKnight, 612 North Michigan avenue, Chicago, is managing director.
- Oct. 13-16 — Electrochemical society. Seventy-second meeting at Hotel Chase, St. Louis. Dr. Collin G. Fink, Columbia university, New York, is secretary.
- Oct. 18-21—National Wholesale Hardware association. Forty-third annual convention at Palmer House, Chicago. George A. Fernley, 505 Arch street, Philadelphia, is secretary.
- Oct. 18-21—American Hardware Manufacturers' association. Semiannual meeting at Palmer House, Chicago. Charles F. Rockwell, 342 Madison avenue, New York, is secretary.
- Oct. 18-22—American Society for Metals. Nineteenth annual national metal congress and exposition at Auditorium, Atlantic City, N. J. W. H. Eisenman, 7016 Euclid avenue, Cleveland, is secretary.
- Oct. 18-22—American Welding society. Eighteenth annual meeting at Hotel Traymore, Atlantic City, N. J. Warner S. Hays, 33 West Thirty-ninth street, New York, is managing director.
- Oct. 18-22—Wire association. Annual meeting at Ambassador hotel, Atlantic City, N. J. Richard E. Brown, 17 East Forty-second street, New York, is secretary.
- Oct. 18-22—American Institute of Mining and Metallurgical Engineers. Meetings of Institute of Metals and Iron and Steel divisions at Atlantic City, N. J. Louis Jordan, 29 West Thirty-ninth street, New York, is assistant secretary.
- Oct. 18-22—American Society of Mechanical Engineers. Meetings of Iron and Steel and Machine Shop Practice divisions at Atlantic City, N. J. C. E. Davies, 29 West Thirty-ninth street, New York, is secretary.
- Oct. 19—National Association of Sheet Metal Distributors. Semiannual meeting at Palmer House, Chicago. George

A. Fernley, 505 Arch street, Philadelphia, is secretary.

- Oct. 27-29—American Institute of Steel Construction. Fifteenth annual meeting at Greenbrier hotel, White Sulphur Springs, W. Va. V. Gilmore Iden, 200 Madison avenue, New York, is secretary.

By-Product Coke Article

(Concluded from Page 20)

facture of chemicals of coal-tar origin.

Synthetic resins are used in making instrument panels, radio cabinets, hand-set telephone sets and other products. The benzol is blended with gasolines to make antiknock motor fuels. Aspirin, novocaine, and other medicinal preparations are synthesized from products derived from coal tar. Sheep dip and moth balls come from tar derivatives.

Considerable tar is used for fuel for open-hearth furnaces and under boilers. Gas, the most valuable coke oven by-product, has been used increasingly in open-hearth furnaces. About one-third of the gas from the modern coke oven is returned to the ovens for heating, under normal operation. The modern ovens can be heated with producer gas or blast furnace gas, as well as with coal gas.

In 1918, according to the bureau of mines, 7.1 gallons of tar was produced per ton of coal charged into by-product ovens. Last year the yield was 8.86 gallons. Recovery of ammonium sulphate or equivalent increased from 18.9 gallons in 1918 to 22.14 gallons in 1936; recovery of crude light oil, from 2.4 gallons in 1918 to 2.9 gallons in 1936; recovery of gas from 10,400 cubic feet in 1918 to 11,060 in 1936.

The total amount of by-products produced in 1936 was as follows:

Gas (M cubic feet).....	699,701,415
Tar (gallons).....	560,385,578
Ammonium sulphate or equivalent (lbs.).....	1,388,682,583
Crude light oil (gallons).....	170,234,202

The total value of the by-product coke, coke breeze, and by-products, including the value of the tar used by the by-product coke plants, was \$361,935,207. This compares with \$286,793,194 in 1935, and \$448,469,817 in 1929.

Three hundred and twenty-five employes of the New Departure division of General Motors Corp. attended a banquet on July 8 as guests of the management. All present had served 20 years or more with the company and were presented with gold service buttons designating the number of years of service. General Manager F. G. Hughes addressed the gathering and emphasized the small turn-over and the very satisfactory employe relations.

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Equipment

Pittsburgh—Shipments of castings are well maintained here, sales of annealing boxes are good and machine tool makers active. Westinghouse Electric & Mfg. Co., has been awarded a contract for two Boulder dam generators at a cost of \$1,467,000. The company last week reported unfilled orders July 1 the largest in 17 years.

Chicago—Little slackening occurred in sales of machine tools and

plant equipment last month though there was a more than seasonal let-down in small tool demand. Machinery inquiries are well diversified and a relatively good volume of business is in prospect. Machine tool builders continue to make inroads into backlogs but are faced with brisk operations through the quarter.

Milwaukee—Lakeside Bridge & Steel Co., Milwaukee, has been awarded two 80-ton gantry cranes for spillway and ingate gates, Pickwick Landing dam, Tennessee valley authority; bids June 24.

000-kilowatt generating units will be installed, with capacity ultimately planned for 100,000 kilowatts. Another generating station will be built at Elmira, N. Y., with a capacity of 15,000 kilowatts.

JAMESTOWN, N. Y.—Jamestown Metal Equipment Co., O. A. Lenna, president-general manager, plans construction of a 1 or 2-story plant addition on Allen street, to cost over \$40,000.

LONG ISLAND CITY, N. Y.—Ame Shellac Products Corp., 48 Thirtieth street, plans to repair its fire-damaged plant at a cost of over \$40,000.

TONAWANDA, N. Y.—General Plastic Co. plans to build a factory addition costing \$150,000.

New Jersey

BURLINGTON, N. J.—Public Service Electric & Gas Co. plans to enlarge and improve its electric generating and transmission facilities in southern New Jersey. At Burlington approximately \$12,000,000 will be spent, and a 100,000-kilowatt turbogenerator, two high pressure steam boilers, and auxiliary equipment will be installed. Thomas N. McCarter is president.

CRANFORD, N. J.—Inland Mfg. Co., division of General Motors Corp., plans to build a 1- and 2-story, 100,000-square foot motor parts manufacturing plant. Cost will be about \$200,000.

TRENTON, N. J.—Akson Sanitary Mfg. Co., Roosevelt and Southern avenues, plans construction of a 2-story, 100 x 600-foot factory to cost \$500,000. Architect is M. H. Finkel, 185 West Forty-fourth street, New York.

Pennsylvania

CORRY, PA.—Aero Supply Co., 611 West Main street, will let contract soon for construction of a 2-story, 74 x 83-foot plant. F. A. Fuller, 721 Commerce building, Erie, is architect.

Michigan

ADRIAN, MICH.—Emerald Electric

Construction and Enterprise

Ohio

CIRCLEVILLE, O.—City will ask bids about Aug. 15 for construction of sewage disposal plant costing approximately \$136,363, of which city's share will be \$75,000. City engineer is David Courtright and consulting engineer is Floyd G. Browne, Marlon.

CLEVES, O.—Village plans to build a sewage disposal plant estimated to cost \$304,000. Voters will pass Nov. 2 on a bond issue, and WPA aid may be asked. Fred Pontius is mayor.

DAYTON, O.—Premier Rubber Mfg. Co., Edmund street, plans to build a 1-story, 85 x 130-foot plant addition, and has given general contract to B. G. Davis Co., 1530 East First street. Geyer & Neuffer, Dayton, are architects.

DAYTON, O.—Materiel division, office of contracting officer, air corps, Wright field, is taking bids until 10 a. m. Aug. 5 for 25 portable air compressors, 5 cubic feet capacity, specification 50070, for operation on 110-220 volt, 1-phase, 60-cycle alternating current. Bids will be taken for two portable air compressors for operation on 25-cycle alternating current.

IVORYDALE, O.—Kentucky Chemical Mfg. Co., 410 East Tenth street, Covington, Ky., plans construction of 1-story buildings, 50 x 165 feet, 50 x 100 feet, 40 x 40 feet, and 50 x 60 feet. Total cost will be around \$45,000. Hillsmith & Co., Chamber of Commerce building, Dayton, O., is engineer.

SWANTON, O.—Village is considering construction of water filtration plant and distribution system, and council has authorized board of public affairs, B. J. Moorman, president, to appoint an engineer to draw plans and make a survey of probable cost. A bond issue is planned for financing. Estimated cost is around \$25,000.

WARREN, O.—City has rejected bids received July 13 for construction of a water softening plant at waterworks, and will take new bids due noon Aug. 11. Cost is estimated at \$90,000. Hoover & Montgomery, 918 Atlas building, Columbus, O., are engineers.

XENIA, O.—Ohio soldiers and sailors orphans home plans to replace its water supply system, and will erect a 100,000-gallon steel storage tank, construct a 200,000-gallon reservoir and install necessary pumps and distribution system. Cost will be about \$30,000. J. P. Schooley, state engineer, Columbus, is in charge.

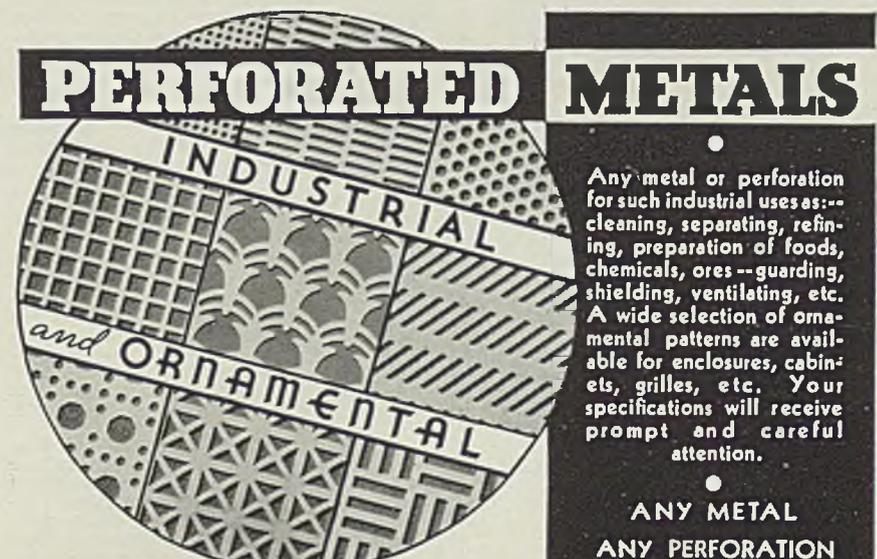
Massachusetts

NORTH GRAFTON, MASS.—Washington Co. plans to rebuild its factory at a cost of about \$40,000, with equipment.

New York

ALBANY, N. Y.—New York Power & Light Corp., 126 State street, Otto Snyder, president, plans to build a steam generating plant on the Hudson river. Capacity will be 80,000 to 150,000 kilowatts. Cost is estimated at \$6,000,000.

DRESDEN, N. Y.—New York State Electric & Gas Corp. has been authorized by Public Service commission of New York to issue note for \$3,500,000, to apply on construction bonds of company. A steam generating station will be built on Seneca Lake, near Dresden, at a cost of \$2,302,750. Two 20-



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—Construction and Enterprise—

Co., 265 West Maumee avenue, has been incorporated to manufacture machinery. Correspondent is Vern Ogle, Adrian.

DETROIT—Ad-Metal Inc. has been formed to engage in general manufacturing. Correspondent is Walter M. Meek, 2104 Dime Bank building.

DETROIT—Gasconaire Inc. has been organized to manufacture air conditioning units by John Turnbull, 3255 Goldner avenue.

DETROIT—Brisk Foundry & Machine Co., 2434 National Bank building, has been incorporated by J. S. Bratton Jr., Pleasant Ridge, Mich.

DETROIT—Lincoln Motor Co., West Warren avenue, plans improvements in its plant, to cost over \$40,000. Included

will be an electric substation, conveyor bridges, and compressor plant additions.

DETROIT—Travel Car Traller Co. plans to build a plant at 16431 West Seven-Mile road, to cost \$40,000 or more with equipment.

KALAMAZOO, MICH.—City will ask bids soon for expansion and improvement of municipal electric power plant, to include installation of turbogenerator and accessories, condenser, boilers, and auxiliary equipment. Estimated cost is \$265,000. Burns & McDonnell Engineering Co., 107 West Linwood boulevard, Kansas City, is engineer.

PONTIAC, MICH.—Baldwin Rubber Co. plans to construct a boiler house, for which plans are being completed by L. J. Heenan, Pontiac architect.

TRENTON, MICH.—Plans are under way in Wayne county to seek a \$2,000,000 grant from the federal government for construction of a sewage disposal plant and system, to serve districts in the county outside of Detroit.

Illinois

AURORA, ILL.—National Brush Co. will take bids soon for construction of a plant addition costing \$80,000. Architect is F. B. Gray, 73 South LaSalle street, Chicago.

CANTON, ILL.—International Harvester Co., 606 South Michigan avenue, Chicago, will install motors and controls, regulators, conveyors, electric hoists, and other equipment in connection with rebuilding part of its branch plant which was recently damaged by fire. Estimated cost is \$225,000.

CHICAGO—Rapid Roller Co., 2558 South Federal street, will let contract soon for construction of a 6-story factory. A. S. Alschuler, 28 East Jackson boulevard, is architect. Estimated cost is \$150,000.

CHICAGO—Union Special Machinery Co., 400 North Franklin street, will let contract soon for construction of a 3-story, 105 x 110-foot factory to cost \$100,000. Ivor Viehe-Naess Co. is architect, 5809 North Ridge avenue.

ROCKFORD, ILL.—Forgings & Stampings Inc. plans construction of a plant addition. Cost is estimated at over \$40,000. General contract has been given to Linden & Sons, Rockford.

Indiana

COLUMBIA CITY, IND.—Columbia Products Co., care of Industrial committee, Commercial Development association, is taking bids for construction of a 1-story, 100 x 300-foot metalworking factory at Ellsworth street and the Pennsylvania railroad. L. Bradley, West Wayne street, Fort Wayne is architect. Cost is estimated at \$35,000.

FORT WAYNE, IND.—Board of public works, city hall, is taking bids due Aug. 11 for a new high pressure steam boiler and a stoker, with necessary appurtenances and accessory equipment, for installation at power plant at New York Central railroad and North Clinton street. Cost will be \$175,000.

Alabama

MOBILE, ALA.—Aluminum Ore Co., 3300 Missouri avenue, St. Louis, plans to construct a smelter for reducing aluminum ore and bauxite on a site acquired from the state dock commission. Total cost will be about \$4,000,000.

MOBILE, ALA.—Meyercord Compound Lumber Co. will build a mill at Frascatti, Ala., for manufacturing fibre wood. Cost will be around \$150,000.

Maryland

RIVERDALE, MD.—Engineering & Research Corp., Silgo Mills road, Washington, plans to install conveyors, electric hoists, motors and controls, regulators, and other equipment in new multi-unit aircraft parts manufacturing plant at Riverdale. Cost will be over \$100,000. Kubitz & Koenig, Emerson Tower building, Baltimore, are engineers.

District of Columbia

WASHINGTON—Treasury department, bureau of supplies and accounts, is taking bids Aug. 13 for rough iron castings, schedule 1351, for delivery Brooklyn, N. Y., and until Aug. 17 for copper-nickel tubing, schedule 1349, for delivery Puget Sound.

WASHINGTON—Potomac Electric Power Co. plans construction of a 2-story electrical and mechanical shop at 2255 Eleventh street Northwest. Cost is estimated at about \$350,000.

WASHINGTON—Treasury department, bureau of supplies and accounts, is taking bids due Aug. 6 for miscellaneous sizes of steel forgings, schedule 1305 for delivery Brooklyn, N. Y., and for sheets and strips of corrosion-resisting steel, schedule 1307, for delivery various coast points.

Florida

DEFUNIAK SPRINGS, FLA.—Walton Hosley Mills plans to make improvements to its plant, including installation of equipment to double capacity. Cost will be \$40,000.

ORLANDO, FLA.—Orlando Utilities commission will award contracts soon for installation of a 10,000-kilowatt turbogenerator in power plant. Total cost of proposed expansion program will be \$600,000 to \$700,000.

TAMPA, FLA.—Southern Brewing Co., Zack and Pierce streets, will spend \$100,000 for plant improvements.

North Carolina

NEWTON, N. C.—Newton Mfg. Co. Inc. has been organized by C. G. Crevenstenjn and Allen Arndt, to engage in woodwork manufacturing.

TUCKERTOWN, N. C.—Carolina Aluminum Co. plans to construct a dam, reservoir and powerhouse of approximately 54,000-horsepower capacity on the Yadkin river, near Tuckertown. Permission is being sought from the federal power commission.

VALDESE, N. C.—City has voted \$50,000 bonds to finance construction of proposed municipal waterworks plant. A. L. Butler is mayor.

WILMINGTON, N. C.—Riegel Paper Corp., 342 Madison avenue, New York, plans to install motors and controls, transformers and accessories, regulators, conveyors, electric hoists, and other equipment in new multi-unit pulp mill at Wilmington. Total cost will be over \$1,000,000.

Louisiana

BOGALUSA, LA.—S. & A. Mfg. Co. Inc. plans to construct a plant for



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SHREVEPORT, LA.—Great National Oil Corp., post office box 997, J. D. Blaton, secretary-treasurer, plans to construct a 1000-barrel gasoline manufacturing plant, and to build an additional unit to its gasoline absorption plant in Caddo parish. Total cost will be around \$200,000. J. W. Coast, Tulsa, Okla., is engineer.

THIBODAUX, LA.—Waverly Inc., A. F. Delbert and Ernest M. Loeb Jr., Canal Bank building, New Orleans, has acquired Waverly sugar mill and will spend \$75,000 for improvements, including installation of new boilers and other equipment.

Virginia

CHARLOTTESVILLE, VA.—City is considering construction of a generating and distributing plant. Seth Burnley is city manager.

Missouri

ST. LOUIS, MO.—Key Co., 2700 McCasland avenue, will construct a foundry costing a total of \$500,000, including installation of machinery and equipment.

Oklahoma

BLACKWELL, OKLA.—City will vote Aug. 17 on \$300,000 bonds for purchase and installation of turbine at power plant.

Texas

SAN BENITO, TEX.—P. W. Harzel and H. L. Hawkins, McAllen, Tex., plans to install a 30,000-gallon steel storage tank and other equipment in oil refining plant recently acquired from T. O. Bellenger. Cost will be about \$45,000.

WICHITA FALLS, TEX.—Ball Bros. plan to make plant improvements costing \$100,000.

Kansas

WICHITA, KANS.—Bay Petroleum Corp., care of C. U. Bay, Bridgeport, Conn., plans to spend over \$40,000 to double the capacity of the former Dickel Oil Refining Co. plant.

Minnesota

DULUTH, MINN.—Linde Air Products Co., Thirty-ninth avenue West, D. V. Tope manager, has awarded contract to N. A. Bergstrom for construction of an addition to factory.

MAPLE PLAIN, MINN.—Rural Co-operative Power association of Minnesota has been given a \$200,000 REA allotment for construction of a generating plant near Maple Plain to furnish power for REA projects in various counties. Wendell W. Cutcliffe, 739 Johnson street Northeast, Minneapolis, is engineer.

NEW ULM, MINN.—City will open bids Aug. 3 for improvement to municipal light and power plant, including an addition and coal handling equipment, boiler feed pump, combustion control, etc. A. C. Sannwald is city clerk, and engineers are Ralph D. Thomas & Associates, 1200 Second avenue South, Minneapolis.

SPRINGFIELD, MINN.—City plans construction of municipal power plant estimated to cost over \$25,000, and is making a survey of feasibility and cost. New equipment will be installed. Engineers are Burlingame, Hitchcock & Estabrook, 521 Sexton building, Minneapolis.

WESTBROOK, MINN.—Village plans

construction of municipal light and power plant and will hold special election soon to vote on bond issue to finance project. T. V. Peterson is village clerk.

Iowa

ANAMOSA, IOWA—State board of control of state institutions, E. H. Felton, chairman, Des Moines, is preparing plans for construction of a sewage disposal plant. Howard R. Green Engineering Co., Cedar Rapids, Iowa, is engineer.

BETTENDORF, IOWA—Socony-Vacuum Oil Co. plans construction of a huge distribution plant, including pumping station, dock and barge facilities, and storage tanks of 9,000,000 gallons capacity.

DES MOINES, IOWA—Plans have been approved and \$510,434 allotted by WPA to city to aid in financing construction of proposed sewage disposal plant to cost about \$1,200,000. John Tippee is city engineer.

GRINNELL, IOWA—City council is making a survey to determine cost and availability of WPA aid for construction of a water softening and purification plant.

New Mexico

EUNICE, N. M.—Skelly Oil Co., Tulsa, Okla., has made final plans for construction of a 15,000-gallon per day natural absorption plant to cost \$100,000. The company is also in the market for nine 230-horsepower Bessemer type gasoline engines.

HURLEY, N. M.—Nevada Consolidated Copper Co., subsidiary of Kennecott Copper Co., 120 Broadway, New York, plans to construct smelters costing \$5,000,000.

Pacific Coast

HUNTINGTON BEACH, CALIF.—M. M. McCallen Refining Co., Seventeenth street, plans to expand its re-

finery and erect storage tanks. Cost is estimated at \$30,000.

OAKLAND, CALIF.—Dobeckmun Co., 3301 Monroe avenue, Cleveland, O., plans to make plant improvements at the former Western Shillmar Products Co. factory. Estimated cost is \$40,000.

SACRAMENTO, CALIF.—Moore & Garlick, E. A. Garlick, in charge, 1716 Alhambra road, plan construction of a planing and lumber mill in vicinity. Cost will be \$45,000 or more.

TORRANCE, CALIF.—General Petroleum Co., Higgins building, plans to install additional refining equipment in present plant. Among the equipment needed will be towers, tanks, and control houses. Estimated cost is \$600,000.

BELLINGHAM, WASH.—Puget Sound Pulp & Timber Co. stockholders recently approved proposed \$2,600,000 expansion program to double plant capacity. In anticipation of plans, city has retained Baar & Cunningham, engineers, Portland, Oreg., to design a proposed enlargement of municipal water plant to furnish pulp mill with increased water supply.

SEATTLE—Puget Sound Power & Light Co. is rebuilding portions of its power plant at Electron, Wash., which was damaged by a landslide several months ago. About \$100,000 will be spent.

Canada

FORT WILLIAM, ONT.—Abitibi Power & Paper Co. plans to make plant improvements costing \$1,000,000.

HAMILTON, ONT.—Remington Rand Ltd. of Canada, typewriter and office machines manufacturer, is enlarging its plant at a cost of approximately \$250,000.

ST. THOMAS, ONT.—City council is planning purchase of additional sewage disposal plant equipment. W. C. Miller is city engineer, city hall.

WINDSOR, QUE.—Windsor Mills Paper Co. plans to construct a water filtration plant costing around \$100,000.

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Bearings (Oilless)

Rhoads, R. W., Metaline Co.,
50 3rd St., Long Island City, N. Y.

BEARINGS (Quill)

Bantam Bearings Corp.,
South Bend, Ind.

BEARINGS (Radial)

Bantam Bearings Corp.,
South Bend, Ind.
Fafnir Bearing Co.,
New Britain, Conn.
Hoover Ball & Bearing Co.,
Ann Arbor, Mich.
Hyatt Bearings Div., General
Motors Corp., P. O. Box 476,
Newark, N. J.
New Departure Div., General
Motors Corp., Bristol, Conn.
Shafer Bearing Corp., 35 E.
Wacker Drive, Chicago, Ill.
SKF Industries, Inc., Front St. and
Erie Ave., Philadelphia, Pa.
Timken Roller Bearing Co.,
Canton, O.