STEEL

PRODUCTION • PROCESSING • DISTRIBUTION • USE

For forty-eight years—IRON TRADE REVIEW

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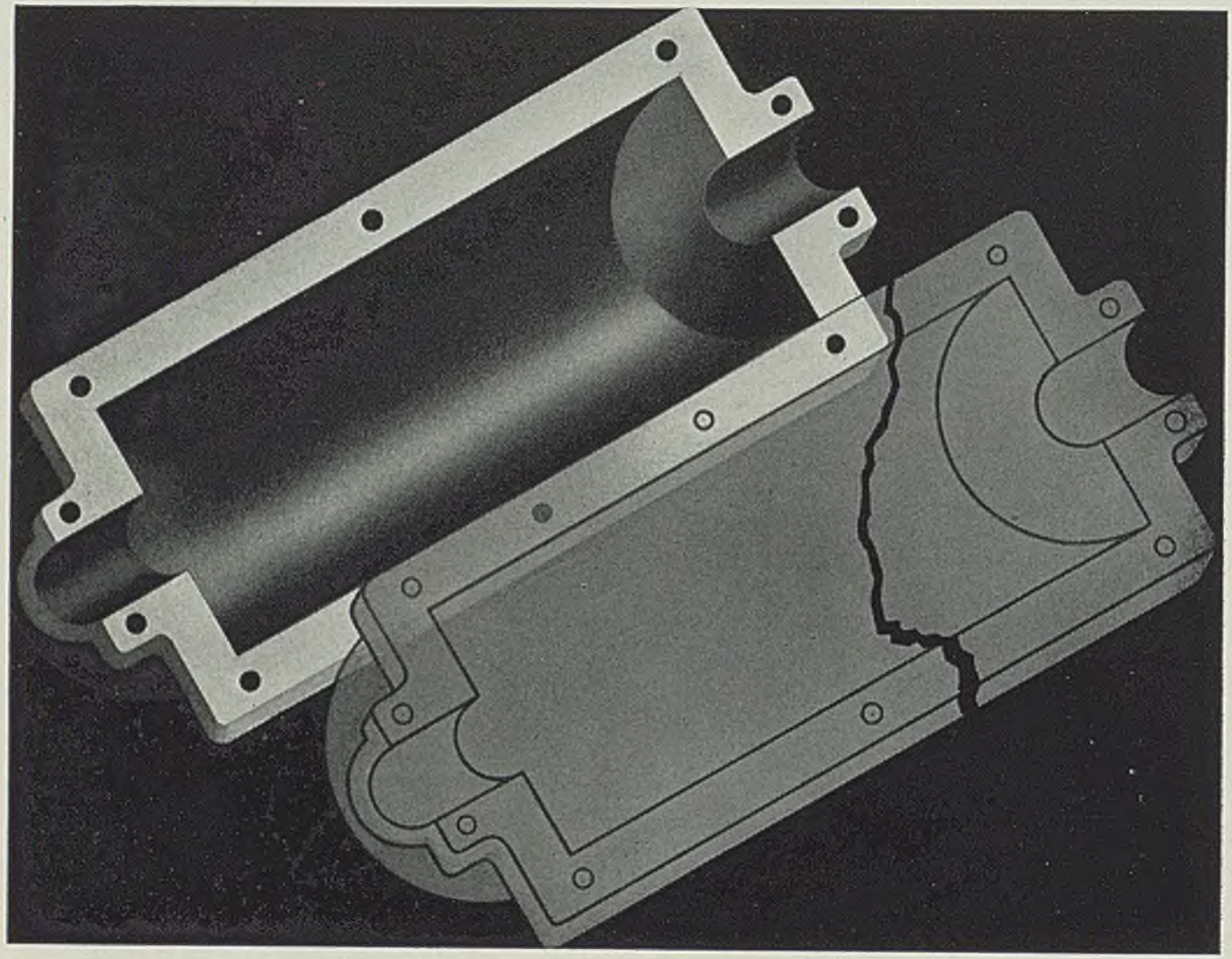
"At last! . . . and MOLY did it!"



WHERE is the foundryman who has not encountered difficulties with malleable-iron castings due to primary graphite — especially in parts where coring prevents rapid cooling of heavy sections?

A founder of housings for a piece of apparatus subject to high-pressure loads had such a problem. Coring was complicated and sections were heavy. Rejects were 100%.

The addition of .35% Moly corrected the trouble after everything else had failed. Rejects ceased. Moly not only made production possible, but made the castings even better than had been anticipated.

Your cast-iron problems may be different. They may involve matters of increased toughness, or resistance to heat, or merely the production of high-test iron. In any case, it will pay you to investigate Moly — "industry's most versatile alloy."

Our technical book, "Molybdenum," is full of practical information. Our periodical news-sheet, "The Moly Matrix," keeps you informed as to the latest developments in Moly irons and steels. They and the help of our experimental laboratory are yours for the asking. Climax Molybdenum Company, 500 Fifth Avenue, New York City.

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CUTS COSTS

CREATES SALES

STEEL
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As the Editor Views the News

IN HIS acceptance speech, the Republican candidate for President was more specific in his interpretation of the party's labor plank than on any other issue. He said, "The right of labor to organize means to me the right of employes to join any type of union they prefer, whether it covers their plant, their craft or their industry. It means that, in the absence of a union contract, an employe has an equal right to join a union or to refuse to join a union." Here is recognition of the rights of 36,000,000 workers whose interests are ignored in the labor policy of the present administration.

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Plays No Favorites

Governor Landon thus approves employe representative plans for employes who desire that form of collective bargaining and also recognizes the predicament of the millions who do not wish to belong to a union of any kind. Further, he interprets the platform pledge to protect employes "from interference from any source" to mean "entire freedom from coercion or intimidation by the employer, any fellow employe or any other person." This promises protection against intimidation by professional labor union representatives—a needed protection that is ignored and neglected by the new deal administration. The Landon policy plays no favorites.

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Best Year Since 1929?

Improved earnings, as indicated by the first returns for the second quarter issued by companies in the metalworking industry (p. 16), reflect the high rate of activity which extended through April, May and June. The record for seven months has been so good that if steel production averages only 50 per cent of capacity over the remainder of the year (p. 15) the total for the 12 months will make 1936 the best steel year since 1929. Also it is probable that the 1936 trend line of steelworks operations will cross the 1929 line sometime in November or December. At the end of July, no signs of a marked summer recession have appeared (p. 30) although it is likely that a moderately easier tone may develop in August. July has rounded out four consecutive months of unusual business stability at high levels.

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Can You Use Plastics?

Manufacturers of numerous metal products owe it to themselves to become familiar with the application of plastics. Cast phenolic parts (p. 32) and other types of plastics are well adapted to use in combination with ferrous and nonferrous metals. The metalworking industry can well afford to regard these popular new nonmetallic materials as complementary or supplementary to the metals, instead of as competitive to them. Plastics fit into the production scheme readily, inasmuch as they can be machined on equipment already installed for soft metals or wood . . . . Do not overlook the fact that adhesives have a definite place in certain phases of assembly. Modern adhesives provide fastenings of surprising strength (p. 38) which sometimes serve a purpose that cannot be satisfied by mechanical connections.

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Don't Overlook Little Things

Designers, engineers and others who have tried to reproduce the bluish green patina that forms on copper after long exposure to the weather will welcome the information that this much desired architectural effect (p. 42) can be produced by a rapid electrolytic process . . . . When wires in the suspension cables of the Mt. Hope bridge failed in 1929, industry wondered whether the fault lay in materials or design. An exhaustive investigation (p. 57) shows that the root of the trouble was largely in the preforming of the wire to the curvature of the anchorage shoes. As a result of inaccurate preforming, low bending stresses, rather than high tensile stresses, contributed to the failure. The incident demonstrates the importance of watching minor details closely.

E. L. Shaner

Steel Adopts Basic 8-Hour Day; More Demands Made

WITH steel demand displaying unusual strength — more so than in any midsummer period since pre-depression years — producers last week re-established the basic eight-hour day, effective Aug. 1, providing for overtime payments.

More requests for wage increases in the higher-paid brackets of steel plant labor, with a minimum of $5 a day for common labor, have been presented by employe representatives, the former contemplating a raise of $1 a day. Reports from Pennsylvania and Chicago districts that demands have been made on Carnegie-Illinois Steel Corp. for a 20 per cent advance for skilled workers are denied.

Effect On Payrolls Slight

The overtime plan is not likely to be reflected to any important extent in payrolls this year, according to leading interests. At present it is doubtful if the average number of hours worked by steel employes is much over 40 hours a week. National Industrial Conference board estimated that in May steel employes worked 40½ hours a week, and May was an unusually active month, with 70.9 per cent operations.

However, once operations begin to approach capacity, payrolls will increase substantially. The average hourly wage for common labor now is 44 cents an hour. Working ten hours, the employe would receive $4.40 per day. Working eight hours at 44 cents, and two more at time and a half he would be paid $4.84—equivalent to a 10 per cent increase.

The United States Steel Corp. inaugurated a basic eight-hour day with time and a half for overtime Oct. 1, 1918 and continued it in effect until July, 1921, through the most active period of the post-war demand for steel. The 12-hour day was abolished in August, 1923.

The Steel corporation's announcement last Thursday resulted from several weeks negotiations with employe representative groups. The time and a half applies to employes working more than eight hours a day or more than six days in a regular working week, and only when the overtime in any one day exceeds 15 minutes. It will apply to hourly, piece work or tonnage rates.

Representatives of the Homestead, Pa., employes accepted the arrangement, but are understood to have reserved the right to continue to bargain for time and a half for all time over 40 hours a week, and double pay for Sundays.

Inland Steel Co., Youngstown Sheet & Tube Co., Jones & Laughlin Steel Corp., and Republic Steel Corp. promptly announced overtime schedules the same as the Steel corporation's. Bethlehem Steel Corp. has had a schedule of overtime payments in effect since 1918. As a result of recent negotiations with employe representatives, however, the schedule has been amended in some details, though providing for time and a half for more than eight-hours a day, and more than six days a week.

Recently, the sheet and tin plate mill workers in the Amalgamated Association of Iron, Steel and Tin Workers accepted a 2 per cent wage increase from those mills with which they have contracts, although they had demanded 15 per cent.

While the common labor rate in the steel industry is generally used as a basis for wage comparisons, average earnings per hour are over 70 cents. The figure for 1934 was 70.2 cents; 1935, 72.3 cents, and 1936 undoubtedly will show a still higher average.

Making some comparisons on the basis of department of labor figures, the American Iron and Steel institute pointed out that steel employes earned an average of $26 38 weekly in March. Bituminous coal miners—dominated by John L. Lewis—earned $22.19, and the anthracite miners, $23.58. In the machinery industry the average was $24.80, and in nonferrous metals $22.17. The average for major manufacturing industries was $22.25.

CIO Attendance Low

As the CIO continues its organization drive it is becoming more apparent that its meetings are not producing results expected. Although the CIO reported 3000 of the Carnegie-Illinois corporation's 5000 workers at Clairton, Pa., had enrolled, only 500, including women and children, attended the mass meeting in that city July 19 when some of the CIO's ace performers were scheduled to speak. A week ago the CIO claimed 3000 new members from the South Chicago plant at Carnegie-Illinois. Observers at a mass meeting, attended by about 300, however, reported the signing of only 50 to 75 workers.

Bulk cargo vessels in the Lake Carriers association—and this asso-

Steel's Common Labor Rates

	Wages for 10 hrs.	Per cent advance or reduction
1915	$2.00	....
Feb. 1, 1916	2.20	+10
May 1, 1916	2.50	+13.6
Dec. 15, 1916	2.75	+10
May 1, 1917	3.00	+ 9
Oct. 1, 1917	3.30	+10
April 16, 1918	3.80	+15
Aug. 1, 1918	4.20	+10.5
Oct. 1, 1918	4.62	+10
Feb. 1, 1920	5.06	+10
May 16, 1921	4.05	−20
July 16, 1921	3.70	− 8.6
Aug. 29, 1921	3.00	−18.9
Sept. 1, 1922	3.60	+20
April 16, 1923	4.00	+11
Aug., 1923	4.40	+10
Oct. 1, 1931	3.95	−10
May 16, 1932	3.35	−15
Aug. 19, 1933 (code)	4.00	+1.94
April 1, 1934	4.40	+10
*Aug. 1, 1936	4.84	+10

*On basis of time and a half for work over eight hours.

Freedom from Coercion—for All, Says Landon

THE principal of freedom for workers, to join or not to join a union, and to be free from coercion, from any and all sources, was clearly enunciated by Governor Landon in his acceptance speech.

He specifically pledged protection for the worker who does not choose to ally himself with an organization. Interpreting the Republican platform, he said:

"The right of labor to organize means to me the right of employes to join any type of union they prefer, whether it covers their plant, their craft or their industry. It means that in the absence of a union contract, an employe has an equal right to join a union or to refuse to join a union.

"Under all circumstances, so states the Republican platform, employes are to be free from interference from any source, which means, as I read it, entire freedom from coercion or intimidation by the employer, any fellow employe or any other person.

"The government must maintain itself in the position of an umpire: First, to protect the public interest, and second, to act as a mediator between conflicting groups. One of the greatest problems of this country is to develop effective methods of conciliation."

ciation represents 75 per cent of the total of such vessels on the Great Lakes—are not affected by the announcement from the International Seamen's union last week that 5000 seamen on lake passenger and freight boats will receive a 5 per cent wage increase Aug. 1. No demands have been presented to the association or its members.

Employment in the steel industry has shown a sharp upward trend in the past 60 years, and has increased more rapidly than has employment in all other manufacturing industries, the American Iron and Steel institute has calculated from records of the federal census of manufactures.

In 1879 a total of 140,798 wage earners were employed in blast furnaces, steel works and rolling mills, the census figures show. In May of this year almost 492,000 were employed in iron and steel plants, of whom 445,800 were wage-earnings employes.

Employment in the industry this spring thus exceeds the number at work in 1929, when total employment was estimated at 460,000, on the basis of the number of wage earners shown for that year in the census.

Since 1879 employment in the steel industry has increased at an average rate of 3.1 per cent per year, while employment in all other industries has increased at an average annual rate of 2.7 per cent.

Metal Trades Employment Up

Metalworking employment increased during June for the twelfth consecutive month, according to the National Metal Trades association. Last month's index was 85.7, compared with 83.6 in May and 68.7 a year ago. In June, 1933 the index was 51.4. Employment recently was at the highest level in six years. The association's index is based on the 1925-1927 monthly average.

Ferro Enamel Raises Wages

Ferro Enamel Corp., Cleveland, which recently granted vacations with pay to all shop workers, last week announced a general increase of 5 per cent in wages and salaries for all employes, effective July 1. R. A. Weaver, president, also announced that tonnage shipments during the past six months exceed all previous records for the company.

Closed Shop Strike "Legal"

National labor relations board, Washington, has ruled that a strike to enforce the closed shop on an employer is legal, in a decision ordering the Alaska Juneau Gold Mining Co. to end "coercion" of its employes.

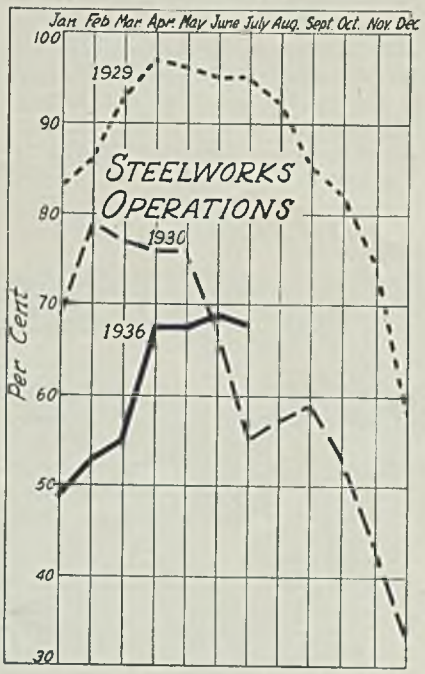
Five Months at 50% and Steel Output Will Beat 1930

SEVEN months of the year have practically elapsed, and with steelworks operations continuing close to 70 per cent, indications point to 1936 making a better record in production than 1930.

It needs now only an operating average of 50 per cent for the remaining five months for the steel industry to say "best since 1929." Barring serious labor trouble, this now seems probable of attainment.

Seven months steel ingot output, with July estimated, shows 25,311,180 gross tons, compared with 26,500,839 gross tons in the first seven months last year.

In 1930 there was a precipitous fall in the latter part of the year and only 12,785,448 tons was produced in the final five months. The total for the 12 months was 39,286,287 tons. Only 13,975,107 tons are required between now and Dec. 31, or 2,795,021 tons per month, to equal 1930. So far the average monthly output this year has been 3,615,883 tons and the average operating rate with July estimated, 63 per cent.



Monthly average steelworks operating rates charted, indicating possibility of 1936 making a better record than 1930, and crossing the line of the 1929 production rate

In every year from 1929 to 1934, inclusive, the curve of production showed a substantial falling off in the last half. In 1935 this condition was reversed as demand rose near the close to approximately the highest level attained in the year.

Much of this change of seasonal form is attributed to introduction of new automobile models last fall. Nearly 3,000,000 cars have been made so far this year, compared with 3,946,934 in all 1935. Car output in the last five months of 1935 averaged 279,314 monthly. This year to date it has averaged about 420,395. A sales record somewhere between these two figures over the remainder of the year would insure strong support to steel production from the automobile industry.

Taking account of the general upward movement of business in many lines, in defiance of the usual depressing influence of a presidential campaign year, it appears that factors of improvement are stronger than those of decline.

Ships Taking Many Plates

Shipbuilding is at a higher rate than for many years, craft under contract at present, for which steel is to be placed shortly, will require more than 100,000 tons of plates, with many additional tons for equipment. Further ship tonnage is on inquiry. Railroad equipment buying has been large and continues at a fair rate, steel for this purpose being placed with mills as it is needed. Further buying of rails is expected during the closing months.

Demand for sheets for containers has been heavy all year and promises to continue near capacity. Vegetable and fish packs are large and beer containers are contributing an increasing tonnage to the sheet market as new adaptations are developed.

Structural work is increasing and projects already under way will require additional tonnages for completion. Every outlet for steel of which account can be taken promises continuance or increase as the year continues to its close.

It is possible that the curve of steelworks operations toward the close of 1936 will cross the line representing the curve for 1929. In that year steelworks operations Aug. 1 were slightly above 95 per cent and from then until Dec. 31 the downward sweep of decline was fairly near a straight line, to a little above 45 per cent as the year ended.

New Complex Tax Laws Delay Earnings Report

SECOND quarter earnings statements by iron and steel manufacturers and metalworking companies generally are expected to show substantial improvement over those for the first quarter, reflecting the higher rate of operations. A few steel returns are in, but compilation of statements for the period is later than usual, owing mainly to the complexities of the new tax laws.

Corporations now have to contend not only with the normal income tax, and the amendments made by congress at its last session, but with the "surtax on undistributed profits," never before contained in any revenue act, in addition to the need for setting up payments for social security.

In place of the 1934 act's 12½ to 15 per cent income tax 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.

Corporations Penalized

On top of this, undistributed 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.

This latter tax is a penalty against the corporations for non-distribution of annual earnings. However, 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 new taxes have not only set auditing departments working overtime, but have involved broad policies of management. According to some corporations, if they comply with the law, paying out dividends under threat of heavy penalties, many of them would be forced out of business in another depression similar to the last one.

In some quarters it is believed large disbursements will be the inevitable consequence of the surtax on undistributed profits. Certain concerns will have to hold onto money for capital expenditures, whether they want to or not, and be penalized.

It is pointed out that some companies 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 and might not object. The government, it is presumed, is likely to consider many such devices as legal, so long as taxes are not greatly diminished. More money may be paid out for business promotion.

EARNING STATEMENTS

Youngstown Sheet & Tube Co. showed a net profit, after all charges but without deduction for federal surtax on undistributed profits, of $2,588,089 for the second quarter of 1936, compared to $1,897,299 for the first quarter of 1936, and $124,758 for the second quarter of 1935.

Net profits for the first half of 1936 amounted to $4,485,388, compared to a net loss of $471,012 for the first half of 1935.

Cash and marketable securities, valued at the lower of cost or market, as of June 30, amounted to $7,776,441.18, and the ratio of current assets to current liabilities was 6.92 to 1. Preferred dividend payable July 1, amounting to $206,250 was paid on that date. Total preferred dividends in arrears June 30 amounted to $2,887,500.

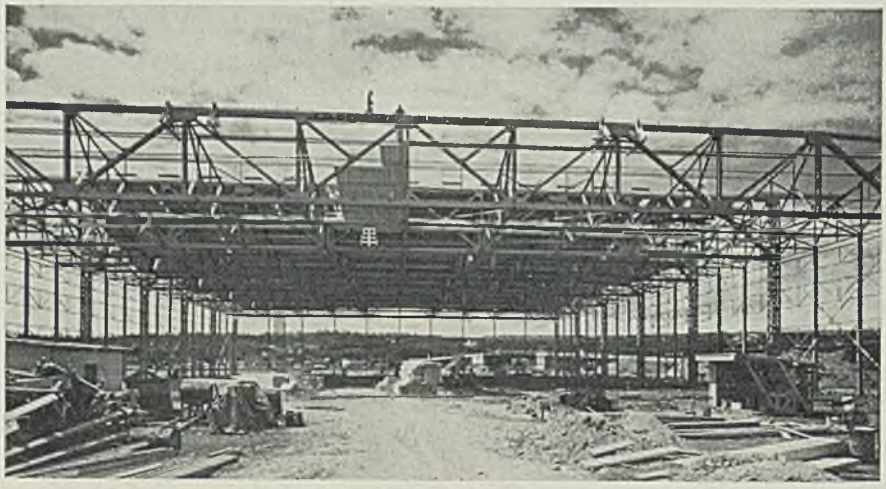
Report of Interlake Iron Corp., Chicago, for the quarter ended June 30, subject to adjustment, shows net loss of $48,978. This compares with net profit of $17,301 in the preceding quarter and net loss of $345,221 in June quarter of 1935. For the half ended June 30, indicated net loss, as compiled from company's quarterly reports, was $31,677, comparing with net loss of $411,773 in 1935.

National Malleable & Steel Castings Co., Cleveland, reports sharp improvement in business for the second quarter. Net profit for the half year ended June 30 was $657,393, equal to about $1.35 a share. Of this $471,338 was earned the second quarter.

Harbison-Walker Refractories Co., Pittsburgh, reports for the quarter ended June 30, an estimated net earnings of $807,700, equal to 55 cents a share, after dividends on preferred stock. This compares with a net of $316,200 or 20 cents a share in the same quarter of 1935. For the year ended June 30, the estimated net earnings were $2,370,700, equal to $1.50 a share on common after dividends on the preferred.

Acme Steel Co., Chicago, reports for the quarter ended June 30, net profit of $513,774, equivalent to $1.57 a share. This compares with $333,348 or

Huge Steel Girders and Doors in Boeing Assembly Plant



STEEL girders span a distance of 204 feet in this new Boeing Aircraft Co. assembly plant at Boeing field, Seattle. Six hundred tons of structural steel is being used in the project, designed, constructed by The Austin Co., Cleveland. This view, from the front, where steel doors operating on an outrigger track system will provide an opening 35 feet high and 195 feet wide, shows the unbroken area of 2,100,000 cubic feet provided to accommodate nine 4-engine Boeing 299 bombers at one time. Continuous bands of horizontal sash will extend around sides and back

$1.01 a share, in the second quarter last year. In the first quarter the company reported net profit of $391,853 or $1.19 a share. The indicated net profit for the six months ended June 30 this year was $905,627 as against $935,338 in 1935.

Sharon Steel Corp., Sharon, Pa., has net of $268,335 the second quarter, against the first quarter net of $212,615.

Pittsburgh Screw & Bolt Corp., Pittsburgh, reports net profit of $501,522 for the first half of 1936, compared with net loss of $83,932 in the first half of 1935.

Chain Belt Co., Milwaukee, declared a dividend of 62.5 cents a share, payable Aug. 15, to stockholders of record Aug. 1. This compares with payments of 50 cents a share on May 15 and 30 cents on Feb. 15, making the total for the year to date $1.425. In 1935 the total dividends for the year amounted to $1.30. The company only has common stock outstanding.

Spicer Mfg. Corp., Toledo, O., reports profit of $694,716 for six months ended June 30, after ordinary taxes, depreciation etc., but before federal income taxes, compared with profit of $249,449 in the first half 1935. The indicated profit for the second quarter was $387,936, before federal taxes, comparing with $306,780 in the preceding quarter, and $114,503 in June quarter of the previous year.

Rebellion in Spain Strengthens Foreign Ore Prices in United States

SO FAR the Spanish rebellion has had no influence on the foreign ore market in the United States, apart from strengthening prices. Importers of Spanish ores here have been unable to get in communication with their foreign offices and precisely what the situation is and what may be reasonably expected is not known.

Should the rebellion be prolonged, it would undoubtedly increase prices of ore, with consumers in this country affected more by increases in prices of ores from other countries than by price advances on ore from Spain and its North African territory. Only a limited amount of the latter material is coming into this country at the present time.

A fair amount of Riff ore is imported from Spanish North Africa, and two cargoes of manganiferous ore have reached this continent so far this year from the same region. These two have gone to Canada. Few if any shipments of foundry ore produced in the Spanish mainland have been received recently in the United States. Practically all of this Spanish foundry ore has been moving to Germany. Should the trouble in Spain be prolonged this would undoubtedly force Germany to turn elsewhere for its supplies, presumably to Sweden and Russia. England is a large consumer of Riff ore from Spanish North Africa, England would probably be forced likewise to turn elsewhere. All of this naturally would affect the world markets and in turn prices that would have to be paid by American consumers on shipments here.

One notable feature of the present situation in Spain, however, is to be found in fluorspar. Due to strikes in the Spanish mines a few weeks ago supplies from this source have become scarce. As a result of this and continued heavy consumption of German fluorspar by Germany herself, which has permitted relatively little fluorspar to leave the country, American prices on imported fluorspar were only recently advanced $1 a ton. This civil strife in Spain has tended to accentuate the strength of the fluorspar market and if continued for any length of time will result in further price increases.

Meanwhile, the rebellion in Spain to date has had little effect on foreign currencies in general. The British pound sterling is the usual medium in ore transactions. This is explained largely by the fact that too little time has elapsed since the outbreak of hostilities.

Iron Deposits Found

Coincident with disturbing reports from Spain is word from Argentina pointing to the possible early development of extensive iron deposits in the north central part of that republic—in the Aguada Del Monte region of Cordoba province and Salta province.

Investigation recently by mining engineers of reputed prominence in Argentina has disclosed the commercial importance of hematite and limonite deposits, which average 46 to 48 per cent iron. They are said to be devoid of phosphorus and sulphur close enough to the surface to be easily mined and are within easy haulage to the railroads.

As a result of these investigations of ore, the presence of which has been known for some time, a wave of enthusiasm, it is said, is sweeping Argentina over prospects of developing a steel industry in that country. Incidentally, it is understood that Argentina has large quantities of scrap iron at hand, none having been permitted to leave the country since 1930.

Stainless Steel Letters on 3-Story Enameled Front

PORCELAIN enameled sheets, stainless steel, and luminous tubing are combined in this new main facade of Ohrbach's store, Broadway at Thirteenth street, New York. Squares of ivory-tinted sheets, with green stripes at the joints, rise from street entrance to the third floor. Decorative insets are dark green porcelain enamel, with corresponding luminous tubing. Letters are formed of stainless steel. The porcelain enamel work is on 16 gage ingot iron, manufactured by American Rolling Mill Co., Middletown, O.

Great Britain To Remain in Cartel

CONTINUANCE of British participation in the international steel cartel until 1940 has been assured by agreements reached at a conference in Paris of the co-ordinating committee on exportation of bars, following the Brussels agreement on plates.

The five-year agreement signed a year ago was subject to termination Aug. 8, this year, pending accords on export quotas and prices of various steel products.

After long negotiations between the British Iron and Steel federation and the international steel cartel, which included steelmakers in France, Germany, Belgium, Luxemburg and some of the smaller countries, an agreement was reached about the middle of 1935 by which Great Britain became signatory. Formal acceptance was announced as of Aug. 8, 1935, with the first year to be a trial period.

It was provided that in the first 12 months steel imports from cartel countries into England should not exceed 670,000 tons and for the four succeeding years 525,000 tons annually. Conditions in England improved so rapidly that its mills were unable to produce sufficient semifinished steel to supply demand, and the quota of semifinished products was increased from 21,000 tons per month to 65,000 tons.

At the same time the quotas were fixed it was agreed that tariff on the steel should not exceed 20 per cent ad valorem, a sharp reduction.

No action apparently has been taken by American steel industry on the invitation from British steelmakers to join the cartel.

Meetings

AMERICAN GEAR MANUFACTURERS association announces that its nineteenth semi-annual meeting will be held aboard the S. S. SEEANDBEE, sailing from Chicago Tuesday morning, Sept. 8, and arriving in Cleveland, Thursday evening, Sept. 10. The program will combine entertainment with business sessions. J. C. McQuiston, Penn Lincoln hotel, Wilkinsburg, Pa., is manager-secretary of the association.

BRITISH INSTITUTE TO MEET IN GERMANY AND FRANCE

British Iron and Steel institute will conduct its autumn meeting in Dusseldorf, Germany, Sept. 21-26, by invitation of the Verein Deutscher Eisenhuttenleute acting on behalf of the German iron and steel industry. During and following the meeting, visits will be made to plants in various districts of Germany. K. Headlam-Morley, 28 Victoria street, London, S. W. 1, is secretary of the institute.

By invitation of the Bureau International des Applications de l' Aluminium with co-operation of the Chambre Syndicale des Metaux a Paris, the British Institute of Metals will hold its twenty-eighth autumn meeting in Paris, Sept. 14-18. Plant visits and excursions will constitute a part of the program. G. Shaw Scott, 36, Victoria street, Westminster, London, S. W. 1, is secretary.

INTERNATIONAL CONSTRUCTION CONFERENCE IN BERLIN

The fifth international conference on steel construction has been called to meet in Berlin Oct. 2, 5 and 7. This is an organization composed of the various national steel associations. The American Institute of Steel Construction Inc. is the member from the United States. Meeting days have been arranged so that delegates also may attend the conference of the International Association of Bridge and Structural Engineering in Berlin at the same time.

CONVENTION OF ACETYLENE GROUP GOES TO ST. LOUIS

International Acetylene association will hold its thirty-seventh annual convention at Hotel Jefferson, St. Louis, Nov. 18-20. H. F. Reinhard, 30 East Forty-second street, New York, is secretary of the assotion.

Follansbee Plans To Spend Million

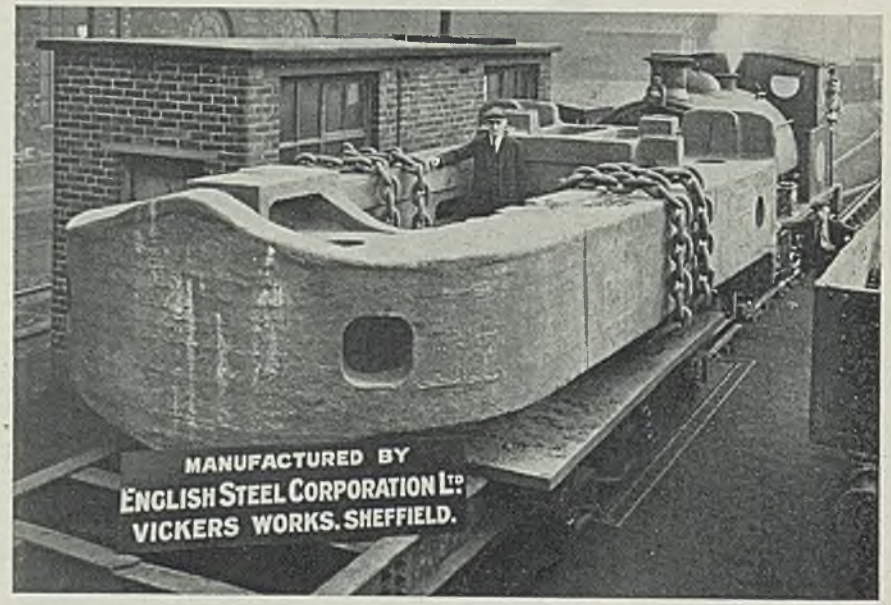
PLANT improvements involving the expenditure of about $1,000,000 are included in tentative plans for reorganization of Follansbee Bros. Co., which has operated under receivership during the last two years.

Receivers announced a 10 per cent restoration of pay cuts for 900 of the 1100 workers in the Toronto, O., and Follansbee, W. Va., plants, and revealed that both plants had shown profits for the first time in six years, having been engaged at capacity during the last four months.

Plans for reorganization include the proposed issuing of new stock and recalling of all old bonds. A hearing will be held Aug. 15 in federal court at Pittsburgh. Both the Toronto and Follansbee plants would be remodeled and enlarged under the plans.

The 10 per cent restoration of pay cuts, beginning July 15, affects all wage and salary employes at Toronto and Follansbee, except the hot mill workers at Toronto whose scale to July 1 was 10 per cent higher than at the hot mill department of the Follansbee plant. The increase was voted by the company receivers.

They Make Them Big in England, Too



THIS 58-ton steel casting, made by English Steel Corp. Ltd., at Vickers Sheffield works, for Davy Bros. Ltd., Sheffield equipment engineers, is the main frame for a hydraulic molding press. Exceptional, but far from the record in weight, as steel castings 135 tons, cleaned, have been poured recently by Otis Steel Co., Cleveland, for rolling mill equipment. Bethlehem Steel Co.'s 230-ton steel platen, for its own use, is the heaviest steel casting of which there is record. Developments in molding plastics recently have called for unusually large steel castings in the United States, as in European countries

Production

LED by a 4-point increase in operations in the Pittsburgh district, bringing the average there to 67 per cent, steelworks operations last week rose 2 points to 70½ per cent, only 1 point behind the 71½ per cent average of the best week of the year, June 27. Production details by districts were as follows:

Chicago—Continued at 70 per cent, only slightly below the year's peak rate. While some recession in ingot production is anticipated in August, one of the leading interests has capacity operations scheduled for the next six weeks. Blast furnace activity is steady, 25 of the district's 41 stacks being in blast.

Detroit—Held at 100 per cent, with all of the district's open-hearth furnaces in operation.

Wheeling—Up eight points to 89 per cent of capacity through last week for the district with production schedules in 33 out of 37 open-hearth furnaces in this district. This rate compares with 81 per cent last week and 69 per cent two weeks ago.

Pittsburgh—Up four points to 67 per cent of capacity last week, based on 64 per cent rate of operations by the Corporation plants here and 70-75 per cent being recorded by the independents. Finishing mill schedules are led by tin plate at 95 per cent, followed by sheets at 70 per cent and strip at 60 per cent, with pipe mills at about 55 per cent. With Pittsburgh Steel Co. blowing in its second Monessen, Pa., furnace, there are now 36 active steelworks blast furnaces in the Pittsburgh district.

Youngstown—Operations are up two points to 78 per cent and will be unchanged this week.

Cleveland-Lorain—Up 34 points to 85 per cent through resumption of work at the Lorain works of the National Tube Co. after a vacation shutdown and through the addition of one open hearth by Otis Steel Co. late last week.

Buffalo—Operations in this district are holding at 84 per cent, a rate maintained for nearly two months. Indications are that 31 open hearths will continue in production here throughout this month.

New England—Up 15 points to 78 per cent last week, with 78 per cent operation scheduled for this week.

Cincinnati—Production was down 4 points to 76 per cent of capacity when one open hearth was taken off last week, leaving 19 of 24 active, all for light rolled material. Same rate is expected to be continued indefinitely.

Central eastern seaboard—Ingot operations, up a point and a half to 50½ per cent, are now the highest since before the start of the depression. Producers generally are revising upward their estimates for August. A recession is expected but not a sharp one.

Birmingham—With 13 open hearth furnaces in operation, the rate is up 6 points to 58 per cent of capacity as against 52 last week. Six of the Fairfield open hearths, the largest sized ingot producers, are now in operation.

District Steel Rates

Percentage of Open-Hearth Ingot Capacity Engaged in Leading Districts

	Week ended July 25	Change	Same week 1935	Same week 1934
Pittsburgh	67	+ 4	41	20
Chicago	70	None	49	34
Eastern Pa.....	50½	+ 1½	29	22½
Youngstown...	78	+ 2	49	35
Wheeling	89	+ 8	73	27
Cleveland	85	+34	48	33
Buffalo	84	None	37	29
Birmingham...	58	+ 6	31½	20
New England	78	+15	32	48
Detroit	100	None	94	76
Cincinnati	76	— 4	†	†
Colorado	....	.....	†	†
Average.....	70½	+ 2	45	29½

†Not reported.

Tin Output Down in May; Twelve Months Show Gains

World apparent consumption of tin in May was 1400 tons lower than in April and 2000 tons lower than in May, 1935, according to the July bulletin of the International Tin Research and Development council, New York.

In the year ended May, 1936, world production of tin was 152,463 tons, against 119,219 tons in the previous year. Consumption in the year ending May, 1936, was 146,527 tons, about 21,000 tons larger than for the previous year. Of countries using 1000 tons or more per year only Germany and Spain showed decreases. In the United States consumption increased 30.1 per cent, U. S. S. R. 30.6 per cent and United Kingdom 10.7 per cent.

Moderate Reduction in World Industrial Output

World industrial production showed a moderate recession during May from the level of the preceding month, according to the National Industrial Conference board, New York.

Least change was noted in Great Britain, France and Italy. Decline in Belgian steel, coal and textile industries occurred in May, a condition partly attributable to uncertainty regarding the political situation.

In France, business activity showed little change during the early part of May, but during the latter part of the month and in June output was noticeably retarded by the outbreak of strikes. In Italy, industries engaged in the manufacture of military supplies showed little recession. Activity in the United Kingdom remained at a high level in the capital goods industries, although operations in many consumers' goods trades are still below capacity.

Only the usual seasonal amount of decline was apparent in the gold value of world trade. The combined index of 75 countries, excluding Italy, stood at 35.8 per cent of the 1929 average, as compared with 36.9 per cent during March, and 32.9 per cent in April, 1935.

Pittsburgh Steel Prepares New Stock Rearrangement

Stockholders of Pittsburgh Steel Co. are preparing for the special meeting of stockholders which has been called for July 27 to act upon rearrangement of the common stock of the company. The present 253,500 common shares are to be increased to 1,000,000 shares, and the present $100 par value of the common stock will be changed to no par common but with a stated value of $10 per share if the plan of directors to be considered at this meeting is acted upon favorably by stockholders.

Issuance of the new common stock will result in raising $1,014,000 in new capital and a loss will result in a write-down of the plant account. Present common share holders will be offered one of the new shares for each 2½ present shares held and will be permitted to buy the new stock at $10 per share. No change is expected as affecting the preferred stock. It is planned to apply for listing of the common stock on the New York stock exchange.

Approve Allegheny Merger

Stockholders of Allegheny Steel Co. and West Leechburg Steel Co., meeting in separate sessions July 27, will formally approve the merger of the two companies, effective Aug. 1, with the resulting concern to be known as the Allegheny Steel Co. According to proxies already deposited in favor of the merger, the special stockholders' meetings will be a formality.

Form New Willys Overland

Willys-Overland Motors Inc., a new company, will replace the Willys-Overland Co. in a reorganization plan to be filed in the federal court at Toledo, O., shortly. The new company has filed a certificate of incorporation at Dover, Del.

Materials

IN PRODUCTION of 20,827,196 gross tons of pig iron in the United States last year, 40,832,138 tons of metalliferous materials were used, according to the bureau of mines. Consumption included 34,127,246 gross tons of domestic iron ore and manganiferous iron ore; 1,370,708 tons of foreign iron ore and manganiferous iron ore; 2,637,464 tons of cinder and scale, and 666,220 tons of purchased scrap, a total of 38,801,638 tons. In addition, 883.500 tons of home scrap and 1,147,000 tons of flue dust were consumed.

An average of 1.86 gross tons of metalliferous materials, exclusive of home scrap and flue dust, was used per ton of pig iron made in 1935 compared with 1.89 tons in 1934. Average consumption of ore per ton of pig iron in 1935 was 1.70 tons, compared with 1.69 tons in 1934.

Shipments of pig iron from blast furnaces in 1935, amounting to 21,178,353 gross tons valued at $358,145,499, showed an increase of 36 per cent in quantity and of 37 per cent in total value over 1934. The general average of pig iron of all grades at the furnaces in 1935 was $16.91 a ton, compared with $16.73 in 1934.

Production of ferroalloys was 545,316 gross tons in 1935 compared with 452,607 tons in 1934, an increase of 20 per cent. Shipments of ferroalloys in 1935 were 592,176 tons valued at $48,891,592, an increase of 38 per cent in quantity and 41 per cent in total value compared with 1934, according to the bureau.

Production of ferromanganese last year was 214,290 gross tons, containing 170,168 tons of manganese, an average of 79.41 per cent; of spiegeleisen, 60,018 gross tons, containing 12,310 tons of manganese, an average of 20.51 per cent; of ferrosilicon, 198,068 gross tons; of ferrotungsten, 1415 gross tons, averaging 80 per cent tungsten; of ferrovanadium, 945 gross tons, averaging 39 per cent vanadium, the bureau reported.

Sheet Metal, Machinery Accident Rates Down

Average accident frequency rate for 30 major industries in 1935 was 14.02, and the severity rate 1.58, according to the National Safety council, Chicago. In the past ten years frequency was reduced 61 per cent; severity 49 per cent. In general the larger plants have better records than the smaller, according to the council.

Frequency is the number of disabling injuries per million man-hours of work, and severity is the number of days lost per thousand man-hours of exposure.

Statistics from 179 sheet metal plants, whose employes worked 129,414,000 man-hours in 1935, show a frequency rate of 14.97, which is 2 per cent under the 1934 rate. In severity the rate was 1.07, down 27 per cent.

In the machinery industry the frequency rate in 1935 was 13 per cent higher than in 1934, but the severity rate was 4 per cent lower.

Activities of Steel Users and Makers

LANDIS TOOL CO., Waynesboro, Pa., has opened an office at 6910 Market street, Upper Darby, Pa., in charge of C. M. Talhelm. This is to offer additional service to patrons.

♦ ♦ ♦

Boetticher-Kellogg Co., Evansville, Ind., has been appointed jobber for Republic Steel Corp., Cleveland, and will handle its complete line of tubular products.

♦ ♦ ♦

Miller Products Co., Shelby, O., maker of automobile parts and grease guns, will be consolidated within the coming 60 days with its parent company, Michigan Steel Tube Products Co., John R. Miller, general manager of the Miller firm, announced last week.

♦ ♦ ♦

Sale of 1278 electric ranges for installation at PWA's Techwood and University slum clearance projects at Atlanta, Ga., through the Georgia Power Co., has been announced by Westinghouse Electric & Mfg. Co., Pittsburgh. The first 600 ranges now are being shipped, the remaining units to be made following the completion of the second housing development.

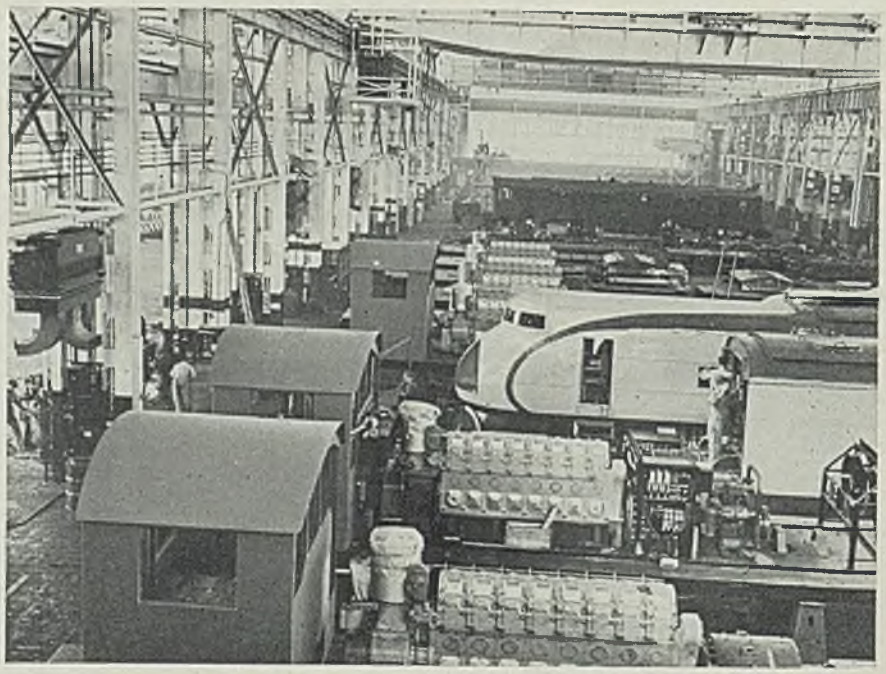
♦ ♦ ♦

Winton Engine Corp., Cleveland, and Hooven-Owens-Rentschler Co., Hamilton, O., have been awarded contracts by the navy department, Washington, for three sets each of propelling machinery, with General Electric Co. equipment. Two sets of Winton equipment are to be delivered at Portsmouth, Va., and one at Mare Island, Calif.

♦ ♦ ♦

Lincoln Electric Co., Cleveland, has appointed Industrial Supply Co. its distributor at Salt Lake City, Utah. This company will maintain a complete supply of Lincoln products, welders, electrodes, motors and accessories. Complete welding service will be provided for mines, smelters, mills and manufacturers in the Salt Lake district. A. B. Kemp, manager of the welding division, will provide free service on any welding question.

Where Steam Lines Get Streamlines



AS DEMAND for diesel locomotives increases, the erection shop of the Electro-Motive Corp.'s new plant at La Grange, Ill., is crowded. The plant was built on a 74-acre site and is designed so that expansion can be accomplished easily if business warrants. The first railroad equipment subsidiary of General Motors, and the first plant in the world for the exclusive manufacture of diesel locomotives, it recently started with work in progress upon approximately $3,500,000 *worth of equipment*

Men of Industry

HAROLD STEIN, who began his career with Allis-Chalmers Mfg. Co., Milwaukee, in 1916 as a graduate student apprentice serving in the erecting and forge shops, has been appointed research engineer of the manufacturing department of the company. He succeeds J. Fletcher Harper, resigned.

After his graduation in 1916 from Tri-State college with a bachelor of science degree in mechanical engineering, Mr. Stein was associated with the De La Vergne Machine Co., New York, until Oct. 1916, when he joined the Allis-Chalmers company. Upon the completion of his apprenticeship in 1918 Mr. Stein was made foreman of the tractor heating and the forge heat treating departments. For three years, 1917-20, he was engaged in special metallurgical study at Marquette university.

In 1925 he was appointed general foreman of the entire forge shop, being transferred to the research laboratories in 1928, and becoming assistant research engineer.

Mr. Harper has joined the Globe-Union Mfg. Co., maker of storage batteries, spark plugs, roller skates, and other products, 900 East Keefe avenue, Milwaukee. In 1927 Mr. Harper was elected president of the American Society for Steel Treating, now the American Society for Metals. He is a graduate of the University of Wisconsin, where he majored in metallurgy. Before joining Allis-Chalmers he was associated with Northwestern Mfg. Co., Milwaukee.

♦ ♦ ♦

W. G. Robbins, former vice president and general manager, has been elected president of Carboloy Co. Inc., Detroit, Mich., manufacturer of cemented carbide tools, dies and wheel dressers. Dr. Zay Jeffries, former president, has succeeded P. R. Mallory, resigned, as chairman of the board. E. S. Morrison and Mr. Robbins have been elected members of the board of directors. Other changes are:

A. MacKenzie, former manager of manufacturing, is now vice president in charge of manufacturing; K. R. Beardslee, former Pittsburgh district sales manager, has been appointed general sales manager; J. R. Longwell, former die engineer, has been appointed chief engineer; A. A. Merry, former Cleveland district sales manager, has been appointed special representative in charge of activities with licensed agents.

A. H. Godfrey, former Cleveland representative, has been named Cleveland district manager; P. W. Weiser, former Pittsburgh representative, now is Pittsburgh district manager.

Harold Stein

W. G. Robbins

H. G. R. Bennett

♦ ♦ ♦

Herbert G. R. Bennett, assistant general superintendent, Dusquesne works, Carnegie-Illinois Steel Corp. has been elected president of the Association of Iron and Steel Engineers, succeeding G. R. Carroll, Jones & Laughlin Steel Corp. Mr. Bennett's entrance into steel dates back to 1901 when he became secretary to the chief engineer of American Steel Hoop Co. He joined Carnegie Steel Co., Youngstown, O., in 1907 as a special engineer. He later held the positions of master mechanic and assistant superintendent of bar mills. In 1933 he was promoted to his present position.

Other officers elected are: L. F. Coffin, Bethlehem Steel Corp., first vice president; C. C. Wales, Otis Steel Co., second vice president; F. E. Flynn, Republic Steel Corp., treasurer; J. L. Miller, Carnegie-Illinois Steel Corp., secretary; and C. L. McGranahan, Jones & Laughlin Steel Corp., director at large. Other directors: C. C. Pecu, Bethlehem Steel Corp.; J. W. Bates, Carnegie-Illinois Steel Corp.; M. J. Conway, Lukens Steel Co.; J. A. Clauss, Great Lakes Steel Corp.; H. G. Hague, Carnegie-Illinois Steel Corp.; G. N. Hughes, Gulf States Steel Corp.; F. E. Leahy, Youngstown Sheet & Tube Co.; W. A. Perry, Inland Steel Co.; and R. G. Adair, American Rolling Mill Co.

♦ ♦ ♦

Irving P. Macauley has been elected vice president of the Reynolds Metals Co. Inc., 19 Rector street, New York.

♦ ♦ ♦

F. Gladden Searle succeeds his brother, Thaddeus G., as general manager of sales of the Continental Can Co. Inc.

♦ ♦ ♦

Karl Landgrebe, administrative vice president, Tennessee Coal, Iron & Railroad Co., Birmingham, Ala., has been elected a vice president of the Birmingham chamber of commerce.

♦ ♦ ♦

James M. Hill, Canton, who recently resigned as Canton district manager of Republic Steel Corp., has been appointed vice president in charge of operations and general manager of Empire Sheet & Tin Plate Co. He succeeds Charles H. Stamm.

♦ ♦ ♦

R. R. LaPelle, formerly associated with Electric Furnace Co. as sales engineer and later as section engineer in charge of furnace design for Westinghouse Electric & Mfg. Co., has joined the Salem Engineering Co., Salem, O.

♦ ♦ ♦

F. E. Dunlap, who has specialized in sand handling, foundry and automotive business for Stephens-Adamson Mfg. Co., Aurora, Ill., has been appointed branch manager in charge of conveyor sales and engineering for the state of Michigan with offices in Book Tower, Detroit.

♦ ♦ ♦

E. M. Schultheis has resigned his position with the Detroit office of the automotive division of Timken Roller Bearing Co. to join the staff of Clark

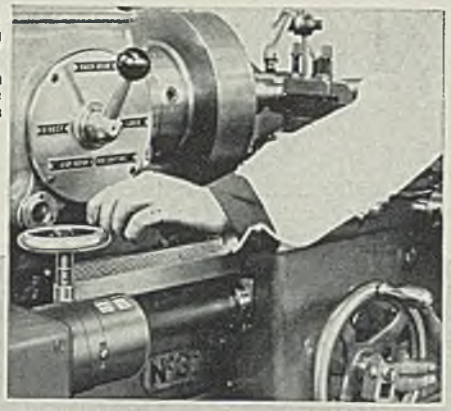
(*Please turn to Page* 26)

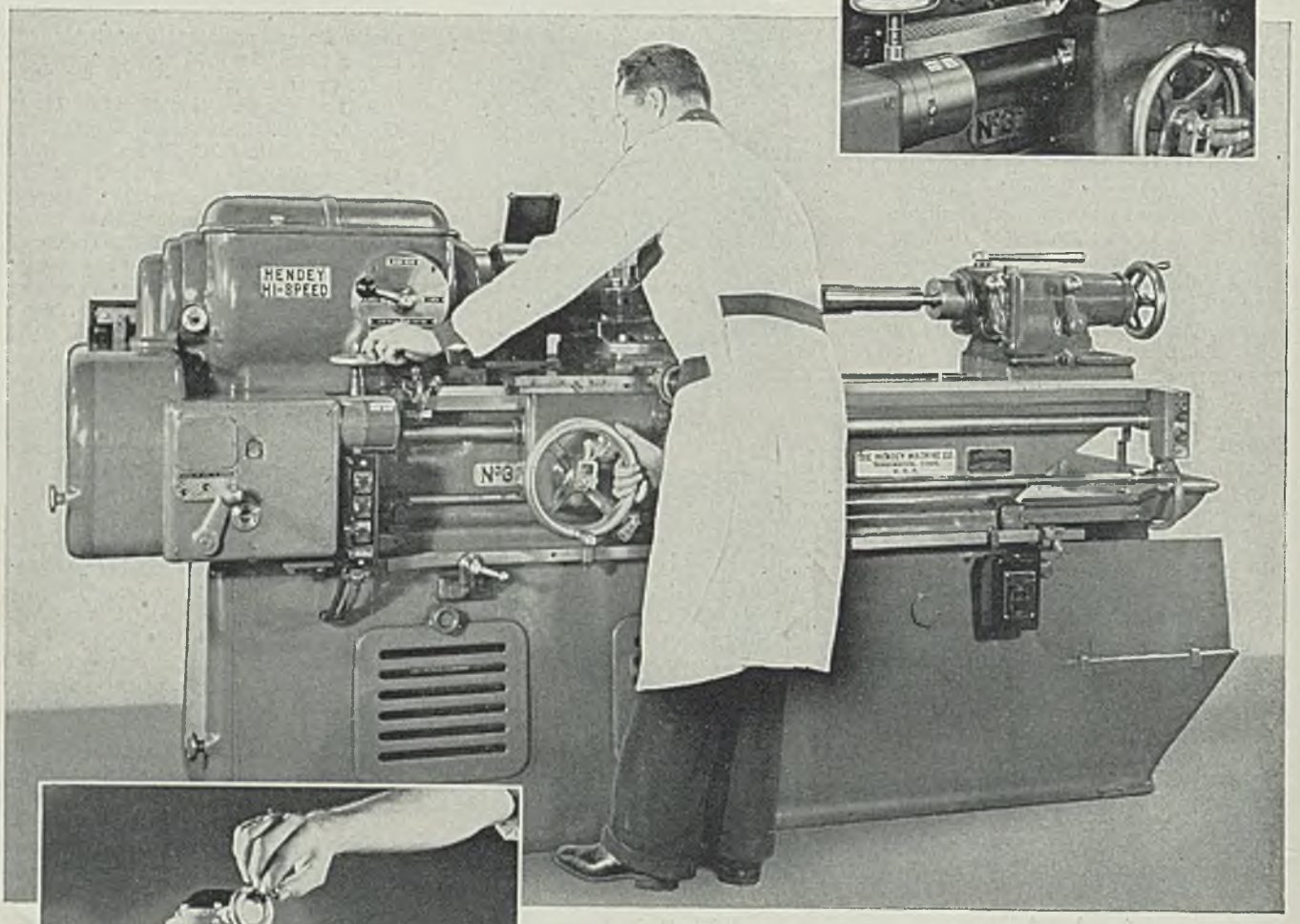
USHERING IN A NEW ERA OF HIGH-SPEED TURNING

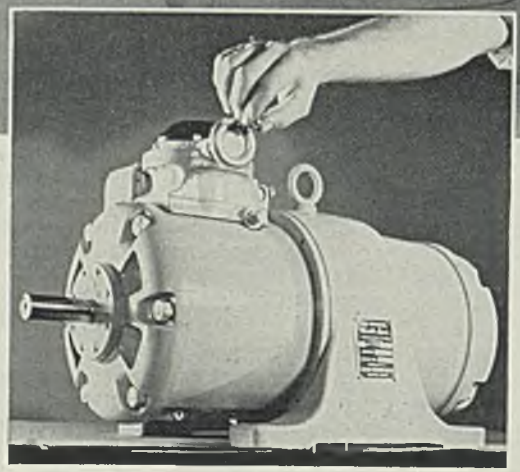
HENDEY No. 3 STEP-TURNING LATHE

Equipped with TRANSITORQ

and New Departure Ultra-Precision Ball Bearings







TRANSITORQ is a positive, infinitely variable speed transmission in unit with a constant speed, constant horsepower motor. Compact, easily mounted, quiet running. Immediate or remote fingertip controls as required.

• Infinite control of speed — the ability to secure, *at the touch of a finger* — not approximately — but *exactly* the cutting speed most effective for the work. That is only part of what Hendey accomplishes with the new No. 3 Hi-Speed, Step-Turning Lathe equipped with the New Departure 10-H.P. Variable Speed TRANSITORQ and New Departure Ultra-Precision Ball Bearings.

In many instances users have shown savings of 200% or better in turning time over former methods — and with better finish — improved subsequent grinding operations and decided increase in tool life. Get the facts about TRANSITORQ. Send for Catalog.

The New Departure Manufacturing Company, Bristol, Conn. Engineering and Sales Offices at Detroit, Chicago and San Francisco.

NEW DEPARTURE *Variable Speed* TRANSITORQ

MIRRORS of MOTORDOM

DETROIT

FORD plans to shut down for two weeks, starting Aug. 3. This will be the usual period for inventory and making necessary plant changes and arrangements incidental to production of new models.

Lately Ford has been assembling 23,500 units weekly, and July production will approximate that of June. When final runs have been made on the 1936 V-8, the total originally scheduled for the tail end of the current model season will have been exceeded by slightly more than 90,000 units.

Active mid-season retail demand has been responsible for bolstering Ford's operations lately, a situation experienced also by a number of other interests. When Ford re-opens Aug. 17, production of some 1937 cars will be under way, though the exact date for starting assemblies of new models is indefinite.

Ford is the subject of more than the usual conjecture regarding future movements, and plans at Dearborn are cloaked with customary secrecy. Detroit's curiosity has largely to do with Ford's intentions toward its small eight as well as toward several important features of the present model.

Will Ford Offer Hydraulic Brakes?

Somewhat of a predicament has been presented Ford in the matter of brakes. The industry has swung over almost completely to the hydraulic type, and sales emphasis to a certain degree has tended to convert the automobile public to the belief that there is something inferior in the mechanical method of modern braking.

For many years Chrysler has been a strong advocate of hydraulic brakes. When General Motors a short time ago discarded the mechanical type nearly all other important interests also went along, Ford being an exception. It is conceded that Chevrolet's and Plymouth's stressing of this point in their sales arguments was an important factor in their relatively greater success than Ford's in the year's business to date. This situation, consequently, leads observers to look for Ford's conversion to hydraulic brakes on coming models.

This expectation, of course, is in spite of Ford's distaste for following the crowd. Development of the V-8 motor, rather than the building of just another six which would give the Ford car no marked distinction from the power plant of those of its principal competitors, was a case in point. The fact that Ford remains outside the Automobile Manufacturers association is another.

Follows Others Occasionally

At the same time Ford has found it necessary on occasions, because of competitive conditions, to follow the lead of other manufacturers. The birth of Model A and abandonment of old Model T, with the latter's foot-operated transmission, black paint and instrumentless dashboard, was a concession to the changed taste cultivated by other manufacturers. Radical changes in body and fender designs the last few years also were originated elsewhere.

Ford has been shrewd in refraining from openly deprecating mechanical features of competing cars and apparently has suffered little by permitting competitors to take the grief connected with the development and application of new parts. Ford stuck to his guns when Chevrolet donned knee action suspension, bringing out instead an improved leaf spring design. Plymouth went along with Chevrolet but later dropped coil springs.

It cannot be said, however, that Ford has refrained from adopting a certain design when it has proved to be superior, merely because it happened to be the original idea of some other manufacturer. Furthermore, the company has a number of new developments to its credit.

Detroit feels pretty sure a new, supplementary and smaller line of V-8 Ford cars will be out this fall, with the appeal directed to economy-minded buyers. Part of the steel needed is understood to have been bought for the first 25,000 jobs. Recalling the advanced stage attained in preparations for a cheaper Ford on a previous occasion, when the idea later was shelved, however, some observers cling to the attitude that "seeing is believing."

Flushed with a highly satisfactory first half, which brought profits to more than ten times those of the 1935 period and the best earnings since 1930, Packard last week started to take in parts for 1937 model assemblies. These concern both the 120 and the newly evolved 115 six. Only minor changes in appearance are slated for the successor 120 models, while the new 115 addition to the Packard family is expected to bear some of the company's characteristic lines.

There will be only a brief lapse by Packard following the completion of 1936 model runs before new cars are coming off the lines, with dealer stocking to proceed extensively through August. Around the middle of September is the earliest date for publicizing the new models.

In fact, the motoring public will hear no official announcement of new cars for at least nearly seven weeks, unless Ford decides to take advantage of the opportunity it has to occupy the spotlight alone. Members of the Automobile Manufacturers' association, of which Ford is not a member, recently decided to defer 1937 model introductions until no earlier than 60 days before the November show.

Gap Is Shortened

It is likely, however, that few manufacturers would be in a position to have dealers showing new models before the September deadline, even if it were permitted. As things have turned out, production of present models has extended several weeks longer than had been planned. By the same token this extended production has shortened the gap between production of old and new models.

Unlike the situation a year ago when fall introduction of models was first adopted, there has been a full 12 months during which to make preparations for design changes. Revisions slated for 1937 cars, however, in most cases are more numerous and involve more tool and die work than did those made a year ago.

This preparatory work has been

proceeding smoothly, and some manufacturers predict that the coming changeover period will be the shortest in years. A few interests slow in placing die orders, having found no excess of die-making capacity quickly available will be delayed, but this will not be true of the industry as a whole.

As a result of this situation it appears likely that the August-September dip in production will be less than that experienced during the model changing periods of the past several years. If retail sales the next 30 to 60 days continue to show traces of the snap which has characterized the summer to date, manufacturers will be particularly anxious to limit shutdowns as much as possible.

The pushing ahead of new models last year to the fall worked out very well in that it provided good winter activity but did not prevent spring operations from attaining a brisk rate. In fact, plants would have been swamped had they attempted to crowd the winter output into later months. People bought cars during what used to be considered an off season, partly because general business conditions were improving and because many purchases had been postponed by the depression. If the industry is commencing to worry over whether it will be as successful during the coming years when the arrearage in normal replacement demand has been satisfied, no indications are given of this fear in the general satisfaction shown toward holding the annual shows in November instead of January.

Volume Is Satisfactory

While sales the past two weeks have commenced to moderate, the volume remains generally satisfactory, considering the unfavorable influence of the heat wave in various sections. For example, Buick reports sales of 4685 the first ten days of July, against 4768 in the corresponding June period. Operations have recovered from the letdown occasioned a week ago by hot weather interference, but in the case of most companies July output will fall somewhat below June.

Steel orders for new models have increased moderately, but the tonnage still is relatively small. Parts suppliers are most active in this connection. Few changes in steel specifications for 1937, other than those covering sizes, are indicated by inquiries issued to date for new model material.

Chief interest in mechanical innovations for next year concerns the mechanical transmission, which is expected to be introduced by General Motors, and hypoid gears, designed to lower the tunnel hump inside the car between transmission and differential. Steel companies have participated in development work in connection with the latter improvement.

Chrysler continues busy equipping the former LaSalle plant on Wyoming avenue for the production of stampings and expects to have it available soon for making certain new model parts. Chrysler also is understood to have taken over a plant of the old Gotfredson truck company. Graham-Paige is moving machinery, which it had located there, to Warren avenue. Chrysler has been proceeding steadily toward attainment of a more independent position in its sources of supply or parts.

Both Chevrolet and Plymouth assemblies will be continued into August. Plymouth is not expected to complete building of 1936 models until late in the month. Some Chrysler operations will be suspended this week . . . . Pontiac is expected to retain its distinctive silver streak on the hood and radiator of 1937 models . . . . Detroit's employment index as of July 15 was 104.3, an increase of .02 points over the June 30 figure and 13.6 points ahead of last year. Since the first six months of 1933 employment has more than doubled. Building activity here has increased 174 per cent the past six months . . . . June marked the fourth consecutive month in which sales of Diamond T trucks have surpassed all previous records. First half of this year bettered all 12 months of 1929 . . . . General Motors Truck last week held an open-house for Pontiac citizens . . . . Goodyear has bought one of the Hupp plants the latter is attempting to dispose of. The building recently had been leased by the former and will be used for warehousing tires . . . . Other tire manufacturers will get a cut at Sears, Roebuck's business now that Goodyear has been forced to terminate its contract because of the Robinson-Patman act . . . .The industry now is predicting total 1936 automobile production of 4,600,000 units. First half output was about 2,500,000.

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
6 mo.	1,714,263	2,218,255	2,400,408
July	264,933	332,109	.....
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 4	100,697
July 11	97,833
July 18	91,317
July 25	96,863

325-Foot Electric Furnace for Ford

Ford Motor Co. has purchased from Westinghouse Electric & Mfg. Co. a 325-foot long, controlled atmosphere, continuous roller hearth furnace for bright normalizing automobile body stock, in a continuous strand or in strip. The output of this furnace will be 7½ tons per hour, based on 56-inch wide strip. This is reported to be the largest continuous electric furnace in the world.

The Ford company already has a 227-foot long furnace of this type, which it purchased from Westinghouse and which has been in operation for about a year.

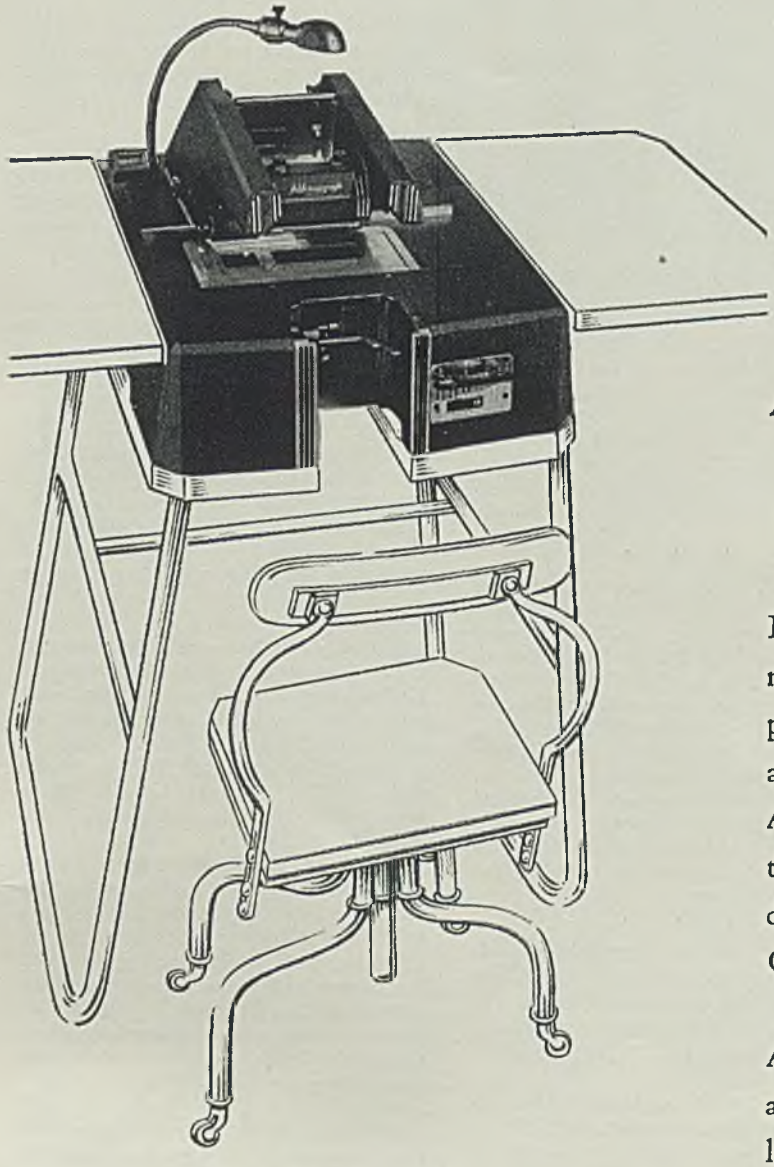
By normalizing the strip form continuously, the strip can be delivered to the body plant in a coil, and, thus, fed continuously in the forming presses. The fine grain structure as obtained by normalizing, produces steel free from the so-called "orange peel" surface.

The rating of the furnace is 2335 kilowatts of which 1920 kilowatts is in the first heating chamber and the remaining 415 in the reheating chamber following the first cooling chamber. The strip will be heated in the first chamber to approximately 1750 degrees Fahr., and can be cooled to a maximum of 800 degrees Fahr. in the first cooling chamber.

The reheating chamber is amply rated to heat the strip from 800 degrees Fahr., to 1300 degrees if desired, and the cooling chamber following is capable of cooling the strip down to 250 degrees before it is exposed to the air. Accordingly the furnace is being built to provide for considerable variation in the cycle to obtain the maximum ductility and softness which may be accomplished in a relatively short cycle.

The Research was done, the Alloys were developed and most Die Castings are specified with

HORSE HEAD SPECIAL (99.99+% UNIFORM QUALITY) ZINC



ADDRESSOGRAPH'S SECRET

In order to reach a broad market, a business machine must be built to sell at the lowest possible cost, must be light weight, compact and of pleasing appearance. According to Addressograph-Multigraph Corporation, these factors were achieved largely by careful designing and the use of ZINC Alloy Die Castings in every possible application.

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THE NEW JERSEY ZINC COMPANY

160 Front Street — New York City

New Jersey Zinc

Men of Industry

(*Concluded from Page 21*)

Equipment Co., Buchanan, Mich., producer of automotive, railway, and agricultural equipment. Mr. Schultheis was connected with the Timken organization since 1927.

♦ ♦ ♦

John E. Angle Jr., 26, has been appointed assistant general superintendent of sheet mills in the Chicago district, Carnegie-Illinois Steel Corp. After being graduated from Lehigh university in 1932, Mr. Angle served the corporation as a junior metallurgist, and during the past two years he has been chief metallurgist.

♦ ♦ ♦

Theodore F. Smith, president, Keystone Wire Matting Co. and a director of Standard Steel Specialty Co., Beaver Falls, Pa., has been appointed secretary and assistant treasurer of Oliver Iron & Steel Corp. He also is former director in western Pennsylvania for the Federal Housing administration.

♦ ♦ ♦

Joseph H. Carter, formerly works manager at Sharon, Pa., for Sharon Steel Corp., has been named general superintendent of plants of Pittsburgh Steel Co.

R. C. Butler has transferred from Sharon Steel Corp. to Pittsburgh Steel Co. as blast furnace superintendent.

Homer C. Morrison, foreman of the rolling mill at Lowellville works, Sharon Steel Corp., has been named superintendent of the blooming and bar mill of Pittsburgh Steel Corp.

♦ ♦ ♦

A. P. Rucks, for 23 years associated with C. J. Tagliabue Co., Brooklyn, N. Y., manufacturer of indicating, recording and controlling instruments has been named general manager. Two other appointments, W. C. Bennett as general sales manager in charge of the eastern territory, and E. D. Wacker, general sales manager in charge of the western territory, are announced.

♦ ♦ ♦

John C. Haswell, since 1915 president and general manager of the Dayton Malleable Iron Co., Dayton, O., has been elected chairman of the board. William B. Runyan, who since joining the company in 1913 has served as superintendent, vice president in charge of operations, and first vice president, is the new president and general manager. Anthony Haswell is now first vice president; C. D. Townsend, vice president; C. E. Swank, treasurer; and R. M. Robinson, secretary.

♦ ♦ ♦

Robert W. Graham has been appointed superintendent of the new 100-inch semicontinuous sheared-plate mill now under construction at Homestead, Pa., for Carnegie-Illinois Steel Corp., Pittsburgh. Mr. Graham started his

Robert W. Graham

business career with the Youngstown Sheet & Tube Co. at the Campbell, O., works and later was with Republic Iron & Steel Co. at Youngstown, O., coming to the Homestead steelworks in August, 1925. He is a graduate of Carnegie Institute of Technology with the degree of metallurgical engineer.

♦ ♦ ♦

Edwin J. Schwanhausser, manager of Buffalo works, Worthington Pump & Machinery Corp., has been elected president of the Buffalo chamber of commerce. He received his mechanical engineering degree from Stevens Institute of Technology. He is a member of the American Society of Mechanical Engineers; chairman of executive committee, Interallied Foundries of New York; and a member of State Advisory council for vocational and apprentice training for the board of regents.

♦ ♦ ♦

Frank C. Miller, formerly associated with the Detroit sales office, has been appointed manager of sales, tin plate division of Republic Steel Corp., succeeding George E. Totten, recently resigned.

P. H. Hubbard has been named assistant manager, as has J. B. DeWolf, formerly district sales manager of the Philadelphia territory.

Further alignments in the division include the appointment, as field man, of W. H. Ungashick, who was formerly associated with Canton Tin Plate Co., which recently was acquired by Republic. J. T. McBride has been named chief of the division.

Died:

JAMES HOLLAND HAMMOND, 68, who founded Superior Steel Corp. in 1892 and became its first president, and later chairman of the board, July 20 in Pittsburgh. He retired in 1929 as chairman of the Superior board, but retained his post as chairman of the board of Copperwell Steel Co. until his death. Mr. Hammond was born in Pittsburgh, and received his education at Williston academy.

♦ ♦ ♦

John Tait, 93, former manager of Edge Moor Iron Co. Edge Moor, Del., at his home near Wilmington, Del., July 16.

♦ ♦ ♦

Walter D. Craft, Chicago district sales manager for Heller Bros. Co., Newark, N. J., manufacturer of files and rasps, at the former city, July 19.

♦ ♦ ♦

Alexander Luttrell, district sales manager who had been with the Columbia Tool & Steel Co. for 23 years, July 18 in Detroit. He was a member of the Society for Metals.

♦ ♦ ♦

Andrew W. Herron, 71, at one time president of the Monongahela River Consolidated Coal & Coke Co. and prominent in banking affairs in Pittsburgh, at Pittsburgh, July 21.

♦ ♦ ♦

Luther Burdick Weidlein, 55, general sales manager, Arthur G. McKee Co., July 20 at North Kingsville, O. He formerly was with Carnegie Steel Corp., Youngstown, O. He was a graduate of Carnegie Institute of Technology.

♦ ♦ ♦

Baron Wargrave (Sir Edward Alfred Goulding), 73, chairman of Rolls-Royce Ltd., London, England, and one of the advisers to the British government on armaments, July 17 at Henley-on-Thames. He was chairman of the Central London Electricity Distribution committee.

♦ ♦ ♦

Christian Paulsen Berg, widely known in the steel industry for his contributions to reduce lost motion and to systematize shop practice, in Chicago, July 4. Beginning in 1932 Mr. Berg had been associated with Link-Belt Co., Chicago. In his earlier years he was associated with Frederick W. Taylor and Carl Barth in developing motion study.

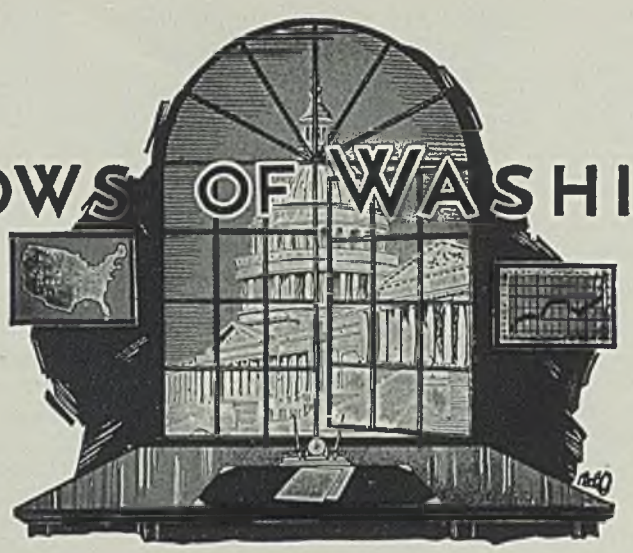
♦ ♦ ♦

Curtis C. Brett, 53, vice president and treasurer, Newport Industries Inc., Pensacola, Fla., maker of ships supplies, and who was associated with the Schlesinger iron and steel interest in Milwaukee since 1907, at Ishpeming, Mich., July 19. Born in Milwaukee, Mr. Brett moved to Pensacola five years ago when Newport headquarters were established there.

♦ ♦ ♦

David O. James, 76, founder and recently president and treasurer of the D. O. James Mfg. Co., Chicago. gear manufacturer, at his summer home at Union Pier, Mich., July 16. He was born in Pottsville, Pa., and went to Chicago when he was 15. The company bearing his name was established in 1888. Mr. James was responsible for a number of developments in gear and speed reducer machinery.

WINDOWS OF WASHINGTON



WASHINGTON

INTERESTING reactions are being heard here these days from the Washington newspaper correspondents in connection with the steel industry, and the fact that the relations here between the industry, the press and the public generally are not taken more seriously by leaders in the industry. This is especially so at times like the present when the steel-labor situation is so much in the public mind.

This is particularly true at the nation's capital, because when the newsmen want to write a story about the situation they get all the "dope" they want from press representatives of the CIO and the A. F. of L. —but when it comes to the steel industry they generally get their ideas about that industry from labor, which doesn't make it so good for steel.

The idea is being expressed here continually by these newsmen—who admitedly know nothing of the steel industry—that their stories going out of this center would probably be considerably different if they were able to get the industry's side of these various questions.

It is true, of course, that many of the labor arguments could be met by someone thoroughly familiar with the industry. Considerable surprise has been expressed by many of the leading Washington newsmen, particularly during recent weeks, that the public relations of the industry have not been more effective.

PRESIDENT REPORTED SEEKING TO HEAL LEWIS-GREEN WOUND

It seems that nothing short of a miracle can now bring John L. Lewis and William Green together. Edward McGrady, assistant secretary of labor, and general labor trouble shooter for the administration, ran back and forth between the two camps last week in a desperate effort to patch up some kind of a peace. This he did, 'tis whispered in Washington, at the direct suggestion of the President.

At any rate Mr. Lewis and his fellow workers in the CIO met last week and threw down the gauntlet to Mr. Green and the executive council of the A. F. of L. by refusing to acknowledge that the counsel had any right to call the CIO to a hearing. The Lewis group refuses to attend any such hearing.

Mr. Lewis in his letter sent at the direction of the CIO stated that "the proceedings you contemplate are wholly unwarranted by the constitution of the A. F. of L. * * * the trial you threaten is plainly intended to forestall action of the convention and foreclose its judgment in a matter over which it alone has jurisdiction."

The CIO in its letter to Mr. Green said that "the CIO declines to submit to its (executive council of the A. F. of L.) jurisdiction."

Mr. Lewis and his CIO co-workers took every opportunity, as they have done all along, to put their case fully before the public in their communication.

Obligations of Labor

"When the five billion dollar steel institute announced that its resources to the full would be used in preventing an independent union of steel workers, it was promptly seconded by members of the council," Lewis said. "The CIO found itself assaulted from the rear, denounced as to its motives, branded with charges of communism, solemnly warned of failure, and finally threatened by what is intended to be a ham stringing expulsion from the federation."

He discussed the obligation of labor as follows:

"Leaders of organized labor have an obligation that ought to outweigh their personal ambitions, and may even call for some sacrifice of real or fancied advantages enjoyed by crafts they represent. That obligation is to organize the unorganized for the common benefit of all who toil, whether craftsmen or unskilled. The problems of social justice and economic security pressing upon us justify organized labor in widening its influence that its voice may be more clearly heard in the councils of the nation. In the fair and just solution of these problems rests the welfare of all our working millions and the heritage they shall leave their children."

Doubt Council's Authority

Referring to the Lewis letter William Green said that "this statement is accepted as a refusal to meet with the executive council of the A. F. of L. on Aug. 3. The answer can more appropriately be interpreted as a speech for propaganda purposes rather than a direct reply to the invitation of the executive council to meet and answer the charges filed.

"The right and power of the executive council to act in the premises and to deal with an emergency such as never before existed within the federation of labor, will be passed upon and determined by the executive council before any official decision is rendered."

Current reports here are to the effect that CIO officials, with the exception of John L. Lewis himself would like to go into court to restrain William Green and the A. F. of L. from throwing the CIO members out of the union, or at any rate of suspending them.

No union has ever been suspended from the A. F. of L., it is said, except by a two-thirds vote of the convention itself. For that reason the CIO executives do not believe that the executive council of the Green organization have authority to do any suspending without further action of the convention itself.

Some amusement was caused here last week when Miss Perkins stated at a press conference that the conciliatory work being done by Assist-

ant Secretary of Labor McGrady was not "official." While it is true that the department of labor did not ask him to intervene and make peace, it is certain that the President asked him to use his good offices and to that extent the McGrady activities between Lewis and Green is certainly official.

JUSTICE DEPARTMENT SILENT ON COLLUSIVE BIDDING INQUIRY

No one seems to know just what to think of the situation at the department of justice in connection with the alleged steel collusive bidding report sent to that department by the President who asked for "appropriate action" by the attorney general.

Justice department officials refuse to discuss the matter in any of its angles—all save the attorney general—and he stated at a recent press conference that he would make a full and complete statement on the subject "in the near future."

There is a feeling in some quarters that the department would like very much to "forget" that report, but whether it will be allowed to or not is another question. The department has enough "headaches" at present without taking on any additional ones.

On the other hand, Secretary of Commerce Roper may have had the right viewpoint after all, when he explained sometime ago that that situation would take care of itself and intimated, without making any definite statement, that the steel industry had nothing to worry about.

Anyhow, at the moment the justice department is silent so far as any action in the steel case is concerned.

TRADE AGREEMENTS HELD UP UNTIL AFTER ELECTION

Some hearings may be held in Washington before election in connection with trade agreements with some of the smaller countries, but it is likely no agreements will be entered into between the United States and foreign nations until after the November election.

Conversations over the agreement with Spain, which have been in progress for months, now are almost at a standstill and there is every indication that no agreement will be completed at this time. It is reported the exchange situation is one of the serious drawbacks.

Trade association executives who have seen the "hand out" of the federal trade commission in connection with its study of the Robinson-Patman price discrimination law have about made up their minds that they are going to learn nothing from that arm of the government until a case under the new act is before the commission and is finally taken to the courts for adjudication.

They might have known that the trade commission would not tell them how far they could go under the law. The commission has never been that friendly to industry and that in spite of the fact that as originally conceived by President Wilson the commission was to do just that thing—advise business and industry before they got into trouble, instead of policing them after they had gone afoul of the law.

The real inside of the story at the trade commission, however, is the fact that members of the commission, their legal staff and economists just don't know what to make of this new act—and therefore they hesitate to say anything which might be used against them in the future.

It is just one of those laws that was rushed through with a good many changes during the closing hours of a congress and consequently there is said by legal lights to be much overlapping and contradictory matter in the act as it was finally passed.

BOARD TO DETERMINE HEALY ACT MINIMUM WAGES

Secretary of Labor Perkins last week made her first pronouncement in connection with the administration of the Walsh-Healy government contract law, effective Sept. 28. The administration of this act comes under the department of labor.

At the same time the national association of manufacturers made public an interesting study on this law in which it set forth that the act "may be applied only within narrow limits." The association also set forth various opinions written on the eight hour law some years ago and its effect on government purchases. One of these was written by Felix Frankfurter for the secretary of war in 1917 in which he analyzed a 1912 law which sought to impose an 8-hour day on government contracts.

According to the association it was found in connection with the 8-hour day law that structural steel, structural iron, tools, tinfoil and a number of other products were exempted from the eight hour provisions. The association's bulletin dealt particularly with interpretations of the phrase exempting things which "may usually be bought in the open market."

In the first official statement on this subject Miss Perkins said last week that "shortly before Sept. 28 the department of labor will promulgate regulations in the draft of which the principal contracting agencies of the government will participate. These regulations will provide uniform procedure so that there will be no delay in the normal procurement activities of other government departments but will enable the contracting officer and prospective contractors to know in advance their respective obligations under the act. The prevailing wage provisions will not produce delay since no wage stipulation is required until the applicable minimum wages have been ascertained by the secretary of labor for a given industry or group of industries. Until this factor has been determined and furnished to the various departments it will not be necessary for the contracting officer to consider this phase of the act."

Miss Perkins said further that "for the purpose of carrying out the act—setting the minimum wage—making rules and regulations for the application and exemption of the other sections and providing for variations over exemptions—the secretary of labor will furnish a special administrative unit in the department.

"The secretary will establish a board to act on all the quasi-judicial matters and regulatory matters. This board will hold hearings and adopt rules and regulations for the limitation and conduct of its own functions.

"The studies, investigations and exemptions necessary for the information of the board before action will be made by the regular existing divisions of the department where possible, and presented to the board with recommendations by the chief examiner, who will be the principal administrative officer."

NEW TYPE OF RAIL CARS TESTED IN GREAT BRITAIN

A new type of light-weight rail car with pneumatic tires is being tested in Great Britain under service conditions, says a report to the commerce department from London.

The car is 54 feet long, designed to carry 56 passegers and 15 hundredweight of baggage. It weighs only 9½ tons in running order. Each tire contains a safety device which allows the wheel to deflate only one-half inch in case of loss of pressure so that the car may continue to the next convenient stopping place before changing or repairing the defective wheel, the report states.

The body of the car is of aluminum panels. The engines are of the 12-cylinder gasoline type and develop 275 h. p. at 3000 revolutions per minute. Cruising speed is said to be about 60 miles per hour with maximum speeds of approximately 70 miles per hour. The use of rubber tires, it is claimed, permits much greater acceleration and better braking than could be had by the use of other types of wheels. It is claimed locally that these cars will accelerate up to 20 miles per hour in approximately 11½ seconds and up to 60 miles per hour in about 70 seconds, according to the report.

Editorial

Lewis Plan Means Federal Control of Industry, Unions

JUDGING from statements made by John Lewis on numerous occasions, his conception of an ideal labor relations set-up in industry consists of a strong trade association to protect the interests of management and an equally strong professional labor union to represent employes.

Getting down to cases, the Lewis philosophy envisions the American Iron and Steel institute as the representative body of the management of iron and steel companies and the CIO as the corresponding organization for employes. Further, it seems likely that the CIO campaign for organizing the iron and steel industry will be waged on the premise that these two organizations will be the spearheads of the contest.

If this is true, one may expect that the Lewis strategy will call for a "conference" between representatives of the two bodies. After a period of skirmishing, CIO, probably acting through the Amalgamated association, will ask for a round table discussion with representatives of the institute.

Team of Strong Trade Association and Strong Labor Union Would Invite Federal Control

While Mr. Lewis and his supporters may see great virtue in this plan, a careful consideration of its far-reaching implications will show that it is charged with potential dynamite, not only for employers in industry but also for employes and for Mr. Lewis himself.

To set up the American Iron and Steel institute and the CIO, or any other trade association or professional labor union or group of unions, and to endow them with the power and authority proposed by the leader of the miners' union would lead inevitably to a situation wherein stringent federal supervision would be necessary. This is not mere surmise. Experience in the United States in connection with the development of trade associations has demonstrated clearly the complications which arise when co-operative effort passes from the safe ground of voluntary action into the quicksands of mandatory or compulsory action. Scores of trade associations which have functioned for many years without government interference have found that when their activities were extended into the zone of possible conflict with antitrust laws, the heavy hand of government is felt immediately.

The experience of trade associations under NRA should have provided a salutary lesson on this point. Many executives favored codes because they promised to offer certain immunity from antitrust legislation. Few would want to repeat the experiment because the benefits under codification can be realized only at the expense of painful, restrictive regimentation. In most cases, freedom for individual action on numerous problems of management is infinitely preferable to direction by a bureaucracy.

Industry Should Show Employers Working For Collective Bargaining, Unions Against It

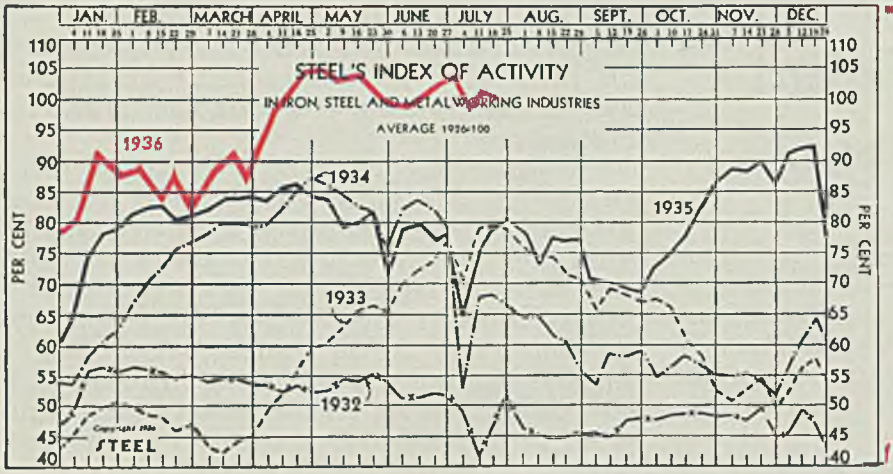
This point should be appreciated by professional labor union leaders as readily as by industrial executives. If Mr. Lewis wants to go ahead in his announced plan, he runs the risk of placing the administration of his unions under the watchful eye and stern hand of federal authority. In the end this would mean government auditing of union books, examination of union finances, legislation restricting or controlling union activities, etc.

From the standpoint of industrial employers, the immediate problem is to anticipate the situation that will arise when the CIO or the Amalgamated requests a conference with the American Iron and Steel institute. This request need not be embarrassing to employers if in the meantime industry has convinced the American public that the position of steel employers is more nearly in line with the letter and spirit of true collective bargaining than is the position of CIO.

The task of enlightening the public can be facilitated by the judicious use of articles in newspapers and general magazines and addresses before representative groups of citizens. Professional union leaders are appearing before Rotary clubs, Press clubs and similar local or regional organizations, outlining the main points of their argument. Employers ought to be preparing a number of good speakers who would be available to present industry's case.

Almost every company has one or more men who could be assigned to this work. Company presidents will do well to look into this phase of public relations. In most cases they will find that civic groups will welcome an opportunity to listen to the employer's side of the current labor relations issue.

THE BUSINESS TREND



STEEL'S *index of activity in the iron, steel and metalworking industries declined 0.7 points to 100.2 in the week ending July 18:*

Week ending	1936	1935	1934	1933
May 9	103.0	79.3	84.4	62.5
May 16	103.1	80.5	82.4	65.2
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	100.2*	79.8	68.1	79.4

†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.*

July Rounds Out Four Months of Activity at High Levels

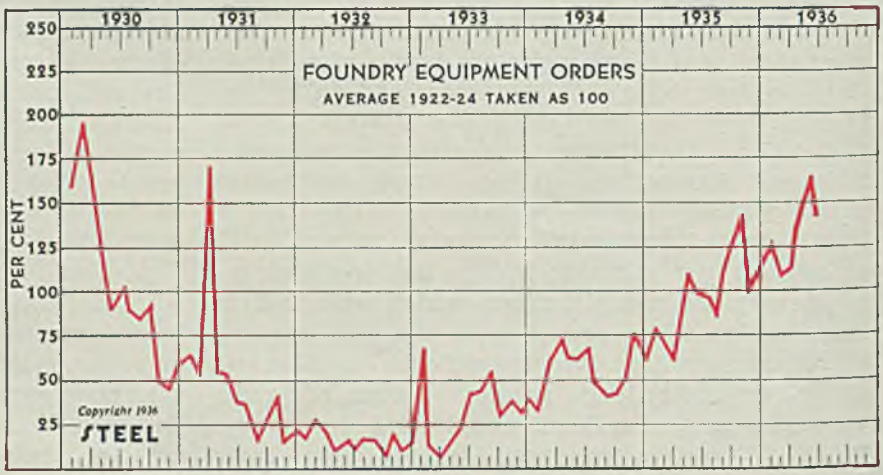
AT THE end of July—only four days away—industry will have rounded out four months of unusually brisk activity. During that period the rate of steelworks operations has never been below 63 per cent and has averaged in the upper sixties. Carloadings have not dropped below 600,000 cars weekly, and have touched as high as 730,000. Automobile output has fluctuated between a peak of 120,000 and a low of 91,000 weekly. Electric power output has not dropped below 1,914,000,000 kilowatt-hours per week and in the upper reaches has established four new all-time records in a span of five weeks.

As a result of this sustained activity at high levels, STEEL's index of industrial activity has remained close to the 100 mark throughout the four-month period. Its range has been from a low of 96.8 to a high of 103.6—a spread of only 6.8. This reflects a high degree of stability, which is all the more remarkable because it has occurred in months in which a seasonal decline is normally expected.

As the end of July approaches, no indications of a sharp curtailment of activity are discernible. If the expected summer dull period is to make its appearance, it will have to reveal itself sometime in August. Should it occur, it probably will be mild and of short duration inasmuch as the pressure of the seasonal fall upturn will begin to be felt immediately after Labor day in September.

The strongest indication that no serious recession is in the offing is furnished by the record of the general barometers of business. Car load-

	Per Cent			
	1936	1935	1934	1933
Jan.	127.0	86.6	37.2	68.4
Feb.	110.4	75.7	65.8	16.1
March	115.0	69.4	75.4	9.8
April	134.0	113.2	67.9	19.4
May	165.4	100.7	66.5	25.6
June	141.4	100.2	70.4	45.5
July	.....	94.0	50.7	48.8
Aug.	.....	113.0	43.1	56.3
Sept.	.....	128.5	46.4	34.9
Oct.	.....	140.0	55.3	42.5
Nov.	.....	100.4	80.4	36.6
Dec.	.....	118.1	66.9	43.8

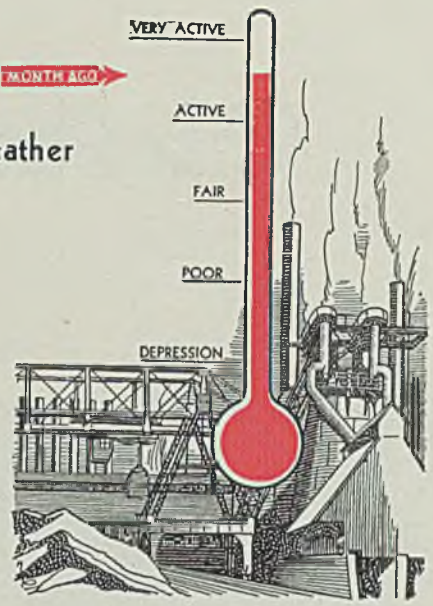


ings, for instance, are showing a remarkable vitality for this time of the year. Likewise electric power output, with its weekly annihilation of old records, reflects a widespread wave of activity which seems to preclude the possibility of an abrupt summer letdown.

Further, the gratifying spurt in equipment purchases, including machine tools and material handling units, is indicative of a belief among purchasers that a prolonged period of brisk activity is ahead. This demand, coupled with substantial purchasing by the railroads, tends to offset the effect of forward specifying in anticipation of higher prices or labor difficulties.

Prices may become a more important factor in the last half of the present year and in 1937 than they have been in the past NRA period to date. Commodity prices, as reflected by Bradstreet's index have declined in six consecutive months from a peak touched last December. STEEL's composite of iron and steel prices, which declined slightly during the second quarter, starts the third quarter at a moderately higher level.

Partially freed from arbitrary controls such as NRA codes, prices now respond more readily to natural economic influences. Costs are mounting, and this fact will be reflected sooner or later in prices.



Industrial Weather

TREND: *Steady*

Where Business Stands

Monthly Averages, 1935 = 100

	June 1936	May 1936	June 1935
Steel Ingot Output	142.6	144.8	84.1
Pig Iron Output	150.9	149.1	89.5
Freight Movement	114.8	110.5	101.3
Building Construction	.....	173.4	109.1
Automobile Output	127.9	137.9	108.3
Wholesale Prices	.....	97.4	98.5

The Barometer of Business

Industrial Indicators

	June, 1936	May, 1936	June, 1935
Pig iron output (daily average, tons)	86,529	85,795	51,949
Machine tool index	124.5	116.6	76.7
Finished steel shipments	886,065	984,097	578,108
Ingot output (daily average, tons)	153,263	155,625	90,347
Dodge building awards in 37 states (sq. ft.)	.....	36,362,700	22,878,800
Automobile output	*445,000	480,571	377,065
Coal output, tons	29,415,000	28,678,000	30,264,000
Business failures; number	.....	832	961
Business failures; liabilities	.....	$15,375,000	$20,463,097
Cement production, bbls.	.....	10,985,000	8,730,000
Cotton consumption, bales	384,000	530,000	386,000
Car loadings (weekly av.)	696,753	670,630	614,953

*Estimate.

Financial Indicators

	June, 1936	May, 1936	June, 1935
25 Industrial stocks	$201.52	$201.23	$161.44
25 Rail stocks	$36.83	$35.24	$25.17
40 Bonds	$87.07	$86.25	$81.33
Bank clearings (000 omitted)	.....	$22,473,000	$20,399,783
Commercial paper rate (N. Y., per cent)	¾	¾	1
*Commercial loans (000 omitted)	$8,396,000	$8,626,000	$8,038,000
Federal Reserve ratio, per cent	78.7	78.5	74.4
Railroad earnings	†$41,842,147	$41,547,644	$39,505,068
Stock sales, New York stock exchange	21,428,377	20,614,690	22,339,512
Bond sales, par value	$221,879,500	$201,974,000	$265,093,200

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

Foreign Trade

	June, 1936	May, 1936	June, 1935
Exports	$185,188,000	$201,042,000	$170,193,000
Imports	$192,233,000	$191,110,000	$156,756,040
Gold exports	$77,000	$5,000	$166,000
Gold imports	$277,851,000	$169,957,000	$230,538,000

Commodity Prices

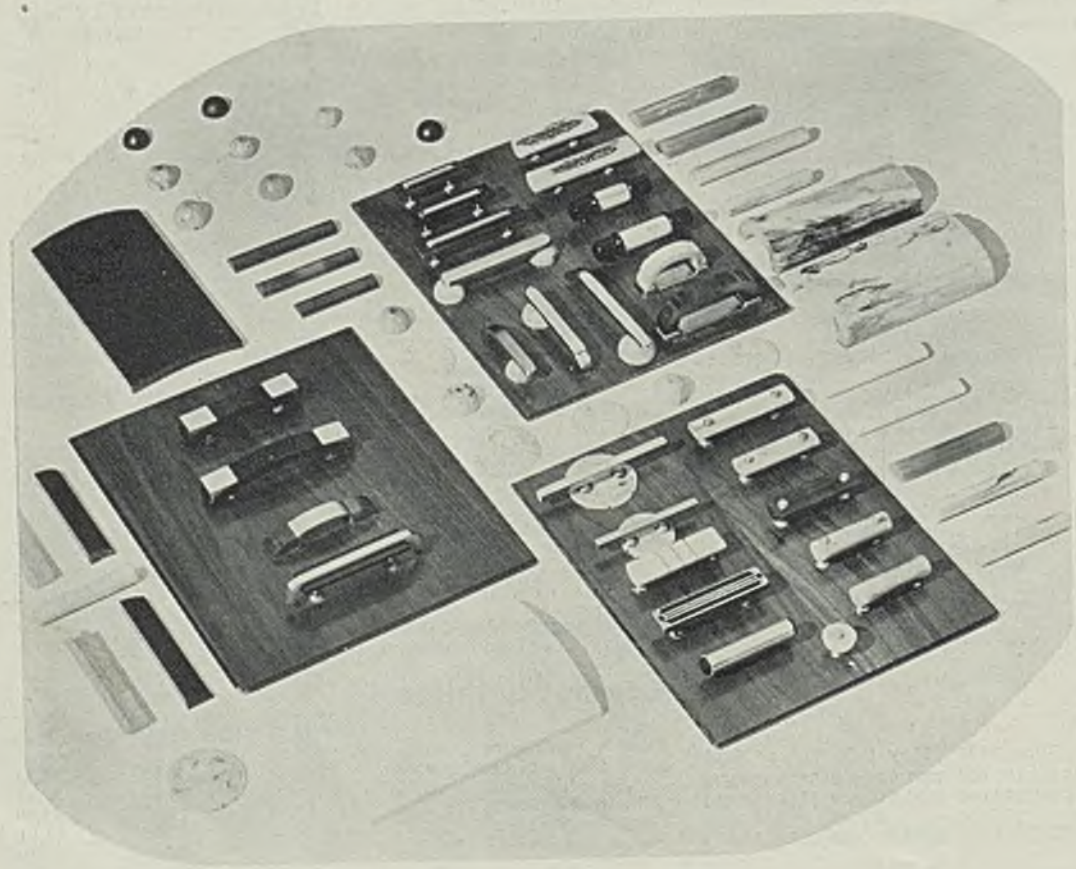
	June, 1936	May, 1936	June, 1935
STEEL's composite average of 25 iron and steel prices	$32.79	$32.92	$32.42
Bradstreet's index	.....	$9.73	$9.84
Wheat, cash (bushel)	$1.13	$1.07	$1.00
Corn, cash (bushel)	81c	79c	$1.01
Petroleum, crude (bbl.)	.....	$1.08	98c

Cast Plastics Are Easily Shaped for

BY HERBERT CHASE, M. E.

PLASTICS in general are sometimes thought of as competitors with metal products, but a study of their numerous uses soon shows a large proportion of applications in combination with metals. Plastics add a decorative note to uncounted products made largely from metals. If plastics were not available, some other nonmetallic substance would take their place in most instances, though usually with inferior results, and metal would gain little or nothing. In consequence, the well-informed metal products supplier is making the most of the vogue for plastics, and is gaining sales by the advantages which these new materials bring.

Producers of metal products not well acquainted with plastics sometimes have the erroneous idea that, to take advantage of plastics, a considerable investment in molds is necessary. Others, perhaps, have wondered why plastics are not available in sheet, rod and tube forms for machining into the desired shape, just as metals are machined, or why cast plastics are not to be had in almost any shape. The facts are, of course, that some forms of plastic do come in standard shapes and also can be cast in the liquid form and hardened. One of the most important, as well as one of the most attractive types of plastic is of this nature. It is known as the "cast phenolic" type and comes in all colors and tints as well as in varying degrees of transparency, translucency and opacity from water-white clear crystal to jet black opaque. It is also available in many cloudy and mottled effects, such as tortoise shell and rose



A FEW of the numerous uses of Catalin in the manufacture of furniture and cabinet hardware by the Everready Cabinet Hardware Co. Many of the shapes are merely sliced or turned from stock shapes or rods, and then combined with metal parts

Use in Variety of Metal Products

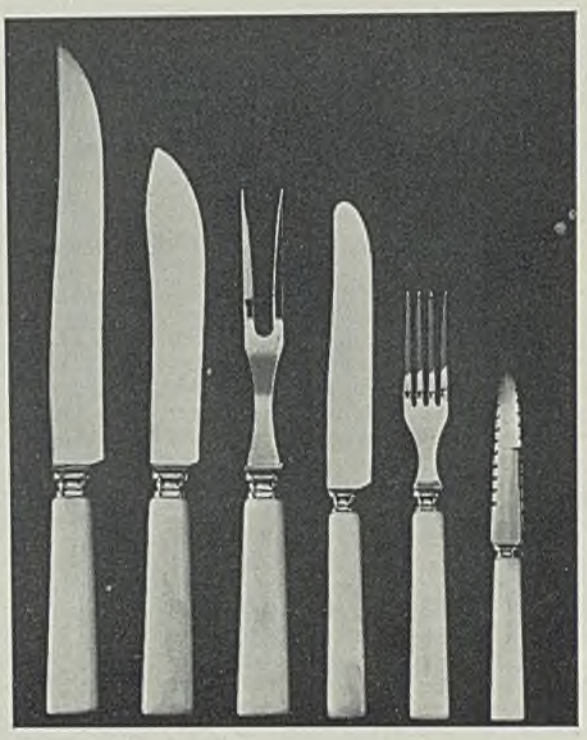
quartz, onyx and the like, and in forms resembling the semiprecious stones and such natural materials as jade, amber, coral, ivory and others.

To make use of the cast phenolics, no investment in molding equipment is required. They are machined in precisely the same way as soft metal and wood and with the same machines, such as lathes, screw machines, drill presses, saws, milling machines and the like. Thus the fabricator can purchase rods, tubes, sheets or standard forms of cast parts, at a cost of about 45 cents a pound upward, depending on quantity and color, and quickly convert these into finished items without any considerable cost for tooling. As the cast phenolics are noninflammable, no fire hazards result from their use or storage. There are, of course, numerous specialists in machining the cast phenolics who supply fabricated parts to those who do not wish to do their own machine work.

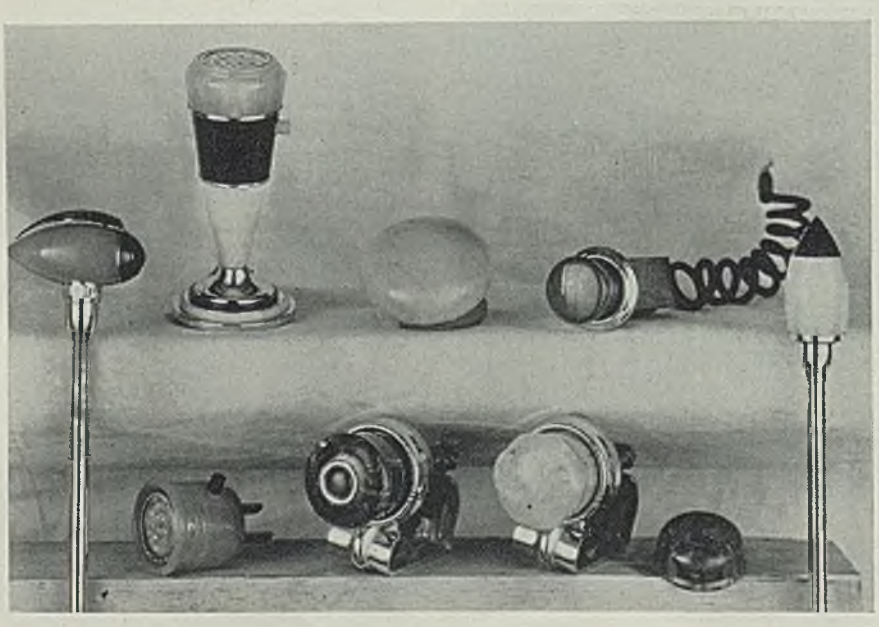
Many parts, such as tapered handles or handles of special shape, are produced in more or less "special" or stock castings. As the makers of cast phenolics have a large assortment of steel forms for making the molds in which these castings are produced, the purchaser need not pay even for such forms when castings ordered from them are selected. Only when a form which is not in stock is required does the buyer have to meet this added cost, —but it is nominal as compared to molds used in molding of other types of plastics.

Cast phenolics are produced initially in liquid form and the casting is always done by the raw material manufacturer. The molds employed are made by dipping steel patterns into molten lead and then stripping the thin shell which freezes around the form. These stripped lead molds are then placed in racks and are subsequently filled with the liquid resin. After casting, the racks are removed to curing ovens where the castings are maintained at the curing

CUTLERY with stainless steel blades and cast phenolic handles is produced in large quantities. The plastic provides color, is pleasing to touch and requires little machining



LIGHTERS, chiefly for automobile instrument boards, combine translucent or transparent cast phenolic parts with plated metal. Plastic parts are turned on screw machines from stock rod by Casco Products Corp. which also makes the fender markers and gear-shift lever knobs shown



temperature for three to six days. At the end of the cure, castings are removed, knocked from the molds and are ready for shipment. To facilitate removal, the molds are slightly tapered and may not be undercut. As the liquid resin levels off at the top of the open mold, the top of the casting is square (flat), but the lower end can be rounded or otherwise shaped as desired, so long as undercutting is avoided.

A large proportion of castings are made in the form of rods or tubes, which may have almost any profile. The tubes are cored, of course, and there may be one or more cores of any desired shape. A large selection of stock shapes is available. These are often merely sliced off in the required thickness to form handles and other parts, which may be of almost any profile. Although straight tapered handles, such as are used for cutlery, kitchen implements, brushes and the like, are readily turned or machined from rod, they are usually cast to size, individually, as this saves both in material and in machining.

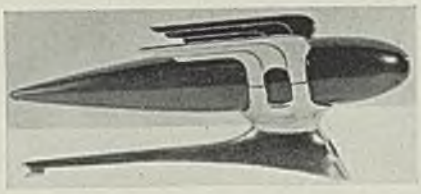
Odd Shapes Easily Made

If desired, the section can be fluted or of odd shape, rather than circular, square or oblong. To finish such a handle, it is necessary only to trim the thin flash from the large end, shape this end if desired (an operation quickly performed against an abrasive disk), drill a hole for the shank over which the handle is to fit and do such polishing as may be required.

Cast surfaces are smooth but have, as do machined surfaces, a frosted appearance, usually made still smoother and sharp corners rounded by tumbling and tumble-polishing. For high-grade work wet "ashing" with pumice on a muslin wheel and wheel polishing are done. Such operations remove tool marks and produce a high and permanent luster which brings out the beauty of the material.

Slabs and thick sheets of cast phenolic resins are cast in box-like molds or sometimes between glass plates but some makers produce thin sheets, down to ⅛-inch thickness, by slicing them from a partly cured slab (about as hard as soft rubber) and thereafter completing the cure. Finished sheets and slabs are readily cut with saws into almost any desired shape and can be machined with the same facility as soft sheet metal.

Fully cured cast phenolics are permanently hard but for certain operations the cure is not carried to completion and the resulting material can be softened temporarily and then can be bent or shaped in other ways. Thus, in the case of cutlery and similar handles, for example, the end to be forced over a shank is softened

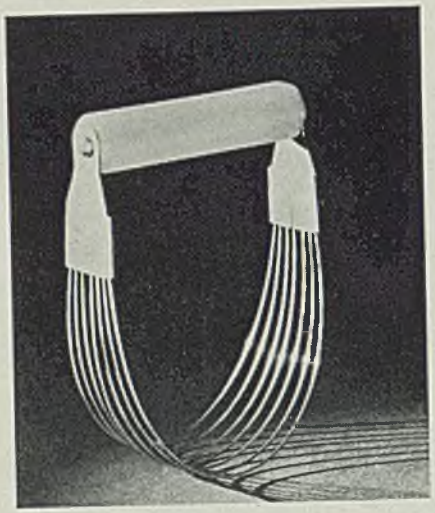


RADIATOR ornament for Hudson car, an effective combination of ruby red transparent Catalin and plated zinc alloy die castings

by immersion in hot water. After pressing over the shank, the material shrinks tightly and permanently around the shank and gives a tight fit without cementing. Blanking can be done on sheet stock similarly softened by heating, using a knife-edge die. Some rod and tube stock is converted into blanks on special slicing machines which cut without waste. In general, however, the material is worked without heating and slicing is done with thin abrasive cutoff wheels running wet or by sawing or lathe cut-off operations.

Rod stock is easily worked in screw machines and many parts, including knobs of various shapes, ferrules, tips of different kinds and such parts as are used in automobile fender markers and instrument board mountings (as for cigar lighters) are made on screw machines. In some plants making combination products of metal and cast phenolics, the same machines are used interchangeably for metal and the cast plastic. There are, however, some specialized forms of screw machines especially adapted for making such cast phenolic parts and which are used to advantage for large production runs. Rapid work is done also, however, on comparatively inexpensive lathes.

In machine work, tools are ground



KITCHEN mechanics will recognize this implement which is one item in the Androck line of kitchenware. Handle is cast phenolic

much as for cutting soft brass. In general, the tool should have plenty of clearance (15 to 18 degrees) and zero or slightly negative rake. Lathe tools are usually set on or slightly above center. Ordinary tool steel, or high-speed steel tools give entirely satisfactory results for most work, but for long runs or where a minimum of sharpening is desired, Stellite or tungsten carbide occasionally are employed. For carving and some other work, special abrasive wheels are sometimes employed, but so also are steel cutters which are made file-hard for ready sharpening with a file.

In general, high speed and light cuts give best results. They also tend to avoid overheating the material. Although any nonalkaline coolant can be used, nearly all work is done dry with the exception of abrasive cutoff operations. Tumbling is also done dry using maple or maplelined barrels.

Catalin Products Illustrated

Accompanying illustrations show cast phenolic parts made from Catalin, which has gained wide use among plastics of this type. This material is supplied by American Catalin Corp., New York. Other makers product similar materials under license of Catalin patents. As will be seen, the combinations with metal are numerous and the beauty of the plastic adds greatly to the attractiveness of the finished product.

Specifically, the cast plastics, in addition to the previously mentioned Catalin, include Bakelite in the cast form, produced by Bakelite Corp., New York; Fiberlon, produced by the Fiberloid Corp., Indian Orchard, Mass.; Joanite; Marblette, supplied by Marblette Corp., Long Island City, N. Y.; and Phenolin, a product of DuPont Viscoloid Co. Inc., New York. Of these, all but Bakelite cast resinoid are produced under Catalin license.

Much furniture hardware and some other hardware items are now made in combinations of cast phenolics and metal, the plastic adding color and materially enhancing the sales appeal of the product. In kitchen equipment and cutlery, the cast phenolic has the advantage of being pleasant to touch (since it is smooth and a poor conductor of heat) readily washable without injury, unaffected by ordinary heat and moisture conditions and not subject to chipping or change in finish.

In numerous applications, the transparency or translucency of the cast phenolic—enhancing beauty and depth of color because of the light transmitted—is highly advantageous in promoting sales. It adds to utility also in automobile instrument board cigar lighters, as the glow of the filament shows through the plastic, indicating the lighter is ready for use. In fender guides wired for interior lights, the plastic acts as a lens at

night and is also brilliant in reflected daylight. Cast phenolics are not easily broken. They are somewhat yielding and much less fragile than glass, yet they are hard enough to retain a high polish.

An effective combination with die castings is found in Hudson and Terraplane radiator ornaments. This cigar-shaped part is cast to shape except for the large end which is rounded by machining. Among the numerous other applications involving metal parts are desk and smokers' accessories, plumbing and soda-fountain fixtures, tableware and electrical appliances, clock and watch cases, handles for umbrellas, lamps and displays, dress accessories and jewelry. Although the chief applications of cast phenolics are ornamental, they invariably include utility to some extent and add greatly to sales appeal. Adaptability to manufacture in large or small quantities with little or no cost for tooling also accounts in part for widening the field of application.

British Furnace Builder Cites Trend To Gas Fuel in Heat Treating Plants

ONE of the recent developments in the field of industrial heating in Great Britain is the trend to gas fuel for heat treating in automobile plants, according to P. Hopkinson, manager of British Furnaces Ltd., Chesterfield, England, who recently completed a tour of this country inspecting American heat treating practices.

The center of the British motor car industry is Coventry where such plants as the Humber and the Morris now use gas for many of their heat treating operations. The Austin plant at Birmingham has also standardized on this form of heat in most operations. Other British motor car plants where this trend is noticeable are Ford at Dagenham, Rolls Royce at Derby and Vauxhall Motors at Luton.

Temperature Control Is Factor

While price reduction in gas is one controlling factor better furnace engineering and improved furnace equipment are also large factors. For instance, large production calls for furnaces of the continuous type, with automatically controlled temperature and prepared atmospheres. Especially is this true in the heat treatment of transmission parts. One innovation in England is a small size atmosphere preparation unit which is used in conjunction with toolroom furnaces of the muffle type and which was designed and perfected by the research department of the Sheffield Gas Co., Sheffield.

Gas for forging is being extended in British steel mills. As in this country, luminous flames are working out satisfactorily. Burners producing this type of flame have also been successfully applied to hardening and tempering furnaces. The method by which the luminous flame is produced in one type of furnace is to introduce the gas and air streams into the furnace at right angles from separate pipes. The hearth sets on piers some 9 inches above the furnace bottom with about a 3-inch space between hearth edges and furnace walls.

The air stream enters the furnace chamber from the bottom so as to shoot up vertically in the 3-inch space. The gas stream enters from the sidewall approximately 12 inches above the air nozzle and in a horizontal direction. Air and gas pressure are about 3 inches. Water vapor and the long luminous flame follows the sidewall and roof without actual contact with the work.

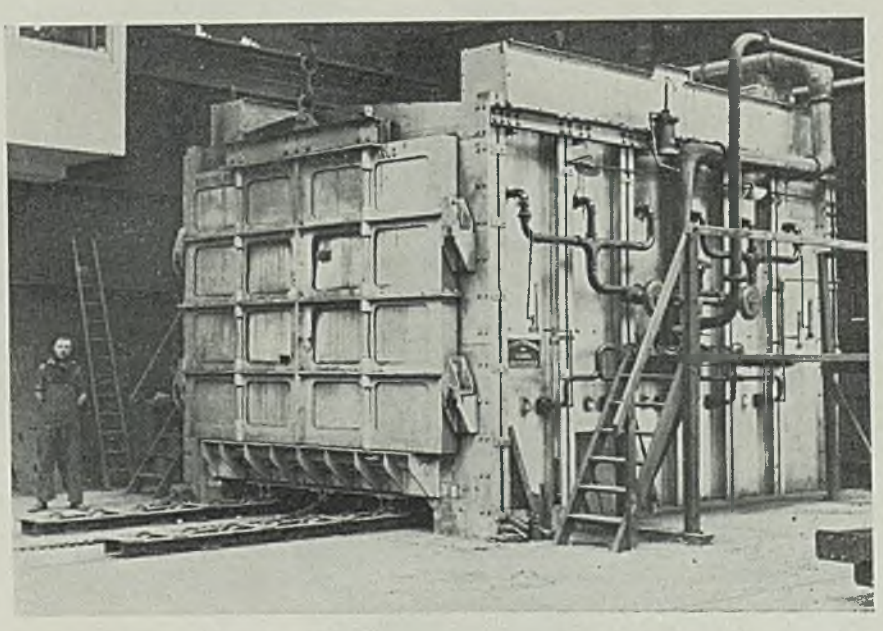
A recent improvement in heating for forging is the use of a double-chamber furnace with ports between. While each is fired by the method just described, only one set of burners is utilized. Both chambers are loaded and the burners on one are lighted. While the charge is being heated in this chamber the hot products of combustion are employed in the second chamber for preheating. When the charge in the first chamber is up to heat the burners are turned down to hold the temperature while the hot slabs or billets are being withdrawn. When this charge has been used a cold charge is put in and the burners shut off entirely. At the same time the burners on the second chamber are lighted. Inasmuch as the charge has gained more than half its ultimate temperature, the final heating up period is reduced by about one half.

Continuous Furnaces Built

Several continuous billet reheating furnaces have recently been built with luminous flames. One of these at the Ford plant is 12 feet wide and 35 feet in length and has a capacity for 15 long tons per hour and in heat content this gas, known in England as town gas, averages 500 B.t.u. per cubic foot.

The latest steel foundry practice calls for a double heat treatment. This consists of first annealing the casting at approximately 1700 degrees Fahr., and then reheating at about 950 degrees Fahr. For this purpose both car bottom and solid hearth type furnaces are used.

An unusual furnace capable of encompassing the entire temperature range from 950 to 1700 degrees Fahr. is in operation in a Sheffield steel foundry. Shown in the accompanying illustration, it is about 11 feet wide, 16 feet long and has a working height of 5 feet. It is of the car-bottom type and is equipped with 24 burners of the low-pressure inspirator type. No difficulty is experienced in maintaining a uniform heat, throughout the entire furnace, even when operating at the lower limit of the temperature range. The rate of cooling is controlled by a system of collecting ducts for the waste products of combustion and an adjustable damper in the exhaust duct.



Gas fired car-bottom annealing furnace for steel castings installed in a British automotive plant

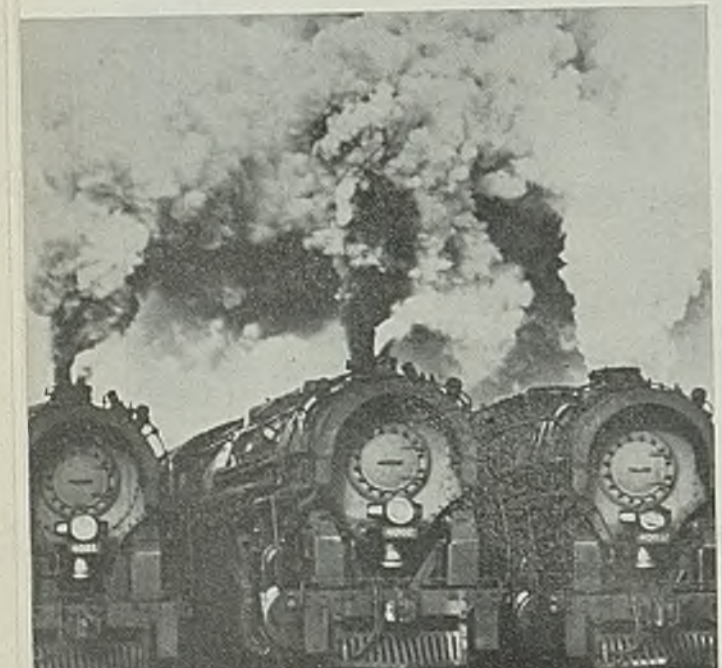
Steel Castings and Their Contribution to Industrial Progress

BY RAYMOND L. COLLIER
Secretary, Steel Founders' Society of America, New York

INDUSTRIAL development has necessitated a constant search for the "missing links" without which new projects could not be undertaken. Each basic industry has contributed its share of indispensable aids to the process of advancement in conquest of natural forces.

Steel castings have played a major role in this great drama of industrial progress, much of which would have been impossible without the timely application of the steel founder's art.

We have all seen pictures of the iron-horses of a hundred years ago—hardly recognizable as the prototypes of our modern mile-eating locomotives. It was not until man had acquired the ability to make steel castings that the rapid development of the locomotive took place. The aim was to increase hauling speed and power. Only a tough, strong metal could withstand the heavy stresses imposed by the greatly increased dynamic forces which would be encountered. Steel was the answer. And because so many parts of the assemblage were too intricate to forge or to construct from rolled shapes, castings seemed imperative. It was at that critical period that the steel casting industry came into existence. Without its contribution to the development of the modern locomotive, it is not hard to imagine the appalling losses of life and capital which might have resulted, if indeed such acceleration of speed and multiplication of power could have been accomplished at all.



MODERN giants of the rails owe their remarkable safety record in part to the strength and toughness of steel castings used extensively in their construction

The steady improvement in the product of the steel foundry, which has gone on constantly ever since, is undoubtedly a vital factor in the low accident record of our railroads. Properly designed and expertly produced steel castings will "stand the gaff" under the most punishing circumstances. That is one reason why 30 per cent of the total weight of a modern locomotive consists of steel castings.

Other industries were not long in discovering the possibilities of a product which could be cast in any desired form and still possess rugged qualities. As one industry after another began stepping up its tempo (higher pressures, higher temperatures, heavier loads, greater speeds), they turned to the steel foundry to obtain working parts capable of resisting these more exacting service conditions.

Different heat treating procedures have given the foundryman and his customer control over the properties of steel castings so that almost any combination of tensile strength and ductility (the two properties of a steel that determine its toughness) can be obtained. Many engineers do not realize that a bar of cast steel can be made which, if stretched longitudinally, will not break until it has been pulled out a quarter as long as the piece itself; and that it will not snap until the cross-section has been reduced to only half of what it was originally. Such physical tests are, as a matter of fact, regular routine procedure in practically all steel foundries.

High Strength Steels Available

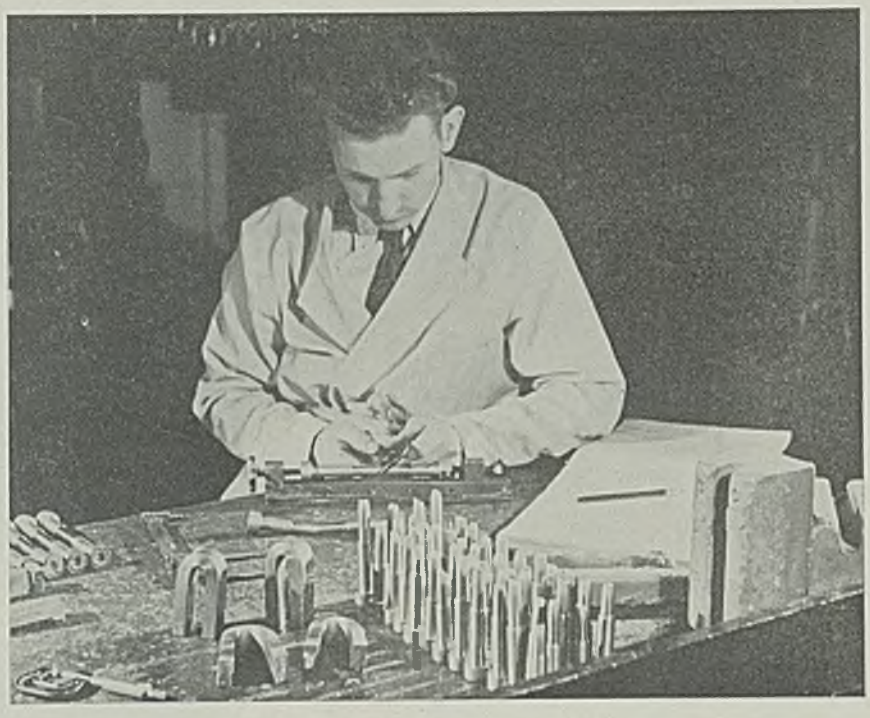
And if a steel is wanted which will be stiff but not too ductile, this, too, can be accomplished. The force applied to a test coupon up to the time it begins to stretch is known as the yield point and is measured in pounds per square inch. There are steels with a breaking strength of 85,000 pounds per square inch that will not start to stretch or deform until a load of 70,000 to 75,000 pounds has been applied. There is a wide range of physical properties available for different industrial applications obtainable in plain carbon steel, depending upon the heat treatment applied.

Alloy steel castings have now opened up wider fields for the application of the industry's product. Parts that must have physical properties even beyond the highest range possible with carbon steels are now regularly being produced with ultimate strengths running as high as 200,000 pounds per square inch and even higher.

Alloy steels have made it feasible to reduce casting weights in some

cases as much as 50 per cent. Certain alloy steel castings are specially suited to resist abrasive wear; others to resist corrosion, either of hot solids, liquids or gases. Still others will resist deformation at high temperatures. Some are especially adapted to withstand sudden impacts; others show remarkable fatigue resistance under alternating stresses and dynamic loading. For almost every application where strength and toughness are called into play there is a cast steel available to carry the burden with an ample margin of safety.

Like all products, steel castings have their critics. Much of the criticism leveled against them is irrational. When it is understood that steel castings are not brittle and that plain carbon steel castings have about the same chemical and physical characteristics as forgings and rolled steel, prejudices against them, based upon lack of authoritative facts, will largely disappear. The current upward trend in the industry's production curve would seem to indicate that the popularity of the industry's product may now be spreading. Castings are being welded to other castings and to rolled steel stock to form integral structures with satisfactory results. As to adaptability with respect to form and shape, steel casting designs are entirely flexible. They can usually be made to coincide exactly with the expert designer's ideas—line for line, section for section, strength as required.



Applying the micrometer to a cast steel test bar. In the foreground are a number of bars broken in the tensile test machine; to their left are four bars which have been subjected to a bend test

Cleaning Stainless Steel After Its Fabrication

Since it is impossible to prevent some markings, such as finger prints, from occurring on stainless steel during fabrication of the metal, the question of how it should be cleaned frequently arises. The June issue of the *Enduro Era*, published by the Republic Steel Corp., Cleveland, contains instructions on cleaning procedure.

There are several methods by which markings can be removed easily. One of the most convenient is the use of whiting which can be obtained in most paint and supply stores. The whiting is in dry powder form and should be used in that state. After application, the whiting is wiped off with a fine flannel cloth.

If heavier markings are still present, dampen the powder and apply with a wet cloth, polishing the surface until markings are removed. The whiting should be wiped off while still wet and the surface rinsed with clear water and dried with a soft flannel cloth. An application of dry whiting at this stage will add luster.

If the stainless surface has been subjected to excessive dirt or contamination which cannot be removed by the whiting, then it is advisable to substitute a mixture of half pumice, grade FF, and half whiting and apply the mixture wet. This pumice and whiting should be rinsed off with clear water and a clean rag and the surface dried with a soft flannel cloth.

Precautions Must Be Taken In Using Grinding Wheels

Because grinding wheels revolve at high speeds and constitute an accident hazard, it is important that they be selected and used under rigid regulations. Laxity in enforcing these regulations frequently results in accidents. In one recent case of this kind, a workman was using a portable compressed air driven grinder. He put on a wheel which was not designed for the high speed of the grinder and then failed to put on the guard.

As he was touching up some work in the yard, the wheel burst, one piece causing a minor laceration on his leg. Another piece, approximately one-fourth of the wheel, went through the second-story window of a building 350 feet away after passing over the roof of an intervening building and narrowly missed striking a workman in the building which it entered.

SCIENTIFIC testing and control means customer satisfaction. Tensile tests such as shown here are routine procedure in modern steel foundries

Improved Adhesives Offer Suitable Means for Joining Some Metal Parts

BY JOHN B. DECOSTE
Bell Telephone Laboratories Inc., New York

ADHESIVES are used in many different types of metal products because cementing parts together is a simple method of construction which is often preferable to any other process. Adhesive joints are not only light in weight and occupy a negligible amount of space but many times their use permits an assembly which otherwise could not be made. Moreover, recent improvements in adhesives have so greatly increased their strength that it is now possible to realize tensions of 1000 pounds per square inch in air dried joints and of almost 2000 pounds per square inch where the adhesive is applied dry and then melted by heat. When properly selected they will produce joints which will withstand indefinitely temperatures safely above maximum summer conditions and high humidity.

Two Classes of Adhesives

Adhesives are for the most part organic in nature and may be divided into two classes—the agglutinous, which include animal glue, casein, dextrin and gum arabic; and the resinous, such as the vinyl and alkyd resins, the natural resins such as rosin and shellac, the varnishes and pyroxylin cements. The agglutinous adhesives are water soluble and are characterized by poor electrical insulation and moisture resistance. Their use is chiefly confined to locations which are remote from electrical circuits. The resinous adhesives, on the other hand, generally have good insulation and moisture resistance which renders them particularly valuable for use in the assembly of electrical equipment.

There are two methods of using adhesives to make a joint. The one most commonly employed is to disperse the adhesive in a suitable solvent and apply it to one or both surfaces which are then pressed together while the adhesive is still wet. The joint is allowed to air dry to drive out the solvent, or this may be hastened by mild heat. The other method is a process in which sufficient heat is used to melt a dry thermoplastic adhesive previously placed between the surfaces to be joined. Various processes are possible which differ mainly in the way the thermoplastic adhesive is carried to the surfaces. For this purpose powdered resins, adhesive tissues, stick adhesives and thermosoftening resin solutions are used.

The thermoplastic method has the advantage that parts to be joined may be coated with adhesive in advance and assembled at a subsequent time. It is also possible to make joints quickly and easily with excellent uniformity of strength. A limitation of the thermoplastic method is that the parts joined must not be exposed in service to temperatures high enough to resoften the joint.

Principles of Adhesion

The mechanism of adhesion depends upon the nature of the surfaces joined. It involves two principles of which the most common is represented by joints of porous materials such as wood, paper, or fabrics. The adhesive penetrates these surfaces and, on hardening, anchors itself to their irregularities. This is called "mechanical adhesion." The other mechanism is represented by joints of impervious and smooth materials such as glass or metal. This may be termed "molecular adhesion" and is only partly understood. Actually the two types of adhesion action operate in all joints with one or the other exerting the predominating influence. Pure cases illustrating either mechanism of adhesion probably do not exist.

Molecular adhesion is an interesting phenomenon. A suitably chosen adhesive will adhere to a highly polished surface without any visible means of support. The accepted explanation is that a preferred orientation takes place among the adhesive molecules due to surface forces which are probably of an electrostatic nature. This orientation of the molecules of an adhesive at a joint interface is essential in producing molecular adhesion but it is also important that every adhesive material have powerful cohesional forces operating inside the substance, otherwise the adhesive will rupture within itself and the joint thereby fail. For this reason it is generally advisable to use adhesives in as thin a layer as is practical in order to minimize the setting up of internal strains in the adhesive layer when it solidifies. In selecting base materials for use in adhesive compounds the more brittle substances are usually avoided. Sometimes plasticizing agents are incorporated to increase the flexibility of the adhesive.

Metals Are Not Etched

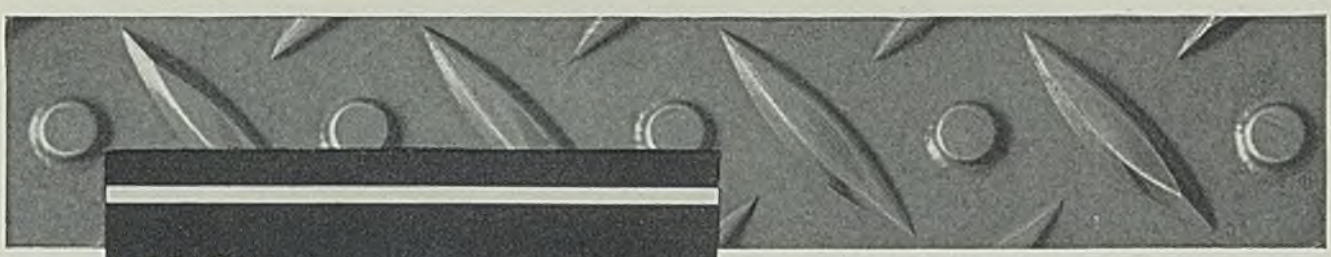
An idea is often advanced that adhesives adhere to metal surfaces by first visibly etching them in order to secure a mechanical bond. This idea was investigated by comparing the adhesion obtained on gold with that obtained on the more chemically active surfaces of copper, steel, and aluminum. The joint strengths were of the same order in each case which indicates that on these metals at least there is no necessity for an adhesive to etch the surface in order to obtain a good hold.

Further knowledge of the physical and chemical properties of adhesives and an understanding of the mechanics of adhesion are needed because of the importance of these materials and the wide variations in their characteristics. No adhesive has as yet been compounded which is suitable in all types of joints.

*Abstracted from the *Bell Laboratories Record*, June, 1936.

Distributes New Booklet

Great Lakes Forge Co., 610 North Michigan avenue, Chicago, is distributing the first copy of a new 4-page pamphlet titled "Forgings," the purpose of which is to talk from time to time about the contributions that have been made and are being made to the art and science of metalworking. The subject of this first issue is "Clubs and Stones," a reminiscing chat on the progress of civilization from the stone age to the metal age.



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ALL industry, whether light or heavy, possesses certain operative dangers that require the safety precautions afforded by sure-footedness of the operator. Specialization and study are pertinent factors in the design of rolled steel floor plate to fit these exacting needs . . . one reason why Central has developed a specific pattern for the cat-walks of the steel mill and another for the platforms of the railway coach.

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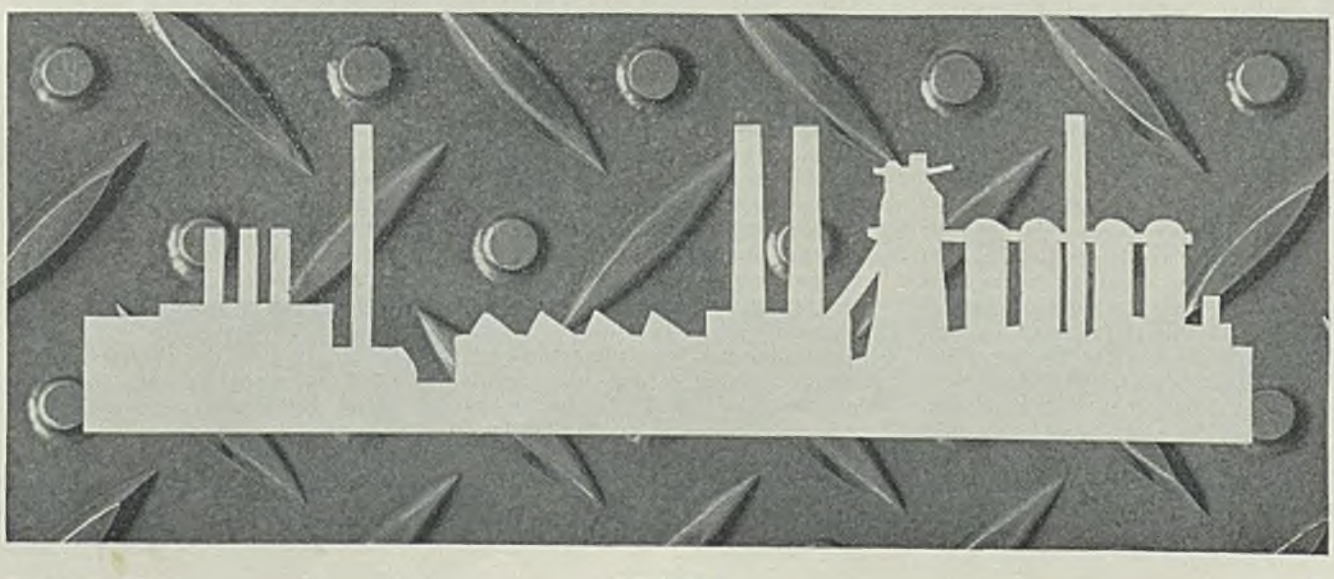

Surface Treatment and Finishing

Hot Tinning Difficulties Avoided by Adherence to Good Shop Practice

BY J. R. SWANTON

DIFFICULTIES which arise in the tinning of gray cast iron can usually be traced to one or more of three things: First, the castings were improperly cleaned; second, the fluxing was faulty; third, the temperature of the tinning pots was too high or too low. Rather than list the defects which may occur in the coating and their probable causes, it is believed that an outline of a procedure which is known to produce well tinned castings will enable operators of hot tinning establishments to locate the trouble spots which may exist in their processes.

Thorough Cleaning Necessary

Castings to be tinned should be thoroughly cleaned either by sandblasting or by tumbling in a dry mill with star shot for 12 hours. The castings should be packed just loose enough for the shot to roll. They should be loose enough for the shot to get in between them but not so loose that they can roll themselves. A good operator knows from the sound of the mill whether or not the parts are rolling properly for the best results. The milling process gives the castings a bright, hard appearance, and any slight rust which may appear during storage will disappear during the next step in the process.

After cleaning the castings should be pickled for about 12 hours in a solution of 1 part hydrofluoric acid in 400 parts of water. The pickling process can be accelerated by increasing the amount of acid. Too much pickling will produce a black sludge of carbon on the castings which is hard to remove. Because of the extreme corrosive nature of this acid, it is best to drain the used acid from the tanks and rinse the castings with a hose before removing them to save the operators' hands.

Just prior to the actual tinning the castings are wet milled using star shot and water. The same precautions with regard to packing apply as in the case of dry milling. It is essential that the water does not leak away and leave the castings exposed to air as they will become oxidized and the milling will have to be repeated.

Dilute Hydrochloric Acid Used

After 10 to 12 hours of wet milling, some operators drain the water, add hydrochloric (muriatic) acid and more water to the mills, and roll them for another 30 to 60 minutes. The acid is added to the water in the proportion of 1 to 70, although this may be varied from 1 to 50 to 1 to 100 and still obtain good results. When acid milling is set up as a permanent part of the process, it is advisable to equip the mills with release valves, which allow the generated hydrogen to escape and yet seal the mills against water leakage.

While it might appear that the long wet milling would clean the castings sufficiently without the acid treatment, experience has determined that for steady production and uniformly bright tinning, the acid milling is necessary. This is due to the fact that during the wet milling a certain amount of oxidation takes place which is removed by the acid treatment.

After the acid treatment the castings are stored under water until they are to be tinned. This under water storage prevents rusting. If kept under water too long, the castings will not tin readily. Forty-eight hours is the limit of safety.

Just prior to tinning, the castings are dipped into the flux. Some operators refine this step of the process by using three tanks. The first tank contains a solution of 1 to 50 hydrofluoric acid and water. The second contains cold water, and the third a zinc chloride dipping flux readily obtainable commercially.

If quantities are relatively small, and the castings are of size to permit it, it will be found that an ordinary wooden washtub makes a suitable low-cost dip tank. A light-gage lead lining will increase the life of the tubs. The thin sheet metal bands of the commercial washtub should be removed and welded rods substituted. Dip tanks should be set on "sleepers" to facilitate cleaning around them.

Temperature Control Important

The tin pots should be kept at a temperature of approximately 550 degrees Fahr. at all times. In the absence of a pyrometer the pots should be kept at just such a heat that the flux smokes. If the tin chars a pine shaving, it is too hot for tinning purposes. To prevent oxidation of the molten metal, the surface of the first tin bath or roughing pot should be covered with flux to a thickness of ¼ to ⅜-inch. Most chemical companies can supply solid zinc ammonium chloride for this purpose. The flux melts down to a black fluid which covers the surface of the molten metal. It should be renewed by the operator as required. Skimming should be frequently carried out.

It is maintained by some that castings need only be held in the tin bath until the tongs cease to vibrate. Experience has determined, however, that it is necessary to hold them in the bath until they come to the temperature of the molten tin. The operators soon learn from experience how long castings should remain in the pots. The time of course is variable depending upon the amount loaded in the pots at any given time.

After the castings have reached the temperature of the roughing pot they are removed with tongs and dropped into the finishing pot, which is covered with a layer of beef tallow. This pot can be run cooler than

Major Norton Improvements in Tool Grinding Wheels . . .

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the roughing pot, and a little experience will indicate to the operator when the pot is running too cold. The melted tallow should be skimmed frequently from the finishing pot, if it begins to appear lumpy. The layer should be maintained at a thickness of approximately ½-inch.

It will be found economical to employ the same operator and the same tongs to remove castings from the roughing pot and place them in the finishing pot. After immersing the castings in the finishing pot, the operator should remove them with the same hot tongs and hand them to the *shaker*, who twirls them around to remove surplus tin. The shaker's tongs are cold. The reason for this is that it is almost impossible to use the same hot tongs for this part of the process as are used for the roughing pot. The hot tongs stick to the tinned surfaces.

After shaking, the castings are dipped in kerosene, then plunged into cold water, and finally laid away. The kerosene tub must be kept cool by a water jacket, and skimmed frequently.

Buffing Produces Bright Finish

For an extremely bright finish the castings are given a light buff with a soft cloth wheel. Practically the same results can be obtained at a lower cost by packing them fairly tightly in a wooden barrel with hardwood sawdust, and rolling them for an hour.

It may be interesting to note that malleable castings respond readily to the foregoing process.

Steel pieces tin readily and do not require the preliminary milling and hydrofluoric acid pickle. It is absolutely necessary to clean all grease or oil from the steel pieces by a cleaning solution. Approved practice includes running them through a cleaner, then a cold rinse, and then immersing them in a boiling solution of 1 part hydrochloric acid and 50 parts water for five minutes.

Castings too small to be handled readily with tongs may be tinned in wire baskets. The basket should be of such size that the parts it holds will not weigh more than 15 to 18 pounds. The wire should roll outward over the top reinforcement and should be braced strongly. The handle should be about 40 inches long and preferably made of steel tubing, ⅜-inch outside diameter and 1/16-inch wall.

At first operators may find that the small pieces in the basket stick together. This trouble disappears as the operator gains experience. The easiest remedy is to mix parts that are half-round with flat pieces, or to keep special spherical pieces for the purpose. Quick shaking and dumping will remove most of the trouble. Pieces with holes in them may be strung on wires, lowered into the pots, and shaken by the loop of wire which should resemble a hoop.

Retinning, which is always a difficult process at best, is most easily accomplished by milling the casting over again with the tin on them.

Freshly tinned work should be removed quickly from the acid and steam as they will dull quickly in a moist atmosphere. Special jobs for shelf merchandise should be wrapped in wax paper immediately.

The high cost of tin makes it desirable to recover as much as possible from the dross, and drippings. If the shaking is done over a sawdust box, place the caked sawdust into a melting pot. A black mass comes to the top which can be skimmed readily leaving a good grade of tin at the bottom. Experience has shown that the dross must be melted down in a steel or cast iron pot, and tapped from the bottom as it melts. High temperatures are to be avoided and flames should not be allowed to come into direct contact with the tin. Reclaimed tin should be used in conjunction with fresh tin and then only in the roughing pots.

Natural Patina Applied to Copper in Field by Novel Electrolytic Process

THE soft, blue green patina that forms on copper after years' exposure to weather distinguished the roofs and architectural trim of many of our older buildings. Copper is used today for similar purposes but modern tempo cannot wait for the formation of a natural patina. Owners and architects want the beauty and dignity of old copper roofs in months instead of years, and they object strongly to the dirty black films that form on exposed copper before the appearance of a natural patina.

Early Attempts Unsuccessful

Since the discovery that the natural patina on copper is largely a basic copper sulphate many attempts have been made to form this compound in place by artificial means. For the most part, these attempts have been unsatisfactory as the patina produced does not equal the natural patina in color, appearance or permanence.

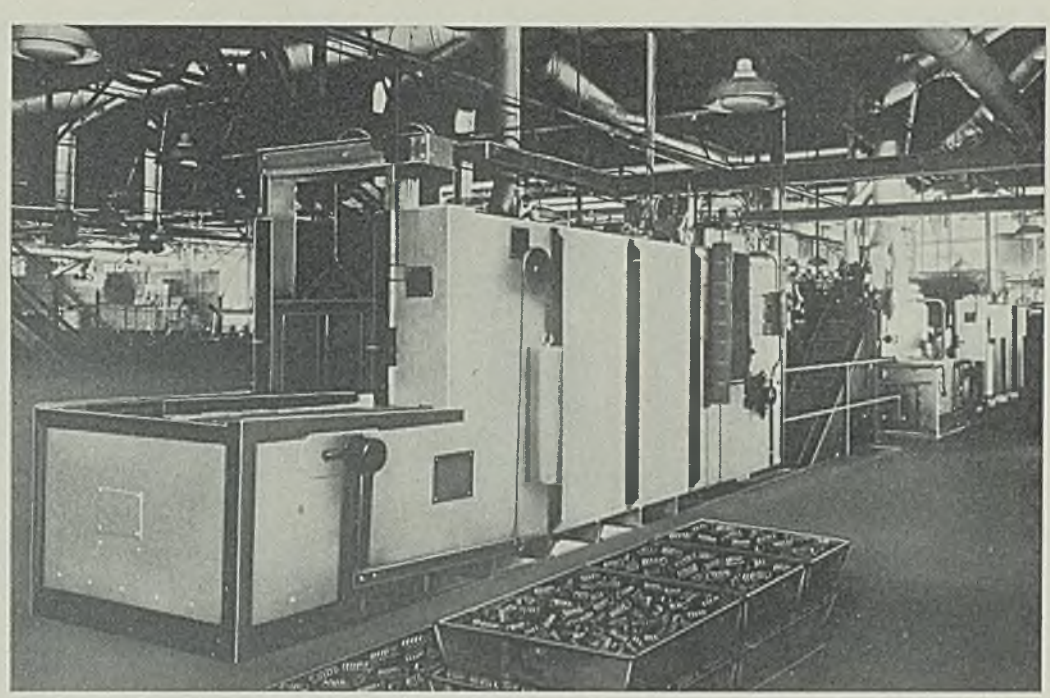
A rapid electrolytic method has recently been described by Battelle Memorial institute, Columbus, O. This method is based on the rapid formation of a patina composed of basic copper carbonate. The appearance of this patina, as formed, is similar to the natural product. It gradually changes on exposure, to the desired basic sulphate and in from six to eight months, the patina so produced cannot be distinguished from the natural product formed over many years.

The patina can be applied by immersion of the copper in a bath of sodium bicarbonate and the application of current. Most architectural applications require the artificial production of a patina after the copper has been installed. To use this method, the copper should be thoroughly cleaned with soap and water, rinsed and then slightly etched with dilute nitric acid. This can be done by hand with mops or pads of cloth. As soon as possible after cleaning, the electrolytic application should be started. The copper is made the negative side of a direct current circuit and a small pad or cloth covered roller the positive side. A dilute solution of sodium bicarbonate is used to saturate the pad or roller. The copper is slowly swabbed with the roller so that the current passes through the sodium bicarbonate solution to the copper and forms basic copper carbonate in place. Experience has shown that a current of about 300 amperes per square foot is the most suitable.

The total cost of application on a cleaned surface is about 2½ cents per square foot. The cost of cleaning and acid treatment is additional and depends on the amount of cleaning required. A convenient source of direct current can be found in the portable generator sets used for welding. The success or failure of this process depends largely on the care used in cleaning the copper. Building roofs coated in this manner have been under observation in Columbus for several years, and the appearance and condition of the patina are satisfactory.

New Die Casting Enamel

Air-drying lacquer enamels which are especially designed for finishing zinc and aluminum alloy die castings have been developed by Maas & Waldstein Co., Newark, N. J. They are said to produce a durable, elastic finish in one coat. Standard or special colors can be supplied as desired.



Heat treating furnaces where the springs are treated, tempered, quenched and drawn in a continuous controlled cycle

Die Springs Coiled from Wire of Keystone Cross Section

A NEW flat rounded die spring, which develops a new type of cross section for springs of this class, has been announced by Danly Machine Specialties Inc., Chicago.

The new spring is coiled from keystone wire which assumes a rectangular cross section, developing the full strength of the wire and increasing flexibility, travel and fatigue life.

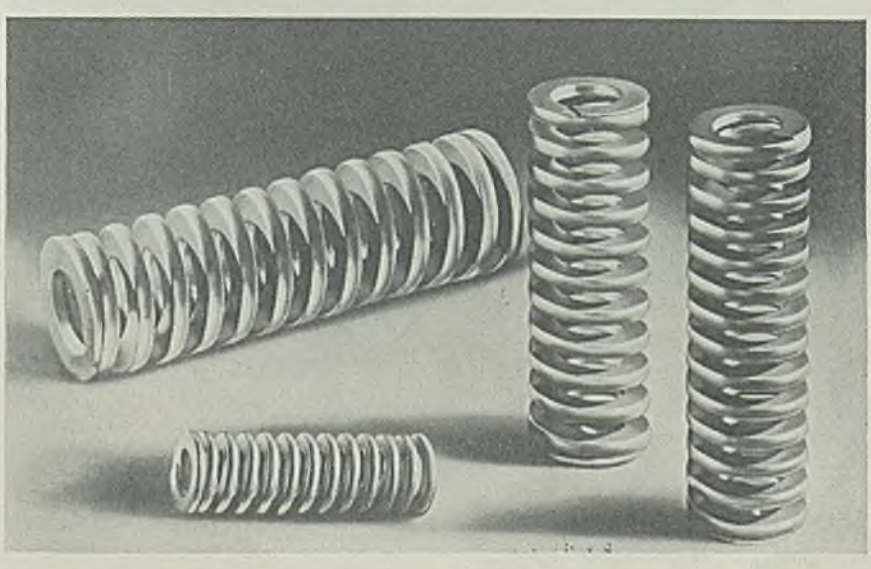
In previous practice, die springs were coiled from a rectangular oval wire, which took the shape of a trapezoid with the thick section on the inside diameter of the spring, reducing travel. This shape also weakened the spring on account of the reduced section at the outside where the greater circumference naturally increased the stress.

In developing the present spring, many types of spring steel were tested to destruction in fatigue tests. From these tests a spring steel wire of a special alloy with the keystone section was selected as giving the present practical ultimate in fatigue life. Preliminary tests extended over a two-year period. After the selection of the steel, another year was spent in developing the section for each of the 15 standard free lengths of flat rounded die springs embracing diameters from ¾-inch to 2 inches.

Enlarged cross-section of the wire used in the construction, shown at left, and right, the shape assumed by the wire as it is coiled

Coiling is all done by completely automatic machinery. Following the coiling of the spring, each spring is heat treated by a special controlled heat treating process, utilizing three-zone furnace control and fixed oil quenching temperature.

The springs are laid flat on the furnace conveyor and brought up to temperature in this furnace. They are then quenched in an oil bath and conveyed through drawing furnaces, following which they move to japanning ovens.

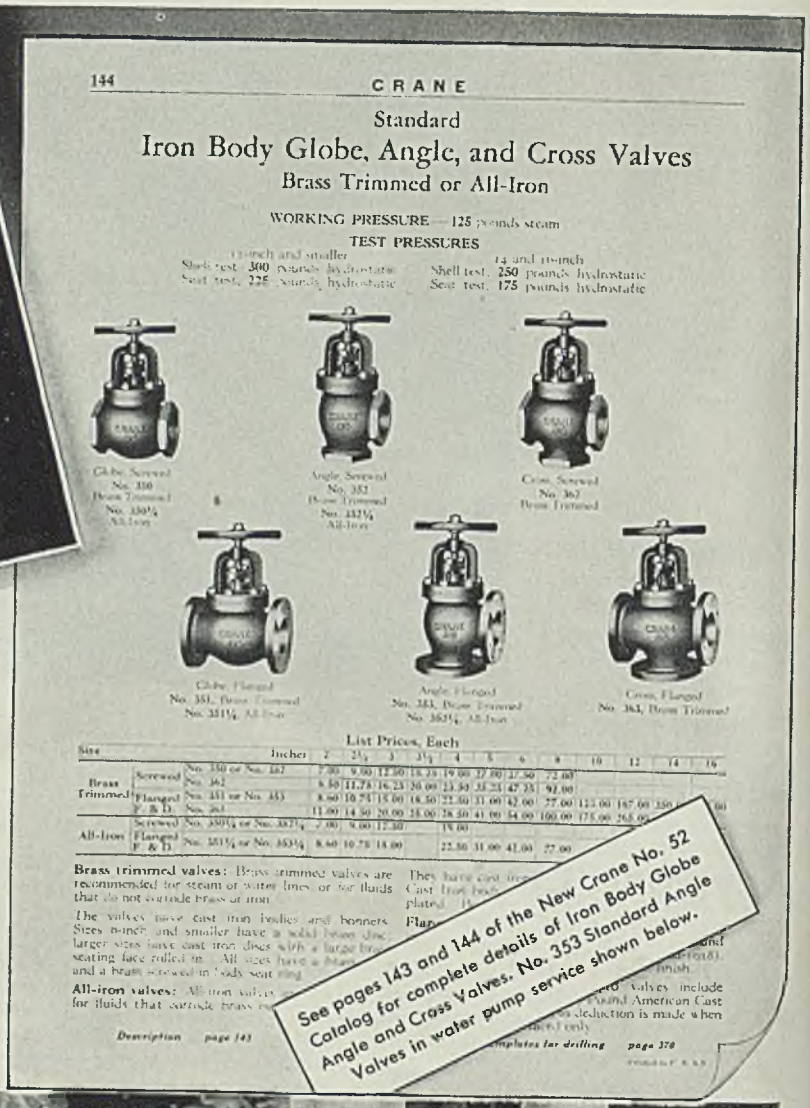


A group of the new die springs, showing the flat rounded construction

Lazy Tongs Developed To Aid Radiographic Inspection

In industrial X-ray work the problem of supporting and fixing the tube and leads in the desired position during the radiographing of metal parts

FOR Run of Plant SERVICES


144 CRANE

Standard

Iron Body Globe, Angle, and Cross Valves

Brass Trimmed or All-Iron

WORKING PRESSURE — 125 pounds steam

TEST PRESSURES

12-inch and smaller: Shell test 300 pounds hydrostatic; Seat test 225 pounds hydrostatic

14 and 16-inch: Shell test 250 pounds hydrostatic; Seat test 175 pounds hydrostatic

Globe, Screwed, No. 350, Brass Trimmed, No. 350¼ All-Iron

Angle, Screwed, No. 353, Brass Trimmed, No. 353¼ All-Iron

Cross, Screwed, No. 367, Brass Trimmed

Globe, Flanged, No. 351, Brass Trimmed, No. 351¼ All-Iron

Angle, Flanged, No. 353, Brass Trimmed, No. 353¼ All-Iron

Cross, Flanged, No. 363, Brass Trimmed

List Prices, Each

Size			Inches	2	2½	3	3½	4	5	6	8	10	12	14	16
Brass Trimmed	Screwed	No. 350 or No. 367		7.00	9.00	12.50	18.25	19.00	27.00	37.50	72.00				
		No. 362		8.50	11.75	16.25	26.00	23.50	35.25	47.25	92.00				
	Flanged F. & D.	No. 351 or No. 353		8.60	10.75	15.00	18.50	22.50	31.00	42.00	77.00	123.00	167.00	356.00	460.00
		No. 363		11.00	14.50	20.00	28.00	28.50	41.00	54.00	100.00	175.00	265.00		
All-Iron	Screwed	No. 350¼ or No. 367¼		7.00	9.00	12.50		19.00							
	Flanged F. & D.	No. 351¼ or No. 353¼		8.60	10.75	15.00		22.50	31.00	41.00	77.00				

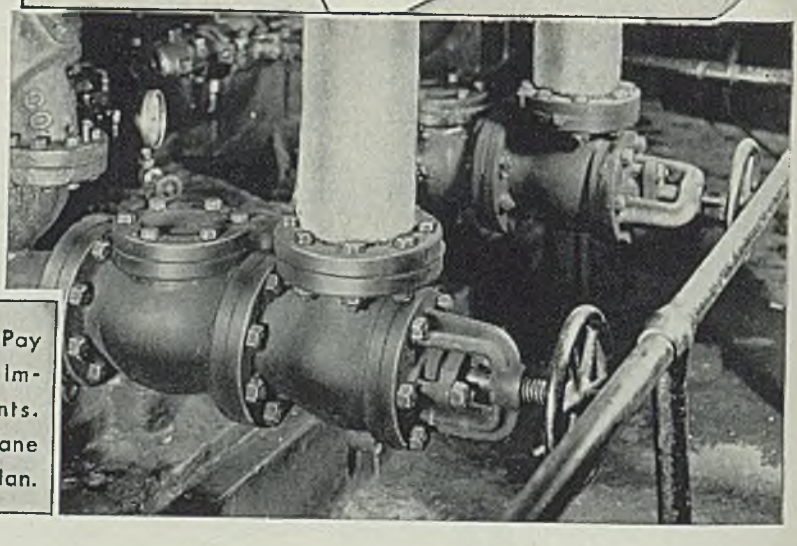
Brass trimmed valves: Brass trimmed valves are recommended for steam or water lines or for fluids that do not corrode brass or iron. They have cast iron bodies. Cast iron bodies plated. Flan

The valves have cast iron bodies and bonnets. Sizes 8-inch and smaller have a solid brass disc. larger sizes have cast iron discs with a large brass seating face rolled in. All sizes have a Monel and a brass screwed in body seat ring.

All-iron valves: All-iron valves for fluids that corrode brass or iron.

Description page 143 *Templates for drilling page 370*

See pages 143 and 144 of the New Crane No. 52 Catalog for complete details of Iron Body Globe Angle and Cross Valves. No. 353 Standard Angle Valves in water pump service shown below.



● Standardizing on one make of valve for many services reduces valve inventory, simplifies maintenance and is often a godsend in cases of emergency.

Standardizing on Crane valves and fittings means even more than this, because every Crane valve and fitting is made with the thought of long life, minimum maintenance and interchangeability of parts foremost in mind.

For example, the Crane No. 353 Standard Cast-Iron Angle Valve is economical in first cost, is reinforced against wear at every vulnerable point, has renewable and regrindable disc and seat to insure low maintenance and is of the outside screw and yoke type to make stem-thread lubrication easy and quick. This valve, and its companion globe and cross valves are all available in both brass-trimmed and all-iron types. Made in sizes up to 16-inches for 125-pounds steam pressure, this line is suited for a wide variety of steel mill services involving the control of steam, water and many corrosive fluids.

Rivaling the versatility of these valves, is the convenience and dependability of Crane Service. There is a Crane branch or distributor in your city—fully stocked and well-manned to insure prompt, intelligent service and co-operation.

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VALVES, FITTINGS, FABRICATED PIPE, PUMPS, HEATING AND PLUMBING MATERIAL

is often difficult. Angle and height settings present the major problems. Frequently the piece to be investigated cannot be conveniently handled and must be placed in the laboratory without regard to the most advantageous positions for radiography.

This problem has been reported solved by the General Electric Co., Schenectady, N. Y., by the development of a system of support using "lazy tongs". The tongs are constructed of kiln-dried, treated maple wood, and are connected to a traveling crane of the same material through a joint which permits the tongs to revolve through an angle of 180 degrees in a horizontal plane. The motion of the tong mounting on the cross member of the crane, and that of the cross member itself, are controlled through guide ropes and pulleys. The pantograph allows a wide variation of heights for radiographic operations.

Babbitt Is Applied By Spray Method

FOR a number of years it had been known that babbitt could be sprayed nicely and easily and would give excellent results, but a great difficulty was encountered in drawing a babbitt of high tensile and compressive strength into a wire of the gage necessary without breaking the metal in the process of drawing. About a year and a half ago this trouble was overcome and now, according to *The Metallizer*, official organ of the International Metallizing association, sprayed babbitt is being used widely for babbitting bearings of all sizes and descriptions.

Principal advantages of babbitting bearings by the spraying method are cited as follows: (1) The babbitt is thoroughly bonded to the back, eliminating any chance of the lining heating and running out of the box; (2) tinning and anchoring are not required, making it simple to babbitt iron and steel boxes; (3) blow holes are eliminated; and (4) it is possible to apply extra thin linings for bearing operating under shop pressure or high speed.

Thin Linings Possible

The last point is particularly interesting, since by using the spraying method it is possible to apply extremely thin linings for bearings that would ordinarily run hot because of high speeds or pressures. This thin lining helps to transfer the heat from the inside out through the box and thus gives a much cooler running bearing. However, it does often mean that the box must be redesigned to be sprayed. In other words, when using sprayed babbitt, much less metal is required—just enough to take the necessary wear in the bearing.

Two methods usually are used in doing this work. One is simply to grit blast the box in the usual manner of preparing for sprayed metal. If possible, the metal should run over the edges a little on each side of the box. This will give a good bond. The second method is to tin the box in the usual manner, then just before applying the sprayed metal to apply a torch to heat up the tin so that it is soft. The babbitt can then be sprayed onto the hot tin and will form a fuse bond with it. The tin already being fused to the box, a completely fused bond is obtained throughout.

Care must be used that there is no oil in the box—this usually gives considerable trouble because many of the boxes are soaked with oil. All of this oil should be drawn out by heating before spraying is attempted. The babbitt should be applied so that there will be just a slight excess either for machining or for scraping the bearing.

Sprayed babbitt also has been used extensively to eliminate the tinning operation in cases in which a great deal of babbitt must be cast. For instance, the usual procedure is to tin the box and then cast the babbitt. The procedure is to sand blast the box, spray on a light coat of babbitt, and then cast the bearing in the usual way. Thus tinning is completely eliminated. This type of work is done where the bearings are large and where heavy thicknesses of babbitt are necessary, requirements which would make spraying cost prohibitive.

Washing Machine Tub Dies Show Good Performance

Nickel-chromium cast-iron dies used in an Ohio plant for forming round washing machine tubs have established a remarkable performance record. One set recently had turned out over 176,000 tubs and from all appearances would make an equal additional number without redressing. This tub manufacturer reports that ordinary unalloyed cast iron dies in this service require redressing after each 2000 to 10,000 pieces.

Another set of dies, used in making square tubs, have run over 40,000 pieces without redressing or replacement, and appear good for several times that figure.

The usual composition employed for dies in this service carries a nickel content of from 2 to 4 per cent, and chromium from 0.75 to 1.00 per cent, depending upon severity of the draw. Aside from possessing good mechanical properties as cast these irons show excellent responsiveness to heat treatment, possess a fine grain structure, take a high polish, and eliminate any undesirable galling and streaking in the metal being formed.

As cast, this nickel-chromium iron has a brinell hardness of 250 to 300, and a tensile strength of 40,000 to 50,000 pounds per square inch. After heat treatment, the hardness is 450-550 brinell and tensile strength 30,000-40,000 pounds per square inch. The producer states that the good wear resistance obtained by heat treatment eliminates the necessity for the old practice of using hard steel inserts at points of extreme wear, thus avoiding much machine work which formerly was required to provide the recesses for the inserts in the castings.

How To Cut Wire Cable With Oxyacetylene Torch

Cutting wire cable by means of the oxyacetylene cutting blowpipe is by no means a new operation, however, for the benefit of those who are interested in the procedure, the July issue of *Oxy-Acetylene Tips* outlines the detailed steps.

Once the point to be cut is determined, the cable is bound with wire in four places. The wire winding is done twice on each side of the spot to be cut, the first or second winding to the line of cut being about 2 inches away. The second winding is placed 3 to 4 inches back from the line of cut.

When the cable is thoroughly bound up in this fashion, the cut is made, and the loose ends are then secured from unraveling by the application of bronze welding rod. In one plant, a steel hook is bronze welded onto the end of the cable remaining on the reel so as to assist when unwinding the cable as small orders come in.

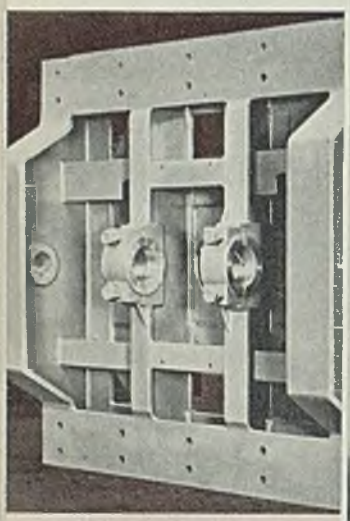
Excavated Material Proves To Be Good Core Sand

A midwestern city opportunist with foundry training noted the character of the material being excavated from a public sewage project. The material was a satisfactory grade of core sand, but, the intention was to convey it to a convenient dumping area. The foundryman contracted for all the material, interviewed all the foundrymen in the city and disposed of it to them.

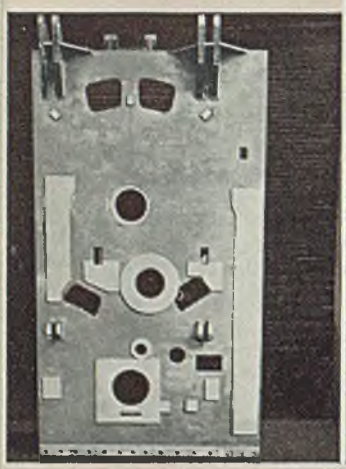
Plowshares Hard Surfaced

A large canning concern in Illinois reports that stellited plowshares have been running 100 hours—which is equivalent to a distance of 200 miles—and are still in fair condition. While no direct comparison is given, this life is said to be far in excess of that obtained with standard shares under similar soil conditions.

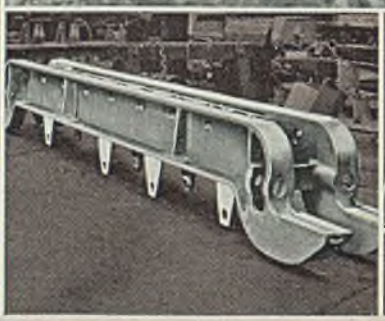
They do Great Things



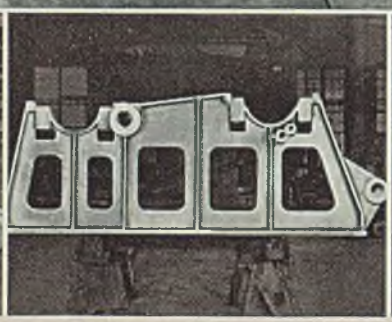
1. Bottom view of the shovel bed frame. Made from Carnegie Beam Sections and plates. All parts stress-relieved.



2. Top view of the rotating machinery support frame. Also made from Carnegie Beam Sections and plates.



3. Cat walk beam side frame. Carnegie Beam Sections and steel castings used in construction.



4. Hoisting drum, side frame machinery supports. Made from plates and rounds.

5. Another view of side frame machinery supports. Also made from plates and rounds.

ALL-WELDED CONSTRUCTION!

Pictured here is the standard Marion Clutch-type Dragline Shovel with an 80 foot boom and a 2½ yard shovel fabricated by the Marion Steam Shovel Company of Marion, Ohio. This all-welded shovel is concrete and forceful evidence that Rolled Steel right now is playing an ever more important part in machine construction. Why? Because, particularly in steam shovels, weight must be reduced without sacrificing strength. Patterns must be eliminated so that changes in design can be quickly, inexpensively made. Designers need more freedom in design. Rolled Steel and welded construction, as you will see from the Marion all-welded parts illustrated below, are admirably solving all of these problems at low cost.

6. Here is the assembly of parts pictured in the other illustrations.

. these

Carpenters in Metal

STRANGE hooded figures handling bluish lights of almost blinding brilliancy. Welders—industry's carpenters in metal—symbolizing the swing of machine construction to Rolled Steel.

Time was when use of Rolled Steel was restricted to bed plates, roller tables, conveyor frames. Only these simple parts were constructed because Rolled Steel could not readily be cut into irregular shapes—because riveting or bolting were the only accepted methods of fabrication.

Then came flame-cutting and welding. Almost over-night these carpenters in metal made possible faster, easier, more economical machine construction. Machine designers quickly saw how Rolled Steel's adaptability speeds up jobs, saves money — how patterns are eliminated, machining costs lowered, and time shortened . . . production costs reduced.

Today Rolled Steel has completed its apprenticeship. In an amazing number of applications this modern manufacturing process has demonstrated its ability to produce a higher quality job at lower cost, than any method hitherto employed. Why not consider it for your jobs?

CARNEGIE-ILLINOIS STEEL CORPORATION, *Pittsburgh - Chicago*
TENNESSEE COAL, IRON & RAILROAD COMPANY, *Birmingham*
COLUMBIA STEEL COMPANY, *San Francisco*

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

UNITED STATES STEEL

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.

Monopoly—Political Style

BOTH political parties have come out strongly against monopoly in their platforms. If they were sincere, it would certainly make trouble in the welding industry since patent monopoly by government grant is one of the foundations of the business. Of course, no one has any intention of disturbing that situation.

Perhaps it is the telephone monopoly the politicians are after. It was established in a most ruthless manner. The mere fact that the United States has the best telephone system in the world and almost everyone can afford to have a telephone may not count with them. Also, it would wreck the excellent service everyone enjoys to break the system down into competing units. We are afraid the voters would not stand for it.

Then, there is the incandescent lamp monopoly. The politicians might revoke the patents on machinery on which it rests. The mere fact that the monopoly steadily produces better lamps for less cost and everyone can buy them at the low prices has not occurred to the political gentry.

"Oh," say the politicians, "we are only after the bad monopolies." Like what? the voter inquires. The answer is hard to find. Bad monopolies fail rapidly because of their own defects. Good monopolies persist because they reduce prices steadily and provide a safe investment for the earnings of the people. The politicians are joking with the people about monopoly.

Profits from Change

WHEN fusion welded pipe was substituted for lap welded pipe, in some instances large profits were made. When welded road building machinery was introduced, similar profits accrued. The company which applied welded steel construction to the underframing of high-speed trains made money by doing it. Application of welding to the building of field erected storage tanks has been profitable to the company which has spent the time and money to make a success of it.

Each change a progressive company makes brings a trail of followers who never initiate a change themselves but imagine they can profit by the leader's courage. The followers seldom do earn reasonable profits for doing what they are compelled to do. As soon as all the followers are on the trail, the profits disappear for everyone and the leader must again change, doing a better job for less money.

Such movements are illustrated in every industry. The cycle is clear-cut: First, adoption of a new idea with attendant expense and trouble; second, the idea succeeds and the profits are large; third, competitors cut the price and the profits gradually disappear; fourth, adoption of another new idea. The rapidity of technical development in the welding field is such that the entire cycle seldom lasts more than six years.

Obsolete design and welding practice is too expensive to endure.

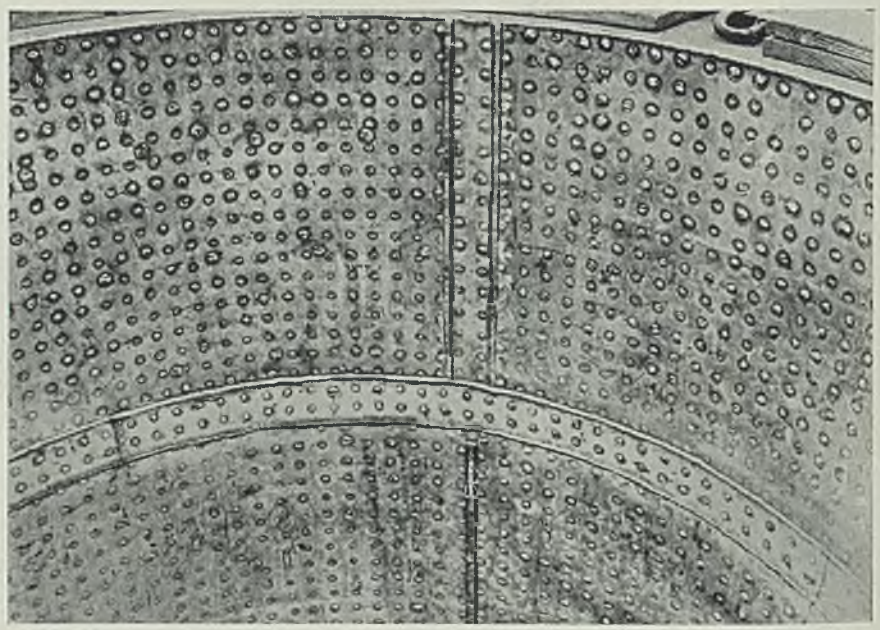
"Super" Sleeps Better Now

IN THE course of one of our jobs recently, we found a production superintendent on a tough spot in connection with welding. He had to produce considerably more without plant extension and had been informed that he must cut labor costs by 25 per cent in the next three months—or else.

While the job cannot be identified, it may be said that the welding practice was good, an equitabe incentive system was in use, there was no labor trouble, the operators were using all the heat the job would stand, the superintendent had to his credit more than ten years' experience doing the job.

The solution was found in a new method about which the superintendent could not possibly have known. New welding methods are usually known by professional welding men about a year before they are publicized and often two or three years before salesmen bring them to the attention of busy production superintendents.

Stainless Lining Installed by Welding



THIRTY thousand holes but not a leak! Shown here is a portion of a stainless steel lining welded into a cracking plant dephlegmator. To apply the lining, which is 1/16-inch 18-8 stainless steel sheet, 9/32-inch diameter holes were punched 1½ inches apart and the holes, totaling 30,000, were welded up inside the dephlegmator with a special 18-8 stainless steel arc welding electrode. The lining has been in service seven months without a single leak. Welding was done by La Consolidada, S. A., Mexico, D. F. Photo courtesy Lincoln Electric Co., Cleveland

METAL SHOW ISSUE
OCTOBER 12, 1936

INFORMATION

GENERAL

The National Metal Congress and Exposition, sponsored by the American Society for Metals, will be held at the Public Auditorium, Cleveland, Ohio, October 19-23. The following technical societies, will participate:

American Society for Metals
American Welding Society
Iron & Steel Division, A.I.M.E.
Iron & Steel Division, A.S.M.E.
Institute of Metals Division, A.I.M.E.
Machine Shop Practice Division, A.S.M.E.
Wire Association

Naturally, **STEEL** will play a prominent part in co-operating to make this Eighteenth Annual National Metal Congress a success. The issue of October 12 will carry the complete advance details of the exposition and convention, and will be in the hands of readers a week before the convention opens—ample time to make plans.

In addition, this issue will portray the increasing uses of metal alloys with a special section (largely pictorial) devoted to "Alloys in Action". This will serve to crystallize the interest aroused by the Metal Alloy articles which are a part of STEEL'S basic editorial structure.

This issue will serve to bring the exposition to those who cannot attend.

PUBLICATION

A feature of the October 12 issue of **STEEL** will be a combined editorial and advertising section devoted to the same interests as the National Metal Congress.

Those advertisers desirous of appealing to these same interests will find unusual value in being properly represented in the special section of this issue.

Added advertising value will be gained by "Alloys in Action", a pictorial feature which will be incorporated in this section. This will add emphasis and interest to the entire section to the decided advantage of all advertisers.

This interest value is not confined to the readers of **STEEL** who attend the Exposition, but extends in even larger measure to those similarly interested who do not attend, thereby depending more largely upon **STEEL** to bring the Exposition to them.

COLOR

Two colors will be used—red and black—printed on India tint coated stock.

RATE

Including color and insert position—$175 a page for regular advertisers—$200 per page one time.

BLEED-OFF

$25.00 additional for one page.
$40.00 additional for a two page spread.
(Bleed-off plates, $8\frac{3}{4}$ x $11\frac{7}{8}$ inches.)

CLOSING DATES

Final forms will close Wednesday, September 30. Reservation and copy requiring composition should be in Cleveland not later than Tuesday, September 15

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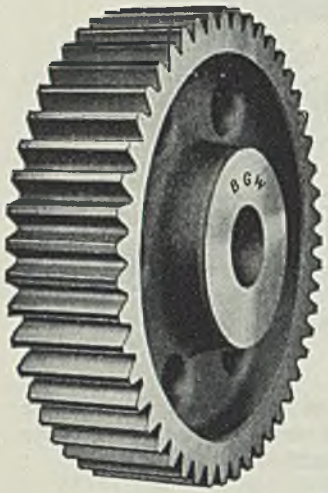

CUTTING THE COST OF POWER TRANSMISSION

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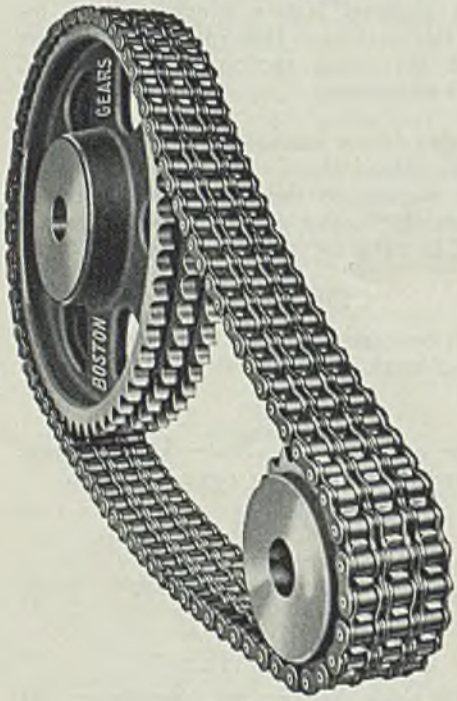

"From Stock," as applied to Boston Power Transmission Equipment, means *far more* than simply buying "ready-made" Gears, Chain, or Speed Reducers from a warehouse. First, the cost of Power Transmission can be cut only *by correctly designed and manufactured* products — and, secondly, these products *must be readily available,* in the type and size you want. This two-fold service is offered by the Boston Gear Works . . . the result of 50 years experience, in the making of *modernized and standardized* power transmission equipment. "From Stock" as applied to Boston Gear Products means exactly the right part — at the right price — delivered in a few hours from 21 service warehouses from coast to coast.

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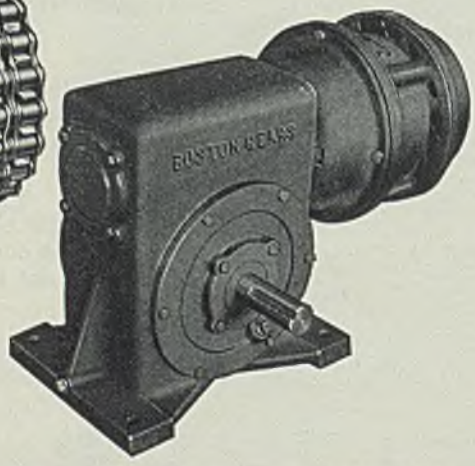

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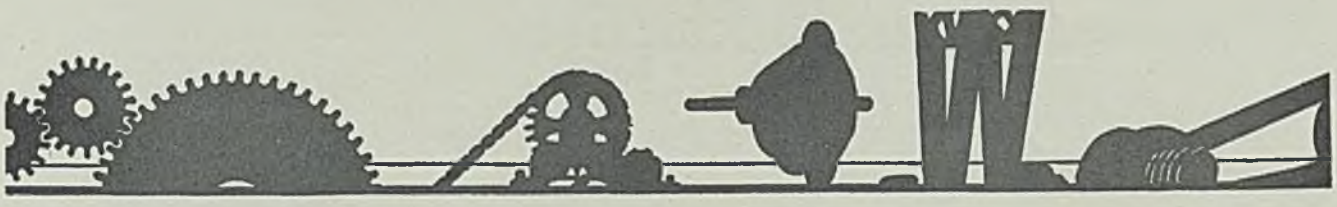
Power Drives



Air-Acetylene Torch Used in New Process for Splicing Rubber Belts

ALL transmission engineers realize the advantage of endless belts. However, one of the drawbacks has been the difficulty of making them endless on the job and the time required to make the splice. Usually a splice requires at least overnight setting and, on large belts, a week-end stoppage. In emergency cases, most of which can be prevented by anticipative maintenance inspections, stoppage must come out of productive hours.

A recently developed method of joining rubber belts is reported in the June issue of *Oxy-Acetylene Tips* issued by Linde Air Products Co., New York. This method of connecting belts permits making an endless splice of an 8-inch belt in one hour by the aid of the air-acetylene torch. In making the splice the plies are cut out at an angle and in steps in each end of the belt with the plies of one belt fitting into the plies of the other, as is the customary practice in such splices. This gives a belt joint of the same thickness as the original and as near maximum strength as possible. About 28 inches extra is required for making the splice in an 8-inch rubber belt.

Splicing Procedure

After separating and cutting the plies to match, all excess rubber is carefully removed from the surfaces of the fabric so as not to injure the threads. Two or three coatings of Balata gum cement are then applied carefully to the fabric, allowing each coating to dry thoroughly. Excess gum should be removed from the corners of the cut because, if the gum is not dry enough when heat is applied, gas pockets are created which result in "bootlegging" or separation of the plies. This is especially true with large belts. Two applications of cement are considered ample for 8-inch belts.

When the gum cement is dry the two ends of the belt are joined carefully. The belt is then placed in a belt press and compressed until perfectly flat and even. An air-acetylene torch is then applied to the entire surface over the top joint which is heated thoroughly but carefully to prevent burning or discoloring the surface of the belt. This requires rapid movement of the torch over the surface of the belt. In the case of an 8-inch belt the torch is used for approximately 5 minutes.

The heat draws the cement into the fabric, thus creating a firm bond. Immediately after heating, the spliced section should again be placed in the belt press for a few minutes until the belt is reasonably cool. For an 8-inch belt this requires about 5 minutes. Water may be used to hasten cooling.

For large rubber belts the two ends of the splice should be stitched to prevent the ends opening. This is not considered necessary on the lighter and smaller sizes.

On completion of this work the belt is ready for use. With 8-inch belts the entire splice can be made in an hour or less depending upon the skill and speed of the workman. This represents an important saving in time compared to splices made with cold cement, which usually require a stoppage of 8 hours or more depending upon the size and number of plies in the belt.

◆ ◆ ◆

Too Much Lubrication

WHEN antifriction lineshaft bearings are installed it is sometimes difficult for plant men who have been trained all their lives to oil bearings daily, or more frequently, to become accustomed to annual or semiannual servicing. This is not surprising, for these men know the inconvenience of bearing trouble resulting from inadequate or improper lubrication. To accept on faith new bearings with almost incredible characteristics is asking considerable of men with a somewhat skeptical viewpoint, who feel that their reputations are at stake in operation of the bearings.

In any number of cases department foremen oil or grease antifriction bearings surreptitiously. In some plants the maintenance department yields to the demands of the production departments and service more frequently. This is not only a waste of lubricant and oiling labor but as the excess lubricant must go somewhere it usually works out the end of the bearing. This necessitates the addition of can or bucket oil-catchers which are not only unsightly but also require emptying periodically, an extra expense. Such conditions are frequently found in connection with antifriction bearings of older types which have been installed several years and on which the seals are not as effective as with more recently installed bearings.

Recommended periods between lubrication for antifriction lineshaft bearings depend upon the type of bearing, speed, and severity of service. Only under exceptional conditions does the bearing manufacturer feel that lubricating more frequently than quarterly is ever justified. Usually annual or semiannual servicing is sufficient.

So that users may have a definite, easily remembered date for such servicing on bearings some manufacturers recommend that annual lubrication be done between Christmas and New Year's day, often a slack time in production and an easily remembered date. Semiannual lubrication may be scheduled July 4 and Christmas.

◆ ◆ ◆

Wherever possible it is always advisable to have one shaft movable so that center distance can be adjusted for wear or stretch.

◆ ◆ ◆

Transmission elements in power drives can receive more damage by improper starting than by years of service.

◆ ◆ ◆

A loosened bearing support which results in misalignment of parallel shafts can quickly do serious damage to chain drives.

Hard Facing Helps To Keep New Equipment Productive

BY E. E. LEVAN
Haynes Stellite Co.

TO JUSTIFY the purchase of new equipment from which greater profits are expected through increased production and lowered overhead, it is necessary to know accurately what the new machine will cost; what it will do; the cost of operation and the overhead; and the production and profit expected to be realized from the investment. But, unfortunately, it is usually difficult to estimate important factors of depreciation and maintenance. We finally arrive at some such answer as: This new machine will pay for itself in 1 year or 5 years or 10 years, as the case may be, if it operates a given number of hours per day for so many days each year.

We are continually faced with the important item of maintenance, depreciation and loss of production due to shutdowns and repairs. A new machine, no matter how efficient, represents a loss when it is standing idle. This is especially true with modern machinery, because it is designed for high production. Conditions of operation are so severe that often the life of the key parts, which determine the rate of production and the efficiency of the entire machine is so short it would seem that the machine could not earn a profit.

Abrasion Is Costly Problem

The loss of hours or even minutes means much in the output of the new high production units, and, to justify their expense, they must be kept on the job day in and day out, with a minimum of time out for repairs and replacement. This is where hard facing plays an important part in any modernization program — by helping to keep new equipment continuously on the job.

By the nature of its operations, the steel industry is constantly faced with the problem of abrasion. The clash of steel on steel as shears clip off the end of a bar, or punches smash their way through plate, may be music to the production man, but it is an alarm bell to the maintenance and repair department. Steel parts clashing or even rubbing together, especially at red heat, mean abrasion that rapidly wears away metal until its usefulness is impaired.

Fortunately, most of this wear is localized to such an extent that the actual wearing surfaces can be protected against abrasion by simply welding on a thin layer of hard-facing material. Special alloys are used for this purpose. One, a non-ferrous alloy of cobalt, chromium and tungsten, not only is exceptionally resistant to abrasion, but also retains its hardness at red heat. This latter property is of the utmost importance when the high temperature of most steel mill operations is considered.

Thus, actual wearing surfaces are protected against abrasion. Depending upon the type of hard-facing material used, these hardfaced parts outlast steel from 3 to 10 or more times. Because of longer life, fewer replacements are necessary, resulting in uninterrupted production and a general increase in operating efficiency. On an average, idle machinery and idle labor during replacement are reduced to one-sixth their former value. Though as a rule wearing parts are not hard-faced until they are worn in service, the process is also applied to new parts of equipment.

THE accompanying article on applications of hard facing in the iron and steel and manufacturing industries supplements the forum on obsolescence and modernization which appeared weekly in STEEL *between June 3 and Dec. 16, 1935. The author, E. E. LeVan, is general sales manager, Haynes Stellite Co., Kokomo, Ind.*

Hard facing is a process for keeping equipment on the job, keeping it producing where it will earn profits. As a modernization process, hard-facing requires practically no investment other than a welding outfit which is standard equipment in all steel mills. All that is necessary is a welding operator and a supply of hard-facing rods. For little or no investment, the economies derived from the use of the hard-facing process often are enormous. The following few typical examples illustrate how progressive plants are using the process.

At one steel mill, for instance, the forged steel hammers formerly used on the gag press would burn away 1/64 inch at each contact and had to be replaced with new ones every 6 days. Hard-faced hammers have run for 90 days—a life ratio of 15 to 1 over steel—a remarkable saving in upkeep and an important factor in continuous production.

One of the greatest savings that hard-facing has effected in the steel industry has been made on the different kinds of guides used in rolling mills. In one large mill a cast steel guide on the first finishing operation formerly had to be changed every 7 days and, after the first run, had to be reground every 3 hours. A hard-faced guide on this operation has run 10 weeks without change. Not only has this been a substantial saving through reduction in time lost in changing guides, but the percentage of scrap and seconds has been considerably reduced.

Merchant mills have had equally good results with hard-faced guides. One steel company is now hard facing all the guides in the rail mill. The superintendent reports that in a great many cases the hard-faced guides have shown a performance ratio of 30 to 1 over any other guide material previously used. In another steel plant, hard-faced guides have shown a life of 6 to 1.

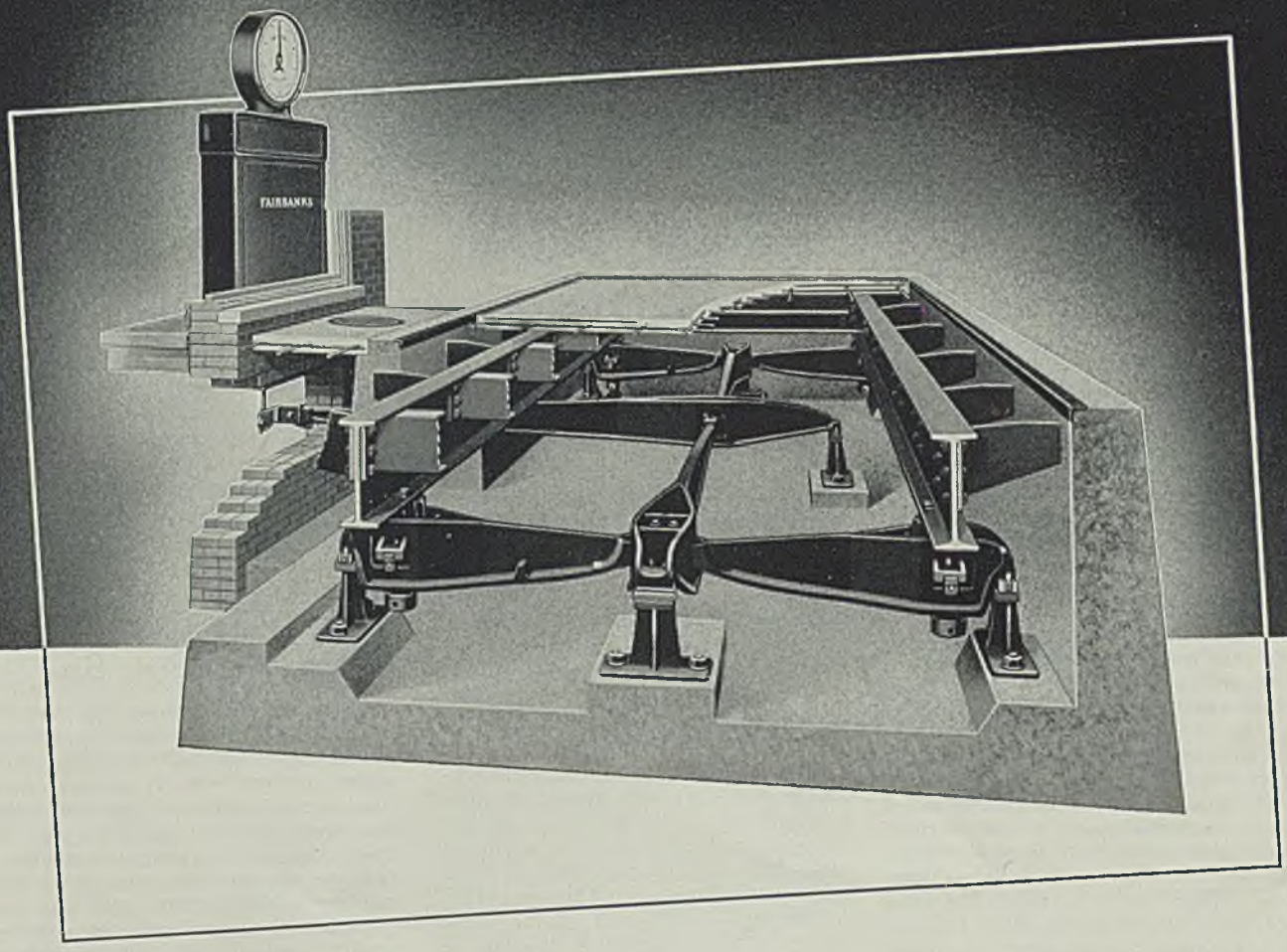
Examples of Savings

At a Chicago steel mill, hard-faced top flying shear knives shear 50 heats of red-hot alloy steel billets. Plain steel knives are good for only 6 heats. One of the large manufacturers of steel car wheels is now blanking the center hole of the forge steel wheels at a temperature of 2000 degrees Fahr. The cast-iron punch formerly used on this job had a life of from 3 to 10 holes before it had to be replaced. A carbon steel punch with a hard-faced cutting edge punches from 100 to 160 holes.

A list of such applications could be continued almost indefinitely. When hard-faced, such parts as coke pusher shoes, carbon scrapers, pulverizer hammers, mud gun screws, tap hole augers, skulling hooks, shear blades, guides, punches, and dies, spindles, diagonal rolls, knock-out blocks, cams, conveyor rolls, gate and globe valves for high pressure, high-temperature steam, and many others, show results equally as impressive as those mentioned.

Any factors such as wear and abrasion, which materially increase operating costs and reduce profits, are worthy of most careful study by steel mill management. The hard-facing process offers a simple and inexpensive method for successfully combatting these factors. It is readily adapted to any modernization program. It means a greater return on investment by assuring more continuous production and operation of expensive equipment.

NOW heavy duty plate fulcrum motor-truck scales at prices comparing with knife-edge types!



FOR over two decades, Fairbanks plate fulcrum scales have been proving their greater value over knife-edge type scales because of their greater strength and resistance to wear under heavy loads.

This selection was made because the plate fulcrum is the only weight-bearing weighing edge which does not wear down under service. Its permanent accuracy is not affected by the shocks and strains.

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FAIRBANKS Scales

PREFERRED THE WORLD OVER

Cites Further Progress in Direct Reduction of Ore, Conversion to Steel

FURTHER steps in the accomplishment of direct production of steel have recently been published in the bureau of mines report of investigation 3306. The information is part of the annual report of the bureau's metallurgical division, by R. S. Dean, chief engineer. A pilot plant demonstration was made of the practicability of reduction of iron ore by natural gas and conversion of this direct iron into steel by direct melting and by forging and rolling before melting. The structure and properties of the iron produced were studied in detail.

Availability of cheap natural gas and pyrite cinder formed the basis of the process evolved by the bureau. The essentials of the proposed process were catalytically re-forming mixtures of natural gas and preheated air to an active reducing gas containing hydrogen and carbon monoxide and then using the hot re-formed gas for the reduction of the cinders. After experimentation over a year's period, the metallurgical soundness and practicability of the process have been demonstrated, and figures have been obtained which will serve as a fairly accurate guide in estimating production costs.

Superior Steel Produced

Melting a bath of the direct iron in a commercial open-hearth furnace produced a grade of steel slightly superior to the average of the furnace when fed with scrap and pig iron, according to the investigators. Testing the direct reduction process has been carried on in the Martinez, Calif., plant of the Mountain Copper Co., in a unit having a capacity of 1 ton per day.

Extrapolation of cost data obtained from this 1-ton plant shows that a plant running production of 100 tons per day should average from $12 to $14 per ton, assuming natural gas to cost $0.15 per thousand cubic feet. Under normal prices, this figure would justify use of sponge iron as a substitute for scrap and pig iron under favorable local conditions.

Commercial operating conditions were used in the melting test, which showed that most of the expected difficulties in melting and refining were of negligible consequences. However, an extremely high grade of sponge iron cannot be produced from pyrite cinder, which is in itself an impure source. Outlets for this grade must be limited to competition with scrap and pig iron and similar forms of low-cost commercial iron. It is possible that with commercial development of the process, costs may be cut so that sponge iron can become a competitor with scrap on the present basis.

Economies in Use Of Die Castings

IN DESIGNING the new Model 900 Addressograph, engineers of the Addressograph - Multigraph Corp., Cleveland, have made many improvements through the extensive use, for the first time, of zinc alloy die castings. Economical in both space and weight, the machine, shown in the accompanying illustration, has acquired much greater portability and takes up about the same space as an ordinary typewriter. Appearance has received special design attention. Zinc alloy die castings are used for corner trim as well as for the embossed name.

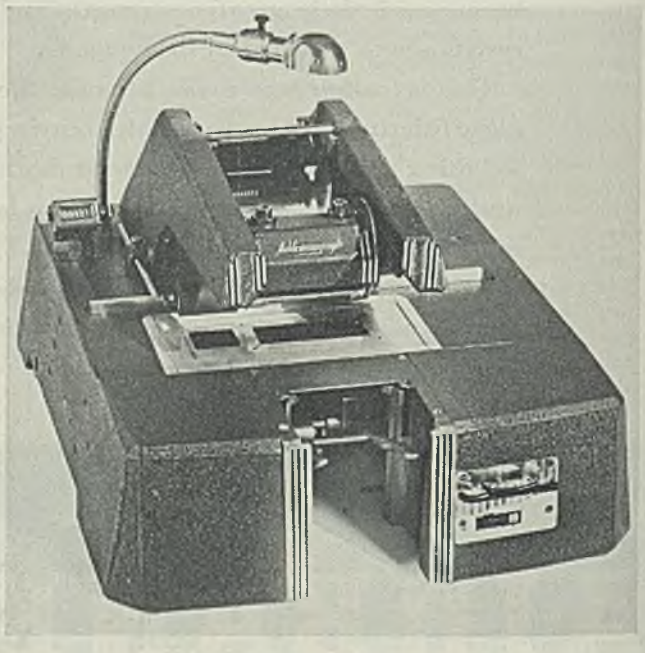
In redesigning the operating mechanism, the engineers gained in compactness by taking advantage of the strength and uniformity of about 20 zinc alloy die castings. The strength of these castings permitted reduction in the size and weight of the parts which in turn permitted the use of smaller supports and springs. Closer clearances were allowable with the use of die castings because of their extremely uniform production. Thin walls, reinforced by ribs and bosses effectively cut more weight.

Probably the greatest advantage derived from the extensive adoption of die castings was the reduction in machining and assembly costs which noticeably effected the advantageous price placed on this new model. Purchasing the ribbon spool as a die casting gives an accuracy in dimensions which would be prohibitively expensive to attain by machining, and so, in this case, die castings made it possible to adopt a patented design which has several valuable merchandising points.

Electrically operated, this model lists names, addresses or routine business form data at a speed of between 20 and 30 times as fast as ordinary typing. Control buttons at the front of the machine automatically feed the plates for consecutive, duplicate or repeat impressions; and although speed is from 1200 to 1500 impressions per hour, operation is practically noiseless.

Water Coil Increases Life Of Cast Iron Grate Bars

A prominent foundryman in the Northwest has developed a special type of perforated grate bar for use under boilers where sawdust and lumber refuse are used for fuel. The bar, made of alloy cast iron, is cast in two parts, the upper part containing the air openings, and the lower part a suitable cavity for the enclosure of a pipe coil. In service, water is circulated from a header through all the bars in the firebox. It is claimed that the bars show approximately five times the life of the ordinary bar.



USE of about 20 zinc alloy die castings improved appearance, reduced size and weight of operating parts and lowered machining and assembly costs of this addressing machine. Photo courtesy New Jersey Zinc Co., New York

Progress in Steelmaking

Three 50-Ton Recuperative Furnaces Serve New Continuous Sheet Mill

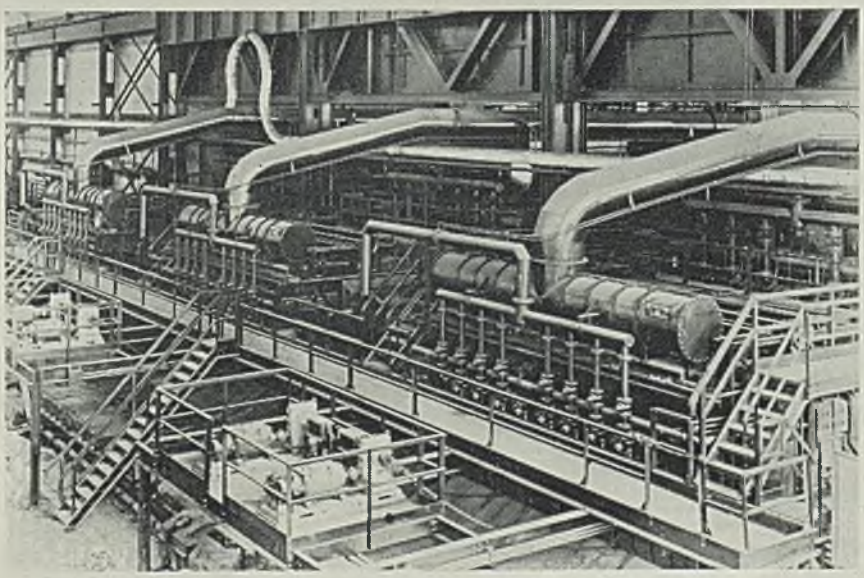
APPROXIMATELY 10,000 tons of slabs of various dimensions and chemical composition ready for heating and rolling as needed can be stored at the new continuous stripsheet mill of the Bethlehem Steel Co., Lackawanna, N. Y. Each of the three recuperative heating furnaces is designed to heat slabs up to 16 feet long in a single row, or 7½ feet in two rows, from 18 to 50 inches wide, at the rate of 50 gross tons an hour. They are fired with a mixture of blast furnace and coke oven gas. This is mixed in the main steel plant, about 2 miles distant, raised to 3 pounds per square inch, and piped to the furnaces of the hot strip mill where it is reduced in pressure.

For charging the furnaces, slabs of the desired size are piled by the crane onto a magazine pusher lift. When the operator throws his switch for raise, the magazine is lifted enough for one slab to be removed. The magazine chain drive is interlocked by limit switches so that it cannot operate to move a slab from the lift unless the lift is in the correct position. The chain drive pushes the slab onto a 3-section charging table, which allows the slabs to be placed in front of any of the three heating furnaces as desired.

Door Control Is Interlocked

Each furnace has two doors, and each door is raised by a 6-horsepower series motor. The control is interlocked by the use of limit switches so that the door cannot be opened too far. The furnace pusher has two arms which can be locked mechanically together or operated separately. The pusher motor control is interlocked by a limit switch with the door hoist so that the pusher cannot be set into operation until the doors are raised.

As a heated slab is required by the mill, another is pushed into the furnace which forces one out of the discharge end of the furnace and deposits it on the delivery table. This table is similar to the charging table, and is driven by three 50-horsepower motors.



Recuperative type of furnaces for heating slabs at new continuous stripsheet mill

• • •

Uses Asphalt Mold Coating

Highly satisfactory results are credited a mold coating recently developed by a German steelmaker. The solution consists of 63 per cent hard asphalt, 27 per cent turpentine oil, 1 per cent manganese borate and 9 per cent penzoil. Caution should be taken not to use asphalt derived from soft coal. The success of the mixture depends upon the use of natural asphalt.

• • •

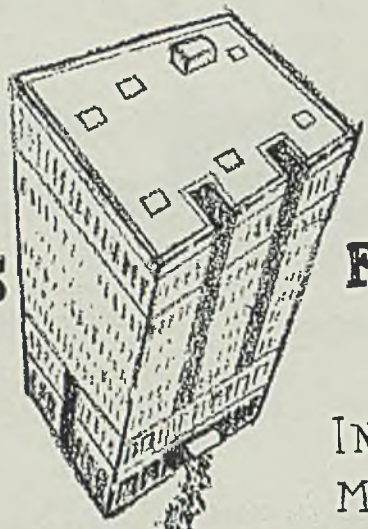
New Alloy Is Developed

An alloy which loses its magnetic qualities under heat but regains them upon cooling, has been developed. While its commercial use is not yet indicated, general application in several forms of heat control is suspected inasmuch as the degree of heat at which its magnetic quality is lost can be regulated.

• • •

Lance Facilitates Removal

Removing a spindle, 12 inches diameter and 15 feet long, from a large universal joint serving a piercing mill recently was accomplished in 40 minutes by the use of an oxygen lance. The spindle extended into the universal joint about 14 inches. Compared to previous methods a saving of 2 hours and 20 minutes was effected. The lance is used for this purpose about 12 times a year necessitated by spindle wear at the center bearing of the piercing stand.



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Studies Mt. Hope Suspension Bridge Cable Wire Failure

BY W. H. SWANGER AND G. F. WOHLGEMUTH
National Bureau of Standards

IN FEBRUARY, 1929, several months after the completion of the spinning of the cables, but before the completion of the bridge structure, fractures were discovered in the cable wires at the anchorages of the suspension bridge across Mt. Hope bay between Bristol and Portsmouth, R. I. During the next six weeks the number of broken wires increased to such an extent that it was considered necessary to dismantle the partially completed bridge at once to prevent its collapse. The national bureau of standards was invited, by those concerned with the construction of the bridge, to make such studies of the failed wire as would lead to an explanation of the causes of failure.

The failed wire was a basic open-hearth steel, with approximately 0.75 per cent carbon content, drawn to 0.192 inch, and brought to an ultimate tensile strength of approximately 220,000 pounds per square inch by heat treatment (quenching and tempering). The wire was galvanized by the hot-dip process.

The failed wire was replaced by a hot-galvanized steel wire of the same size, and of approximately the same carbon content, and ultimate tensile strength. The outstanding difference was that the high tensile strength of the replacement wire was obtained by cold drawing of hot-rolled and patented rod instead of by heat treatment of the drawn wire. The bridge, with cables of the cold-drawn wire, was completed in 1930 and no failures of wire have been reported.

Double Problem Studied

The problem therefore was two-fold. It was felt that not only should studies be made to learn the conditions that caused the heat treated wire to fail, but that the behavior of the cold-drawn bridge wire under the same conditions should also be investigated.

Results of numerous tensile strength, hardness, torsion, and bend tests on specimens of wire from the bridge were in close agreement with the reported results of similar tests made before the wire was installed on the bridge.

Extended studies of the microstructure of the failed wire did not disclose any evidence of defective material or faulty heat treatment to which the failure could be ascribed. There was marked uniformity in structure and properties of the steel itself in all of the wire examined. All cases of abnormally low strength or ductility, in mechanical tests performed in the laboratory, were found to be associated with defects at the surface of the wire. Intensive search failed to disclose internal cracks or fissures as a possible cause of the failure.

THE accompanying article is a synopsis of a paper presented at the thirty-ninth annual meeting of the American Society for Testing Materials in Atlantic City, June 29-July 3. The authors, W. H. Swanger and G. F. Wohlgemuth, are research investigators, national bureau of standards, Washington.

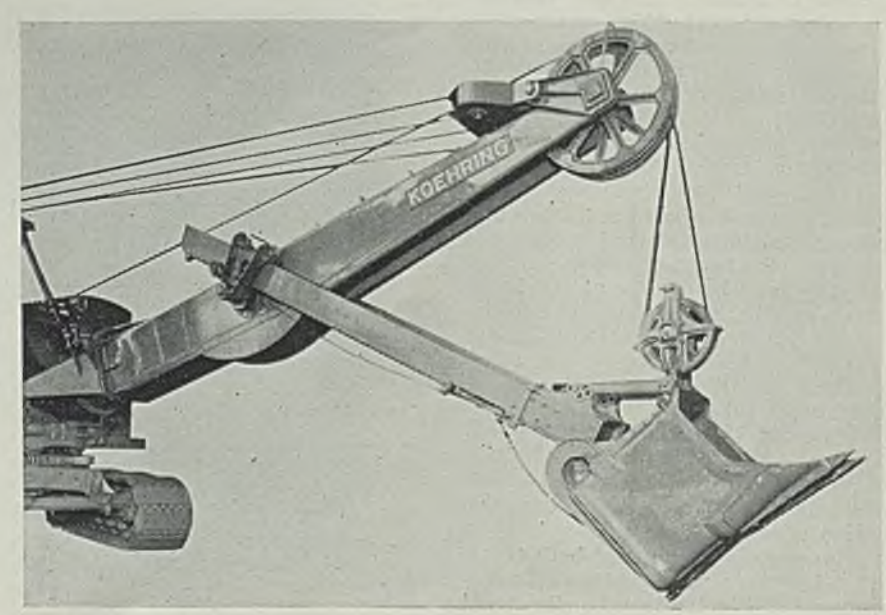
Specimens of the drawn wire, not previously heat treated, were heat treated according to the schedule of time and temperature used in the manufacture of the failed wire. Thermomagnetic and other studies indicated that after the wire had passed through the final tempering treatment no further change occurred in structure and properties at any atmospheric temperatures.

Anchorage Conditions Are Cause

The failures on the bridge had occurred at the anchorages. The wire at the anchorages was not different from that located elsewhere in the cables. The chance location of major surface imperfections in the comparatively short lengths subjected to the most severe stresses, which were at the anchorages, would account for failure of some wires of a cable strand while others, apparently subjected to the same stresses, had not failed. It was evident, therefore, that the cause of the failure was associated with stress conditions at the anchorages. Yet the cold-drawn replacement wire subjected to the same load has not failed. Either the stress conditions in the heat treated wire at the time of failure were different from those imposed upon the cold-drawn wire or the cold-drawn wire was better able to resist the stresses which caused failure of the heat treated wire. Results of the investigation show that both conditions obtained.

The fractured surfaces of wires which broke on the bridge showed definitely and almost without exception the characteristics of fatigue fractures. This fact indicated that

Beauty Added to Brawn



BEAUTY has been added to brawn in this streamlined shovel and constructed by the Koehring Co., Milwaukee, of arc welded steel. The shovel boom has a smooth, even surface, unbroken by protruding connecting members. Photo courtesy Lincoln Electric Co., Cleveland

fluctuating stresses were the damaging stresses when the wires failed.

Fatigue tests indicated that the fatigue limits of both types of wire were approximately the same, and that the failure of the heat treated wire was not caused solely by its low fatigue limit in comparison to its ultimate tensile strength.

Because of the high elastic limit of the heat treated wire provision had been made for preforming each wire, where it passed around the anchorage, to a loop of the same curvature as the anchor shoe — a semicircle 19½ inches diameter—so that each wire would then lay dead against the anchor shoe with no residual elastic bending stresses in the wire. It was found upon examination of several hundred unbroken wires from a number of the cable strands, that most of the loops around the anchor shoes, when hanging free, did not have the curvature of the shoes. In fact, many of them had reversed curves and when constrained to the shape of the shoe would be subjected to higher elastic bending stresses than if they had not been preformed at all. This condition was a significant factor in the failure of the wire.

Deviations Are Noted

It was obvious that when one of these preformed loops, deviating in curvature from that of the anchor shoe, was subjected to a tensile load just sufficient to cause it to conform to the shoe, it would, upon release of a small portion of the tensile load, again revert to a position deviating from the curvature of the shoe. The outer fiber stresses on the wire (elastic bending stresses) would fluctuate. The magnitude of the range of fluctuation would vary according to: (1) The degree and mode of deviation of the original curvature from that of the shoe; (2) the magnitude of the maximum tensile load; and (3) the numerical difference between maximum and minimum loads.

For equal differences between maximum and minimum loads, on a loop with a given deviation from the support, the range of elastic bending stress would be greater at low loads than at high loads. The cold-drawn wire, without a definitely elastic range, when subjected to the same loading conditions would in consequence be subjected to elastic bending stresses lower in magnitude and in range than was the case in the heat treated wire. This was a significant difference between the two types of wire.

Numerous specimens of both types of wire were subjected to various ranges of fluctuating tensile load while suspended over circular supports of the same radius of curvature as the bridge anchorages. The results showed that for equal ranges of tensile loads the endurance of the heat treated wire was greater at high values of mean tensile loads than at low values and that for equal endurance a higher range could be applied at high mean loads than at low loads. Fractures were obtained in 72 hours with a maximum load as low as 5 per cent of the load necessary to break specimens from the broken pieces in static tensile tests following the fluctuating load tests. The real damage was done by the bending stresses. When means were provided to prevent bending of the wire as the tensile loads fluctuated, the endurance approached that obtained in fatigue tests on straight specimens.

It is believed that the fluctuating tensile load tests reproduced the mechanism of fracture of the wires on the bridge. The appearance of the fractures produced in the laboratory could not be distinguished from those that occurred on the bridge.

For all loading conditions the endurance of the cold-drawn wire was greater than that of the heat treated wire. The difference was greatest at low loads.

The fibrous structure of cold-drawn wire and the lack of a definitely elastic range are distinct advantages in combatting the effect of bending stresses induced by fluctuating loads at the anchorages of the bridge cables. The surface imperfections, which lower the resistance of both types of wire to fluctuating stresses, were much less numerous and much less pronounced in the cold-drawn than in the heat treated wire.

The way in which the failed wires were placed on the anchor shoes, the high elastic limit of the material, and the fluctuating loads on the wires while the cables were spun and the bridge structure was being erected combined to produce a range of elastic bending stresses in the wires at the anchor shoes. The uniformly fine-grained steel of the wire, surrounded by the brittle, low-strength, zinc-iron alloy of the galvanized coating, and with numerous surface imperfections acting as points of stress concentration offered inadequate resistance to the repeated elastic bending stresses. Fatigue fractures originating at the surface of the wires were the result. There was definite evidence that the fibrous structure of the cold-drawn wire tended to turn aside such cracks, whereas the hard, fine-grained structure of the heat treated wire could not act in this way.

Portable Hangar Is Built Largely of Steel Sections

Bennett Air Service of the central Jersey airport at Hightstown, N. J., has developed a portable airplane hangar weighing only 5000 pounds and constructed largely of steel. The frame of the new hangar is of steel and wood, while the sides, doors and roof are of galvanized steel. The structure can be folded to a flat area of 14 by 17 feet and can be conveyed by truck. Alfred B. Bennett, head of Bennett Air Service, states that experimental work has been carried on by a well-known manufacturer of portable metal buildings.

Visiting Engineers To See American Accomplishments

Recently completed by the American national committee of the Third World Power conference are plans for a series of technical study tours, which will take 600 of the world's leading engineers to scenes of American industrial accomplishments. This feature is supplementary to the World Power Conference which convenes in Washington Sept. 7.

Nine separate tours will include many of the eastern cities and power sites, and the Boulder, Bonneville and Coulee dams of the west. Tours will be held both before and after the conference, and after each tour, a roundtable discussion will be held to compare American and foreign methods and theories.

Tours have been arranged on five general subjects: Mineral sources of energy, hydraulic sources of energy, metropolitan areas, railroad transport, and major construction projects. A 32-page illustrated booklet outlining the tours is available from the committee, with headquarters at the Interior building, Washington.

Canada's Trade Indexed

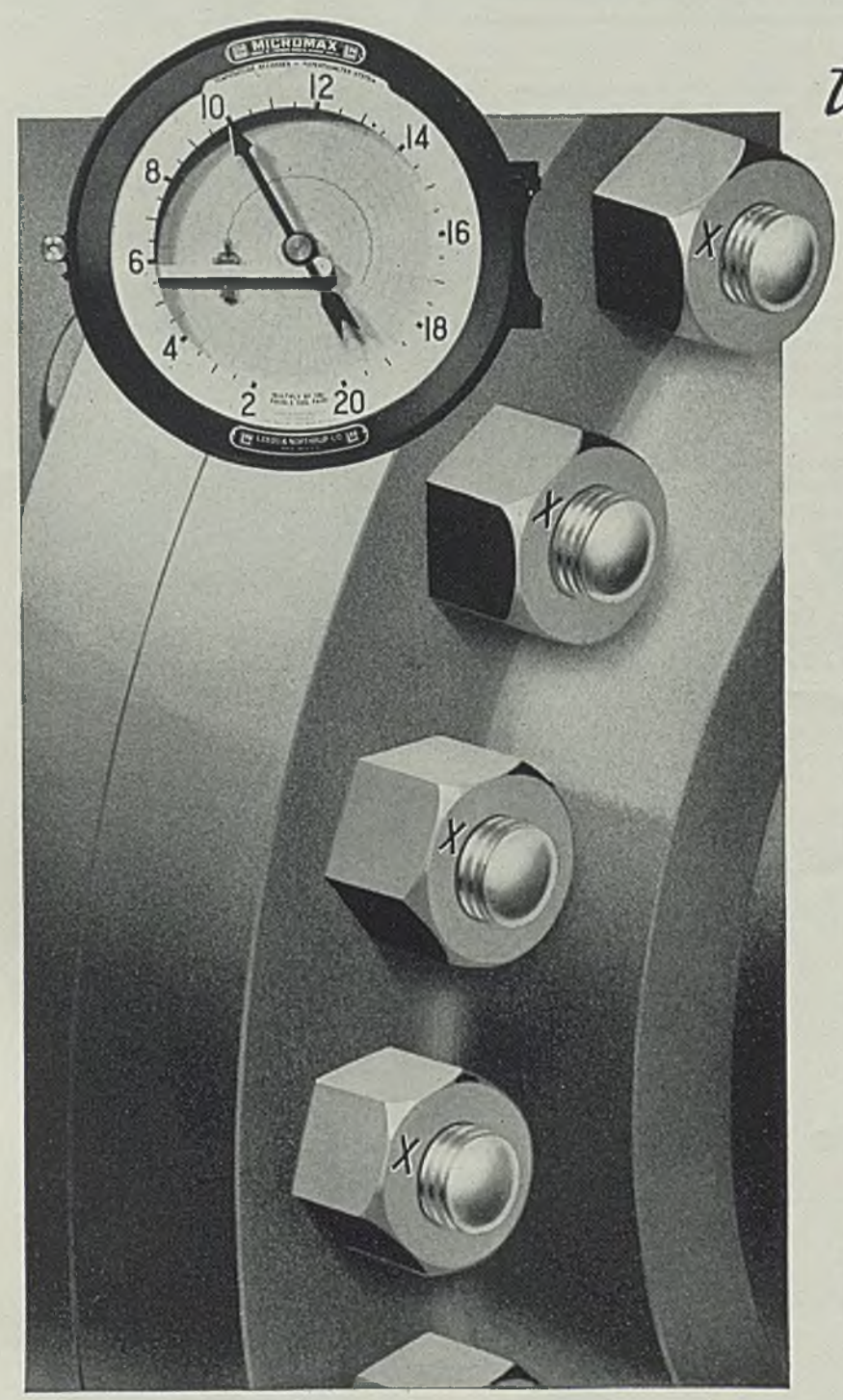
Canadian Trade Index, cloth, 842 pages, 6½ x 10 inches; published by Canadian manufacturers' Association; supplied by STEEL, Cleveland, for $6, plus 15 cents for postage; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London.

The annual issue of this compendium for 1936 carries all the features of previous editions, providing buyers with an authoritative directory of products manufactured in Canada and the names of the firms making them. It contains a complete and up-to-date list of all Canadian manufacturers having more than local distribution.

It also includes an export section and a directory of producers, shippers and exporters of agricultural and allied lines.

When Pressure and Temperature Join Forces

—these are the fastenings to handle them



WHEN pressures are accompanied by high temperatures that seriously undermine the strength of ordinary materials, these Bethlehem high-temperature fastenings are right in their own element.

Bethlehem has been concentrating for years on the development of steels that retain high physicals under such conditions. In this work Bethlehem's Bolt and Nut Division has drawn freely on the experience of a steel-making organization that is in constant touch with the steel problems of all industry. In Bethlehem Bolts and Studs of the steels mentioned below the designer of high-temperature equipment finds fastenings that place his calculations on practically as solid a foundation as when figuring on a basis of ordinary temperatures. And operators of such equipment find that bolts and studs of these highly heat-resistant steels simplify their maintenance work.

BETHLEHEM STEELS FOR HIGH-TEMPERATURE FASTENINGS

Supertemp, a chromium-tungsten steel, to use where temperatures run up to 1050 deg. F.

S.A.E. 4140, a chromium-molybdenum steel, for applications where temperatures do not exceed 900 deg. F.

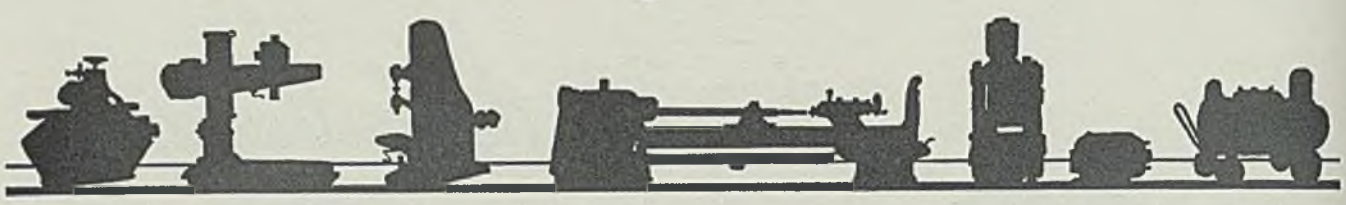
Mayari A, a nickel-chromium steel, for service under temperatures up to 850 deg. F.

To provide complete high-temperature fastenings, use Bethlehem Treated Nuts or Oil-Quenched Nuts with bolts or studs of the steels mentioned above. Tests have demonstrated beyond question the exceptional strength, structural stability and freedom from distortion of these nuts in high-temperature service.

BETHLEHEM STEEL COMPANY

BETHLEHEM STEEL

New Equipment



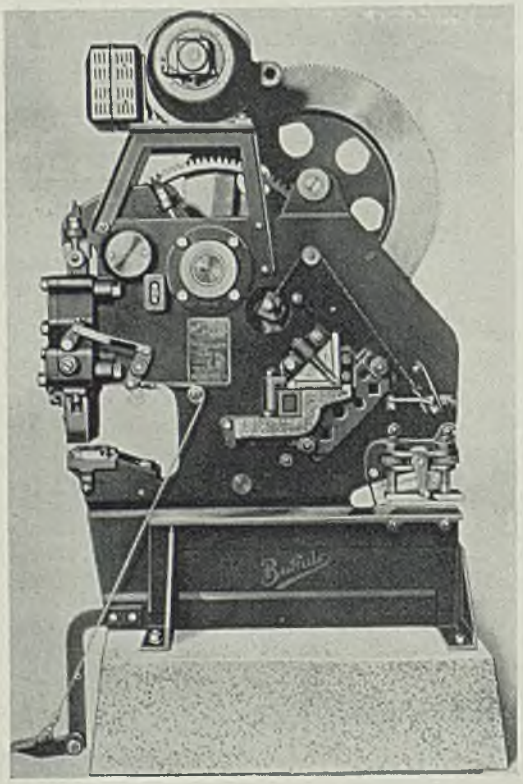
Socket Wrench—

Bonney Forge & Tool Works, Allentown, Pa., has placed on the market a new set of socket tools consisting of 16 sockets with double hexagon openings ranging from 7/16-inch to 1¼ inches for ½-inch square drive. Supplied with these sockets is a hinge handle 15 inches long and a cross handle. The set is made of chrome-vanadium steel, each piece being chrome plated and polished. The sockets and handle are packed in a case finished in black. The case measures 20½ x 3¾ x 2 inches, and the weight is 8½ pounds.

♦ ♦ ♦

Iron Worker—

Buffalo Forge Co., Buffalo, N. Y., has placed on the market a series of iron workers intended for use in cutting rounds, angles, squares, tees, beams or channels; for punching, slitting and shearing operations. Frame of the machine is of welded steel, eccentric is a carbon steel forging and flywheel shaft and pinion are nickel steel with steel gear. The two shear blades have four cutting edges each and are interchangeable. The dual character of the machine, one end being fitted with a punch and the other end a shear, makes possible both notching and coping operations without changing tools. Built-in notchers and copers are available on all models. The notcher is built on the punch end of the machine and is operated with hand or foot controls. Either notcher or coper may be installed in the shear end. Capacities of the notcher range up to 6-inch channels, 7-inch beams, and 3 x 3 x ¾-inch angles. One cut is required for full depth on all sections.

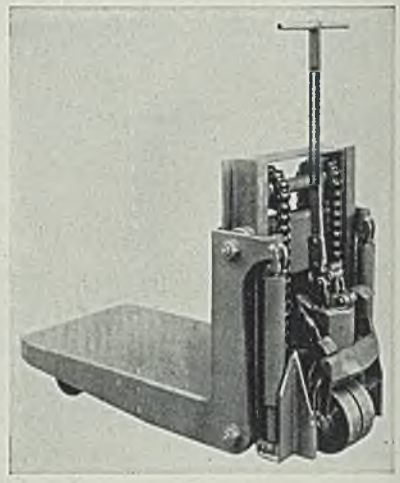


Universal iron worker built by the Buffalo Forge Co., which enables the operator to do both notching and coping without changing tools

♦ ♦ ♦

Lift Truck—

Yale & Towne Mfg. Co., Philadelphia, has designed a new high-lift heavy-duty hand truck. Illustrated here, the truck has a lift of 10 inches and a capacity of 8000 pounds. Of multistroke type, the truck employs a chain lift and requires 22 strokes on the handle to elevate the load to full height. The deck raises on rollers in the channel uprights.



Yale & Towne heavy duty hand lift truck of 4-ton capacity

The heavy-duty hydraulic release checks lower the load without a jar. Twin front wheels and full side lift add to ease of handling. The wheels are smooth faced and are mounted on ball bearings.

♦ ♦ ♦

Magnetic Switch—

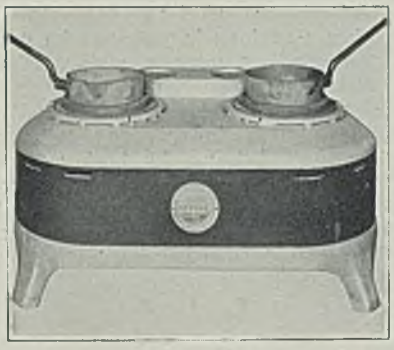
Doors & Operators Inc., Wall and Hudson streets, Tiffin, O., has recently perfected a new magnetic switch which is sensitive to a strong magnet within a range of approximately fifteen inches. The switch may be imbedded in walls, driveways, or similar locations since only steel and iron affect its operation. Typical installation is in operation of a garage door when a car approaches. The switch is imbedded in the driveway and when a magnet mounted on the under side of the car passes over it, a relay is operated and the doors are opened. The movable part of the switch consists of an unbalanced magnetic element poised in a porcelain frame above two small pools of mercury. At an impulse from permanent or electromagnet, the magnetic element makes contact in the mercury. The entire mechanism is mounted in a bronze container

and sealed against moisture. The contact made in the mercury closes the circuit of a magnetic relay with silver contacts, rated 10 amperes, 110 volts.

♦ ♦ ♦

Melting Furnace—

Kindt-Collins Co., 12697 Elmwood avenue, Cleveland, has recently produced an aluminum melting furnace claimed to have low fuel consumption and short melting time. Metal heated in the pots does not absorb gas and may be poured directly into the mold, according to the builders. A hand lever on an indicator scale may be set to regulate the proper volume of gas and air. Usual valve adjustments are eliminated by an automatic power switch which regulates the volume of gas and air. An interesting feature is



Kindt-Collins aluminum melting furnace, double type, either unit of which may be operated separately

the preheater which utilizes heat which would otherwise be wasted to preheat the metal before it is placed in the pot. The molded refractory lining is backed by insulating material to concentrate the heat on the pot. Air circulates through a jacket on the outside of the furnace to aid in cooling. Furnaces are built in several sizes, with either one or two cast iron melting pots of 30 or 50 pound capacity.

♦ ♦ ♦

Lathe Grinder—

Dumore Co., Racine, Wis., announces a new lightweight lathe grinder which will be a lower cost addition to its line of lathe grinders. Weight of the new device is 10 pounds and it will swing a 2-inch straight wheel for external grinding jobs. Internal grinding capacity is holes ½-inch or larger to a depth of 2½ inches. With ⅛-inch collet type chuck, it is also capable of grinding smaller diameters 1 inch deep. The grinding spindle operates at 6000 revolutions per minute for external work and 30,000 revolutions per minute for internal work. Forced ventilation assures cool running and continuous operation. A felt sleeve and wick arrangement feed oil to tapered throwers where it is atomized and carried into the bearings. The motor is rated 1/5 horsepower. Equipment supplied includes two straight wheels, three mounted wheels and ⅛-inch chuck.

♦ ♦ ♦

Magnetic Pulley—

Dings Magnetic Separator Co., Milwaukee, has announced a new magnetic pulley which features an increased radiating surface. The horizontal and radial ducts for air currents are corrugated or ribbed. The conveyor belt forces the air downward through the radial openings and out through the longitudinal ducts, and therefore, presents a maximum amount of radiating surface. Heat from the coils is rapidly conducted to the steel poles and cores and dissipated. The pulley shaft is turned and polished. Where heavy strains are encountered, a special high-tensile steel shaft is supplied. Standard equipment supplied with a magnetic pulley consists of set collars, bronze slip rings mounted upon the shaft, double contact brushes on each slip ring, a dustproof collector ring housing and a steel switch cabinet with fused switch, bulls-eye indicator and a special kick absorbing

resistance which absorbs the counter electromotive force when the circuit is opened.

♦ ♦ ♦

Flexible Coupling—

Diamond Chain & Mfg. Co., 435 Kentucky avenue, Indianapolis, has recently announced a series of flexible couplings of the chain type. The coupling of the new units consists of two sprockets encircled by a length of double strand roller chain. Strength and durability of steel is combined in the new design with adequate flexibility. Misalignment of the connected shafts is permitted by a clearance between the sprocket teeth and the chain side plate. Double strand chain is now being used to replace single strand chain on all couplings in the company's line. According to the makers, this feature gives a coupling of a given size more horsepower capacity and also permits its use on larger shafts for given outside diameter than the former design.

Flexible coupling using double strand chain manufactured by Diamond Chain & Mfg. Co.

♦ ♦ ♦

Spray Nozzle—

Worthington Pump and Machinery Corp., Harrison, N. J., has recently developed a new spray nozzle for descaling strip, plate and bar steel. The nozzle consists of a stainless steel body, a tapered, self-locking spray disk of heat treated stainless steel and a strainer of corrosion resistant material. Disk and strainer are held in place by a stainless steel cap nut, and they may be removed for cleaning without disturbing the nozzle body in the spray manifold. The nozzle may be supplied with a shut-off cap, which makes a savings in water and power when rolling narrow strips, it is claimed. The one piece disk contains an elliptical orifice designed to give uniform linear spray distribution and maximum impinging force. The disk is furnished in three sizes capable of discharging up to 35 gallons per minute at pressures up to 1000 pounds per square inch.

♦ ♦ ♦

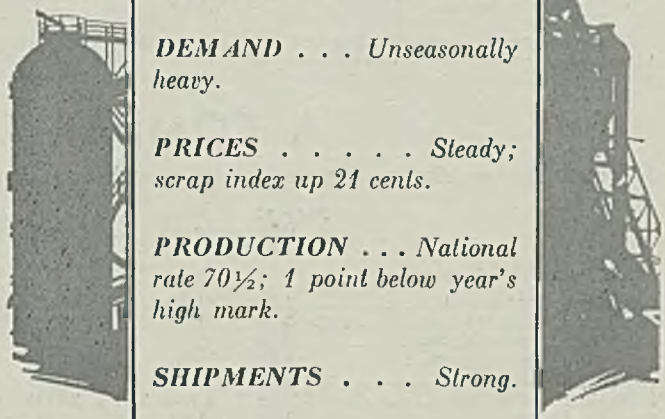
Micrometer Calipers—

Swedish Gage Co. of America, 7310 Woodward avenue, Detroit, has produced a micrometer equipped with hardened, ground and lapped lead screws. The threads are hardened through the entire length of the lead screw to resist wear and the threads are ground after hardening to eliminate distortion from the hardening process. After grinding, the threads are lapped to rectify errors in pitch diameter and lead, and to give the micrometer a smoother feel in the hands of the operator. According to the company, these refinements allow the calipers to be held to much closer limits than possible under ordinary treatment. It is claimed that the calipers retain their accuracy to a greater degree and last longer when treated in this manner.

Micrometer with hardened, ground and lapped screw manufactured by Swedish Gage Co. of America

Strong Demand Lifts Operating Rate 2 Points

Pittsburgh Average Up 4; Automobile Assemblies Increase



MARKET IN TABLOID

DEMAND *. . . Unseasonally heavy.*

PRICES *. . . . . Steady; scrap index up 21 cents.*

PRODUCTION *. . . National rate 70½; 1 point below year's high mark.*

SHIPMENTS *. . . Strong.*

THE gap for the customary summer decline in the steel industry became narrower last week as operations increased 2 points to 70½ per cent, under strong consumption, almost equaling the best week of the year.

Operations in the Pittsburgh district made an unusual gain of 4 points to 67 per cent of capacity. The rate in the eastern Pennsylvania district was up 1½ points to 50½ per cent, highest since before the start of the depression.

At Youngstown, operations were up 2 points to 78 per cent; Wheeling 8 to 89; Cleveland 34 to 85; Birmingham 6 to 58; New England 15 to 78. Cincinnati was down 4 points to 76 per cent, and the other districts were unchanged.

The national average of 70½ per cent was only 1 point lower than the high mark for this year, reached by the industry in the week of June 27. Last year at this time operations were at 45 per cent and in 1934 they were at 29½ per cent.

Although considerable divergence is apparent in the trend of some of the markets, demand in some lines has more than offset declines in others. A disposition toward the building up of inventories has become more pronounced among certain consumers.

Many observers believe volume will be supported substantially well into August, even though operations may fluctuate from week to week in the near future in some districts.

Automobile production last week totaled 96,863 units, an increase of 5546 from the previous week. In this industry the active mid-season demand has started predictions of total production of 4,600,000 units this year, compared with 3,946,934 last year. Such a total would be about 700,000 units behind the 1929 figure. Indications still point to an extremely short dip in production while changeovers to new models are being made. Ford plans to shut down for two weeks, starting Aug. 3.

One of the unusual features in the current activity of the steel industry is the insistence for rush shipments from some consumers. The unseasonally high demand for wire is another aspect arousing considerable comment. Tin plate operations are holding at the high average of 95 per cent.

With the protection period on identified projects ending July 31, plate tonnage is being bolstered by orders in good volume. Demand from shipyards, railroad car shops and bridge builders continues fairly strong.

Sheet mills, falling further behind on deliveries, report buying is well diversified. Coke producers have been unable to build stocks against the unusually strong fall demand. Bookings of bolts, nuts and rivets approximate those of the comparable June period.

The overtime payment plan adopted by steel producers last week is considered unlikely to be reflected in payrolls this year and probably will not become apparent until operations begin to approach capacity.

Further strength has developed in scrap and STEEL's price composite is up 21 cents to $13.12, the fourth consecutive weekly rise. Last week's increase brings the index almost even with the fourth week in May, when it stood at $13.13.

Railroad car builders had a fair week, with 1170 steel box cars placed, including 1000 by Norfolk & Western. Shape awards were down about 5000 tons to 17,577 from the previous week but awards for reinforcing bars increased 7000 tons to 15,431.

Due to the rise in the scrap index, STEEL'S iron and steel price composite is up 2 cents to $33.51. The finished steel composite is unchanged at $53.40.

Strengthened prices of Spanish ores, not only in this country but in world markets, have been noted as a result of the Spanish rebellion.

COMPOSITE MARKET AVERAGES

	July 25	July 18	July 11	One Month Ago June, 1936	Three Months Ago April, 1936	One Year Ago July, 1935	Five Years Ago July, 1931
Iron and Steel	$33.51	$33.49	$33.48	$32.79	$33.10	$32.44	$30.78
Finished Steel	53.40	53.40	53.40	52.20	52.20	54.00	48.68
Steelworks Scrap	13.12	12.91	12.79	12.55	14.39	10.64	8.70

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

	July 25 1936	June 1936	April 1936	July 1935
Finished Material				
Steel bars, Pittsburgh	1.95c	1.85c	1.85c	1.80c
Steel bars, Chicago	2.00	1.90	1.90	1.85
Steel bars, Philadelphia	2.26	2.16	2.16	2.11
Iron bars, Terre Haute, Ind.	1.85	1.75	1.75	1.75
Shapes, Pittsburgh	1.90	1.80	1.80	1.80
Shapes, Philadelphia	2.11½	2.01½	2.01½	2.01½
Shapes, Chicago	1.95	1.85	1.85	1.85
Tank plates, Pittsburgh	1.90	1.80	1.80	1.80
Tank plates, Philadelphia	2.09	1.99	1.99	1.99
Tank plates, Chicago	1.95	1.85	1.85	1.85
Sheets, No. 10, hot rolled, Pitts.	1.95	1.85	1.85	1.85
Sheets, No. 24, hot ann., Pitts.	2.50	2.40	2.40	2.40
Sheets, No. 24, galv., Pitts.	3.20	3.10	3.10	3.10
Sheets, No. 10, hot rolled, Gary	2.05	1.95	1.95	1.95
Sheets, No. 24, hot anneal., Gary	2.60	2.50	2.50	2.50
Sheets, No. 24, galvan., Gary	3.30	3.20	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	2.60
Semifinished Material				
Sheet bars, open-hearth, Youngs.	$30.00	$28.00	$28.00	$28.00
Sheet bars, open-hearth, Pitts.	30.00	28.00	28.00	28.00
Billets, open-hearth, Pittsburgh	30.00	28.00	28.00	27.00
Wire rods, Pittsburgh	38.00	38.80	40.00	38.00

	July 25, 1936	June 1936	April 1936	July 1935
Pig Iron				
Bessemer, del. Pittsburgh	$20.8132	20.8132	20.8132	19.81
Basic, Valley	19.00	19.00	19.0	18.00
Basic, eastern del. East. Pa.	20.8132	20.8132	20.8132	19.81
No. 2 fdy., del. Pittsburgh	20.3132	20.3132	20.3132	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	21.6882	21.6882	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	19.6741	19.6741	18.67
Scrap				
Heavy melting steel, Pittsburgh	$14.50	$13.80	$15.75	$12.30
Heavy melt. steel, No. 2, east. Pa.	11.50	10.90	12.70	9.75
Heavy melting steel, Chicago	13.25	12.75	14.35	10.25
Rail for rolling, Chicago	14.00	14.00	15.75	11.25
Railroad steel specialties, Chicago	14.75	14.40	15.85	11.75
Coke				
Connellsville, furnace, ovens	$3.30	$3.50	$3.50	$3.30
Connellsville, foundry, ovens	4.25	4.25	4.25	4.25
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.	2.28c
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
100,000 lbs. and over.....2.12½c	

*Gary, Ind., Cleve., Chi., up 5c; Buffalo, up 10c; Detroit, up 15c; eastern Michigan, up 20c.

Alloy Steel Bars (Hot)

(*Base, 3 to 25 tons.*)

Pittsburgh, Buffalo, 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 23/8-in. Pittsburgh	1.95c
Chicago or Gary..	2.05c
Birmingham base	2.00c
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	Cleve-land 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 7/8-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
7/8-in. and smaller, Pitts., Chi., Cleve.	70 and 5 off
Wrought washers, Pitts., Chi., Phila. to jobbers & large nut, bolt mfrs.....	$6.25 off

Cut Nails

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

Pipe and Tubing

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

Welded Iron, Steel Pipe

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

Butt Weld

Steel

In.	Blk.	Galv.
¼ and 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 ¾ 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	36.67
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 1/4-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- 5.60
Wise county fur.....	4.00- 4.50

By-Product Foundry

Newark, N. J., del.	9.70-10.15
Chi., ov., outside del.	5.00
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. fer 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.	20.58	20.58	20.08	.....
Cincinnati from Birmingham	20.20	.....	19.20	.....
Cleveland from Birmingham	19.62	.....	19.12	.....
Indianapolis from Hamilton, O.	21.93	21.93	21.43	22.43
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		Charcoal	
Valley furnace	19.00	Lake Superior fur.	$22.00
Pitts. dist. fur.	19.00	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
July 18	9.50	9.62½	9.15	43.37½	42.37½	4.60	4.45	4.75	*19.00	13.00	35.00
July 20	9.50	9.62½	9.15	44.25	43.00	4.60	4.45	4.75	*19.00	13.00	35.00
July 21	9.50	9.62½	9.15	43.75	42.55	4.60	4.45	4.80	*19.00	13.00	35.00
July 22	9.75	9.87½	9.40	44.00	42.75	4.60	4.45	4.80	*19.00	13.00	35.00
July 23	9.75	9.87½	9.40	43.50	42.37½	4.60	4.45	4.80	*19.00	13.00	35.00
July 24	9.75	9.87½	9.40	43.62½	42.62½	4.60	4.45	4.80	*19.00	13.00	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 9.50c 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

Dealers' 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	5.80- 6.40
Heavy Copper and Wire	
*New York, No. 1	7.62½-7.87½
*Chicago, No. 1	7.50- 7.75
*Cleveland, No. 1	7.25- 7.75
*St. Louis, No. 1	7.25- 7.75
Composition Brass Berings	
*New York	5.87½-6.12½
Light Copper	
*New York	6.25-6.37½
*Chicago	6.00- 6.25
*Cleveland	6.00- 6.25
*St. Louis	5.75- 6.25
Light Brass	
*Chicago	3.62½- 3.75
*Cleveland	3.40- 3.65
*St. Louis	3.40- 3.90
Lead	
New York	3.50- 3.75
Cleveland	3.50- 3.75
Chicago	3.25- 3.75
St. Louis	3.25- 3.75
Zinc	
New York	2.25- 2.50
Cleveland	2.25- 2.50
St. Louis	2.50- 2.75
Aluminum	
Borings, Cleveland	8.00- 8.50
Mixed, cast, Cleve.	11.75-12.00
Mixed, cast, St. L.	11.25-11.75
Clips, soft, Cleve.	13.75-14.00

SECONDARY METALS

*Brass ingot, 85-5-5-5	9.75
Stand. No. 12 alum.	16.25-16.75

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- 9.50
Bos. d'ck, No. 1, exp.	†10.75-11.00
N. Eng. del. No. 1..	10.00
Buffalo, No. 1	13.00-13.50
Buffalo, No. 2	11.50-12.00
Chicago, No. 1	13.00-13.50
Cleveland, No. 1	13.00-13.50
Cleveland, No. 2	12.00-12.50
Detroit, No. 1	11.50-12.00
Detroit, No. 2	10.50-11.00
Eastern Pa., No. 1..	12.50
Eastern Pa. No. 2..	11.50
Federal, Ill.	10.00-10.50
Granite City, R. R...	11.75-12.25
Granite City, No. 2..	9.75-10.25
New York, No. 2	†8.25- 8.75
N. Y. d'ck, No. 1, exp.	†10.25-10.50
Pitts., No. 1 (R.R.)	14.75-15.25
Pitts., No. 1 (dlr.)..	14.25-14.75
Pittsburgh, No. 2....	13.00-13.50
St. Louis, R. R.	11.50-12.00
St. Louis No. 2	9.75-10.25
Toronto, dealers	7.50
Valleys, No. 1	13.50-14.00

COMPRESSED SHEETS

Buffalo, dealers	11.50-12.00
Chicago, factory	11.50-12.00
Chicago, dealer	11.00-11.50
Cleveland	12.75-13.25
Detroit	11.25-11.75
E. Pa., new mat.	12.00-12.50
E. Pa., old mat.	10.50-10.75
Pittsburgh	14.25-14.75
St. Louis	7.75- 8.25
Valleys, No. 1	13.00-13.50

BUNDLED SHEETS

Buffalo	10.00-10.50
Cincinnati, del	7.75- 8.25
Cleveland	9.00- 9.50
Pittsburgh	13.00-13.50
St. Louis	6.25- 6.75
Toronto, dealers	4.50

SHEET CLIPPINGS, LOOSE

Chicago	8.00- 8.50
Cincinnati	6.25- 6.75
Detroit	8.25- 8.75
St. Louis	5.50- 6.00

STEEL RAILS, SHORT

Birmingham	12.00-12.50
Buffalo	15.50-16.00
Chicago (3 ft.)	15.00-15.50
Chicago, (2 ft.)	16.00-16.50
Cincinnati, del.	14.50-15.00
Detroit	15.00-15.50
Pitts., open-hearth, 3 ft. and less	15.75-16.25
St. Louis, 2 ft. & less	15.50-16.00

STEEL RAILS, SCRAP

Boston district	†7.50- 8.00
Chicago	13.00-13.50
Pittsburgh	14.50-15.00
St. Louis	13.25-13.75
Buffalo	13.00-13.50
Toronto, dealers	8.50

STOVE PLATE

Birmingham	7.00- 7.50
Boston district	†5.00- 5.25
Buffalo	10.00-10.25
Chicago	7.50- 8.00
Cincinnati, dealers..	7.75- 8.50
Detroit, net	9.00- 9.50
Eastern Pa.	10.50-10.75
New York, fdry.	†7.00- 7.25
St. Louis	7.50- 8.00
Toronto, dealers, net	5.50

COUPLERS, SPRINGS

Buffalo	14.75-15.25
Chicago, springs	14.50-15.00
Eastern Pa.	16.00-16.50
Pittsburgh	17.50-18.00
St. Louis	13.25-13.75

ANGLE BARS—STEEL

Chicago	14.00-14.50
St. Louis	14.00-14.50
Buffalo	14.50-15.00

RAILROAD SPECIALTIES

Chicago	14.50-15.00

LOW PHOSPHORUS

Buffalo, billet and bloom crops	15.00-15.50
Cleveland, billet, bloom crops	17.50-18.00
Eastern Pa., crops..	16.50
Pittsburgh, billet, bloom crops	17.75-18.25
Pittsburgh, sheet bar crops	17.00-17.50

FROGS, SWITCHES

Chicago	13.00-13.50
St. Louis, cut	13.00-13.50

SHOVELING STEEL

Chicago	13.00-13.50
Federal, Ill.	10.00-10.50
Granite City, Ill.	9.75-10.00
Toronto, dealers	6.50

RAILROAD WROUGHT

Birmingham	7.50- 8.00
Boston district	†7.25- 7.50
Buffalo, No. 1	11.50-12.00
Buffalo, No. 2	13.00-13.50
Chicago, No. 1, net..	12.50-13.00
Chicago, No. 2	13.00-13.50
Cincinnati, No. 2....	10.50-11.00
Eastern Pa.	13.50-14.00
St. Louis, No. 1	11.25-11.75
St. Louis, No. 2	11.75-12.25
Toronto, No. 1, dlr.	7.00

SPECIFICATION PIPE

Eastern Pa.	12.00-12.50
New York	†7.75- 8.25

BUSHELING

Buffalo, No. 1	11.50-12.00
Chicago, No. 1	11.50-12.00
Cinci., No. 1, deal....	8.50- 9.00
Cincinnati, No. 2	4.50- 5.00
Cleveland, No. 2	8.25- 8.75
Detroit, No. 1, new..	10.00-10.50
Valleys, new, No. 1	12.75-13.00
Toronto, dealers	6.00

MACHINE TURNINGS

Birmingham	4.00- 5.00
Boston district	†3.50- 3.75
Buffalo	6.50- 7.00
Chicago	6.00- 6.50
Cincinnati, dealers..	5.75- 6.25
Cleveland	7.50- 8.00
Detroit	6.50- 7.00
Eastern Pa.	8.00- 8.50
New York	†4.00- 4.25
Pittsburgh	9.50-10.00
St. Louis	4.00- 4.50
Toronto, dealers	4.00
Valleys	9.50- 9.75

BORINGS AND TURNINGS

For Blast Furnace Use

Boston district	†2.25
Buffalo	8.00- 8.25
Cincinnati, dealers..	5.00- 5.50
Cleveland	8.25- 8.75
Detroit	7.00- 7.50
Eastern Pa.	6.50- 7.00
New York	†2.25- 2.50
Pittsburgh	7.50- 8.25
Toronto, dealers	4.00

CAST IRON BORINGS

Birmingham, plain..	3.50- 4.00
Boston dist. chem...	†6.25- 6.75
Boston dist. for mills	†3.50- 4.00
Buffalo	8.00- 8.50
Chicago, dealers	6.00- 6.25
Cincinnati, dealers..	5.00- 5.50
Cleveland	8.25- 8.75
Detroit	7.00- 7.50
E. Pa., chemical	10.00-13.00
New York	†4.25- 4.50
St. Louis	3.50- 4.00
Toronto, dealers	5.00

PIPE AND FLUES

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

RAILROAD GRATE BARS

Buffalo	10.50-11.00
Chicago, net	8.25- 8.75
Cincinnati	7.00- 7.50
Eastern Pa.	10.00-10.50
New York	†6.00- 6.25
St. Louis	9.00- 9.50

FORGE FLASHINGS

Boston district	†7.00- 7.25
Buffalo	11.50-12.00
Cleveland	11.50-12.00
Detroit	9.50-10.00
Pittsburgh	13.00-13.50

FORGE SCRAP

Boston district	†5.50- 6.00
Chicago, heavy	14.00-14.50
Eastern Pa.	12.00-12.50

ARCH BARS, TRANSOMS

St. Louis	13.50-14.00

AXLE TURNINGS

Boston district	†5.75- 6.00
Buffalo	11.00-11.50
Chicago, elec. fur.	12.75-13.25
Eastern Pa.	11.00-12.00
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	15.00-15.50
Eastern Pa.	17.00
St. Louis	14.50-15.00
Toronto	8.50

SHAFTING

Boston district	†13.75-14.25
Eastern Pa.	19.00-19.50
New York	†14.25-14.75
St. Louis	13.50-14.00

CAR WHEELS

Birmingham	11.00-11.50
Boston dist. iron	†7.75- 8.00
Buffalo, iron	13.50-14.00
Buffalo, steel	15.50-16.00
Chicago, iron	13.25-13.75
Chicago, rolled steel	14.50-15.00
Cincinnati, iron	10.50-11.00
Eastern Pa., iron	14.50-15.00
Eastern Pa., steel	16.00-16.50
Pittsburgh, iron	15.00-15.50
Pittsburgh, steel	17.25-17.75
St. Louis, iron	11.50-12.00
St. Louis, steel	14.00-14.50
Toronto, net	8.50

NO. 1 CAST SCRAP

Birmingham	10.00-11.00
Bos. dist. No. 1 mach.	†8.75- 9.00
N. Eng., del. No. 2..	9.50-10.00
N. Eng. del. textile..	11.00-11.50
Buffalo, cupola	12.50-13.00
Buffalo, mach.	13.50-14.00
Chicago, agri. net	10.00-10.50
Chicago, auto	11.00-11.50
Chicago, mach. net..	12.00-12.50
Chicago, railr'd net..	11.00-11.50
Cinci., mach. cup	11.25-11.75
Cleveland, mach.	15.25-15.75
Eastern Pa., cupola	14.50-15.00
E. Pa., mixed yard..	12.00-12.50
Pittsburgh, cupola..	15.50-16.00
San Francisco, del..	13.50-14.00
Seattle	10.00-11.00
St. Louis, No. 1	10.75-11.25
St. L., No. 1 mach.	12.50-13.00
Toronto, No. 1, mach., net	9.00

HEAVY CAST

Boston dist. break..	†8.50- 8.75
New England del.	9.50-10.00
Buffalo, break.	10.50-11.00
Cleveland, break	12.50-13.00
Detroit, No. 1 mach. net	13.00-13.50
Detroit, break.	11.00-11.50
Detroit, auto net	11.00-11.50
Eastern Pa.	14.00
New York breakable	†9.50-10.00
Pittsburgh	13.00-13.50

MALLEABLE

Birmingham, R. R.	11.50-12.50
New England del.	15.00-16.00
Buffalo	15.50-16.00
Chicago, R. R.	15.50-16.00
Cincinnati, agri. del.	12.50-13.00
Cleveland, rail	15.75-16.25
Detroit, auto, net	14.50-15.00
Eastern Pa., R. R.	15.50-15.75
Pittsburgh, rail	17.00-17.50
St. Louis, R. R.	13.00-13.50
Toronto, net	7.00

RAILS FOR ROLLING

5 feet and over

Birmingham	11.50-12.50
Boston district	†9.00- 9.50
Buffalo	13.50-14.00
Chicago	13.75-14.25
Eastern Pa.	15.00-15.50
New York	†9.50-10.00
St. Louis	13.75-14.25

LOCOMOTIVE TIRES

Chicago (cut)	14.50-15.00
St. Louis, No. 1	12.00-12.50

LOW PHOS. PUNCHINGS

Buffalo	14.75-15.25
Chicago	15.50-16.00
Eastern Pa.	16.00-16.50
Pittsburgh (heavy)	17.00-17.50
Pittsburgh (light)	16.00-16.50

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	3.31c
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	3.31c
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	3.11c
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)	4.05c
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	3.36c
Detroit, 5/16-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	3.79c
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	57c
High carbon, high chrome	37c
Oil hardening	22c
Special tool	20c
Extra tool	17c
Regular tool	14c

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, July 23

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

	British gross tons U. K. ports		Continental Channel or North Sea ports, metric tons	
			Quoted in dollars at current value	**Quoted in gold pounds sterling
PIG IRON		£ s d		£ s d
Foundry, 2.50-3.00 Silicon	$15.68	3 2 6*	$13.89	1 15 0
Basic bessemer	15.68	3 2 6*	11.51	1 9 0
Hematite, Phos. .03-.05	18.69	3 14 6	.....	.....
SEMIFINISHED STEEL				
Billets	$29.48	5 17 6	$18.65	2 7 0
Wire rods, No. 5 gage	44.91	8 19 0	35.74	4 10 0
FINISHED STEEL				
Standard rails	$41.39	8 5 0	$43.67	5 10 0
Merchant bars	1.73c	7 15 0	1.12c to 1.17c	3 2 6 to 3 5 0
Structural shapes	1.68c	7 10 0	1.10c	3 1 6
Plates, ††¼ in. or 5 mm.	1.80c	8 1 3	1.53c	4 5 0
Sheets, black, 24 gage or 0.5 mm	2.18c	9 15 0	2.08c	5 16 0††
Sheets, gal., 24 gage, corr.	2.63c	11 15 0	2.15c	6 0 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.	$4.70	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(a)	$17.19	260	$13.85	410	$25.38	63
Basic bessemer pig iron	18.83	3 15 0(a)	12.56	190	11.82	350	28.00 (b)	69.50
Furnace coke	5.62	1 2 6	6.28	95	4.14	122	7.66	19
Billets	30.71	6 2 6	28.42	430	18.75	555	38.88	96.50
Standard rails	1.87c	8 5 0	2.01c	671	1.53c	1,000	2.40c	132
Merchant bars	2.12c	9 7 0	1.67c	560	.99c	650	2.00c	110
Structural shapes	2.13c	9 7 6	1.64c	550	.99c	650	1.95c	107
Plates, †¼-in. or 5 mm.	2.15c	9 13 9	2.09c	700	1.22c	800	2.31c	127
Sheets, black	2.61c	11 10 0§	1.79c	600‡	1.34c	875‡	2.63c	144‡
Sheets, galv., corr., 24 ga. or 0.5 mm.	3.07c	13 10 0	2.99c	1,000	2.29c	1,500	6.76c	370
Plain wire	2.20c	9 15 0	2.84c	950	1.76c	1,150	3.16c	173
Bands and strips	2.29c	10 2 0	1.94c	650	1.22c	800	2.31c	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 64

Pittsburgh—Hot-rolled bar demand in July has kept close to heavy specifications of June. Hot-rolled bars are moving to a variety of outlets, chief among which is the cold-finishing trade, which in some quarters is booked up through mid-September. Some automobile manufacturers are now placing substantial tonnages of hot-rolled bars for August shipment, although farm implement makers are buying less. Hot-rolled bars are firmly quoted at 1.95c, base, Pittsburgh, on 3 to 25-ton lots of a single size shipped at one time; on the same basis hot-rolled alloy bars are quoted 2.55c, base, Pittsburgh.

Cleveland—Requirements of auto partsmakers and farm equipment builders have dropped considerably. Steel forging concerns are in the market for considerable tonnage. Roadmaking equipment manufacturers are probably the largest single consumers of bars at present. Backlogs still remain heavy. Little buying has been done for stocking, as shown by demand for prompt deliveries.

Chicago—Steel bar consumption remains fairly steady, but sales and specifications are off moderately. New business from the automotive industry consists of only small lots because of the approaching change in models, and this contributes to the quieter situation in bookings. Shipments against orders continue active. Partial relief from the drought aids the farm implement outlook, with this industry and tractor builders maintaining relatively good operations.

New York—Commercial bar business for July will be almost on a parity with June, according to some leading sellers. The melt is heavy and buyers are pressing for deliveries.

Philadelphia—Consumers of commercial steel bars find deliveries still extended and perhaps for that reason are ordering more freely than otherwise in an effort to get on mill books. Business for the month to date in not only commercial bars but hot alloy bars and cold-drawn bars has been unexpectedly active.

Semifinished

Semifinished Prices, Page 65

Buying of tube rounds and skelp is the outstanding feature of the present semifinished market, where

heavy commitments have been made by pipe mills against recent orders for finished line pipe. Second in order is a steady demand for tin bars and sheet bars, followed by billets, both rerolling and forging quality grades. The wire rod market, especially for the account of bolt and nut manufacturers, is showing fair stability, and quotations on semifinished steel are $30, Pittsburgh, per gross ton for billets, blooms, sheet bars and slabs, $37, Pittsburgh, for forging quality billets, and $38, $40, and $42 for wire rods. Skelp is quoted 1.80c, all basing points.

Plates

Plate Prices, Page 64

Pittsburgh—Heavy call for plates for railroad car shops, shipyards, and bridge and other construction work is maintaining the market at its most active rate for the year. River barge inquiries are more promising than those orders at hand, although several contracts are in the near-closing state. International Petroleum Corp., Toronto, Ont., having received bids some time ago, will soon announce low bidder on six small oil barges for export. Recent report that American Barge Lines had awarded 17 standard steel coal barges, involving 3800 tons of plates, to American Bridge Co. was erroneous as the contract was preliminary and has since failed to develop. The advanced second-quarter plate market of 1.90c is meeting more test and is quoted firmly on new business.

Cleveland — Freight car building concerns are the largest single consumers of plates. Miscellaneous business remains in fair volume, though such orders generally call for lighter gages. A negligible amount of new plate tonnage has been specified so far this quarter. The advance price schedule is holding firm, little or no opposition being felt. Considerable tonnage on identified jobs at the old prices is expected to reach the awarding stage soon.

Chicago—Decrease in plate demand lately is attributed largely to coverage by consumers before the price advance. Shipments hold near the peak for the year, with best tonnages going to structural and tank fabricators and freight car builders. Backlogs and prospective business point to good operations by these groups during the balance of the summer.

New York—Texas Co., New York, has awarded one, if not two, tankers. Sun Shipbuilding Co., Chester, Pa., was low on two for this company but the actual recipient of the award has not yet been announced. Plate tonnage is being bolstered by orders against identified projects with protection period ending July 31.

Philadelphia — Although miscellaneous tonnage has tapered, some substantial business is being placed against identified work. Baldwin Locomotive Works, Eddystone, Pa., is closing on more than 1200 tons of plates for locomotives and substantial further tonnage for tanker work is expected to be closed before the end of this month. Some building construction, also of identified character, will be closed before the end of this month to obtain the protection against the higher prices which now prevail on general tonnage. Specifications for car repairs are coming out in increasing volume.

Birmingham, Ala.—Steel plate demand continues good and further specifications are anticipated as some of the work booked in recent weeks is taken up.

San Francisco—The largest plate letting went to Western Pipe & Steel Co. and involved 430 tons for a 28 to 44-inch welded steel pipe line for San Francisco. A pipe line at Climax, Colo., calling for 100 tons, was placed with an unnamed interest. To date

this year 95,351 tons have been booked, compared with 23,115 tons for the same period last year.

Seattle — No large tonnages are up for figures but several important projects are developing. In the meantime local shops are well supplied with tank, boiler and general jobs calling for small tonnages. Port of The Dalles, Oreg. has decided to proceed with construction of oil terminal and storage and Inland Navigation Co. on adjacent property will erect its own storage facilities, site having been purchased.

Contracts Placed

1010 tons, power house penstocks, Columbus, Nebr., to Pittsburgh-Des Moines Steel Co., Pittsburgh.
460 tons, waterworks conduit, Denver, to Thompson Mfg. Co.
430 tons, 28 to 44-inch welded steel pipe, contract 107, San Francisco, to Western Pipe & Steel Co., San Francisco.
150 tons, blast furnace gas main, Ford Motor Co., Dearborn, Mich., to Biggs Boiler Works Co., Akron, O.
130 tons, sidewalls, doors, etc., for Boeing assembly plant, Seattle, to Truscon Steel Co., Youngstown, O.
Unstated tonnage, 27½ miles of 8-inch and 12 miles of 16-inch pipe for El Paso Natural Gas Co., El Paso, Tex., to A. O. Smith Corp., Milwaukee.

Contracts Pending

450 tons, water stops, metropolitan water district, Los Angeles; bids July 28.
304 tons, two 152 x 34 x 6-foot steel barges for St. Paul engineers; bids Aug. 12.
Unstated tonnage, pontoon and dredge pipe, for St. Paul engineers, plans being drawn.
Unstated tonnage, two or four 150 and 175-foot barges, for Gulf Refining Co., Pittsburgh.

Sheets

Sheet Prices, Page 64

Pittsburgh—Sheet mills appear to be falling further behind on deliveries. In common grades three to four weeks, and in full-finished, five to six weeks, seem to be the earliest that any producer can name on new business. Buying is well diversified from users of electrical sheets, full-finished stock, common sheets and other grades. With few exceptions, third-quarter prices appear to have been satisfactorily received by consumers, although considerable trade interest exists on interpretation of the Robinson-Patman bill as it may affect certain mill-customer relations.

Cleveland—Backlogs still remain heavy enough to carry most mills through July. Requirements for building construction and household utilities are the leading factors in the abnormal consumption of the last two weeks. A particularly strong demand has been noticed for galvanized material. Most tonnage consists of small lots for immediate consumption.

Chicago—New business is in good volume considering that anticipatory buying last month was fairly extensive and the fact that automotive interests have yet to enter the market for new model requirements. Sheet mill operations continue full, and heavy shipments are scheduled for several weeks. New prices are steady on new bookings.

New York—Consumption of steel sheets is slightly less active than a fortnight ago but is still brisk. Some sellers are sold up practically to the end of August.

Cincinnati — Sheet mills are operating close to capacity on orders at third quarter prices, the backlogs built on price advantage last month having been exhausted. A fair volume for future delivery, to Aug. 15, has been booked but most users are pressing for delivery. The proportion of shipments to automobile manufacturers is lower than during previous peaks this year.

Philadelphia—Judging from pressure for deliveries, heavy volume of

sheet steel is being consumed in this district. Indications point to a diversified consumption. Sellers are having difficulty in meeting these demands, as the mills appear to be booked up solidly on most grades until late August and beyond on some lines. Prices are firm. Settlement of the R.C.A. Mfg. Co. strike in Camden is expected to result in early releases for radio steel.

St. Louis—Shipments of sheets continue on a large scale, and mills are under pressure to accelerate the movement. Users are apparently in urgent need of material, and despite recent heavy deliveries, consumer stocks are not large. Business of the Granite City Steel Co., leading district sheet producer, it is reported, will show a substantial increase over the like period in 1935.

Birmingham, Ala. — Warrant for active operation of sheet mills is still reported and there has been little change recently in output. These mills have had a phenomenal run with demand equal to production.

Norma-Hoffmann Bearings Corp., Stamford, Conn., is celebrating its twenty-fifth anniversary this year. The company was founded in 1911 by Walter M. Nones, its president, and has made many advances in ball, roller and thrust bearings.

Transportation

Track Material Prices, Page 65

Buying of freight cars continues to bring business through builders to steelmakers, though most orders now are for smaller lots than earlier in the year. Norfolk & Western has distributed 1000 box cars and a total of 170 others is made up of lots of less than 100 each. An inquiry for 400 hopper cars by the Wabash is the largest before builders at present.

Pittsburgh & West Virginia has placed an order for two 2-6-6-4 single expansion articulated type locomotives for heavy freight service in the Pittsburgh district with the Baldwin Locomotive Works, Philadelphia. The latter has also received an order from the Richmond, Fredericksburg & Potomac for five 4-8-4 high-speed passenger engines with 12-wheeled tenders to be used in handling passenger traffic from Washington south during the coming winter season. Both orders are to be shipped before Dec. 31. Union Pacific has placed an order with Electro-Motive Corp., LaGrange, Ill., for a 3600-horsepower diesel-electric locomotive.

Merchants Despatch Transportation Co., East Rochester, N. Y., a subsidiary of the New York Central, is low on heavy repairs to 1000 self-clearing hoppers for the Pittsburgh & Lake Erie, with award of the contract expected at any moment.

Cars Orders Placed

Aluminum Ore Co., subsidiary of the Aluminum Co. of America, 50 covered hopper cars of 70 tons capacity, to the Pullman-Standard Car Mfg. Co., Chicago.

Atchison, Topeka & Santa Fe., 10 covered hopper cars, to American Car & Foundry Co., New York.

Indianapolis & St. Louis, 60 gondolas, to the General American Transportation Corp., Chicago.

Newfoundland Railway, 50 steel underframe box cars, 42-inch gage and of 30 tons capacity, to the Koppel Industrial Car & Equipment Co., Pittsburgh.

Norfolk & Western, 1000 steel box cars: 800 standard 40-foot cars to Ralston Steel Car Co., Columbus, O.; 100 automobile cars with loading device to Magor Car Corp., New York; 100 50-foot cars to Greenville Steel Car Co., Greenville, Pa.

Locomotives Placed

Pittsburgh & West Virginia, two Mallet type locomotives, to Baldwin Locomotive Works, Eddystone, Pa.

Richmond, Fredericksburg & Poto-

mac, five locomotives to Baldwin Locomotive Works, Eddystone, Pa.
Union Pacific, one 3600-horsepower diesel electric locomotive, to Electro-Motive Corp., LaGrange, Ill.

Car Orders Pending

Wabash, 400 55-ton hopper cars, bids asked.
Wilson & Co., Chicago, seven 7000-gallon tank cars, pending.

Rail Orders Placed

Seaboard Air Line, 6280 tons of 100-pound rail, bids asked; also 19,300 kegs of track spikes, 2200 kegs of track bolts and 600,000 tie plates.

Buses Booked

Twin Coach Co., Kent, O.: Thirty-four 23 and 31-passenger, Birmingham Electric Co., Birmingham, Ala.; twenty 23-passenger, for New York State Railways, Rochester, N. Y.; eighteen 31-passenger, for Central Illinois Electric & Gas Co., Rockford, Ill.; four 23-passenger, for Southern Pennsylvania Bus Co., Chester, Pa.; four 23-passenger, for Utah Light & Traction Co., Salt Lake City, Utah; three 20-passenger, for Valley Public Service Co., Columbus, O.

Pipe

Pipe Prices, Page 65

Pittsburgh — Promising developments in line pipe contracts have been reported over the past week, with possibility that several small lines will develop to the contract stage shortly. Jones & Laughlin Steel Corp.'s recent order for 9000 tons of 8-inch seamless pipe from the Sun Oil Co., Philadelphia, will go into a gasoline line from Philadelphia to Newark, N. J. In the market for lap and butt weld pipe, specifications originating with the building industry are a highlight. This has meant considerable replenishment of jobbers' stocks, as well as the presence of a number of direct shipments for identified structures.

Cleveland — Private buying in small lots for new building construction and repair work are the main factors in the heavy pipe requirements. Jobber stocks remain normal and the rate of turnover is encouraging. Little trouble has been noted in meeting delivery schedules. The only time that any difficulty arises is when specifications for large tonnages are placed for prompt delivery. Demand for cast iron pipe is not keeping pace with other items and few projects are pending.

New York—Somewhat more activity characterizes the cast iron pipe market here but the largest letting reported is 131 tons. A number of tonnages are pending, of which an inquiry for 750 tons is the most notable.

Chicago—Chicago is in the market for 203 tons of cast pipe fittings but has yet to close formally on 689 tons of 24-inch pipe on which bids were taken recently. Cast pipe activity elsewhere is somewhat quieter, but shipments against orders are in fair volume. New inquiries are confined principally to small lots.

Buffalo — Republic Steel Corp., Cleveland, has been awarded 60 miles of 10¾-inch gas pipe by the Penn-York Natural Gas Corp., to be laid from the Pennsylvania natural gas area to Arcade, N. Y., where two 8-inch lines will be laid into Genesee and Chautauqua counties, New York. A contract for 80 miles of 8-inch pipe has also been awarded the A. O. Smith Corp., Milwaukee.

St. Louis—Waterworks and sewage disposal projects are calling for a substantial tonnage of pipe. A work order for construction of the pipe line for the Little Rock, Ark., waterworks has been authorized by PWA. Ajax Pipe line Co. of Oklahoma has requested permission of the war department, St. Charles County, Mo., and Madison Co., Ill., to lay an auxiliary petroleum pipeline across the Mississippi river to Wood River, Ill. The new line would connect with the

present line of the company. The main line is 400 miles long, from the Oklahoma oil fields to a refinery at Wood River.

Birmingham, Ala.—With some additional orders from California points, small tonnage awards from federal aided projects in the South and Southwest have built up splendid books for cast iron pipe and fittings shops. Shipments are active and operations good, schedules being from three to five days a week.

Seattle — The market for cast iron pipe is inactive, few projects of size having been announced. Seattle has opened bids for 180 tons of 16-inch cast pipe for Rainier avenue and an unstated tonnage of fittings for the East Marginal Way extension.

Cast Pipe Placed

192 tons, 8-inch sludge pipe, Stockton, Calif., to unnamed interest.
148 tons, 4 and 6-inch, Inglewood, Calif., to National Cast Iron Pipe Co., Birmingham, Ala.
134 tons, 30-inch, Long Beach, Calif., to United States Pipe & Foundry Co., Burlington, N. J.
131 tons, sewage disposal plant, Rockland state hospital building, Orangeburg, N. Y., to Warren Foundry & Pipe Corp., Phillipsburg, N. J., through F. H. McGraw & Co., New York.
123 tons, 4 to 20-inch, Santa Barbara, Calif., to American Cast Iron Pipe Co., Birmingham, Ala.
110 tons, 4 to 20-inch, Santa Monica, Calif., to American Cast Iron Pipe Co., Birmingham, Ala.

Steel Pipe Placed

Unstated tonnage, 60 miles, 10¾-inch gas pipe, Penn-York Natural Gas Co., Buffalo, to Republic Steel Corp., Cleveland.

Cast Pipe Pending

203 tons, fittings for 3 to 24-inch pipe, Chicago; bids Aug. 3.
180 tons, 16-inch Rainier avenue extension, Seattle; bids in.

Strip Steel

Strip Prices, Page 65

Pittsburgh—Noticeably heavier demand for cold-rolled strip steel is a feature, with demand from a wide range of sources in addition to heavier specifications from the automotive industry. Many cold-rolled strip producers in this district find themselves unable to make shipments in much less than four to five weeks. Hot-rolled strip is also in active call, both in narrow and wide widths. Though shipments are proceeding against the lower second-quarter price, there has been adequate test of the higher third-quarter base of 1.95c on hot-rolled strip. The 2.60c, Pittsburgh or Cleveland, base, on cold-rolled, carrying through unchanged from the second quarter, has been firm.

Cleveland — Price conditions are holding firm. New business so far this month has been very encouraging. While a marked recession in requirements of the auto partsmakers and farm equipment concerns has been noticed, the heavy demand and general diversification from other sources has been exceptional.

Chicago—Strip shipments are well maintained despite a decline in new business. Automotive buying is light because of the approaching end of current model production, but orders for new models are expected to increase within a few weeks. Cold-rolled strip demand is widely diversified and so far has been affected only moderately by the season.

Philadelphia—Sellers of narrow strip find business has been fairly good, better than expected in view of the protective buying last month before the $2 advance in hot strip.

Lehigh Steel Co. has moved its offices and steel warehouse to its new building at Bethune and Greenwich streets, New York. Modern facilities

have been installed to improve its service.

Wire

Wire Prices, Page 65

Pittsburgh—Unseasonally high demand for both merchant and manufacturing wire products is a subject of considerable trade comment. Furthermore, the price is fairly firm and barring the policy of producers to still ship against low-priced first-quarter nail contracts, $2.10, base, Pittsburgh, per keg, is firm on new business. A more lenient attitude is being taken by many manufacturing wire consumers as regards inventories, and many have decided to build up at least a 30 days' inventory on hand. The market on 6 to 9 gage bright wire remains 2.40c, Pittsburgh or Cleveland.

Cleveland—Requirements of nut and bolt concerns, nails, spring wire, and wire rods manufacturers, is particularly heavy. The long overdue recession in automobile needs has begun to show itself the last few weeks. Large miscellaneous orders have been noticeably lacking, and no change is anticipated soon. Activity in merchant wire products is affected seasonally in rural districts. Consumption of barbed wire and fencing, however, remains at a better rate than a year ago.

Chicago—A slight tapering in wire demand still leaves this month with prospects of being the most active July in history. The fact that business has not taken a downward trend lately is unusual, ascribed to maintenance of consumption rather than to artificial factors. Most of such decrease as has occurred in buying recently is attributed to the automotive industry. Weather conditions improved last week in several drought-ridden states, but actual damage to farmers has yet to be determined accurately. Wire nails continue to benefit from the better activity in building construction.

Cold Finished

Cold Finished Prices, Page 65

Pittsburgh—Reduction of $1 a ton has been made in delivered base prices at Detroit, and other places of delivery in eastern Michigan on cold-finished carbon steel bars. This announcement was made by an important Pittsburgh producer for effect July 21 and until further notice, with the result that the carload lot market at Detroit, Mich., is now 2.40c, and at points in eastern Michigan, 2.45c. Furthermore, these lower delivered base prices will apply on all orders placed July 1 and thereafter, which were priced in accordance with the $3 a ton higher quotation for third quarter. For less than carload lots the Detroit, Mich., delivered price is now 2.49c and eastern Michigan, 2.45c. The latter, however, is qualified by plus the amount by which the published all-rail less carload rate of freight from Pittsburgh to the place of delivery exceeds the carload freight rate from Pittsburgh to that place. In those cases where the 2.30c, Chicago, Cleveland, or Gary, Ind., market, with the carload or less-carload rate of rail freight added to the place of delivery results in a lower price to eastern Michigan points, the latter lower price will govern. In effect, these new delivered prices include the same transportation charges from Pittsburgh, base, as those included in delivered prices on hot-rolled carbon steel bars for delivery to the same points.

American Rolling Mill Co., Middletown, O., has appointed the Edgecomb Steel Corp., Newark, N. J., and the Edgecomb Steel Co., Philadelphia,

distributors for Armco stainless steel in these respective districts.

Bolts, Nuts and Rivets

Bolt, Nut, Rivet Prices, Page 65

Bookings of bolts, nuts and rivets this month approximate those of the corresponding June period. Some decrease is appearing in miscellaneous demand, however, and July as a whole is not expected to equal the unusually heavy business of June. Railroads and car shops continue the leading factor in current demand, gains in consumption being particularly impressive when compared with that of the past several years. Farm implement and tractor builders, while still operating at a good rate for this season, have reduced their requirements from the spring peak.

Tin Plate

Tin Plate Prices, Page 64

Pittsburgh—With the appearance of cooler weather last week, most tin mills were able to schedule a full 16 turns weekly, with the result that operations averaged 95 per cent of capacity. The Steel corporation's tin plate capacity is at present engaged at 100 per cent of capacity, with the independents at 90-95 per cent, and every expectation exists that present rates will continue, or be bettered over the next four to six weeks. The market on long ternes is exceptionally active and producers are falling further in arrears on deliveries. Tin plate is quoted $5.25 per base box, Pittsburgh, and No. 24 unassorted long ternes, 3.50c.

Shapes

Structural Shape Prices, Page 64

New York—While the market has been devoid of any lettings of size, a great deal of new work came out for bids. The pending list has been increased by over 20,000 tons as a result of these inquiries. There still is a large tonnage pending on which the old 1.90c base, Bethlehem, Pa., price will apply, provided contracts are placed prior to Aug. 1. The plain material price on all new projects is 2c base, Bethlehem.

Pittsburgh—A heavier list of contracts includes 1018 tons for a grandstand at Jersey City, N. J., which American Bridge Co. has booked, 2040 tons for various state bridges in Iowa closed on by Pittsburgh-Des Moines Steel Co., and a larger number of small contracts, each under 500 tons. Among new inquiry is a 400-ton lime plant at Annville, Pa., for H. E. Mallaird Co., a 200-ton dock at Marcus Hook, Pa., for the Sinclair Refining Co., and an 800-ton building at Rossford, O., for the Libbey Owens Ford Glass Co. On most new inquiries where closing dates have been named for August and later, the higher price of 1.90c, f.o.b., Pittsburgh, is being quoted by producers. In the July 31 state letting 324 tons are out for bidding.

Cleveland — Structural specifications are light. However, consider-

Shape Awards Compared

	Tons
Week ended July 24	17,577
Week ended July 17	23,216
Week ended July 10	41,952
This week, 1935	5,173
Weekly average, 1935	17,081
Weekly average, 1936	22,152
Weekly average, June	25,036
Total to date, 1935	448,227
Total to date, 1936	664,553

able tonnage is expected to materialize soon. The greater portion of the work now under construction is of a private nature, plant extensions and the like. Two good size jobs, each totaling approximately 1000 tons, which were expected to reach the specification stage last week, are still pending. A number of pending small jobs are also expected to close soon.

Chicago—Inquiries continue heavy. While bridges and other public project predominate, there is fair activity in industrial and other forms of private building. New bridge inquiries in Oklahoma and Texas involve 5300 tons. Pending work is heaviest in a number of months, and an increase in awards is in early prospect.

Boston—The market continues fairly active. New lettings totaled well over 1000 tons while the list of projects pending has been swelled materially. Fabricating shops are busy and indications are they will continue during the rest of the year. On all new work prices are being figured on the basis of 2.00c base, Bethlehem, Pa., for plain structural material. The old 1.90c price is good only on identified tonnages on which quotations were made prior to the end of June, and only if these jobs are placed under contract before the end of July.

Philadelphia—Buying by the Sinclair Refining Co. for Marcus Hook, Pa., Houston, Tex., and the Chicago district, features current transactions, with the fabrication contract going to Frank M. Weaver, Lansdale, Pa. Also of interest is the award of 360 tons in plant extensions for the Alan Wood Steel Co., Conshohocken, Pa., awarded to Bethlehem Steel Co., Bethlehem, Pa. District fabricators report that the bulk of their tonnage, however, is coming from outside the immediate district.

Detroit—Considerable automobile plant building has enlivened the market, with contracts reported including the following: 500 tons for a building for Long Mfg. Co. to R. C. Mahon Co.; 300 tons in a building at Lansing, Mich., for Olds Motor Co., to Jarvis Engineering Co.; and 260 tons in a plant at Flint for A. C. Spark Plug Co., which R. C. Mahon Co. will fabricate.

Birmingham, Ala. — Fabricating shops are busy and report plenty of business still on books with an occasional large order being received. Steady operations are assured for several weeks ahead with some contracts on hand not yet started.

San Francisco—Demand for structural shapes is being well maintained and awards aggregated 1897 tons, bringing the total for the year to 117,148 tons as compared with 52,770 tons for the corresponding period in 1935. Cyclops Iron Works was awarded two 75-ton, two 60-ton and one 40-ton traveling crane for the metropolitan water district, Los Angeles, requiring approximately 100 tons. Bethlehem Steel Co. took 113 tons for the Del Amo street bridge in Los Angeles for the United States engineer office. The same government bureau will open bids on July 29 for eight bridges to be erected in Los Angeles involving a total of 849 tons.

Seattle — Business is fair, small jobs predominating, but several important projects are expected up for figures soon. Pacific Coast fabricators are checking plans for the navy floating drydock for Pearl Harbor, bids at Washington Sept. 30, calling for 45,000 tons. Bureau of roads will open bids at Missoula, Mont., for the Bitterroot bridge for 70 tons of steel.

Shape Contracts Placed

1860 tons, postoffice, Indianapolis, Ind., to Bethlehem Steel Co., Bethlehem, Pa.

1632 tons, highway bridges, Texas, to Bethlehem Steel Co., Bethlehem,

Pa.; tonnages divided as follows: Tarrant county, 437 tons, Gillespie county, 390 tons, Fremont county, 215 tons, and Sabine county, 590 tons.

1190 tons, viaduct, Polk county, Iowa, to Des Moines Steel Co., Des Moines, Iowa.

1100 tons, subway alterations, Long Island City, N. Y., to Bethlehem Steel Co., Bethlehem, Pa., through J. Leopold & Co., New York.

1018 tons, grandstand for municipal recreation center, Jersey City, N. J., to American Bridge Co., Pittsburgh.

950 tons, bridge, Polk county, Iowa, to Pittsburgh-Des Moines Steel Co., Pittsburgh.

600 tons, Illinois river lock, Peoria, Ill., to Independent Bridge Co. Pittsburgh.

600 tons, Chase avenue subway, Milwaukee, to Bethlehem Steel Co., Bethlehem, Pa.

580 tons, grit chambers for boroughs of Manhattan and Bronx, New York, to Ingalls Iron Works Co., Birmingham, Ala.

475 tons, bridge, Maravia, Iowa, to American Bridge Co. Pittsburgh.

450 tons, overpass, Randolph county, Arkansas, to Bethlehem Steel Co., Bethlehem, Pa.

385 tons, Hiram Walker warehouse, Peoria, Ill., to Mississippi Valley Structural Steel Co., Decatur, Ill.

360 tons, plant extension for Alan Wood Steel Co., Conshohocken, Pa., to Bethlehem Steel Co., Bethlehem, Pa.

360 tons, building for Buick Motor Co., Flint, Mich., to Flint Structural Steel Co., Flint, Mich.

335 tons, Wilver Springs bridge, Milwaukee, to Milwaukee Bridge Co., Milwaukee.

322 tons, building for Landers, Frary & Clark Co., New Britain, Conn., to Berlin Construction Co., Berlin, Conn.

310 tons, school, Wilkes-Barre, Pa., to Lehigh Structural Steel Co., Allentown, Pa.

300 tons, state bridge, Natomas, Calif., to Moore Dry Dock Co., San Francisco.

300 tons, building for Olds Motor Co., Lansing, Mich., to Jarvis Engineering Co., Lansing, Mich.

290 tons, bridge, Tioga county, New York, to R. S. McManus Steel Construction Co., Buffalo.

285 tons, Teutonia avenue viaduct, North Milwaukee, Wis., to Wisconsin Bridge & Iron Co., Milwaukee.

280 tons, junior high school, Newburgh, N. Y., to Belmont Iron Works, Philadelphia.

275 tons, building for Ohio Edison Co., Youngstown, O., to Truscon Steel Co., Youngstown.

265 tons, bridge, Rusk county, Wisconsin, to Lakeside Bridge & Steel Co., Milwaukee.

260 tons, building for A. C. Spark Plug Co., Flint, Mich., to R. C. Mahon Co., Detroit.

257 tons, state bridge, Hamlin, Ind., to Bethlehem Steel Co., Bethlehem, Pa.

250 tons, bridge, Lake Bluff, Ill., to American Bridge Co., Pittsburgh.

245 tons, Port Washington bridge, Milwaukee, to Milwaukee Bridge Co., Milwaukee.

240 tons, buildings, Long Beach, Calif., for Spencer Kellogg Co., to Minneapolis-Moline Power Implement Co., Minneapolis.

180 tons, state bridge, Ayer, Mass., to Boston Bridge Works Inc., Cambridge, Mass., through Coleman Bros. Corp., Boston.

170 tons, addition to Trust Co. of Georgia building, Atlanta, to Ingalls Iron Works Co., Birmingham, Ala.

155 tons, apartment building for Mary L. Curley, San Francisco, to Herrick Iron Works, Oakland, Calif.

135 tons, bridge, Woodbury county, Iowa, to Pittsburgh-Des Moines Steel Co., Pittsburgh.

130 tons, bridge, Willmar county, Minnesota, to American Bridge Co., Pittsburgh.

130 tons, overhead crossing, Lyon county, Iowa, to American Bridge Co., Pittsburgh.

120 tons, bridge, Hooksett, N. H., to American Bridge Co., Pittsburgh.

120 tons, welded lintels, Berwyn, Md., to Barber & Ross Inc., Washington, through Treasury department, Washington.

115 tons, I-beams, Greenhills, O., to American Bridge Co., Pittsburgh, through Treasury department, Washington.

115 tons, state highway work, Newton county, Georgia, to Bethlehem Fabricators Inc., Bethlehem, Pa.

115 tons, high school, Mahanoy City, Pa., to an unnamed fabricator.

113 tons, Del Amo street bridge, Los Angeles, for United States engineer office, to Bethlehem Steel Co., Bethlehem, Pa.

105 tons, state bridge, Pittsfield, Mass., to Bethlehem Steel Co., Bethlehem, Pa.

100 tons, two 60-ton, two 75-ton and one 4-ton traveling crane for metropolitan water district, Los Angeles, to Cyclops Iron Works, San Francisco.

Unstated tonnage, construction for Sinclair Refining Co., Marcus Hook, Pa., Houston, Tex., and in the Chicago district to Frank M. Weaver, Lansdale.

Behind the Scenes with STEEL

Some Fun

Sure I'm for the——

NEW LOW appears to have been struck in the current political campaign, with distribution of the accompanying "comic valentine" effort. The piece is being mailed, with no comment, to a wide list of voters. We do not know, and care less, who is supplying the postage, but there it is.

The blank space in the caption is the result of editorial censoring. You can supply the missing word or words, depending upon whom you are mad at, be they Republicans, New Deal, Democrats, Father Townsend or Dr. Coughlin, only don't get us incriminated.

After considerable study, we are unable to determine whether the lad pictured is a genus of Neanderthal Man, Pithecanthropus Erectus or Piltdown Man. At least he would probably have a little difficulty with tunnels.

* * *

Galvanized Ad

CREDIK where credik is due! Only pure oversight can account for not giving Aetna-Standard Engineering Co. a great big hand here for its advertisement in the July 6 issue of STEEL, wherein by clever combination of black and aluminum inks the background was made to resemble, with startling effectiveness, a sheet of galvanized steel.

We almost tore the page out and took it home to repair a hole in the garage roof.

* * *

Splendor Inviolate

SITTING here in our embroidered shorts and natty brown shirt, we feel a distinct pang of sorrow for the poor boys down at McGraw-Hill Publishing Co. in New York, who, according to dat ole debbil *The New Yorker*, were confronted with the following interoffice memo the other morning:

"With the coming of hot weather we all try to keep as cool as possible. This means that during office hours a great many of us find added comfort in discarding our coats and working in shirt sleeves. This is entirely in order except that in so doing every effort should be made to maintain a neat and businesslike appearance. Suspenders, galluses and braces, while very useful at times, are not particularly attractive when subjected to the light of day. The Book Company, in its memorandum on this subject, has even said that if worn at all they should never be seen outside the boudoir or the crossroads general store.

"We would therefore suggest that when you shed your coat you also dispense with suspenders and braces and put all your faith in a belt. We also particularly request that when you have occasion to use the elevators or travel through the building coats be worn, as shirt sleeves in the elevators give a very decidedly rustic or factory atmosphere to the building."

To paraphrase a popular song:

Shirt sleeves in the elevators,
Are not much to see;
We're none of us rustics,
All gentleman, we!

* * *

Lady in Waiting

FROM the classified columns of STEEL comes the information that a certain "lady with executive ability and steel research including welding experience" is looking for a permanent position somewhere. Those are unusual qualifications for a secretary; we hope she meets with success.

Certainly she ought to go farther than some of these cuties whose classified application might read: "Lady (?) with ability to like executives; rates perfume above personality; callipygian index 95 plus."

Things being what they are, however, response to the latter would probably be terrific. Ah, men, you carnal beasts!

* * *

No Grapes

SOME FRIEND phoned in here last week and asked about the identity of the "sour grapes" expert who cried in this column last week because he didn't get a free ride on the MERCURY. Let us hasten to assure this friend and all others who may harbor similar thoughts that we were only kidding. One of STEEL'S editors made the trip and had a swell time.

This department has too many projects of major importance to cope with to be bothered about riding trains. Such as noting that 11,000 copies of STEEL now go in the mail each Saturday morning to fill the reading demands of close to 60,000 men of industry.

—SHRDLU

Pa.; a fairly sizable tonnage is believed to be involved.

Shape Contracts Pending

7400 tons, Sixth avenue subway, route 101, section 9, New York; bids Aug. 4.
5000 tons, including 2400 tons of piling, dam No. 21, Quincy, Ill.; McCarthy Construction Co., Davenport, Iowa, low on general contract.
3125 tons, buildings, Daytona Beach, Fla.
2600 tons, Rockland state hospital building, Orangeburg, N. Y.; new bids Aug. 12.
2500 tons, hospital building, Jersey City, N. J.; bids Aug. 4.
2000 tons, armory building, Teaneck, N. J.
1800 tons, five buildings, department of sanitation, Wards Island, New York; low bidder, Cauldwell-Wingate Co., New York.
1650 tons, bridge, Bonham, Tex.
1650 tons, bridge, Durant, Okla.
1400 tons, sheet steel piling, wales and tie rods, Cape Cod canal, Sandwich, Mass.; general contract to L. E. McLaughlin, New London, Conn.
1200 tons, Liberty Mutual building, Boston.
1000 tons, terminal building for Baltimore & Ohio railroad, Chicago Transfer System, Chicago.
1000 tons, postoffice and court house, Los Angeles.
1000 tons, plant building, Indianapolis.
1000 tons, plant addition, Union Bag & Paper Corp., Savannah, Ga.; general contract to Merritt-Chapman & Scott Corp., New York.
900 tons, bridge, Dallas, Tex.
800 tons, Gordon Baking Co. building, Long Island City, N. Y.; bids on revised plans.
800 tons, plant, Rossford, O., for Libbey Owens Ford Glass Co., Toledo, O.
800 tons, municipal garage, New York.
775 tons, state highway bridges, Ohio.
600 tons, grit chambers, department of sanitation, New York; general contract to Rosoff Bros., Brooklyn, N. Y.
600 tons, bridge, Leymour, Tex.
575 tons, state bridge, Winslow, Me.; bids July 29.
560 tons, bridge, San Antonio, Tex.
520 tons, sheet piling, breakwater for United States coast guard, Point Arguello, Calif.; bids opened.
500 tons, bridge, Sherman, Ill.
500 tons, buildings, Ashwood, Tenn.
500 tons, building, Campana Corp., Batavia, Ill.; new bids asked.
500 tons, bridge, Waterville, Me.
450 tons, state bridge, Oleans county, New York; low bidder, William J. Gallagher, Media, N. Y.
450 tons, Trans-Lux theater and office building, Washington; low bidder, Harris Structural Steel Co., New York.
450 tons, bleachers for municipal recreation center, Jersey City, N. J.
400 tons, state highway bridges, various locations, Iowa.
400 tons, lime plant for H. E. Mallaird & Co., Annville, Pa.
400 tons, plate girder underpass, North Franklin and Canton townships, Washington county, Pennsylvania; Tri-State Engineering Co., Washington, Pa., low bidder at $163,568.73 on July 17 letting at Harrisburg, Pa.
350 tons, bridge for New York Central railroad, Whitesboro, N. Y.
230 tons, bridge, Milo, Me.; low bidder, Harris Structural Steel Co., New York.
230 tons, Saddle river bridge, Bergen county, New Jersey; low bidder, J. P. Burns, Dumont, N. J.
209 tons, three bridges, Clear Creek county, Colorado; bids opened.
209 tons, state highway bridge, Idaho Springs, Colo.
200 tons, St. Christopher school, Dobbs Ferry, N. Y.
200 tons, bridge draw span, East Alburg-West Swanton, Vt.; bids July 29.
200 tons, postoffice, Gary, Ind.
200 tons, plant addition, Chicago Vitreous Enamel Products Co., Chicago.
200 tons, state bridge, Dover, Idaho.
200 tons, dock for Sinclair Refining Co., Marcus Hook, Pa.
181 tons, highway underpass, West Hempfield and East Hempfield townships, Lancaster county, Pennsylvania; bids to state highway department July 31. Included 73 tons of plain steel bars.
180 tons, state bridge, Saunga, Pa.; bids July 31.
165 tons, state crossing, Dover, Idaho; A. B. Carscallen, Coeur d'Alene, Idaho, low.
143 tons, Pennsylvania state highway work in four counties to be held at Harrisburg, Pa., July 31, consisting of the following quantities: Warren county, 172,100 pounds of fabricated structural; Huntingdon county, 76,470 pounds of fabricated structural; Blair county, 22,640 pounds of plain structural, and Bedford-Huntingdon counties, 16,525 pounds of fabricated structural.
140 tons, bridge, Ontario county, New York; low bidder, A. S. Wikstrom, Newark, N. J.
140 tons, state highway bridge, Lynnfield,

Mass.; general contract to Alfred H. Lewis, Andover, Mass.

138 tons, overpass, Mansfield, Mass.; general contract to Coleman Bros. Corp., Boston.

134 tons, overpass, Bowdoinham, Me.; general contract to Hector J. Cyr, Waterville, Me.

115 tons, Woolworth store building, Eighty-sixth street and Third avenue, New York.

110 tons, state highway bridge, Canton-Norwood - Westwood, Mass.; bids Aug. 4.

108 tons, state highway bridge, Peabody, Mass.; general contract to Richard White & Son Co., West Newton, Mass.

100 tons, state highway bridge, Westboro-Hopkinton, Mass.; bids Aug. 4.

100 tons, Seattle plant for Northwest Lead Co.; The Austin Co., Seattle, general contractor.

Unstated tonnage, science hall, University of Portland, Portland, Oreg.; Poole and McGonigle, Portland, general contractor.

Reinforcing

Reinforcing Bar Prices, Page 65

New York—The recent attempt by some leading mills to firm up the market through the adoption of open prices has failed. In some cases the 2.05c base, Pittsburgh, price on new billet rolled bars was shaded by as much as $6 a ton. Such shading has been done by some of the principal interests. The market is fairly good with several sizable tonnages placed and a considerable amount of tonnage under negotiation.

Pittsburgh—Most producers issued announcements to the trade more clearly defining a reinforcing steel bar distributor, the definition closely conforming to the former NRA code terminology. At the same time a policy of making "published" prices to jobbers was inaugurated, based on naming a 2.05c, Pittsburgh, base for new billet steel bars in structural or intermediate grades and a 1.90c, Pittsburgh, base on rail steel reinforcing bars, stating that quotations shall be made at f.o.b. delivered prices to be determined by adding published extras and applicable transportation charges from the basing point to the place of delivery. In turn, it is reported that fabricators will follow the example of producers by publishing their retail prices.

Cleveland — New projects placed last week were scarce, and little is anticipated in the near future. Price conditions are firm on both billet and rail steel bars. Small lot bar requirements, for private work, constitute the strongest demand in this district. Some fabricators report difficulty in obtaining prompt deliveries because of the extensive backlogs resulting from the rush of orders before July 1.

Chicago — Awards are heavier while shipments against old orders continue brisk. New bookings include 940 tons for a local housing project and 600 tons for the Wieboldt department store. Orders for state road work aggregate several hundred tons. New inquiries for small lots are fairly numerous, while the substantial tonnage pending for river locks and dams shortly will develop into orders. Bar distributors are assured of good business through the balance of this quarter.

Boston—Fair activity is reflected in the market. Lettings aggregated easily 1000 tons, including three lots ranging from 100 to 200 tons each. New work continues to come out in good volume. The 2.05c base, Pittsburgh, price on new billet rolled bars is not maintained in all cases.

Philadelphia—Demand is spotty although 600 tons have been placed for a New Jersey road job with a district seller and 1000 tons for sewage work at Buffalo, through a Philadelphia contractor, with a Buffalo interest. Aside from the three federal housing projects in the district, noted in a previous issue as up for bidding shortly, new demand is light. Prices are somewhat shaky.

Birmingham, Ala.—Many awards under 100 tons have been received by producers. One or two larger sized orders are in sight and bids are being prepared on specifications.

San Francisco—The reinforcing bar market is active and 10,625 tons were placed last week. This brings the total to 152,363 tons, compared with 72,014 for last year.

Seattle — Outlook for reinforcing materials is improving, there being a noticeable gain in demand for small tonnages from private industrial sources. Tonnages pending are larger than average while proposed projects indicate a fair fall business. In Washington state highway jobs about 500 tons remain unplaced.

Concrete Awards Compared

	Tons
Week ended July 24	15,431
Week ended July 17	8,641
Week ended July 10	6,107
This week, 1935	1,410
Weekly average, 1935	6,862
Weekly average, 1936	6,832
Weekly average, June	3,303
Total to date, 1935	134,316
Total to date, 1936	204,972

Reinforcing Steel Awards

3538 tons, outlet and main control

shaft, Fort Peck dam, Montana, to unnamed interest.

1000 tons, building, Charlotte, N. C., for West Virginia Pulp & Paper Co., to National Bridge Works, subsidiary of Jones & Laughlin Steel Corp., Pittsburgh.

1000 tons, West side elevated highway extension, 111th to 121st streets, New York, to Carroll-McCreary & Co. Inc., Brooklyn, N. Y., through James Stewart & Co., New York.

1000 tons, rail steel bars, municipal sewage development, Buffalo, through the Horst Co., Philadelphia, general contractor, to the Buffalo Steel Co., Buffalo.

940 tons, Trumbull housing project, Chicago, to Calumet Steel Co., Chicago.

640 tons, gate shafts and building, Fort Peck dam, Mont., to unnamed interest.

600 tons, Wieboldt department store, River Forest, Ill., to Concrete Engineering Co., Chicago.

600 tons, state road work, Burlington county, New Jersey, through John Lafferty, Haddon Heights, N. J., to Taylor-Davis Inc., Philadelphia.

550 tons, schools, Los Angeles, to unnamed interests.

530 tons, Clarksville, Mo., lock, to Inland Steel Co., Chicago.

450 tons, women's gymnasium, Washington state college, Pullman, Wash., to unnamed interest.

364 tons, dam, Lynxville, Wis., to Paper Calmenson & Co., St. Paul.

355 tons, Rio Honda bridge near El Monte, Calif., to unnamed interest.

312 tons, four double hangars, Hickman Field, T. H., to Bethlehem Steel Co., Bethlehem, Pa.

250 tons, alterations to Le Conte junior high school, Los Angeles, to Blue Diamond Corp., Los Angeles.

250 tons, addition to Cahuenga school, Los Angeles, to Soule Steel Co., Los Angeles.

250 tons, building for high school, South Gate, Calif., to Concrete Engineering Co., Los Angeles.

200 tons, buildings, United States veterans' bureau, Togus, Me., to Barker Steel Co., Cambridge, Mass., through Thomas O'Connor, Cambridge.

150 tons, building for water and power department, Los Angeles, to Consolidated Steel Corp., Los Angeles.

150 tons, office building, 107 South Vincente boulevard, Los Angeles, to unnamed interest.

150 tons, Illinois state bridge, to Calumet Steel Co., Chicago.

144 tons, crossing near Plummer, Benewah county, Idaho, to unnamed interest.

142 tons, state grade crossing elimination, Hightstown, N. J., to Bethlehem Steel Co., Bethlehem, Pa., through Kolyn Construction Co., Trenton, N. J.

140 tons, University of Idaho dormitory, Moscow, Idaho, to Bethlehem Steel Co., Seattle.

130 tons, school alterations, Brea, Calif., to unnamed interest.

125 tons, auto speedway, Roosevelt field, New York, to Carroll-McCreary & Co. Inc., Brooklyn, N. Y., through Edmund J. Rappoli, Cambridge, Mass.

125 tons, bridge, Pittsfield, Mass., to Northern Steel Co., Medford, Mass., through Lane Construction Co., Meriden, Conn.

125 tons, reservoir, Arlington, Mass., to Barker Steel Co., Cambridge, Mass., through O'Malley & Delaney, Waltham, Mass.

121 tons, siphons No. 1 and 2, Vasquez Creek tunnel project, Denver, to unnamed interest.

100 tons, office for Los Angeles Gas & Electric Co., Los Angeles, to unnamed interest.

100 tons, auditorium for high school, Grossmont, Calif., to unnamed interest.

100 tons, Treasury department, schedule 12745, Los Angeles, to unnamed interest.

100 tons, market, Beverly boulevard and Kings road, Los Angeles, to unnamed interest.

100 tons, store, Fourth and Wilshire boulevard, Los Angeles, to unnamed interest.

100 tons, bureau of reclamation at Casper, Wyo., to unnamed interest.

100 tons, state crossing, Centralia, Wash., to Bethlehem Steel Co., Seattle.

100 tons, miscellaneous projects, to Bethlehem Steel Co., Seattle.

100 tons, Illinois state road work, to Concrete Engineering Co., Chicago.

100 tons, bridge, Essex county park commission, Newark, N. J., to Igoe Bros., Newark, through John Dorer, Irvington, N. J.

100 tons, grade crossing elimination, Quincy, Mass., to Northern Steel Co., Medford, Mass., through Coleman Bros. Corp., Boston.

Unstated tonnage, Portland university building, Portland, Oreg., to Soule Steel Co., Portland.

Reinforcing Steel Pending

1200 tons, rail steel bars, federal jail, San Pedro, Calif.; bids opened.

650 tons, dam No. 21, Quincy, Ill.; McCarthy Construction Co., Davenport, Iowa, low for general contract.

350 tons, Sixth avenue subway, route 101, section 9, New York; bids Aug. 4.

300 tons, Richmond sewer, San Francisco; bids Aug. 5.

300 tons, paving, Lynn-Peabody, Mass.

206 tons, New Jersey highway, route 25, section 25; bids Aug. 10.

200 tons, wards No. 10 and 11, state hospital, Camarillo, Calif.; bids July 28.

154 tons, plain steel bars for five state highway projects in Pennsylvania to be bid to Harrisburg, Pa., secretary of highways, July 31, consisting of the following quantities: Bedford-Huntingdon counties, 25,835 pounds; Blair county, 332 pounds; Huntingdon county, 103,759 pounds; Lancaster county, 147,275 pounds; and Warren county, 32,133 pounds.

150 tons, stadium, Jersey City, N. J.

100 tons, bureau of roads bridge, Lewis county, Washington; bids at Portland, Oreg., July 29.

100 tons, embankment and spillway, Enfield-Ware, Mass., for metropolitan district water supply commission, Boston; general contract to Benjamin Foster Co., Philadelphia.

100 tons, state highway bridge, Westboro-Hopkinton, Mass.; bids Aug. 4.

100 tons, state highway bridge, Canton-Norwood - Westwood, Mass.; bids Aug. 4.

Unstated tonnage, reclamation project, upper Snake river, Idaho; Otis Williams Co. and Brent Sturgill Co., Vale, Oreg., joint contractors.

Quicksilver

New York—The quicksilver market appears slightly easy although prices are unchanged at $74 to $74.50 per 76-pound flask in small lots of 15 to 25 flasks. Round lots

of 100 flasks are available at $73.50 per flask. It was reported that some distress material sold at concessions but this was unverified. Most sellers report the market is quiet, reflecting the usual seasonal summer let-down.

Pig Iron

Pig Iron Prices, Page 66

Pittsburgh—The $19.50 per ton Pittsburgh district furnace base on No. 2 foundry and malleable iron is meeting a fair test through orders which foundries are placing, mainly in less-carloads. This type of current order is fairly numerous but takes second place to the two or three longer time basic contracts which local merchant furnace interests are running on. Davison Coke & Iron Co.'s Neville Island, Pa., stack, Shenango Furnace Co.'s Sharpsville, Pa., furnace, and merchant furnace capacity of Carnegie-Illinois Steel Corp., Jones & Laughlin Steel Corp. and others continue active.

Cleveland—General requirements from various foundries, in the last few weeks, has shown much greater strength than expected. Demand from machine tool builders, heating household appliances and railroad casting concerns have been the main factors in this exceptional showing. The recent drought has brought in some cancellations from farm equipment foundries that had been buying for stock purposes. Shipments so far this month still remain ahead of June, the expected decline not as yet materializing.

Chicago—Seasonal decrease in foundry operations, though accentuated recently by the weather, has been only moderate. July pig iron shipments, however, will be slightly below those of June. New business is light, but sellers have sufficient unfilled orders to assure fairly heavy deliveries in August and September. Production of railroad castings is steady, and schedules of automotive parts suppliers have yet to increase in preparation for new models. Pig iron is steady at $19.50, furnace, for No. 2 foundry and malleable.

New York—Pig iron sales continue to reflect the suspension of operations in iron foundries here due to labor trouble. This strike is now entering its third week. Specifications otherwise appear if anything a little more brisk than a week ago.

A feature is placing of several hundred tons, probably close to 1000 tons, of No. 1 iron by the Thatcher Co., Newark, N. J. While domestic furnaces shared in the order most of it is understood to have been placed with a foreign seller.

Philadelphia—Pig iron business this month promises to exceed June. There have been few outstanding orders, with buying mostly for nearby needs; however, the melt in this district is higher and orders have been more numerous. Domestic prices are firm.

Buffalo—Reports that a blast furnace in a plant long idle is about to be relighted persist in this district. Ten other furnaces, all in operation since the early part of the year, continue to produce iron. With shipments and local melt accounting for practically the entire output of this district no slackening of the record production of the past six months is in sight. Fleet operators say many barges have been chartered to move iron in August.

Cincinnati—Shipments of pig iron are steady, with an occasional dip due to extreme hot weather or seasonal influences in isolated industries. Volume, however, is not far under the best months of the year. New business is chiefly in small lots, for a total of about 1000 tons a week. Foundries on machine tool parts are expected to rebound shortly. Prices continue firm.

St. Louis—The melt of pig iron continues abnormally high for this time of year, with indications pointing to the heaviest July consumption since 1930. Buying continues in fair aggregate volume, but almost exclusively in small lots for prompt delivery. Shipments this month are only moderately under the daily average of June.

Birmingham, Ala.—While melters report new business being received, pig iron purchasing is in small tonnages and no more frequent than the pace set in recent weeks. Demand is a little under production. Ten blast furnaces are in operation, with foundry iron output better than basic and other classes.

Toronto, Ont. — While sales of merchant pig iron for the past week were below the average for the year, they showed improvement over the preceding week. Merchant pig iron awards totaled approximately 700 tons, made up of lots ranging from a car to 300 tons. Melters are interested only in spot needs and no forward delivery contracts are reported. Iron prices are firm and unchanged.

Scrap

Scrap Prices, Page 67

Pittsburgh—By advancing another 25 cents a ton last week, the market clearly showed that it had entered into a definite sellers' phase, inasmuch as the leading interest here, unable to buy further at $14.50 as it did ten days ago, began lifting scrap off its stock piles. Among secondary holders of scrap a universal disposition to hold accumulations is noted, and local brokers with $14.50 short sales into consumption have been obliged to pay $14.50 for coverage. No. 1 steel is now quoted $14.25 to $14.75; railroad specialties, $17.50 to $18; low phos billet crops, $17.75 to $18.25; and No. 2 steel, $13 to $13.50, although blast furnace mixed borings and turnings are off to $7.50 to $8.25. Machine shop turnings remain unchanged at $9.50 to $10.

Cleveland—Heavy arrivals of scrap

by water from upper lake sources is supplying some large melters here, a cargo of 2400 tons being unloaded here last week, among other receipts. Scarcity of steelmaking grades exists in this area. Prices are steady and without change.

Chicago—Principal activity in steelworks scrap is on the part of dealers and brokers whose buying continues to give a strong tone to prices. Heavy melting steel generally is being picked up at $13.50 to $13.75, with railroad material ranging higher. This is in contrast to $13.50 paid on the last purchase by a mill. Hot weather still is interfering with collection and preparation of scrap in some sections of the country.

Boston—Actuated by belief that increasing domestic demand for iron and steel scrap will force prices to higher levels, brokers here sharply advanced their buying prices on principal grades last week. Mixed shafting is up 75 cents, skeleton, specification pipe, forge flashings and heavy breakable cast are up 50 cents. Blast furnace borings and turnings and cast iron borings for chemical use are up 25 cents. Brokers also have advanced by 25 cents their prices on steel scrap for export.

New York—An advance of 50 cents on No. 1 heavy melting steel to $12.50, delivered Bethlehem, Pa., has caused brokers here to mark up their buying prices on steel scrap by an equivalent amount. Demand is more urgent on the part of consumers. On the other hand, dealers in most cases have gone long on scrap and are anticipating profits at higher prices which they expect to see soon. Competition for scrap for export also has brought about a further advance of 25 cents a ton in prices brokers are offering for material delivered on New York and Brooklyn docks.

Philadelphia—Further strength is noted in scrap, with advances in heavy melting steel, leading grades of cast and in several other classifications. The advances in steel, which is now holding at $12.50 for No. 1 and $11.50 for No. 2 are due to higher offerings at Bethlehem, Pa., for material from other than nearby points. The other leading consumers of steel scrap have not been in the market recently. Incidentally, the Bethlehem consumer has also advanced its price for No. 1 steel for Sparrows Point, Md., to $12, up 50 cents. Due to increasing strength in the domestic market, dealers in the Philadelphia district are no longer able to quote for export shipment from this port. Cast grades are exceptionally strong, heavy breakable, cupola, stove plate and cast wheels all being higher. Couplers and knuckles have also been advanced.

Buffalo—Dealers are declining offers of $13 for No. 1 heavy melting steel, they claim, and ask $13.50 or more. Tonnage purchases are likely when buyers and sellers can get together on prices. Other materials, strengthened by continued large melt, are stronger in nominal quotations. Offers to purchase No. 1 machinery cast have shown this material is held for a $14 bid. Blast furnace scrap is gaining strength at a rate forecasting early tonnage sales.

Detroit—Scrap prices have been advanced again as a result of strong bidding by dealers, although melters are not in the market. Heavy melting steel quotations have been advanced $1.25 per ton to $11.50 to $12.00 for No. 1 and $1 higher to $10.50 to $11.00 on No. 2. Other grades show considerable strength. Buying by melters here has not developed but demand from other districts continues strong. Automotive offerings are strong for this portion of the year.

St. Louis—Dealers find it increasingly difficult to obtain scrap for delivery on contracts and the market throughout continues the upward trends of the past two or three weeks. An east side mill purchased a round tonnage of steel specialties, reported at 3000 to 4000 tons, for delivery over the next 60 days at current quotations.

Cincinnati—A strong undertone continues in iron and steel scrap, based partly on reports of bids on recent railroad lists. Mill reserves are adequate to support high steelmaking rates and the market, except for dealer activity in building up stocks, is dull.

Birmingham, Ala.—Consumers of iron and steel scrap are buying against immediate needs, not building up inventory. The market remains slow, quotations weak and plenty of stock available. Heavy melting steel users show little interest, the largest consumer evidently having a reasonable supply.

Seattle — Oriental buyers show some interest but little export business is being done as Japan will not meet asked prices. The domestic turnover continues heavy as mills and foundries are purchasing in proportion to consumption. Prices are steady at previous levels.

Toronto, Ont. — Trading in iron and steel scrap has shown minor improvement during the past few days. Steel grades are moving to the mills in the Hamilton and Montreal districts and there is a fair call for heavy melting steel, axles and rails.

Export demand is at a standstill with dealers unloading surplus stocks on the domestic market. Iron grades also have shown improvement recently. Prices are firm and unchanged.

Warehouse

Warehouse Prices, Page 68

Pittsburgh — Bookings by local jobbers have been less in July than in the comparable June period. Demand for sheets, nails, bars, hoops, bands and cold-drawn steel has been as good as June, but orders for structurals and plates for shipment out of warehouse have been less. The advanced warehouse steel market is being firmly held.

Cleveland— Demand for finished warehouse material has been mild so far this month, falling considerably behind June. The recent price increase on cold-rolled finished products, which went into effect July 15, has been favorably received. Nothing has been definitely decided on a possible increase for hot-rolled products.

Chicago—Rising demand last week accompanied moderation in temperature. Heavy plates and shapes experience the best demand in several years. Prices are steady.

New York—Higher prices which iron and steel jobbers began quoting recently are being well observed in connection with the going warehouse business. The only weakness appears to be in galvanized sheets, a condition which is not new. Jobbers report the current volume is at the same daily average as during June.

Philadelphia—Unless there is a sharp slump before the end of the month, which is not expected, July will prove as good as June for most distributors here. Business has been coming out in surprising fashion, considering the period of the year, attributed in part to the sold-up condition of the mills on some products, particularly bars and sheets. Prices are firm.

Detroit — Business has benefited from cooler weather, continuing around the level prevailing before the recent heat wave. A steady or rising trend is in prospect, partly because of automotive activity in preparation for model changes.

Cincinnati—Iron and steel jobbers are booking business comparable in volume to June, proving that there was little speculative buying last month in anticipation of the higher prices. Building materials continue active, but inquiries have fallen off and a shrinkage in this demand may be imminent.

Seattle — Volume is steady, the month's total showing improvement. Buyers have accepted the new price schedules which are being generally maintained although on some items Portland is under Seattle levels.

St. Louis—Sales by warehouse and jobbing interests, which had receded slightly during the period of extreme heat, have picked up substantially, due chiefly to resumption of purchasing by the general manufacturing trade. The movement of building materials is reported good, with prospects during the balance of the third quarter believed to be excellent. Sheets are active, and there is also a brisk demand for bars and some tubular items. Railroads are buying fairly freely, mainly shop supplies.

Metallurgical Coke

Coke Prices, Page 65

Heaviest mid-summer demand for both beehive and by-product coke in almost a decade finds coke producers with little chance to build stocks against usually strong fall demand in domestic sizes. Owing to large current demand, such important steel concerns as Republic Steel Corp., Wheeling Steel Corp., Jones & Laughlin Steel Corp. and others serving the domestic coke market have had practically no chance to build up inventories for the fall. One of these companies, for example, has only 3000 tons of by-product coke in domestic sizes in its yards, whereas it normally carries up to 100,000 tons. Strong demand for metallurgical coke is sustaining present Connellsville, Pa., oven prices on a firm basis. Common foundry coke maximum prices have advanced 15 cents a ton and are now quoted $4.25 to $4.50, against $4.25 to $4.35 formerly. Premium foundry coke has firmed up to an apparent minimum of $5.50, but standard beehive furnace coke in recognition of Pittsburgh Steel Co.'s purchase of 75,000 to 100,000 tons of standard beehive coke for shipment over the balance of 1936 at $3.30 per ton, f.o.b. Connellsville, Pa., ovens, has declined to a range of $3.30 to $3.65, compared with $3.50 to $3.65 formerly. There continues to be a large number of small lot transactions in standard furnace coke which are commanding the maximum of this figure.

Iron Ore

Iron Ore Prices, Page 67

According to a recent report compiled by the M. A. Hanna Co., Cleveland, 25 more boats were engaged in the ore trade July 15 than on the same day in June. It is said that these 25 boats show the extent to which independent operators have been pressed into service.

The number of American lake ore carriers in commission July 15 was 247, compared with 240 June 15 and 159 July 15, 1935. Ten fleets are now operating 100 per cent. The increase since June 15 represents boats transferred from inactive companies to active ones by sale during the past few weeks. The total number of Ameri-

can lake ore carriers is 318, making 77.67 per cent of the fleet active. Not since these statistics were compiled, beginning in 1931, have so many freighters been in commission.

Stocks of iron ore at Lower Lake ports and furnaces, July 1 were approximately 4,000,000 tons less than on the comparable date last year, according to Lake Superior Iron association.

The association's report follows:

	Tons
Consumed in May	3,882,173
Consumed in June	3,941,426
Increase in June	59,253
Consumed in June, 1935	2,198,757
On hand at furnaces, July 1	18,016,850
On Lake Erie docks, July 1	4,045,110
Total on hand at furnaces and Lake Erie docks, July 1	23,106,550
Reserves total, July 1, 1935	27,001,988

Receipts of iron ore at lower lake ports for this season to July 1, shipments to interior furnaces, and dock balances follow:

Port	Receipts	Shipments	Dock bal. July 1,'36
Buffalo	798,437	1,385	2,730
Erie	389,477	398,720	45,849
Conneaut	1,511,089	1,856,376	1,234,300
Ashtabula	965,921	1,162,199	1,464,532
Fairport	243,777	245,503	387,085
Cleveland	2,115,366	1,800,811	547,077
Lorain	719,019	501,952	12,527
Huron	171,656	172,767	332,688
Toledo	427,875	191,779	18,322
Total	7,342,617	6,331,492	4,045,110
Year ago	5,328,967	4,342,546	4,160,873

Baltimore — Ore arrivals continue heavy. From June 19 to July 6, inclusive, 22,380 tons of iron ore came in from Cruz Grande, Chile, 11,000 tons from Daiquiri, Cuba, and 7724 tons from Narvik, Sweden.

Manganese ore arrivals included 8335 tons from Abu Zenina, 7880 tons from Poti, Russia and 1500 tons from Calcutta, India. Chrome ore arrivals were 6019 tons from Louremco, Marques, Portuguese East Africa, and 1000 tons from Greece.

Philadelphia — A good movement of chrome ore continues, 3462 tons having come in during the week ended July 18, in three shipments, 1618 tons from Cuba, 1074 tons from British India and 770 tons from British South Africa.

Nonferrous Metals

Nonferrous Metal Prices, Page 66

New York — A tremendous avalanche of buying orders for copper swept the market last week as domestic consumers rushed to cover their future requirements prior to the advance in price to 9.75c, Connecticut. Zinc rose $1 per ton while lead was strong. The tin market again was weak.

Copper — The advance of ¼-cent which was made effective as of July 22 reflected continued active rates of consumption, the strong statistical position of the industry and higher levels in London. Total sales for the month through Thursday totaled 171,990 tons compared with 16,520 tons for June and 158,064 for April. A quiet but firm market is expected over the balance of the summer.

Zinc — Sellers raised quotations five points to the basis of 4.80c, East St. Louis, as the pressure caused by low prices in London lifted slightly. Bookings were heavy during the early part of the week but tapered following the advance in prices. Indications point to 5-cent zinc before the end of the year.

Lead — A strong situation developed in lead on continued active demand but the market did not appear so close to a price rise as earlier in the week. Should present excellent buying persist, producers feel that an advance may be justified. The market closed unchanged at 4.45c, East St. Louis.

Tin — Consumption, especially among tinplate makers, is holding at a high rate but actual new tin buying was light last week. Prices eased to around 43.62½c on spot compared with 44.25c at the beginning of the week.

Steel in Europe

Foreign Steel Prices, Page 68

London—(*By Cable*)—Buying of steel in Great Britain is quieter as the August vacation season approaches and some consumers are asking that deliveries be interrupted. Pig iron producers are overtaking their arrears but are accepting only a small portion of the forward business offering. Steelmakers have full specifications for third quarter delivery.

All districts on the Continent report the situation not yet normal and some works are closing, due to unprofitable operation under new labor conditions.

Equipment

Chicago—Deliveries on machine tools have lengthened the past month or two and constitute one of the principal problems of sellers. Inquiries continue active despite the absence of large lists, and sales are holding unusually well for mid-summer. Milling machine manufacturers have announced another price increase, averaging around 10 per cent. Railroad inquiries are light, new lists being headed by a lathe, drill and press for the Illinois Central at St. Louis. Small

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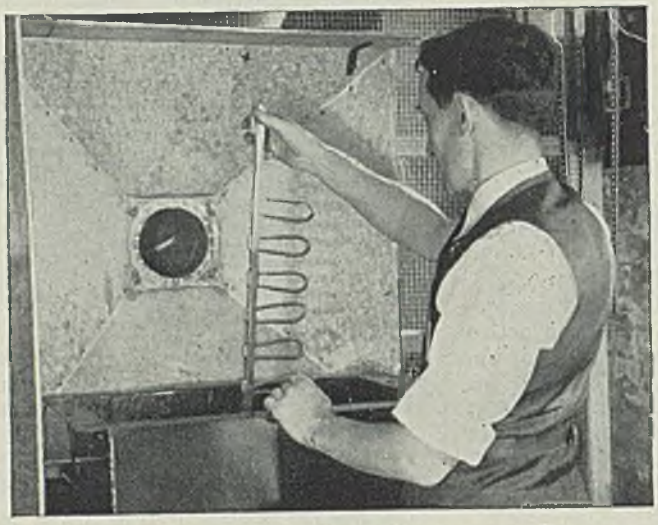

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tool demand shows but little of the slackness common to this period.

Seattle — Business continues in good volume, replacements being heavier and new projects more numerous. Cannery interests in Alaska are calling for additional supplies due to a heavy run of fish.

Pittsburgh—Ford Motor Co. has purchased from Westinghouse Electric & Mfg. Co. a 325-foot controlled atmosphere continuous roller hearth furnace for bright normalizing autobody stock. Output of this furnace will be 7½ tons per hour, based on 56-inch strip. This is reported to be the largest continuous electric furnace in the world.

Construction and Enterprise

Ohio

BRIDGEPORT, O.—City council will submit to voters in November a proposition to use proceeds of a proposed $85,000 bond issue to finance construction of a municipal electric power and light plant.

CINCINNATI—Corcoran-Brown Co., 4390 Springgrove avenue, maker of lamps and auto equipment, has received permit to erect a brick and steel $50,000 addition.

CLEVELAND — City utilities director, Frank O. Wallene, is considering taking action to obtain federal financing for making additions to the city light and power plant.

CLEVELAND—American Metal Products & Machine Co., Maurice H. Sacharow, president, Guarantee Title building, has been incorporated to manufacture metal products, including specialties. Company expects to acquire a plant and purchase lathes and some mechanical handling equipment.

CORNING, O. — Voters will pass on assuming $25,000 of the cost of a proposed $75,000 waterworks planned with the aid of WPA. Walter W. Graff, Lancaster, O., is engineer. L. C. Gibson, Zanesville, O., is WPA director for district No. 4.

DAYTON, O.—Contracting officer, materiel division, Wright field, asks bids Aug. 5 for furnishing and installing motors, circular 11, for operating building doors.

DAYTON, O.—Hartzell Mfg. Co. has been incorporated to manufacture and distribute metal products by R. B. Hartzell and Oden D. Hartzell. Sigler & Denlinger, 1020 Reibold building is correspondent.

HILLSBORO, O. — Inter-County Rural Electric Co-operative Inc., in care of Ohio Farm Bureau, 20 East Broad street, Columbus, O., has completed plans for erecting lines in Fayette, Highland, Clinton, Ross, and Pike counties at an estimated cost of $1,250,000. Carl Frye, 620 East Broad street, is engineer.

MASSILLON, O. — Bessemer Refractories Inc. has been formed and plans to acquire a plant to manufacture refractory brick. Sayre, Vail & Dorn, Union Trust building, Cleveland, is correspondent.

TOLEDO, O. — National Superior Co., maker of gas engines, plans to construct a 1-story addition, which with equipment, is expected to cost $100,000.

TOLEDO, O. — Industrial Steel Casting Co. is spending approximately $150,000 for expansion of its furnace division, including installation of new equipment.

VALLEY JUNCTION, O. — Ohio Gravel Co.'s plant, including motors and conveyors, was damaged considerably by fire recently.

WEST LAFAYETTE, O. — Saks Stamping Co. has been incorporated to operate a metal products plant by Joseph B. Shepler, Ethel Cunio, and J. Cowan. Thompson & Smith, Terminal building, Cleveland, is correspondent.

Connecticut

WATERBURY, CONN.—Waterbury Farrel Foundry has acquired property on Benedict street, adjoining the Farrel foundry, which may build a new factory building.

Massachusetts

BERNARDSTON, MASS.—Board of selectmen have approved a grant to purchase $13,000 worth of equipment for the pumping station. Werton & Sampson, 14 Beacon street, Boston, is engineer.

SPRINGFIELD, MASS.—Contracting officer, Springfield armory, asks bids until Aug. 7 for furnishing 10 automatic, motor-driven medium milling machines, circular 6.

New Hampshire

GONIC, N. H.—Gonic Mfg Co. is constructing a new power house.

New York

BATAVIA, N. Y.—City has asked PWA for grant of $64,965 for erection of a 1,500,000-gallon water storage tank estimated to cost $144,365. (Noted STEEL July 20).

BUFFALO—Fedders Mfg. Co., 57 Tonawanda street, is asking bids for conveyors, stokers and erecting a boiler house at a cost of $50,000. R. A. Hill, 132 Shoshone avenue, is engineer.

CINCINNATI — Western Electric Co., 312 Elm street, expects to expand plant facilities. Plans may mature in September.

ITHACA, N. Y.—New York State Electric & Gas Corp. proposes to erect 1000 miles of lines in 1936 to service 4000 consumers.

NEW YORK—Simon Holland foundry, 825 Stone avenue, Brooklyn, has been granted permission to extend its plant.

NEW YORK — Gaynor Iron Works Inc., structural steel fabricating and erecting company, has been organized and will operate a plant at 48 Williams place, Brooklyn, N. Y. M. Gaynor is president. This company succeeds Gaynor & Rosenblum Inc. now being liquidated.

WARSAW, N. Y.—Village proposes to purchase pumps, tanks and other equipment for a $32,000 filtration plant. F. A. Preble, care of Industrial Planning Corp., Delaware avenue, Buffalo, is engineer. (Noted STEEL July 13).

New Jersey

CAMDEN, N. J. — Camden Metal Works has been incorporated with capital of $125,000.

EAST RUTHERFORD, N. J. — Hi-

(*Please turn to Page* 89)

(*Continued from Page 87*)

State Metalware Mfg. Co. has been formed with capital of $50,000.

Pennsylvania

GLENFIELD, PA.—Borough secretary, F. W. Schneider asks bids until Aug. 3 for construction of waterworks and sewage systems.

McKEESPORT, PA.—Firth-Sterling Steel Co. proposes to spend $250,000 for equipment, including conveyors, motors and controls.

PHILADELPHIA — Melchor Windhovel Co., 6 South Mole street, has been organized by Paul F. Melchor and associates to manufacture cutlery and steel, copper plates and dies.

PHILADELPHIA — Arch Bilt Corrugated Products Corp. has received a charter to manufacture corrugated products. Nathan D. Isen and associates are the incorporators.

PITTSBURGH — Pittsburgh Gear & Machine Co., 27 Smallman street, J. H. Jackson, purchasing agent, has applied for permit to construct a 1-story steel addition at a cost of $5,000.

SCRANTON, PA. — Scranton Stove Repair Co. has been organized to manufacture stoves. Arthur J. Harvith, M. M. Loughney, and H. J. Ress are the incorporators.

WOODVILLE, PA. — Allegheny County Home Corp. asks bids until Aug. 6 for furnishing and installing boilers and equipment. Joseph Breslove, Oliver building, Pittsburgh, is consulting engineer.

Michigan

DEARBORN, MICH. — American Blower Co. proposes to construct a 2-story addition and install equipment, total cost $55,000.

DETROIT — Kabin-Koach Trailer Co., 21813 Gratiot avenue, has acquired a plant at Fraser, Mich., and plans to operate a structural steel shop. Lloyd R. Worden is president.

DETROIT—Craine-Schrage Steel Co., 6189 Hamilton, plan to construct a 1-story distributing plant and install mechanical handling equipment at total cost of $60,000.

DETROIT—Abrasive Dressing Tool Co., 420 Capitol Theater building, maker of dressing tools, has been incorporated with Sidney Krandall, 204 Capitol Theater building, as correspondent.

DETROIT—Universal Trailer Co., 1832 West Fort street, has been incorporated to manufacture commercial trailers with Harry H. DeWitt, 1309 East Grand boulevard, correspondent.

MUSKEGON, MICH.—Metal Display Equipment Co., box 165, has been formed to manufacture store fixtures. Bert M. Wadkins, Muskegon Heights, is correspondent.

Illinois

CHICAGO — Western Chain Co., 1809 Belmont avenue, plans to spend $50,000 for a 1-story addition.

CHICAGO — Northwestern Stove Repair Co., 721 West Bunker street, proposes to build a 1-story foundry at a cost of $50,000.

EAST PEORIA, ILL.—Long-Wear Oil Equipment Co., Sherman Long, resident agent, 1026 West Washington street, has been incorporated to manufacture and sell steel and iron products and machinery. John D. Thomason, Donald G. Beste, both of Peoria, are the incorporators.

MADISON, ILL.—East Side Levee & Sanitary district, S. H. Kernan, president, 628 Missouri avenue, East St. Louis, Ill., proposes to construct a pumping station on the Mississippi river in a program that will cost approximately $3,000,000. PWA may furnish $1,350,000. E. F. Harper, care of district, is chief engineer. H. Shipin, International Office building, 722 Chestnut street, St. Louis, is engineer.

QUINCY, ILL. — Gardner-Denver Co. proposes to construct a $150,000 1-story foundry.

Indiana

ELKHART, IND.—Montieth Bros. Inc. has been formed to manufacture mechanical and electrical machinery. Curtis E., Roy C., Stanley W., and Mark I. Montieth, and Cecil J. Kistler are the incorporators.

EVANSVILLE, IND.—Hoosier Lamp & Stamping Co. has acquired property and may construct a $50,000 plant.

FT. WAYNE, IND. — Rea Magnet Wire Co. expects to spend $50,000 for a 1-story addition and install equipment.

FT. WAYNE, IND.—Zollner Machine Works., Bueter road, plans to construct a 60 x 80-foot addition at a cost of $10,000.

WARSAW, IND.—DePuy Mfg. Co., maker of metal splints for surgeons, is constructing a 132 x 52-foot, 2-story factory building, to cost $20,000.

YORKTOWN, IND.—City clerk, H. Watkins, will call bids July 28 for two 125-gallons per minute deep well turbine pumps. R. B. Moore & Co. Inc., 930 Pythian building, Indianapolis, is engineer.

Alabama

BIRMINGHAM, ALA.—R. E. Boggs, 1427 South Eighteenth street, is in the market for a 2½-cubic yard diesel engine driven, crawler mounted shovel for use in Southeast.

Maryland

BALTIMORE, MD. — Columbia Specialty Co., maker of metal specialties, has moved to larger quarters at 6301 Eastern avenue.

District of Columbia

WASHINGTON—Navy department, chief of yards and docks, asks bids for furnishing a water-tube boiler at the Naval operating base, Norfolk, Va., specification 8195.

WASHINGTON — Navy department, bureau of supplies and accounts, asks bids until July 28 for furnishing a motor-driven, upright power drill for Sewall's Point, Va., schedule 8437; until July 31 for furnishing 2 motor-driven bench type lathes, schedule 8458 and 2 bench type drilling machines, schedule 8457, both delivered at Newport News, Va.; and 1 drill press, schedule 8433; and until Aug. 4 for furnishing miscellaneous motor generator sets, schedule 8447 for Portsmouth, N. H.; and miscellaneous trucks and cranes, schedule 8323 for Thorne, Nev.

Kentucky

BETSYLAYNE, KY.—Pike Floyd Coal Co. tipple was damaged by fire recently.

CATLETTSBURG, KY.—United Collieries, Carew Tower, Cincinnati, plans to spend $400,000 for coal handling equipment.

LOUISVILLE, KY.—Sewage commission will ask bids until Aug. 26 for furnishing four electric motor-driven vertical pumps for the sewage disposal plant.

Florida

JACKSONVILLE, FLA.—City utilities commission has applied for federal aid in financing a proposed $900,000 improvement and extension of the municipal light plant. Total project will involve more than $2,000,000.

RIVER JUNCTION, FLA.—Town seeks $43,000 loan from PWA for improvements in the light plant.

Georgia

ATLANTA, GA.—Georgia Power Co., Preston S. Arkwright, president, proposes to spend $4,000,000 over a 3-year period in adding $3,000,000 worth of lines to serve 15,000 customers.

COBBSTOWN, GA.—Georgia Power Co., Atlanta, Ga., plans to erect a power line to serve this community.

SYLVANIA, GA.—City proposes to install a 300 horsepower diesel generating unit at an estimated cost of $21,000 at the water and light plant.

Louisiana

NEW ORLEANS—Lighthouse service asks bids until Aug. 3 for furnishing water tube boilers and oil burning equipment.

PONCHATOULA, LA.—Town has applied to PWA for a grant of $39,000 with which to help finance construction of a proposed $86,997 power plant. L. J. Voorhies, Baton Rouge, La., is consulting engineer.

SHREVEPORT, LA.—City waterworks superintendent, T. L. Amiss, proposes to spend $265,000 on waterworks improvements, including construction of a 1,000,000-gallon elevated steel tank.

Mississippi

LAUREL, MISS.—Masonite Corp., 111 West Washington street, Chicago, proposes to install conveyors, motors and other equipment in a plastic board mill. Total cost is estimated at $125,000.

LIBERTY, MISS.—City will vote Aug. 11 on bonds with which to finance construction of a proposed $49,000 waterworks.

McCOMB, MISS.—State planning commission, J. O. Emmerich, chairman, is awaiting results of surveys before making plans for construction of rural electric lines in several counties.

PICAYUNE, MISS. — Goodyear Yellow Pine Co. expects to spend $150,000 to rebuild burned portion of plant and to install conveyors, motors and controls.

North Carolina

ALEXANDER, N. C. — Village waterworks superintendent, L. E. Erion, also engineer, is in charge of plans for securing a waterworks system through federal aid.

COLUMBIA, N. C.—Mayor J. E. Norris has applied for PWA loan and grant to help finance construction of a $44,000 waterworks.

FARMVILLE, N. C. — Mayor J. B. Lewis seeks PWA aid to construct a

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$56,000 sewage system and waterworks.

LUMBERTON, N. C.—Robeson County Rural Electrification committee, aided by C. W. Burton, engineer for the state REA, proposes to organize a cooperative and extend power lines in the county.

South Carolina

CALHOUN FALLS, S. C. — South Carolina Power Co. proposes to erect 25 miles of lines from McCormick to here.

GREENWOOD, S. C. — Greenwood County Finance board asks bids until Aug. 17 for erecting 111 miles of rural electrification lines. Board has a PWA allotment of $106,000. Dan T. Duncan is engineer.

Tennessee

JACKSON, TENN. — Tennessee Valley authority, Knoxville, Tenn., expects to construct a power substation here. Cost to be $200,000.

KNOXVILLE, TENN.—Director of purchases, Tennessee Valley authority, asks bids until July 27 for hydraulic turbines for Pickwick Landing power plant.

MEMPHIS, TENN.—City proposes opening bids in two months for TVA-supplied municipal electric distribution system. Roy Husselman, engineer, will complete general design in about a week. (Noted STEEL June 22).

WEST NASHVILLE, TENN.—Jakes Foundry Co., 2800 Charlotte avenue, Edward Jakes president, manufacturer of gray iron castings, plans to rebuild portion of plant recently damaged by fire.

West Virginia

PHILLIPI, W. VA.—Barbour Power Co. has been incorporated by G. B. Proudfoot and Carl B. Harvey.

QUINWOOD, W. VA.—Imperial Smokeless Coal Co. expects to install coal-handling equipment and construct a new plant at a cost of $37,000.

WHEELING, W. VA.—Sands Electric Co. has been organized by H. S. Sands and R. E. Bowie, 1143 Market street.

Virginia

BREMO BLUFF, VA.—Ranson Bros. are in the market for a used 60 to 80-horsepower boiler, and a 35 to 50-horsepower engine.

DANVILLE, VA.—City will accept bids until Aug. 1 for constructing a steam plant to be operated in conjunction with a power plant. Charles T. Main Inc., 210 Devonshire street, Boston, Mass., is engineer.

NORFOLK, VA.—Henry Walke Co. is in the market for a used 20 or 24-inch swing, 10 or 12-foot bed lathe.

RICHMOND, VA. — Electrical Equipment Co., 324 South Fifth street, wishes to purchase miscellaneous squirrel cage motors, including a 3-phase, 60-cycle, 550-volt motor.

TAPPAHANNOCK, VA.—City proposes to construct with WPA aid a waterworks and sewage system to cost $70,000.

Missouri

LIBERTY, MO. — Municipality plans to retain an engineer to prepare plans for an electric light and power plant that may cost $140,000.

MT. VERNON, MO.—Myers Electric Co. has been organized by Anderson Myers and B. F. Johnson.

ST. LOUIS — Southern Equipment Co., 5017 South Thirty-eighth street, maker of metal lunch room equipment, plans to spend $50,000 for equipment and a 1-story, 40 x 150-foot, addition.

Texas

BURKBURNETT, TEX.—City contemplates rebuilding at an estimated cost of $75,000 the water plant recently damaged by a storm.

ELECTRA, TEX.—City has secured PWA approval for loan and grant of $221,818 for a power plant.

McALLEN, TEX.—McAllen Pipe & Supply Co. plans to double plant capacity.

SAN MARCOS, TEX.—Cape Gin Co., in care of Horace Cape, plans to install a 150-horsepower water turbine in a new gin.

Wisconsin

MADISON, WIS.—Democrat Printing Co. is considering installing new boilers. Law, Law & Potter is preparing plans for the new building.

MILWAUKEE—Sewage commission plans to ask bids for a 900-horsepower boiler, stokers and other equipment at a cost of $80,000. A PWA project.

MILWAUKEE — Stolper Steel Products Co., automotive stampings and similar products, is constructing a second story to its plant at 3300 West Fond du Lac avenue, at a cost of $25,000 with equipment. D. D. Wensink is purchasing agent.

MILWAUKEE — Stokerunit Co. now at South Forty-fifth and West Rogers streets, has acquired plant of former Milwaukee Grey Iron Foundry at South Forty-fifth and West Mitchell streets, and will remodel to make automatic stokers. Blackhawk Mfg. Co., maker of automobile jacks, wrenches, etc., will soon occupy site of Stokerunit plant.

KNOWLTON, WIS. — Wisconsin Valley Improvement Co., Wausau, Wis., plans to construct a hydroelectric generating station on Wisconsin river. Total development may cost $15,000,000.

Minnesota

CROOKSTON, MINN. — Interstate Power Co. plans to spend $200,000 in improving transmission facilities and erection of a new sub-station.

FAIRMONT, MINN.—South Central Co-operative Power & Light association, I. J. E. Peterson, Waverly township, in charge, plans to ask for federal funds with which to construct 450 miles of lines in Martin county at an estimated cost of $400,000.

FLOODWOOD, MINN.—Tri-County Co-operative Electric association, L. E. Harris, president, expects to seek federal funds with which to construct a $40,000 generating plant and erect rural lines to serve 30 townships.

GLENWOOD, MINN.—Minnewaska Co-operative Power association, N. P. Hasson, secretary, may spend $40,000 to construct rural lines in Pope county if federal application is approved.

LAKEFIELD, MINN.—Village plans to purchase two diesel engines of 280 and 450 horsepower for municipal power plant, at a cost of $50,000. E. P. Whitney is village clerk.

OWATONNA, MINN.—Steele County Co-operative Electric Corp., E. Springer, Merlon, Minn., secretary-treasurer, proposes to spend $100,000 in erecting 300 miles of lines.

SPRING VALLEY, MINN.—Local Co-operative organization, L. Tellefson, secretary, considers seeking federal aid in constructing $100,000 worth of lines in Fillmore and Winona counties

ST. JAMES, MINN.—Central Co-operative Electric association, E. C. Meier, director, proposes to spend $400,000 to erect 450 miles of lines.

ST. PAUL — National Bearing Metal Corp., 626 Armstrong street, is spending $40,000 for erection of an addition to its foundry.

TROMMALD, MINN. — Butler Bros., iron ore producers, 138 East Eighth street, St. Paul, expects to construct an iron ore concentrating plant.

Kansas

PRATT, KANS.—Zrubek machine shop, 511 South Main street, was damaged by fire recently.

Iowa

BOONE, IOWA — Iowa Electric Light & Power Co. plans spending $200,000 for improvements.

BURLINGTON, IOWA — Air Products Corp. has been granted a state charter to manufacture gas, electric and air conditioning machines, oil burners, and refrigerators. Walker D. Hanna is president; Thomas L. Crabtree and Alfred R. Kramer, vice presidents; and Robert C. Safely, secretary-treasurer.

WEBSTER CITY, IOWA — Andrew Raven & Sons plan construction of a 1-story, 60 x 120-foot factory for manufacture of trailer coaches and automobile trailers.

Nebraska

SCRIBNER, NEBR.—Elkhorn Valley Rural Power Co., recently organized, expects to spend $132,000, obtained from federal government, with other funds, for erection of lines in several counties. (Noted STEEL March 23).

Arizona

FLORENCE, ARIZ.—San Carlos Irrigation & Drainage district, will vote this autumn on issuance of bonds to construct electrification lines in Florence, Coolidge, Casa Grande, and vicinity. C. H. Southworth is engineer.

Pacific Coast

PORTLAND, OREG. — United States Sales & Mfg. Co. proposes to construct a plant on property at Twenty-fourth, Northwest and Vaughn streets.

CENTRALIA, WASH.—City has engaged G. D. Hall, engineer, Courthouse, Yakima, Wash., to prepare plans for installing new pump at a well now being drilled. Cost may be $176,000.

SEATTLE—Independent Sheet Metal Corp., 1124 Vance building, has been formed by N. C. Nelson and associates with capital of $6,000.

Canada

WELLAND, ONT.—Vale Mfg. Co. suffered fire damage to its forge department July 15. James D. Chaplin is owner. Company plans to rebuild immediately.