STEEL

PRODUCTION • PROCESSING • DISTRIBUTION • USE

For forty-eight years—IRON TRADE REVIEW

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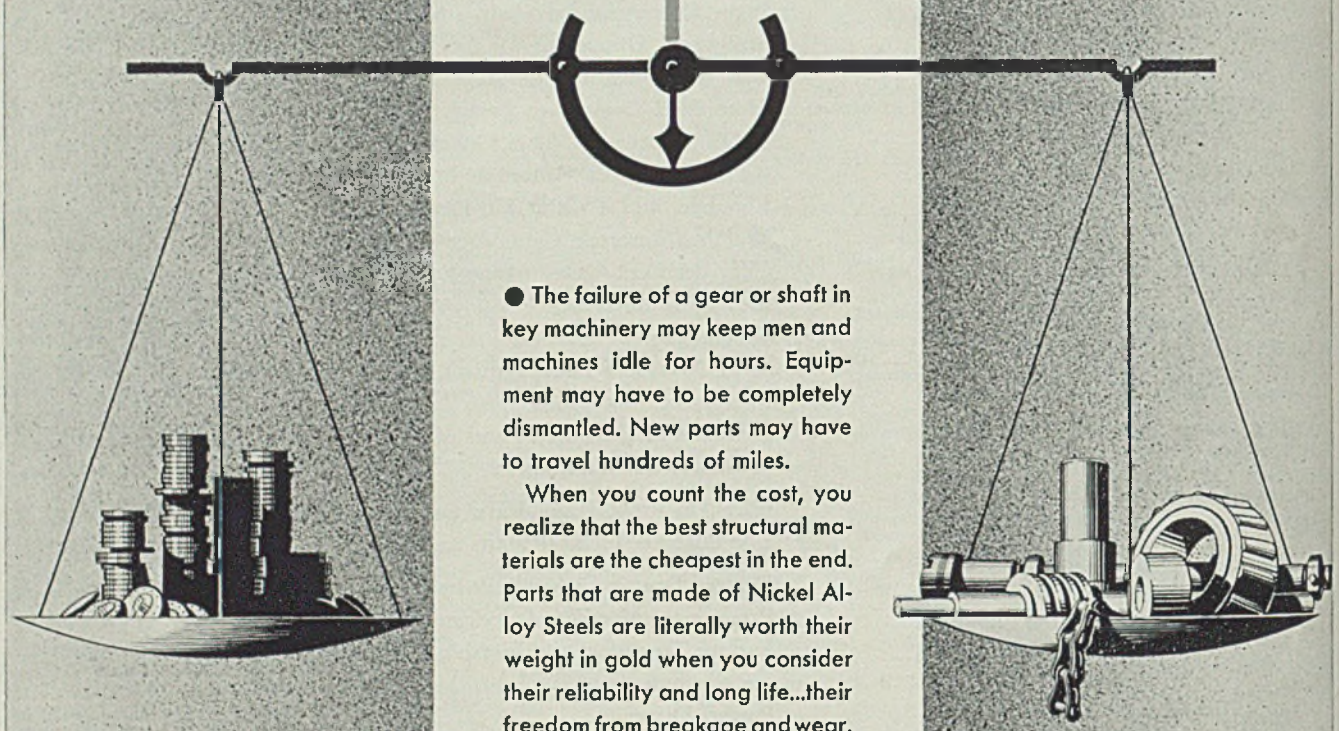

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As the Editor Views the News

WHILE stinging invectives were hurled at the federal tax bill while it was pending in congress, those attacks were mild in comparison to the annoyance the enacted law has provoked in the accounting rooms of industry. The utter impossibility of figuring the total tax burden for 1936 until after the close of the fiscal year was mentioned in the last quarterly financial statements of many companies. Inability to allow properly for federal taxes in advance (p. 16) prevents accurate comparisons of current statements with those of corresponding periods in the past. This world's worst tax law is a nightmare to auditors and accountants.

• • •

Head Ache? It's Tax Law

The true measure of the law's absurdity will be revealed when attempts are made to figure taxes in accordance with its grotesque provisions. If earnings for 23 steel companies in 1936 (p. 17) were the same as in 1935 and none of such earnings were distributed in dividends, the normal income tax rate would be 33 cents per ton of finished steel, and surtax 38.7 cents per ton. To determine the most advantageous balance between distributed and undistributed earnings in 1936 will require keen judgment. Small companies, badly in need of replenished reserves, will be penalized. Fortunately, the law is so bad it cannot stand long without modification.

• • •

Good—If Not Too Late

Industry at last has undertaken a campaign to tell its story to the public. Full page advertisements are being run in newspapers (p. 18) to explain the meaning of the "American sytem" and to discuss machines and unemployment, taxation, standards of living and the prospect for the future development of America. The campaign is being financed by individual manufacturers in various parts of the country. The motive is praiseworthy and the need for constructive information along these lines is urgent. It remains to be seen how far a campaign at this late date can offset the damage done in the long period during which industry did little to stem the tide of criticism that was rising against it. The most effective type of public relations work is that which goes on continuously, and which anticipates crises rather than comes to life after they occur.

• • •

Ingenuity Saves the Day

If an all-seeing eye could penetrate every nook and cranny of all the plants which comprise America's industrial workshop, it would witness daily scores of examples of resourcefulness and ingenuity on the part of erecting, operating and maintenance men and their crews. Every hour, somebody, somewhere, is employing an unusual method to solve a particularly knotty problem. Typical is the case of erectors in a General Motors plant (p. 43), who got around the difficulties of lowering a 90-ton forging machine into a concrete pit by filling the pit with ice, sliding the machine onto the ice directly over the anchor bolts, and speeding the process of melting and maintaining the machine in a level position by playing jets of live steam upon the ice cakes.

• • •

Lamp Burns Brightly

Ingenuity has been a dominant quality in the development of American machine tools. The genius of the early New England mechanics found expression in machines which even today win admiration for the high standards of workmanship which they represent. Nevertheless, with due credit to the Yankee achievements of the nineteenth century, machine tool builders in 1936 in widely scattered sections of the country are displaying equally spectacular ingenuity (p. 34) in building machines to unprecedented standards of precision and at the same time in accordance with the exacting requirements of modern production procedure. Thus far each succeeding generation in the field of mechanical design in America has been singularly successful in keeping the lamp of genius burning brightly.

E. L. Shaner

Per Capita Steel Production Now 76 Per Cent of Normal

PER capita production of steel ingots and castings shows strong recovery from the 1932 low, but a theoretical normal would not be reached for more than a year, even if production continued to rise in the same proportion as in 1935 and 1936.

This is one of the salient points in a portrayal of the trend of per capita production of ingots and castings from 1872 to the present, computed for STEEL by Col. Leonard P. Ayres, economist and statistician, Cleveland.

The normal trend line has been ascertained mathematically. It is the line from which the irregular yearly lines of actual per capita production deviate less than from any other line.

The chart indicates two more years at the same proportionate rise as in 1936 would bring the steel industry's output back to the same level as the 1929 peak, which was 1040 pounds per person.

Production for 1936 has been estimated at 42,961,913 gross tons, with the calculated output of ingots in the last half about equal to the first half's 21,326,335 gross tons. The estimated total production of ingots and castings this year would be about 26 per cent larger than last year's output.

On the basis of this estimated 1936 output, per capita production this year will be about 752 pounds, or 76 per cent of normal. The calculated per capita production last year was 594 pounds, 60 per cent of normal. In 1932 actual production was only 242 pounds, 26 per cent of normal.

For the six depression years 1930 to 1935 inclusive there was a deficiency of 2882 pounds for every person in the United States. This would be double the actual per capita production of 1929. Output of ingots and castings in the six-year period was 2906 pounds per person, 50 per cent short of normal for the period.

1929 Production Above Normal

Production per person in 1929 was 11 per cent above normal and in 1928 it was 5 per cent above normal.

Output for the six years prior to 1928 was 5036 pounds per person, 95 per cent of normal for that period.

A certain proportion of the deficiency, of course, will never be made up. The mathematical shortage is not the actual shortage. In depressions, the life of machinery and other equipment normally required is extended by some consumers through frequent repairing, replacement of parts and careful operation. Most iron and steel shortages have to be made up, but a certain percentage never will be.

Extent of the depression and how much greater it has been than any similar period since 1872 is well shown on the chart. It is interesting to note how the decline in actual per capita production reacted on the trend line, tending to flatten out the curve representing the normal. Also the depth to which output fell in 1932, when production per capita barely was enough to cover the amount of iron and steel being consumed by rust.

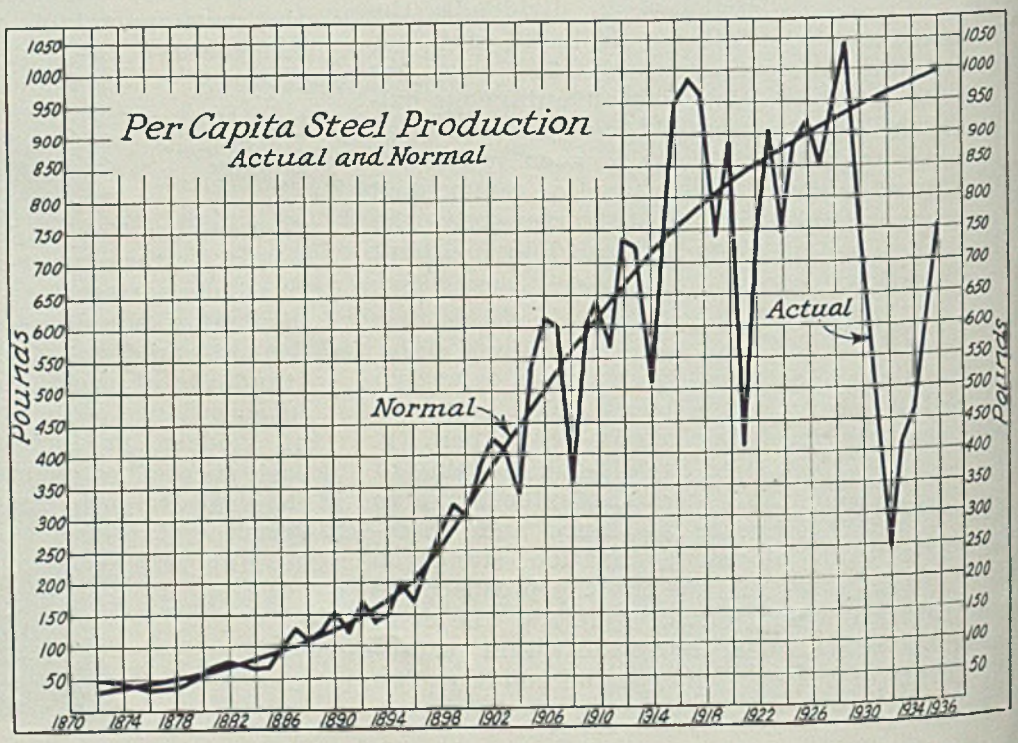
Another interesting aspect well shown on the chart is the unprecedented high pressure production of the World War era, compared to production of 1929.

Ingot Output Overtaking 1930

STEEL ingot production in the first seven months of 1936, at 25,249,066 gross tons, is equal to 95.27 per cent of the 26,500,839 tons made in the corresponding period of 1930, indicating that 1936 production will equal the 1930 tonnage long before the end of the year, according to figures by the American Iron and Steel institute.

The seven months figure this year is 37.8 per cent greater than the 18,-

NORMAL in the chart has been computed mathematically from actual per capita production since 1872. The effect of the depression, of course, has been to flatten out the normal curve. Output for 1936 has been estimated on the basis of seven months. The chart indicates the proximity of 1936 production to the best definition of "normal"; also, how far the industry has to go to reach the 1929 peak



310,478 tons made in the same period last year.

Ingot production in July was 3,922,731 tons, 1.56 per cent under that of June, an unusually small decline for mid-year. It is 72 per cent larger than the output of 2,267,827 tons in July last year.

Daily average in July was 150,874 tons, compared with 153,263 tons in June, and 87,224 tons in July, 1935. Daily average production for seven months of 1936 was 139,497 tons, compared with 101,162 tons for the same period in 1935. The per cent of capacity engaged during seven months of 1936 was 63.55, compared with 46.09 for the corresponding period of 1935.

District Steel Rates

Percentage of Open-Hearth Ingot Capacity Engaged in Leading Districts

	Week ended Aug. 8	Change	Same week 1935	1934
Pittsburgh	71	+ 2	41	19
Chicago	71½	+ ½	53	32
Eastern Pa.	50½	None	31½	22
Youngstown	77	— 1	51	38
Wheeling	92	None	79	30
Cleveland	82	None	62	32
Buffalo	81	None	37	34
Birmingham	61½	+ 3½	35½	20
New England	68	—10	45	38
Detroit	100	None	88	77
Cincinnati	72	— 4	†	†
Colorado	56	— 7	†	†
Average	71½	None	48	27½

†Not reported.

Production

STEEL ingot production last week averaged 71½ per cent, unchanged from the preceding week, and compared with 68.7 per cent, the official average for July. Of chief interest last week was the gain of 2 points at Pittsburgh; an increase of ½-point at Chicago, while Youngstown was down 1. Both Pittsburgh and Youngstown expect little change from the present rate through August. Details by districts follow:

Youngstown—Down 1 point to 77 per cent, and indications point to the rate holding at or above this level the remainder of the month.

Pittsburgh—Up 2 points last week to 71 per cent, with United States Steel Corp. units operating at 69 per cent, and the independents at 76 per cent. Thirty-seven steelworks blast furnaces continue active, with the following individual rates reported: Carnegie-Illinois, 16 of 32; Jones & Laughlin, 10 of 11; National Tube, 3 of 4; Pittsburgh Steel, 2 of 2; Pittsburgh Crucible Steel, 1 of 2; and Bethlehem, 5 of 7 at Johnstown, Pa.

Chicago—Increased ½ point to 71½ per cent, the peak for the year to date. Because of limitations in mills' attempts to increase finishing mill schedules further, the ingot rate actually is close to 100 per cent of practical, if not theoretical, capacity. Blast furnace operations are unchanged, with 25 of 41 stacks active.

Wheeling—Unchanged at 92 per cent last week, following five consecutive weekly gains previously. Thirty-four out of 37 open-hearth furnaces are melting.

Detroit—Held at 100 per cent last week, for the fifth consecutive week. All units are active.

Buffalo—Held at 81 per cent last week, with 30 furnaces continuing in production, and indications point to little or no change between now and Labor Day.

New England—Down 10 points to 68 per cent last week, with resumption to 78 per cent slated for this week.

Birmingham — With 14 open-hearth furnaces producing, the steel-making rate has been pushed up from 58 per cent to 61½ per cent the past week. Indications point to continued active production.

Cincinnati—Declined 4 points to 72 per cent last week, due to removal of one open hearth, leaving 18 active. Decline in demand for sheets from automobile industry, during model changeovers, may cut the rate a few points later in the month.

Cleveland—Remained at 82 per cent last week. Corrigan, McKinney division of Republic Steel Corp. took off one furnace to operate 12, while Otis Steel Co. added one to operate all eight. National Tube Co. at Lorain continued with 12 on active schedule.

Colorado—Off 7 points last week to 56 per cent, with Colorado Fuel & Iron Corp. operating nine furnaces.

Central eastern seaboard—Steady at 50½ per cent last week, with little or no change expected this week.

Steel Ingot Statistics

Monthly Production—Complete for Bessemer; Open Hearth, Calculated from Reports of Companies Making 98.03 per cent

	Open Hearth		Bessemer		Total		Calculated daily production, all companies (gross tons)	Number of working days
1936	Gross tons	Per cent of capacity	Gross tons	Per cent of capacity	Gross tons	Per cent of capacity		
Jan.	2,849,557	53.73	196,389	31.54	3,045,946	51.40	112,813	27
Feb.	2,761,973	56.25	202,445	35.11	2,964,418	54.03	118,577	25
Mar.	3,157,579	61.83	185,040	30.86	3,342,619	58.58	128,562	26
Apr.	3,637,479	71.23	304,775	50.83	3,942,254	69.09	151,625	26
May	3,744,161	73.32	302,092	50.38	4,046,253	70.91	155,625	26
June	3,649,948	71.47	334,897	55.85	3,984,845	69.83	153,263	26
July	3,596,125	70.42	326,606	54.47	3,922,731	68.74	150,874	26
7 mo.	23,396,822	65.81	1,852,244	44.61	25,249,066	63.55	139,497	181
1935								
Jan.	2,630,303	49.70	239,858	34.99	2,870,161	48.02	106,302	27
Feb.	2,549,935	54.21	224,336	36.82	2,774,271	52.22	115,595	24
Mar.	2,634,482	51.70	230,810	34.97	2,865,292	49.78	110,204	26
Apr.	2,408,686	47.27	231,916	35.14	2,640,602	45.88	101,562	26
May	2,378,865	44.95	254,796	37.17	2,633,661	44.06	97,543	27
June	2,048,177	41.80	210,487	33.17	2,258,664	40.81	90,347	25
July	2,043,371	40.10	224,456	34.01	2,267,827	39.40	87,224	26
7 mo.	16,693,819	46.95	1,616,659	36.72	18,310,478	46.09	101,162	181
Aug.	2,682,569	50.69	233,361	34.05	2,915,930	48.78	107,997	27
Sept.	2,591,267	52.88	233,737	36.83	2,825,004	51.04	113,000	25
Oct.	2,872,040	54.27	270,719	39.50	3,142,759	52.58	116,398	27
Nov.	2,898,246	56.87	252,163	38.20	3,150,409	54.73	121,170	26
Dec.	2,845,013	58.06	228,392	35.99	3,073,405	55.53	122,936	25
Total	30,582,954	50.17	2,835,031	35.91	33,417,985	48.54	107,453	311

Capacity percentages for 1935 are based on open-hearth capacity of 60,954,717 gross tons and bessemer of 7,895,000 gross tons on Dec. 31, 1934; for 1936 on open-hearth capacity of 61,280,509 gross tons and bessemer of 7,195,000 gross tons, as of Dec. 31, 1935.

July Pig Iron Total Is Better Than Estimate

Actual production of coke pig iron in July was slightly higher than indicated in the preliminary figures published in STEEL, Aug. 3, page 17. Average daily production for the month was 83,735 gross tons, a loss of 2816 tons, or 3.2 per cent, from the daily rate of 86,551 tons established in June.

Total output amounted to 2,595,791 tons, against the 2,596,528 tons made in June. For the seven months of 1936, the total was 16,175,793 tons, an increase of 42.5 per cent over the 11,350,274 tons produced in the corresponding period during last year.

Active stacks on July 31 numbered 146 instead of 148 as reported last week. Information that the Youngstown Sheet & Tube Co. had blown in two of its Youngstown district blast furnaces was incorrect, statistics supplied to STEEL having been in error. The 146 operating furnaces on the last day of July compared with 144 on June 30 and 92 in July, one year ago. The total was the highest for any month since June, 1930, when 162 were active.

Tax on Undistributed Profits Becomes Problem for Steel

UNCERTAINTIES created by the confusing new federal tax law, with its heavy penalties on undistributed corporation profits, have been emphasized in second quarter financial statements of the steel industry.

As yet there has been no answer to the question of how the industry is going to conserve its profits for use in depression periods. Such conservation is penalized through the unprecedented surtaxes in the revised federal setup. Government seeks to drive profits into the hands of the large individual stockholders, who then will be taxed under the higher income tax brackets.

Last year dividends in excess of $21,000,000 were paid by major steel producers. Twelve of them, representing 83 per cent of the nation's total ingot capacity, paid $18,434,968. Combined earnings of these same 12 in the first half of this year were $41,281,010, more than double last year's dividends. Although the total of dividend distributions for the 12 so far this year is not available, dividends declared last month by the steel industry totaled nearly $8,500,000, compared to $5,750,000 in July 1935.

In its second quarter statement United States Steel Corp., made provision for $3,602,811 preferred dividends for the quarter ending June 30 (STEEL Aug. 3, page 15). It retained surplus of $9,259,612. Its financial statement bore the notation that "the surtax on undistributed profits must necessarily be based upon the financial results for the full year of 1936. Accordingly, no determination of same can be made until the annual figures are known."

May Reduce Surplus Later

In view of the amount retained the question was raised in some quarters whether the Steel corporation would seek to rebuild its surplus despite the new federal tax on undistributed profits, or reduce the surplus later this year. Its surplus for the first six months this year was $10,834,511.

Most of the other leading steel producers advised in their second-quarter statements that "no provisions have been made for surtaxes on undistributed net income." National Steel Corp., however, made provision for $550,173 federal income taxes for the quarter ending June 30, compared to $496,413 in the same quarter of 1935. Profit of National Steel was $3,356,743 before federal income tax in the second quarter of this year, compared to $3,687,583 in the corresponding period of 1935.

The inability of corporations to reckon with some degree of certainty as to what they will have to pay out threatens to make quarterly statements vague, in the opinion of financial experts.

Discontinuance of regular dividends is a possibility. Bendix Aviation Corp. discontinued regular dividends last week. Vincent Bendix, president, said the action had been taken "on account of penalties imposed by the new revenue act." After announcing a dividend of 50 cents a share, he said future dividends would be paid "from time to time in such amount as the earnings of the corporation and its financial position permit."

In place of the 1934 act's 13¾ per cent income tax rate on corporations, the new act, effective last Jan. 1 on calendar year returns and fiscal years beginning in 1936, substitutes a schedule of 8 per cent on the first $2000 of net income; 11 per cent on the next $13,000; 13 per cent on the next $25,000, and 15 per cent on all over $40,000.

Then comes the new surtax on undistributed profits. Such profits will be taxed 7 per cent on the first 10 per cent withheld; 12 per cent on the next 10 per cent; 17 per cent on the next 20 per cent; 22 per cent on the next 20 per cent and 27 per cent on the undistributed net income which is in excess of 60 per cent of the adjusted net income.

Allowance is made to give credit for the retainment of a portion of the annual earnings which on account of prior contracts or agreements signed before May 1, 1936, prohibit distribution of the earnings.

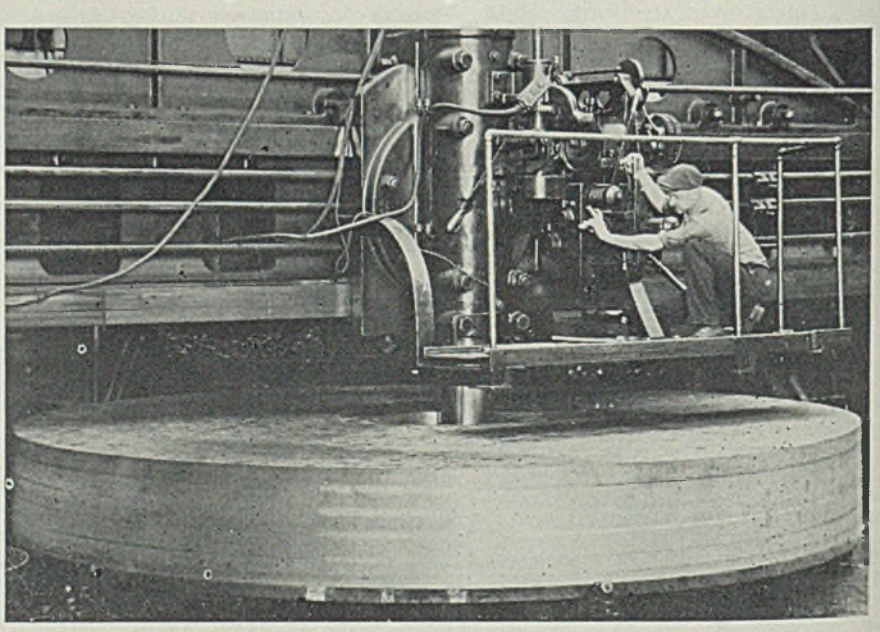
The normal tax for a steel corporation with a net income of $1,000,000 will be $148,840. In addition to this, if no dividends are paid the retained earnings tax will be $174,497. If a 50 per cent dividend is paid the retained earnings tax will be $63,837.

Ways of Avoiding Tax

A corporation with a net income of $100,000, no part of which came from dividends from other corporations or other special sources, would pay a normal tax of $13,840. If dividends totaling $10,000 were paid, the undistributed earnings tax would be $14,962. If 40 per cent is paid in dividends the surtax would be $8357.

Business promotion expenditures

80-Ton Flywheel for Carnegie-Illinois New Plate Mill



EIGHTY-TON flywheel, on a boring mill in the shops of the Westinghouse Electric & Mfg. Co., East Pittsburgh, to be part of a 6000-kilowatt motor generator set for the Carnegie-Illinois Steel Corp.'s new plate mill, Homestead, Pa. Fifteen feet in diameter, it will operate at 375 revolutions per minute, and equalize the load from the reversing motor keeping the variations in power drawn from the line within 25 per cent. The flywheel consists of six rolled steel plates, welded at the rim and center bore

might be increased or wages boosted as two likely means of reducing net income to correspondingly reduce the taxes.

Adequate comparisons with previous years are impossible because of uncertainty as to the amount which the steel industry will pay in dividends this year.

Applied to the production of 24,000,000 tons of finished steel products last year, the federal income tax of about $7,300,000 paid by 23 major steel producers was 30½ cents a ton. Under the 1936 act, based on the same income and production, the normal income tax rate per ton would amount to 33 cents.

If the earnings for the 23 major producers in 1936 were to be the same as those for the year 1935, and tonnage of production remained the same, and if none of such earnings were distributed, the surtax rate per ton would be 38.7 cents.

However, if 50 per cent of such earnings were distributed and the other 50 per cent retained, the surtax on the undistributed portion would be approximately $3,400,000, resulting in a rate against the 24,000,000 tons of production of 14.2 cents per ton. If 75 per cent of the earnings were distributed the surtax on the remaining 25 per cent would be approximately $1,250,000, resulting in a rate per ton of 5.2 cents.

Taxes Heaviest for All Time

Combined with state and local taxes, and the industry's payments for unemployment insurance (1 per cent on total payrolls for 1936), the burden will be greater than ever before. In addition, next year payments for old age pensions will start, under the federal social security act.

One of the biggest questions being asked by business men and industrialists today is how far the government will go in overlooking devices designed to help soften the burden of the revised federal taxes. One observer has pointed out that a company might pay dividends in stock, then use the cash to buy in the bonds of a subsidiary. In this case the government would still get its tax.

More Steelmakers Report Profits

SIXTEEN leading producers of steel, representing 56,636,000 gross tons of ingot capacity, or 88.8 per cent of the country's total have now issued financial reports for the second quarter. (STEEL'S tabulation and analysis, Aug. 3, page 14, showed 12, representing 83 per cent of capacity).

Aggregate profits for the 16 for the first half this year are $45,784,809, compared with $18,183,157 in the first half last year.

American Rolling Mill Co., Middletown, O., reports a net income in the June quarter of more than double that of the first quarter. In the second quarter the company had a consolidated income of $1,561,161. This is equal to 68 cents a share on 2,252,491 common shares outstanding. This compares with $1,087,529 or 62 cents a share on 1,710,776 shares in the second quarter last year, and $743,904 in the quarter ending March 30 this year.

For the six months ended June 30, the company reports a net income of $2,305,065 or $1.02 a share on 2,192,284 common shares. This compares with $2,459,003 or $1.40 on 1,710,776 shares a year ago. For the 12 months ended June 30, the net income was $4,157,671, or $2.05 a share on 1,971,201 shares.

Allegheny Nets $1.35 a Share

Allegheny Steel Co., Brackenridge, Pa., had a net income for the first half of $830,778, or $1.35 a common share, compared with $147,554 in the period last year. The second quarter earnings were $493,814, or 45 cents a share. This compares with $336,964 in the first quarter, and a net loss of $176,592 in the second quarter last year.

Crucible Steel Co. of America reports for the first half earnings of $1,262,512, equal to 86 cents a share. In the first half last year earnings were $456,821, or $1.83 on the 7 per cent preferred.

Granite City Steel Co. has an indicated profit of $44,226 for the quarter ended June 30, equal to 11 cents a share on 382,488 shares now outstanding. In the preceding quarter the net profit was $61,217, or 24 cents a share on 254,992 shares and in the June quarter last year profit was $177,792, or 70 cents a share on 254,992 shares. For the six months, net profit was $105,443, equal to 27 cents a share, compared with $312,373 or $1.22 a share on 254,992 shares in the period in 1935.

Additional Financial Reports from Steel Consumers

	Second Quarter 1936	Second Quarter 1935	First Half 1936	First Half 1935
Link-Belt Co., Chicago	$ 451,189	$ 331,606	$ 758,322	$ 532,584
Briggs & Stratton Corp., Milwaukee	271,377	320,269	593,227	677,344
A. M. Byers Co., Pittsburgh	6,133	272,026*	178,101*	469,805*
Black & Decker Mfg. Co., Detroit	213,133	134,468	.....	275,067
Hoskins Mfg. Co., Detroit	138,313	92,243	251,334	198,078
Square D Co., Detroit	.....	.....	341,055	268,926
Evans Products Co., Detroit	21,538	6,461	277,455	256,753
Sullivan Machinery Co., Chicago	.....	.....	104,875	64,336*
Reliance Mfg. Co., Chicago	291,866	87,041*	437,447	51,989*
International Business Machines Corp.	2,289,080	2,030,701	3,832,001	3,548,115
Timken Roller Bearing Co., Canton, O.	2,538,138	.....	4,606,994	.....
McKeesport Tin Plate Co., McKeesport	.....	.....	740,202	1,036,848
Walworth Co., New York	70,062	171,470*	80,537	219,550*
National Radiator Corp., Johnstown, Pa.	129,758*	.....	307,221*	.....
Spang, Chalfant & Co., Pittsburgh	590,991	407,727	.....	.....

*Deficit.

Jones & Laughlin To Issue Bonds for $30,000,000

Jones & Laughlin Steel Corp. has applied for listing on the New York stock exchange of $30,000,000 new series A 4½ per cent first mortgage bonds due March 1, 1961.

Proceeds of the bonds will be used with $5,000,000 serial bank loans, as follows: $25,000,000 estimated by company to cover cost of construction at Pittsburgh of the new continuous wide strip-sheet mill and additional electric generating capacity; $5,500,000 to pay off indebtedness to Union Trust Co., Pittsburgh; $2,375,000 estimated by corporation to cover expenditures to complete new blooming mill at the Pittsburgh works and for additions and improvements at the Aliquippa works.

Net proceeds of the new bonds, which were sold April 2 to a syndicate, were stated at $27,875,000.

Erie Malleable Out of Receivership, Reorganized

Receivership of the Erie Malleable Iron Co., Erie, Pa., has been dissolved and the firm reorganized with the following directors: Archibald Brown, Joseph Roebling, Trenton, N. J.; Robert H. McCarter, Newark, N. J.; Charles H. English, Enoch C. Filer, A. W. Mitchell, and Charles G. Strickland, Erie, Pa.

Officers of the new company are Mr. Filer, president; Mr. Strickland, vice president; J. H. Redhead, executive vice president and general manager; Ray H. Eisenlord, secretary and treasurer.

Mr. Redhead continues actively in charge as president and treasurer of the Lake City Malleable Co., Cleveland. In addition, he has for several years been operating the malleable division of the Warren Tool Corp., Warren, Ohio.

The Erie Co. has been operated continuously for the past 50 years. The same operating staff will be continued as under the receivership.

Breach Hurts CIO, Is View in Steel

OPINION in the steel industry last week was that the suspension of the ten trade unions represented in the Committee for Industrial Organization, by the American Federation of Labor's executive council, has greatly diminished the CIO's chances for organizing the industry.

Unless the CIO unions surrender to the A. F. of L. within 30 days—which now appears improbable—they are outlawed, branded as a body that does not believe in majority rule. This, it is believed, will hurt the CIO in its appeal to steel plant labor.

Majority Against Strike

To begin with, a large percentage of steel employes now in the Amalgamated Association of Iron, Steel and Tin Workers and in craft unions, which have members in the steel plants, are conservative, and have resented CIO tactics. Furthermore, it is the conviction of steel plant executives that fully 95 per cent of all their employes are opposed to unionization, and prefer the company plan of representation.

Both the Lewis and the Green factions apparently do not appreciate that the great majority of employes would prefer to continue to work than strike. This is the principal reason why the CIO, with hundreds of organizers in the field, so far has made relatively little progress.

Employe representatives at several plants, have voted to request 15 per cent wage advances. One reason presented by the representatives is the improved earnings of steel companies. The answer to this is that after running in the red for years the companies are just getting out, and now have an annual rate of return on capital invested of only 2 per cent—less than that paid on a savings account.

Where Mediation Failed

Expulsion of the CIO unions will cost the A. F. of L. approximately 1,000,000 of its 3,500,000 members, and at least $120,000 regular annual revenue. What the A. F. of L. will do in retaliation, if anything, is the uncertain factor. The Green faction may now become more active, in competing with the CIO for members. It is possible that steel may be harassed from both groups. It is evident that the CIO has no intention of relaxing its efforts.

The fact that government mediators, obviously acting at the behest of the administration, were unsuccessful in reconciling the two factions, makes it appear doubtful that the administration could restrain the Lewis faction in the matter of a steel strike, even if it were so disposed.

Governor Graves of Alabama announced that the two-months strike of 2200 Tennessee Coal, Iron & Railroad Co.'s miners has ended. Under the "Graves compromise" the company's incentive wage plan, which was said to have precipitated the strike, will be given four months trial. A seven-man arbitration board will act as observers with the power to hear objections of either the operators' or miners' spokesmen, and to recommend remedies. The company and the union each will name two men to the commission, and three neutrals will be appointed by the governor.

At the end of the four-month trial period, the governor said, if there still are differences, the arbitration board "will be allowed to enforce whatever is fair."

More than 12 iron foundries in Brooklyn, N. Y. are resuming, a strike having been settled. Employes received an increase of 5 per cent in wages and the promise of an additional 5 per cent in six months. They demanded an increase of 15 per cent and union recognition for common labor. The molders' union has long been recognized by these Brooklyn foundries.

More Pay For Employes

Employes working on an hourly basis for Ludlum Steel Co. will find additional compensation, estimated unofficially at $30 per person, in their pay envelopes Aug. 14, totaling 5 per cent of the wages they received in the first six months of 1936. In the future, the Bedaux system, now being installed at the Watervliet and Dunkirk, N. Y., plants will govern additional compensation for Ludlum employes.

Granite City Steel Co., Granite City, Ill., made effective July 1 a 2 per cent increases in wages. This increase in wages is considered the equivalent of a week's vacation.

A 10 per cent wage increase has been granted by National Radiator Co., New Castle, Pa.

Phoenix Iron Co., Phoenixville, Pa., has announced a 10 per cent increase in the hourly wages of all mill workers, effective Aug. 1. A week's vacation also will be granted to all employes who have been with the company five years.

Aluminum Co. of America has granted an increase of approximately 5 per cent in wages, effective Sept. 15, in the form of a 3-cent per hour increase to more than 20,000 hourly rate employes, about one-third of which are in the Pittsburgh district. Company officials state the average hourly wage rate is now 11 per cent higher than in 1929, and the present increase marks the second within the last ten months.

Selling American Industry to People

THE beginning of a national advertising campaign to carry the story of American industry to the people was announced by the National Association of Manufacturers, New York.

The first of a series of five full page advertisements appeared last week in Chicago newspapers, and the advertisements will be run over the next few weeks in cities throughout the country, financed by individual manufacturers in each community. The association is offering matrices for each page in each individual community.

The subjects are: What is your American system all about? Machines and employment; Taxation; American standards of living; America's tomorrows.

C. M. Chester, president of the association, said:

"Industry's silence in the face of continued criticism against the American business system has been misunderstood. The association feels that the time has arrived to provide the public with the real facts about the American system.

"Industry is too vital to the general welfare to become the football of political parties."

Executives Get 3 Per Cent Of Payrolls, Survey Shows

Executive salaries, including bonuses, comprised only 3 per cent of the total payroll of 694 companies in 25 industries surveyed recently by the National Association of Manufacturers. Taxes took 34 per cent of payrolls, the association announced.

Top salaries comprised 6/10 of 1 per cent of sales, and 13 cents for each share of common stock.

Pittsburgh Steel Lights Stack

With appropriate ceremonies, Gretchen Roemer, daughter of Henry A. Roemer, president, Pittsburgh Steel Co., lighted the company's No. 2 blast furnace at Monessen, Pa., Aug. 4. Her father and E. W. Smith, Albion Bindley, and H. I. Miller, all executives of the company, as well as other officials, were present.

The company is now operating both its blast furnaces for the first time in many years. Part of the iron will be used to supply the Lowellville O., open hearths of Sharon Steel Corp., this requirement having been cared for by the Davison Coke & Iron Co., Neville Island, Pittsburgh, up until a few months ago.

Republic To Make Tin Plate in Coils

REPUBLIC STEEL CORP., Cleveland, has let a contract to the United Foundry & Engineering Co., Pittsburgh, for a 4-stand tandem 4-high strip tin plate mill to be erected at its plant at Niles, O. An appropriation of $3,000,000 has been made to cover cost of the improvement.

Niles plant of Republic has contained only hot and cold-rolled sheet mills, the galvanizing and long terne equipment originally installed there having been removed to its Stark works at Canton, O. Up to the present Republic has produced tin plate only at its Warren, O., works.

The new mill will be built by United Engineering & Foundry at its Youngstown plant. Some additions to the building at Niles will be necessary. The mill probably will be ready for production next spring.

The Niles plant was built in 1909 by the DeForest Sheet & Tin Plate Co. and was bought by the Republic Iron & Steel Co. May 9, 1919, the equipment then being removed to Canton.

The new plant will be highly mechanized and will produce tin plate in coils, which according to reliable reports has never before accomplished in this country.

Decision to place the new work in Niles is said to have come about because of the availability of land there, whereas at Warren, considered the logical place for such a mill, the necessary land is not to be had. The project contemplates rolling the hot strip in the Warren mills and shipping it to Niles where the processing will be completed. Republic has two reversing cold mills at Warren and the Niles unit will take the surplus capacity of the hot strip mill. It also has 14 tinning pots at Warren.

Meetings

INSTITUTE of Metals and Iron and Steel divisions of the American Institute of Mining and Metallurgical Engineers have arranged a joint symposium on "Physical Tests of Metals and Their Significance" during their meetings in Cleveland, Oct. 19-22, in connection with the National Metal congress and exposition. Morning and afternoon sessions on Oct. 22 will be devoted to the symposium.

Headquarters for the A. I. M. E. will be at Hotel Statler and all sessions will be held there except those on Wednesday afternoon, Oct. 21, which will be in Public Auditorium. Technical session will begin on Tuesday morning, Oct. 20. The joint dinner of the two divisions will be served on the evening of Oct. 21.

Subjects to be considered at sessions of the Institute of Metals include aging of metals, constitution of alloy systems, and general nonferrous metallurgy.

Hundreds of Small Plates Welded Into "World's Largest"

THIS immense plate of sheet steel, 220 feet in diameter, weighing approximately 300 tons, was lowered into place on its foundation July 16 at the Ford Motor Co.'s Rouge plant. It will serve as the bottom of a 10,000,000 cubic feet gas holder, and is reported to be the first welded bottom plate of this size ever built. During the welding of hundreds of small plates they were held 3 feet above foundation by 160 screw-jacks. The gas holder will tower 350 feet in the air, as high as a 35-story building

Welding Research Committee Confers

A CONFERENCE of the subcommittee on industrial research of the Engineering Foundation welding research committee was held at Watertown arsenal, Watertown, Mass., July 23-24, to complete organization of subcommittees preliminary to analysis of research activities being conducted to solve many complicated problems in welding.

Col. G. F. Jenks, commanding officer of the arsenal and chairman of the subcommittee, presided. He pointed out that this work is of great importance to all branches of the metalworking industry, including governmental departments, railroads, shipyards, automotive, aircraft, buildings, bridges and pressure vessels.

The two-day session included the presentation of papers and reports on radiography, monel metal, low-alloy steels, and high-velocity impact tests. Members of the subcommittee had an opportunity to witness various welding operations at the arsenal, centrifugal casting of low-alloy steel, and testing of metals under impact loads delivered at the rate of more than 300 feet a second.

Critical Transition Velocity

H. C. Mann, in charge of the work on impact testing, stated that he had found that almost every metal has a critical transition velocity at which its ability to withstand impact loads falls off sharply. Through the results of these tests, the arsenal has been able to select those materials which are best suited for the various services encountered in ordnance work.

Lynn works of the General Electric Co. acted as host to the scientists and engineers and demonstrated the wide applications of welding in the construction of all types of dynamo-electric machinery and boilers.

A second conference is planned in Cleveland during the annual convention of the American Welding society and the National Metal congress and exposition.

Dr. C. A. Adams, chairman of the welding research committee, reported that the Engineering Foundation has made three grants totaling $12,000 to launch the project and that leaders of industry have pledged whole-hearted co-operation.

Steel Index Is Ready

The index to Volume 98 of STEEL, *for the first six months of 1936, now is ready for distribution. Copies will be sent to all subscribers requesting them.*

50% Gain in June Exports Over 1935

FIFTY per cent greater tonnage of steel and iron products, excluding scrap, was exported from the United States in June than in the corresponding month of 1935. On the same basis manufactured and semi-manufactured steel and iron exports in June exceeded those of May, 1936, by 6.4 per cent in volume. June exports, with scrap excluded, were 103,778 gross tons valued at $7,579,807, compared with 97,511 tons valued at $7,388,962 in May and 69,032 tons valued at $4,611,186 in June, 1935,

FOREIGN TRADE OF UNITED STATES IN IRON AND STEEL

Gross Tons

	1936		1935	
	Imports	Exports	Imports	Exports
Jan.	50,489	241,564	22,784	262,740
Feb.	43,358	213,802	28,905	228,537
Mar.	56,720	264,337	21,409	323,035
April	49,621	301,987	28,866	205,336
May	59,391	314,950	47,719	286,598
June	59,910	294,951	33,208	286,333
6 mo.	319,145	1,631,591	182,863	1,592,687
July	.....	.....	31,894	296,802
Aug.	.....	.....	31,312	247,312
Sept.	.....	.....	53,158	244,419
Oct.	.....	.....	59,569	238,358
Nov.	.....	.....	56,637	205,242
Dec.	.....	.....	53,678	239,268
Total	.....	.....	469,954	3,063,982

according to the metals and minerals division of the department of commerce.

Total exports for June, including scrap, were 294,951 tons valued at $10,147,811, compared with 314,950 tons, valued at $10,099,360, in May and with 286,333 tons valued at $6,993,087 in June, 1935. This is a decline of 6.3 per cent from May and a gain of 3 per cent over June of last year, in tonnage.

During the first six months of 1936 exports, excluding scrap, made a gain of 25 per cent in tonnage over the same period of 1935, with 554,656 tons valued at $41,439,238, compared with 442,200 tons valued at $31,066,001 in first half of 1935. With scrap included total exports for first half of this year were 1,631,591 tons, compared with 1,592,687 tons in first half of 1935, an increase of 2.5 per cent.

Larger shipments during the initial six months period were made of tin plate, black steel sheets, heavy rails, steel plates, plain shapes and wire rods. Canada continued its position as during June leading outlet for steel and iron exports, except scrap, taking 31,232 tons spread over a wide variety of products. During first half Canada imported from the United States 130,341 tons, exclusive of scrap, compared with 93,489 tons in first half of 1935.

Details of steel and iron imports into the United States for June and first half of 1936 were presented in STEEL, Aug. 3, page 21.

UNITED STATES EXPORTS OF IRON AND STEEL PRODUCTS

Gross Tons

Articles	June, 1936	May, 1936	Jan. thru June, '36
Pig iron	91	121	924
Ferromanganese and spiegeleisen	16	60	226
*Other ferroalloys	75	156	1,041
Ingots, blooms, etc.	1,682	982	6,883
Bars, iron	107	108	656
†Bars, concrete	188	377	1,341
‡Bars, other steel	3,128	5,114	24,436
Wire rods	3,317	3,183	20,931
Boiler plate	361	188	1,597
Other plate, not fab.	3,922	5,207	28,095
Skelp, iron or steel	6,017	5,188	18,362
Iron sheets, galv.	111	219	682
Steel sheets, galv.	4,654	4,830	28,420
Steel sheets, black	10,771	10,106	65,787
Iron sheets, black	798	605	3,895
Strip steel, cold-rolled	1,987	1,389	12,176
Strip steel, hot-rolled	4,015	2,780	17,209
Tin plate, taggers' tin	26,596	25,889	131,706
Terne plate	631	373	2,100
Tanks, except lined	1,669	1,428	12,768
Shapes, not fabricated	6,057	3,166	25,573
Shapes, fabricated	1,319	1,605	9,237
Plates, fabricated	570	965	1,919
Metal lath	168	113	542
Frames and sashes	91	36	466
§Sheet piling	263	257	1,540
¶Rails, 60 lbs. and over	6,458	2,734	29,732
¶Rails, under 60 lbs.	1,652	1,706	4,325
Rail fastenings	965	887	3,621
Switches, frogs, crsgs.	62	56	572
Railroad spikes	134	137	1,222
R. R. bolts, nuts, etc.	18	43	326
Boiler tubes, seamless	344	469	2,713
Boiler tubes, welded	36	9	235
Casing and oil-line pipe, seamless	1,908	791	8,063
Do, welded	141	248	1,054
Seamless black pipe, other than casing	193	378	1,802
Malleable iron screwed pipe fittings	310	339	1,634
Cast iron screwed pipe fittings	174	217	974
Cast iron pressure pipe and fittings for	485	688	3,393
Cast iron soil pipe, Do	495	420	2,523
Welded blk. steel pipe	687	605	5,155
Welded black wrought iron pipe	289	203	1,013
Welded galv. steel pipe	593	852	4,171
Welded galv. wrought iron pipe	99	68	727
Riveted iron or steel pipe and fittings	115	68	496
Plain iron or steel wire	2,376	2,806	12,655
Galvanized wire	1,693	1,966	9,973
Barbed wire	1,996	3,215	14,779
Woven wire fencing	191	180	1,166
Woven wire screen cloth	94	79	506
Wire rope	231	283	1,684
Other wire and mfrs.	399	326	2,354
Wire nails	448	786	4,002
Horseshoe nails	54	50	315
Tacks	32	24	160
Other nails, inc. staples	149	242	1,161
Ordinary bolts, mach. screws, rivets, washers	493	621	3,124
Iron castings	723	342	3,797
Steel castings	308	213	1,449
Car wheels, tires, axles	558	594	2,886
Horseshoes and calks	1	6	63
Iron and steel forgings, n. e. s.	240	415	2,319
Total gross tons	103,778	97,511	554,656
Iron and steel scrap	186,696	213,366	1,050,275
Tin plate scrap	.....	.....	8,825
Waste-waste tin plate	4,477	4,073	17,837
Total gross tons	191,173	217,439	1,076,935
Grand total all iron and steel products	294,951	314,950	1,631,591

*New class. No comparable figures for previous year.

†New class. Previously included under former classification "steel bars."

‡New class. Includes alloy, nonalloy and stainless steel bars (excepting concrete reinforcement bars).

§New class. Previously included with "frames and sashes."

¶Previously shown at "50 pounds."

Canada Imports More Steel, Most From United States

Steel imports into Canada in June had a total value of $12,806,000, a large increase over the corresponding month of last year, when the total was $9,421,000. The value of imports from the United States rose from $7,090,000 to $10,018,000. Machinery, which headed the list, had a value of $2,198,000, compared with $1,383,000 in June, 1935. Other imports from the United States included automobile parts, $1,989,000; farm implements, $1,035,000; plates and sheets, $1,032,000; automobiles, $797,000; engines and boilers, $630,000; rolling mill products (miscellaneous) $454,000; castings and forgings, $155,000; tools, $129,000; stamped and coated products, $128,000; tubes and pipes, $91,000; hardware and cutlery, $82,000.

Canadian exports for the month amounted to $4,450,000, against $3,742,000 for the corresponding month of last year, exports to the United States increasing from $306,000 to $539,000. Farm implements exported to the United States had a value of $204,000, compared with $165,000 in June of last year.

Farm Equipment Exports In Heavy First-Half Gain

Exports of farm equipment from the United States in the first half of 1936 were valued at $21,270,657 compared with $14,413,651 in the corresponding period of 1935 and $10,078,768, in the January-June period of 1934, representing gains of 55 per cent and 111 per cent, respectively, according to machinery division, department of commerce.

Two-thirds of the total trade consisted of tractors and parts, a gain of nearly 64 per cent over the exports in the first six months of 1935.

United States exports of agricultural equipment in June, 1936, were valued at $3,819,842, a gain of 35 per cent compared with $2,839,141 in June, 1935.

Mexico Buys Excavators

Business in Mexico continues to show steady improvement, to make that nation a larger market for American products, according to Frederick Salditt, export manager of Harnischfeger Corp., Milwaukee, upon his return from an extended tour of investigation. Extensive construction work, and increasing capital due to American purchases of silver were noted. The company recently sold eight large excavators for use in railroad construction in areas heretofore inaccessible except by water and air.

Men of Industry

WILLIAM MILLER, formerly assistant manager of sales of tin mill products for Jones & Laughlin Steel Corp., Pittsburgh, has been appointed manager of sales of sheet and strip products for the company, in anticipation of the completion within a few months of the company's new strip and sheet mill now under construction.

A graduate of Carnegie Institute of Technology, Mr. Miller has been with the company for 22 years. He previously had served in various capacities in the Pittsburgh office, in

William Miller

the Philadelphia district office, and as district sales manager at Atlanta, Ga., before going to Pittsburgh as assistant manager of sales for the tin mill products division.

♦ ♦ ♦

Fred C. Pyper, who joined the Buick Motor Co. in 1916 as foreman of tool grinding, has been promoted from assistant master mechanic to the position of general master mechanic.

♦ ♦ ♦

H. P. Munger has recently become affiliated with the research department of the Republic Steel Corp., Warren works, Warren, O., as metallurgist. He is a member of the American Society for Metals.

♦ ♦ ♦

W. F. Angus, has been elected president and managing director of the Dominion Bridge Co., Montreal, Que., and also president of Dominion Engineering Works, a subsidiary, succeeding G. H. Duggan.

♦ ♦ ♦

M. A. Mawhinney, Salem, O., has terminated his association with the Salem Engineering Co., Salem, O., as consultant. He was a partner in that business from its formation until January of this year and then served as consultant until this time.

♦ ♦ ♦

William Hodder, former maintenance manager for Jones & Laughlin Steel Corp., Pittsburgh, and later with the Carnegie-Illinois Steel Corp. in the Chicago district, sailed from New York, Aug. 4, for South Wales, Australia, to be in charge of the construction of a new strip mill there.

♦ ♦ ♦

Leslie G. Korte, foundry engineer, Atlas Foundry Co., Detroit, has been elected chairman of the Detroit chapter of the American Foundrymen's association. Mr. Korte became connected with Atlas Foundry on Feb. 1 of this year, resigning as general superintendent of the Detroit Stoker Co.

♦ ♦ ♦

George Summerfield has been appointed chief inspector of the Hill Diesel Engine Co., Lansing, Mich. He formerly occupied the position of chief inspector with Hayward-Tyler Co., of Luton, England, Novo Engine Co., Reo Motor Car Co. and the Olds Motor works, division of General Motors Corp.

♦ ♦ ♦

J. M. McKibbin, associated with Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., since 1920, has been appointed manager of the newly created sales promotion department. All apparatus sales promotion operations, excepting those of the merchandising department, now will be co-ordinated under this new division.

♦ ♦ ♦

George P. MacKnight has returned to the Porcelain Enamel institute, 612 North Michigan avenue, Chicago, as secretary, to succeed Kurt R. Groener, who has resigned. Mr. MacKnight, who was associated with the institute from 1931-1934, has been engaged in other association activities and publicity work for the past two years.

♦ ♦ ♦

Elmer J. Carmody has been made chief metallurgist and chemist, Superior Engine division, National-Superior Co., Springfield, O. He formerly had been connected with the Saginaw Malleable Iron Co. division of General Motors Corp., Saginaw, Mich., Oliver Farm Equipment Co., South Bend, Ind., and the Campbell, Wyant & Cannon Foundry Co., Muskegon, Mich.

♦ ♦ ♦

Dimitry Niconoff, formerly metallurgist for Phelps-Dodge Corp., has joined the division of process metallurgy of Battelle Memorial institute, Columbus, O. J. G. Donaldson, formerly of Laclede Steel Co., has joined the chemical division; and L. H. Berklehamer, formerly a bureau of mines fellow at the University of Washington, has been assigned to the ceramics division.

♦ ♦ ♦

Rudolph Furrer has been appointed industrial engineer of the manufacturing department of Allis-Chalmers Mfg. Co., Milwaukee. In 1907 he was employed at the former Scranton plant of that company, being transferred in 1911 to the West Allis works where he was engaged in drafting and engineering work. In 1918 he joined the A. O. Smith Corp., Milwaukee, as mechanical engineer. He later became supervisor of construction, and from 1927 to 1932 held the position of chief engineer and director of research.

Rudolph Furrer

Following this Mr. Furrer became connected with the National Tube Co., where for three years prior to his recent appointment with Allis-Chalmers, he acted as assistant to the vice presidents.

♦ ♦ ♦

George C. Congdon, advertising manager of Jones & Laughlin Steel Corp. since 1929, has been appointed manager of advertising and sales promotion. He will work with the general sales department in its sales promotional program in addition to continuing his supervision of advertising.

R. M. Gibbs, who has been connected with the advertising department of Jones & Laughlin since 1930, has been named assistant manager of advertising.

♦ ♦ ♦

Elmer A. Schneider, formerly owner of the Mishawaka Pyrometer Instrument Co., has been made production manager for the Wheelco Instruments Co., Chicago. Mr. Schneider also had been with Leeds & Northrup Co., Brown Instrument Co., and the Pyrometric division, Republic Flow Meter Co.

George W. Keller, formerly vice president, Brown Instrument Co., has

been placed in charge of the eastern sales division of the Wheelco company.

♦ ♦ ♦

William C. Kirkpatrick and Malcolm W. Leech, vice presidents of the former West Leechburg Steel Co., have been elected directors of the Allegheny Steel Co. following the merger of the two companies as of Aug. 1.

F. H. Stephens and V. B. Browne, both vice presidents of Allegheny Steel Co., have also been elected directors of the company. Election of the four new directors increases the company's board from seven to 11 members.

♦ ♦ ♦

Thomas Cruthers has been made vice president of the Worthington Pump & Machinery Corp., Harrison, N. J. A graduate of Stevens Institute of Technology, he first entered the employ of the Westinghouse Machine Corp., during which connection he served as superintendent of gas engine erecting. In 1907, in the same capacity, he entered the service of the Snow Steam Pump works, Buffalo, a Worthington subsidiary, and in 1908 was transferred to the Worthington sales department. In 1930 he was appointed assistant general sales manager and two years later was made assistant vice president in charge of sales.

Mr. Cruthers will direct the corporation's sales activities with large steam power stations, the railroads, waterworks, sewage drainage and irrigation projects. He will also have charge of general traffic department.

♦ ♦ ♦

C. R. Jernberg, formerly vice president, Standard Forgings Co., is now associated with the Kropp Forge Co.,

C. R. Jernberg

Chicago, maker of drop and steam hammer forgings. He has been connected with the forging industry for over 20 years in various production, development and sales capacities, and is the inventor of several forging processes. In his present connection he will direct sales in the territory contiguous to Chicago, having charge of contract and production sales.

♦ ♦ ♦

John C. Haswell, president and general manager since 1915, has been elected chairman of the board, Dayton Malleable Iron Co., Dayton, O. He will continue active in the business.

William B. Runyan, formerly superintendent, vice president in charge of operations, and first vice president of the company, has been made president. Mr. Runyan became associated with the company in 1913.

Other officers include: C. D. Townsend, vice president; C. E. Swank, treasurer, and R. M. Robinson, secretary.

Died:

IRVIN F. LEHMAN, 65, president and one of the founders of Blaw-Knox Co., Pittsburgh, at Lake Amston, Conn., Aug. 5. Mr. Lehman was well known in the industrial and civic life of Pittsburgh and had taken a leading part in various charitable drives. He succeeded to the presidency of the company a year ago upon the death of his brother, A. C. Lehman, co-founder of the company. Beside the presidency of Blaw-Knox Co., Mr. Lehman was vice president of various Blaw-Knox subsidiaries, including National Alloy Steel Co., Lewis Foundry & Machine Co., Pittsburgh Rolls Corp., Union Steel Castings Co. and Blaw-Knox International Corp. He was also a director of the Keystone National bank, Pittsburgh.

♦ ♦ ♦

George Thomas Hatheway, 71, retired president of the Hatheway & Pratt Corp., maker of metal stampings, Bridgeport, Conn., at his home in Fairfield, Conn., recently.

♦ ♦ ♦

Hubbard D. Nitchie Sr. who, except for a few years, was continuously employed in the engineering and sales department of the Watson-Stillman Co., Roselle, N. J., maker of hydraulic machinery, since his graduation from Cornell university in 1897, at his home in Cranford, N. J., Aug. 2.

♦ ♦ ♦

John Gilmore Platt, 62, president and general manager, Hunt-Spiller Mfg. Corp., South Boston, Mass., at East Harwich, Mass., July 26. He became associated with Hunt-Spiller in 1907 as mechanical representative,

"Order of Merit" Presented to Westinghouse Engineers

CHAIRMAN A. W. Robertson and President F. A. Merrick, Westinghouse Electric & Mfg. Co., paid tribute to distinguished services of four employes by presenting them with the "Westinghouse Order of Merit" at a mass meeting of employes held in the East Pittsburgh, Pa., works.

Mr. Robertson made the awards to John E. Blankenbuehler, engineer, for design and application engineering in connection with welding generators, and to Arthur E. Goodwin for his ability as a tool designer in the analysis of the manufacturing problem. Mr. Merrick made the awards to John E. Webster, general works engineer, and to O. H. Eschholz, manager of the patent department. Mr. Webster's award was for breadth of engineering skill, and Mr. Eschholz's was for marked ability and energy in departmental management.

In the picture, left to right, are: President Merrick, Vice President Ralph Kelly, Mr. Webster, Mr. Eschholz, George F. Ryan, who accepted Mr. Goodwin's award in his absence, Mr. Blankenbuehler, and Chairman Robertson.

and then advanced successively to the positions of sales manager, vice president and in 1928, president and general manager.

◆ ◆ ◆

John C. Whitridge, 64 president and general manager, Buckeye Steel Castings Co., Columbus, O., July 30.

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Broderick Haskell, former general manager of the Franklin Steel Works, Franklin, Pa., and a member of the American Society of Mechanical Engineers, at his home in Miller Park, near that city, recently.

◆ ◆ ◆

Edwin A. Curtis, 70, president, St. Louis Structural Steel Co., at his home in East St. Louis, July 28. He started his career in the steel business as salesman for a Chicago firm. In 1900 he founded the Attica Bridge Co., Attica, Ind., and operated the plant for 13 years. In 1913 he dismantled the plant and shipped it to East St. Louis.

◆ ◆ ◆

George Hicks Walbridge, 67, engineer and banker, in New York city, Aug. 5. He formerly was vice president of the engineering firm of J. G. White & Co., New York, and later a director of the company. Later, and in the early part of the century, he engaged in general engineering practice and was president of the Colorado Power Co., in charge of construction and management of hydroelectric plants.

◆ ◆ ◆

L. Richard Custer, 63, general manager of the Cambria division, Bethlehem Steel Co., Bethlehem, Pa., at Johnstown, Pa., July 31. He went to Johnstown in 1919 as vice president of the Cambria Steel Co., after the latter had been acquired by the Midvale Steel & Ordnance Co., Philadelphia. A few years later when Bethlehem Steel Co. absorbed the latter, Mr. Custer became general manager. He was a prominent figure in civic enterprises.

Spanish Pyrites Shipments Stopped; U. S. Plant Closed

Due to the Spanish rebellion operations at the plant of the Pyrites Co., Wilmington, Del., have been suspended. Inability to obtain shipments of sulphur pyrites ore from the Rio Tinta mines in Spain is the immediate cause. The Pyrites Co. extracts sulphur for sulphuric acid and sells the pyrites sinter, said to contain at least 55 to 60 per cent iron, to eastern pig iron producers.

Exports from the United States to Spain have increased during the past few years, according to figures available at the department of commerce.

These show that our exports in 1933 amounted in round numbers to $26,500,000 increasing in 1934 to $28,200,000 and increasing again in 1935 to $28,500,000. In the first four months of this year a rise was also recorded.

Exports of Spanish goods to the United States have not changed materially. In 1933 they amounted to $10,300,000, in 1934 to $10,000,000 and in 1935 to $10,800,000. There has been a slight decline in these figures during 1936.

Trade Commission Begins Implement Investigation

Federal trade commission has just sent out a questionnaire in connection with its investigation, being made at the request of congress, of the agricultural and implement machinery industry.

This questionnaire is designed to develop the facts with respect to interlocking directors and community interests between stockholders among manufacturers of farm implements and machinery.

The commission now has in preparation questionnaires for the farm machinery dealers, the costs of manufacturing farm implements and one on marketing methods and distribution.

Manufacturers are being asked to describe the voting rights of each class of stock and the total number of votes for each class of each kind of stock as of June 30

Buy More Steel Furniture

Orders booked by manufacturers of steel office furniture in June totaled $1,565,183, compared with $1,236,152 for June, 1935. Orders in the first six months of 1936 totaled $9,374,168, compared with $7,101,696 in 1935. Furniture shipments in June were valued at $1,470,195, in June, 1935 at $1,137,173; six months of 1936 they totaled $9,211,418 and for the same period of 1935 they were $6,898,572.

Shipments of steel shelving for six months of 1936 were valued at $2,274,796, compared with $1,686,569 for first half, 1935. Steel locker shipments for first half rose from $650,625 in 1935 to $1,053,766 in 1936.

Will Operate Both Plants

In an article in the Aug. 3 issue of STEEL, page 21, concerning modernization of certain plants of the Eaton Mfg. Co., Cleveland, it should have been stated that W. C. Ireland, president, Eaton Detroit Metal Co., a subsidiary, will operate both the Cleveland and Massillon plants.

New Officers of A.F.A. Organize

NEWLY elected officers of the American Foundrymen's association began their duties at a joint meeting of the new and retiring boards of directors in Cleveland, July 22-23. James L. Wick Jr., Falcon Bronze Co., Youngstown, O., now is president, and H. Bornstein, Deere & Co., Moline, Ill., vice president. D. M. Avey, editor, *The Foundry*, Cleveland, retired as president after two years of service.

C. E. Hoyt, 222 West Adams street, Chicago, was re-elected executive secretary-treasurer and manager of exhibits; R. E. Kennedy, technical secretary; Jennie Reininga, assistant secretary-treasurer; and E. O. Jones, director of the safety and hygiene section. Norman F. Hindle was elected assistant technical secretary, a new position. Mr. Hindle has been on the staff of the association for the past two years, engaged first in preparation of the *Cast Metals Handbook* and later in editorial and technical work.

Continues Safety Section

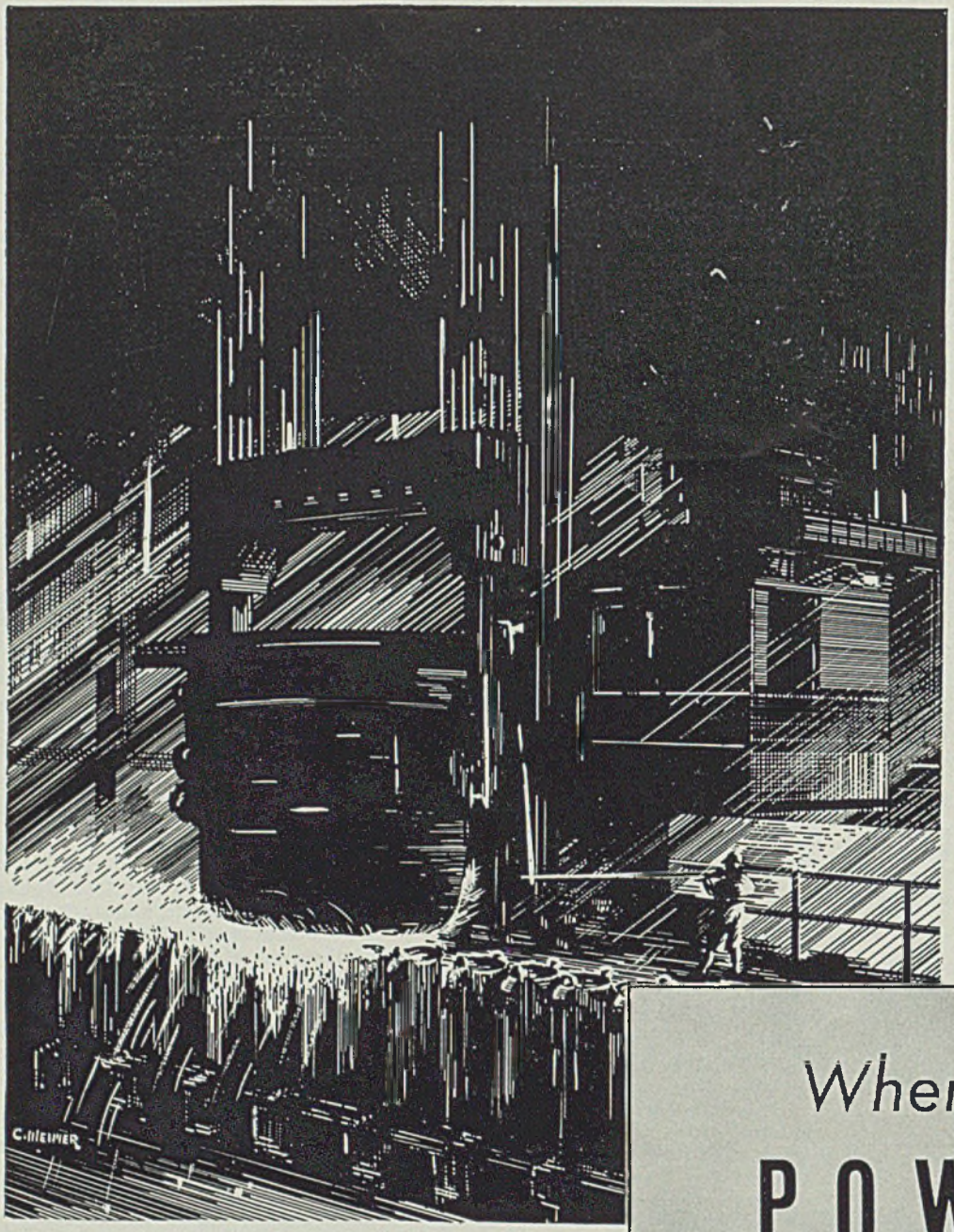
Directors Avey and E. O. Beardsley, Beardsley & Piper Co., Chicago; W. L. Seelbach, Forest City Foundries Co., Cleveland; and L. S. Peregoy, Sivyer Steel Casting Co., Milwaukee, were elected to serve with the president, vice president and executive secretary, as members of the executive committee of the board of directors.

The new board voted unanimously to continue the work of the safety and hygiene section, organized in January, 1936, with E. O. Jones as director. With a view to making practices uniform in the several industrial states, all foundrymen, whether or not members of the A.F.A., who have engineering, medical or legislative problems in connection with their safety and hygiene programs are invited to correspond with the director of the section.

Approve Research

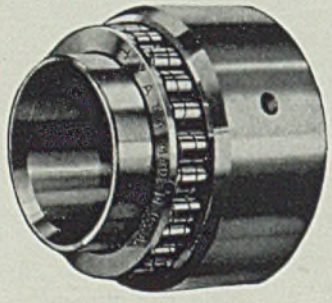
A recommendation that the association support financially a program of research to study the effect of elevated temperatures on molding sand was presented by the foundry sand research committee. The board voted approval of a plan to support this project by raising funds, through subscription from firms which have benefited financially from the committee's extensive work on sand control.

Another recommendation approved was the request of the steel division for funds with which to finance preparation of a treatise on designing steel castings.



Builders of all types of steel mill equipment are tooled up for Hyatts. No matter what new equipment you may be contemplating or whatever change-overs you may have under way, Hyatt Roller Bearings are available—also the service of our engineers.

Wherever POWER meets LOAD— there's a job for HYATT



Unleashed power flashes against static load . . . or sudden load crashes against idling power. They meet at the bearing points, where Hyatt Roller Bearings unflinchingly take the impact, while protecting related parts. Wherever weight, shock, speed, and dirt offer a worthy Bearing test, there's a job for Hyatt. Hyatt Roller Bearing Company, Newark, Detroit, Chicago, Pittsburgh, San Francisco.

MIRRORS of MOTORDOM

DETROIT

WHEN the big body plants, like Fisher, start asking diemakers for deliveries by Aug. 15 on all new die work on contract, the desire to change quickly into 1937 models clearly is evident.

But if any magicians ever were in the automotive business they must have joined the ranks of professional entertainers long ago. Most of the diemakers, who did not receive their orders until April, claim that the earliest possible delivery time will be in September. Pressed for a definite date, they agree that the 15th is as close as they can come.

In a few cases the Aug. 15 delivery date on 1937 dies will be met, but by and large the body shops won't be knocking out their new panel work until another month. The interim will be devoted to taking inventory, to office vacations, and in many cases to running out the last of the 1936 models.

With the 1937 parade ready to strike up the band by, say Sept. 15, Detroit looks for a trend in auto production during the next few months something like this: August will be about 60 per cent of July assemblies; then September should go up for a 20 to 30 per cent improvement, and October will be back up to within an eyelash of July's figure, which was about 449,000 units. November and December each will better the same months of 1935.

Bonus Money Still a Factor

One important fact cited is that a considerable portion of the veterans' bonus money still is going into new cars. Many would-be buyers, mindful of the proximity of 1937 models, are purposely holding back for a few weeks.

Furthermore, the old argument about the accumulation in normal replacement has been given another whirl. Recent surveys show that more than half of the 26,000,000 cars now registered in this country were built before 1929.

To reconsider the diemakers: There will be no falling off in their business in October just because initial deliveries have been made. Building spares and replacements will keep the industry busy for the rest of the year.

The case of the owner of one die shop here illustrates this. Always taking his annual vacation from Christmas through January, he already foresees that the pressure of business this season will keep him on the job.

Four years ago it may have been big news, but today it isn't when automobile makers expand their plants. The headlines are smaller on most of these expansions in Detroit for the simple fact that everybody's doing it.

But the millions that the automobile industry began earmarking six months ago for new plants which would be ready in 1937 have not failed in counterpart since. Whereas General Motors and Ford launched their programs earlier, Chrysler has been increasingly active.

Big Three All Expand Plants

Such General Motors enlargement plans as those involving Fisher Body at Grand Rapids, Buick at Flint, or Chevrolet at Saginaw, Flint and Detroit have been matched this year almost dollar for dollar by Ford in expanding many departments at Dearborn.

Now Chrysler, with the DeSoto enlargement on Wyoming avenue dispatched, is about to figure out something more on the same line. Harold Wills, now a Chrysler executive, must have mixed feelings as he views the plans under consideration for Marysville, Mich.

Some of the "veterans" in this business (that embraces anyone with a 25-year memory, or less) recall the model industrial community the Wills-St. Clair company once projected for Marysville. Including modern homes, community houses, restaurants, it was planned to set up a truly model and self-contained automotive community.

The plan even progressed to the point where some secondary suppliers of tools and equipment set up their factories adjacent to Marysville. But the eddies of fortune swept the Wills-St. Clair automobile into memory and have made the model itself a museum piece.

At present Detroit hears that Chrysler, now owner of the Marysville community, will be moving part of its Highland Park division there. Into the Highland Park plant, situated really in metropolitan Detroit, likely will go a concentration of Chrysler truck manufacture.

So watch the headlines soon for Chrysler to gird itself further for the assault on second place in automotive importance. Most of its moves this year have been aimed thus and the end is not in sight.

The recalling of many parts contracts from outside shops has been expected of Chrysler for 1937. The Dodge and DeSoto plants will supply almost all the heavy stampings for the company's models.

Where outside suppliers are needed, the nod seems in favor of Detroit industry. Murray's closing on a substantial share of Plymouth frame requirements and the local tieup here with Budd Wheel bear evidence.

Murray now has its Plymouth frame division ready to break the tape about the middle of September, some idea of its size being evident from the plan to carry 300 additional men there. Murray Body will also turn out Dodge commercial frames, as well as frames for Ford commercial and passenger models.

International Awards Contracts

The long-bandied truck contract for International Harvester Co. finally went to Murray in major part, for Murray will build not only the frames but the front cab assembly, the fenders going to Mullins. Though International made some 60,000 jobs last year, the new contract may be good for nearly 100,000 jobs in 1937.

How long International continues to let this work out is a question. Active plans for retooling and the purchase of new equipment for the company's Fort Wayne, Ind., plant are proceeding.

Among other Murray contracts for 1937 are those covering cushion spring requirements for Studebaker and half of the Packard needs. Yet, despite this diversity, it is still a safe bet to say that as Ford's fortunes go, so go Murray's.

Hayes Body Corp. at Grand Rapids may have been watching General Motors' new Fisher Body plant being

built nearby, but hardly seems discouraged. Hayes will be out this fall with an all-steel trailer unit. The chassis, body frame, and most of the sides will be in steel.

If Hupp finally works its way out of its difficulties (those who are hopeful think this can be done if the Cleveland plant and other fixed assets are sold to raise working capital) Hayes may garner some additional automotive business from an old customer before the November shows. Reo and Graham Paige are still listed as Hayes' accounts, and the company has branched out this year in getting a slice of tool and die business from some of the General Motors units. The Ionia plant of Hayes Body may be reopened after long idleness.

Process Not Abandoned

Through a misunderstanding, it was stated in this column last week that the Brackelsburg foundry practice employed by Kelsey-Hayes "is being discarded." A recheck shows this statement is in error. The Brackelsburg process and equipment are not being abandoned nor is any such action being contemplated.

Perhaps the rubber industry is in for what befell steel at Dearborn. The tire makers in Akron have heard rumors that Ford is contemplating making his own tires. Recently makers of tire machinery have handed many a card across the desk in the Ford purchasing lobby. The story goes that Ford has been displeased for some time with the way Akron's major industry has encountered labor troubles.

The Ford tire business for original equipment has been going 51 per cent to Firestone, 17 per cent each to Goodyear and Goodrich, and 15 per cent to U. S. Rubber. Ford, on the basis of assembling 6000 cars daily, can use 30,000 tires daily for new equipment alone, not to mention servicing requirements in the field.

At present, the idea may not necessarily be a threat. Ford has proceeded to drum up cost sheets and estimates of what it would take, and from an operating standpoint how profitably such a venture would go over.

For steel, the expansion would have a beneficial kickback. The requirements on bead wire for making 20,000 to 30,000 tires daily would be a considerable item. Inquiries are in the market for this type of finished wire.

After all, Dearborn's idea of integration is not new. Ford has always proceeded on the theory of being as self-contained as costs permit. Even at the expense of producing a commodity at slightly more than the open market, Ford has preferred to make a portion, not necessarily all, of its requirements.

Witness the Ford steel mill. Though integrated to the extent of ore mines, two blast furnaces, nine open hearths, bar mills, wire drawing blocks and both hot and cold-rolled sheet units, the company cannot supply more than 50 per cent of its internal steel needs.

Fifty per cent of Ford's steel requirements is a high estimate, especially when assemblies are running good, for then the company becomes more of a market factor in finished steel. Furthermore, at all times Ford is entirely dependent on outside sources for a great many grades of steel, like bessemer, stainless, or cold-drawn.

Making one's own steel or tires is not always easy. Not many years ago, three to be exact, Ford found the steelworks such a white elephant in those slack times that a buyer was sought.

True, today's business outlook might justify installing a complete plant near Detroit for making tires and tubes, yet the pitfalls of too complete an integration are omnipresent. Just as it never disposed of its own steel to competitors Chrysler or General Motors, neither could Ford depend on selling to the same firms any surplus stocks of tires.

In fact, it is more likely that Akron's tire business, now moving some 22 per cent of all it makes to Ford, would be kindled with so much animosity if the move were perpetrated that it would literally freeze onto the remaining outlets in Detroit.

Chevrolet, which made its 12,000,000th car Aug. 4, seems to think the $25,000,000 it spent on new capacity late in 1935 is paying dividends in 1936. At times Chevrolet has not been able to build cars fast enough this year for the dealers.

New records were set in three months of 1936 and in all but two months production was over the 100,000 mark. In June and July Chevrolet assemblies exceeded 143,000.

Last week Chevrolet assemblies began to taper from the 30,000 mark which has been usual for some weeks past. Not only did the Toledo, O., transmission plant close down Aug. 7 for four to six weeks, but other divisions were following a staggered vacation plan.

When most of the Chevrolet parts plants get back on normal schedule, work will, of course, be on the 1937 job, and mid-September should find most shutdowns a thing of the past. As far as steel for the new car is concerned, Chevrolet, like Ford, has placed material in substantial lots, releases and shipping directions on which follow within the next month.

New Type Spark Plug

At Fostoria, O., Electric AutoLite Co. has started the manufacture of spark plugs using a new type of electrode and insulator . . . Hudson's July sales were the highest since 1929 . . . One way of air-conditioning your car this summer is to put a 20-lb block of dry ice in a basket beneath the cowl ventilator and close all the windows except one in the rear . . . . Chevrolet made 1,000,000 models from Dec. 4, 1935, to Aug. 4, 1936 . . . General Motors has distributed over $130,000,000 in common dividends so far this year . . . Average workers' wage in the automobile industry is now 16 per cent higher than 1935.

Automobile Production

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

	1934	1935	1936
Jan.	155,666	289,728	364,004
Feb.	230,256	332,231	287,606
Mar.	338,434	425,913	420,971
Apr.	352,975	452,936	502,775
May	330,455	361,107	460,565
June	306,477	356,340	454,487
July	264,933	332,109	*432,329
7 mo.	1,979,196	2,550,364	2,922,737
Aug.	234,811	237,400	.....
Sept.	170,007	87,540	.....
Oct.	131,991	272,043	.....
Nov.	83,482	395,059	.....
Dec.	153,624	404,528	.....
Year	2,753,111	3,946,934	.....

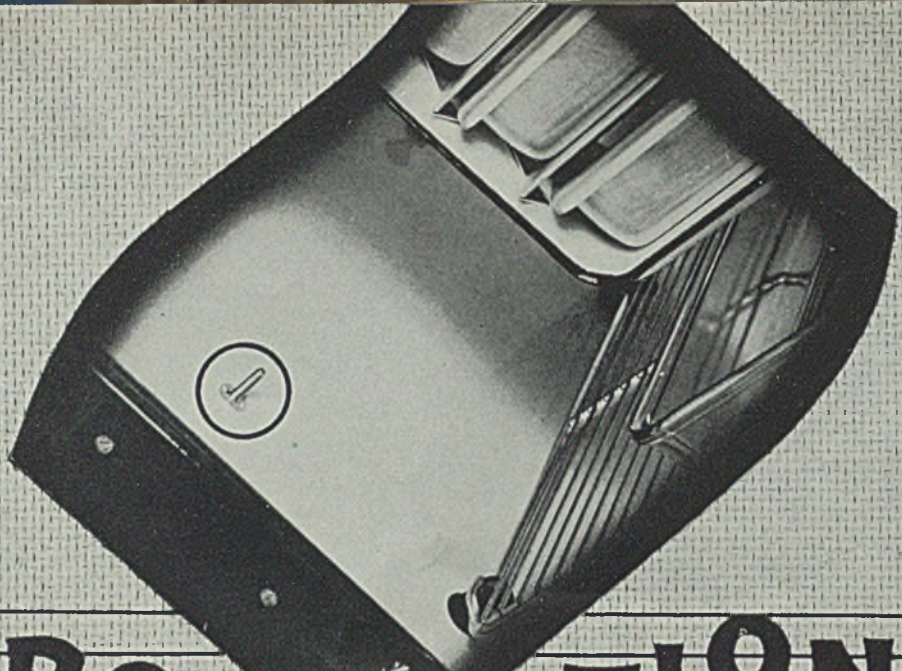
Estimated by *Cram's Reports*

Week ended:	
July 18	91,317
July 25	96,863
Aug. 1	95,970
Aug. 8	81,804

*Estimated.

Craine-Schrage Acquired By Detroit Steel Corp.

Craine-Schrage Steel Co., Detroit, has been acquired as a wholly owned subsidiary by Detroit Steel Corp. through an exchange of 75,000 shares of the latter company's $5 par value common stock for the 13,043 shares of Craine-Schrage stock. Principal stockholders of the new subsidiary were men who organized the company in 1922, and who were instrumental in forming Detroit Steel in 1923. The Craine-Schrage company will continue as exclusive sales agent for the Detroit corporation's cold-rolled strip steel as well as its own products. W. C. Schrage is president of Detroit Steel; C. P. Craine, vice president; and A. A. Schrage secretary.

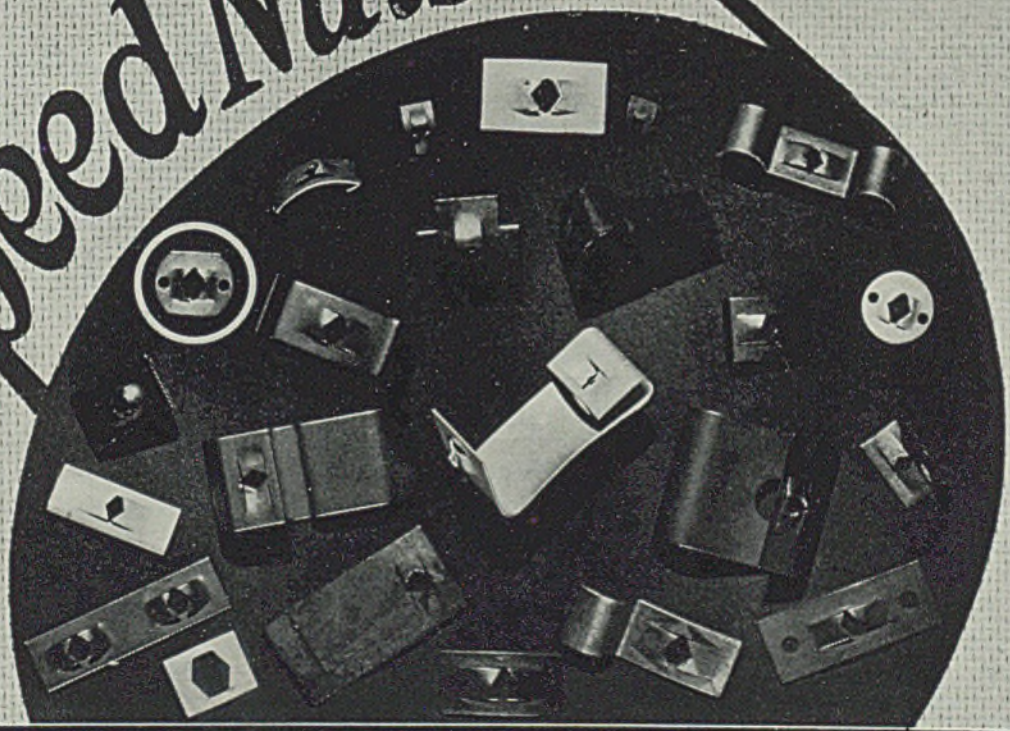


PRODUCTION NOTES

"GREATER sales than ever before"—says the electric refrigeration industry... and production problems mount in both manufacture and assembly. Soft rubber shelf-lugs must position themselves securely on rigid bolts — their long leverage held firmly by simple, fast assembly . . . accomplished with SPEED NUTS.

Rust resisting, these SPEED NUTS of stainless steel (see encircled illustrations) assemble with lightning speed and remain permanently tight under any conditions of vibration — lowering production costs and simplifying initial design . . . Write for card of assorted samples and list of their many established uses.

Speed Nuts PATENTED



TINNERMAN STOVE & RANGE CO. • SPEED-NUT DIVISION • CLEVELAND, OHIO

Activities of Steel Users and Makers

ALAN WOOD STEEL CO., Conshohocken, Pa., announces that by fall a complete range of hot-rolled annealed sheets will be added to its present list of products. Plans for the necessary improvements and additions have been completed. Orders have been placed with the mill equipment manufacturers for mechanized units, and construction work is under way to enlarge present existing buildings to accommodate the new equipment.

♦ ♦ ♦

Eclipse Counterbore Co., Detroit, has appointed the Brammer Machine & Tool Service Co., Tulsa, Okla., as its exclusive representative in the states of Oklahoma, Kansas and Texas.

♦ ♦ ♦

Fisher Governor Co., Marshalltown, Iowa, manufacturer of automatic control specialties, has appointed General Meters & Controls Co., Chicago, as direct factory representative for its equipment.

♦ ♦ ♦

H. W. Porter & Co., Newark, N. J., manufacturer of Therm-O-Tile underground steam conduit systems, has appointed the following distributors for its products: Canadian Johns-Manville Co. Ltd., Montreal, Que., and Toronto, Ont.; Johns-Manville Sales Corp., White Plains, N. Y.; Smith-Murray Corp., Rochester, N. Y., and P. S. Thorsen Co. of Massachusetts, South Boston, Mass.

♦ ♦ ♦

Lincoln Electric Co., Cleveland, has moved its San Francisco office from 894 Folsom street to 866 Folsom street, providing 50 per cent greater space.

♦ ♦ ♦

Globe Steel Tubes Co., Milwaukee, has appointed the Corbett Corp., Houston, Tex., sales representative in the state of Texas.

♦ ♦ ♦

Gar Wood Industries Inc., Detroit, has appointed the following distributors for its hoist and body division: Shaw Sales Co., Billings, Mont.; A. Fassnacht & Sons, Chattanooga, Tenn.; Baker Equipment Engineering Co., Charlotte, N. C.; Lone Star Equipment Co., El Paso, Tex.; Mississippi Truck Equipment Co. Inc., Jackson, Miss.; C. W. Rathbun Co., Oklahoma City, Okla.; Allison Steel Mfg. Co., Phoenix, Ariz.; Felt Auto Parts Co., Salt Lake City, Utah; Union Iron Works, Spokane.

♦ ♦ ♦

A new slot-type continuous forging furnace has been designed for the Ziz commission, Russian manufacturer of motor trucks, by the Surface Combustion Corp., Toledo, O. The new furnace will burn either oil or gas. It is designed to heat 5 inches of the end of motor valve rods to 2000 degrees Fahr. to prepare them for upsetting for valve heads, and its production will be 3000 pieces an hour.

♦ ♦ ♦

Chain Products Co., Cleveland, has changed its name to the Hodell Chain Co., in order to closer associate the corporate title with its products which are branded "Hodell Chains." This change of name will not involve any other changes in product, personnel or policy. The company reports a great increase of orders so far this year over any preceding period.

♦ ♦ ♦

Granite City Steel Co., Granite City, Ill., has been granted a license by American Rolling Mill Co., Middletown, O., to use its continuous sheet rolling patents and cross rolling patents. With the completion of this new continuous mill, the Granite City plant will be completely equipped for the production of hot and cold reduced sheets.

♦ ♦ ♦

Edward G. Budd, president, Edward G. Budd Mfg. Co., Philadelphia, in a semiannual review sent to stockholders, states the first six months of 1936 have been the most satisfactory since 1930, and that prospects for the railroad division are "bright." The company is working on 41 lightweight, stainless steel railroad passenger cars, and has commitments for 40 additional cars. French and Italian licenses are building 60 cars of this type.

♦ ♦ ♦

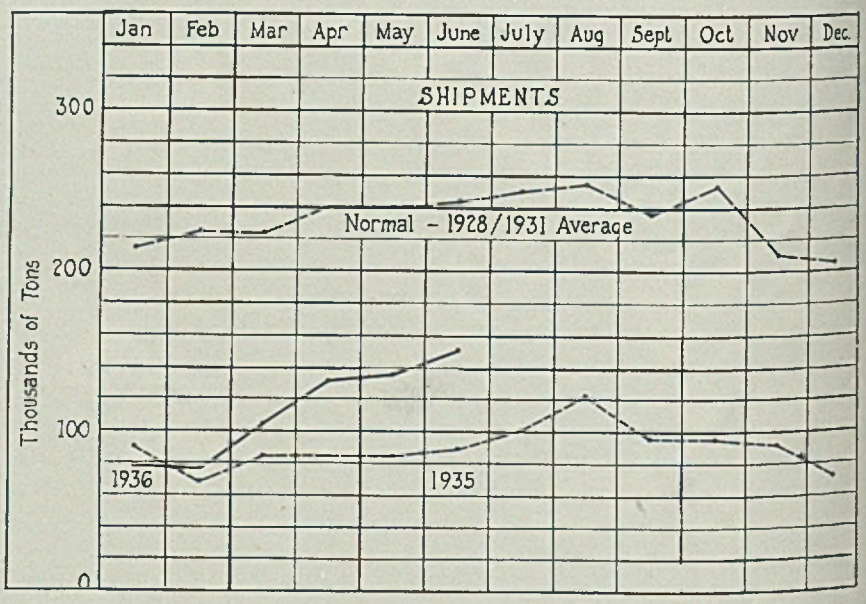
American Rolling Mill Co., Middletown, O., announces the appointment of five new distributors of Armco ingot iron and Armco stainless steels. Edgcomb Steel Co., Philadelphia, and Edgcomb Steel Corp., Newark, N. J., has been named distributors of Armco stainless steels, while Syracuse Supply Co., Syracuse, N. Y.; Alamo Iron Works, Brownsville and Corpus Christi, Tex.; Klauer Mfg. Co., Dubuque, Iowa ,and Central Steel & Wire Co., Chicago, have been appointed to distribute Armco ingot iron.

♦ ♦ ♦

Reeder Carbide Tool Co., 356 East Congress street, Detroit, has been formed to manufacture tungsten carbide and high-speed steel tools. E. R. F. Reeder, for the past seven years district sales manager in the Middle West for Thomas Prosser & Son, is general manager of the new company.

L. N. Hall, prominently identified with sales of tungsten carbide tools in Detroit, Cleveland and Chicago for the past eight years, is district manager of sales. David Hall and Carl Zwar, heretofore identified with the manufacture of fine tools, will continue to make in their own shop tools for the Reeder company. Oren S. Cole has been made sales engineer and will handle all service contracts.

Structural Shipments Continue To Rise



SHIPMENTS of fabricated structural steel in June by members of the American Institute of Steel Construction Inc., New York, totaled 122,276 tons. On this basis the institute estimates June shipments for the entire industry at 150,790 tons, compared with 91,608 tons in June, 1935. Steady increases have been reported since February

WASHINGTON

THERE is likely to be a good deal of change in the export and import situation between the United States and Germany in iron, steel and machinery, because of the action taken last week by the German government in refusing to allow this trade to continue either by barter or by the use of the aski mark, according to officials of the department of commerce. It is reported here that perhaps 60 per cent of this trade has been carried on by one or the other of these two methods.

The Germans are said to have laid down this rule as the result of the treasury department having placed a countervailing duty against the importation of certain German commodities which are well known to be subsidized by the German government. Effort was made by the German government to have this countervailing duty withdrawn by the sending of a delegation to this country, which left in disgust only a week or so ago after having failed in their mission.

Other Markets Cheaper

American purchasers of German goods have been using the 25 per cent discounted aski mark and as the use of this is now forbidden by the German government there is every reason to believe Americans can and will buy the same commodities in other countries at a cheaper rate than they can now purchase the same thing from Germany.

Figures available at the department of commerce show that 49,048 tons of iron and steel were imported into the United States from Germany during the first six months this year. For the entire year 1935 these imports totaled 89,894 tons.

American exports of iron and steel products to Germany for the first six months of this year totaled only 187 tons while for the entire last year they were only 465 tons.

The machinery situation, however, is of much more interest because of the value. Imports of machinery into the United States during the first five months of this year from Germany were valued at $1,840,822 while for all of 1935 they were valued at $3,270,425 and for 1934 they were valued at $3,809,005.

Exports of industrial machinery from the United States to Germany in 1935 were valued at $1,093,053 and of farm machinery $130,234, while during the first five months of this year $267,582 worth of industrial machinery was exported to Germany from this country and $88,151 worth of farm machinery.

Figures at the department of commerce show that the principal machinery items furnished to the United States from Germany included knitting machinery, shoe machinery, chocolate and confectionery machinery. Also machine tools and parts, other textile machinery, ball and roller bearings and parts and other machinery and parts.

It is whispered here that the German government was provoked when our treasury department asked German exporters to reveal how much they benefited from government subsidies. The Germans pointed out, it is reported, that the giving of such information would constitute high treason in Germany.

High government officials here are still waiting for more detailed information on this subject from official sources. There may be a catch in this some place but the present feeling here is that the German trade is going to suffer as much from the new ruling as the American trade.

WILL EXPELLED CIO UNIONS SET UP RIVAL LABOR GROUP?

Whether the ten CIO unions will go ahead and set up a new rival organization is the question uppermost here since their expulsion from the A. F. of L. last week. David Dubinsky, president, International Ladies' Garment Workers and only CIO member on the A. F. of L. council, says that it will mean the birth of a new labor movement.

Throughout the summer, presumably the struggle will go on ,with speculation as to whether the CIO unions will attempt to obtain a favorable showdown vote at the federation's convention in Tampa, Fla., in November. In the event the delegates of the suspended unions go to Tampa, their eligibility to vote will be decided by the convention.

Unions represented on the Lewis committee are: United Mine Workers of America; Amalgamated Clothing Workers; Oil Field, Gas Well and Refinery Workers of America; International Union of Mine, Mill, and Smelters Workers; International Ladies Garment Workers; United Automobile Workers; United Rubber Workers, Amalgamated Association of Iron, Steel, and Tin Workers, and the Textile Workers of America.

Factions Ignore Church Offer

Last week churches of the principal denominations offered their offices to try and heal the wound. Offers were made to both the Lewis and Green organizations but apparently no attention was paid to the communications. At any rate they were ineffective.

Lewis, in a message to his membership in the United Mine Workers' official journal said that the executive council of the A. F. of L. attempted to place the CIO unions on trial "for promoting union organization."

He wrote that the trial was "for encouraging organization, and assisting to organize workers whom the A. F. of L. had for many years left without the benefits of organization." Further:

"The CIO believes that its acts are in accordance with the mandate of the convention of the A. F. of L. and with the wishes of the members of that body. We are fulfilling the instructions of the convention, which the executive committee has flounted.

"We believe that the unorganized workers of this country can only or-

ganize effectively through industrial unions; we believe that such organization will promote the welfare of all the workers of this country; we believe that it will benefit the nation itself."

In addition to the churches' effort to stave off the final action of the council, Edward F. McGrady, assistant secretary of labor, and "labor trouble shooter" for the administration, again made efforts to do what he could—but he finally gave it up as a bad job.

There was some talk here last week that President Roosevelt might make some gesture in the steel situation, such as calling a conference of steel executives and labor to meet here and see what could be done. This, of course, would only be a political move and he would then be able to point out either that the steel industry would not attend such a conference, or would make no effort to remedy the present labor drive. Such a suggestion, however, was not taken seriously, although there has been talk along these lines during the week.

U. S. IS LOSING SOUTH AMERICAN STEEL TRADE

The belief prevails in some high quarters here that United States iron and steel manufacturers should make a concerted effort and go after more South American business. We are losing some of the trade that we now have to Germany because of the aski-mark situation and it is pointed out that after all, some of the South American countries where we are losing trade, the United States is still their best customer.

In this connection also it is shown that with steel production in Japan forging ahead, already in many lines capacity has developed beyond the point of home consumption and it seems reasonable that shortly there will be a considerable excess available to supply the needs of China and the rest of the Far East.

It is well known that competition among the chief European producers is so aggressive and so completely covers the field of steel rolling mill products that our exporters cannot hope for much expansion in our trade either in Europe or in Africa, with its strong European dominance.

Some here who have our foreign trade much at heart point out that if any foreign market may be called naturally ours it is the countries to the north and south of the United States. However, representatives of American firms in South American countries and returning commercial travelers report an almost prohibitive situation in many of our former good markets due to both European competition—and that chiefly German—with prices far below the lowest at which our goods can be offered.

The aski-mark in payment for German purchases and usable only for the purchase of German goods is so manipulated that it gives the German product a price advantage of from 20 to 35 per cent over open exchange which has to be employed for the purchase of our goods, it is stated by experts here. Through this device, with energetic and skillful sales promotion, Germany is rapidly gaining in her sales of steel products to South America and is rapidly replacing the United States as supplier to these markets.

Monthly statistics covering imports and exports of steel producing countries are published by the British Iron & Steel federation and a month by month analysis of these since Jan. 1, 1935 shows the truth of these statements.

The British figures show that to all South American countries and Mexico, in 1935, Germany exported 335,013 gross tons of steel products while in the same period we exported 244,252 tons. Month by month during the whole period Germany has increased her sales to these countries. In the first quarter of this year Germany's sales were actually 81½ per cent more than during the same quarter of last year, while our trade with these countries decreased in the same period by 6½ per cent.

During the first half of this year our exports of steel products to all countries of the world increased 21 per cent over the first half of last year, so it is evident that we are losing ground in many of those countries which logically should be our best markets, it is pointed out.

FTC AND JUSTICE DEPARTMENT JOIN HANDS ON PATMAN LAW

Officials of the department of justice and the federal trade commission, including the attorney general, John Dickinson, assistant attorney general, federal trade commissioners, Edwin L. Davis, William A. Ayres, and Robert E. Freer, and experts of both offices, met here last week to formulate a policy of co-operation between the two branches of government in connection with enforcement of the Robinson-Patman law.

It was announced following the conference that arrangements were made for consultation and co-operation by the staffs of the two government organizations in investigations and other activities in order that the two agencies might agree upon common policies with reference to the act and to co-ordinate their functions in connection with its administration.

WILL CONFER ON NATIONAL FOREIGN TRADE POLICY

Announcement has been made here of a plan for a meeting, to be held probably in Chicago, following the national election in November to discuss the national trade policy. J. Carson Adkerson of the Raw Materials National council is in charge of the meeting at which it is hoped that farmers and manufacturers will get together in an effort to do something about developing suitable trade agreements.

"Regardless of who is elected president or which party controls congress," Mr. Adkerson said, "American enterprise still will face the problem of new legislation needed to help liberate the productive energies of capital and labor.

"Since all new wealth comes from the ground, we believe that a clear-cut expression from the grass roots of American industry concerning tariffs, import and export policies, financial policies and international trade relations will be helpful to business and to congress."

ROADS SEEK MEANS TO HOLD FREIGHT SURCHARGES

The interstate commerce commission last week refused the petition of railroad carriers that its technical procedure be so modified that the roads might file and publish new tariffs translating the emergency freight rate surcharges now in effect into permanent rates.

New maneuvers are now to be tried by the roads, it is reported here. A. F. Cleveland, vice president of the Association of American railroads said that the carriers could either ask the commission to reconsider the blanket authority which it has just denied or seek permission to effect individual increases in specific rates which now carry surcharges—an action which it has been stated many times before would cost heavily to carry out. It is understood that a meeting of the heads of the roads will be held soon to discuss this matter and decide on what action to take in the matter.

It will probably be recalled in connection with this general surcharge case that the emergency rates expired July 1 but before actual expiration the commission—acting as the result of extended hearings—extended the effective date of the surcharge until Dec. 31. That is the present status of the case and unless the commission takes action in the meantime all surcharges now in effect will expire.

ROPER SEEKS FAIR TRADE

The committee on unfair trade practices of the Roper business advisory council is getting bold in its old age. It is broadcasting, by communication, to the American Iron and Steel institute, to other trade associations and individual business men, asking that the associations and others voluntarily sign an agreement to abstain from unfair trade practices. To bind the bargain, the committee is asking for $1 each. The report here is that no dollars have been received.

Editorial

Why Do Profit Rates of Industries Vary So Widely?

EARNINGS of industrial companies for the first half of 1936 have been so gratifying in contrast to the deficits or meager profits of recent years that one hesitates to comment in any way that will seem to belittle real accomplishment. Nevertheless the difference in the rate of return in important branches of industry is so marked that a study of the disparities should be enlightening and constructive.

National City Bank of New York has surveyed the earnings statements of 285 corporations in 21 branches of industry. The net profits of these companies for the first half of 1936, after depreciation, interest, ordinary taxes and other charges and reserves but before dividends, represented an annual yield of 10.3 per cent.

The deviations in the rates for certain industrial groups above or below this average furnish a curious commentary upon the wide range of earning power in American industry. The following table, showing rates for groups in or closely allied with the iron, steel and metalworking industries, is abstracted from the National City survey:

Number of companies	Industry	Annual rate of return represented by net profit for first half of 1936 (Per cent)
11	Automobiles (excluding General Motors Co.)	26.6
23	Automobile accessories	20.4
18	Machinery	14.4
5	Office equipment	14.2
7	Mining, nonferrous	13.9
42	Miscellaneous manufacturing	11.9
14	Household goods and supplies	10.2
8	Electrical equipment	9.6
13	Building materials	8.5
5	Railway equipment	3.2
18	Iron and steel (excluding United States Steel Corp.)	4.0
8	Coal mining	2.0

Obviously the most pertinent question prompted by these comparisons is "Why are the profits of the iron and steel groups so low in comparison with those of their principal customers —particularly automobile builders, automobile accessory manufacturers, etc?"

Numerous answers to this question can be suggested. Some authorities will declare that part of the disparity is due to the alleged propensity among automobile companies for forcibly beating down the prices of the materials and products they purchase in large quantities. However, the force of this argument is destroyed in large measure by the fact that manufacturers of machinery and automobile accessories, who sell much of their output to motor car builders, are able to net profits of 14.4 and 20.4 per cent, respectively.

Of course there are many more plausible explanations. Among them is the fact that a comparatively young industry, such as the automotive, usually fares better than an older one, like iron and steel, where the tentacles of tradition exact a certain, inevitable toll. Another is that an industry dealing in raw materials is encumbered with great investments in lands, mines and equipment for protection of future sources of supply. This is a burden which does not rest heavily upon the automobile builders.

Producers Need Better Merchandising and Public Relations Sense To Enhance Profits

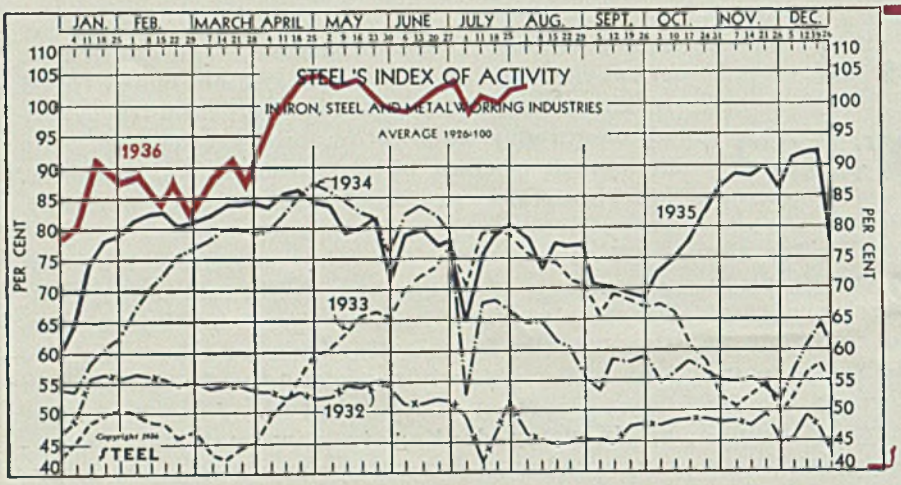
These and many other extenuating circumstances may be cited to help explain the apparent disadvantage of iron and steel producers in their ability to match the automobile companies in earning power. But beyond these explanations are two extremely important factors which may hold the answer to the question. One is the superiority of the automobile industry in merchandising ability. The other is its decided advantage in handling its public relations problems effectively.

Motor car builders have made their products so attractive and have merchandised them so successfully that they have induced millions of individuals to prefer to spend their dollars for personal transportation instead of food, clothing or even shelter. Iron and steel producers face a more difficult task, because they must appeal to manufacturers and fabricators instead of to the ultimate users of their products. Nevertheless, iron and steel sellers are just beginning to scratch the surface of their potential market opportunities. When they get into the spirit of actually "creating" markets, in the sense that automobile builders have extended their business, steel profits will rise.

In public relations work, the automobile people have demonstrated an uncanny ability to keep on the good side of public opinion. Iron and steel executives, only recently converted to the idea that public opinion is worth cultivating, have much to do to make up for lost time.

On both counts, the metalworking industries have made encouraging progress in the past few years. Continued improvement will help to cut down the disparity in earning power.

THE BUSINESS TREND



STEEL'S *index of activity in the iron, steel and metal-working industries gained* 0.3 *points to* 102.4 *in the week ending August* 1:

Week ending	1936	1935	1934	1933
May 23	100.4	82.8	81.9	66.1
May 30	98.6	71.9	75.7	65.3
June 6	98.8	79.3	82.3	69.9
June 13	99.4	80.0	83.6	72.1
June 20	101.0	77.3	81.8	73.9
June 27	101.9	78.4	79.4	77.0
July 4	97.5	64.1	52.3	71.4
July 11	100.9	76.5	67.8	79.1
July 18	99.9	79.8	68.1	79.4
July 25	102.1†	80.8	66.4	78.8
Aug. 1	102.4*	78.4	64.8	75.9

†Revised. *Preliminary.

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

Demand Sustains Industry at High Rate of Activity

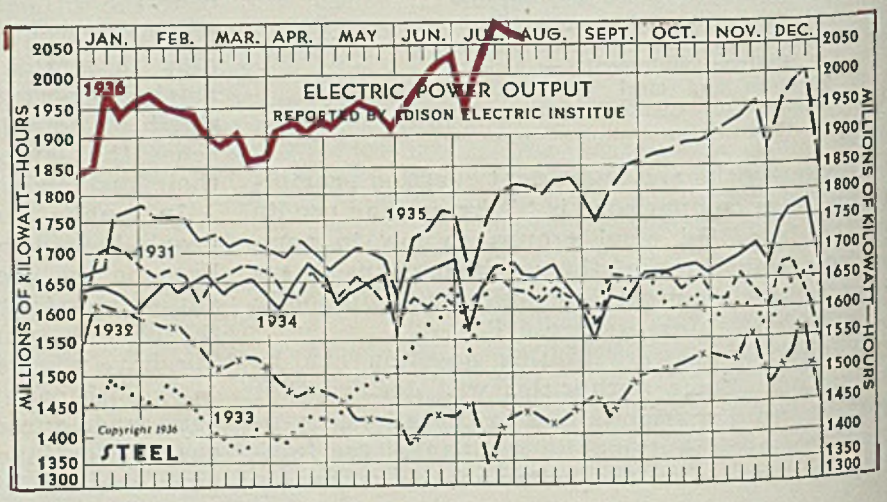
EVERY additional week in which industry continues to hold to a rate of activity that is only negligibly below the high point of May postpones and perhaps minimizes the likelihood of a summer letdown. Stability at high levels has extended so far into the dog day period that today commentators are beginning to think that the few weeks intervening between now and the time for the normal post labor day spurt of activity may be bridged without an appreciable slackening of pace.

A typical indicator of sustained activity is found in the automobile situation. Weekly production touched a peak of 120,000 cars late in April and tapered off gradually to about 100,000 units weekly at the end of June. A more pronounced decline was expected in July and August, but to date it has not materialized. Instead, with an exception in one week, output has remained within a few thousand units of the 100,000 mark. Also, retail demand has been maintained so evenly that the vacation and inventory periods of several builders have been postponed.

Similar tendencies are found in other indicators of industrial activity. Revenue freight car loadings, which were higher in July than in any previous month in 1936, apparently established a new weekly record for the year in the week ending Aug. 1. Electric power output continues above the two billion kilowatt-hour level, but slightly below the recent all-time high.

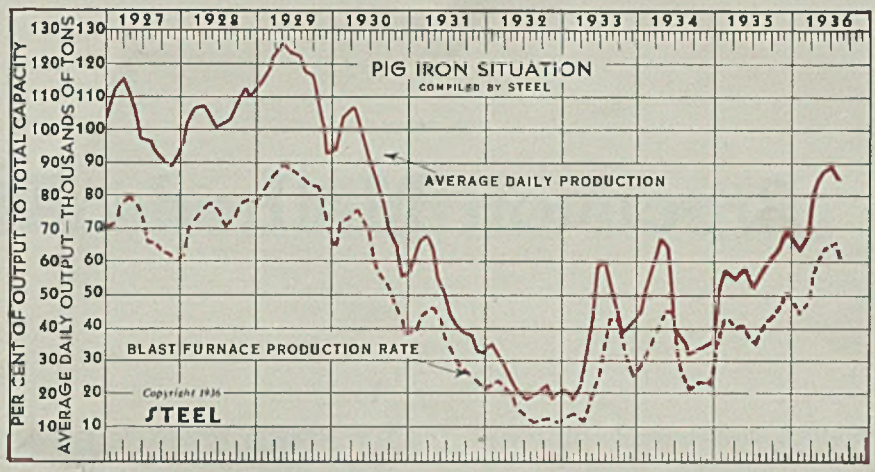
The rate of steelworks operations now is establishing its third peak of the current year. Its first at high levels was 70.5 per cent of capacity in the week ending April 18. A secondary pinnacle of 71.5 per cent was touched in the week ending June 27. The third, now in the making, already has matched the June high and may exceed it.

	Millions Kw.-Hrs.			
	1936	1935	1934	1933
Aug. 1	2079	1821	1657	1650
July 25	2008	1823	1683	1661
July 18	2099	1807	1663	1654
July 11	2029	1766	1647	1648
July 4	1940	1655	1555	1538
June 27	2029	1772	1688	1655
June 20	2005	1774	1674	1598
June 13	1989	1742	1665	1578
June 6	1945	1724	1654	1541
May 30	1922	1628	1575	1461
May 23	1954	1696	1654	1493
May 16	1961	1700	1649	1483
May 9	1947	1701	1643	1468
May 2	1928	1998	1632	1436



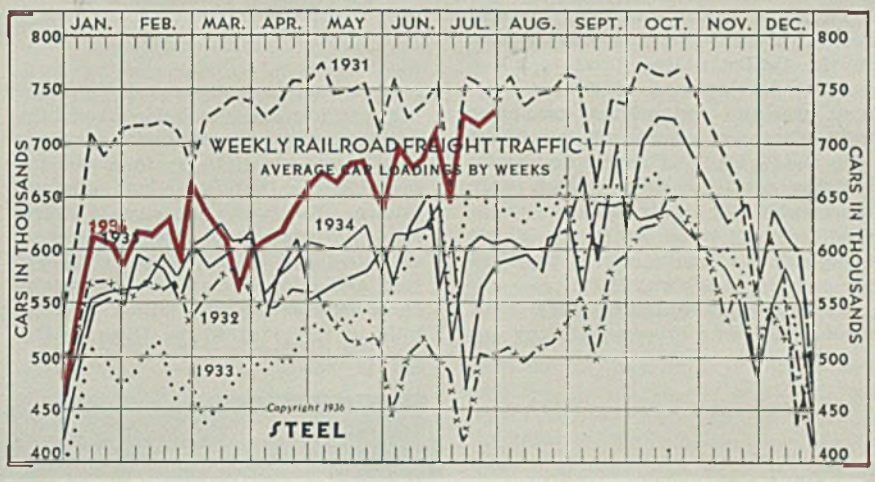
July Iron Production Down 3.6 Per Cent

	Daily Average, Tons		Blast Furnace Rate, Per Cent	
	1936	1935	1936	1935
Jan.	65,461	47,692	48.2	34.2
Feb.	63,411	57,675	46.6	41.4
Mar.	66,004	57,120	48.5	41.0
Apr.	80,316	55,719	59.1	40.0
May	85,795	55,986	63.1	40.2
June	86,529	51,949	63.6	37.2
July	83,404	49,043	61.3	35.2
Aug.	.....	56,767	.....	40.7
Sept.	.....	59,009	.....	42.5
Oct.	.....	63,818	.....	45.8
Nov.	.....	68,876	.....	49.5
Dec.	.....	68,242	.....	49.0



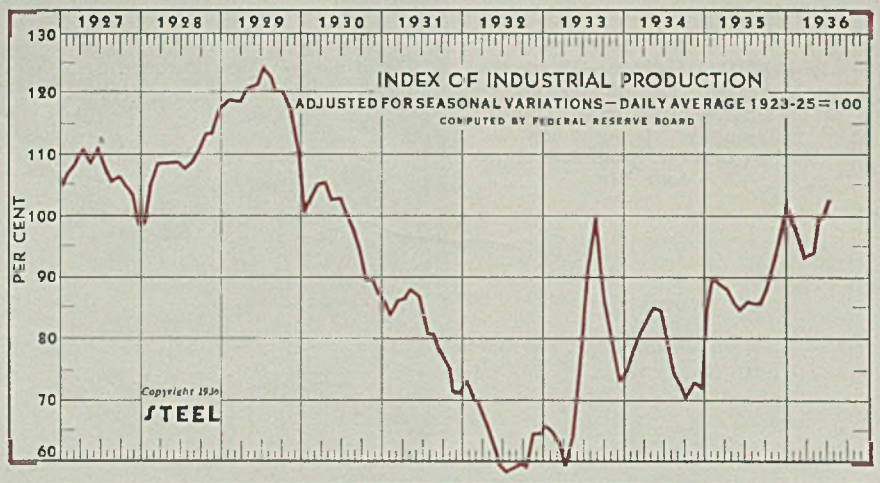
Weekly Freight Car Loadings Continue Climb

	1936	1935	1934
July 25	731,062	596,462	608,800
July 18	720,402	593,366	614,900
July 11	724,324	566,488	602,800
July 4	649,759	472,421	519,800
June 27	713,639	618,036	644,600
June 20	690,716	567,847	621,900
June 13	686,812	653,092	617,600
June 6	695,845	630,836	615,600
May 30	646,859	565,342	578,500
May 23	683,406	598,396	625,990
May 16	681,447	582,950	612,331
May 9	668,935	575,020	602,798
May 2	671,154	568,927	605,246



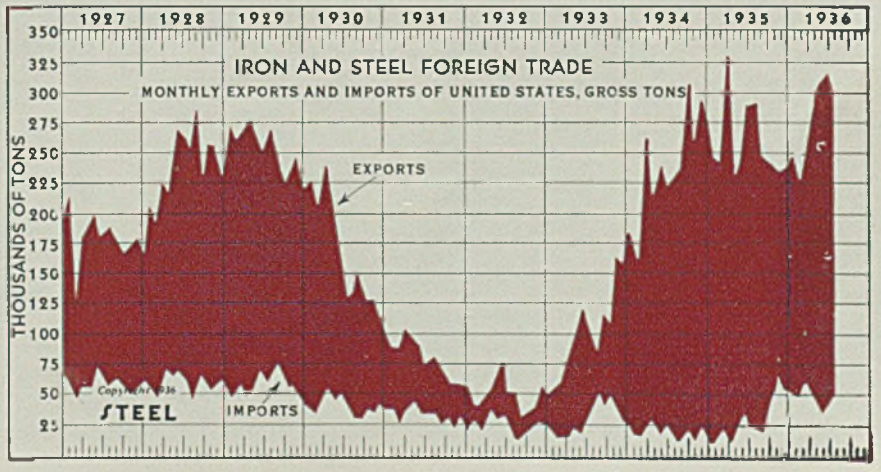
Industrial Production Index Up Sharply in June

	1936	1935	1934	1933
January	98	91	78	65
February	94	89	81	64
March	93	88	84	60
April	100	86	85	67
May	101	85	86	77
June	103	86	84	91
July	....	86	75	100
August	....	87	73	91
September	....	89	71	84
October	....	95	73	77
November	....	98	74	73
December	....	104	86	75



Iron and Steel Exports Decline Slightly in June

	1936		1935	
	Imports	Exports	Imports	Exports
Jan.	50,489	241,564	22,784	262,740
Feb.	43,358	213,802	28,905	228,537
March	56,720	264,337	21,409	323,035
April	49,621	301,987	28,866	205,336
May	59,391	314,950	47,719	286,598
June	59,910	291,951	33,208	286,333
July	.....	.....	31,894	296,802
Aug.	.....	.....	31,312	247,312
Sept.	.....	.....	53,158	244,419
Oct.	.....	.....	59,569	238,358
Nov.	.....	.....	56,637	205,242
Dec.	.....	.....	53,678	239,268



Precision Methods Are Essential

BY FRED B. JACOBS

PERFECTION attained in the manufacture of engine lathes on a production basis was not brought about in a decade or in several decades. In the United States it represents a gradual development of over a century. The first engine lathes used prior to the Civil war were crude, but about 1860 the Pratt & Whitney Co. began building precision lathes which were remarkable for their accuracy. Indeed, some of these lathes are in use today and one can be seen at the Ford Museum in Dearborn, Mich.

In earlier days lathes were built through the long process of fitting one part to another, and much hand scraping was necessary to bring about the desired accuracy. Intensive production as we see it today in a modern machine tool building plant was unknown. But today the case is different; designs have been improved, semisteel has taken the place of cast iron and alloy steels are used widely. In a typical modern lathe, such as built at the plant of the Monarch Machine Tool Co., Sidney, O., cone pulleys and change gears are things of the past. A typical Monarch lathe is shown in Fig. 1. Its fully geared headstock makes speed changes easily, while the alloy steel heat treated spindle runs in superprecision tapered antifriction bearings. All the interior parts shown in this phantom illustration are heat treated.

As far as the general principle of operation is concerned the modern engine lathe does not differ from the original developed by Henry Maudsley over 135 years ago. Features of the modern lathe are that it is of ex-

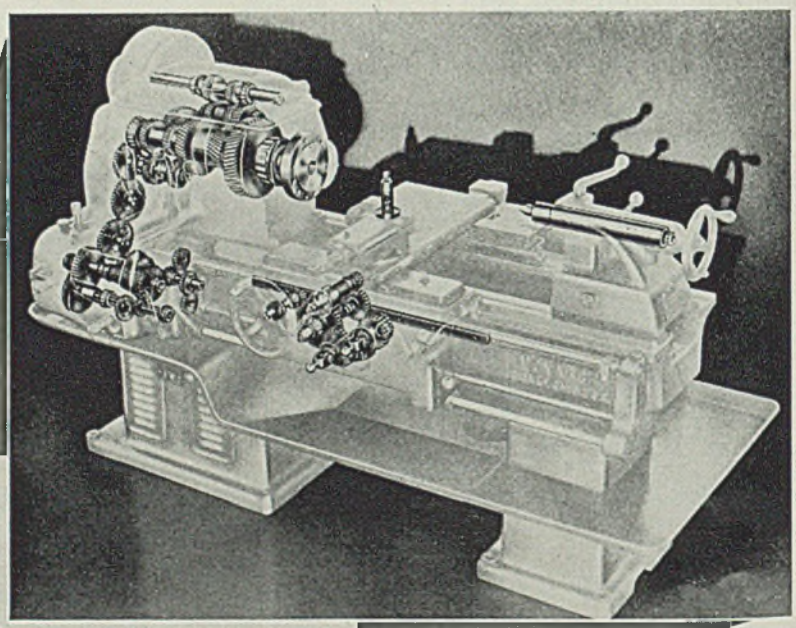


FIG. 1 (Right)—Phantom view of modern engine lathe, gears and spindles being heat treated for strength and long life

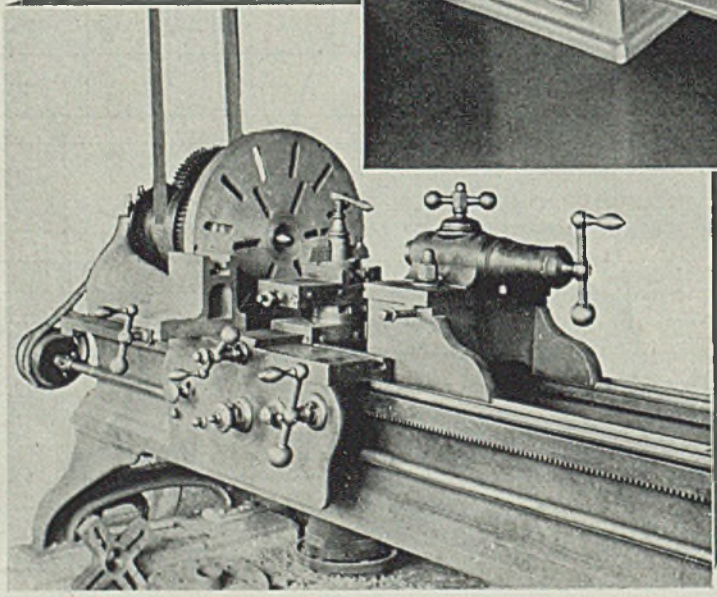


FIG. 2 (Left)—A modern engine lathe in 1865; many such tools were in common use until about 30 years ago

in Building Modern Engine Lathes

ceptionally rigid construction, accurately built and designed for ease of operation.

No better conception can be had of the advantages of the modern lathe as shown in Fig. 1 than by comparing it with the standard pattern of engine lathe in common use up to about 30 years ago. Such a lathe is shown in Fig. 2. This tool was built about 1865 by S. G. Wright & Co., Fitchburg, Mass. It is a splendid example of machine tool building for that day, but far too light in design and construction to meet present day needs.

Improvements in machine tool construction are the direct results of ideas conceived by able workers and engineers. Excellent ideas, of course, are not new. Leonardo Da Vinci, the great Italian engineer, 1452-1519, who lived some 400 years before his time, anticipated many mechanical devices, movements and processes of the present day which can be found in his manuscripts. But he lacked the equipment to carry out his ideas. Today the case is different. We have mechanical means for developing ideas, the like of which was never before known.

Keen competition has forced two other important factors to the fore. Machine tools must be made extremely accurate and they must be built quickly. In this article are illustrated and described a few interesting machining operations performed daily at the plant of Monarch Machine Tool; they give an accurate picture of how a modern machine tool builder meets his peculiar problems.

Six Beds Planed at Once

One of the most important units entering into the construction of the engine lathes in question is the bed. These are semisteel nickel-chromium alloy which is used to impart the necessary hardness to the ways and to prevent warpage which of course would be destructive to high accuracy. The beds are placed several at one setting on a planer, 48 x 48 inches in the housing with a 30-foot bed. Six beds are located for simultaneous planing. First the bottom portion where the legs locate is finished. Then the beds are turned over, carefully aligned and the ways planed. This planing is not done by the time-honored method of feeding the tools across the surface. To save time, the ways are form planed as shown in Fig. 3. Here the tools cut the full width. These tools are precision ground so they present true, level cutting surfaces. Otherwise, unnecessary time would be consumed in scraping the ways to true bearings. As may be imagined, this is work of the most exacting nature, all the planed surfaces being fitted to gages provided for that purpose.

Referring to Fig. 3, it will be seen that two heads on the cross rail and one side head are in operation simultaneously. While it is true that all planed surfaces will be in the correct location with each other as they are finished at one setting of the work, care must be exercised to make sure that the planed surfaces are straight and without side wind. That is, all corners must lie in the same plane. The final finishing operation after

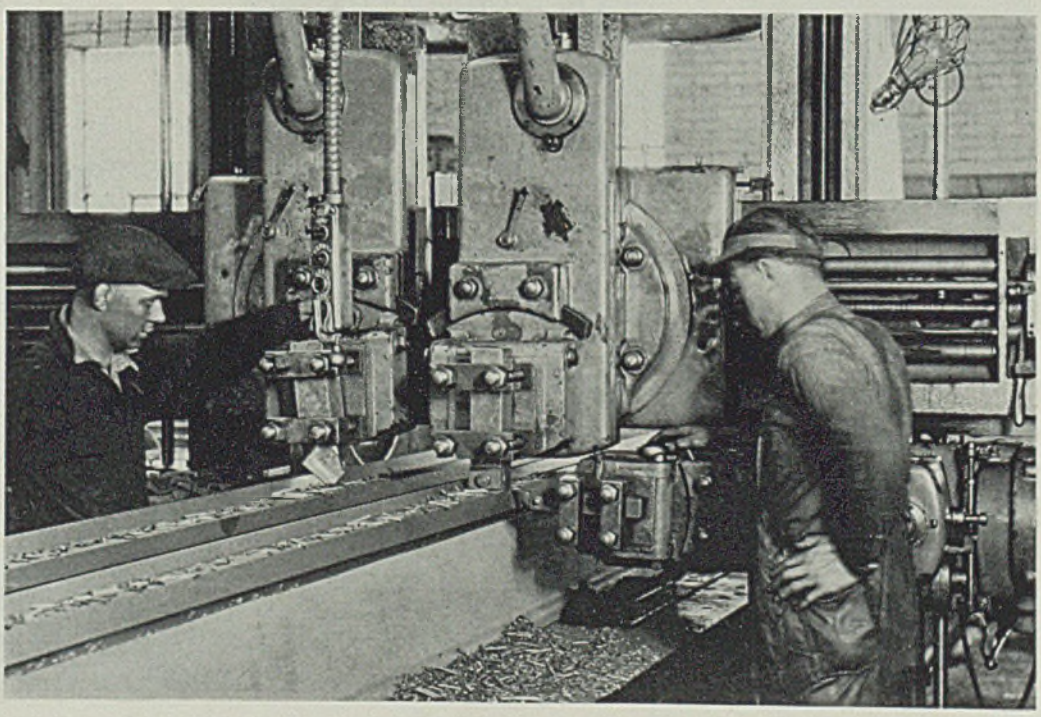


FIG. 3—Planing the ways of the lathe bed with precision ground tools cutting the full width. Ways are later hand scraped to true bearings

planing consists of hand scraping the ways to true bearings. To make sure that they are absolutely level they are tested with straightedges made by the corrective process of scraping three straight edges together.

Ten holes must be bored to close tolerance in the headstock, five at each end, of course, each hole must align with the hole opposite it. The former method of doing this work in an ordinary precision horizontal boring mill, spacing from hole to hole, has been found too costly and, due to the human element, slight inaccuracies might develop in the center spacings. Time is saved and errors eliminated by boring the headstocks in the special boring mill shown in Fig. 4, which was designed by Monarch engineers. The five boring bars run through bushings located in a bushing plate at each end of the fixture, while a special force-feed oiling system is intalled to insure adequate lubrication of the boring bars. The fixture takes care of several sizes of headstocks, inasmuch as the swing of the lathe depends on the depth of the headstock. Thus, by providing suitable raising blocks, on which the headstocks are located, one fixture takes care of several sizes. As the illustration shows, the work is held down by straps as in ordinary practice.

The bore in the tailstock to accommodate the quill also is finished in a special fixture, somewhat similar in design to the one shown in Fig. 4, except that only one boring bar is necessary. Distance from the bottom of the headstock fixture to the center of the spindle hole and the distance from the bottom of the tailstock fixture to the hole are identical. The point of this close accuracy is apparent, since it assures assembled accuracy in the finished lathe without resorting to the former process of boring the headstock and tailstock at one setting or, what is worse, "doctoring" them by means of a final boring operation in the asembly.

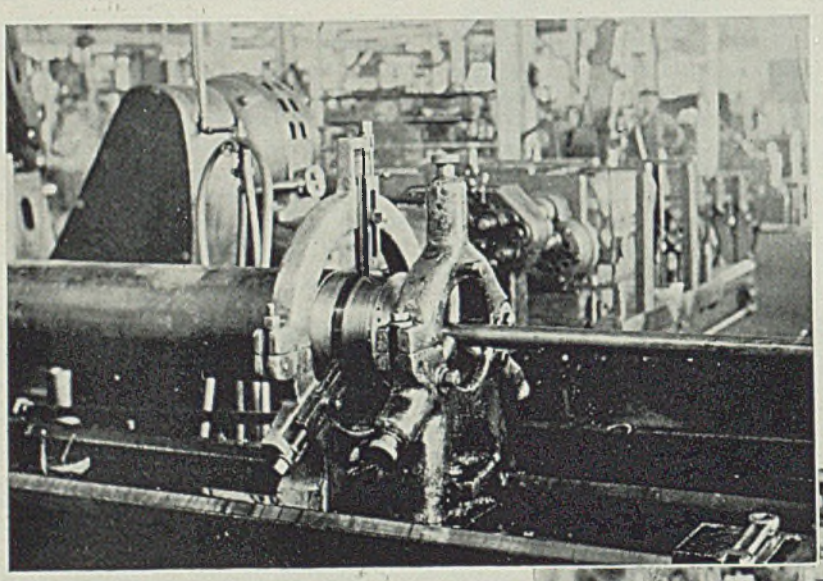
Setup for Boring Spindles

Spindles are alloy steel forgings machined to shape and finished by grinding. A standardized spindle nose takes the place of the conventional threaded nose although this type, of course, is supplied occasionally on demand. The spindle, being hollow, must be bored. This operation is shown in Fig. 5. The principle involved is that followed in boring guns. As the illustration shows, the spindle runs in a backrest, a seat being turned for the purpose, while the flange end is located in a chuck. The hognose drill or boring bar is driven by the lathe carriage and also passes through a backrest. With the work and the tool thus supported, the operation is comparatively simple.

After the outer diameters are turned, the spindle is finished to exact dimensions on a 12 x 72-inch cylindrical grinder. All surfaces being finished at one setting of the work, they are concentric, which is essential.

Ever since the first engine lathes were built, the problem of making the taper hole in the spindle accurate and concentric has been important. Early tool builders finished this hole by boring and reaming after the lathe was assembled. However, this roundabout method is not employed at the Monarch plant. The taper hole is ground so that it is exactly concentric with the outer diameter and of the correct taper. The advantages of grinding are readily apparent, since a surface thus finished does not present tool marks which would be present if the hole were finished by boring and reaming. The operation is shown in Fig. 6. The equipment is a lathe fitted with a special fixture in which the spindle is located from the seats over which the roller bearings subsequently will be fitted. Thus the hole will be concentric with the spindle rotation. The drive to the work is through a faceplate which engages a driver on the work. Thus the spindle "floats" as far as the drive is concerned. The lathe carriage is driven through the medium of hydraulic drive which was designed by Monarch engineers. The wheel head can be operated at a sufficient speed to drive the wheel at a surface travel of 5000 feet per minute.

There are a number of other production grinding operations. For example, holes for the bearing seats in the headstock are finished with hones to assure true surfaces. The hole for the tailstock quill also is honed. Gears are ground internally on grinders fitted with chucks for locating the work by pitch-line control. Teeth are ground accurately on automatic gear



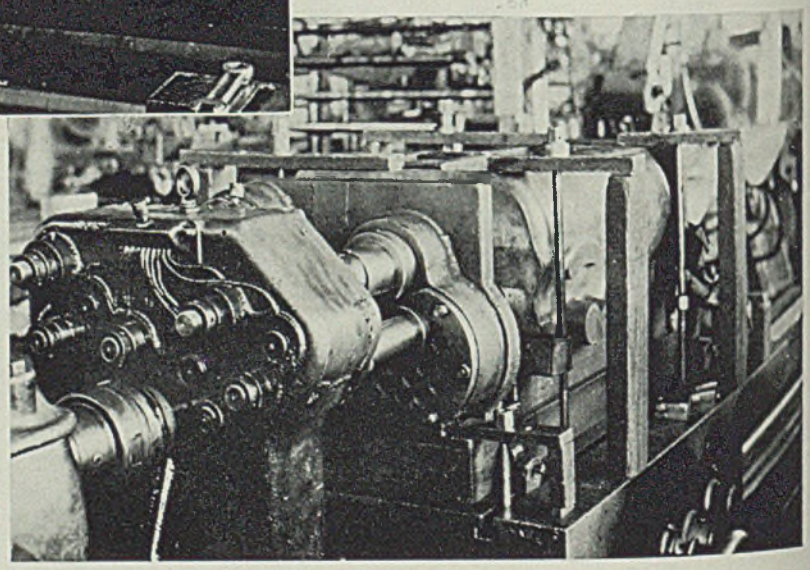
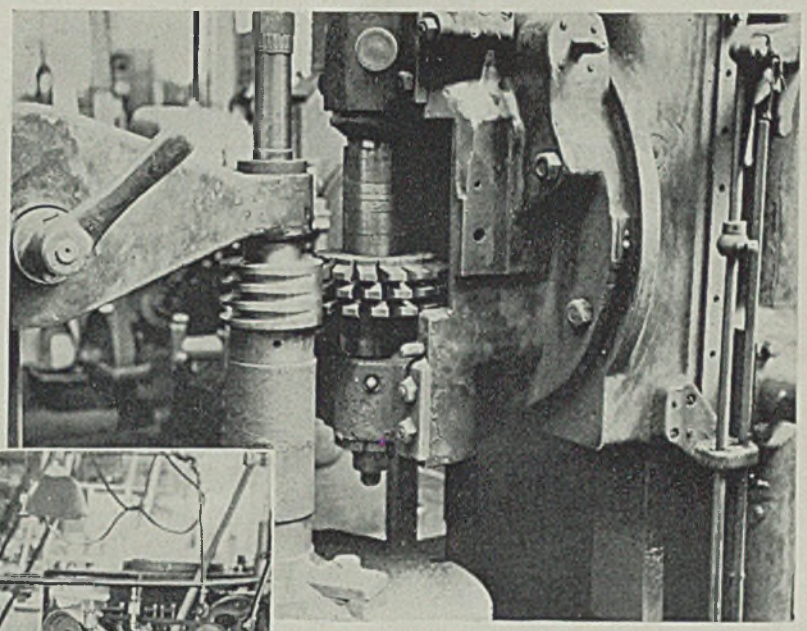
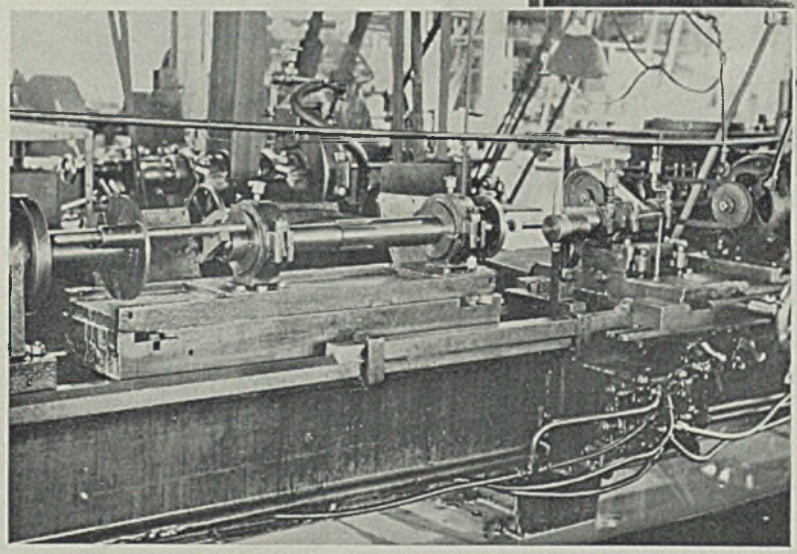


FIG. 4 (Right) — Special horizontal boring mill for accurate boring of holes in the headstock. Fig. 5 (Above) —Setup for hollow boring spindle, similar principle being used in boring guns

FIG. 6 (Below) — Lathe equipped with fixture to accommodate spindle while taper hole is precision ground. Fig. 7 (Right)—Pulleys for V-belt drives are finished on a gear cutter more economically than by turning in a lathe





grinders, this applying to both straight and spiral gears. Various flat parts, especially those which have been heat treated, are ground on a hydraulic surface grinder fitted with a magnetic chuck having working surface of 48 x 16 inches.

A number of milling operations are required in building these lathes. Fig. 7 might be termed milling but in reality is an adaptation of gear cutting applied to an operation that otherwise would be turned. The work is a pulley for a multiple V-belt drive, of cast iron, $4\frac{7}{16}$ inches in diameter with three belt grooves. It is mounted on an arbor, three cutters being set with teeth staggered.

In some instances lathe carriages are milled. Here a gang cutter is used so that all surfaces on the bottom can be finished simultaneously. However, this process applies only to the smaller carriages. The larger sizes are finished by planing. In general it is believed that a planed surface is more accurate on the type of work in question and that it is easier to scrape to a true bearing. Of course, there are exceptions to this rule.

One of the most accurate units entering into the construction of a precision engine lathe is the leadscrew, for upon the trueness of its pitch, or lead, depends the accuracy of threads cut on the lathe. Production of accurate leadscrews is a long story. In Maudslay's day, one method consisted of winding two wires about a shaft then removing one wire and soldering the other in place. Maudslay improved on this method by using a sharp edged cutter set at an angle and brought against the work. The angle of the cutter of course determined the accuracy of the lead. Maudslay employed this method for generating his first leadscrews. Also, he introduced the method of using one leadscrew on a lathe and change gears to take care of pitch variations.

These early leadscrews were not accurate as the term is accepted today. Indeed, as late as 50 years ago leadscrews on standard make lathes varied anywhere from 0.005-inch to 0.015-inch

(*Please turn to Page* 39)

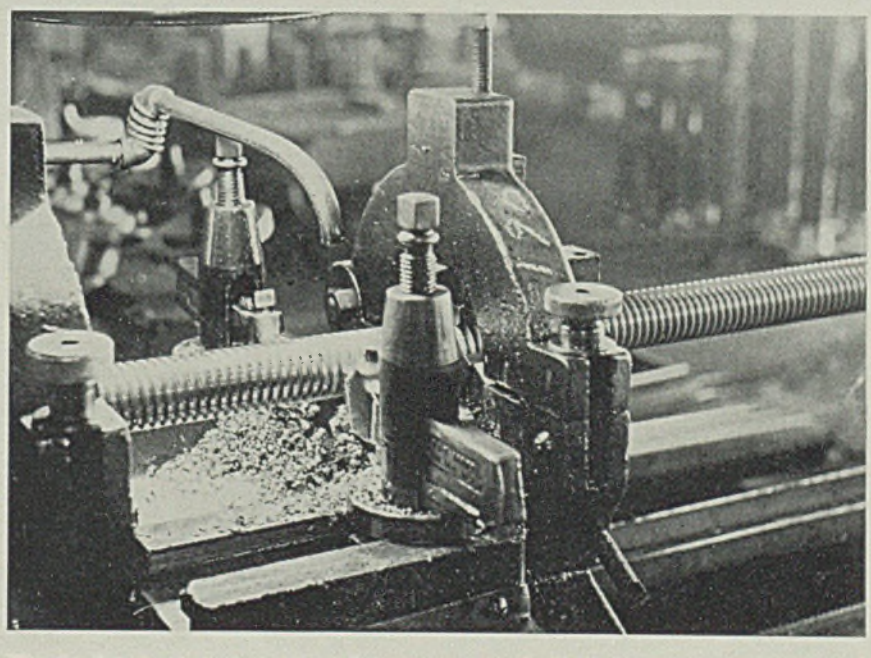


Fig. 8—Leadscrews are cut to show nonaccumulative error of less than 0.0005-inch per foot. Stock is S.A.E. X1335 steel. Equipment will cut screws up to 30 feet in length

Plastic Forming Symposium Will Feature A.S.M. Annual Meeting Program

A FOUR-SESSION symposium on plastic working of metals, at which 18 technical papers are to be presented and discussed, will be held by the American Society for Metals during its eighteenth annual convention in Cleveland, Oct. 19-23, in connection with the National Metal congress and exposition. Other features of the tentative program just announced are 31 technical papers at ten regular sessions, two educational lecture courses, and the Campbell memorial lecture.

This constitutes the most comprehensive program the society has yet arranged and will make it necessary to hold simultaneous sessions following the precedent set last year. The symposium, to take up sessions both morning and afternoon on Thursday and Friday, Oct. 22-23, will be conducted simultaneously with other sessions. In addition, simultaneous meetings are arranged for Tuesday morning, Oct. 20.

No Conflict in Papers

In announcing the program for the convention, the society's president, Robert S. Archer, chief metallurgist, Chicago district, Republic Steel Corp., states that in spite of simultaneous technical sessions, the various sessions have been arranged so that there will be no conflict in subjects. No papers on the same subject will be presented at the same time, thus those in attendance will be able to hear all important discussions relating to their particular branches of the metal industry.

The society will hold its annual meeting on Wednesday morning, Oct. 21, after which J. P. Gill, chief metallurgist, Vanadium-Alloys Steel Co., Latrobe, Pa., will deliver the Edward De Mille Campbell memorial lecture, the subject of which has not yet been announced.

Success of the two educational lecture courses at the Chicago convention last year has prompted the scheduling of two more courses this year. One course, comprising five late afternoon lectures, will deal with the subject "Physical Testing of Metals," and will be directed by Prof. H. D. Churchill, professor of mechanics, Case School of Applied Science, Cleveland. The second course of three lectures on "X-Ray Analysis" will be held on Monday, Tuesday and Wednesday evenings with Dr. Kent R. Van Horn, metallurgist, Aluminum Co. of America, Cleveland, as the lecturer. Both courses will be in Public Auditorium.

Activities Centrally Located

Headquarters for the convention will be maintained at Hotel Statler and all morning technical sessions will be held there. Afternoon sessions will be in Public Auditorium to afford easy access to the metal show in the Exhibition Hall. The Auditorium is within easy walking distance of all downtown hotels.

The tentative program, with papers listed by sessions, is as follows:

Monday, Oct. 19

MORNING

"Retarding Effect of Certain Metallic Elements on Graphitization," by H. A. Schwartz, H. H. Johnson and C. H. Junge, National Malleable & Steel Castings Co., Cleveland.

"Cadmium Alloys for Bearings," by C. F. Smart, Pontiac Motor Co., Pontiac, Mich.

"Diffusion of Hydrogen through Nickel and Iron," by W. R. Ham, Pennsylvania State college, State College, Pa.

"Behavior of Quenching Mediums During Quenching," a high-speed motion picture, by I. N. Zavarine, Massachusetts Institute of Technology, Cambridge, Mass.

AFTERNOON

"Notes on Continuous Gas Carburizing," by R. J. Cowan, Surface Combustion Corp., Toledo, O.

"Differential Hardening by Induction," by M. A. Tran and W. E. Benninghoff, Ohio Crankshaft Co., Cleveland.

"Continuous Heat Treatment of Cold-Rolled Strip," by N. P. Goss, Cold Metal Process Co., Youngstown, O., and T. B. Bechtel, Electric Furnace Co., Salem, O.

Educational course: "Physical Testing of Metals," lecture No. 1, by H. D. Churchill, professor of mechanics, Case School of Applied Science, Cleveland.

EVENING

Educational course: "X-Ray Analysis," lecture No. 1, by Kent R. Van Horn, metallurgist, Aluminum Co. of America, Cleveland.

Tuesday, Oct. 20

MORNING

"Some Effects of Small Additions of Vanadium to Eutectoid Steel," by J. G. Zimmerman, R. H. Aborn and E. C. Bain, United States Steel Corp., Kearny, N. J.

"Influence of Aluminum on the Normality and Grain Size of Steel," by G. R. Brophy and E. R. Parker, General Electric Co., Schenectady, N. Y.

"A Study of the Effect of the Aluminum Addition on the Structure of a Quenched Carbon Steel," by H. W. McQuaid, Republic Steel Corp., Massillon, O.

Simultaneous Session

"Effect of Titanium on Some Cast Ferrous and Nonferrous Metals," by J. A. Duma, Norfolk navy yard, Portsmouth, Va.

"Effect of Titanium on the Hardness and Microstructure of Heat Treated 18 Per Cent Chromium Steel Ingots," by R. E. Bannon, Titanium Alloy Mfg. Co., Niagara Falls, N. Y.

"Production of Flakes in Steel by Heating in Hydrogen," by R. E. Cramer, University of Illinois, Urbana, Ill.

AFTERNOON

"Effect of Overload on the Fatigue Properties of Several Steels at Various Low Temperatures," by H. B. Wishart and S. W. Lyon, University of Illinois, Urbana, Ill.

"Austenitic Stainless Alloys: Their Properties and Characteristics," by V. N. Krivobok and R. A. Lincoln, Allegheny Steel Co., Brackenridge, Pa.

"Slip Twinning and Cleavage in Iron and Silicon Ferrite," by C. S. Barrett, G. Ansel and R. F. Mehl, Carnegie Institute of Technology, Pittsburgh.

Educational course: "Physical Testing of Metals," lecture No. 2, by H. D. Churchill.

EVENING

Educational course: "X-Ray Analysis," lecture No. 2, by Kent R. Van Horn.

Wednesday, Oct. 21

MORNING

Annual meeting of American Society for Metals.

Campbell memorial lecture, by J. P. Gill, metallurgist, Vanadium-Alloys Steel Co., Latrobe, Pa.

AFTERNOON

"Magnetic Properties of a Series of Basic Open-Hearth Slag Samples," by B. A. Rogers and K. O. Stamm, United States bureau of mines, Pittsburgh.

"Basic Open-Hearth Slag Control," by Earnshaw Cook, American Brake Shoe & Foundry Co., Chicago Heights, Ill.

"A New Tool for Control of Quality Steelmaking," by G. T. Motok, Republic Steel Corp., Cleveland.

"Equilibrium in the Reaction of Hydrogen with Iron Sulphide in Liquid Iron and the Thermodynamics of Desulphurization," by John Chipman and Ta Li, American Rolling Mill Co., Middletown, O.

Educational course: "Physical Testing

of Metals," lecture No. 3, by H. D. Churchill.

EVENING

Educational course: "X-Ray Analysis," lecture No. 3, by Kent R. Van Horn.

Thursday, Oct. 22

MORNING

Symposium on "Plastic Working of Metals."

Simultaneous Session

"X-Ray Study of Preferred Orientations in Pure Cold-Rolled Iron-Nickel Alloys," by D. McLachlan Jr. and W. P. Davey, Pennsylvania State college, State College, Pa.

"Application of X-Ray Diffraction to the Study of Fatigue in Metals," by C. S. Barrett, Carnegie Institute of Technology, Pittsburgh.

"X-Ray Diffraction Studies of Distortion in Metals," by G. L. Clark and M. M. Beckwith, University of Illinois, Urbana, Ill.

AFTERNOON

Symposium on "Plastic Working of Metals" (continued).

Simultaneous Session

"Further Study of a High-Carbon, High-Chromium Tool Steel," by W. H. Wills, Ludlum Steel Co., Dunkirk, N. Y.

"Importance of Boundary Attack in the Etching of Steel Specimens," by B. L. McCarthy, Wickwire Spencer Steel Co., Buffalo.

"Physical Properties of Axle Shafts," by H. B. Knowlton, International Harvester Co., Chicago.

Educational course: "Physical Testing of Metals," lecture No. 4, by H. D. Churchill.

Friday, Oct. 23

MORNING

Symposium on "Plastic Working of Metals" (continued).

Simultaneous Session

"Conversion of Elongation Data from One Form of Test Piece to Any Other," by E. J. Janitzky, Carnegie-Illinois Steel Corp., Chicago.

"Behavior of Some Low-Alloy Steels in the Single-Blow Drop Test," by O. W. Ellis, Ontario Research Foundation, Toronto, Ont.

"Fracture of Carbon Steel at Elevated Temperatures," by A. E. White and C. L. Clark, University of Michigan, Ann Arbor, Mich., and R. L. Wilson, Timken Steel & Tube Co., Canton, O.

AFTERNOON

Symposium on "Plastic Working of Metals" (concluded).

Simultaneous Session

"Investigation of Fatigue Strength of Axles, Press Fits, Surface Rolling and Effect of Size," by T. V. Buckwalter and O. J. Horger, Timken Steel & Tube Co., Canton, O.

"Endurance of Gear Steels at 250 Degrees Fahr.," by A. L. Boegehold, General Motors Corp., Detroit.

"Recovery of Cold-Worked Nickel at Elevated Temperatures," by Erich Fetz, Wilbur B. Driver Co., Newark, N. J.

Educational course: "Physical Testing of Metals," lecture No. 5, by H. D. Churchill.

Papers Scheduled for Symposium on "Plastic Working of Metals"

"Laws and Fundamentals of Plastic Deformation," by A. V. deForest, Massachusetts Institute of Technology, Cambridge, Mass.

"Metallic Single Crystals and Plastic Deformation," by S. L. Hoyt, A. O. Smith Corp., Milwaukee.

"Creep Characteristics of Metals at Elevated Temperatures," by C. L. Clark and A. E. White, University of Michigan, Ann Arbor, Mich.

"Interpretation and Use of Creep Results," by J. J. Kanter, Crane Co., Chicago.

"Elastic Properties and Their Relationship to Strain Hardening," by M. F. Sayre, Union college, Schenectady, N. Y.

"Effect of Shape of Test Piece Upon the Energy Needed to Deform Materials in the Single-Blow Drop Test," by O. W. Ellis, Ontario Research Foundation, Toronto, Ont.

"Hot Working, Cold Working and Recrystallization Structure of Metals," by N. P. Goss, Cold Metal Process Co., Youngstown, O.

"Factors Relating to the Production of Drop and Hammer Forgings," by Adam Steever, Columbia Tool Steel Co., Chicago Heights, Ill.

"Hot Press and Upset Forging," by J. H. Friedman, National Machinery Co., Tiffin, O.

"Extrusion of Metals," by D. K. Crampton, Chase Brass & Copper Co., Waterbury, Conn.

"Cold Heading — Bolts, Rivets and Nails," by R. H. Smith, Lamson & Sessions Co., Kent, O.

"Ductility of Steel in Wire Drawing," by H. B. Pulsifer, American Steel & Wire Co., Cleveland.

"Cold Forming Processes — Drawing Rods and Bars," by J. E. Beck, Jones & Laughlin Steel Corp., Pittsburgh.

"Cold Drawing Processes: Making of Tubing," by Horace Knerr, Metallurgical Laboratories Inc., Philadelphia.

"Cold Rolling of Mild Steel Sheets and Strip," by Anson Hayes and R. S. Burns, American Rolling Mill Co., Middletown, O.

"Some Factors Affecting the Plastic Deformation of Sheet and Strip Steel and Their Relation to the Deep Drawing Properties," by Joseph Winlock and R. W. E. Leiter, Edward G. Budd Mfg. Co., Philadelphia.

"Cold Working of Hollow Cylinders by Auto-Frettage," by N. E. Woldman, Eclipse Aviation Corp., East Orange, N. J.

"Damping Characteristics of Metals," by G. R. Brophy, General Electric Co., Schenectady, N. Y.

Precision Methods Used in Building Engine Lathes

(Concluded from Page 37)

accumulative variation in 6 feet. Today, however, by the aid of perfected measuring instruments, leadscrews have been standardized. Thus, the leadscrews cut at the Monarch plant will not show a nonaccumulative error of over 0.0005-inch per foot. Leadscrews at the Monarch plant are cut as shown in Fig. 8 on one of the company's lathes arranged for this purpose. The lathe leadscrew upon which depends the accuracy of the finished product is located under the carriage in the center of the bed. This screw has been tested by the national bureau of standards and is accurate within the foregoing limits.

Referring to Fig. 8 it will be seen that the leadscrew in process of cutting passes through two backrests which are located on and consequently travel with the lathe carriage. Thus the somewhat long screw is supported adequately as the cutting tools are located between the backrests, one at the front, the other at the rear. The front tool cuts the tape portion of the thread, that is the sides, while the rear tool removes stock at the base of the thread. On the forward cut the front tool is used and on the return cut the rear tool. Thus, there is no lost time as in ordinary screw cutting practice. The machine shown in Fig 8 will cut screws up to 30 feet in length. Stock from which the screws are made is S. A. E. X1335 steel; the screws are not hardened.

From the foregoing brief summary, it is seen that the building of modern engine lathes on a production basis is a trade in itself, calling for the use of much special precision equipment, for upon the accuracy of the machine tool builder's own shop equipment depends the precision of his product.

4000 Feet of Welded Rail Installed in Tunnel

Northern Pacific railway officials announce the laying of the longest stretch of welded rails ever to be strung in one piece, according to reports from Seattle. This installation was made in the 4000 foot Bozeman tunnel in the Rockies between Livingston and Bozeman, Mont.

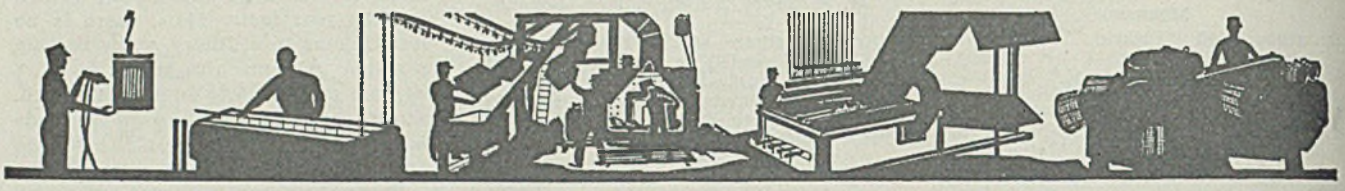
Each 4000-foot length of rail was built by welding together a sufficient number of standard 39-foot steel rails weighing 131 pounds to the yard. Before welding the rails were placed end to end on 90 gondolas equipped with rollers. Welding was done by means of pressure fusion with thermit metal.

When welding was completed, locomotives were attached to each end of the string of gondola cars and the continuous spans were hauled to location. The train was uncoupled in the middle and half the cars were pulled away, allowing the rail to lower to the track. Then the other half of the train was pulled out, leaving the entire stretch of continuous rail in place. The company is now at work performing a similar job to be laid, 4000 feet in length, in the Blossburg tunnel, west of Helena, Mont.

REVISED RECOMMENDATIONS FOR ABRASIVE SIZES APPROVED

Current revision of simplified practice recommendation R118, abrasive grain sizes, has been accorded the required degree of acceptance by the industry, and is to become effective Sept. 1, according to an announcement by the division of simplified practice, national bureau of standards, Washington. Until ready in printed form, complimentary copies of this recommendation, in mimeographed form, may be obtained from the division.

Surface Treatment and Finishing



Improvements in Bath and Deposits Increase Use of Black Nickel Plate

BY C. B. F. YOUNG
Technical Director, United States Research Corp., Long Island City, N. Y.

ONE of the standard blacks for decorative and designing purposes is black nickel which has been important from an industrial point of view almost since the inception of electroplating as a commercial process. During the last decade the trend in its use has been diminishing because of the increased use of japans and lacquers in industry. In the last year or so, however, the pendulum has swung back, and once more black nickel is becoming an important industrial black finish. The reason for the change, it appears, lies in the fact that if lacquer chips, cracks or peels off the base metal is exposed, thus spoiling appearance of the finished product and at the same time exposing the base metal to corrosion. If black nickel is first deposited and then lacquered, the appearance and corrosion resistance will be increased.

Black nickel deposits, when exposed to the atmosphere, gradually assume a brown color, undoubtedly due to the fact that the sulphur compounds of the coating are changed to oxides. This brown material can be removed by wiping the surface with a cotton cloth. Obviously the method of preventing such a discoloration is to cover the black coating with either colorless or black lacquer.

Knowledge Limited

Just how long black nickel deposits have been used is difficult to say, but it is generally assumed that the coating was discovered by accident. Little research has been carried out in this field, and for that reason knowledge of the subject is somewhat limited.

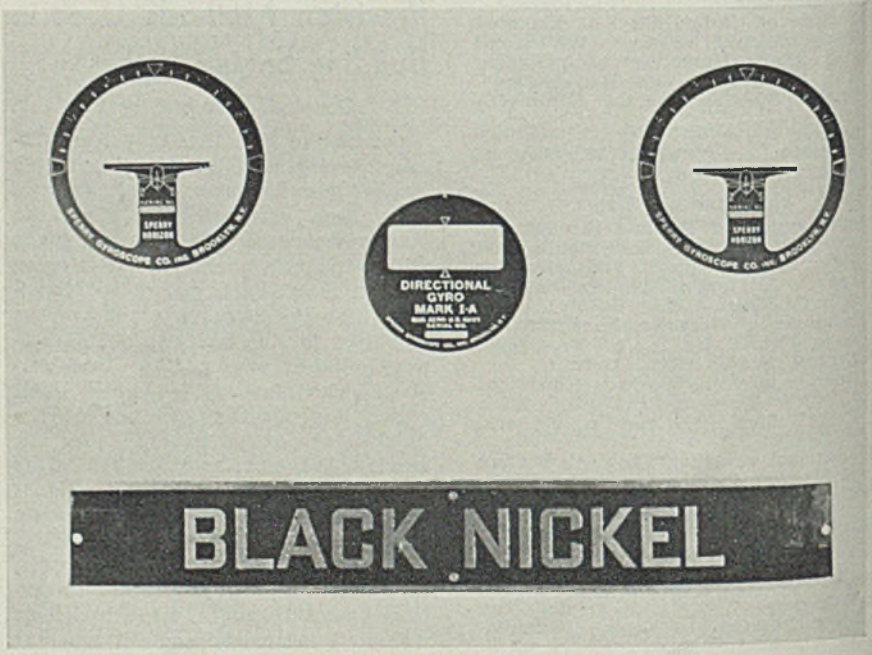
During the World war demands arose for specifying the color and other desirable properties for black nickel on equipment purchased by the government. For this reason the national bureau of standards undertook a study of this interesting colored coating.[1]

As one would expect, each plater had developed his own formula, and guarded it with great secrecy. These men, most of whom had little technical training, had many compounds present in the bath which did not aid in any way the deposition of black nickel. In fact, many of the chemicals added did not remain in the solution, but immediately reacted with some of the other constituents and precipitated, forming a sludge on the bottom of the tank. As an example of the waste which was prevalent, it was found on analyzing one bath for nickel content that only 7 per cent of the nickel added was in the solution. Such solutions naturally were uneconomical to operate, aside from the fact that most of the time the coatings obtained were unsatisfactory.

Two Classes of Baths

Black nickel baths can be divided into two classes, that is, the basic cyanide and the slightly acid or neutral baths. Many times, although it is not an essential constituent, arsenic is present in one form or another. This is undoubtedly due to the fact the nickel bath was not working well and the men in charge added some arsenic trioxide and found the bath produced a black deposit. It is well to point out here that this is not a black nickel bath, but a simple "arsenic black" bath

[1] National bureau of standards, Washington; technical paper 190.



Group of indicating dials made by depositing black nickel on brass. These dials are used in the "Robot Pilot" of airplanes. Photo courtesy of Sperry Gyroscope Co. Inc., Brooklyn, N. Y.

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which can be prepared by adding arsenic trioxide to a solution containing sodium hydroxide and sodium cyanide.

Many experiments were conducted at the bureau of standards to determine the best formula for black nickel. Solutions containing nickel sulphate treated with enough cyanide to dissolve any precipitate formed and arsenic trioxide with enough sodium hydroxide to dissolve it yielded unsatisfactory grayish deposits which consisted mostly of arsenic. When zinc was added to the solution, better deposits were obtained, although little zinc was found in the coatings. Good gray black deposits were obtained from the following bath:

Bath I

	Ounces per gallon
Nickel ammonium sulphate	6.0
Zinc sulphate	0.5
Ammonium carbonate	5.0
Arsenic trioxide	0.7
Sodium hydroxide	0.7
Sodium cyanide	6.0

In operating the above bath, increasingly lighter deposits were obtained due to the decrease of the zinc and arsenic ions. From a glance at the composition, it can be seen that such a bath would not be commercially feasible due to its complexity. There are entirely too many constituents to control. The bureau of standards, after making many tests upon alkali baths, decided all were unsatisfactory from a commercial point of view.

Sulphocyanate Baths

If neutral or slightly acid baths are used, results can be obtained which are of commercial value. Such a bath contains:

Bath II

	Ounces per gallon
Nickel ammonium sulphate	8.0
Zinc sulphate	1.0
Sodium sulphocyanate	2.0

This bath is simpler and more easily controlled than Bath I. When using this solution, the operator will note a slight change in voltage produces a great change in the physical properties of the deposited coating. The control of the voltage, and not the current density, is the important factor in the deposition of black nickel. Langbein and Brannt[2] state that with the above bath 0.5-0.7 volt between the anode and cathode should be used, while Blum and Hogaboom[3] state that 1.0-1.5 volts should be used. All agree that 2 volts is excessive and that an unsatisfactory deposit will result. The current density in any of these cases should not exceed 2 amperes per square foot.

[2] Langbein-Brannt, *Electro-Deposition of Metals*, Henry Carey Baird & Co. Inc., New York, 1924; page 325.

Composition of Deposits

Analyses of black nickel deposits shows them to contain the following:

Metal	Per cent
Nickel	40–60
Zinc	20–30
Sulphate	10–14
Organic	10+

It appears that the material consists of a mixture of nickel sulphide, nickel, zinc and organic matter. The latter is formed by the decomposition of the sulphocyanate when electrolyzed.

Gray Deposits

If the zinc content is increased above the amount indicated in Bath II, grayish deposits containing a high zinc content will be obtained. This is used by many industrial concerns to produce a relief which is not jet black. It is also possible to obtain a gray deposit by omitting the zinc altogether. Such a bath should contain:

Bath III

	Ounces per gallon
Nickel ammonium sulphate	8.0
Sodium sulphocyanate	2.0

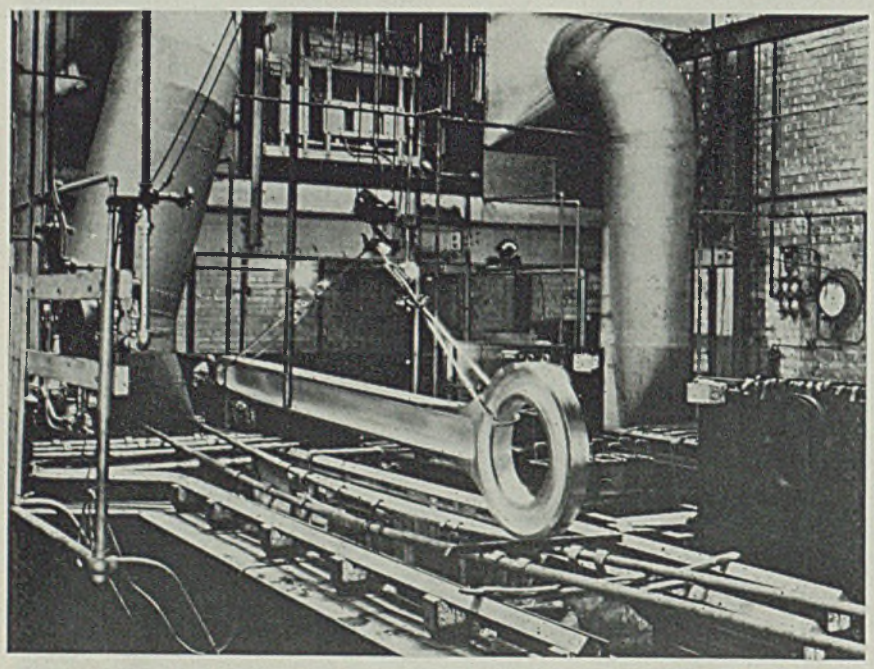
The operating conditions for this bath are the same as for the black nickel.

As a general rule, nickel or nickel and carbon anodes are used. The baths are operated at room temperature with the voltage specified as above. The pH of the baths should be from 5.5 to 6.0. If the solution becomes too acid, which will generally be the case due to the anodes, ammonia can be added, but care must be taken not to precipitate any of the zinc ions. Nickel carbonate has been suggested to maintain the proper pH, but the disadvantage of this material is that when it is added the nickel ion concentration is increased. Langbein[2] suggests the use of zinc carbonate, because, while it neutralizes the solution, it also helps to maintain the zinc ion concentration which is decreasing at all times.

Black nickel may be applied directly on steel, but it is rather difficult. Commercal demands generally call for preliminary coatings of another metal, such as nickel, brass, zinc or copper. It must be borne in mind that black nickel offers little protection against corrosion, therefore the finishes are not desirable for outdoor exposure. According to Langbein[2] experiments have shown steel plated with zinc and then with

[3] Blum and Hogaboom, *Principles of Electroplating*, McGraw-Hill Book Co., New York, 1930; page 275.

Chromium Brightens Locomotive Main Rod



REPORTED to be the largest chromium plating job ever accomplished in a single operation, this locomotive main rod is one of a set comprising two 12-foot main rods and four 9-foot side rods. Plating required the construction of a specially designed tank 17 feet long, 3 feet wide and 3 feet deep. The rods, designed and built by Timken Roller Bearing Co., Canton, O., are of heat treated alloy steel and afford a substantial saving in weight over those of standard construction. Chromium is plated directly over the steel under closely controlled conditions. Note the large ducts of the ventilation system which is capable of handling 12,000 cubic feet of air per minute. Provision is made for salvaging chromic acid by washing the exhaust fumes

black nickel possesses about the same resistance to the salt spray test as does steel plated with the same thickness of zinc.

As a general rule, the operator of a black nickel tank can tell by observation just how the electrolysis is proceeding. The deposit at first should be iridescent and cover only a part of the surface. Later, the coating should assume a bluish tone, and finally a black color. If the deposit is uniform at the beginning, the current density is too high. When the entire area is black, the process is finished. Thick deposits should be avoided because they are brittle as a general rule.

Analysis of Solutions

Black nickel, like all other solutions, should be analyzed periodically. The two metals, nickel and zinc, may be determined after the sulphocyanates have been destroyed by boiling a sample of the solution with nitric acid. The zinc is separated from the nickel by precipitating in an acetic acid solution with hydrogen sulphide. After filtering, the zinc is put back into solution and titrated with potassium ferrocyanide, using uranium acetate as an outside indicator. The nickel contained in the filtrate is titrated with a standard sodium cyanide solution in a simple and direct manner.

The sulphocyanate can be determined by adding an excess of standard silver nitrate and titrating the excess with sodium sulphocyanate, using ferric alum as the indicator.[3] These determinations can be carried out in any industrial laboratory. If the company does not have such a laboratory, analytical sets can be purchased on the market which are so simple in operation the operator in charge can determine the amount of different constituents in the plating bath. These sets can be obtained not only for black nickel, but for brass, silver, white nickel, zinc and copper (acid and cyanide).

Heavy Machinery Lowered Into Position By Packing Foundation Pits with Ice

INSTALLATION of heavy machinery such as forging hammers, presses and the like, where the base of the equipment must be located in a pit below floor level, often presents a knotty problem to erectors. A common method has been to use so-called "whisky" jacks — hydraulic jacks filled with alcohol—but with this system the equipment must be provided with jack pads and usually four or more jacks are required in the work.

The problem arose recently when two 5-inch and one 4-inch Ajax horizontal forging machines or upsetters were being installed at the new forging and heat treating plant erected by the Chevrolet parts manufacturing division of General Motors Corp. at Saginaw, Mich. The 5-inch machine weighs about 185,000 pounds and the 4-inch only slightly less. They had to be lowered into a concrete pit 3 feet deep and about 12 by 20 feet in size. No jacks were available, and furthermore the size of the machines would have required at least two and probably four 50-ton jacks.

Some ingenious brain devised a simple answer to the difficulty. The pit was packed flush with the top with large 370-pound blocks of artificial ice which is frozen to accurate dimensions and which could be fitted snugly into the pit. The machines then were slid on rollers onto the "ice elevator" and located exactly over the anchor bolts which were in position to receive the machines. As the ice melted, the machines slowly descended into position, two operators with live steam hoses being on the job to speed up the melting and to see that the machines remained fairly level in the descent.

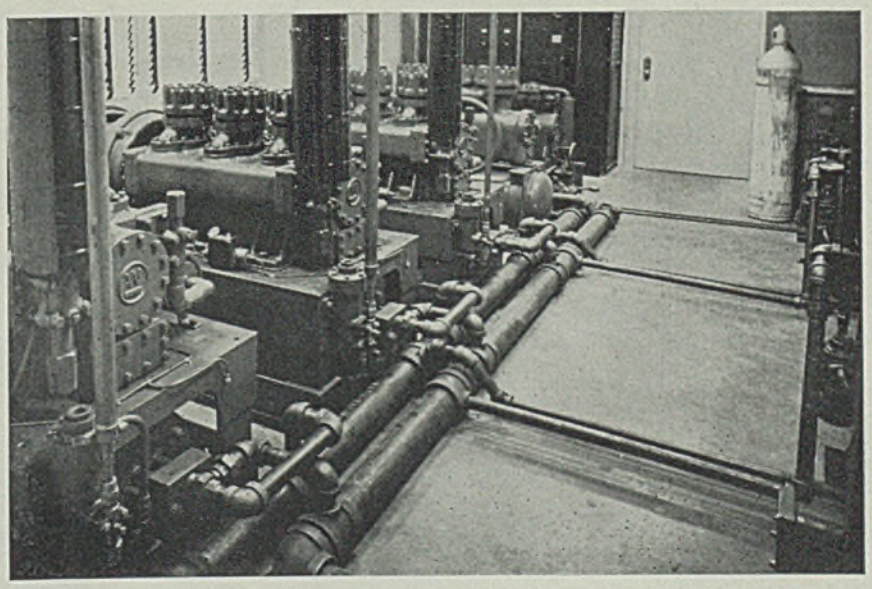
Drainage pipes in the bottom of the pit removed the excess water resulting from the melting of the ice.

This idea, according to W. W. Criley, general manager, Ajax Mfg. Co., Cleveland, is most unusual, but has been adopted in other instances, one being in connection with installing large forging hammer bases in 12-foot pits at the plant of Buick Motor Co. Certainly the method should suggest to many a simple and efficient means for the handling of heavy machinery in the process of installation.

Welding Repairs Casting

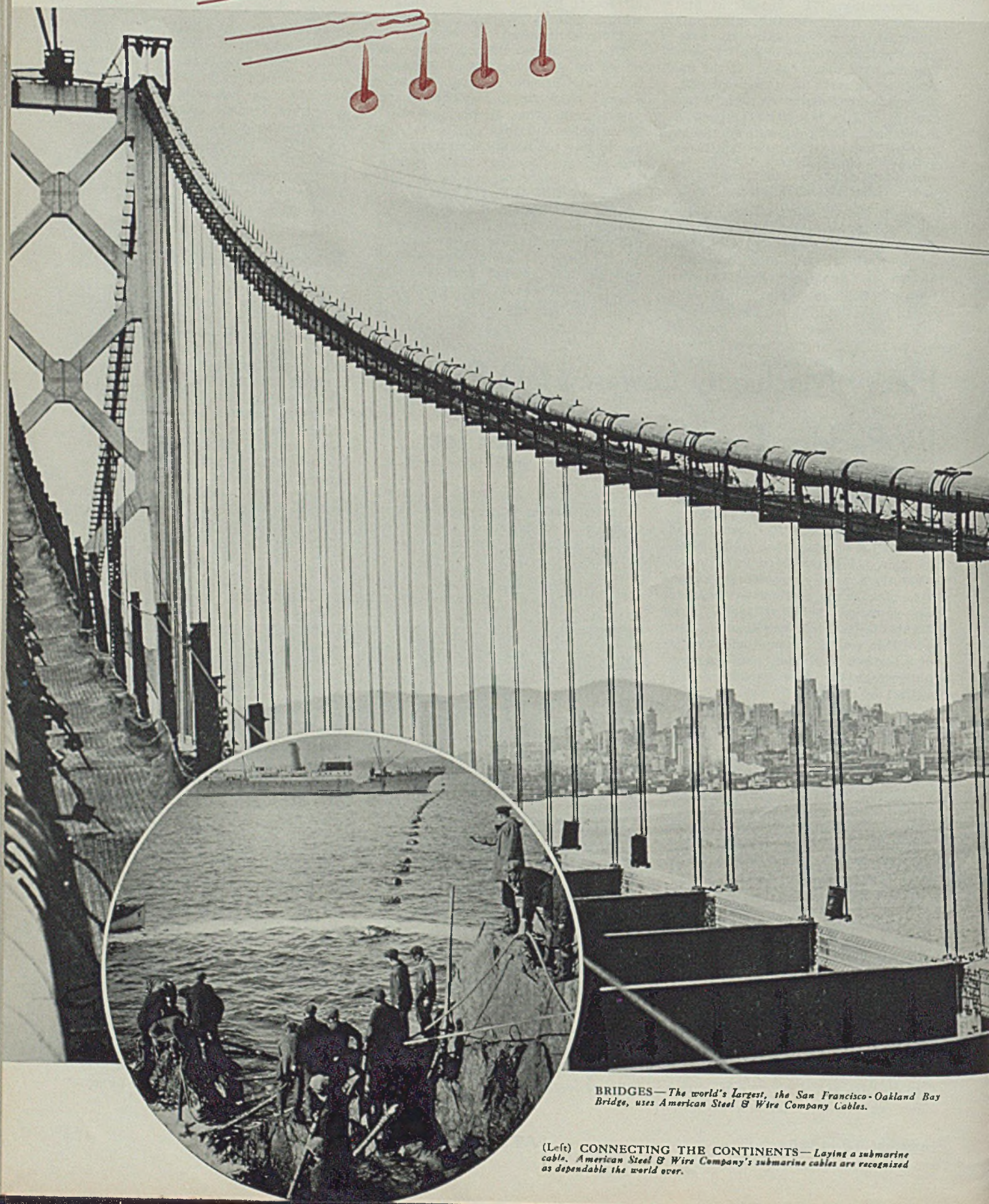
Service men of a large oxyacetylene welding company recently supervised the preparation and assisted with the bronze welding of the water end of a 12 x 14-inch pressure pump cylinder in the shops of a West Virginia railway company. This casting, which was cracked in a service, became an emergency job as the pump is used on the boiler wash system. The cylinder was removed from the pump, chipped, preheated and welded. Approximately 3 hours welding time was required. Total cost, including welding, materials, machining and handling, was $27.50.

Keeps Centennial Visitors Cool



CENTRAL compressor room operated by Westinghouse at the Texas Centennial exposition in Dallas, supplying conditioned air for the Westinghouse and three adjacent exhibits. Equipment includes the new hermetically sealed condensing unit (STEEL, July 20) recently developed by Westinghouse engineers. An all-steel cooling tower serves the condensing units. Room is illuminated by 250-watt mercury vapor lights

From HAIRPINS AND TACKS



BRIDGES—*The world's Largest, the San Francisco-Oakland Bay Bridge, uses American Steel & Wire Company Cables.*

(Left) CONNECTING THE CONTINENTS—*Laying a submarine cable. American Steel & Wire Company's submarine cables are recognized as dependable the world over.*

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...WIRE!

160,000 recorded uses for wire. Think of it! Each particular piece of wire serving some useful purpose . . . making some task easier. Wire to support the nation's bridges, to light its homes and streets and highways —wire to bale the farmer's hay, to bind the cooper's staves. Bird-cages, needles, hairpins, paper clips and springs. WIRE—of many shapes, gauges and analyses.

Whether wire is called upon to do its job alone, or is combined with other materials to help produce something useful, it must be strong and well made and of the right analysis.

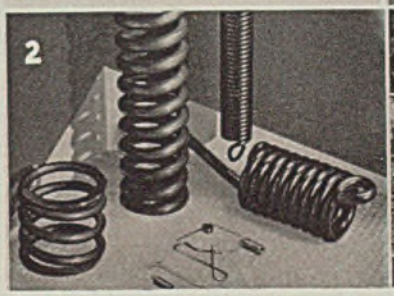
For more than a hundred years, we have been making wire for many purposes. Our experience has been responsible for the development of many new applications and new types of wire and has been a leading factor in the vast improvement of wire already in general use. If you need wire for any purpose we can make it for you . . . in any quantity, uniformly and to your specification. And if you have a problem involving wire, we will be glad to bring the results of our long experience to your assistance.

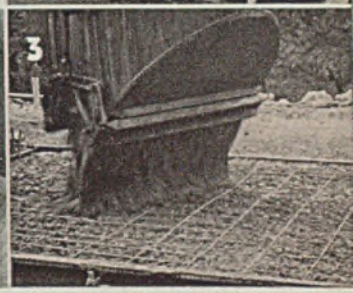
Yes, we are old hands at making wire and we know that no matter what your wire requirements may be, we can serve you skillfully, efficiently, and economically.

1. AMERICAN TIGER BRAND WIRE ROPE *has proved its worth in keeping equipment in operation, in doing away with costly replacements and in lowering operating costs. Experience has proved its superiority.*

2. AMERICAN QUALITY STEEL SPRINGS—*Here are but a few of them. We make springs large enough to support railroad cars, and springs smaller than those used in a watch.*

3. WIRE FABRIC — *To reinforce and strengthen highways, the floors of buildings, walls and concrete products.*





AMERICAN STEEL & WIRE COMPANY

208 South La Salle Street, Chicago

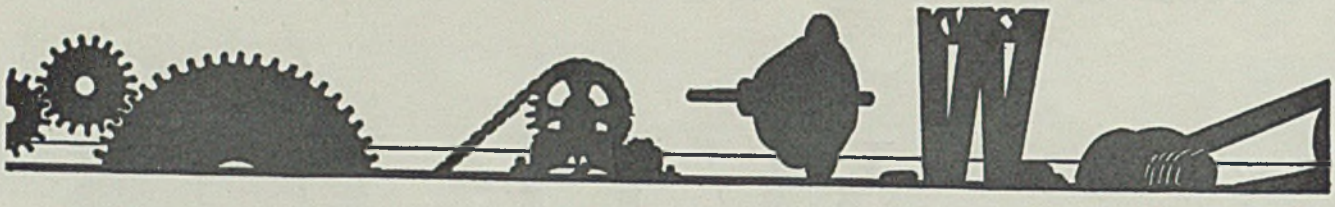
Columbia Steel Company, San Francisco, *Pacific Coast Distributors*

Empire State Building, New York

United States Steel Products Company, New York, *Export Distributors*

UNITED STATES STEEL

Power Drives



Supporting Lineshafting

BUILDINGS with wide spans or with light trusses present a problem in attaching the necessary superstructure to support lineshafting. Where wooden stringers are used it has sometimes been necessary to install 8 x 12 or even 10 x 14-inch timbers which add a heavy dead load on the structure. On many light single-story structures such dead loading is prohibitive even without the additional live load of the shafting and pull of the belts.

Properly designed steel stringers are lighter than such heavy timbering. This is particularly true of the specially designed type of metal stringers and superstructure material. However, in some cases the span is too great even for these.

One concern which was faced with the problem of erecting lineshafting in a single-story building with wooden roof trusses on wide spacing found that no additional load could be placed on the trusses. The solution was to insert steel pipe post supports under the truss and also at about the midpoints of the stringers between trusses.

As the position of the machines had been carefully laid out it was possible to place these posts where they would not interfere with any machine. Also, much lighter stringers were used than if no support had been given to the spans between trusses.

Another unusual feature of this installation (the building was not originally erected for manufacturing purposes) was that the stringers were built on top of the lower chords of the roof trusses. The lineshaft hangers were inverted and the lineshaft erected over the stringers. This was necessary because the roof trusses were so low that erecting the shaft below the truss would have placed the shafting and pulleys too low for safety.

◆ ◆ ◆

Preventing Overloads

ON drives with practically constant torque load the power required increases almost directly with the speed. This factor is sometimes overlooked in connection with the use of variable-speed motors or drives.

With direct-current motors the load may be increased unknowingly to a danger point, particularly where the product is also variable. Other types of variable-speed units may also be heavily overloaded.

Such was the case on a certain wire drawing bench used to draw a miscellaneous assortment of alloys. In each case as high drawing speed as possible was desired but at the same time the maximum power load was to be kept within the capacity of the motor.

To permit this, an ammeter was mounted in view of the operator with the maximum permissible current reading marked with a heavy red line. When drawing wire the operator sets the speed at a point such that the ammeter pointer does not pass this red line and so is obtaining maximum production without danger of overloads. Fluctuation of the needle indicates variation in the quality of the product or its heat treatment, another valuable advantage of this control of current used.

In a similar manner another plant placed an indicating ammeter in view of the operators of polishing lathes to indicate the maximum pressure that should be applied to get the best work. This not only prevents pressing too hard and slowing down the drive but also indicates when the operator is not exerting enough pressure.

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Men working with or on electrical equipment should be experienced in the application of the prone pressure method of resuscitation. It is a good plan to train the entire maintenance force in this safety work because these men work close to "hot" lines. Also, such men are scattered through the plant and in many cases can begin working on an accident victim almost immediately when time counts.

◆ ◆ ◆

Before starting an open chain drive see that the joints are thoroughly lubricated. Best results are obtained by immersing in hot oil and moving about until the lubricant has penetrated into the joints.

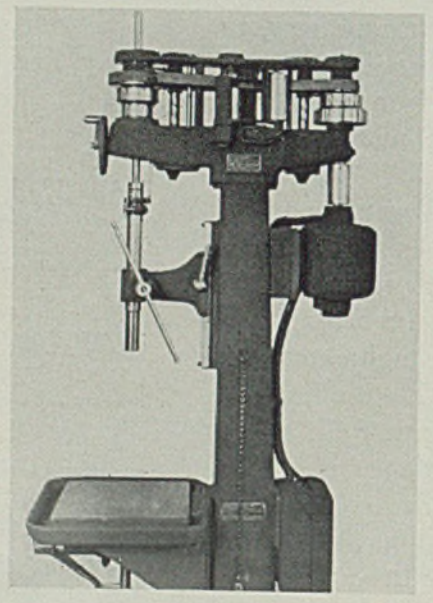
◆ ◆ ◆

Where lubrication is neglected as much as 95 per cent of the maintenance may result from excessive wear of moving parts.

◆ ◆ ◆

Life of an antifriction bearing depends primarily upon the quality of the lubricant used and, secondly, upon the reliability of its servicing.

New Drive Featured



THREE-STEP pulleys provide varying speeds on this new drive designed by the Foote-Burt Co., Cleveland, for installation on its BK type sensitive drilling machine, which has a capacity of ⅜-inch in cast iron. The drive is operated by a ball bearing motor which is mounted on a bracket at the rear of the column of the machine. The motor armature shaft is connected to the rear cone pulley driveshaft by means of a flexible coupling. The motor runs at a constant speed, changes providing spindle speeds of 1035, 1725 and 2915 revolutions per minute being possible by shifting the belt lever at the front of the machine

Welding, etc. . . .

by Robert E. Kinkead

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.

Steam Locomotive Boilers

THE welding fraternity endures a considerable amount of joshing on account of the fact that the barrel of locomotive boilers is never welded in spite of the fact that practically all new power boiler drums are now welded. The stock answer that the interstate commerce commission will not permit welding hardly covers the case.

There is no doubt in the writer's mind that the all-welded locomotive boiler would be a better and safer piece of equipment and that eventually all such boilers will be welded. There are good reasons why the development has not been brought about heretofore: First, since welding has been applied to power boiler drums, few locomotive boilers have been built; second, railroads build many of their own boilers, and not one railroad shop in the country is equipped to build welded boilers under A.S.M.E. code requirements; third, the welded locomotive boiler would cost at least as much as the present boilers and the economies of maintenance would not be large. Welding is already used extensively in the firebox where practically all maintenance work is required.

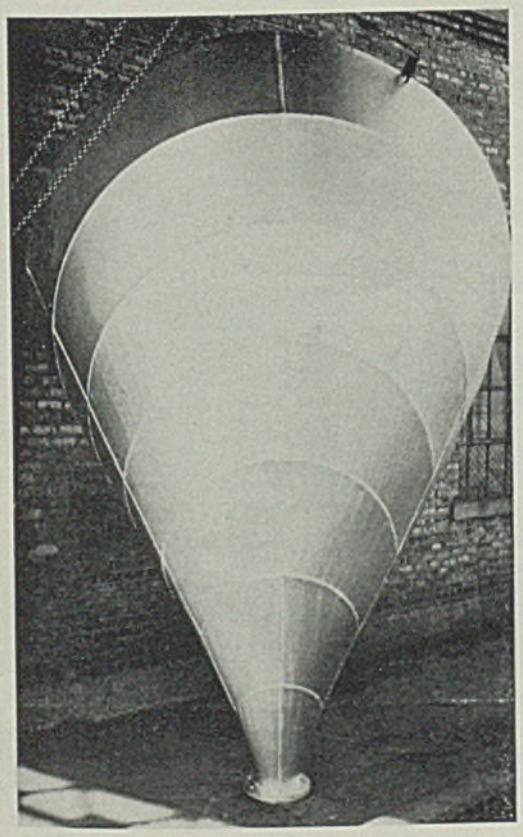
Considering the freight train as a whole, welding begins just aft of the locomotive boiler throat sheet and, before the battle is over, may have captured every permanent mechanical fastening to the after end of the caboose. Applying welding to tenders and freight cars will yield economies which will justify expenditures and leave a substantial profit.

More About Lumpy Welds

MAX. M. FROCHT of Carnegie Institute of Technology, Pittsburgh reported the results of studies in stress concentrations in the *Transactions* of the A. S. M. E. in 1931. Current issue of *Mechanical Engineering* reproduces excerpts. For the good of the welding industry, the paper should be reprinted about once every 60 days.

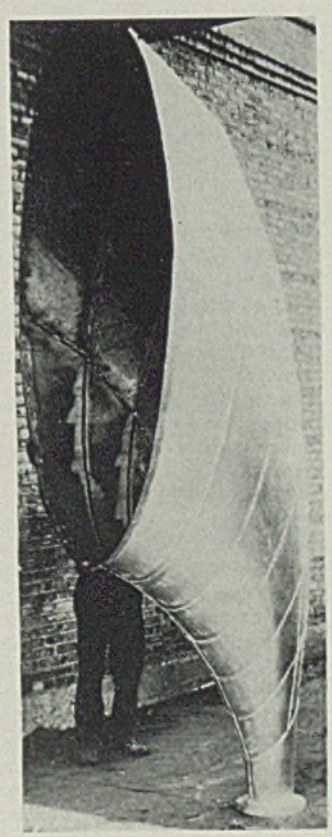
This study deals with effect of a notch of varying radius but smooth circular contour. Stress concentrations up to 3:1 are shown for small notches. Had the study been carried out on actual weld contours where improper technique had been used, stress concentrations of the order of 10:1 would have been shown. Welding technique which produces sharp re-entrant angles in the surface contour makes the weld an entirely unsuitable connection for alternating stress or rapidly repeated application of the working stress.

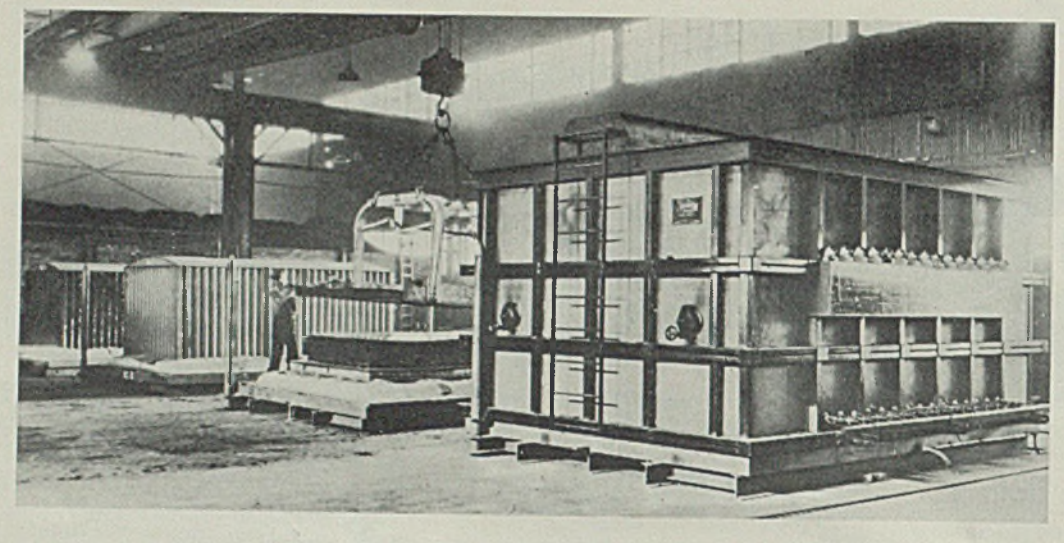
Every machine designer knows the penalty of sharp changes in contour in revolving shafts. The penalties are the same in welded connections—premature failures. Rough, lumpy welds must be avoided.



Welding Fabricates Odd-Shaped Fitting for Sewage Disposal Plant

THIS horn-shaped structure, speading out from 8 inches diameter at the bottom to 8 feet at the top, was once a single flat piece of 3/16-inch ingot iron. The structure is still a single piece of metal but the shape is different. It was made by cutting out 26 pieces, then fusing them all together into one unit by the shielded arc process of electric welding. Fabricated by the Farrel Mfg. Co., Joliet, Ill., the structure is an outlet fitting for the cone of a clarifying tank used in sewage disposal work. Photos courtesy Lincoln Electric Co., Cleveland





METHOD of charging the furnaces is shown here. The charge is placed under the corrugated covers shown on the units at the left, while a charge is being heated in the unit at the extreme right

Annealing Covers for Sheet and Strip

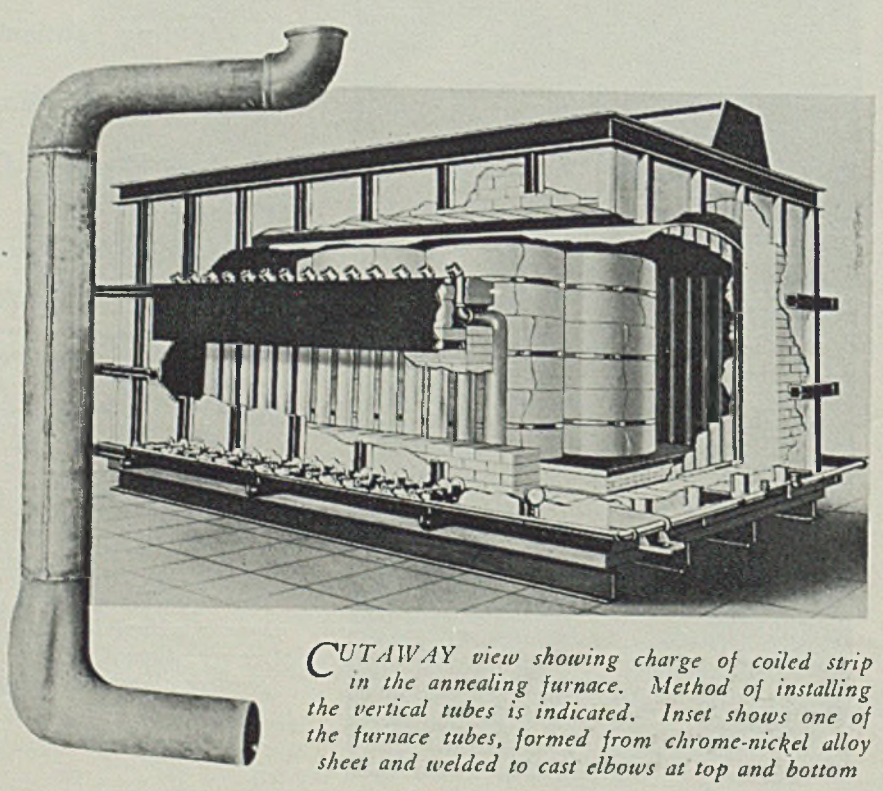
Gas-Fired Vertical Tube Type Show Flexibility and Economies in Heating

RIGID specifications have forced the use of more accurate equipment for heat treating steel sheets and coiled strip. Modern automobiles require steel of qualities unheard of a few years ago and have demonstrated to other users of steel that many parts can be formed of sheet and tinplate which formerly were made from other materials. This has stimulated the market for higher quality sheet and tinplate and has forced the development of methods and equipment suitable for producing this type of material.

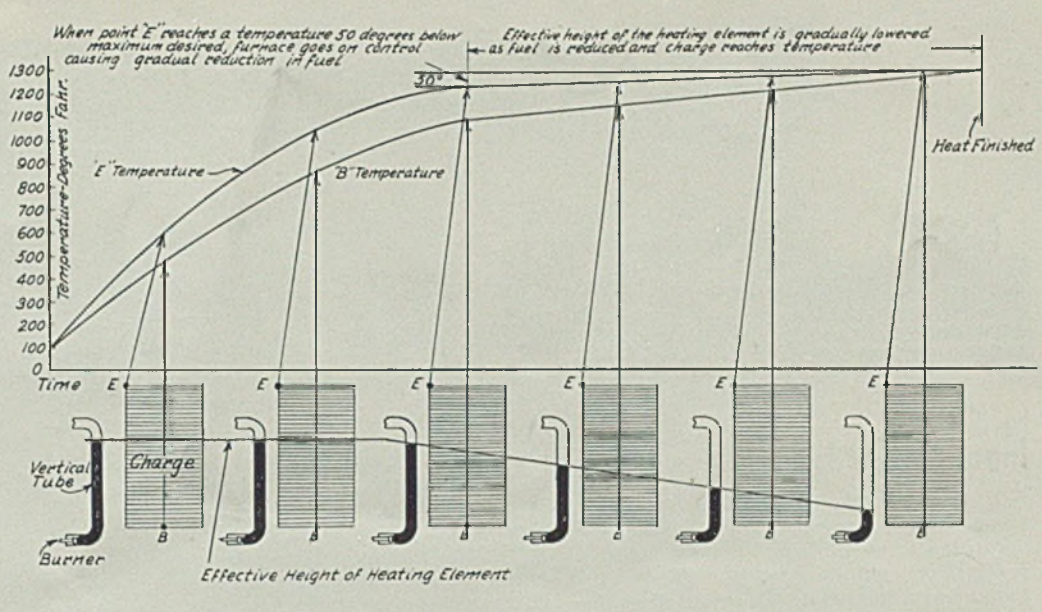
Rapid progress has been made in all departments of steelmaking, from the open hearth on down to the final heat treatment. One of the noteworthy developments is in the heat treating or annealing of sheets. Development of the tube-type annealing cover has created a marked change in this field.

The vertical tube annealing cover, developed by the Lee Wilson Engineering Co., Cleveland, comprises a steel shell lined with insulating brick, a refractory and insulating brick base and a light gage inner hood or cover made of corrugated sheet. The heating is done with vertical tube heating elements which are set on equal spacing along the sidewalls of the outer shell. Each heating element consists of an alloy tube, a fuel burner and a shut-off valve. Fuel is burned in the bottom portion of the tube and the hot products of combustion pass up through the tube, giving off their heat in passing.

The charge of sheets or coils is built on the base and the corrugated inner cover is placed over the charge and sealed with sand. The charge is then ready to fire and the heating cover is lowered into place and the fuel connected. To light the furnace,



CUTAWAY view showing charge of coiled strip in the annealing furnace. Method of installing the vertical tubes is indicated. Inset shows one of the furnace tubes, formed from chrome-nickel alloy sheet and welded to cast elbows at top and bottom



THIS diagram shows graphically the method of automatic vertical heat control designed to hold the hottest point at a given temperature while the remainder of the charge is brought to that temperature

a switch is thrown which both turns on the fuel and lights it. When the charge is completely heated, the outer heating cover is removed and placed over another charge and the cycle is repeated.

Advantages claimed for the vertical tube type furnace include application of all fuel at the bottom of the charge where it is most needed, use of shorter tubes, greater flexibility of temperature control as a result of increased numbers of heating elements of smaller size, use of a single burner and elimination of need for fans and blowers.

Considerable investigation was required to find the correct material for use in the tubes. Problems to be met included expansion and contraction and uneven heating of the tubes due to application of heat at the bottom. After a period of testing it was found that greater tube life was obtained from a tube formed of chrome-nickel alloy sheets, welded to specially shaped cast elbows. The use of the rolled section in the tube eliminated the cracking difficulties which have been encountered frequently in the all-cast tube.

The automatic vertical control, represented in the accompanying diagram, is designed to hold the hottest point in the charge to a given temperature while heat is automatically applied to bring the balance of this charge to this temperature. Horizontal distribution is taken care of by turning on or off the heating elements. If a charge two-thirds the length of the furnace is being heated, all tubes opposite the unused portion of the furnace are turned off. This eliminates overheating of corners and ends of charges.

Tons of Bronze In Castings for Dam

WAR department recently awarded to the Bartlett-Hayward Co., Baltimore, contract for completion of the emergency gate shafts for the Fort Peck dam tunnels at Fort Peck, Mont. The contract calls for 1,500,000 pounds of castings from high tensile and manganese bronze.

An interesting feature of the bronze is the fact that 350,000 pounds of it must have physical properties in excess of 100,000 pounds per square inch ultimate tensile strength and 10 per cent elongation with a minimum of 228 brinell hardness. Over a million pounds is to be manganese bronze to navy specifications. All castings are to be made in the company's Baltimore foundry.

In addition to the special liner castings which will average from 2 to 3 tons each for the shaft foundations, the contract includes eight large emergency gates, special hoists weighing 24 tons each, eight 18-inch bronze bypass valves, buildings and other equipment. The complicated construction of the gates demands workmanship of unusual accuracy, and assembly tolerances are limited to 0.005-inch. All field construction work will be done by the Bartlett-Hayward company.

Corrosion Resistance Data On Metals and Alloys

Corrosion Resistance of Metals and Alloys, by Robert J. McKay and Robert Worthington; cloth, 492 pages, 6 x 9 inches; illustrated; published by Reinhold Publishing Corp., New York; supplied by STEEL, Cleveland, for $7, plus 15 cents for postage; in Europe by Penton Publishing Co Ltd., Caxton House, Westminster, London.

A monograph in the series by the American Chemical society, this volume is intended as an aid to anyone engaged in producing, manufacturing, distributing or using metals; all who are faced with corrosion problems.

The thought and data of modern corrosion knowledge have been consolidated under one plan, making accurate comparison between different metals and different corrosion conditions. A concise outline of the theory of corrosion is included and data from test and experience on modern corrosion problems.

In Part I the various parts of the corrosion theory have been related; physical and chemical facts given briefly; properties of metals, chemistry of corrosive solutions and characteristics of types of corrosion are described and the effect of each on corrosion rates is shown.

Part II gives a complete summary of the useful corrosion data as they have been published, but with critical interpretation based on actual experience of the authors and others. Unity of presentation allows quick comparison.

A selected critical bibliography is included, containing such references as are pertinent and necessary.

Reports on Research Work

Purdue university, West Lafayette, Ind., has issued as bulletin No. 51 of its engineering experiment station research series, a report of the research and extension activities of the engineering schools and departments for 1934-35. The report contains numerous progress reports of investigations under way. Copies of the bulletin may be obtained without charge by addressing the university.

Progress in Steelmaking

Ingot Height Is Important

Horizontal cracks in steel ingots are caused by excessive ingot height, according to an Ohio steelmaker. Investigation shows that the ingot hangs up in the mold. The maximum of efficient practice is obtained when the height of the ingot is 3½ times its thickness.

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Discloses Irregularities

An instrument known as the profilograph and designed at the University of Michigan, Ann Arbor, Mich., has been installed in the new chemical and metallurgical testing and production control laboratory of the Ford Motor Co., Dearborn, Mich. The instrument is the third of its kind to be constructed. It is employed to examine finishes on steel Through an optical magnifying system, any imperfections in the finish, which are detected by a diamond point, are magnified 2000 times vertically and 64 times horizontally. A graph of a surface of a ⅛-inch specimen of steel thus becomes a readable chart 8 inches long, with minute irregularities showing as deep ridges on the surface of the steel being tested.

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Determines Wire Fatigue

Endurance limit of small diameter wire used in elevator and hoisting cable now may be determined by a new method. A consideration of the fatigue limit of these wire materials has been neglected largely because of the difficulties in making the fatigue tests. The new fatigue machine is based on the mechanical principle that a rotating curved wire automatically tends to assume the form of a circular arc. Stress computations, therefore, are simple. The wire test specimen rotates at high speed and subjects the fibers of the outer curvature to a tension stress and the fibers of the inner curvature to a compression stress. When a fatigue crack once starts on the surface it is opened and closed rapidly until the wire breaks. The wire specimen is rotated in an oil bath to dampen vibration. The machine now is being used to test wire 0.024 to 0.050-inch diameter used in typical wire rope fabrication. The test method also may be employed for much smaller wire.

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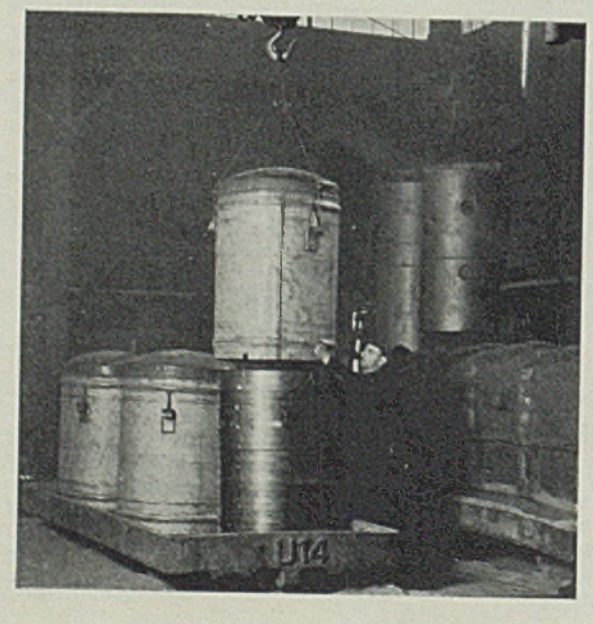
Resists High Temperature

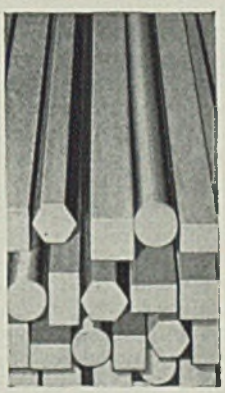
Research has led to the production of a high-temperature paint especially suited for steel boiler breeching, stacks, retorts, exhaust pipes, etc. It can be applied to the metal either while cold or hot, and to rusty or previously painted surfaces without first removing rust or carbonized paint. Immediately after drying the surface can be heated to a cherry red without damage to the coating.

Annealing Cover Fabricated of Stainless Steel Permits 20 Per Cent Heavier Tray Loads



STAINLESS steel annealing covers have been found to be highly economical in the annealing of strip and other steel commodities. Hoods shown in the accompanying illustration weigh 400 pounds each and permit a 20 per cent heavier load on the same tray that formerly handled metallic hoods of another type. While the average life of other type metallic hoods, according to investigations, is about 160 cycles through the furnace, stainless steel covers already have passed 650 cycles through the furnace and show no sign of deterioration. The convenience in handling the lighter hood is apparent. The stainless steel annealing hood, shown in the illustration, is manufactured at the new fabricating division of the Taylor-Winfield Corp., 15120 Woodward avenue, Detroit

Under his critical eyes



STARTING at the open-hearth, where the characteristics of carbon steel bars that determine their fitness for a given purpose originate, the steel for Bethlehem Bars moves through production under the scrutiny of metallurgical observers who build up these characteristics to full development.

These observers link together the various stages of production. They provide the follow-through so essential to the making of any quality steel product. They coordinate the entire process of manufacturing Bethlehem Carbon Steel Bars, directing every detail toward the single goal of customer satisfaction.

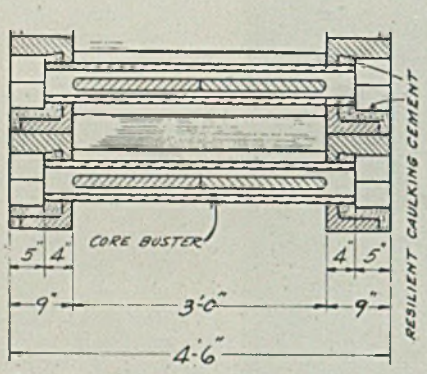
BETHLEHEM STEEL

BETHLEHEM STEEL COMPANY

Improved Recuperator Serves New Slab Heating Furnaces

AT THE McDonald plant of Carnegie-Illinois Steel Corp. in the Youngstown, O., district, installation of one of the latest types of continuous hot mills for strip steel was recently completed. Description and illustrations of the mill were given in the Dec. 30, 1935, issue of STEEL. Slab heating furnaces in this plant are equipped with tubular recuperators designed by the Carborundum Co., Perth Amboy, N. J.

The three furnaces are of the triple-fired type, with hearths 18 feet wide by



Detail cross section through recuperator showing corebusters and general construction. Seals of caulking cement prevent mixture of air and furnace gases

75 feet long. Each has a rated capacity of 50 gross tons of slabs per hour charged at atmospheric temperature. For fuel, natural gas of 1050 to 1100 B.t.u. per cubic foot is employed, with all of the combustion air preheated in twin recuperators equipped with Carbofrax tubes to about 650 degrees Fahr. when the furnace is operating at rating. The waste gases descend through downtakes to the recuperators, sweep in a horizontal path past the tubes, past hand-operated dampers in each offtake and unite in a main flue containing an automatic damper, and then go to the stack.

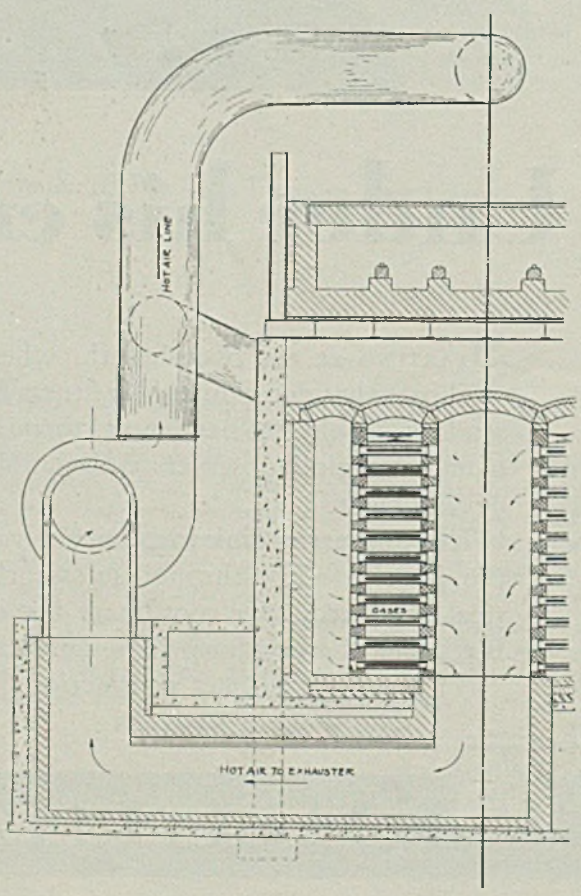
On the instrument board for each furnace are conveniently mounted all the necessary indicating, recording and controlling devices, as well as the damper equipment. The arrangement of the recuperators and flues is brought out in accompanying sketches. Air is drawn fom the atmosphere through two banks of tubes on each side and an underground duct to the fan inlet. From there it passes through insulated piping to the burners. To improve the thermal efficiency, each tube is equipped with a corebuster, which affords extra convection surface heated by radiation from the tube walls and improves the coefficient of heat transfer by increasing the air velocity and turbulence. Leakage between the air and waste gases is minimized by caulking all joints between the refractory shapes with a resilient cement.

Many Advantages Claimed

High thermal conductivity, freedom from cracking and spalling under rapid temperature changes, high physical strength, speed of raising air temperature and complete inertness to furnace gases are advantages claimed for the furnace tubes. Care was taken in the design to provide for accessibility and ease of replacement of the tubes if necessary.

Although the furnaces have been in operation only about seven months, enough information has been acquired to demonstrate the entire adequacy of the furnace equipment. So far, the best production in one hour from one furnace has been 75 gross tons of steel heated to rolling temperature. The average output per furnace per hour when operating normally is approximately 50 tons. The maximum of fuel consumption measured so far on any one furnace is 85,000 cubic feet of natural gas per hour. Under this condition the draft loss across the recuperators is 0.5-inch of water per hour.

CROSS section through recuperator, indicating path of heated air. The Carbofrax tubes are equipped with corebusters which increase the convection surface



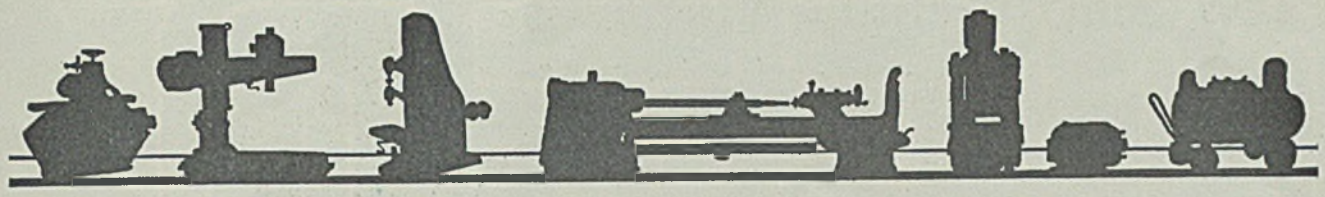
Sea Water Holds Promise For Magnesium Production

Production of magnesium from sea water in a commercial process at South San Francisco, Calif., gives promise of greater supplies of this element. As the available supply grows, the inherent advantages of this lightest of all metals can be adapted more widely to all machines in which lightness is a vital consideration. Today magnesium is available as die castings, sand castings and rolled products to lighten any machine part regardless of the comparative scarcity of magnesium deposits.

Valves Give Longer Life

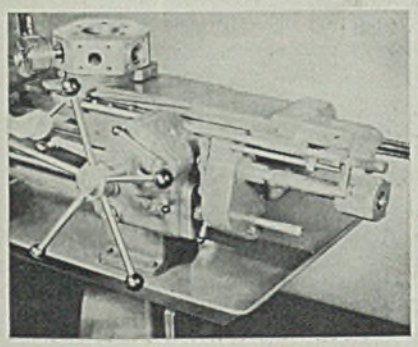
Gray iron valves on a high-pressure steam line in the plant of a Wisconsin paper company sometimes required replacement as often as every 3 or 4 days. Steel valves with stellite applied to the seating surfaces were tried in an effort to prolong the life. The first such valves have now been in service 6 months and have given no trouble.

New Equipment



Threading Attachment—

Gisholt Machine Co., Madison, Wis., announces a new Ram slide thread chasing attachment for Gisholt No. 3, 4 and 5 Ram type universal turret lathes. This attachment makes possible production of accurate threads without resorting to the single tool method. It leads the die onto the work at a uniform rate governed by a section of leadscrew. The threading attachment is of the leader and follower type and consists of a bracket for carrying the followers, a means of mounting and driving the leaders and suitable means for starting and stopping the threading feed. By using a selective gearbox which is coupled to the feed shaft, one leader will cut three threads having one, two and four times the pitch of the leader. Threading capacity is from 4 to 32 threads. The gearbox also makes available three ranges of eight feeds ranging from 0.001-inch to 0.104-inch.



Gisholt Ram Slide thread chasing attachment for Nos. 3, 4 and 5 Ram type universal turret lathes

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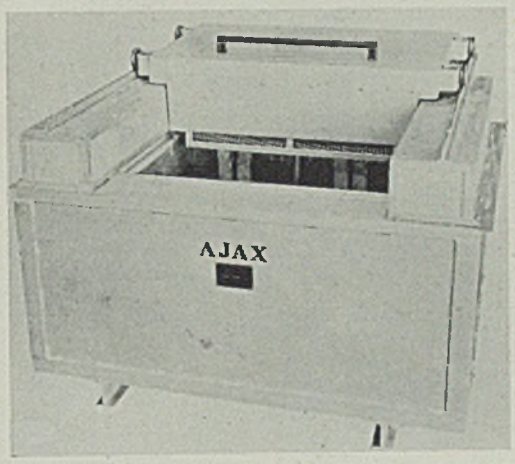
Salt Bath Furnace—

Ajax Electric Co., Frankford avenue and Allen street, Philadelphia, recently has announced a new heat treating salt bath furnace, for cyaniding, hardening, annealing and tempering. The complete unit includes furnace casing completely assembled with insulation and cover, electrodes, pot, transformer with tap changing switch and automatic temperature control equipment comprising pyrometer, magnetic contactor, ammeter and thermocouple. The furnace can be used on alternating current only. Operating principle is that of resistance heating in which the solution itself provides the resistance. Electrodes are immersed in the pot in such a way that the magnetic forces provide an automatic stirring action and thus a uniform temperature. Increased pot life is claimed to result from heating internally rather than from an external source. Local overheating is impossible since the solution itself is the heating element.



Ajax-Hultgren salt bath furnace for cyaniding and similar operations. Heat is supplied by electrodes immersed in the solution

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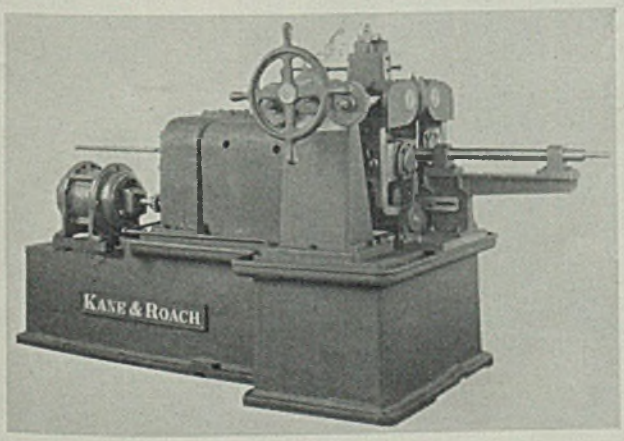
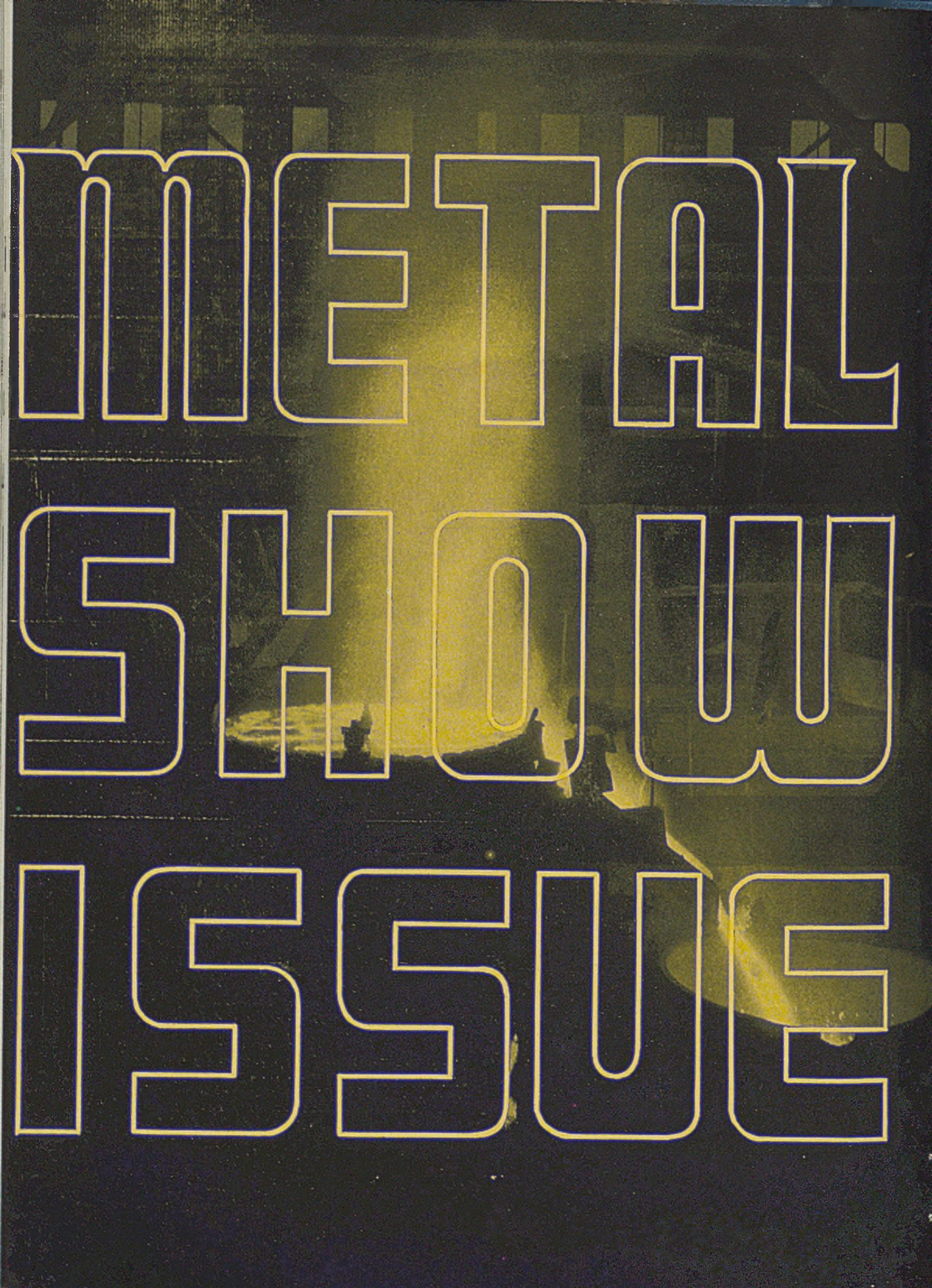
Straightening Roll—

Kane & Roach, Syracuse, N. Y., announce a new rotary straightening roll, consisting of two power driven tool steel, machined, hardened and ground straightening rolls, mounted in antifriction bearings. The design of the machine permits changing the angle of tilt of the rolls to meet varying conditions. The drive to the rolls is from oiltight gearbox through a universal joint drive. The reduction gear unit is mounted on antifriction bearings and the gears are helical cut steel, enclosed and running in oil. The machine is provided with a cooling system complete with rotary pump, piping, and valves. The main base contains a drip canal for retaining the coolant liquid. The base is of the box form type, suitable for receiving the straightening roll



Kane & Roach No. 2 rotary straightening roll

METAL SHOW ISSUE

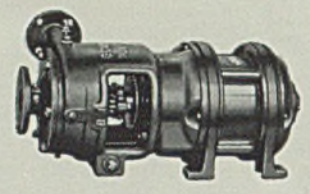


housings, reduction gear unit and motor. The production rate may be varied from 50 to 75 feet per minute depending on the stock. A 10-horsepower, 1140 revolutions-per-minute motor is recommended. Capacity of the machine is ¼ to ¾-inch mild steel rounds, ¼ to ⅝-inch heat treated steel rounds and 1⅛-inch tubing.

♦ ♦ ♦

Motor Driven Pump—

Goulds Pumps Inc., 75 Fall street, Seneca Falls, N. Y., has developed a new line of motor driven centrifugal pumps. The new products are designed for general service pumping where low weight and small space are essential. Units are available in standard and special construction for handling ordinary as well as corrosive industrial liquids. Fifteen sizes are being offered in capacities varying from 5 to 1600 gallons per minute. Motor and pump are combined in a single compact unit, making reductions in overall dimensions and weight possible. All moving parts are mounted on a single oversize shaft which turns on ball bearings. Impellers are of the enclosed single suction type and are keyed and locked to the shaft. Casings are equipped with priming, drain openings and air vent cock and may be swiveled to any one of four positions.

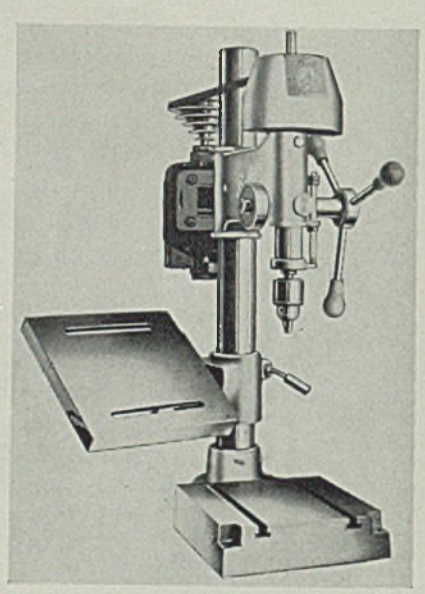


Goulds motor driven pump of compact design and reduced weight

♦ ♦ ♦

Production Drill—

Buffalo Forge Co., Buffalo, N. Y., has recently placed on the market a series of heavy-duty production drills in both bench and floor models. These No. 15 drills are equipped with 5-speed cone pulleys for both high and low speed operation. These machines drill holes up to ½-inch. Pulleys are carried on double row ball bearings, and spindles and pulleys have double keys with radial sides. Feed is by special cut rack and pinion, and a graduated stop bar provides for feeding to proper depth in repeat work. Tables are tiltable to any angle with locating holes at 0, 45 and 90 degrees. For woodworking purposes, straight shank adapters and mortising attachments are available.



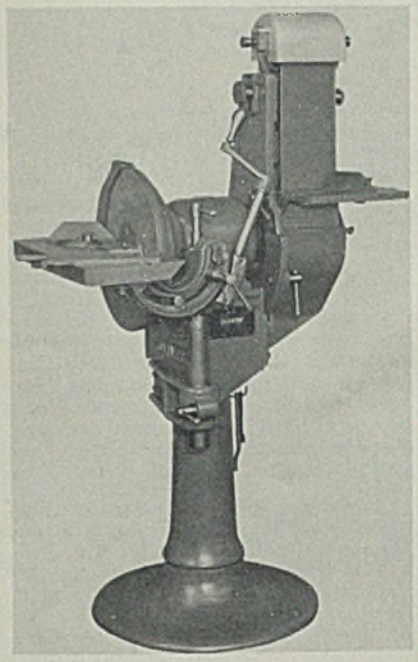
Buffalo No. 15 heavy duty production drills with five speeds

♦ ♦ ♦

Disk Grinder—

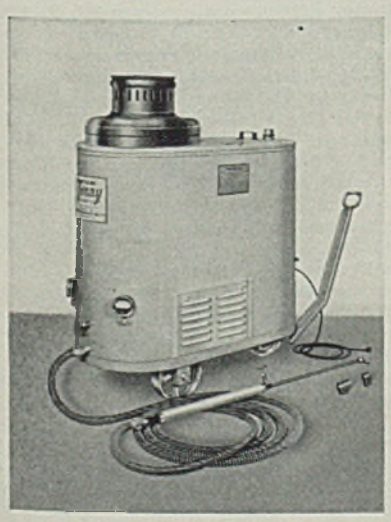
Oliver Machinery Co., Grand Rapids, Mich., is placing on the market a new disk grinder for use on small tough jobs of medium and light metal work. It handles circular work up to 15 inches in diameter and dup-

licating work up to 7 inches wide. The machine is portable, and is equipped with a 15-inch aluminum disk which revolves at a speed of 1725 revolutions per minute. A



Motor-driven disk grinder built by the Oliver Machinery Co. It carries a 15-inch disk

semisteel casting provides a housing for the disk, aluminum exhaust fan, and air passages through which exhaust travels by means of the column to the floor. The column is of cast iron with a circular base to facilitate moving. The table tilts 45 degrees down and 25 degrees up by means of a hand wheel control, and it is provided with a groove for gages. Power is provided by a ¾-horsepower motor, totally enclosed and air jacketed for operation on 110 or 220 volts alternating or direct current.



Model E Hypressure Jenny for heavy duty industrial cleaning work

• • •

Cleaning Unit—

Homestead Valve Mfg. Co., Coraopolis, Pa., has recently designed a new addition to its line of Hypressure cleaning jennies, for use in heavy-duty industrial cleaning work. The unit is intended for use in such heavy jobs as removal of metallic oxide deposits from skylights and other ribbed glass, removal of grease and dirt accumulations from machines, cranes, floors, tracks and runways, and similar industrial cleaning uses. Jennies operate under the principle of a hot spray of water and chemicals under pressure and are self contained. The machines are electrically operated. Heat is furnished by an oil burner.

• • •

Tapping Head—

Procunier Safety Chuck Co., 12-14 South Clinton street, Chicago, has placed on the market a new high speed precision tapping attachment which will be known as the No. 2 style E model. This new model augments the style E line of tapping attachments. (STEEL, May 4)

New Trade Publications

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.

Valves and Fittings—Hydraulic Press Mfg. Co., Mount Gilead, O. Bulletin 3601, illustrating Forgsteel valves and fittings for high pressure hydraulic, steam, hot oil and ammonia.

Special Wrenches—Bonney Forge & Tool Works, Allentown, Pa. Catalog No. 36, illustrating an extensive line of automotive hand tools; there is also included a numerical price list.

Industrial Ovens—Herrington & Randall Inc., 13700 Sherwood avenue, Detroit. Bulletin No. 36.1, illustrating several of the company's industrial ovens with appropriate discussion of panel design.

Packaging—Exact Weight Scale Co., Columbus, O. A booklet assembled to bring the picture of modern packaging up-to-date, as proof of opportunities for important economy through visible weight control.

Steam Trap — Yarnall-Waring Co., Chestnut Hill, Philadelphia. Folder No. T-1721, illustrating and describing construction and operating features of the Yarway impulse steam trap; contains only one moving part.

Tractors—Caterpillar Tractor Co., Peoria, Ill. A booklet, form 3335, showing performance of ten Caterpillar diesel engines, in tractors and stationary power, in agriculture, construction, logging and industry.

Ball Bearings—Ahlberg Bearing Co., 317 East Twenty-ninth street, Chicago. Loose-leaf catalog containing complete engineering specifications on CJB pillow block and other mounted ball bearings; data on the company's line of ball bearings.

Chain Drives—Ramsey Chain Co. Inc., Albany, N. Y. Catalog No. 636, offering the latest developments and applications of Ramsey silent chain drives; includes detail tables and technical illustrations proving many new operating features.

Shielded Arc Welding — Lincoln Electric Co., Cleveland. Booklet No. 411, describing the advantages of shielded arc welding for erecting new piping and also the simpler and lower cost method of modernizing existing piping.

Plating Barrels—Hanson-Van Winkle-Munning Co., Matawan, N. J. Bulletin No. PB 105, describing and illustrating the latest designs in the single cylinder and multiple cylinder units, also oblique and jeweler's plating barrels, with a standard equipment chart.

Gadgets—Townsend Co., New Brighton, Pa. A pamphlet illustrating 199 gadgets, composed of all types of metals with any desired finish, coating or plating. Each item pictured was a special job; they are numbered for convenience.

Bench Lathes—Hardinge Brothers Inc., Elmira, N. Y. A booklet describing Hardinge precision ball bearing bench lathes for production, tool-room and laboratory departments, in five sizes which vary in collet capacity and swing.

Spray Nozzle—Link-Belt Co., 307 North Michigan avenue, Chicago. Folder No. 1407, announcing a simple, effective non-clogging spray nozzle for spraying, washing, cleaning all kinds of materials, screens, fruit, vegetables, etc.; booklet No. 1552, covering its line of "RC" silverlink conveyor chains operating over cut-tooth sprocket wheels.

Power Press—Niagara Machine & Tool Works, 637 Northland avenue, Buffalo. Bulletin No. 59-C, describing No. 101 Niagara bench type power press with capacity up to two tons; a bolster plate can be furnished in place of the standard die holder regularly furnished with the press.

Universal Electric Tool—Chicago Pneumatic Tool Co., 6 East Forty-fourth street, New York. Folder No. S. P. 1932-PMM JCD-5-36, illustrating by an actual size reproduction newest and smallest 801 CP universal electric tool for $\frac{3}{16}$-inch drilling, with complete tables of specifications for sizes.

Traveling Crane—Whiting Corp., Harvey, Ill. Catalog No. 300, describing the tiger electric overhead traveling cranes, capacity from 1 to 350 tons and serving all branches of industry; includes a table of the standard clearances for tiger cranes and an illustrated description of the various industries which they serve.

Washers—Wrought Washer Mfg. Co., 210 South Bay street, Milwaukee New stock list, No. 55-A, of standard and special washers; lists thousands of washer specifications in various materials including steel, brass, copper, aluminum, fibre, etc., carried in actual inventory available for immediate shipment.

Ampco Metal—Ampco Metal Inc., Milwaukee. Catalog No. 21, giving general uses of the metal such as pickling equipment, patterns, washers, valve seats, piston rings, welding electrodes and acid equipment; also includes grade recommendations for the specific purpose for which the metal is to be used.

Press and Testing Machines—Baldwin-Southwark Corp., Southwark division, Philadelphia. Bulletin No. 99, descriptive of Southwark-Heydekampf testing machines. No. 102, illustrating the RD type universal testing machines. No. 126, describing their general utility hydraulic presses. No. 127, descriptive of Southwark hyspeed hydraulic presses.

End Mill Holders — Weldon Tool Co., 321 Frankfort avenue, Cleveland. Milling machine accessory folder, describing advantages of the new line of end-mill and shell end-mill holders and adaptors; a single adaptor may be used for a wide range of shell end-, single end-, and double end-mills merely by changing the holder part of the combination.

Magnetic Separator—Ferro Enamel Corp., Cleveland. Bulletin describing the new Stearns high duty magnetic separator which cleans liquid ceramic materials, such as ground coat and cover coat porcelain enamels, clay body slips, glazes, etc.; consists of a powerful stationary magnet energized by coil windings; specifications and prices are also included.

Phototube Pyrometer—C. J. Tagliabue Mfg. Co., Park and Nostrand avenues, Brooklyn, N. Y. Catalog No. 1101B, details features of the Tag indicating, recording and controlling pyrometers which utilize a beam of light, a mirror galvanometer and a phototube; large interior illustrations are clearly marked and thus provide a quick understanding of the operation.

Thermometer—Republic Flow Meters Co., 2240 Diversey parkway, Chicago. Folder No. 210, describing the new gas-filled recording thermometer assuring sensitivity, accuracy and trouble free performance; the reading instrument may be placed at any point up to 200 feet from the point of temperature measurement, with the instrument so compensated that the effects of temperature changes on the capillary may be disregarded.

Pumps—Worthington Pump & Mfg. Corp., Harrison, N. J. Bulletins No. W-321-B9, describing monobloc centrifugal pumps. Bulletin No. L-611-B11, types HB-2 and HS-2 single tandem horizontal two-stage steam and motor driven compressors; No. L-620-B16, types V3-A2 and V6-A2 air cooled vertical two-stage compressors; No. W-210-B19A, stationary feedwater heaters; No. S-500-B22, vertical four-cycle, direct-injection, type BB, diesel engines; No. L-611-B12, types HB-3 and HS-3, steam and motor driven, single horizontal three-stage compressors; No. S-550-B4B, type AG, vertical four-cycle gas engines; No. W-450-B25, vertical turbine pumps for cofferdam dewatering and mine sinker service; No. W-1200-B17, model WS-3, dry and wet hand-rotated stopers; No. W-101-B6, type VG, horizontal duplex steam pump and receiver sets; No. L-711-B2, single-stage and two-stage dry vacuum pumps; No. W-319-B1, high pressure and high temperature centrifugal boiler feed pumps; No. W-310-B5, pressed steel frame mounted centrifugal pumps, type CF; No. L-700-B1A, type VV, single and two-stage vertical vacuum pumps for canning and industrial services.

Steelworks Operations Hold at High Level

Backlogs Larger in Some Lines; Scrap Index Up 63 Cents

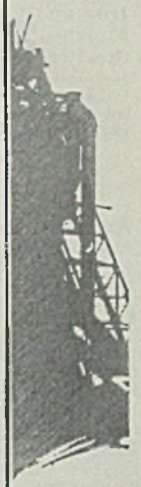
MARKET IN TABLOID

DEMAND . . . . . *Strong.*

PRICES . . . . . *Steady; scrap index up 63 cents.*

PRODUCTION . . . *Operating rate unchanged at 71½ per cent.*

SHIPMENTS . . . *Many lines under pressure.*



UNDER sustained demand for the heavier finished materials, and with backlogs in some lines becoming augmented, steelworks operations last week remained unchanged at 71½ per cent.

As scrap prices went higher some mills showed concern over a possible shortage. Increases in practically all districts raised STEEL'S index 63 cents to $14.25. The composite is now at the highest point since the last week in April, when it was $14.33.

A number of melters using both pig iron and scrap have begun to include more pig iron in their melt. Pig iron shipments have started to pick up, current deliveries being slightly ahead of one year ago.

Operations of farm implement and tractor plants have fallen off, but not to the degree many manufacturers expected. Mid-summer production compares favorably with that of 1929, despite the adverse effect of the drought. Some manufacturers are considering starting production of spring tools earlier in the fall than the usual time.

A sharp decline of 14,166 units put automobile production for the week at 81,804, but last year at this time output was only 48,067 units. Some of the large body plants have started pressing diemakers for earliest possible deliveries on new die work.

Although bookings in sheets showed a falling-off in comparison with the previous week, automotive tonnage is increasing and miscellaneous specifications are in fair volume for this time of year. Principal problem for many producers is the insistence they have encountered for speedy shipments. Demand for both hot and cold-rolled strip is strong. Bar producers now have backlogs of three to four weeks.

Tin plate producers still are operating at full capacity, with six to eight weeks of unfilled orders ahead of them. One leading producer has canceled vacations of employes temporarily because of the pressure for deliveries.

A fairly large volume of pending work is in prospect for makers of shapes and plates. On some sizes of these materials deliveries extend for six to eight weeks, and many structural fabricating shops are sold out until October. The outlook is promising for tonnage from shipbuilders, both private operators and the government being likely to require considerable material in the immediate future. Structural shape awards, 28,125 tons, were about even with the preceding week.

Major requirements for a tunnel under East River, New York, include 10,000 to 15,000 tons of shapes, 5000 tons of reinforcing bars and 60,000 to 65,000 tons of cast iron tunnel rings. Construction shaft bids will be opened about Sept. 1.

July steel ingot production of 3,922,731 gross tons was 1.56 per cent under the June output of 3,984,845 tons, but 72 per cent over the 2,267,827 tons produced in July, 1935. Daily average in July was 150,874 tons, compared to 153,263 in June and 87,224 in July, 1935. Seven months' output of 25,249,066 tons was 37.8 per cent over the total production of 18,310,478 gross tons in the corresponding 1935 period.

The iron and steel price composite is up to $33.82, a 10-cent increase due to the advance in scrap. STEEL'S composite of finished material prices remains at $53.40.

Operations in the Pittsburgh district were up 2 points to 71 per cent; Chicago ½ point to 71½; Birmingham 3½ to 61½. Youngstown operations were down 1 point to 77, New England 10 to 68, Colorado 7 to 56 and Cincinnati 4 to 72. Operations in the other districts were unchanged.

COMPOSITE MARKET AVERAGES

	Aug. 8	Aug. 1	July 25	One Month Ago July, 1936	Three Months Ago May, 1936	One Year Ago Aug., 1935	Five Years Ago Aug., 1931
Iron and Steel	$33.82	$33.72	$33.51	$33.49	$32.92	$32.68	$30.73
Finished Steel	53.40	53.40	53.40	53.40	52.20	54.02	48.72
Steelworks Scrap	13.66	13.66	13.12	12.89	13.40	12.05	8.79

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

A COMPARISON OF PRICES

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

Finished Material

	Aug. 8, 1936	July 1936	May 1936	Aug. 1935
Steel bars, Pittsburgh	1.95c	1.95c	1.85c	1.80c
Steel bars, Chicago	2.00	2.00	1.90	1.85
Steel bars, Philadelphia	2.26	2.26	2.16	2.11
Iron bars, Terre Haute, Ind.	1.85	1.85	1.75	1.75
Shapes, Pittsburgh	1.90	1.90	1.80	1.80
Shapes, Philadelphia	2.11½	2.11½	2.01½	2.01½
Shapes, Chicago	1.95	1.95	1.85	1.85
Tank plates, Pittsburgh	1.90	1.90	1.80	1.80
Tank plates, Philadelphia	2.09	2.09	1.99	1.99
Tank plates, Chicago	1.95	1.95	1.85	1.85
Sheets, No. 10, hot rolled, Pitts.	1.95	1.95	1.85	1.85
Sheets, No. 24, hot ann., Pitts.	2.50	2.50	2.40	2.40
Sheets, No. 24, galv., Pitts.	3.20	3.20	3.10	3.10
Sheets, No. 10, hot rolled, Gary	2.05	2.05	1.95	1.95
Sheets, No. 24, hot anneal., Gary	2.60	2.60	2.50	2.50
Sheets, No. 24, galvan., Gary	3.30	3.30	3.20	3.20
Plain wire, Pittsburgh	2.40	2.40	2.40	2.30
Tin plate, per base box, Pitts.	5.25	5.25	5.25	5.25
Wire nails, Pitts.	2.10	2.10	2.10	2.55

Semifinished Material

	Aug. 8, 1936	July 1936	May 1936	Aug. 1935
Sheet bars, open-hearth, Youngs.	$30.00	30.00	28.00	28.00
Sheet bars, open-hearth, Pitts.	30.00	30.00	28.00	28.00
Billets, open-hearth, Pittsburgh	30.00	30.00	28.00	27.00
Wire rods, Pittsburgh	38.00	38.00	40.00	38.00

Pig Iron

	Aug. 8, 1936	July 1936	May 1936	Aug. 1935
Bessemer, del. Pittsburgh	$20.8132	20.81	20.81	19.81
Basic, Valley	19.00	19.00	19.00	18.00
Basic, eastern del. East. Pa.	20.8132	20.81	20.81	19.81
No. 2 fdy., del. Pittsburgh	20.3132	20.31	20.31	19.31
No. 2 fdy., Chicago	19.50	19.50	19.50	18.50
Southern No. 2, Birmingham	15.50	15.50	15.50	14.50
Southern No. 2, del. Cincinnati	20.2007	20.2007	20.2007	19.38
No. 2X eastern, del. Phila.	21.6882	21.68	20.81	20.68
Malleable, Valley	19.50	19.50	19.50	18.50
Malleable, Chicago	19.50	19.50	19.50	18.50
Lake Sup., charcoal, del. Chicago	25.2528	25.2528	25.2528	24.25
Ferromanganese, del. Pitts.	80.13	80.13	80.13	90.13
Gray forge, del. Pittsburgh	19.6741	19.67	19.67	18.67

Scrap

	Aug. 8, 1936	July 1936	May 1936	Aug. 1935
Heavy melting steel, Pittsburgh	$15.75	14.15	14.75	13.25
Heavy melt. steel, No. 2, east. Pa.	12.25	11.50	11.71	10.50
Heavy melting steel, Chicago	14.75	13.25	13.05	12.35
Rail for rolling, Chicago	15.75	14.00	14.65	13.65
Railroad steel specialties, Chicago	16.25	14.75	14.65	13.55

Coke

	Aug. 8, 1936	July 1936	May 1936	Aug. 1935
Connellsville, furnace, ovens	$3.30	3.45	3.50	3.25
Connellsville, foundry, ovens	4.25	4.25	4.25	4.00
Chicago, by-product foundry, del.	9.75	9.75	9.75	9.25

Steel, Iron, Raw Material, Fuel and Metals Prices

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

Sheet Steel

Prices Subject to Quantity Extras and Deductions (Except Galvanized)

Hot Rolled No. 10, 24-48 in.

Pittsburgh	1.95c
Gary	2.05c
Chicago, delivered	2.08c
Detroit, del.	2.15c
New York, del.	2.30c
Philadelphia, del.	2.26c
Birmingham	2.10c
St. Louis, del.	2.23c
Pacific ports, f.o.b. cars, dock	2.50c

Hot Rolled Annealed No. 24

Pittsburgh	2.50c
Gary	2.60c
Chicago, delivered	2.63c
Detroit, delivered	2.70c
New York, del.	2.85c
Philadelphia, del	2.81c
Birmingham	2.65c
St. Louis, del	2.82c
Pacific ports, f.o.b. cars, dock	3.15c

Galvanized No. 24

Pittsburgh	3.20c
Gary	3.30c
Chicago, delivered	3.33c
Philadelphia, del.	3.51c
New York, del.	3.55c
Birmingham	3.35c
St. Louis, del.	2.83c
Pacific ports, f.o.b. cars, dock	3.80c

Tin Mill Black No. 28

Pittsburgh	2.75c
Gary	2.85c
St. Louis, delivered	3.08c

Cold Rolled No. 10

Pittsburgh	2.60c
Gary	2.70c
Detroit, delivered	2.80c
Philadelphia, del.	2.91c
New York, del.	2.95c
Pacific ports, f.o.b. cars, dock	3.20c

Cold Rolled No. 20

Pittsburgh	3.05c
Gary	3.15c
Detroit, delivered	3.25c
Philadelphia, del.	3.36c
New York, del.	3.40c

Enameling Sheets

Pittsburgh, No. 10	2.45c
Pittsburgh, No. 20	3.05c
Gary, No. 10	2.55c
Gary, No. 20	3.15c

Tin and Terne Plate

Gary base, 10 cents higher.

Tin plate, coke base (box) Pittsburgh	$5.25
Do., waste-waste	2.75c
Do., strips	2.50c
Long ternes, No. 24 unassorted, Pitts.	3.50c
Do., Gary	3.60c

Corrosion and Heat-Resistant Alloys

Pittsburgh base, cents per lb.

Chrome-Nickel

	No. 302	No. 304
Bars	23.00	24.00
Plates	26.00	28.00
Sheets	33.00	35.00
Hot strip	20.75	22.75
Cold strip	27.00	29.00

Straight Chromes

	No. 410	No. 430	No. 442	No. 446
Bars	17.00	18.50	21.00	26.00
Plates	20.00	21.50	24.00	29.00
Sheets	25.00	28.00	31.00	35.00
Hot strip	15.75	16.75	21.75	26.75
Cold stp.	20.50	22.00	27.00	35.00

Steel Plate

Pittsburgh	1.90c
New York, del.	2.19c
Philadelphia, del.	2.09c
Boston, delivered	2.32c
Buffalo, delivered	2.15c
Chicago or Gary	1.95c
Cleveland, del.	2.09½c
Birmingham	2.05c
Coatesville, base	2.00c
Sparrows Pt., base	2.00c
Pacific ports, f.o.b. cars, dock	2.45c
St. Louis, delivered	2.18c

Structural Shapes

Pittsburgh	1.90c
Philadelphia, del.	2.11½c
New York, del.	2.16¼c
Boston, delivered	2.30½c
Bethlehem	2.00c
Chicago	1.95c
Cleveland, del	2.10c
Buffalo	2.00c
Gulf Ports	2.30c
Birmingham	2.05c
Pacific ports, f.o.b. cars, dock	2.45c

Bars

Soft Steel

(Base, 3 to 25 tons)

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

Rail Steel

To Manufacturing Trade

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

Iron

Terre Haute, Ind...	1.85c
Chicago	1.90c
Philadelphia	2.16c
Pittsburgh, refined..	2.75-7.50c

Reinforcing

New billet, straight lengths, quoted by distributors.

Pittsburgh	2.05c
Chicago, Gary, Buffalo, Cleve., Birm., Young...	2.10c
Gulf ports	2.45c
Pacific coast ports f.o.b. car docks	2.45c
Philadelphia, del.....	2.26c-2.36c

Rail steel, straight lengths, quoted by distributors

Pittsburgh	1.90c
Chicago, Buffalo, Cleveland, Birm., Young.....	1.95c
Gulf ports	2.30c

Wire Products

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

Base Pitts.-Cleve. 100 lb. keg.	
Stand. wire nails....	2.10c
Cement c't'd nails....	2.10c
Galv. nails, 15 gage and finer	4.10c
do. finer than 15 ga.	4.60c
(Per pound)	
Polished staples.....	2.80c
Galv. fence staples	3.05c
Barbed wire, galv...	2.60c
Annealed fence wire	2.65c
Galv. fence wire.....	3.00c
Woven wire fencing (base column, c.l.)	$58.00

To Manufacturing Trade

Plain wire, 6-9 ga..	2.40c

Anderson, Ind. (merchant products only) and Chicago up $1; Duluth up $2; Birmingham up $3.

Spring wire, Pitts. or Cleveland	3.05c

Do., Chicago up $1, Worc. $2.

Cold-Finished Carbon Bars and Shafting

Base, Pitts., one size, shape, grade, shipment at one time to one destination

10,000 to 19,999 lbs.	2.25c
20,000 to 59,999 lbs.	2.20c
60,000 to 99,999 lbs.....	2.15c

Gary, Ind., Cleve., Chi., up 5c; 100,000 lbs. and over.....2.12½c Buffalo, up 10c; Detroit, up 15c; eastern Michigan, up 20c.

Alloy Steel Bars (Hot)

(*Base, 3 to 25 tons.*)

Pittsburgh, Buffalo, Chicago, Massillon, Canton, Bethlehem	2.55c

S.A.E.	Alloy Diff.	S.A.E.	Alloy Diff.
2000	0.25	3100	0.55
2100	0.55	3200	1.35
2300	1.50	3300	3.80
2500	2.25	3400	3.20

4100 0.15 to 0.25 Mo.	0.50
4600 0.20 to 0.30 Mo. 1.25-1.75 Ni.	1.05
5100 0.80-1.10 Cr.	0.45
5100 Cr. spring	base
6100 bars	1.20
6100 spring	0.70
Cr., Ni., Van.	1.50
Carbon Van.	0.95
9200 spring flats	base
9200 spring rounds, squares	0.25

Piling

Pittsburgh	2.25c
Chicago, Buffalo	2.35c

Strip and Hoops

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

Hot strip to 23 15/16-in.	
Pittsburgh	1.95c
Chicago or Gary	2.05c
*Birmingham base	2.10c
Detroit, del.	2.15c
Philadelphia, del.	2.26c
New York, del.....	2.30c
Cooperage hoop,	
Pittsburgh	2.05c
Chicago	2.15c
Cold strip, 0.25 carbon and under,	
Pitts., Cleveland..	2.60c
Detroit, del.	2.81c
Worcester, Mass..	2.80c

Carbon	Cleveland Pitts.	Worcester, Mass.
0.26—0.50....	2.60c	2.80c
0.51—0.75....	3.45c	3.65c
0.76—1.00....	4.95c	5.15c
Over 1.00....	6.50c	6.70c

Rails, Track Material

(Gross Tons)

Standard rails, mill	$36.37½
Relay rails, Pitts. 20—100 lbs.	25.50-28.00
Light rails, billet qual. Pitts., Chi....	$35.00
Do., reroll. qual....	34.00
Angle bars, billet, Gary, Ind., So. Chi.	2.55c
Do., axle steel.....	2.10c
Spikes, R. R. base..	2.60c
Track bolts, base....	3.60c
Tie plates, base.....	1.90c

Base, light rails 25 to 40 lbs.; 50 to 60 lbs. inclusive up $2; 16 and 20 lbs., up $1; 12 lbs. up $2; 8 and 10 lbs., up $5. Base railroad spikes 200 kegs or more; base tie plates 20 tons.

Bolts and Nuts

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

Carriage and Machine

½ x 6 and smaller.....	70-10 off
Do. larger	70-5 off
Tire bolts	50 off

Plow Bolts

All sizes	70-5 off

Stove Bolts

In packages with nuts attached 75 off; in packages with nuts separate 75-5 off; in bulk 82½ off on 15,000 of 3-inch and shorter, or 5000 over 3-inch.

Step bolts	65 off
Elevator bolts	65 off

Nuts

S. A. E. semifinished hex.:	
½ to 7/16-inch.....	60-20-15 off
Do., ½ to 1-inch....	60-20-15 off
Do., over 1-inch....	60-20-15 off

Hexagon Cap Screws

Milled	80-10-10 off
Upset, 1-in., smaller	85 off

Square Head Set Screws

Upset, 1-in., smaller.....	75-10 off
Headless set screws	75 off

Rivets, Wrought Washers

Struc., c. l., Pittsburgh, Cleveland	3.05c
Struc., c. l., Chicago	3.15c
7/16-in. and smaller, Pitts., Chi., Cleve.	70 and 5 off
Wrought washers, Pitts., Chi., Phila. to jobbers & large nut, bolt mfrs.....	$6.25 off

Cut Nails

Cut nails, Pitts.; (10% discount on size extras)	$2.75
Do. less carloads, 5 kegs or more, no discount on size extras	$3.05
Do., under 5 kegs; no disc. on size extras.....	$3.20

Pipe and Tubing

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

Welded Iron, Steel Pipe

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

Butt Weld

In.	Blk.	Galv.
Steel		
¼ and ⅜.....	60	44½
½.....	64½	55
¾.....	67½	59
1—3.....	69½	61½
Iron		
½.....	31½	15
¾.....	36½	20½
1—1¼.....	39½	25½
2.....	41½	26

Lap Weld

Steel		
2.....	62	53½
2½—3.....	65	56½
3½—6.....	67	58½
7 and 8.....	66	56½
9 and 10.....	65½	56
Iron		
2.....	37	22½
2½—3½.....	38	25
4—8.....	40	28½

Line Pipe

Steel	
⅛, butt weld.....	56
¼ and ⅜, butt weld.....	59
½, butt weld	63½
¾, butt weld	66½
1 to 3, butt weld	68½
2, lap weld	61
2½ to 3, lap weld.....	64
3½ to 6, lap weld.....	66
7 and 8, lap weld.....	65
Iron	

⅛—1½ inch, black and galv. take 4 pts. over; 2½—6 inch 2 pts. over discounts for same sizes, standard pipe lists, 8—12-inch, no extra.

Boiler Tubes

C. L. Discounts, f.o.b. Pitts.

Lap Weld Steel		Charcoal Iron	
2—2¼.....	33	1¾.....	8
2½—2¾.....	40	2—2¼.....	13
3.....	47	2½—2¾.....	16
3¼—3½.....	50	3.....	17
4.....	52	3¼—3½.....	18
4½—5.....	42	4.....	20
		4½.....	21

In lots of a carload or more, above discounts subject to preferential of two 5% and one 7½% discount on steel and 10% on charcoal iron.

Lapwelded steel: 200 to 9999 pounds, ten points under base, one 5% and one 7½%. Under 2000 pounds 15 points under base, one 5% and one 7½%. Charcoal iron: 10,000 pounds to carloads, base less 5%; under 10,000 lbs., 2 points under base.

Seamless Boiler Tubes

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

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

Seamless Tubing

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

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

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

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

Class A pipe $3 over Class B
Stnd. fitgs., Birm. base..$100.00

Semifinished Steel

Billets and Blooms

4 x 4-inch base; gross ton

Pitts., Chi., Cleve., Buffalo & Young.	$30.00
Philadelphia	35.67
Duluth	32.00

Forging Billets

6 x 6 to 9 x 9-in., base

Pitts., Chi., Buff.....	37.00
Forging, Duluth	39.00

Sheet Bars

Pitts., Cleve., Young., Chi., Buff., Canton, Sparrows Pt.	30.00

Slabs

Pitts., Chi., Cleve., Young.	30.00

Wire Rods

Pitts., Cleve., No. 4 to 5	$38.00
Do., No. 5 to 11/32-inch	40.00
Do., over 11/32 to 47/64-inch	42.00

Chicago up $1; Worcester up $2

Skelp

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

Coke

Price Per Net Ton

Beehive Ovens

Connellsville, fur.....	$3.30- 3.65
Connellsville, fdry...	4.25- 4.50
Connel. prem. fdry.	5.50
New River fdry.....	6.00
Wise county fdry....	4.45- 5.00
Wise county fur.....	4.00- 4.50

By-Product Foundry

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

Coke By-Products

Per gallon, producers' plants.

Tank lots	Spot
Pure and 90% benzol.....	18.00c
Toluol	30.00c
Solvent naphtha	30.00c
Industrial xylol	30.00c
Per lb. f.o.b. Frankford,	
Phenol (200 lb. drums)..	15.50c
Do. (450 lbs.)	14.50c
Eastern Plants, per lb.	
Naphthalene flakes and balls, in bbls., to jobbers	7.25c
Per 100 lbs. Atlantic seaboard	
Sulphate of ammonia.....	$1.25

†Western prices, ½-cent up.

Pig Iron

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

Basing Points:	No. 2 Fdry.	Malleable	Basic	Bessemer
Bethlehem, Pa.	$20.50	$21.00	$20.00	$21.50
Birdsboro, Pa.	20.50	21.00	20.00	21.50
Birmingham, Ala., southern del.	15.50	15.50	14.50	21.00
Buffalo	19.50	20.00	18.50	20.50
Chicago	19.50	19.50	19.00	20.00
Cleveland	19.50	19.50	19.00	20.00
Detroit	19.50	19.50	19.00	20.00
Duluth	20.00	20.00	.....	20.50
Erie, Pa.	19.50	20.00	19.00	20.50
Everett, Mass.	20.50	21.00	20.00	21.50
Hamilton, O.	19.50	19.50	19.00	.....
Jackson, O.	20.25	20.25	19.75	.....
Neville Island, Pa.	19.50	19.50	19.00	20.00
Provo, Utah	17.50	.....	17.00	.....
Sharpsville, Pa.	19.50	19.50	19.00	20.00
Sparrows Point, Md.	20.50	.....	20.00	.....
Swedeland, Pa.	20.50	21.00	20.00	21.50
Toledo, O.	19.50	19.50	19.00	20.00
Youngstown, O.	19.50	19.50	19.00	20.00
Delivered from Basing Points:				
Akron, O., from Cleveland	20.76	20.76	26.26	21.26
Baltimore from Birmingham	21.08	.....	19.96	.....
Boston from Birmingham	20.62	.....	20.50	.....
Boston from Everett, Mass.	21.00	21.50	20.50	22.00
Boston from Buffalo	21.00	21.50	20.50	22.00
Brooklyn, N. Y., from Bethlehem	22.93	23.43	.....	.....
Brooklyn, N. Y., from Bmghm.	22.50	.....	.....	.....
Canton, O., from Cleveland	20.76	20.76	20.26	21.26
Chicago from Birmingham	†19.72	.....	19.60	.....
*Cincinnati from Hamilton, O.	19.82	19.82	19.32	.....
*Cincinnati from Birmingham	19.44	.....	18.44	.....
Cleveland from Birmingham	19.62	.....	19.12	.....
*Indianapolis from Hamilton, O.	21.42	21.42	20.93	21.93
Mansfield, O., from Toledo, O.	21.26	21.26	20.76	21.76
Milwaukee from Chicago	20.57	20.57	20.27	21.07
Muskegon, Mich., from Chicago				
Toledo or Detroit	22.60	22.60	22.10	23.10
Newark, N. J., from Birmingham	21.61	.....	.....	.....
Newark, N. J., from Bethlehem	21.99	22.49	.....	.....
Philadelphia from Birmingham	20.93	.....	20.81	.....
Philadelphia from Swedeland, Pa.	21.31	21.81	20.81	.....
Pittsburgh district from Neville Island	Neville base plus 67c, 81c and $1.21 switching charges			
Saginaw, Mich., from Detroit	21.75	21.75	21.25	21.25
St. Louis, northern	20.00	20.00	19.50	.....
Delivered from Basing Points:	No. 2 Fdry.	Malleable	Basic	Bessemer
St. Louis from Birmingham	†19.68	.....	19.50	.....
St. Paul from Duluth	21.94	21.94	.....	22.44

†Over 0.70 phos.

Low Phos.

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

Gray Forge

Valley furnace 19.00
Pitts. dist. fur. 19.00

Charcoal

Lake Superior fur. $22.00
Do., del. Chicago 25.25
Lylees, Tenn. 22.50

Silvery†

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

Bessemer Ferrosilicon†

Jackson county, O., base: Prices are the same as for silveries, plus $1 a ton.

†The lower all-rail delivered price from Jackson, O., or Buffalo is quoted with freight allowed.

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

Refractories

Per 1000 f.o.b. Works

Fire Clay Brick

Super Quality

Pa., Mo., Ky. $55.00

First Quality

Pa., Ill., Md., Mo., Ky. $45.00
Alabama, Georgia...$38.00-45.00

Second Quality

Pa., Ill., Ky., Md., Mo. 40.00
Georgia, Alabama.... 35.00

Ohio

First quality $40.00
Intermediary 37.00
Second quality 28.00

Malleable Bung Brick

All bases 50.00

Silica Brick

Pennsylvania $45.00
Joliet, E. Chicago.... 54.00
Birmingham, Ala.... 48.00

Ladle Brick (Dry Press)

Pa., O., W. Va., Mo..... $24.00
Do., wire cut..... 22.00

Magnesite

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).... 40.00
Domestic dead-burned gr. net ton f.o.b. Chewelah, Wash. (bulk).. 22.00

Basic Brick

Net ton, f.o.b. Baltimore, Plymouth Meeting, Chester, Pa.

Chrome brick $45.00
Chem. bonded chrome.... 45.00
Magnesite brick 65.00
Chem. bonded magnesite 55.00

Fluorspar, 85-5

Washed gravel, duty paid, tide, net ton..... $21.50
Washed gravel, f.o.b. Ill., Ky., net ton, carloads, all rail $18.00
Do., for barge $19.00

Ferroalloys

Dollars, except Ferrochrome

Ferromanganese, 78-82% tidewater, duty paid 75.00
Do., Balti., base.... 75.00
Do., del. Pittsb'gh 80.13
Spiegeleisen, 19-20% dom. Palmerton, Pa., spot†..... 26.00
Do., New Orleans 26.00
Ferrosilicon, 50% freight all., cl..... 69.50
Do., less carload.. 77.00
Do., 75 per cent.. 126-130.00
Spot, $5 a ton higher.
Silicoman., 2½ carb. 85.00
2% carbon, 90.00; 1%, 100.00
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb. del.... 10.00
Ferrotungsten, stand., lb. con. del. 1.30- 1.40
Ferrovanadium, 35 to 40% lb., cont.... 2.70- 2.90
Ferrotitanium, c. l., prod. plant, frt. allow., net ton..... 137.50
Spot, 1 ton, frt. allow., lb. 7.00
Do., under 1 ton.... 7.50
Ferrophosphorus, per ton, c. l., 17-19% Rockdale, Tenn., basis, 18%, $3 unitage 58.50
Ferrophosphorus, electrolytic, per ton c. l., 23-26% f.o.b. Anniston, Ala., 24% $3 unitage 75.00
Ferromolybdenum, stand. 55-65%, lb. 0.95
Molybdate, lb. cont. 0.80
†Carloads. Quan. diff. apply.

Nonferrous

METAL PRICES OF THE WEEK

Spot unless otherwise specified. Cents per pound

	Copper Electro, del. Conn.	Copper Lake, del. Midwest	Copper Casting, refinery	Straits Tin New York Spot	Straits Tin New York Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 99%	Antimony Chinese Spot, N. Y.	Nickel Cathodes
Aug. 1	9.75	9.87½	9.40	42.75	41.87½	4.60	4.45	4.80	*19.00	13.00	35.00
Aug. 3	9.75	9.87½	9.40	43.00	41.95	4.60	4.45	4.80	*19.00	13.00	35.00
Aug. 4	9.75	9.87½	9.40	42.80	41.60	4.60	4.45	4.80	*19.00	13.00	35.00
Aug. 5	9.75	9.87½	9.40	42.62½	41.25	4.60	4.45	4.80	*19.00	13.00	35.00
Aug. 6	9.75	9.87½	9.40	42.75	41.25	4.60	4.45	4.80	*19.00	12.50	35.00
Aug. 7	9.75	9.87½	9.40	42.37½	41.00	4.60	4.45	4.80	*19.00	12.50	35.00

*Nominal range 19.00 to 21.00c.

MILL PRODUCTS

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

Sheets

Yellow brass (high) 15.37½
Copper, hot rolled.... 17.25
Lead cut to jobbers.. 8.25
Zinc, 100-lb. base..... 9.50

Tubes

High yellow brass.... 17.62½
Seamless copper..... 17.75

Rods

High yellow brass.... 13.37½
Copper, hot rolled.... 14.00

Anodes

Copper, untrimmed 14.75

Wire

Yellow brass (high) 15.62½

OLD METALS

Deal. buying prices, cents lb.

No. 1 Composition Red Brass

New York 6.12½-6.37½
Cleveland 6.40- 6.75
Chicago 6.00- 6.25
*St. Louis 5.75- 6.25

Heavy Copper and Wire

New York, No. 1.... 7.75- 8.00
Chicago, No. 1..... 7.50- 7.75
Cleveland, No. 1..... 7.25- 7.75
*St. Louis, No. 1.... 7.50- 7.75

Composition Brass Borings

New York 5.87½-6.12½

Light Copper

*New York 6.50- 6.62½
Chicago 6.00- 6.25
Cleveland 6.00- 6.25
*St. Louis 6.00- 6.50

Light Brass

*Chicago 3.75- 3.87½
Cleveland 3.40- 3.65
St. Louis 3.40- 3.90

Lead

*New York 3.62½-3.87½
Cleveland 3.50- 3.75
Chicago 3.25- 3.75
St. Louis 3.25- 3.75

Zinc

*New York 2.37½-2.62½
*St. Louis 2.25- 2.50
Cleveland 2.25- 2.75

Aluminum

Borings, Cleveland 9.00- 9.50
Mixed, cast, Cleve. 12.00-12.25
Mixed, cast, St. L... 11.25-11.75
Clips, soft, Cleve... 14.00-14.50

SECONDARY METALS

Brass ingot, 85-5-5-5 9.75
*Stand. No. 12 alum. 16.50-16.75

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†	9.00-12.00
Bos. d'ck, No. 1, exp.	†11.00-11.25
N. Eng. del. No. 1	11.75
Buffalo, No. 1	13.50-14.00
Buffalo, No. 2	12.00-12.50
Chicago, No. 1	14.50-15.00
Cleveland, No. 1	14.00-14.50
Cleveland, No. 2	13.00-13.50
Detroit, No. 1	12.00-12.50
Eastern Pa., No. 1	13.00-13.50
Eastern Pa., No. 2	12.00-12.50
Federal, Ill.	11.50-12.00
Granite City, R. R.	12.25-12.75
Granite City, No. 2	10.50-11.00
New York, No. 2	†8.25- 8.75
N. Y. d'ck, No. 1, exp.	†10.75
Pitts., No. 1 (R. R.)	16.00-16.50
Pitts., No. 1 (dir.)	15.50-16.00
Pittsburgh, No. 2	14.00-14.50
St. Louis, R. R.	12.25-12.75
St. Louis, No. 2	10.50-11.00
Toronto, dealers	7.50
Valleys, No. 1	14.75-15.25

COMPRESSED SHEETS

Buffalo, dealers	12.00-12.50
Chicago, factory	13.00-13.50
Chicago, dealer	11.75-12.25
Cleveland	13.50-14.00
Detroit	12.50-13.00
E. Pa., new mat.	13.00
E. Pa., old mat.	11.00
Pittsburgh	15.50-16.00
St. Louis	9.00- 9.50
Valleys	14.50-14.75

BUNDLED SHEETS

Buffalo	10.50-11.00
Cincinnati, del.	8.25- 8.75
Cleveland	10.50-11.00
Pittsburgh	14.00-14.50
St. Louis	7.25- 7.75
Toronto, dealers	4.50

SHEET CLIPPINGS, LOOSE

Chicago	8.50- 9.00
Cincinnati	7.00- 7.50
Detroit	9.00- 9.50
St. Louis	6.50- 7.00

STEEL RAILS, SHORT

Birmingham	11.50-12.00
Buffalo	15.50-16.00
Chicago (3 ft.)	16.50-17.00
Chicago (2 ft.)	17.00-17.50
Cincinnati, del.	15.00-15.50
Detroit	15.50-16.00
Pitts., open-hearth, 3 ft. and less	17.00-17.50
St. Louis, 2 ft. & less	15.50-16.00

STEEL RAILS, SCRAP

Boston district	†8.75
Buffalo	13.50-14.00
Chicago	14.00-14.50
Pittsburgh	15.75-16.25
St. Louis	13.75-14.25
Toronto, dealers	8.50

STOVE PLATE

Birmingham	8.00- 9.00
Boston district	† 6.00- 6.25
Buffalo	10.00-10.25
Chicago	8.00- 8.50
Cincinnati, dealers	7.75- 8.50
Detroit, net	9.00- 9.50
Eastern Pa.	11.00-11.50
New York, fdry.	† 7.25- 7.75
St. Louis	8.00- 8.50
Toronto, dealers, net	5.50

COUPLERS, SPRINGS

Buffalo	15.00-15.50
Chicago, springs	16.50-17.00
Eastern Pa.	17.50
Pittsburgh	18.25-18.75
St. Louis	14.00-14.50

ANGLE BARS—STEEL

Chicago	16.50-17.00
St. Louis	14.50-15.00
Buffalo	14.50-15.00

RAILROAD SPECIALTIES

Chicago	16.00-16.50

LOW PHOSPHORUS

Buffalo, billet and bloom crops	15.00-15.50
Cleveland, billet, bloom crops	17.50-18.00
Eastern Pa., crops	16.50-17.00
Pittsburgh, billet, bloom crops	18.50-19.00
Pittsburgh, sheet bar crops	18.00-18.50

FROGS, SWITCHES

Chicago	14.00-14.50
St. Louis, cut	14.00-14.50

SHOVELING STEEL

Chicago	14.50-15.00
Federal, Ill.	11.00-11.50
Granite City, Ill.	10.50-11.00
Toronto, dealers	6.50

RAILROAD WROUGHT

Birmingham	7.50- 8.00
Boston district	†7.25- 7.50
Buffalo, No. 1	12.00-12.50
Buffalo, No. 2	13.50-14.00
Chicago, No. 1, net	13.00-13.50
Chicago, No. 2	14.50-15.00
Cincinnati, No. 2	11.50-12.00
Eastern Pa.	14.50-15.00
St. Louis, No. 1	11.25-11.75
St. Louis, No. 2	12.25-12.75
Toronto, No. 1, dir.	7.00

SPECIFICATION PIPE

Eastern Pa.	12.50
New York	†7.75- 8.25

BUSHELING

Buffalo, No. 1	12.00-12.50
Chicago, No. 1	13.00-13.50
Cincl., No. 1, deal.	8.75- 9.25
Cincinnati, No. 2	4.75- 5.50
Cleveland, No. 2	9.00- 9.25
Detroit, No. 1, new	11.00-11.50
Valleys, new, No. 1	14.50-14.75
Toronto, dealers	6.00

MACHINE TURNINGS

Birmingham	4.00- 5.00
Buffalo	6.75- 7.25
Chicago	6.50- 7.00
Cincinnati, dealers	5.75- 6.25
Cleveland	8.75- 9.00
Detroit	7.50- 8.00
Eastern Pa.	8.50- 9.00
New York	†4.50- 5.00
Pittsburgh	10.25-10.75
St. Louis	5.00- 5.50
Toronto, dealers	4.00
Valleys	10.25-10.75

BORINGS AND TURNINGS
For Blast Furnace Use

Boston district	†3.25- 4.25
Buffalo	8.25- 8.75
Cincinnati, dealers	5.00- 5.50
Cleveland	9.00- 9.25
Detroit	8.00- 8.50
Eastern Pa.	7.50- 8.00
New York	†2.25- 2.50
Pittsburgh	10.50-11.00
Toronto, dealers	4.00

CAST IRON BORINGS

Birmingham, plain	4.00- 5.00
Boston dist. chem.	†6.25- 6.75
Boston dist. for mills	†4.50- 5.00
Buffalo	8.25- 8.75
Chicago, dealers	7.00-7.50
Cincinnati, dealers	5.00- 5.50
Cleveland	9.00- 9.25
Detroit	8.00- 8.50
E. Pa., chemical	10.00-13.00
New York	†4.25- 4.50
St. Louis	4.25- 4.75
Toronto, dealers	5.00

PIPE AND FLUES

Cincinnati, dealers	7.50- 8.00
Chicago, net	8.00- 8.50

RAILROAD GRATE BARS

Buffalo	10.50-11.00
Chicago, net	9.00- 9.50
Cincinnati	7.00- 7.50
Eastern Pa.	11.00-11.50
New York	†6.25- 6.75
St. Louis	10.00-10.50

FORGE FLASHINGS

Boston district	†7.50- 7.75
Buffalo	12.00-12.50
Cleveland	13.00-13.50
Detroit	10.50-11.00
Pittsburgh	14.00-14.50

FORGE SCRAP

Boston district	†5.50- 6.00
Chicago, heavy	16.00-16.50
Eastern Pa.	13.00

ARCH BARS, TRANSOMS

St. Louis	14.50-15.00

AXLE TURNINGS

Boston district	†6.50- 6.75
Buffalo	11.00-11.50
Chicago, elec. fur.	14.00-14.50
Eastern Pa.	12.00
St. Louis	9.50- 10.00
Toronto	4.50

STEEL CAR AXLES

Birmingham	11.50-12.50
Boston district	†11.50-11.75
Buffalo	15.50-16.00
Chicago, net	17.00-17.50
Eastern Pa.	17.50-18.00
St. Louis	14.50-15.00
Toronto	8.50

SHAFTING

Boston district	†13.75-14.25
Eastern Pa.	20.00
New York	†14.25-14.75
St. Louis	14.00-14.50

CAR WHEELS

Birmingham	11.00-11.50
Boston dist. iron	†8.00- 8.50
Buffalo, iron	13.50-14.00
Buffalo, steel	15.50-16.00
Chicago, iron	15.00-15.50
Chicago, rolled steel	16.00-16.50
Cincinnati, iron	11.50-12.00
Eastern Pa., iron	15.00
Eastern Pa., steel	17.50
Pittsburgh, iron	16.00-16.50
Pittsburgh, steel	18.25-18.75
St. Louis, iron	12.00-12.50
St. Louis, steel	14.00-14.50
Toronto, net	8.50

NO. 1 CAST SCRAP

Birmingham	11.00-12.00
Bos. dist. No. 1 mach.	†9.25- 9.50
N. Eng., del. No. 2	10.00-10.50
N. Eng. del. textile	11.50-12.00
Buffalo, cupola	12.25-12.75
Buffalo, mach.	13.75-14.25
Chicago, agri. net	10.50-11.00
Chicago, auto	12.00-12.50
Chicago, mach. net	13.00-13.50
Chicago, railr'd net	12.00-12.50
Cinci., mach. cup	12.25-12.75
Cleveland, mach.	15.25-15.75
Eastern Pa., cupola	15.00-15.50
E. Pa., mixed yard	12.50-13.00
Pittsburgh, cupola	16.00-16.50
San Francisco, del.	13.50-14.00
Seattle	10.00-11.00
St. Louis, No. 1	11.75-12.25
St. L., No. 1 mach.	12.50-13.00
Toronto, No. 1, mach., net	9.00

HEAVY CAST

Boston dist. break.	†9.00- 9.25
New England del.	10.00-10.25
Buffalo, break.	11.00-11.50
Cleveland, break.	12.50-13.00
Detroit, No. 1 mach. net	13.00-13.50
Detroit, break.	11.50-12.00
Detroit, auto net	12.50-13.00
Eastern Pa.	14.50
New York breakable	†10.00-10.50
Pittsburgh	13.50-14.00

MALLEABLE

Birmingham, R. R.	11.50-12.50
New England del.	15.00-16.00
Buffalo	15.50-16.00
Chicago, R. R.	16.50-17.00
Cincinnati, agri. del.	12.50-13.00
Cleveland, rail	16.00-16.50
Detroit, auto, net	14.50-15.00
Eastern Pa., R. R.	17.50
Pittsburgh, rail	18.00-18.50
St. Louis, R. R.	14.00-14.50
Toronto, net	7.00

RAILS FOR ROLLING
5 feet and over

Birmingham	11.50-12.50
Boston district	†9.00- 9.50
Buffalo	14.25-14.75
Chicago	15.50-16.00
Eastern Pa.	15.50
New York	†10.00-10.50
St. Louis	14.25-14.75

LOCOMOTIVE TIRES

Chicago (cut)	16.00-16.50
St. Louis, No. 1	12.50-13.00

LOW PHOS. PUNCHINGS

Buffalo	15.00-15.50
Chicago	17.00-17.50
Eastern Pa.	17.00
Pittsburgh (heavy)	18.00-18.50
Pittsburgh (light)	17.00-17.50

Iron Ore

Lake Superior Ore
Gross ton, 51½%
Lower Lake Ports

Old range bessemer	$4.80
Mesabi nonbess.	4.50
High phosphorus	4.40
Mesabi bessemer	4.65
Old range nonbess.	4.65

Eastern Local Ore
Cents, unit, del. E. Pa.

Foundry and basic 56-63% con. (nom.)	8.00- 9.00
Cop.-free low phos. 58-60% (nom.)	10.00-10.50

Foreign Ore
Cents per unit, f.a.s. Atlantic ports (nominal)

Foreign manganiferous ore, 45.55% iron, 6-10% man.	10.50
No. Afr. low phos.	10.50
Swedish basic, 65%	9.50
Swedish low phos.	10.50
Spanish No. Africa basic, 50 to 60%	10.50
Tungsten, spot sh. ton unit, duty pd.	$15.85-16.00
N. F., fdy., 55%	7.00
Chrome ore, 48% gross ton, c.i.f.	19.25

Manganese Ore

(Nominal)

Prices not including duty, cents per unit cargo lots

Caucasian, 50-52%	26.00
So. African, 50-52%	26.00
Indian, 50-52%	26.00

Warehouse Iron and Steel Prices

Cents per pound for delivery within metropolitan districts of cities specified

STEEL BARS

Baltimore*	3.10c
Boston††	3.20c
Buffalo	3.10c
Chattanooga	3.46c
Chicago (j)	3.10c
Cincinnati	3.32c
Cleveland	3.00c
Detroit	3.19c
Houston	3.10c
Los Angeles	3.70c
Milwaukee	3.21c-3.36c
New Orleans	3.45c
New York‡ (d)	3.41c
Pitts. (h)	3.05c-3.20c
Philadelphia*	3.15c
Portland	3.60c
San Francisco	3.35c
Seattle	3.80c
St. Louis	3.35c
St. Paul	3.35c-3.50c
Tulsa	3.35c

IRON BARS

Portland	3.50c
Chattanooga	3.46c
Baltimore*	3.10c
Chicago	2.85c
Cincinnati	3.32c
New York‡(d)	3.15c
Philadelphia*	3.15c
St. Louis	3.35c
Tulsa	3.35c

REINFORCING BARS

Buffalo	3.60c
Chattanooga	3.46c
Chicago	2.10c-2.60c
Cleveland (c)	2.10c
Cincinnati	3.25c
Houston	3.25c
Los Angl., cl.	2.45c
New Orleans	3.50c
Pitts., plain (h)	3.05c
Pitts., twisted squares (h)	3.175c
San Francisco	2.45c
Seattle	3.50c
St. Louis	3.35c
Tulsa	3.25c
Young	2.30c-2.60c

SHAPES

Baltimore*	3.10c
Boston††	3.29c
Buffalo	3.35c
Chattanooga	3.66c
Chicago	3.30c
Cincinnati	3.52c
Cleveland	3.41c
Detroit	3.52c
Houston	3.10c
Los Angeles	3.70c
Milwaukee	3.41c
New Orleans	3.65c
New York‡(d)	3.47c
Philadelphia*	3.10c
Pittsburgh (h)	3.25c
Portland (i)	3.60c
San Francisco	3.35c
Seattle (i)	3.80c
St. Louis	3.45c
St. Paul	3.55c
Tulsa	3.60c

PLATES

Baltimore*	3.10c
Boston††	3.31c
Buffalo	3.47c
Chattanooga	3.66c
Chicago	3.30c
Cincinnati	3.52c
Cleveland, ¼-in. and over	3.41c
Detroit	3.52c
Detroit, 3/16-in.	3.85c
Houston	3.10c
Los Angeles	3.70c
Milwaukee	3.41c
New Orleans	3.65c
New York‡(d)	3.50c
Philadelphia*	3.10c
Phila. floor	4.95c
Pittsburgh (h)	3.25c
Portland	3.60c
San Francisco	3.35c
Seattle	3.65c
St. Louis	3.55c
St. Paul	3.55c
Tulsa	3.60c

NO. 10 BLUE

Baltimore*	3.10c
Boston (g)	3.40c
Buffalo	3.72c
Chattanooga	3.46c
Chicago	3.15c
Cincinnati	3.32c
Cleveland	3.21c
Det. 8-10 ga.	3.24c
Houston	3.45c
Los Angeles	3.85c
Milwaukee	3.26c
New Orleans	3.65c
New York‡(d)	3.41c
Portland	3.85c
Philadelphia*	3.20c
Pittsburgh (h)	3.05c
San Francisco	3.45c
Seattle	3.85c
St. Louis	3.40c
St. Paul	3.40c
Tulsa	3.80c

NO. 24 BLACK

Baltimore*†	3.70c
Boston (g)	4.05c
Buffalo	3.35c
Chattanooga*	3.41c
Chicago	3.95c
Cincinnati	4.12c
Cleveland	3.91c
Detroit	4.04c
Los Angeles	4.45c
Milwaukee	4.06c
New Orleans	4.50c
New York‡(d)	3.99c
Philadelphia*†	3.75c
Pitts.**(h)	3.55c-4.85c
Portland	4.20c
San Francisco	4.10c
Seattle	4.50c
St. Louis	4.20c
St. Paul	4.00c
Tulsa	4.85c

NO. 24 GALV. SHEETS

Baltimore*†	3.90c
Buffalo	4.10c
Boston (g)	4.00c
Chattanooga*	3.96c
Chicago (h)	4.65c
Cincinnati	4.82c
Cleveland	4.61c
Detroit	4.82c
Houston	4.50c
Los Angeles	4.50c
Milwaukee	4.76c
New Orleans	4.95c
N. Y.‡ (d)	4.30-4.50c
Philadelphia*†	4.50c
Pitts.**(h)	4.30c-5.55c
Portland	4.60c
San Francisco	4.60c
Seattle	5.10c
St. Louis	4.90c
St. Paul	4.60c
Tulsa	5.20c

BANDS

Baltimore*	3.30c
Boston††	3.40c
Buffalo	3.52c
Chattanooga	3.71c
Chicago	3.40c
Cincinnati	3.57c
Cleveland	3.46c
Detroit, 3/16-in. and lighter	3.49c
Houston	3.35c
Los Angeles	4.20c
Milwaukee	3.51c
New Orleans	4.05c
New York‡(d)	3.66c
Philadelphia*	3.30c
Pittsburgh(h)	3.30c
Portland	4.35c
San Francisco	4.20c
Seattle	4.35c
St. Louis	3.65c
St. Paul	3.65c
Tulsa	3.55c

HOOPS

Baltimore	2.30c
Boston††	4.40c
Buffalo	3.52c
Chicago	3.40c
Cincinnati	3.57c
Det., No. 14 and lighter	3.49c
Los Angeles	5.95c
Milwaukee	3.51c
New York‡(d)	3.66c
Philadelphia*	3.55c
Pittsburgh(h)	3.80c
Portland	5.70c
San Francisco	6.25c
Seattle	5.70c
St. Louis	3.65c
St. Paul	3.65c

COLD FIN. STEEL

Baltimore (c)	3.88c
Boston	4.05c
Buffalo (h)	3.70c
Chattanooga*	4.28c
Chicago (h)	3.65c
Cincinnati	3.87c
Cleveland (h)	3.65c
Detroit	3.74c
Los Ang.(f) (d)	6.00c
Milwaukee	3.76c
New Orleans	4.45c
New York‡(d)	3.96c
Philadelphia*	3.91c
Pittsburgh	3.50c
Portland (f) (d)	6.30c
San Fran.(f) (d)	6.10c
Seattle (f) (d)	6.25c
St. Louis	3.90c
St. Paul	4.17c
Tulsa	4.80c

COLD ROLLED STRIP

Boston	3.245c
Buffalo	3.39c
Chicago	3.27c
Cincinnati (b)	3.22c
Cleveland (b)	3.00c
Detroit	3.18c
New York‡(d)	3.36c
St. Louis	3.41c

TOOL STEELS

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

	Base
High Speed	59½c
High carbon, high chrome	39c
Oil hardening	23c
Special tool	21c
Extra tool	17¾c
Regular tool	14½c

Uniform extras apply.

BOLTS AND NUTS

(100 pounds or over)

	Discount
Chicago (a)	65
Cleveland	70
Detroit	70
Milwaukee	70
Pittsburgh	65-5

(a) Under 100 pounds, 60 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, fillet angles, 3.25c.

Prices on heavier lines are subject to new quantity differentials: 399 lbs. and less, up 50 cts.; 400 to 3999 lbs., base; 4000 to 7999 lbs., 15 cts. under; 8000 to 14,999 lbs., 25 cts. under; 15,000 to 39,999 lbs., 35 cts. under; 40,000 lbs. and over, 50 cts. under; (except Boston).

‡Domestic steel; *Plus quan. extras; **Under 25 bundles; *†50 or more bundles; †New extras apply; ††Base 40,000 lbs., extras on less.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, Aug. 6

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	$15.69	3 2 6*	$13.89		1 15 0
Basic bessemer	15.69	3 2 6*	11.51		1 9 0
Hematite, Phos. .03-.05	18.70	3 14 6	.....		.....
SEMIFINISHED STEEL					
Billets	$29.49	5 17 6	$18.65		2 7 0
Wire rods, No. 5 gage	44.93	8 19 0	35.73		4 10 0
FINISHED STEEL					
Standard rails	$41.41	8 5 0	$43.67		5 10 0
Merchant bars	1.74c	7 15 0	1.12c to 1.17c		3 2 6 to 3 5 0
Structural shapes	1.68c	7 10 0	1.11c		3 1 6
Plates, †¼ in. or 5 mm.	1.81c	8 1 3	1.53c		4 5 0
Sheets, black, 24 gage or 0.5 mm.	2.18c	9 15 0	2.17c		6 1 0††
Sheets, gal., 24 gage, corr.	2.63c	11 15 0	2.43c		6 15 0
Bands and strips	1.96c	8 15 0	1.43c		4 0 0
Plain wire, base	2.18c	9 15 0	1.89c		5 5 0
Galvanized wire, base	2.58c	11 10 0	2.10c		5 17 6
Wire nails, base	2.69c	12 0 0	1.71c		4 15 0
Tin plate, box 108 lbs.	$ 4.71	0 18 9	.....		.....

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

Domestic Prices at Works or Furnace—Last Reported

		£ s d		French Francs		Belgian Francs		Reich Marks
Fdy. pig iron, Si. 2.5	$18.83	3 15 0(n)	$19.11	290	$15.17	450	$25.36	63
Basic bessemer pig iron	18.83	3 15 0(a)	12.52	190	12.30	365	27.97 (b)	69.50
Furnace coke	5.40	1 1 6	6.85	104	4.11	122	7.65	19
Billets	30.75	6 2 6	30.12	457	18.70	555	38.84	96.50
Standard rails	1.85c	8 5 0	2.01c	671	1.65c	1,100	2.42c	132
Merchant bars	2.09c	9 7 0	1.89c	630	.98c	650	2.01c	110
Structural shapes	2.10c	9 7 6	1.86c	620	.98c	650	1.96c	107
Plates, †¼-in. or 5 mm.	2.17c	9 13 9	2.37c	790	1.20c	800	2.32c	127
Sheets, black	2.69c	12 0 0§	1.95c	650‡	1.31c	875‡	2.64c	144‡
Sheets, galv., corr., 24 ga. or 0.5 mm.	3.14c	14 0 0	3.00c	1,000	2.25c	1,500	6.77c	370
Plain wire	2.18c	9 15 0	3.30c	1,100	1.73c	1,150	3.17c	173
Bands and strips	2.26c	10 2 0	2.21c	735	1.20c	800	2.32c	127

*Basic. †British ship-plates. Continental, bridge plates. §24 ga. ‡1 to 3 mm. basic price. British quotations are for basic open-hearth steel. Continent usually for basic-bessemer steel. a del. Middlesbrough. b hematite. ††Close annealed.
**Gold pound sterling carries a premium of 63.00 per cent over paper sterling.

Bars

Bar Prices, Page 62

Pittsburgh—Users of carbon steel bars have been so active in specifying that producers now have backlogs of three to four weeks. Furthermore, there are large tonnages now on mill books, especially from the automotive trade, which are awaiting release later in August, so that the outlook for the balance of this month and September is exceedingly good. Demand for alloy steel bars has declined over the past week, mainly from the standpoint of oil refinery, automotive and farm implement makers' specifications.

Cleveland—Demand has been bolstered by heavy requirements of miscellaneous consumers. Jobbers' stocks show rapid turnover. Considerable tonnage has been placed by auto partsmakers for hot-rolled material to be used in connection with 1937 models.

Chicago—Additional bar orders are being received from automotive interests, but heavier releases are not expected for several weeks. In the meantime miscellaneous consumers are taking fairly substantial tonnages, and demand from farm implement and tractor manufacturers is relatively good for this season. Cold bar finishers are pressing for delivery, and other users are seeking prompt shipment. Despite heavy shipments the past several weeks, producers are unable to give better delivery than three to four weeks on the average on new business.

Boston—A good volume of new business in steel bars is being placed at 1.95c, base, Pittsburgh, equivalent to 2.37c, delivered, Boston. Due to their sold-up condition, and to necessity of supplying bars to individual specifications, mills are having difficulty in making shipments as needed.

Philadelphia—Little improvement is noted in steel bar deliveries, with sellers still being pressed for shipment. Commercial steel bars are being offered at around three to four weeks and hot alloy bars and cold-finished bars at even more extended delivery. Prices are strong.

New York—Commercial steel bars are moving actively with specifications coming freely from railroads and bolt and nut manufacturers in particular.

Youngstown, O.—Common carbon bars are showing some indications of easing off in demand from automotive builders but makers of alloy bars report renewed interest for new model auto parts manufacture.

Shallcross Controls Inc., Milwaukee, is transferring its manufacturing operations to new and larger

quarters at 121 North Broadway, due to a sharp increase in orders, which during the first six months of this year were 70 per cent above the like period in 1935.

Plates

Plate Prices, Page 62

Philadelphia—Most eastern plate mills are in position to make deliveries within two weeks, as compared with four to five weeks in the middle west. But even at this relatively good rate of delivery, district producers are being pressed for shipments. New orders are lighter at present, but the outlook continues promising, particularly for ship and railroad work. As noted in a previous issue, the navy will open bids of private yards Aug. 19 on six 1500-ton destroyers and three submarines and will likely then take action on a similar list to be built in navy yards. The destoyers, it is estimated, will each require about 750 tons of steel, including forgings, and submarines about 300 tons.

Figuring that 12 destroyers and six submarines will be built in private navy yards approximately 10,800 tons of steel will be required, mostly plates. At least five ships for private operators are pending, including the United States liner, on which new bids will be opened Sept. 15, two tankers for the Gulf Refining Co., New York, at least one passenger-cargo boat for the American-South African line, New York, and at least one for the Matson line, San Francisco. These latter two companies may eventually place two ships each, with the Sun Shipbuilding & Dry Dock Co., Chester, Pa., low on the American-South African boats and the Newport News Shipbuilding & Dry Dock Co., low on the Matson boats. This latter shipyard has been low at least three times on the United States liner. Two eastern plate mills shared in requirements of a tug to be built for the Donaldson line by Pusey & Jones, Wilmington, Del. Plate prices are strong.

Should the Locust street line of the local subway system be opened for early operation, as is now proposed, approximately 60 new subway cars would be required.

Pittsburgh—An eastern seaboard shipyard has placed about 8000 tons of plates for several ocean tankers with a leading Pittsburgh mill. Other marine activity includes about 300 tons for three steel dump scows, all welded, on which bids will be closed Sept. 1 at Louisville, Ky., and a revised inquiry from the Gulf Refining Co., Pittsburgh, marine headquarters at New York, for two to four barges for use on the Ohio river. International Petroleum Corp., Toronto, Ont., has placed seven steel barges of varying designs to be exported to Columbia, South America, with Ingalls Iron Works Co., Birmingham, Ala. This follows an order for six similar barges placed with Marietta Mfg. Co., Point Pleasant, W. Va., about six months ago. The latter company is also building a towboat for International Petroleum Corp.

Cleveland—Requirements for light gage plates in small lots for general repair work predominate. New business has been steady, causing many mills to fall two to three weeks behind in deliveries. Shipments during July were greater than in June and are expected to continue to increase through August. Prices remain firm at the advanced figure.

Chicago—While new plate business is quieter, mills have the heaviest backlogs in several years and are in a position to continue active shipments for the balance of this quarter. Specifications from freight car builders are heavier, and steady shipments are being taken by structural fabricators. Tank builders continue busy and additional construction for the oil industry is in prospect.

Boston—Plate demand here is featured by more large orders and heavy demand made up of small tonnages. While mills are sold up for only two to four weeks they encounter difficulty due to the fact that spot shipment is wanted on a large number of the current orders.

New York—Plate specifications continue brisk and diversified. Manufacturers of domestic fuel tanks, oil tanks and range boilers are taking large tonnages. Contracts for identified projects drove in a good tonnage at the end of July. Railroads are forming car repair programs to meet expected car shortage this fall, and are planning additional new equipment. Several more tankers are expected to come out soon. Calmar Lines, subsidiary of Bethlehem Steel Co., has preliminary plans for six 18-knot freighters, although construction may not start for more than a year.

San Francisco — United Concrete Pipe Co. is low bidder on specification 154 for the metropolitan water district, Los Angeles, involving 9-foot 8-inch precast reinforced concrete pipe, requiring 3515 tons of reinforcing material and 3570 tons of liner plates. Alternate bids were taken on a portion of the line to be welded steel pipe. It is generally thought that the entire line will go on the precast basis. Consolidated Steel Corp. was awarded 450 tons for water stops for the same district.

Seattle—Inquiry for plates has increased and local shops are figuring on about 1000 tons for various tank and pipe line jobs. The outlook presages an active fall. Grays Harbor Pulp & Paper Co., Hoquiam, Wash., announces plans for 25% increase in capacity involving new digesters and other equipment. Other important projects are expected to be placed this month.

Contracts Placed

2600 tons, 12 coal barges for Dewey Portland Cement Co., Kansas City, Mo., to unstated interest.

1500 tons, ten standard coal barges, each 175 x 26 x 11 feet, all welded, for Keystone Sand & Supply Co., to Dravo Construction Co., Neville Island, Pittsburgh.

875 tons, seven barges for International Petroleum Corp., Toronto, Ont., to be exported to Colombia, South America, to Ingalls Iron Works Co., Birmingham, Ala.

450 tons, water stops, metropolitan water district, Los Angeles, to Consolidated Steel Corp., Los Angeles.

350 tons, two tanks, Hartol Products Co., Revere, Mass., to Chicago Bridge & Iron Works, Chicago.

250 tons, tank, Colonial Beacon Oil Co., Everett, Mass., to Chicago Bridge & Iron Works, Chicago.

235 tons, three tanks, Interstate Equipment Co., Elizabeth, N. J., to Graver Tank & Mfg. Co., East Chicago, Ind.

100 tons, steel sand barge for Pittsburgh Gravel Co., to Treadwell Construction Co., Midland, Pa.

100 tons, 18-inch welded steel pipe, metropolitan water district, Los Angeles, to unnamed interest.

Contracts Pending

969 tons, Hayfield pumping plant, metropolitan water district, Los Angeles; specification 160; bids Aug. 27.

300 tons, three all-welded steel dump scows, each 114 x 26 x 7¾ feet; bids to Louisville, Ky., engineers, Sept. 1.

150 tons, steel pipe for Conchas dam, Tucumcari, N. Mex. for United States engineer office; bids Sept. 10.

100 tons, 18-inch welded steel pipe, water and power department, Los Angeles; bids opened.

200 tons, 300,000-gallon water tank for Beaver Dam, Wis.; contemplated.

Unstated tonnage, crude oil and cracking unit, Shell Petroleum Corp., Houston, Tex.

Unstated tonnage, two oil barges, either 175 or 195 feet in length, Gulf Refining Co., New York, bids asked; for operation on Ohio river.

Cold Finished

Cold Finished Prices, Page 63

Pittsburgh—Automotive specifications for cold-finished steel bars are beginning to appear in greater frequency as first parts for 1937 cars are being worked up. Makers of textile machinery are still actively in the market, as are manufacturers of office equipment and miscellaneous home appliances. The 2.25c, Pittsburgh, market on cold-drawn carbon bars represents the present price.

Transportation

Track Material Prices, Page 63

Featuring freight car awards is the placing of 150 50-ton hopper cars and 150 50-ton general service gondolas by the Boston & Maine, Boston. Birmingham Southern, a subsidiary of the Tennessee Coal, Iron & Railroad Co., Birmingham, Ala., has placed 125 steel cars with Pullman-Standard Car Mfg. Co., Bessemer, Ala. They will be fabricated of Cor-Ten alloy steel. Philadelphia Rapid Transit Co., Philadelphia, may buy 60 subway cars, although formal inquiry, it is said, has not been issued.

Many railroads are beginning to formulate inquiries for track fastenings, on which a $2 a ton price advance becomes effective Aug. 30. However, producers are accepting specifications until that time for shipment through September at the present market.

Domestic freight car awards in July, according to final returns, involved 7229 cars, including 3500 tank cars for the Union Tank Car Co. This brings the total for the first seven months up to 35,458 compared with 6833 in the corresponding period of 1935, 23,278 in the same period of 1934 and 806 in the first seven months of 1933. Further comparisons follow:

	1936	1935	1934	1933
Jan.	2,050	24	152	3
Feb.	6,900	806	19,725	0
March	632	0	30	5
April	4,427	350	800	50
May	8,900	2	717	8
June	5,220	5,151	1,835	500
July	7,229	500	19	306
7 mos.	35,458	6,833	23,278	806
Aug.	.....	200	105	202
Sept.	.....	875	7	23
Oct.	.....	1,250	75	514
Nov.	.....	100	254	533
Dec.	.....	10,050	110	316
Total		19,308	23,829	2,460

Car Orders Placed

Birmingham Southern, subsidiary of Tennessee Coal, Iron & Railroad Co., Birmingham, Ala., 100 steel box and 25 seventy-ton gondolas, to Pullman-Standard Car Mfg. Co., Bessemer, Ala.

Boston & Maine, 300 fifty-ton freight cars, including 150 hopper cars and 150 general service gondolas, distribution to be announced shortly.

Car Orders Pending

Philadelphia Rapid Transit Co., Philadelphia, 60 subway cars, contemplated.

Tin Plate

Tin Plate Prices, Page 62

Philadelphia — Tin plate specifications are somewhat easier, but producers are still sold weeks ahead,

eight weeks in most instances. Further details have been revealed here in connection with the acquisition by Continental Can Co. of the Wilkes-Barre Can Co., Wilkes-Barre, Pa. Actual acquisition, it is said, is being made through a subsidiary, the Continental Can Co., Pennsylvania, at a cost of $450,000 in cash, plus an amount equal to the value of the inventory. The Wilkes-Barre property includes a 3-story plant of 104,000 square feet.

Pittsburgh — Owing to their sold-up condition, the leading producer of tin plate last week canceled employe vacations for the time being, with the result that extra mill turns were put into operation and tin plate production advanced to a full 100 per cent of actual operating capacity. Even so, the backlog of orders awaiting rolling is still sufficient to engage hot mills at capacity for the next four weeks and cold-reducing mills for the next six to seven weeks. Apparently, general line can demand has picked up any of the loss which may be expected from packers' cans in drouth affected crops. Latest packing estimates state that the tomato crop this year will be around 22,000,000 cases, peas, 17,000,000, corn, 14,000,000, and string beans about 5,000,000 cases.

New York—American Can Co. has received a contract from the F. & N. Schaefer Brewing Co. Brooklyn, for its new beer can requirements.

Sheets

Sheet Prices, Page 62

Pittsburgh—Bookings last week compared unfavorably with the heavy sheet orders entered a week preceding, as the latter was the heaviest for any week since mid-June. Satisfactory delivery, rather than price shading, is now a dominant subject in sheet sales, for some mills have booked such heavy automotive tonnage the past two weeks that when releases commence late in August, they may suddenly run four to six weeks in arrears on spot business. Output of continuous type mills last week was engaged at about 70 per cent, with jobbing mills around 50 per cent.

Cleveland—Most of the new business placed this month has come from barrel manufacturers and concerns manufacturing household utilities, such as refrigerators, stoves, etc. Activity in building construction and from farm equipment producers has been mild However, most mills are operating at approximately 70 per cent, and are booked through August. New business was heavy all through July and no let down is anticipated for August.

Chicago—Sheet mills are in a position to give reasonably prompt delivery on the grades most generally used by the automotive industry, but on commoner material shipments average around 30 days. Automotive buying is commencing to increase, with heavier orders in sight during the next few weeks. Miscellaneous sheet users are specifying in good volume for this period, and with mill backlogs still fairly heavy, near-capacity operations are in prospect for at least the remainder of August. Sheet prices are steady on new business.

New York—Little improvement is noted in deliveries of sheets, with specifications coming out well. Sellers are having difficulty meeting shipment demands and in an effort to meet distress demands in several instances tonnages have been turned over to competitors who could make quicker deliveries.

About 200 tons of sheets will be required for the $12,000,000 Williamsburg housing development in Brooklyn, on which construction bids have just been opened. For the Harlem housing development in this city, awarded recently, 150 tons of sheets

were placed with an eastern Pennsylvania mill.

Philadelphia—While inquiry is slowing up somewhat, there is still strong pressure for deliveries of sheets. Sellers in most cases are unable to offer anything under three to four weeks on hot-rolled sheets and five to six weeks on cold-finished sheets. This situation, combined with a promising outlook for this fall, is imparting much strength to prices and, in fact, there is already talk of possible higher quotations for fourth quarter. The two principal automobile body producers here are particularly active, with one, the Edward G. Budd Mfg. Co., figuring on additional requirements for stainless steel for streamlined train construction. This builder, as previously noted, has orders for approximately 80 coaches, including, as the latest, a 9-car train for the Santa Fe placed earlier in the summer. In correction of an error, the Superior Steel Sheet Co., Canton, O., was one of three to participate in the distribution of 250 tons of sheets for the Northeast penitentiary, Lewisburg, Pa., the other two participants being the Bethlehem Steel Co., Bethlehem, Pa., and the other, the Youngstown Sheet & Tube Co., Youngstown, O.

Youngstown, O.—Accumulated orders for steel sheets assure operations for several weeks at practical capacity, in some cases several months. Delivery is the prime factor at present, as tonnage seems to be going into production at once.

Cincinnati—Pressure for sheet deliveries has relaxed, a consequence of anticipatory ordering. Some business has been placed to meet needs for the entire quarter, and a high rate, although it may lag behind July, is assured for August.

St. Louis—Sheet sales made an unusual showing during July and demand is still strong. Spot buying was notable as many users had underestimated requirements when providing for third quarter.

Pipe

Pipe Prices, Page 63

Pittsburgh—Inquiry for about 9000 tons of 14-inch line pipe in a 92-mile line with terminus at Rochester, N. Y., is nearing the contract stage. The prospective buyer is the Godfrey Cabot Co., Boston. Another project considered in the active stage is from the Southern Pipe Line Co., which will build a 6-inch welded line from the Frio district to Neuces county, Texas, to Corpus Christi, Tex. With specifications for oil country goods and mechanical tubing highlights in the market, the present rate of operations is maintained it around 60 per cent. Prices are unchanged.

Cleveland—Miscellaneous pipe requirements continue heavy. Jobbers' stocks are moving at a steady rate in response to strong demand from industrial concerns, plumbers, and building contractors. Mills are running at capacity with many unable to meet the prompt shipping schedules demanded by jobbers.

Notices are being sent out by leading pipe fittings manufacturers that, effective Aug. 10, there will be an advance of 5 per cent in the prices of malleable and cast iron fittings. The advance will cover steam and drainage fittings, plugs, unions, etc. Brass fittings will not be affected.

Chicago—Principally small orders, business in cast pipe is in fair volume and producers continue steady shipments. Largest of recent awards is 689 tons for Chicago and 400 tons for the Chicago sanitary district. WPA projects are rather liberally represented among new business and inquiries.

New York—About 5000 tons of cast pipe of various sizes, with fittings, valves, etc., will come up for opening of bids Aug. 17 by the department of purchase, New York.

Outside of this requirement the market is quiet.

Boston—Fair activity is reflected in cast pipe with several new tonnages awarded and a considerable amount of business under negotiation. Prices are unchanged but occasionally there is slight shading.

Kansas City, Mo. — Panhandle Eastern Pipe Line Co. has awarded to J. R. Stewart Construction Co., Kansas City, a contract for about 15 miles of field lines near Dumas, Tex., and Hugoton and Liberal, Kans., 4 to 16 inches in diameter, construction to start about Aug. 17. Drillers Gas Co., Wichita, Kans., has awarded Knupp Construction Co. a contract for four miles of 4-inch gas line near Russell, Kans. Both lines will be welded by the Linde oxyacetylene method.

Seattle—The largest tonnage pending is at Union Gap, Wash., where bids were opened Aug. 1 for 325 tons of 4, 6 and 8 inch cast pipe. Other business pending includes 180 tons of 16 inch for a Seattle improvement project. Hughes & Co., Spokane, received award to furnish 50 tons of 6 inch cast pipe for that city. Bellingham, Hoquiam and Spokane, Wash., are planning extensive water system additions.

Cast Pipe Placed

689 tons, 24-inch, Chicago, to Glamorgan Pipe & Foundry Co., Lynchburg, Va.

400 tons, Chicago sanitary district, to Glamorgan Pipe & Foundry Co., Lynchburg, Va.

280 tons, 18 and 24-inch, Yonkers, N. Y., to Warren Foundry & Pipe Corp., Phillipsburg, N. J.

200 tons, Auburn, Me., to United States Pipe & Foundry Co., Burlington, N. J.

120 tons, Providence, R. I., to United States Pipe & Foundry Co., Burlington, N. J.

100 tons, 6 and 8-inch, Boston, to Warren Foundry & Pipe Corp., Phillipsburg, N. J.

100 tons, 6 and 8-inch, Northampton, Mass., to United States Pipe & Foundry Co., Burlington, N. J.

Cast Pipe Pending

5000 tons, department of purchase, New York; bids Aug. 17.

3000 tons, 6, 8 and 12-inch cast pipe, for city of Chicago; bids Aug. 18.

800 tons, 3, 6, 8 and 12-inch, East Smithfield, R. I.; bids Aug. 13.

325 tons, 4, 6, and 8-inch, for Union Gap, Wash.; bids in.

180 tons, 6, 8 and 16-inch, Springfield, Mass.

100 tons, Eastham-Orleans, Mass.

Steel Pipe Pending

9000 tons, 14-inch line pipe, 92-mile line, New York state, with terminus at Rochester, N. Y., for Godfrey Cabot Co., Boston.

Strip

Strip Prices, Page 63

Pittsburgh—Tonnage for 1937 automobile models is beginning to be released and thus provides a highlight in the strip market, where operations of producers on hot strip have advanced to about 65 per cent and on cold strip to around 60 per cent. Both these levels are the highest since mid-June.

Cleveland — A few automobile manufacturers have come into the market for considerable tonnage for 1937 models. Chief among them are Ford and Chevrolet. Most miscellaneous consumers are ordering in larger quantity, not because of general strike possibilities, but to meet anticipated heavy demand and the already delayed delivery situation in most mills. Shipping schedules on hot and cold-rolled run close to three and four weeks respectively; in some mills they carry over into September.

Chicago—Both hot and cold-rolled strip demand continues to show unusual activity, and with automotive buying shortly expected to increase, the summer dip in operations is likely to be brief. Cold strip demand continues well diversified, and consumers generally request early de-

livery. Some increase in automotive orders has appeared, with heavier releases scheduled for late this month.

Boston—Continued heavy demand for cold-rolled strip steel has provided makers with backlogs which make it a problem to keep consumers supplied in accordance with requirements. Demand is helped by a disposition among New England consumers that 2.80c base, Worcester, is due to be advanced for fourth quarter. 1.95c base Pittsburgh has been ratified by the placing of considerable new tonnage here at this figure.

Philadelphia—Narrow strip demand has again become sluggish, with specifications scattered.

Youngstown, O.—Strip users are pressing further tonnages and mill backlogs in both hot and cold strip are being increased, assuring full production for many weeks. Makers of automobile parts seek delivery to meet demands for new models. The new wide hot strip mill of Youngstown Sheet & Tube Co. at Campbell, O., is said to have produced 62,500 tons of finished material in July, which, though no official claim has been made, seems to have established a record output, though not definitely establishing the mill's maximum capacity.

Wire

Wire Prices, Page 63

Pittsburgh — Eastern and midwestern demand for wire products has eased slightly the past week following a strong market through June and July. Imports of barbed wire, fence and galvanized wire on the seaboard, and even as far inland as Missouri, are still a matter of concern to domestic mills. The price situation on wire products is fairly firm, with the possible exception of isolated weakness in wire nails.

Cleveland — Manufacturing consumers are buying heavily to bolster their inventories. The recent drought has slightly curtailed demand for merchant wire. Prices remain firm for most wire products, but general weakness in wire nails continues. Demand during July equaled June and no decline through August is anticipated.

Chicago — While wire demand is off moderately from the rate of 30 to 60 days ago, business still is unusually active for August. Miscellaneous consumers of manufacturers' wire have shown little letdown in their requirements since a month or two ago, and while automotive needs have been curtailed, an early pickup is in prospect.

Philadelphia — Wire nails continue weak, with concessions at $4 or so under 2.10c, Pittsburgh, available in the East. Despite the reduction in the official price last spring, from 2.40c to 2.10c, Pittsburgh, there has been little stability in the market in the East, with the trend appearing as easy as it has been at any time. Foreign arrivals of nails, which have shown a steady increase in recent years, are a particularly depressing factor along the eastern seaboard.

Keystone Chromium Co., Buffalo, has announced wage increases of 10 to 15 per cent for all its workers. Production is reported at the highest point since 1929.

Much Chrome Ore Imported

Movement of chrome ore to this country continues substantial with arrivals at Philadelphia during the week ended Aug. 1 amounting to 10,373 tons. Of this total 8373 tons came in from French Oceania and 2000 tons from Portuguese Africa.

Other imports at Philadelphia during this period were 202 tons of sponge iron, 76 tons of steel tubes, 61 tons of cold-drawn steel wire, 32 tons of steel bars, 18 tons of steel forgings and eight tons of bar iron, all from Sweden.

Shapes

Structural Shape Prices, Page 62

New York—Letting of 10,000 tons for a bridge at Port Arthur, Tex., featured the market. A number of smaller awards aggregated about about 1000 tons. Negotiations are proceeding on considerable pending work so that prospects for continued good business in the fabricated steel market are good. Roughly, the going erected price on large apartment buildings now is around $90 a net ton. Quotations on hospital buildings are about the same. Erected prices on school buildings range around $85, as a rule.

The East Thirty-eighth street tunnel connecting Manhattan and Queens under East river has been authorized and bids will be opened about Sept. 1 on construction of a shaft in Long Island City. Supplemental contracts will follow. Major requirements will be 10,000 to 15,000 tons of structurals and 5000 tons reinforcing bars for the approaches and about 60,000 to 65,000 tons of cast iron tunnel rings.

Pittsburgh—Many smaller fabricating shops are now sold out on deliveries until October, due to heavy contracting for industrial plants and alterations. Aluminum Co. of America has an inquiry out for about 800 tons for new buildings, Pittsburgh Steel Co. is inquiring for 500 tons for two buildings, and leading among inquiries for transmission towers is a 3200-ton job pending for the Tennessee Valley Authority at Somerville, Tenn. American Bridge Co. contracts over the past week included 1200 tons in two Nebraska bridges. Plain structurals are now firmer at 1.90c, f.o.b. Pittsburgh, and some strength has become apparent in fabricated and erected prices.

Cleveland—Much tonnage will be required for a number of pending state projects. Most of this work is for grade crossings totaling close to 1600 tons. The new hockey rink for this city, involving 1000 tons, is still pending. Fabricators failed to bid on three state bridge jobs ,because of the low cost estimates. New bids are expected to be called for before the end of the month. Fabricators are having a difficult time in getting prompt deliveries because of heavy backlogs of three to four weeks in most mills.

Chicago—Mills are requesting 30 to 60 days delivery on some sizes of structural shapes and still are rushed in an attempt to satisfy fabricators' requirements. Awarding of 2300 tons for the Ashland avenue bridge is deferred since recent bids exceeded the estimate.

Philadelphia—Except for the 4500-ton bridge to be erected between Easton and Phillipsburg by the Pennsylvania-New Jersey toll commission, little is outstanding at present. Substantial work continues to come into district shops from the outside, and shape mills, with deliveries at three to four weeks, are being pressed for tonnage. Shapes are strong at 2.00c, Bethlehem, Pa., or 2.11½c Philadelphia.

Seattle—Renewed activity is noted in the structural shapes division, the week's lettings exceeding 1000 tons.

Shape Awards Compared

	Tons
Week ended Aug. 7	28,125
Week ended July 31	28,282
Week ended July 24	17,577
This week, 1935	21,260
Weekly average, 1935	17,081
Weekly averagefi 1936	22,530
Weekly average July	27,757
Total to date, 1935	483,887
Total to date, 1936	720,960

Behind the Scenes with STEEL

Rose with Thorn

AMERICAN BRIDGE CO.'s ad in the July 13 issue of STEEL, headlined "The Cleveland that ABC Built," must have caught the attention of many. The clever heading halted us and we read further. An accompanying illustration showed numerous structures in downtown Cleveland for which ABC supplied the steel. A tabulation identified the various buildings in the photograph, as well as others in the vicinity but not shown. Among the latter was No. 22, identified as the Winton hotel. Now, the dear old Winton hotel has been deceased these many long years, the corpse being remodeled and revivified into the present Carter hotel (advt.)

Maybe the Carter wouldn't like being called the Winton, we don't know. It's just one of those little things that give most advertising copywriters the shakes. Sorry to have brought it up.

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Outside the Fold

AN ACCOUNTANT friend of ours happened to see a copy of STEEL and read it through carefully. He expressed amazement at the great volume of information presented and said he guessed he'd better enter a subscription so he could keep posted on what was doing industrially. Regretfully, we declined his $6 and told him that inasmuch as he would never be in the market for products of our advertisers, we couldn't let him into the charmed circle of our subscribers.

Poor fellow, he felt real bad about the whole thing until we offered to let him read our copy of STEEL every week, at no cost. Our income tax report, if any, next year is going to be a cinch.

INQUISITIVE CAMERA DEPT.—XII

D. S. "DON" CADOT, left-handed artist and statistician who keeps the figures and chartlines in STEEL'S Business Trend from jumping off the page, as well as dashing off a mean layout now and then. Don joined up in 1924.

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Better Grasp

ONE of the New England bearing companies writes that their engineers find the choice of subjects covered in STEEL'S *Power Drives* section "shows a better grasp of the subject than is the case with the average power transmission section."

Praise from Caesar falls not on unheeding ears, as they say in the upper reaches of the Union club. Many readers have told us they follow *Power Drives* regularly for valuable ideas on transmission problems—quickly digested.

• • •

Some Font—eh, Kid?

ONE of our editorial layout experts (hnyah-hnyah) whispers the information that the headline type used on pages 34 and 35 of this issue is nothing else but 30-point Kornak medium and is a brand new type face to appear in the editorial pages of STEEL.

Very interesting, but it might just as well be pin-point Carnal spiritualist for all we would know. The question that concerns us primarily: Is our type face read? De ayes is got it!

• • •

Quipster

ACCORDING to word from Bob Hartford in the editorial department it is now possible for those thrifty Scotchmen to appear philanthropic without going back on their historic traits. He says that with the advent of the new backless shirt, it will doubtless become a common thing to have the kiltle-clad gents offer to give you the shirt off their back.

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Head Play

HEADLINE of the week: "Odds and Bends for Pickling"—International Nickel Co.'s Monel metal in Aug. 3 issue.

—SHRDLU

Pacific Car & Foundry Co. was awarded 525 tons involved in the Nisqually river state bridge and 280 tons for a state span at Pasco, Wash.

Shape Contracts Placed

10,000 tons, bridge superstructure, Port Arthur, Tex.; 6000 tons for truss spans to Fort Pitt Bridge Works, Pittsburgh, and 4000 tons for approaches to Jones & Laughlin Steel Corp., Pittsburgh, through Taylor-Fichter Steel Construction Co., New York.

1500 tons, plant building, Owens-Illinois Glass Co., Streator, Ill., to Mississippi Valley Structural Steel Co., Decatur, Ill.

1400 tons, steel sheet piling, wales and tie rods, Cape Cod canal, Sandwich, Mass., to Bethlehem Steel Co., Bethlehem, Pa., through L. C. McLaughlin, New London, Conn.

1252 tons, La Grange lock and dam, Beardstown, Ill., to Independent Bridge Co., Pittsburgh.

1200 tons, two state highway bridges, Fremont, Nebr., to American Bridge Co., Pittsburgh.

940 tons, subway, route 108, sections 10 and 11, Queens borough, New York, to Bethlehem Steel Co., Bethlehem, Pa.

849 tons, seven bridges, United States engineer office, Los Angeles, proposal 37-23, to Consolidated Steel Corp, Los Angeles.

767 tons, plate girder bridge and through truss bridge, Crawford county, Pennsylvania, to Bethlehem Steel Co., Bethlehem, Pa., through J. Lee Plummer, Sewickley, Pa.

700 tons, bridge, Milwaukee, for Chicago, Milwaukee, St .Paul & Pacific railroad, to Bethlehem Steel Co., Bethlehem, Pa.

605 tons, bridge, Lawrence county, Ohio, to Fort Pitt Bridge Works, Pittsburgh.

565 tons, Old Harbor Village housing project, Boston, to New England Structural Co., Everett, Mass., through Matthew ,Cummings Co., Boston.

540 tons, transmission towers for New England Power Service Co., Millbury, Mass., to American Bridge Co., Pittsburgh.

525 tons, Nisqually river, state bridge, Washington, to Pacific Car & Foundry Co., Seattle.

460 tons, highway bridge, Cody, Wis., for United States bureau of public road, to Wisconsin Bridge & Iron Co., Milwaukee.

400 tons, Starcor Realty Co. building, Maspeth, N. Y., to Dreier Steel Construction Co., New York.

340 tons, boiler house for Appalachian Electric Power Co., Logan, W. Va., to American Bridge Co., Pittsburgh.

330 tons, bridge, North Milwaukee, Wis., for Chicago, Milwaukee, St. Paul & Pacific railroad, to Wisconsin Bridge & Iron Co., Milwaukee.

330 tons, H. E. Millard lime plant, Annville, Pa., to Frank M. Weaver & Co., Lansdale, Pa.

330 tons, oil refinery building for M. W. Kellogg Co., Toledo, O. to Pittsburgh Bridge & Iron Co, Pittsburgh.

320 tons, elementary school, Wilkes Barre, Pa., to Lehigh Structural Steel Co., Allentown, Pa.

280 tons, Franklin street viaduct for District of Columbia, to American Bridge Co., Pittsburgh.

270 tons, state highway bridge, Stratford, Iowa, to Pittsburgh-Des Moines Steel Co., Pittsburgh.

270 tons, garage for Sanitary Grocery Co., Washington, to Rosslyn Steel & Cement Co., Washington.

260 tons, highway bridge, Lusk county, Wisconsin, to Lakeside Bridge & Steel Co., Milwaukee.

255 tons, high school, Lancaster, Pa., through D. S. Warfel to A B. Rote, both of Lancaster.

250 tons, high school, East Orange, N. J., to H. R. Goeller, Hillside, N. J.

250 tons, building, McKeesport, Pa., for Firth Sterling Steel Co., to Bethlehem Steel Co., Bethlehem, Pa.

240 tons, Carborundum Co. building, Niagara Falls, N. Y., to R. S. McMannus Steel Construction Co., Buffalo.

240 tons, state highway bridge, Lake Bluff, Ill., to American Bridge Co. Pittsburgh

230 tons, Saddle river bridge, New Jersey, to American Bridge Co., Pittsburgh, through J. P. Burns, Dumont, N. J.

215 tons, National Paper Products Corp. building, Carthage, N. Y., to Gray Steel Corp.

200 tons, addition to St. Regis Kraft Co. plant, Tacoma, Wash., to Isaacson Iron Works, Seattle.

200 tons, extension to West Leechburg division, Allegheny Steel Co., Brackenridge, Pa., to Pittsburgh Bridge & Iron Co., Pittsburgh.

195 tons, Masonic home, Elizabethtown, Pa., through the Hughes Foulkrod Co., Philadelphia, to Bethlehem Fabricators, Bethlehem, Pa.
190 tons, Lehigh valley bridge, Seneca county, New York, to Bethlehem Steel Co., Bethlehem, Pa.
180 tons, Kress & Co. building, Wichita Falls, Tex., to J. B. Klein Iron Foundry Co., Oklahoma City, Okla.
165 tons, manufacturing building, Standard Silicate Co., Jersey City, N. J., to Oltmer Iron Works, Jersey City.
160 tons, repairs, Kings highway bridge, St. Louis, to Stupp Bros. Bridge & Iron Co., St. Louis.
140 tons, Greyhound Bus Lines terminal, Pittsburgh, to Ingalls Iron Works Co., Verona, Pa.
140 tons, manufacturing addition, Detroit Steel Products Co., Detroit, to Taylor & Gaskin Co., Detroit.
120 tons, warehouse, Heinz Co., Medina, N. Y., to Leach Steel Corp., Rochester, N. Y.
120 tons, plant addition for Dover Die Casting Co., Pottstown, Pa., to Truscon Steel Co., Youngstown, O.
117 tons, crossing, Converse county, Wyoming, to unnamed interest.
115 tons, St. Francis hospital, addition, Wilmington, Del., through D. W. O'Dea, Philadelphia, to Belmont Iron Works, Eddystone, Pa.
110 tons, bridge, Sharkey county, Mississippi, to Vincennes Bridge Co., Vincennes, Ind.
100 tons, alterations to Rosemont school, Los Angeles, to Consolidated Steel Corp., Los Angeles.
100 tons, Libby Creek bridge, Lincoln county, Montana, to unnamed interest.
100 tons, Theological school building, Newton, Mass., to Groisser & Shlager Iron Works, Somerville, Mass.

Shape Contracts Pending

7400 tons, Sixth avenue subway, route 101, section 9, New York; low bidder, J. F. Cogan Co., New York.
4700 tons, Sixth avenue subway, route 101, section 8, New York; bids Sept. 11.
4600 tons, interstate bridge, Easton, Pa.-Philippsburg, N. J.
3350 tons, including 1260 tons of piling, Mississippi river dam, Bellevue, Iowa; Warner Construction Co., Chicago, low on general contract, Treadwell Construction Co., Midland, Pa., low on fabricated steel.
3200 tons, transmission towers for Tennessee Valley Authority, Somerville, Tenn.
2300 tons, Ashland avenue bridge, Chicago; Ketler-Elliott Co., Chicago, low on general contract.
2000 tons, armory building, United States military academy, West Point, N. Y.; bids Aug. 26.
2000 tons, dam No. 22 in Mississippi river at Saverton, Mo.; bids Aug. 18.
2000 tons, state bridge, Sunderland, Mass.
2000 tons, Suffolk county court house, Boston.
1700 tons, hospital, Jersey City, N J; Lehigh Structural Steel Co., Allentown, Pa., low.
1300 tons, state bridge, Saugatuck, Mich.
1000 tons, sugar refinery, Woodland, Calif.
900 tons, building for Kelvinator Corp., Detroit.
800 tons, extensions and alterations to eight buildings located at Arnold, Pa., Massena, N. Y., and Alcoa, Tenn., for Aluminum Co. of America, Pittsburgh.
575 tons, state bridge, Winslow-Waterville, Me.; low bidder, Bethlehem Steel Co., Bethlehem, Pa.
500 tons, extension of tube mill building, Allenport, Pa., and construction of stripper building extension, Pittsburgh Steel Co., Pittsburgh.
465 tons, state highway bridge, Long Eddy, N. Y.; bids Aug. 18.
300 tons, Radcliff college dormitory, Cambridge, Mass.
380 tons, bridge for Southern Pacific Railroad Co., Marysville, Calif.
360 tons, state highway bridge, Schoharie county, New York; bids Aug. 25.
350 tons, boiler house for Monsanto Chemical Co., Monsanto, Ill.
283 tons, consisting of 145 tons of fabricated structural steel and 138 tons of plain structural steel, erection of a plate girder bridge and extension of timber deck I-beam bridge, Indiana county, Pennsylvania; bids to state highway department, Harrisburg, Pa., Aug 21. Included, 22 tons of plain steel bars.
240 tons, Long Island railroad grade crossing elimination, Smithtown, N. Y.; bids Aug. 18.
235 tons, state highway bridge, Mt. Jewett, Pa.; bids Aug. 14.
212 tons, crossing, Green River, Sweetwater county, Wyoming; bids opened.
200 tons, draw span, East Alburg-West Swanton, Vt.; low bidder, Bethlehem Steel Co., Bethlehem, Pa.
200 tons, plant addition, United States Gypsum Co., East Chicago, Ind.
200 tons, storage bins, Grasselli Chemical Co., Grasselli, Ind.
190 tons, New York Central grade crossing elimination, Crittenden, N. Y.; bids being taken.
185 tons, maintenance building, Delaware river bridge commission, Philadelphia; bids opened Aug. 5.
181 tons, highway underpass, Lancaster county, Pennsylvania; C. W. Good, Lancaster, Pa., low at $220,273 in July 31 state letting. Included, 74 tons of plain steel bars.
180 tons, addition to parcel post building, Richmond, Va.
162 tons, seven bridges in San Bernardino, Santa Cruz and Humboldt counties, California; bids Aug. 20.
160 tons, St. Barnabas hospital, Newark, N J
138 tons, plate girder bridge, Lackawanna county, Pennsylvania; bids to state highway department, Harrisburg, Pa., Aug. 21. Included, 44 tons of plain steel bars.
130 tons, New Jersey state highway bridge, Metuchen, N. J.; bids Aug. 17.
102 tons, consisting of 86 tons of fabricated structural steel and 16 tons of plain steel bars, pony truss bridge, Warren county, Pennsylvania; C. L. Johnson & Son, Mansfield, Pa., low at $24,098 on July 31 state letting.
100 tons, housing project, Cambridge, Mass.; bids Aug. 18.
100 tons, grade crossing elimination, Peabody, Mass.; Richard White & Sons Co., West Newton, Mass., general contractor.
100 tons, Warner Bros. theater, Seventy-ninth street, Chicago.

Ferroalloys

Ferroalloy Prices, Page 64

New York—Ferromanganese and other alloys continue firm and in good demand. Shipments so far this month appear on a rate comparable with July, which was one of the best months of the year.

Reinforcing

Reinforcing Bar Prices, Page 63

New York—While no lettings of importance were reflected, many small orders aggregated a fair total. The price situation seems somewhat better in that shading has been less drastic. The market on new billet bars is quoted at 2.05c base, Pittsburgh. This price is being obtained on the so-called miscellaneous tonnage, but is shaded a few dollars a ton on more attractive lots.

Pittsburgh—Heavy volume of demand in lots averaging 50 to 75 tons individually has increased mill backlogs here to the extent where five to six weeks' delivery is the earliest obtainable. Kaufmann's department store has placed a contract through Metzger-Richardson Co. with Jones & Laughlin Steel Corp. for 280 tons for a new three-story parking structure. Zanesville, O., engineers take bids shortly on 170 tons for relocation of Baltimore & Ohio railroad tracks at East Sparta, O. The market on structural and intermediate grade reinforcing bars as quoted by distributors is officially unchanged at 2.05c, base, Pittsburgh, but large sales seem subject to individual transaction.

Cleveland—While most mills are running close to capacity in attempting to diminish backlogs, recent reinforcing bar orders have been noticeably absent. However some bridge jobs are expected to appear before the end of the month, which should aggregate to a large tonnage. Many small jobs requiring new billet steel have been placed. Prices remain firm at 2.00c, Cleveland.

Chicago—Early closing on more than 4000 tons for three projects is anticipated. These include 2500 tons for the Chicago river lock, 1000 tons for the outer drive development and 700 tons for a Chicago sanitary district sewer. For the Quincy, Ill., river dam, 650 tons has been awarded, with 525 tons pending for the Bellevue, Iowa, dam. Shipments against contract continue heavy and mill backlogs are sufficient to assure active deliveries during the balance of this quarter. Prices are tending toward greater stability.

Philadelphia—The market has hit a dead spot insofar as sizable awards are concerned. Further, inquiry is outstanding, aside from the two federal housing projects which are active. Prices on billet steel and rail steel bars are still unsettled.

Boston—Considerable activity features the market, a large amount of tonnage being under negotiation. Though the market is regarded as nominal at 2.10c base, Buffalo, on billet rolled material, much lower prices are being done.

Concrete Awards Compared

	Tons
Week ended Aug. 7	4,723
Week ended July 31	3,862
Week ended July 24	15,431
This week, 1935	2,689
Weekly average, 1935	6,862
Weekly average, 1936	6,674
Weekly average July	8,510
Total to date, 1935	139,507
Total to date, 1936	213,557

Reinforcing Steel Awards

800 tons, Joseph E. Seagram & Sons Inc. warehouses at Lawrenceburg, Ind., to Pollak Steel Co., Cincinnati, through J. & E. Warm Co., Cincinnati, general contractor.

761 tons, Union avenue crossing, Portland, Oreg., to Bethlehem Steel Co., Bethlehem, Pa.

650 tons, Mississippi river dam No. 21, Quincy, Ill., to Inland Steel Co., Chicago.

500 tons, housing projects at Louisville, Ky., to Laclede Steel Co., St. Louis.

500 tons, housing project at Memphis, Tenn., to Laclede Steel Co., St. Louis.

328 tons, schedule 13101, list 1717, Treasury department, Los Angeles, to Truscon Steel Co., Los Angeles.

280 tons, triple deck reinforced concrete parking structure, Kaufmann's department store, Pittsburgh, to Jones & Laughlin Steel Corp., Pittsburgh, through Metzger-Richardson Co., Pittsburgh. Mellon-Stuart Co., Pittsburgh, general contractor.

150 tons, two industrial plants, Seattle, to Bethlehem Steel Co., Seattle.

140 tons, state crossings, Centralia and Spokane, Wash., to Bethlehem Steel Co., Seattle.

136 tons, state crossing, Bellingham, Wash., to Truscon Steel Co., Youngstown.

128 tons, crossing, Evanston, Uinta

county, Wyoming, to unnamed interest.
125 tons, Nisqually river, Wash., state bridge approaches, to Bethlehem Steel Co., Seattle.
125 tons, reservoir, Arlington, Mass., to Concrete Steel Co., New York.
100 tons, bridge over Boston & Maine tracks, Lunenburg, Mass., to Northern Steel Co., Medford, Mass.

Reinforcing Steel Pending

3000 tons, Williamsburg slum clearance project, Brooklyn, N. Y.; low bidders, Starrett Bros. & Ekin Inc., New York, and Wallin Co. Inc., New York.
1150 tons, Conchas dam, Tucumari, New Mex., for United States engineer office; bids Sept. 10.
1000 tons, bridge superstructure, Port Arthur, Tex.; general contractor, Taylor-Fichter Steel Construction Co., New York.
1000 tons, housing project, Cambridge, Mass.; bids Aug. 18.
600 tons, state bridge and paving, Lynnfield, Mass.; general contract to Elsworth H. Lewis, Andover, Mass.
550 tons, dam No. 22 in Mississippi river at Saverton, Mo.; bids Aug. 18.
525 tons, Mississippi river dam, Bellevue, Iowa; Warner Construction Co., Chicago, low for general contract.
500 tons, two armory buildings, United States military academy, West Point, N. Y.; bids Aug. 26.
350 tons, Sixth avenue subway, route 101, section 9, New York; low bidder; J. F. Cogan Co., New York.
340 tons, sixth avenue subway, route 101, section 8, New York; bids Sept. 11.
300 tons, Richmond sewer, tunnel, San Francisco; bids opened.
201 tons, state highway work in six counties, California; bids Aug. 20.
200 tons, grade crossing elimination, Revere, Mass.
200 tons, state paving, Wallingford, Vt.; general contract to Lane Construction Co., Meriden, Conn.
200 tons, paving, Barton-Irasburg, Vt.
170 tons, relocations of Baltimore & Ohio railroad tracks, East Sparta, O.; bids to Zanesville, O., army engineers soon.
125 tons, grade crossing elimination, Mansfield, Mass.; general contract to Coleman Bros. Corp., Boston.
120 tons, crossing, Green river, Sweetwater county, Wyoming; bids opened.
100 tons, warehouse, Armour & Co., Boston; general contract to Tredennick-Billings Co., Boston.
100 tons, bridge, Concord, N. H.
100 tons, grade crossing elimination, Peabody, Mass.; general contract to Richard White & Sons Co., West Newton, Mass.

Pig Iron

Pig Iron Prices, Page 64

Pittsburgh—In spite of the recent advance in steel mill roll prices, demand has undergone no decline, and roll makers have been booking new business at a rate comparable with July and June. Many melters using both pig iron and scrap are beginning include more iron in their melt in view of the rapid advance in scrap. Prices are steady.

Cleveland — Shipments of pig iron to miscellaneous foundries continues at the rapid pace set during July. Requirements from machine tool, railroad casting, and farm equipment foundries are the heaviest. Some auto foundries have come into the market for additional tonnage, reflecting the preparation for 1937 models.

Chicago—Pig iron shipments have started to increase following a slight letdown in July. Deliveries currently are more than 30 per cent heavier than a year ago. Automotive foundries are increasing schedules, while farm implement and tractor plants continue relatively busy for this period. Some farm equipment companies plan an early start on production of spring tools. While new business is only moderate, a slight gain in orders has been noted recently. The market is steady.

Boston — New England foundries are busier than at any time since 1929. Although consumers have been subsisting largely on inventories, pig iron purchases now are moving upward. One consumer is reported to have covered for about 5000 tons of foundry iron for shipment over the rest of the year. The market continues firm at $20.50, Everett, Mass., furnace, for the base grade of foundry iron.

New York—Pig iron demand is becoming a longer range character. Although the bulk of orders still is for immediate shipment, consumers are showing a greater disposition to buy ahead. Two inquiries each involving more than 1000 tons are pending. Resumption of operations at Brooklyn foundries, recently affected by strikes, is bolstering specifications. Iron for close to 70,000 tons of segments for the Thirty-eighth street tunnel will likely be up for figures this fall.

Philadelphia—Pig iron tonnage is moving at a steady pace, with orders still confined largely to carlots. July shipments were slightly in excess of June, and so far this month have held around the July rate. Prices are unchanged.

Buffalo — Shipments of pig iron continue heavy. Both merchants and steelworks have added much less iron to their reserves than anticipated for the mid-summer period. Mounting prices of scrap and scarcity of some grades is likely to force even greater use of hot iron in open hearths. Ten furnaces are active and another may be started about Sept. 1.

Cincinnati—Prices on pig iron in this district are being revised to avoid possible conflict with the Robinson-Patman bill, some shipping points taking the Birmingham base price, northern iron retaining the dif-

ferential of 38 cents higher than southern, and other points continuing on Hamilton, O., base. Examples are: No. 2 Southern, delivered, Evansville, Ind., $19.44, down $2.50; delivered, Cincinnati, $19.44, down 76 cents; delivered Indianapolis, $21.04, down 50 cents. Immediately north of Hamilton, in Dayton and Springfield, and westward to include Richmond, Ind., prices are unchanged. The summer lull in shipments is only a slight dip.

St. Louis—Purchasing of pig iron is confined chiefly to small lots for prompt delivery. Sellers have heavy backlogs, and shipments are holding at, or close to the recent high average. Aggregate tonnage delivered to melters in July fell slightly below that of June, but was the largest for any July since 1930. The melt, which had been holding up well, has been affected by a strike of molders called early last week.

Birmingham, Ala.—Deliveries of pig iron are continuing at a steady pace. New business is confined almost entirely to small lots for immediate needs. Ten blast furnaces are active.

Toronto, Ont.—Business is showing improvement in the pig iron market. Awards for the past week totaled around 800 to 900 tons. Melters however, continue to confine purchases to immediate needs. The daily melt is holding in excess of 50 per cent. Prices are firm and unchanged.

Scrap

Scrap Prices, Page 65

Pittsburgh — Because a leading consumer here last week succeeded in getting only a few thousand tons of No. 1 steel at $15.75, delivered to its Pittsburgh district works, its willingness to pay $16 subsequently was indicated. Later in the week the Baltimore & Ohio's No. 1 steel brought $16, rails $16.02, and specialties $17.60, all f.o.b. tracks, thus confirming that the present market has advanced an average of 75 cents a ton from the week previous. Lack of yard scrap accumulations in the Pittsburgh district, most of which were sold out a year ago, and the fact that idle blast furnaces here cannot readily be blown in, are construed as strong bullish factors.

Chicago—Scrap prices are rising rapidly and mills show some concern over a possible shortage later this year. Dealers and brokers are active in competing for supplies and this has resulted in further advances on practically all grades. No. 1 heavy melting steel has brought better than $15.40 on recent railroad lists, and with dealers offering $14.50 to $15 elsewhere, the market on this grade is $1 a ton higher. Steel specialties continue strong and other items are up 50 cents to $1.

Boston—On top of the recent sharp price advances in several grades of scrap additional increases have been made. While a large portion of New England scrap continues to be loaded for export, New England consumers are buying more liberally and considerable tonnage is being shipped to eastern Pennsylvania. The recent rise of $1.75 on steel scrap delivered in New England, it is learned, developed in connection with purchases of 10,000 tons for shipment to Worcester, Mass.; $11.75 delivered was paid for No. 1 and $10.75 for No. 2 or auto steel.

New York—Urgent need for scrap at a number of important consuming points has caused another advance of about 50 cents. In some cases, brokers now are paying above $10.25 here for No 1 heavy melting steel sold at $16, delivered, in the Pittsburgh district.

Philadelphia—Reflecting a continued strong trend in scrap, prices on practically all grades have been marked up here. In some instances these revisions are nominal as dealers have been forced to increase their offering prices for scrap to apply against contracts. In the case of heavy melting steel, dealers are now paying as high, if not higher, for material to apply against their old contracts than they received for the orders originally. No. 1 steel may now be quoted at $13 to $13.50 and No. 2 steel at $12 to $12.50, and it appears likely that these figures will be further advanced upon the consummation of any sizable orders.

Buffalo—The local scrap market is the most active of many weeks. One dealer reports sale of No. 1 heavy melting steel at $14, for local delivery. Probability of delivery of a large per cent of substitute material on this order is seen by competitors. Dealers offered contracts for No. 1 exclusively at $13.50 to $14 have refused to take tonnage because of difficulty of getting material in sufficient quantities to complete delivery on contracts.

Youngstown, O.—Such an inrush of iron and steel scrap into consumers' yards some days ago followed the recent price advance that restrictions were placed by three important consumers. Some modifications have been made in these restrictions by two of them and the other may follow. Meanwhile quotations again have strengthened by about 75 cents.

Detroit—Further advances of 50

cents a ton have carried the local market to new high ground, but there is growing feeling here that the market has lost some of its strength and that present levels represent a peak for the time being. Automotive scrap lists are being noticeably curtailed this month and one leading local producer of scrap has definitely withdrawn its offerings.

St. Louis—Activity by dealers to secure material to apply on contracts, and general scarcity were the chief factors in a further advance in prices of iron and steel scrap. Stocks are light and little material is coming out. Heavy melting steel and railroad steel specialties are in particularly small supply and bidding is active.

Birmingham, Ala.—While the scrap market continues slow and prices steady, dealers are a little more hopeful as other districts report improving market conditions. Local consumers are buying as needs present themselves and apparently not accumulating stocks.

Seattle—The domestic situation is strong and the export market is weak and unchanged. Japan is stocked to the end of the year but is willing to negotiate for attractive tonnages, though it will not meet prices of local dealers whose ideas are firm based on local demand. Mills here are paying $8 and $8.50 for No. 2, $10 for No. 1 while dealers are asking $12 for extra choice No. 1 material for export.

Toronto, Ont.—Sales of steel and iron are specialized and demand is somewhat greater than a year ago. Steel grades are in most demand and regular shipments of heavy melting steel and other grades are being made to mills in the Hamilton district. Montreal dealers also report steady demand.

Iron Ore

Iron Ore Prices, Page 65

Cleveland — Total shipments of iron ore from the upper lakes during the month of July were 7,159,563 tons, against 6,608,320 tons in June of this year and 4,460,563 tons in July 1935. This represents an increase of 2,699,027 tons or 60.51 per cent over July last year. The amount carried this year up to Aug. 1, was 18,837,073 tons against 12,606,029 tons in 1935, an increase of 49.43 per cent.

Shipments from upper lake ports for the season to Aug. 1, follow:

Port and Dock	To Aug. 1 1935	To Aug. 1 1936
Escanaba	628,234	982,770
Marquette	1,149,921	1,882,587
Ashland	1,500,585	1,920,342
Superior	4,400,116	7,048,389
Duluth	3,368,794	4,767,017
Two Harbors	1,558,379	2,235,968
Total	12,606,029	18,837,073

Metallurgical Coke

Coke Prices, Page 63

Beehive coke operators in the western Pennsylvania district have announced a higher asking price of $3.60 to $3.75 a ton for standard furnace coke, f.o.b. ovens, on all new inquiry where additional ovens will have to be fired. There is a growing scarcity of beehive coke in view of the fact that all available ovens are moving 100 per cent of their output. Medium sulphur furnace coke remains at around $3.10 to $3.15, f.o.b. Connellsville, Pa., ovens.

The market on metallurgical beehive coke for foundry use holds at $4.25 to $4.50, with only occasional distress carloads being available at around $4. Premium foundry coke is firm at $5.50. Buying of egg and nut sizes of coke for domestic use has already commenced for the fall season and volume is higher than in the same month of former years.

By-product coke shipments are holding well, though some contraction is noted, a usual midsummer event. Prices are firm.

Warehouse

Warehouse Prices, Page 66

Pittsburgh—Following a month in July which equaled June's shipments, local jobbers have experienced some letdown the first week in August. The schedule of quotable warehouse prices here is unchanged.

Chicago—Sales continue above the seasonal average. Demand continues well diversified, with heavy products now fairly active. Prices are steady.

Boston—Iron and steel jobbers apparently are escaping the usual midsummer lull, since present demand is at the peak of the year. In numerous cases, size of individual orders has increased.

New York — Demand for iron and steel rolled products out of warehouse shows unusual vitality for this time of year. So far there has been no tendency toward a mid-summer lull. Current bookings are only a shade less than those in June and July. Prices continue firm.

Philadelphia — Warehouse business since the first of the month has been slightly less active, although brisker than anticipated a few weeks ago. Distributors are profiting by the extended deliveries now being offered by producers on many products. Prices are firm.

Detroit — Contrary to earlier expectations, steel warehouse shipments the first ten days of August have exceeded slightly the same period in July. Orders are more numerous and are running to a larger size individually. No price changes have occurred in the warehouse schedule.

Cincinnati—Volume of sales from warehouse during July was close to that of June, with early-August business well diversified and showing no pronounced decline. Prices remain firm.

St. Louis—Iron and steel warehouse business continues in substantial volume. Building materials are moving actively. There has been a

heavy demand for bale ties, due to the fact that farmers are baling fodder of all descriptions to offset feed shortages owing to drouth, although movement of fencing materials, galvanized roofing and wire mesh has been curtailed. July proved a successful month with the trade as a whole. Prices remain unchanged.

Seattle—Jobbers report a satisfactory turnover last month under the higher price schedules. The market is steady, although indications of price cutting by Portland houses have unsettled the situation again. Alaska is buying freely, while navy yard requirements are adding to the totals. State and government buying has declined.

Bolts, Nuts and Rivets

Bolt, Nut, Rivet Prices, Page 63

Producers of bolts, nuts, and rivets, who announced higher third-quarter prices, have not yet been able to put over the advance uniformly. Shipments against lower second-quarter contracts still continue and a fair test of the market has not yet developed. Although fresh specifications have declined over the past week to ten days, producers are naming 70-10 off on small carriage and machine bolts and 70-5 off on larger sizes for small sized orders received. The structural rivet market is quoted at 3.05c, Pittsburgh, 3.15c, Chicago, with small rivets, 70-5 off list.

Semifinished

Semifinished Prices, Page 63

Pittsburgh—In view of the rising market on scrap and coke, and increased costs in other constituent steelmaking items, there is some belief that an advance in semifinished steel will be considered for fourth quarter.

Philadelphia—Demand for semifinished is heaviest since 1929, with forge shops active on requirements, particularly from machine tool builders, shipyards and railroads. Consumers of semifinished have small stocks. Prices on both forging and rerolling billets are strong.

Coke By-Products

Coke By-Product Prices, Page 63

New York—While sulphate of ammonia continues quoted at $25 per net ton in bulk carloads f.o.b. cars Atlantic and Gulf ports, on contracts stipulating equal monthly shipments over July, August, September, producers have advanced the price to $25.50 to cover spot shipments in September alone. For October and November contracts the price continues $25.50 and for December-June contracts, $26. Demand for sulphate is heavy. Other coke by-products are unchanged. Demand for the distillates particularly is heavy.

Steel in Europe

Foreign Steel Prices, Page 66

London—(*By Cable*)—Demand for pig iron in Great Britain continues active in spite of the holiday vacation period and some furnaces have sold their entire output to the end of the year. Steelworks are also heavily booked for all descriptions of steel for domestic requirements. Galvanized and other sheets are quiet, with demand for tin plate fair for domestic and export use. An advance of four shillings weekly has been granted unskilled labor in heavy steelworks.

The Continent reports export demand is reviving and an early price advance is expected. Belgian domestic prices have been increased 50 francs on the average.

Quicksilver

New York—The quicksilver market is weak but buying interest has picked up slightly and sellers anticipate higher prices soon. This market has been highly competitive recently and with demand limited dealers have been inclined to cut prices. Small lots of 15 to 25 flasks commanding $73 per 76 pound flask while large lots are quotably $72.50 per flask. Some sellers continue to quote $74 to $74.50 for small lots and report sales at those levels.

Nonferrous Metals

Nonferrous Metal Prices, Page 64

New York — Substantial tonnages of lead were again purchased by consumers last week while other major nonferrous metals were generally quiet. Tin was unsettled and antimony prices eased fractionally.

Copper—Interest in copper was focussed on developments abroad. Active demand arising from industrial expansion ,armament needs and short covering carried foreign prices to the highest point since early in 1931, or around 9.55c, c.i.f. European ports. Observers here still foresee no immediate prospects of the foreign price equalling domestic parity. Buying here was light with electrolytic holding at 99.75c, Connecticut.

Lead—New demand held at a high rate despite the fact that July business was the heaviest for any month since 1929. The price tone was firm to strong with the close quoted unchanged at 4.45c, East St. Louis.

Zinc—Some increased buying interest developed last week but no active buying movement is expected until consumers catch up on their commitments. Prime western held steady at 4.80c, East St. Louis, despite the sharp drop in London occasioned by the breakdown of negotiations for reforming the International Zinc cartel.

Tin—Straits prices declined to

around 42.37½c for spot despite the generally favorable July world statistics which showed a cut of 465 tons in the world visible supply. Unsettlement in the market is due to the present half in negotiations with Siam for continuing the tin control scheme beyond the end of the year. The tight situation in spot supplies is likely to continue throughout the month.

Antimony—Chinese spot declined ½-cent to 12.50c, duty paid New York, while American spot declined to 11.00c, New York. Easiness in the market reflects lower prices in China where demand has not supported price levels.

$40,000,000 Spent on Railroad Air Conditioning

Research advancing rail transportation is proceeding on a vast scale, according to L. W. Wallace, director of the division of equipment research of the Association of American Railroads, who declares that "the railroad industry stands on the threshold of one of the most active and fruitful eras of its history."

Pointing out that the railroads are purchasers of more than 70,000 commodities, Mr. Wallace says, in a statement explaining the aims of the division, a new arm in railroad activity.

"These many relationships mean that of the hundreds of millions of dollars spent annually for research by industries, such as steel, a measurable amount is spent directly in response to the needs of the railroads.

During the worst economic depression of national history something like $40,000,000 has been spent for the air conditioning of railroad passenger cars."

Farm Income Near Peak Despite Drought's Effect

Farm income is increasing despite drought damage, and buying power in agricultural regions is approaching a six-year peak, according to statistics by the department of agriculture and Associated Press. This condition indicates sustained buying of steel and iron products and equipment by the farm population.

Cash farm income during first half of this year is estimated at $3,291,000,000, an increase of about $335,000,000 over first half of 1935. This includes $171,000,000 of benefit payments, $115,000,000 larger than in the same period of 1935.

The larger income results from higher prices of agricultural products which are sufficient to overcome the shrinkage caused by smaller volume resulting from drought and other factors.

Equipment

Chicago—Most equipment markets are resisting the retarding influences common to this season. In a number of instances sales are below the volume of a month or two ago, but the letdown has been less than usual. The principal reason for this situation is the sustained activity among important divisions of the metalworking industry and the good outlook for these groups during succeeding months. Small tool demand has been maintained exceptionally well the past 30 days. Machine tool sales have declined but little from the peak attained earlier in the year.

Pittsburgh—Additional contracts placed by the Carnegie-Illinois Steel Corp. for a new tin plate mill at Gary, Ind., find successful bidders in the Westinghouse Electric & Mfg. Co., Mesta Machine Co., and United Engineering & Foundry Co., all of Pittsburgh. Mesta will supply the five-stand continuous four-high 42-inch cold reduction mill, which is similar to one completed in July, also for Gary. United Engineering contract covers four patented uncoilers for unwinding, two electrolytic strip cleaning and rewinding units, and four precision tin mill flying shears. Contract for all motors and controls has been placed with Westinghouse. E. W. Bliss Co. recently received contract for a five-stand cold mill, also for Gary.

Construction of Jones & Laughlin Steel Corp.'s new strip-sheet mill at South Side works, Pittsburgh, is proceeding on schedule. Mesta Machine Co. recently began shipment of the first of the machinery, but it is expected shipments will be continued over the balance of the year.

Boston—Pressure to obtain machine tools is great, due to the sold-up condition of builders. For the first time in years, leading manufacturing interests have put men on the road in New England to visit machine tool plants and see that machine tools on order are shipped with the greatest possible despatch. By "applying the heat" in these personal contacts it usually is possible to speed up delivery.

Seattle—Business continued steady with industrial activity expanding and extensive road projects under way in the Pacific Northwest. Usual requirements of mining, logging, lumbering and canneries are being filled, both new and used equipment being in good demand.

New York—No indication of any summer let-down in demand for machine tools and allied equipment has appeared. Buying continues of a universal character, and practically all companies are contributing to the volume. Railroads are showing more interest in replacing old equipment, and the New York Central and Pennsylvania have some inquiries out.

On the average, machine tools and allied equipment now cannot be bought for delivery prior to the end of September or the early part of October. Some heavy units, such as milling machines and radial drills, are sold into early 1937.

Construction and Enterprise

Ohio

CINCINNATI — City purchasing agent, H. F. Wagner, room 143, City hall, asks bids until noon, Aug. 11 for furnishing an air compressor for the department of public works.

CLEVELAND — Arthur G. McKee & Co., architect and engineer, 2422 Euclid avenue, has been awarded a contract for construction of a combination crude oil and cracking unit for the Shell Petroleum Corp. at Houston, Tex. Cost is estimated at $1,500,000.

CLEVELAND—City of Cleveland, department of public service, City hall, is completing plans for completion of the $1,800,000 sewage disposal plant. Robert Hoffman, room 518, City hall, is city engineer; and George B. Gascoigne, Leader building Cleveland, is consulting engineer.

COLUMBUS, O. — K. & R. Iron & Metal Co., 235 West Mound street, was damaged considerably by fire recently.

DAYTON, O. — Globe Tool & Engineering Co., Harry W. Moore, president, 42 Davis street, plans to construct a 1-story factory building.

ELMORE, O.—Village board of public affairs, Edward J. Avers, clerk, will complete survey and be ready for bids about Aug. 15 for converting lighting system from 25 to 60 cycles and replace private motors, and repair damages incurred by change. Cost is estimated at $28,000.

FINDLAY, O. — McComb Farmers' Co-operative association, N. G. Bennett, president, is considering plans for rebuilding grain elevator destroyed by fire recently at Hancock, near here.

LEWISBURG, O. — Village, R. G. Sever, village attorney, has made preliminary survey and will file an application for funds with which to construct a $60,000 sewage disposal plant. H. J. Derivan, Dayton, O., WPA director for district No. 5, and Steller Engineering Co., are consulting.

MARIETTA, O. — Marietta Sheet & Tin Plate Co. has acquired the old Hudson mill here formerly owned by W. F. Robertson Steel & Iron Co., Elm street, Cincinnati, and will operate the plant after purchasing $75,000 worth of equipment for the tin shop. Frank D. Sinclair, Steubenville, O., and Charles Manion, Follansbee, W. Va., are prominent in the Marietta concern.

TIFFIN, O. — Midland Wire Corp. has been formed with capital of $150,000. David R. Detwiler, Arthur A. Mueller, and Heath K. Cole, 79½ South Washington street, correspondent, are the incorporators.

WELLSVILLE, O. — City service director, Fred Gluth, probably will advertise soon for bids for improvement of the waterworks system. Morris-Knowles Co., Westinghouse building, Pittsburgh, is engineer. PWA has approved this $192,727 project.

WEST UNION, O.—Village, C. Washburn mayor, and W. S. Heer Engineering Co., 800 Broadway, Cincinnati, awaits outcome of survey on proposed $50,000 waterworks.

Michigan

BATTLE CREEK, MICH. — Postum Company, division of General Foods Corp., proposes to install conveyors, motors and controls and other equipment in two multi-story plant additions that will cost $1,000,000.

BAY CITY, MICH. — City council is considering calling for a vote on a proposed $550,000 new municipal electric light and power plant.

COOPERSVILLE, MICH. — Village proposes to construct with WPA financing totaling $32,000 a sewage disposal plant.

DETROIT — Atmosphere Furnace Co., Alfred street, has been incorporated to manufacture, by Norman J. Urquhart, 11652 Indiana street.

DETROIT — Fellolite Mfg. Co., 804-7 Hammond building, has been incorporated to manufacture molded products, by John Kahlmann, Detroiter hotel.

DETROIT — Zink-Bordik Products Inc., 2263 Penobscot building, has been incorporated to manufacture springs, by Leopold E. Zink, 5919 Three Mile drive.

DETROIT — Detroit Forging Co., 3465 Toledo avenue, Norman H. Macqueen, president, is asking bids for a new $250,000 plant. (Noted STEEL Aug. 3).

DETROIT — Vacuum Power Equipment Co., 1644 West Lafayette, C. B. Johnson, president, has secured an option on adjacent property for an addition.

DETROIT — Detroit Steel Products Co., 2250 East Grand boulevard, V. F. Dewey, president, will add 23,000 square feet of manufacturing space to its Fenestra plant for the production of steel windows and accessories.

DETROIT — Consumers Steel Products Co., L. J. Epps, vice president, 6450 East McNicholas road, plans to spend $50,000 for an addition and new equipment, including four steel storage racks having capacity of 50 tons each.

FLINT, MICH. — A. C. Spark Plug Co. is receiving bids for a factory addition.

FLINT, MICH. — City engineering department has developed plans for construction of a water softening plant that is expected to cost approximately $500,000.

GRAND RAPIDS, MICH. — Irwin Seating Co., supplier of automobile equipment, suffered damage by fire to the plant at 1840 Division avenue, South, recently.

GRAND RAPIDS, MICH. — W. B. Jarvis Co., producer of automobile radiator caps, 1501 Paris avenue, Southeast, W. B. Jarvis, president, is taking bids through Pierre Lindhout, architect, for a factory addition.

JACKSON, MICH. — Eaton Mfg. Co. plans to install a conveyor system for handling bumpers in plant expansion here. New buffing lathes and power grinders for polishing are to be purchased. Total cost is estimated at $40,000.

MIDLAND, MICH. — City engineering department has completed plans for additions to the water pumping system that may cost $90,000.

MONROE, MICH. — Monroe Auto Equipment Co. has under consideration plans for construction of a $50,000 plant addition and the purchase of new equipment.

MUSKEGON HEIGHTS, MICH. — Norge Corp. will spend more than $100,000 during the coming 90 days for expansion and improvement of the plant here, and the installation of new equipment. Harry L. Spencer is plant manager.

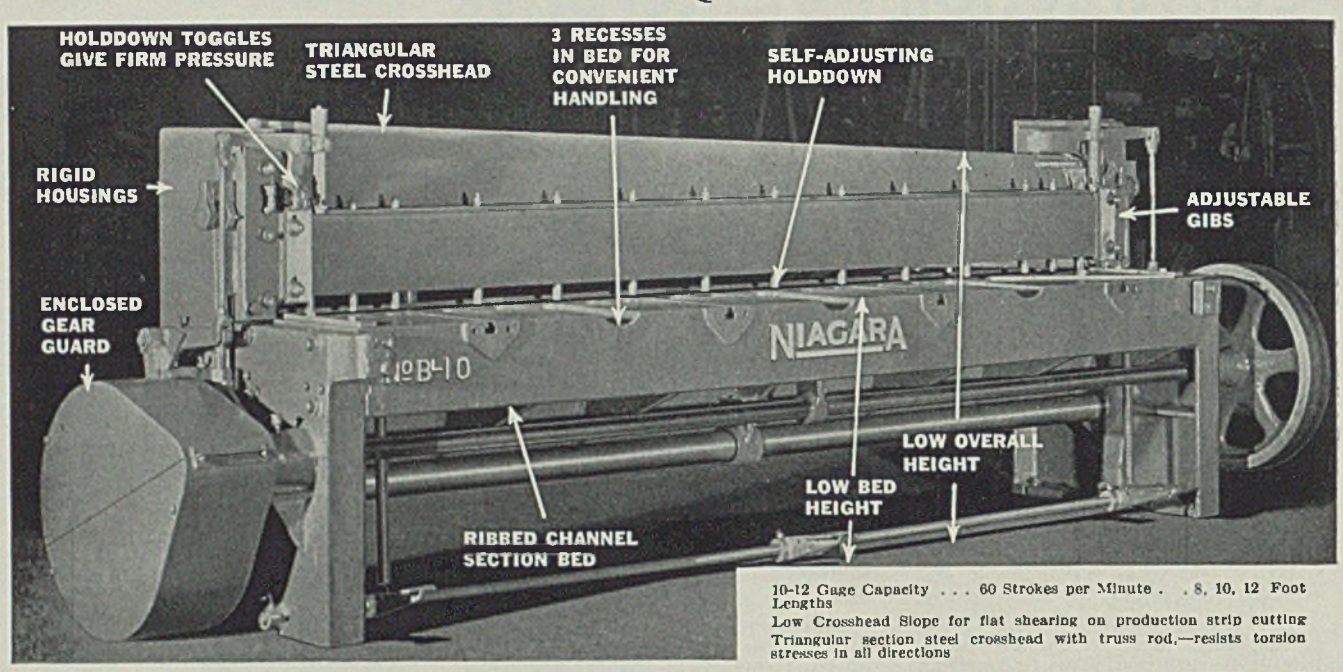
OWOSSO, MICH. — Renown Stove Co. has acquired additional foundry facilities on Washington street.

Connecticut

NEW BRITAIN, CONN. — Landers, Frary, & Clark Co., Center street, is

(*Please turn to Page* 85)

ANNOUNCING the New Series "BL" POWER SQUARING SHEARS



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(Continued from Page 83)

considering construction of a 6-story factory for the manufacture of electrical equipment and plans the installation of electric power equipment. W. F. Brooks, Gold street, Hartford, is architect for this proposed $250,000 project.

SCOTLAND, CONN. — Connecticut Light & Power Co., Hartford, Conn., may rebuild the hydroelectric generating plant damaged by the spring floods. Cost is estimated at $200,000.

New York

ALBANY, N. Y.—New York Power & Light Co., 126 State street, plans to purchase considerable equipment in remodeling the Riverside steam station at a cost of $100,000.

BUFFALO — Aluminum Corporation of America, Gulf building, Pittsburgh, will install new equipment prior to reopening Sept. 1 the second unit of the Niagara Falls plant.

DUNKIRK, N. Y. — Leeworthy Motor Co., Rupert Adams, general manager, is in the market for air compressors, a lathe, electric drills, and small tools for a new shop being equipped at Silver Creek, N. Y.

OCEAN BEACH, N. Y.—Long Island Lighting Co., 50 Church street, New York, is considering extending the transmission line; permission has been granted.

SYRACUSE, N. Y. — A. Wolfram, Hills building, is in the market for electric welding equipment.

Pennsylvania

CONEMAUGH, PA. — Franklin borough school district, H. C. Tilley, supervising principal, is in the market for a motor driven drill press, and a belt sander.

EASTON, PA. — Morlesco Tackle Block Co., Palmer township, is in the market for welding machines, transmission and conveying equipment to replace equipment damaged by a recent fire.

GLEN ROCK, PA. — Glen Rock Electric Light & Power Co. proposes to rebuild transmission lines from York Haven substation to here at an estimated cost of $23,000. P. L. Hedric is superintendent.

HARRISBURG, PA. — Commonwealth of Pennsylvania, Arthur Colegrove, secretary of property and supplies, Capitol building, accepts bids until Aug. 19 for furnishing and installing a 500-horsepower water tube boiler.

KENHORST, PA. — Borough is considering rehabilitating the waterworks. C. Smith is president of the council.

NEW BRIGHTON, PA. — Borough will ask for federal aid in financing construction of a $100,000 sewage disposal plant. Preliminary plans have been drawn by R. Steinfield, borough building, engineer.

NORTHUMBERLAND, PA. — Hannon Garage, M. Hannon, proprietor, is in the market for an air compressor, a lathe, a hoist, and small tools.

OIL CITY, PA. — Homer H. James is in the market for heavy duty gas engines, air compressors and other equipment.

PHILADELPHIA — Board of public education, Administration building, Parkway and Twenty-fifth streets, is considering spending $85,000 for a steam operated power plant in a new vocational school at Mifflin and Eighth streets.

YORK, PA. — Pennsylvania garage, M. Herman, proprietor, is in the market for complete welding equipment.

Illinois

AURORA, ILL. — All Steel Equip. Co. Inc., has purchased the Aurora Metal Cabinet Co.

CHICAGO — G. F. Wright Steel & Wire Co., 22 West Austin avenue, has leased a building at 1921 North Jefferson street, and will move its plant.

CHICAGO — Lapham Hickey Co., steel jobber, 3333 West Forty-seventh street, has purchased 24,000 square feet adjoining the plant, and plans to construct a $75,000 plant, with equipment.

PITTSFIELD, ILL. — Pike County Electric Co-Operative has plans under consideration for construction of $85,000 worth of rural electrification lines.

PITTSFIELD, ILL. — Scott County Rural Electric Co-Operative is considering spending $50,000 for rural lines.

Indiana

INDIANAPOLIS — George P. Ryan Mfg. Co. Inc., 5152 Baltimore avenue, has been formed to manufacture air cooling and ventilating equipment, with George P. Ryan, resident agent. Alfred D. Ferris and Charles E. Wilke are the other incorporators.

MARION, IND. — Construction service, Veterans administration, Washington, asks bids until Aug. 25 for furnishing and installing a deep well pump here.

Alabama

BAY MINETTE, ALA. — Alabama Power Co., Birmingham, Ala., plans to erect transmission lines to here from Silverhill, Ala., and distribution lines for rural service, totaling 100 miles.

BIRMINGHAM, ALA. — W. M. Smith & Co., (a dealer) Forty-fifth and Forty-eighth streets at First avenue, North, is in the market for jackhammer drills.

BIRMINGHAM, ALA.—W. M. Smith & Co. (dealer) Forty-fifth and Forty-eighth streets at First avenue, North, is in the market for a 100 ton hydraulic jack, and a 24-inch screw cutting lathe.

BIRMINGHAM, ALA. — W. M. Smith & Co., dealer, First avenue, North, is in the market for a 5 to 10 ton road roller.

LEEDS, ALA.—City has been granted a PWA allotment of $89,091 to construct a sewage system and purchase a sludge pump and other equipment.

MONTGOMERY, ALA.—City has been granted a PWA allotment of $99,000 to help finance construction of a $220,000 sewage plant, including the purchase of a diesel electric generator.

SHEFFIELD, ALA. — Mayor Hoyt Greer is considering plans for extensions and improvements in the recently acquired waterworks system serving Tuscumbia and Sheffield.

Delaware

WILMINGTON, DEL. — Bond Mfg. Co., maker of bottle seals, Fifth and Monroe streets, plans to construct soon a $50,000 addition. Stanhope & Mann, Equitable building, is architect.

Maryland

SALISBURY, MD.—Maryland Light & Power Co. has been authorized to construct power lines in Talbot county.

District of Columbia

WASHINGTON — Procurement division, branch of supply, federal warehouse, asks bids until Aug. 12 for deep well pumping units, inventory RA-186.

WASHINGTON — Division of purchases, sales, and traffic, department of agriculture, asks bids until Aug. 14 for

(Please turn to Page 87)

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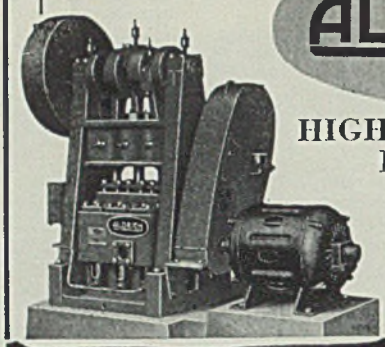

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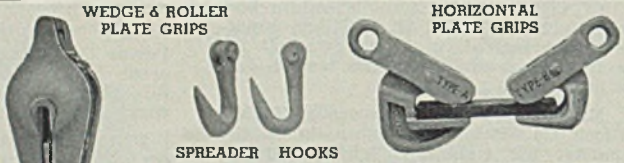

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(*Continued from Page* 85)

1 centrifugal pump delivered at Albuquerque, N. Mex., proposal 6376.

WASHINGTON — Navy department, bureau of supplies and accounts, asks bids until Aug. 11 for motor generator sets delivered Portsmouth, N. H., schedule 8528; and until Aug. 14 for miscellaneous motor generator sets, and spot welding machines delivered at Charleston, S. C., schedule 8516; a motor driven tool room precision lathe, schedule 8509; and miscellaneous four wheel type industrial tractors; schedule 8514.

Kentucky

ASHLAND, KY.—City, W. A. Kitchen mayor, plans to apply for funds with which to construct a $34,000 water and sewer system.

HENDERSON, KY. — Henderson County Rural Electric association proposes to erect $190,000 worth of rural lines in Henderson county.

LAWRENCEBURG, KY. — Municipality is considering plans for construction of a $100,000 waterworks. H. F. Bell, Lexington, Ky., is engineer.

LOUISVILLE, KY.—Henry Fischer Packing Co. plans to construct a boiler house at 1856 Melwood street.

LOUISVILLE, KY. — United States engineer, W. E. R. Covell, box 59, will accept bids until Sept. 1 for furnishing 3 welded steel dump scows with capacities of 2080 cubic yards each.

RICHMOND, KY.—District engineer, postoffice building, is in the market for a new heating boiler.

Florida

BAY PINES, FLA.—Veterans administration, construction service, 764 Arlington building, Washington, accepts bids until Aug. 18 for furnishing a diesel engine and generator set, project 1116.

LAKELAND, FLA.—Town has been granted a PWA allotment of $18,540 to help finance construction of $41,200 improvements in the municipal electric distribution system.

ORLANDO, FLA.—A-F-E-L Metal Products Inc. has been formed by N. M. Bullock and P. A. Beckett.

Georgia

ROME, GA. — Tubize Challiton Corp., 2 Park avenue, New York, is in the market for electric power equipment to be installed in a new $2,000,000 rayon mill.

SAVANNAH, GA. — Union Bag & Paper Corp., Woolworth building, New York, proposes to install electric hoists, conveyors, motors and controls and other equipment in addition to the plant here, at a cost of $2,500,000.

SCREVEN, GA.—Mayor P. D. Griffs will call for bids soon for constructing a 60,000-gallon tank on a 75-foot tower and for furnishing pumping equipment at a total cost of $20,000.

Louisiana

INDEPENDENCE, LA.—Town has been granted a PWA allotment of $7272 to purchase pumps, motors, and equipment to improve the local waterworks.

RUSTON, LA. — City, Charles C. Goyne, mayor, plans to carry out improvements in the light plant.

SHREVEPORT, LA. — American Pipe & Supply Co., 2405 Texas avenue, is in the market for 2 to 12-inch capacity motor driven pipe machines.

SHREVEPORT, LA. — City is considering construction of a 1,000,000 gallon capacity elevated storage tank in the South Highlands at a cost of $69,000. T. L. Ames is engineer.

WINNFIELD, LA.—Mansfield Hardwood Lumber Co., Shreveport, La., plans to purchase electric power equipment and replace mill recently damaged by fire. Total cost is approximately $100,000.

Mississippi

BLUE MOUNTAIN, MISS.—Town has PWA allotment of $36,363 for construction of a waterworks system. Three pumps, pumphouses, and a water storage unit are to be furnished.

LIBERTY, MISS.—Town has PWA allotment of $30,000 to finance construction of a water system.

North Carolina

CANDOR, N. C.—Town has been granted a PWA allotment of $30,909 to finance construction of water distribution system and purchase of a 75,000-gallon elevated steel tank.

RANDOLPH, and GUILFORD, N. C.—Adjoining municipalities have applied to PWA for funds with which to construct a $171,000 waterworks.

ROCKY MOUNT, N. C. — Glenview Co-Operative has received an allocation of $16,000 for erection of 16 miles of rural lines in Halifax and Nash counties.

SHELBY, N. C. — City council plans to engage an engineer to consider the feasibility of constructing a new electric light and power plant. Project is expected to cost $225,000, part of which would be PWA aid.

WASHINGTON, N. C.—City has been granted a PWA allotment of $64,500 for improving and adding to the municipal steam-electric generating station. A 2000-kilowatt turbo-generator is to be purchased.

South Carolina

CHARLESTON, S. C.—South Carolina Power Co. proposes to construct a transmission line from Calhoun Falls, S. C., to McCormick, with power substation at Calhoun Falls.

COLUMBIA, S. C.—State rural electrification director of South Carolina, with offices at 1539 Main street, will accept bids until Sept. 1 for furnishing and constructing various rural distribution lines.

LEESVILLE, S. C.—Town has been granted a PWA allotment of $54,545 to finance construction of a pumphouse and purchase of necessary equipment.

Tennessee

CLARKSVILLE, TENN.—City has been granted a PWA allotment of $49,500 to help finance construction of a $110,000 waterworks improvement that includes purchase of five pumps.

KNOXVILLE, TENN.—University of Tennessee has been granted a PWA allotment of $54,000 to make improvements in the power and heating plant that may cost $120,000. A new boiler is to be added.

KNOXVILLE, TENN. — Tennessee Valley authority plans to erect a line between Norris dam and the Alcoa plant of Aluminum Company of America and from the Santeetlah dam, owned by Aluminum company, to Fowler Bend dam.

MEMPHIS, TENN.—Armour & Co., Chicago, proposes to install new conveyors, motors and controls and other equipment in expanding the meat packing plant here. Henry J. Kramer, 1756 Vinton avenue, is associate architect for this $100,000 project.

West Virginia

BERKLEY SPRINGS, W. VA. — Angle Rolling Mill was damaged by fire recently. Mill is operated by Guy Angle, Clearsprings, Md.

HUNTINGTON, W. VA.—International Nickel Co., Robert G. Stanley, presi-

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(*Concluded from Page 87*)

dent, 67 Wall street, New York, proposes to erect a 25-ton open-hearth furnace here.

PHILIPPI, W. VA. — Barbour Power Co. seeks permission from the public utilities commission to provide additional electrical service.

Virginia

NORFOLK, VA. — Prest-O-Lite Co. Inc., 30 East Forty-second street, New York, maker of steel gas cylinders, and a subsidiary of Union Carbide & Carbon Corp., plans to install electric power equipment in a new $200,000 factory to be built on a recently-acquired 5-acre site.

WEST POINT, VA. — Mayor J. L. Bland accepts bids until Aug. 10 for furnishing a deep well turbine pump and construction of a pumphouse. R. Stuart Royer, Richmond, Va., is consulting engineer.

Missouri

COLUMBIA, MO. — City plans to extend and improve electric power plant, and may purchase a new 5000 kilowatt steam turbogenerator and other equipment at a cost of $280,000. Burns & McDonnell Engineering Co., 107 West Linwood boulevard, Kansas City, Mo., is consulting. (Noted STEEL July 27).

GOLDEN CITY, MO. — City has approved issuance of $30,000 worth of bonds for waterworks system. WPA is furnishing $35,000.

ST. LOUIS — Standard Radiator Mfg. Co. has been incorporated. Harry Huber, 6250 Clemens, and Phillip Schneider are prominent in the company.

ST. LOUIS — Board of public service, City hall, rejected bids of June 17 and calls for new bids for furnishing direct current motors and rock handling equipment for the city workhouse quarry, on Merramac street. W. C. Becker is city engineer.

ST. MARY'S, MO. — City will vote Aug. 4 on construction of proposed waterworks that may cost $30,000. Russell & Axon, Roosevelt Hotel building, St. Louis, is engineer.

Arkansas

BATESVILLE, ARK. — Wilbur Thomas, Vicksburg, Miss., is considering installing an electric furnace and constructing a ferromanganese plant at Crocker's Spur, near here. John W. O'Bannon, New Orleans, is consulting geologist; and Ford, Bacon, & Davis, 39 Broadway, New York, may be construction engineer.

BENTON, ARK.—Municipality has PWA allotment of $38,182 for extensions and improvements in the waterworks system, including installation of a 750 gallons per minute pump with motor.

HAMPTON, ARK.—Town has been granted a PWA allotment of $27,273 for construction of a complete waterworks, including furnishing a deep well pump and a 50,000-gallon tank and tower.

MARIANNA, ARK.—Improvement district No. 2, Lee county, has been granted a PWA allotment of $6,137 to help finance construction of a 100,000-gallon tank and tower estimated to cost $13,637.

MOUNTAIN HOME, ARK.—Town has been granted a PWA allotment of $34,545 for construction of a complete waterworks, including purchase of an electrically driven deep well pump.

Oklahoma

OKLAHOMA CITY, OKLA. — General Machine Works Inc., has been incorporated. John O. Schuster, and F. M. Owen, 36 Southeast Thirty-eighth street, are prominent in the firm.

TALIHINA, OKLA. — Purchasing officer, department of interior, Washington, asks bids until Aug. 21 for a steam generator plant for a new hospital, proposal 1613.

TULSA, OKLA. — Boone Pump Co. has been formed with capitalization of $10,000. G. Fred Jones and B. M. Jones, 728 South Quincy, are prominent in the company.

Texas

BELFALLS, TEX. — Belfalls Light & Power Co., Bartlett, Tex., has a loan from rural electrification administration for $452,000 with which to construct 300 miles of rural distribution lines and a generating plant to serve Bell, Milan and Falls counties.

HOUSTON, TEX. — Houston Machinery Co., 3119 Navigation boulevard, is in the market for a 300 kilowatt, alternating current generator.

Wisconsin

MILWAUKEE — Schlitz Brewing Co., West Galena street, expects to construct a 4-story addition and install electric power equipment, mechanical handling devices, and other equipment at a total cost of approximately $350,000. Lawrence E. Peterson, 312 East Wisconsin avenue, is engineer.

SHEBOYGAN, WIS.—Board of public works closes bids Aug. 14 for construction of two pumping stations and a new $1,250,000 sewage disposal system. Jerry Donohue Engineering Co., 735 North Water street, is supervising.

Minnesota

DULUTH, MINN. — Board of public utilities commission, City hall, Ernest A. Bodin, chairman, is considering construction of a $3,000,000 municipal light and steam power plant for the East end. Federal aid will be sought. Charles Foster, Medical Arts building, is consulting engineer.

ROCHESTER, MINN. — Peoples Co-Operative Power Association of Olmsted county, H. C. Blumentrill, president, has applied to rural electrification administration for funds with which to erect $50,000 worth of power lines.

Montana

DILLON, MONT. — R. B. Gaswell has applied to the federal power commission for a permit to construct a transmission line in Beaverhead county.

Idaho

BOISE, IDAHO — A. L. Senger, 1101 North Twentieth street, is considering construction of a power project in Beaverhead county.

Iowa

ANAMOSA, IOWA — Iowa Electric Co., Cedar Rapids, Iowa, may install a new turbogenerating unit and other equipment at Anamosa dam, Wapsipinicon river; also may build new transmission lines.

KEOKUK, IOWA — Quincy Foundry & Novelty Co. will be the new name of a foundry to be moved from Quincy, Ill., here. John C. Kuchera and E. L. Moellering are the owners.

Arizona

PRESCOTT, ARIZ. — Arizona Power Corp. has applied to federal power commission for a license to erect a transmission line in Yavapai county affecting Prescott National forest.

Pacific Coast

FORT JONES, CALIF. — F. D. Stables has applied to the federal power commission for a permit to construct a power project on Canyon creek, Siskiyou county, affecting the Klamath National forest.

LEEVINING, CALIF. — H. L. Killian has applied to the federal power commission for a permit to construct a power project on Fern creek in Monor county.

LOS ANGELES — A 1-story shop building will be added to William McKinley Jr. High school, 885 East Forty-fifth street.

LOS ANGELES — Metropolitan water district will receive bids until Aug. 27 for furnishing 3 pumps each capable of handling 200 cubic feet of water per second for the Hayfield pumping station on the Colorado River aqueduct. Later six additional pumps will be purchased.

MODESTO, CALIF. — City, H. E. Gregg clerk, proposes to appropriate funds with which to construct a new $10,000 pumping station.

OAKLAND, CALIF. — Sisson Gold Mining Co., 312 Oakland Theater building, has applied to federal power commission for preliminary permit for the construction of a power project on the Middle Fork of the North Fork of North Yuba river in Sierra county, affecting Tahoe National forest.

RIVERSIDE, CALIF. — Southern Sierra Power Co., here, and Yuma Utilities Co., Yuma, Ariz., has applied to federal power commission for a permit to construct a transmission line in Riverside county, and in Yuma.

SAN LEANDRO, CALIF. — Standard Trailer Co., Elmhurst, Calif., plans to construct a 1-story, 50 x 125 foot shop building on San Leandro boulevard.

SANSALITO, CALIF. — American Distillery Co. plans to install electric power equipment in a new addition. Total cost estimated at $100,000.

WILLARD, WASH. — Broughton Lumber Co. has applied to the federal power commission for a license to construct a power project on the Little White Salmon river in Skamania county.

Canada

EDMONTON, ALTA. — Municipality plans to spend $16,000 for improvements in the electric light plant, and $15,000 for waterworks additions.

GLACE BAY, N. S. — Dominion Steel & Coal Corp. is in the market for a 1,000 volt turbogenerator. J. J. Kelley is general manager.

SAULT STE. MARIE, ONT. — Great Lakes Power Co. Ltd. is in the market for equipment for a power house. Total expenditures are estimated at $1,000,000.

HOONAH, ALASKA — H. Kan is considering construction of a power project near Port Frederick, Chichafog island.