STEEL

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For forty-eight years—IRON TRADE REVIEW

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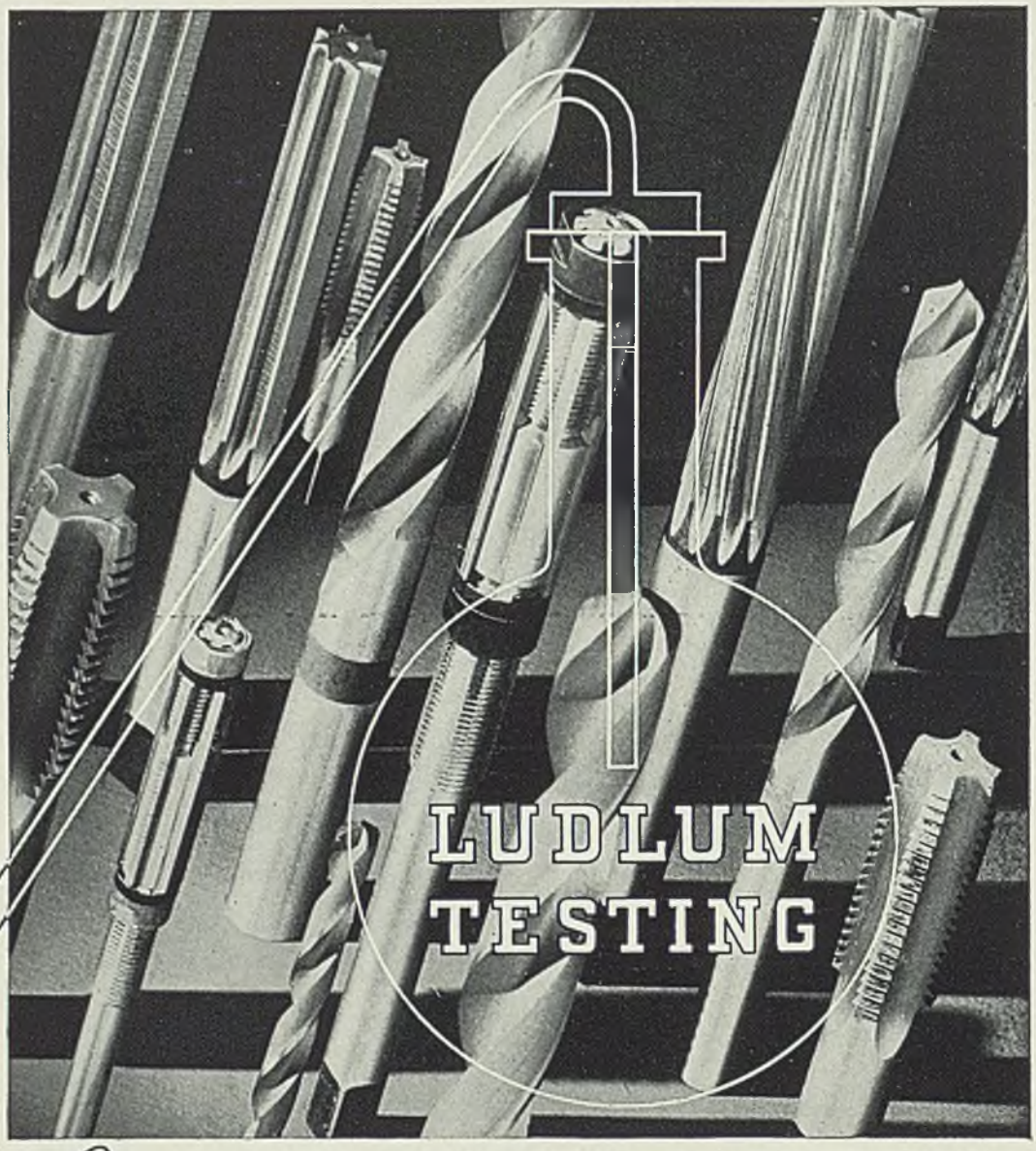

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FINE STEELS SINCE 1854

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As the Editor Views the News

THE untimely passing of Speaker Byrns may prove to be an important factor in the fate of several pending bills affecting industry. Congressmen seem to think it destroys all hope of adjourning congress before the Republican convention. This means that a three-day recess may be taken, after which almost anything can happen. Prolonged deliberation on the tax bill will increase the chances for the consideration of certain bills, some of which certainly would have been crowded out if early adjournment had occurred. For instance, prolonging the session seriously increases the threat that the Healey government contract bill may be passed in this session.

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Healey Bill Is Serious Threat

When reported out of the committee, this bill (p. 17) will contain provisions for a 40-hour week and prevailing county wages on government contract work. The full strength of the American Federation of Labor will be exerted to induce representatives to enact this bill. Administration support will be asked on the ground that the federation deserves it in exchange for its aid in defeating the Frazier-Lemke bill. Industry won an eleventh-hour victory against the Walsh contract bill at the close of the last session. This year it will need all the strength it can muster if it is to prevent enactment of the Healey bill.

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British Offer Cartel Plan

Distinguished visitors from England last week were hosts to American industrialists and in turn were feted by the two largest steel companies. The British had the edge on two counts. First, their prestige as hosts was accentuated by their good fortune in being able to stage their party on the QUEEN MARY. Secondly, they sprung a surprise (p. 15) when they broached their cartel proposal with spectacular effect. But American steelmakers were not to be taken off guard. Myron C. Taylor assembled a blue ribbon list of industrialists and financiers to meet the guests at a luncheon at 71 Broadway. Eugene G. Grace likewise proved to be a good host by taking the visitors through the Sparrows Point plant of Bethlehem Steel. The exchange of courtesies should promote understanding between English-speaking steelmakers and may help to clarify foreign trade problems affecting steel.

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Better Rails, Faster Trains

Few persons realize the extent to which recent improvements in the manufacture of steel rails are contributing to the safety of rail transportation and are making it possible for the roads to increase the speed of trains. The once-difficult problem of transverse fissures has been solved to a large degree by controlled cooling. The demand for rails of higher physical characteristics (p. 34) is being met through the increasing use of accurately controlled quenching and tempering operations, or heat treatment. Likewise the hardening of rail ends and experiments with mitered ends are tending to solve the problem of end-batter. Without these advances in rail manufacture, many of the current spectacular achievements in American railroading would have been impossible.

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Business Holds Well in June

Business reports indicate that industrial activity is presenting strong resistance (p. 32) to seasonal influences. The month-end figures on pig iron production for May (p. 18) show a 6.8 per cent gain over the output for April. Steel ingot production in the fifth month (p. 19) was up 2.6 per cent from the previous month. That the strong situation in iron and steel is being well-maintained in June is indicated by the rise of one point, from 66 to 67 per cent, in STEEL'S estimate of the rate of steelworks operations for the week ending June 6. This reversal from the gradual downward trend in recent weeks is attributed (p. 67) to specifications from railroad, building and bridge construction, agricultural equipment and miscellaneous consumers.

E. L. Shaner

Steel Industry Outlines Its Relations to Labor

SIGNIFICANT, last week, was the publication by the American Iron and Steel institute of a 52-page booklet, "The Men Who Make Steel," setting forth for the public and employes the steel industry's relations with its workers. In a statement at the outset by E. G. Grace, institute president, outlining briefly the industry's "three great obligations"—to labor, to the buying public, and to investors—Mr. Grace says:

"I put the obligation to labor first, because the industry's obligations start with labor."

It goes into details on such subjects as the benefits of co-operation; the importance of steel in the life of the nation; standards of living here and abroad; the immensity of the steel organization and business; how its leaders have risen from the ranks of its workers; collective bargaining; steel wages and hours; safety in the mills; what has been done for employes' welfare, and collective co-operation.

Some of these are amplified from former news releases from the institute, the purpose apparently being to get before the public a comprehensive picture of the industry's labor conditions and policies. In the foreword, it says:

"Workers in the steel industry represent a high degree of skill and intelligence. Most of the managers of the industry have worked their way up from the ranks.

"For a long time the industry has been distinguished by harmonious relationships and collective co-operation between employes and employers.

Steel Wages Higher

"The results of this relationship were evident during the depression, in the share-the-work plans, and in the millions of dollars spent for the many special forms of employe relief by companies which were losing money. Moreover, today, wage rates in the steel industry are higher than the average level of industrial wage rates in the country.

"For many years the steel industry has been a leader in the development of safety methods and in the improvement of working conditions. These efforts have been successful largely because of the spirit of co-operation between workers and management."

Looking at steel from the standpoint of the American standard of living, the booklet states:

"Steel has made it possible to erect on this continent a new and sturdy civilization, which has freed man from the back-breaking, soul-consuming toil that characterized the life of his ancestors. . . . the comforts, conveniences and leisure produced by it are shared by all classes of people. This distinguishes the American plan of living, and presents a startling contrast to present-day conditions in many other countries."

Taking up the measure of progress two yardsticks are cited, the per capita amount of consumption goods used by each economic bracket of society and the amount of leisure for recreation, culture or relaxation. The automobile presents itself as an example of the former measure. In the United States there is one car for each 5.7 persons, in England one to each 31 persons, Germany one to 86 and Sweden one to each 61.

National Industrial Conference board figures show average hours of work in American industry between 1899 and 1929 decreased 14.8 per cent. During the same period the average amount of money received by wage earners as a whole for one hour's work increased 226 per cent.

Development of the steel industry to a position of mass production, capable of supplying everyday comforts at low price, says the booklet, has upset the old-time close relation of the proprietor of the small shop and his workmen. It is estimated that at present $11,500 investment in capital is necessary to provide plant and materials for one worker in the steel industry. In the old days, it continues, men worked 12 to 14 hours per day, in insanitary plants, for less than a dollar a day, as success of the producer was impossible with less effort or higher pay. Large scale production makes possible higher pay and fewer hours per man.

Attention is called to the relatively large number of executives in the steel industry who have come up from the ranks and thus are capable of understanding the situation of the worker. As a result of this, collective bargaining has been a great success in the many years it has been in effect in most of the steel plants. Of total employes, it is stated, 89 per cent choose membership in employe representation plans. Of some 15,600 questions arising under these plans, nearly 73 per cent were decided in favor of the employes and only 16.4 per cent against them. The remainder were compromised or withdrawn.

To condense some of the statistics on wages and hours, the booklet states: In 1895 the day was 12 hours, in 1923 a basic 8-hour day was established and in 1933 a maximum 6-day week and 8-hour day was adopted; in 1895 the average hourly wage rate was approximately 21 cents, at present 65.6 cents, an increase of 212 per cent; about 93 per cent of steel employes are skilled or semiskilled. In 1934, although the steel industry showed aggregate losses of $25,000,000 it added $100,000,000 to payrolls in higher wages and increased employment.

Of each dollar received the steel industry pays 41 cents to employes, 1½ cents for dividends, taxes 4½ cents, 51 cents for materials, interest and other expense; the remaining 2 cents to surplus.

Steel's First Obligation To Labor, Says Grace

THE steel industry has three great obligations:

To preserve fair treatment for labor;

To deal fairly with the buying public;

To exercise an intelligent trusteeship of the funds invested in the industry.

I put the obligation to labor first, because the industry's obligations start with labor.

E. G. Grace, President, American Iron and Steel institute.

(Foreword to the institute's booklet, "The Men Who Make Steel.")

Company Union Representatives Presenting Wage Demands

REPRESENTATIVES of the Homestead works employes of Carnegie-Illinois Steel Corp. presented a plan for a wage increase to executives June 1. The plan would provide a minimum wage of $5 per day for steel employes, and proportionately higher increases for those in the lower paid brackets. The committee made the following statement:

"Eight duly elected representatives of the employes of the Homestead steelworks, functioning as a special wage increase committee, have presented formal request for a general wage increase for all employes of that plant. Working on the theory that general wage increases on a straight percentage basis do not succeed in the ultimate objective of improving standards of the lower wage men, the Homestead group is of the opinion that the wage increase should be concentrated as much as possible among the lower paid employes."

The plan, presented directly to B.

F. Fairless, president, requested that laborers be raised to $5 per day, which would be minimum. It requested increase on positions above common labor by at least a similar amount, or approximately 20 per cent.

After virtual refusal by Mr. Fairless, the committee considered carrying their request to the New York headquarters of United States Steel Corp.

At Pittsburgh last week also company union representatives of the Aliquippa, Pa., plant of Jones & Laughlin Steel Corp., demanded double pay for Sunday work and time and a half for any work over eight hours. Ingalls Iron Works Co., Verona, Pa., plant just outside of Pittsburgh, experienced a strike of more than 100 of its employes who walked out after seeking a 15 per cent increase in wages.

This week in all United States Steel Corp. subsidiary manufacturing plants employe representatives will be elected for the coming year. Most other steel producers in Pittsburgh and other districts will hold similar elections either this week or next.

Amalgamated Casts Lot with Lewis

FOLLOWING a two-day conference between the Amalgamated Association of Iron, Steel and Tin Workers and John L. Lewis, at Washington last week, a joint statement was issued that they have agreed to affiliate to organize the steel industry.

The steelworks organization is to be appointed by Lewis, and include two to represent the Amalgamated. This committee will, according to the statement, have power to deal with the steel companies to reach agreements, but this will not abridge the Amalgamated's right to continue with its bimonthly wage agreements. The industrial organization committee is to raise $500,000 to organize the industry.

At Pittsburgh, this was considered as placing Lewis in full charge of the organizing campaign, but it was indicated that he will await the outcome of the company union elections at steel plants this week before presenting a challenge.

It is believed Lewis can throw at least several hundred trained organizers and others against the steel industry, recruiting even from his United Mine Workers, and other unions. However, current interest in the mill elections would overshadow any immediate action on the part of these organizers. A number of steel employes are expected to write Lewis' name into company ballots next week, as their representative.

British Steelmakers Extend U. S. Invitation to Cartel

EXCHANGE of views between British representatives of the international steel cartel, or European Steel Entente, as it was originally organized, and American steel leaders continues in conversations, following the dinner on board the QUEEN MARY on her arrival last week in New York. The British representatives seek to interest producers in this country in joining the cartel, but details of their proposals have not been revealed.

Myron C. Taylor, chairman of the board, United States Steel Corp., and Eugene G. Grace, president, Bethlehem Steel Corp., with members of their executive staffs attended the dinner. Mr. Taylor later stated the British representatives explained the steps taken under the cartel which had benefited their industry, and he added: "But we don't know whether these same plans would apply to us with benefit."

Directors of the United States Steel Corp. entertained the British visitors at luncheon Tuesday, with some 125 financial, business and industrial leaders present. This was merely for social greeting.

The British representatives included the Earl of Dudley, head of the British Iron and Steel federation, and Sir Andrew Duncan, chairman of the executive committee of the federation. Mr. Duncan is quoted as saying:

"Owing to the success we have had in the formation of the European cartel we have not only brought steel production up to 110 per cent of rated capacity but also have increased operations in European countries. We feel that anything we can do to bring America into this agreement will be definitely helpful."

It is suggested in some quarters that while the British representatives are interested in offering attractive inducements for joining the cartel they may also wish to seek favor with particular reference to Britain's large rearmament program. England's apparent success in exchanging high import duties for restricted quotas of foreign steel into England may prove attractive to American producers but it is pointed out that new laws might be necessary before American producers could operate in the same way.

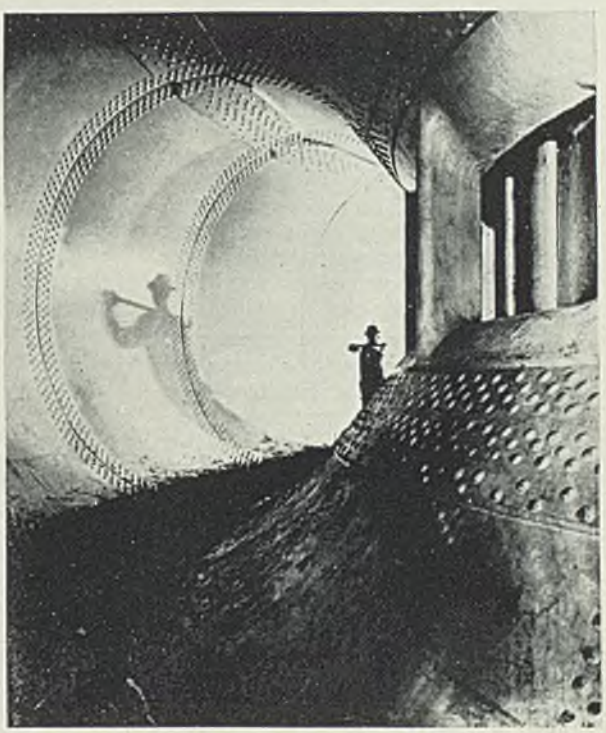
American iron and steel tariffs are relatively low, so that the steel industry here would not have much to offer in this respect in any barter for restricted quotas on foreign shipments to this country, it was pointed out.

American tin plate producers belong

Steel Ready To Guide Swirling Waters

THIS steel plate scroll case at Norris Dam forms the lower end of the penstock or tube which conducts water from Norris lake to the turbines of the power plant. The swirling water will pass through the wicket gates or valves to the right of the workman, and thus into the turbines. There are two of these scrolls at the Norris dam, one for each generator. The plant will develop 100,000 kilowatts, and is a part of the TVA development at Clinch river

Wide World Photo



to a cartel and have for about two years been operating under the Webb-Pomerene act. This law gives permission to combine on exports, but not concertedly on imports. Whether an arrangement similar to that enjoyed by American tin plate producers in the matter of foreign trade could be set up under the international steel cartel as applying to other products remains problematical.

Officers of the Steel Export association of America, 75 West street, New York, understood to represent domestic tin plate producers in foreign trade, refused to comment on the bearing on their organization of such proposals as are being made by the British steelmakers with relation to an international cartel affecting a wide range of products.

Certain conditions in the steel industry in the United States differ considerably from those in European countries, especially in respect to exports. Relating exports of semifinished and finished steel exports to steel ingot production, it appears that in 1935 the United States exported 3.1 per cent, Great Britain 24 per cent, France 29 per cent, Germany 19 per cent and Belgium-Luxemburg 66 per cent. Similar figures for 1934 run practically parallel to those of 1935.

With this wide spread between the percentage of steel products exported from the United States and European countries, some observers say, the urge to unite forces in the international steel cartel may differ in as great degree.

Nearly All European Steel Producers in the Entente

AFTER long negotiations the European steel entente was formed Oct. 1, 1926, with about 60 per cent of European steel production represented, several smaller countries not being included at first. Germany was alloted 43.18 per cent of total production, France 31.19 per cent, Belgium 11.63 per cent, Luxemburg 8.23 per cent and the Saar 5.77 per cent. Each producer paid in $1 for each ton of steel produced. Overproduction was penalized $4 per ton and underproduction was paid a bonus of $2 per ton.

In 1927 Germany overproduced and France was under her quota. An international wire rod syndicate was formed in November and functioned so well it was continued indefinitely and served as the model for various other cartels afterward operated under the entente.

The original entente was due to expire March 31, 1930, as it was considered valuable but was continued, for getting steel producers together for conference.

From 1930 to 1932, inclusive, conditions were such that the entente, though kept in existence, could not function, production being far below normal.

In 1933 it was re-established and at once lifted and maintained export prices and tonnages. This condition continued through 1934.

In 1935 Great Britain, having completed the rationalization of her domestice steel production structure, became a party to the entente, with reservations, rounding out the original plans. The tonnage of steel exported from the Continent into England was restricted by a committee of the British Iron and Steel federation and import duties were reduced to 20 per cent *ad valorem*. Since then demand for semifinished steel in Great Britain has been so insistent the quotas have been increased several times.

Czechoslovakia became a member of the entente in 1934 with respect to certain products and Poland joined the entente and the European Rail Manufacturers association in 1935.

Steel Scrap Exporters Unite To Handle Growing Foreign Trade

EXPORTATION of steel and iron scrap has assumed such importance to the industry that a corporation of scrap exporters is to be formed under Webb-Pomerene export trade act, to take advantage of the privileges accorded under that law.

Formation of this corporation has been decided on by the advisory board of the American scrap exporters conference. Benjamin Schwartz, director general of the Institute of Scrap Iron and Steel Inc., New York, has been authorized to prepare papers and submit them to the federal trade commission, which is in charge of all corporations formed under this law. Membership of scrap exporters will be by invitation.

The exporters' conference is considering formation of a central shipping bureau to charter cargo space on a co-operative basis, Mr. Schwartz being authorized to make a complete investgiation of the plan. A preliminary fund of $25,000 is proposed, most of which has been pledged, to cover organization and promotional expense.

Importance of the export business in steel and iron scrap is shown by the current report of the metals and minerals division of the department of commerce for the year 1935. This gives a total of 2,103,959 gross tons, compared with 1,835,141 tons in 1934.

The destinations of the major portion of the 1935 tonnage are Italy, the United Kingdom and Japan, the latter leading by a wide margin. These three countries took a total of 1,778,114 tons in 1935, about 80 per cent of the total exports. Figures for these three countries for 1935 and 1934 are as follows:

Gross Tons

	1935	1934
Italy	382,775	225,644
United Kingdom	277,366	134,434
Japan	1,778,973	1,168,496

The figures disclose that a far larger proportion of scrap exports originate in customs districts on the Atlantic coast than in those on the Gulf and Pacific Coast districts. These districts are adjacent to the eastern Pennsylvania and Maryland steel-producing areas and usually supply a considerable tonnage of scrap to the Pittsburgh district.

Scrap exports from districts from Massachusetts to Maryland totaled 948,701 tons in 1935, which was somewhat more than 45 per cent of the total exports for that year. Gulf ports cleared 383,156 tons and Pacific Coast ports 284,551 tons in 1935. These three groups accounted for 1,616,408 tons in 1935, close to 80 per cent of total scrap exports from all custom districts.

Details of tonnages from these districts for 1934 and 1935 are as follows:

Gross Tons

Customs District	1935	1934
ATLANTIC COAST		
Massachusetts	198,493	14,407
Rhode Island	21,296	2,658
New York	518,468	497,806
Philadelphia	142,639	148,667
Maryland	67,805	93,471
Total	948,701	757,009
GULF OF MEXICO		
New Orleans	98,412	108,648
Sabine	77,870	57,072
Galveston	167,028	164,230
San Antonio	39,846	27,078
Total	383,156	357,028
PACIFIC COAST		
Los Angeles	84,948	104,343
San Francisco	69,000	50,913
Oregon	71,416	36,963
Washington	59,187	53,412
Total	284,551	245,631
Total, three areas	1,616,408	1,359,668

In addition to exports of steel and iron scrap the United States in 1935 exported 959,646 gross tons of semifinished and finished steel and iron products.

C. W. Bennett Completes 40 Years' Service to Steel

Charles Wilbur Bennett, last president of the American Sheet & Tin Plate Co. prior to its formal absorption by Carnegie-Illinois Steel Corp. on June 1, formally presented his resignation two days preceding the announcement of the new personnel, (STEEL, June 1, page 30).

He gained recognition throughout the steel industry during his 40 years association with the Sheet & Tin Plate company and its predecessors for important improvements in production he helped to introduce.

Mr. Bennett began his career with the American Tin Plate Co. as a mechanical engineer. In 1906 he became assistant to the president of the Sheet & Tin Plate company. His election to the office of vice president in 1925 was followed in 1933 by his elevation to the presidency, succeeding E. W. Pargny.

Many of the modern practices in sheet and tin plate production were originated and patented by Mr. Bennett, who also developed considerable new equipment. He was closely allied with the introduction of the normalizing furnace, continuous pair and sheet furnace, mechanical doubler, and the automotic tin pot.

During his presidency, Sheet & Tin Plate built the Gary, Ind., sheet mill that has annual capacity for 614,200 tons of black sheets, and the new tin mill, also at Gary.

Mr. Bennett passed the voluntary retirement age, and was approaching the mandatory retirement age of 70.

New England Foundrymen To See Operations Resumed

In celebration of the resumption of pig iron production at its blast furnace at Everett, Mass., the Mystic Iron Works, Boston, has invited all New England foundrymen to visit the furnace June 10. After lunch the afternoon will be devoted to an inspection of the furnace and observation of its operation.

Later the foundrymen will visit the adjacent plant of the Warren Foundry & Pipe Corp. at Everett, where they will witness the centrifugal casting of pipe.

George M. Verity Honored By Middletown Residents

At Middletown, O., last Saturday, a remarkable demonstration of respect and loyalty was staged by civic organizations in honor of George M. Verity, chairman of the board, American Rolling Mill Co. The man who rose from a grocery clerk to head a $100,000,000 steel company, in the formation of which he played a major role, is understood never to have had a major labor dispute.

Both organized and unorganized labor participated in "Verity Day," as did many the city's industrialists, merchants, lawyers, teachers, physicians and clergymen.

Part of the celebration took place in the city's 400-acre park, which Mr. Verity opened.

A report of this celebration will be carried in the June 15 issue of STEEL.

Tin Plate Hearings Open In Wheeling This Week

Hearings in the federal trade commission's complaint against 15 tin plate manufacturers are scheduled to begin Wednesday, June 10, in Wheeling, W. Va.

John W. Norwood will be the trial examiner, while attorneys for the commission will be E. F. Haycraft and R. J. Martin. The commission has set other hearings to be held in Pittsburgh, June 12; New York, June 19; Cleveland, June 29; and Chicago, July 6.

The commission's complaint, issued in March, charged the firms entered into an agreement under which they refused to sell "stock plate" to jobbers of tin plate and small manufacturers of tin cans and other metal containers. In their answers (STEEL, May 25, page 23) the manufacturers denied unlawful practices.

Construction Institute Outlines Achievements

American Institute of Steel Construction Inc., has issued a booklet outlining some features of its work which led the American Trade Association Executives recently to award it a certificate of honor "for distinguished service during a distressing period, 1933-35."

The booklet tells how the institute was organized in 1921 and gained its first major objective in 1934 "when rolling mills finally agreed to a standardization of the weights and sections of the wide flange beams, thus permitting an impartial use of material from any mill in any job that specified steel."

Publication of a standard handbook, adoption of a program of education, and research, were other outstanding features.

"The standardization and improvement in the material has made it possible to increase safely the working stress from 16,000 pounds per square inch to 18,000 pounds which is today standard in building codes," the booklet says. "That reduced the cost of steel structures by at least 10 per cent. Last year a further increase in the working stress was approved to 20,000 per square inch."

Contract Wage Scales Retained

HEALEY government contract bill, substitute for the Walsh bill controlling hours and wages for government contracts, will be reported out of the house judiciary committee containing provisions for the 40-hour week, maintenance of prevailing county wages and a prohibition against the employment of children under 8 years. Administration will be placed in charge of the secretary of labor instead of a board.

Private firms working on government contracts will be required to conform to provisions of the bill, which has already passed the senate.

Strong backing for the measure has come from the American Federation of Labor. In Washington it was reported that William Green, president of the federation, had notified members of the house committee that nonattendance at the final meeting would be taken to mean a vote against the bill.

The Walsh bill, before it was rewritten, aroused condemnation from industrialists. The rewritten bill includes many of the features which were protested.

U. S. Steel Corporation's Employe Magazine Issued

First issue of *U. S. Steel News*, published by the United States Steel Corp., was distributed to employes last week.

The monthly magazine is a further step in broadening the corporation's employe relations program. It contains a foreword by Myron C. Taylor, chairman of the board, in the interest of co-operation.

The contents are largely historical, describing the formation of the corporation and detailing its 35 years of service. A statement by President Irvin warns of the dangers in price legislation. The usual publication essentials of personals, obituaries, humor, and even recipes, are included.

Gilbert L. Lacher, formerly managing editor of the *Iron Age*, is editor.

Sloss Sheffield Sells 2 Stacks

Sloss Sheffield Steel & Iron Co., Birmingham, Ala., has sold two blast furnaces at Gadsden, Ala., for dismantlement to the Max Solomon Co., Oliver building, Pittsburgh, instead of four blast furnaces, as previously reported from Pittsburgh. The two blast furnaces at North Birmingham, Ala., are being retained intact by the company.

May Iron Production Up 6.8 Per Cent; Stacks Gain Two

MAKING a gain of 5479 tons, or 6.8 per cent, in average daily rate, production of coke pig iron in the United States in May continued to push its way back to pre-depression levels. Active blast furnaces increased by two units during the month to a total of 145. Thus, production and stack activity were at the highest levels in six years, or since June, 1930.

Average daily production in May was 85,795 gross tons, as compared with the 80,316-ton rate in April. In May, one year ago, the figure was 55,986 tons; in June, 1930, it was 97,817 tons per day.

Total production in May was 2,659,643 gross tons, this being a gain of 250,169 tons, or 10.4 per cent, over the 2,409,474 tons of the preceding month. May was a one-day longer month than April. Production in May, 1935, was 1,735,577 tons; and in June, 1930, amounted to 2,934,508 tons.

MONTHLY IRON PRODUCTION

Gross Tons

	1936	1935	1934
Jan.	2,029,304	1,478,443	1,225,643
Feb.	1,838,932	1,614,905	1,270,792
Mar.	2,016,121	1,770,990	1,625,588
Apr.	2,409,474	1,671,556	1,736,217
May	2,659,643	1,735,577	2,057,471
Tot. 5 mo.	10,983,474	8,271,471	7,915,711
June		1,558,463	1,936,897
July		1,520,340	1,228,544
Aug.		1,759,782	1,060,187
Sept.		1,770,259	899,075
Oct.		1,978,379	951,353
Nov.		2,066,293	957,906
Dec.		2,115,496	1,028,006
Total		21,040,483	15,977,679

For the five months of the current year, output has aggregated 10,983,474 tons, which, compared with the 8,271,471-ton production in the corresponding period of 1935, was an increase of 2,712,003 tons, or 32.8 per cent. In 1934, only 7,915,711 tons were made in the first five months.

Relating production to capacity, operations in May were at the rate of 63.1 per cent. This is to be compared with 59.1 per cent in April, 48.5 per cent in March, and 40.2 per cent in May, a year ago.

The 145 active blast furnaces on May 31 corresponded to 143 on April 30, to 126 on March 31, and 96 on May 31 last year. In June, 1930, a total of 162 was operating. During the month 4 nonmerchant or steelworks stacks resumed and 3 were blown out or banked with a net gain of 1 stack. Of the merchant class, 2 units resumed and 1 was banked, making a net gain of 1.

Furnaces resuming in May were: In Ohio: Massillon, Republic Steel Corp.; Brier Hill No. 2, Youngstown Sheet & Tube Co. In Pennsylvania: Farrel No. 2, Carnegie-Illinois Steel Corp. In New York: One Buffalo, National Steel Corp.; Troy, Troy Furnace Corp. In Maryland: Maryland C, Bethlehem Steel Co.

AVERAGE DAILY PRODUCTION

Gross Tons

	1936	1935	1934	1933
Jan.	65,461	47,692	39,537	18,348
Feb.	63,411	57,675	45,385	19,752
Mar.	66,004	57,120	52,438	17,484
Apr.	80,316	55,719	57,873	20,786
May	85,795	55,986	66,370	28,784
June		51,949	64,563	42,165
July		49,043	39,630	58,108
Aug.		56,767	34,199	59,137
Sept.		59,009	29,969	50,264
Oct.		63,818	30,689	43,824
Nov.		68,876	31,930	36,124
Dec.		68,242	33,161	38,456
Ave.	72,260	57,694	43,774	36,223

Stacks blowing out or banking were: In Ohio: Toledo B, Interlake Iron Corp.; Portsmouth, Wheeling Steel Corp. In Maryland: Maryland F, Bethlehem Steel Co. In Colorado: Minnequa A, Colorado Fuel & Iron Co.

The following furnaces have resumed operations in June: In Pennsylvania: One Eliza, Jones & Laughlin Steel Corp. In Massachusetts: Mystic, Mystic Iron Works. In Tennessee: Rockdale, Tennessee Products Corp. These stacks are not included in the tabulation for May.

MAY IRON PRODUCTION

	No. in blast last day of May	No. in blast last day of Apr.	Total tonnage Merchant	Total tonnage Nonmerchant
Ohio	33	33	82,800	555,255
Penna.	47	46	99,534*	700,943*
Alabama	12	12	82,041	99,566
Illinois	12	12	48,992	212,989
New York	12	10	52,679	145,746
Colorado	2	3		
Indiana	12	12	22,474*	391,909
Maryland	4	4		
Virginia	1	1		
Kentucky	1	1		
Mass.	0	0		
Tenn.	0	0		
Utah	1	1	14,432	150,283
West Va.	3	3		
Michigan	4	4		
Minnesota	1	1		
Missouri	0	0		
Total	145	143	402,952*	2,256,691*

*Includes ferro and spiegeleisen.

With the scrapping, dismantling or abandonment of 12 blast furnaces the total number of potential blast furnaces in the United States is reduced from 265 to 253. Stacks removed from the list are as follows:

Vanderbilt No. 1, East Birmingham, Ala., Woodward Iron Co.; partially dismantled; built 1890; long idle; annual capacity 35,000 tons basic and foundry iron.

Minnequa B and F, Pueblo, Colo., Colorado Fuel & Iron Co.; abandoned; B built 1890-91, idle since World war when it produced spiegeleisen, annual capacity 70,000 tons; F built 1902, idle since 1931, annual capacity 165,000 tons basic and foundry iron.

Milton furnace, Wellston, O., Milton Iron Co.; completely dismantled; built 1873-74; idle since 1923; annual capacity 18,000 tons silvery and bessemer ferrosilicon.

Dayton Nos. 1 and 2, Dayton, Tenn., Cumberland Coal & Iron Co.; completely scrapped; built 1884-85; idle since 1913; annual capacity 125,000 tons foundry iron.

West End furnace, Roanoke, Va., John W. Hubbard; abandoned; built 1890; last operated 1919 under lease to Old Dominion Pig Iron Corp.; annual capacity 48,000 tons foundry iron.

Pulaski furnace, Pulaski, Va., Pulaski Iron Co.; sold for scrap May 26; built 1887; idle since 1930; annual capacity 90,000 tons foundry and malleable iron.

Josephine Nos. 1 and 2, Josephine, Pa., Republic Steel Corp., acquired through absorption of Corrigan, McKinney Steel Co.; sold for scrap (STEEL, May 25, page 108); No. 1 built 1906-07, No. 2 built 1907-12; idle since 1926; annual capacity 240,000 tons basic, malleable, foundry and forge iron.

Claire furnace, Sharpsville, Pa., last operated by Davison Coke & Iron Co., sold for scrap (STEEL, May 25, page 108); built 1869; idle for several

RATE OF OPERATION

(Relation of Production to Capacity)

	1936[1]	1935[2]	1934[3]	1933[4]
Jan.	48.2	34.2	28.3	13.3
Feb.	46.6	41.4	32.5	14.3
Mar.	48.5	41.0	37.5	12.7
Apr.	59.1	40.0	41.4	15.1
May	63.1	40.3	47.5	20.9
June		37.2	46.3	30.6
July		35.2	28.4	42.4
Aug.		40.7	24.5	42.8
Sept.		42.5	21.5	36.4
Oct.		45.8	22.1	31.8
Nov.		49.5	22.8	26.2
Dec.		49.0	23.7	27.9

[1]Based on capacity of 49,777,893 gross tons, Dec. 31, 1935; [2]capacity of 50,845,741 gross tons, Dec. 31,1934; [3]capacity of 50,975,561 tons, Dec. 31, 1933; [4]capacity of 50,313,975 tons, Dec. 31, 1932. Capacities by American Iron and Steel institute.

years; annual capacity 200,000 tons basic, bessemer, malleable and foundry iron.

Name of the Ohio river towboat ALICIA, operated by the Monessen Coal & Coke Co., subsidiary of Pittsburgh Steel Co., has been changed to HENRY A. ROEMER in honor of the recently named president of Pittsburgh Steel Co.

Steel Operations

STEELMAKING gained 1 point last week to 67 per cent, reflecting heavier operating schedules at Youngstown, Chicago, Cleveland, Buffalo and Cincinnati, and the impending price for third quarter may prove a factor in lifting the rate still higher. Further details follow:

Youngstown—Up 1 point last week to 77 per cent, with expectations of a dip to 76 per cent at this week's start.

New England—Down 7 points to 70 per cent last week, with indications of a further drop to 68 per cent for this week.

Cleveland - Lorain — Lifted 6½ points to 82 per cent. Corrigan, McKinney added three open hearths the beginning of the week to operate 12, Otis continued with all 8 in blast, and National Tube at Lorain with all 12.

Birmingham—Continued at 69 per cent last week, and this rate is scheduled to hold for this week.

Chicago—Recovered the 2 points lost a week ago, operations currently standing at 70 per cent. Backlogs and new buying appear sufficient to maintain schedules at close to this figure during the balance of June. Blast furnace operations are steady, 24 of 41 stacks being active.

Wheeling—Off 2 points to 68 per cent last week. Twenty-five open hearths were in operation, compared with 26 a week previous. Open-hearth department of Wheeling Steel Corp. at Portsmouth, O., continues shut down, owing to strike.

Detroit—Steady at 88 per cent, as out of 17 basic open hearths, 15 are producing.

Pittsburgh—Off 1 point to 62 per cent last week, the average of Carnegie-Illinois operations being at 60 per cent and that of Jones & Laughlin at 65 per cent, with smaller independents averaging 60 per cent. Among finishing mills, tin plate continues to lead at 100 per cent, followed by sheets at 65 per cent, with a 60 per cent rate of operations general in wire products and strip steel, followed by tubular products at 50-55 per cent.

Thirty-six out of 60 steelworks blast furnaces are now active, a gain of one. The additional blast furnace added was a fifth Eliza furnace for Jones & Laughlin, making 9 out of 11 stacks active. Carnegie-Illinois continues with 16 of 32 on, Bethlehem, 5 of 7 at Johnstown, Pa., National Tube, 3 of 4 at McKeesport, Pa., and 1 each for American Steel & Wire, Pittsburgh Crucible and Pittsburgh Steel Co.

Cincinnati—Gained 8 points to 80 per cent last week as orders for light rolled material, for June delivery, were spurred by the $2 a ton rise effective next quarter. With 19 of 24 open hearths melting, another is likely to go on to meet deliveries.

Central eastern seaboard — Unchanged at 43 per cent, although an increase shortly is expected, as reflection of probable covering by consumers in expectation of the proposed $2 advance next quarter on many leading items of finished and semifished steel.

Buffalo—Operations have climbed to the highest point definitely on record here reaching 84 per cent last week. Thirty-one open hearths are active and no immediate curtailment is contemplated.

Steelmaking Operations

Percentage of Open-Hearth Ingot Capacity Engaged in Leading Districts

	Week ended June 6	Change	Same week 1935	Same week 1934
Pittsburgh	62	— 1	32	54
Chicago	70	+ 2	43	70
Eastern Pa.....	43	None	29½	46½
Youngstown...	77	+ 1	48	66
Wheeling	68	— 2	48	79
Cleveland	82	+ 6½	54	78
Buffalo	84	+ 3	37	55
Birmingham...	69	None	52½	55
New England	70	— 7	60	70
Detroit	88	None	94	100
Cincinnati	80	+ 8	†	†
Average.....	67	+ 1	41	62

†Not reported.

May Ingot Rate Is Up 2.64 Per Cent

WITH a daily rate of 155,625 gross tons, production of steel ingots in May was the highest for any month since April, 1930, when 158,057 tons were made per day, according to figures compiled by the American Iron and Steel institute. Compared with the April rate of 151,625 tons, the May output was an increase of 4000 tons a day, or 2.64 per cent; it was 60 per cent better than the 97,543-ton rate of May, one year ago.

Total production in May was 4,046,253 tons, a gain of 103,999 tons over the 3,942,254 tons made in April. Each month had 26 working days. Capacity was engaged at 70.91 per cent in May, as compared with 69.09 per cent in April.

For the five months ended in May, ingot production totaled 17,341,490 tons, an increase of 3,557,503 tons, or 25.8 per cent, over the 13,783,987 tons made in the corresponding period of 1935. Daily production for the five months of the current year averaged 133,396 tons.

Steel Ingot Production

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

1936	Open Hearth Gross tons	Open Hearth Per cent of capacity	Bessemer Gross tons	Bessemer Per cent of capacity	Total Gross tons	Total Per cent of capacity	Calculated daily production, all companies (gross tons)	Number of working days
Jan.	2,849,557	53.73	196,389	31.54	3,045,946	51.40	112,813	27
Feb.	2,761,973	56.25	202,445	35.11	2,964,418	54.03	118,577	25
Mar.	3,157,579	61.83	185,040	30.86	3,342,619	58.58	128,576	26
Apr.	3,637,479	71.23	304,775	50.83	3,942,254	69.09	151,625	26
May	3,744,161	73.32	302,092	50.38	4,046,253	70.91	155,625	26
5 mo.....	16,150,749	.....	1,190,741	.....	17,341,490	.....	133,396	130
1935								
Jan.	2,630,303	49.70	239,858	34.99	2,870,161	48.02	106,302	27
Feb.	2,549,935	54.21	224,336	36.82	2,774,271	52.22	115,595	24
Mar.	2,634,482	51.70	230,810	34.97	2,865,292	49.78	110,204	26
Apr.	2,408,686	47.27	231,916	35.14	2,640,602	45.88	101,562	26
May	2,378,865	44.95	254,796	37.17	2,633,661	44.06	97,543	27
5 mo.....	12,602,271	.....	1,181,716	.....	13,783,987	.....	106,030	130
June	2,048,177	41.80	210,487	33.17	2,258,664	40.81	90,347	25
July	2,043,371	40.10	224,456	34.01	2,267,827	30,40	87,224	26
Aug.	2,682,569	50.69	233,361	34.05	2,915,930	48.78	107,997	27
Sept.	2,591,267	52.88	233,737	36.83	2,825,004	51.04	113,000	25
Oct.	2,872,040	54.27	270,719	39.50	3,142,759	52.58	116,398	27
Nov.	2,898,246	56.87	252,163	38.20	3,150,409	54.73	121,170	26
Dec.	2,845,013	58.06	228,392	35.99	3,073,405	55.53	122,936	25
Total.....	30,582,954	50.17	2,835,031	35.91	33,417,985	48.54	107,453	311

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

Rush of Implement Orders; Near 90% of 1929 Peak

FARM implement and tractor manufacturing plants have been humming so far this year. Sales records of the boom pre-depression period are not being eclipsed, but measured against the performance of the past five years, recent activity of this important customer of the iron and steel industry may be described as excellent.

Reasons for this recovery are not hard to find. They closely resemble the circumstances which have changed the automotive industry from its lethargic status of 1932 into its beehive proportions of 1936.

Automobiles wore out during depression years, but their owners were low on funds and discouraged over prospects, so they simply made the old car last a bit longer. When basic conditions improved and incomes increased, the forces of obsolescence helped to swell the rush of drivers to sign on the dotted line for a new machine.

Export Markets Lag

Farm implements last longer than automobiles, but they too wear out eventually. In most cases when this happened to a farmer during the depression, he bought a new implement only because the old one was beyond repair and because he was unable to continue farming without it. Tractors lost popularity because animal power became relatively cheap.

The implement and tractor industry did a fair business in repair parts, but its total sales represented only a shadow of the robust totals of pre-depression years. From 1929 to 1932 domestic sales dropped nearly 75 per cent.

Farm prices and cash income improved moderately in 1933 but it was not until 1934 and 1935 that marked gains were recorded in tractor and implement buying. Domestic sales of farm equipment last year were more than two and a half times as large as those of 1932, despite the fact that farm cash income was only about 60 per cent larger than it was three years previous. So far in 1936 domestic business has been at the best rate since 1929, leading the industry to anticipate a gain of about 25 per cent for the 12 months compared with 1935.

Only the lag in export trade prevents conditions as a whole from rivaling the record 1928-1930 activity. Foreign markets, unfortunately, have recovered at a slower rate than has domestic trade. Last year, for instance, exports were only about one-fourth the 1929 total.

As in the case of automobiles, release of buying which was postponed when times were bad has been an important factor in pushing sales to their recent peak. This deferred purchasing apparently has built up a huge volume of potential business, if the records of pre and post-depression years are compared.

Domestic implement and tractor sales for the five years 1926-1930 were about a billion dollars larger than those of the succeeding five years—a deficiency which the industry hopes will be wiped out as agriculture proceeds to strengthen its economic position.

At the moment there is nothing of a major character to disturb the favorable outlook that is attached to the succeeding several months. The industry normally has its best operations during March, April and May, with seasonal influences restricting production with the approach of summer. In an attempt to flatten the swings in manufacturing, some companies are anticipating their requirements of the peak sales periods, though this practice necessarily is confined to the larger interests.

Tractor demand is less seasonal than that for implements since the former have a more nearly year-around use than do most other items, such as tillage or harvesting equipment. As a consequence, tractor manufacturing is spread more evenly throughout the year.

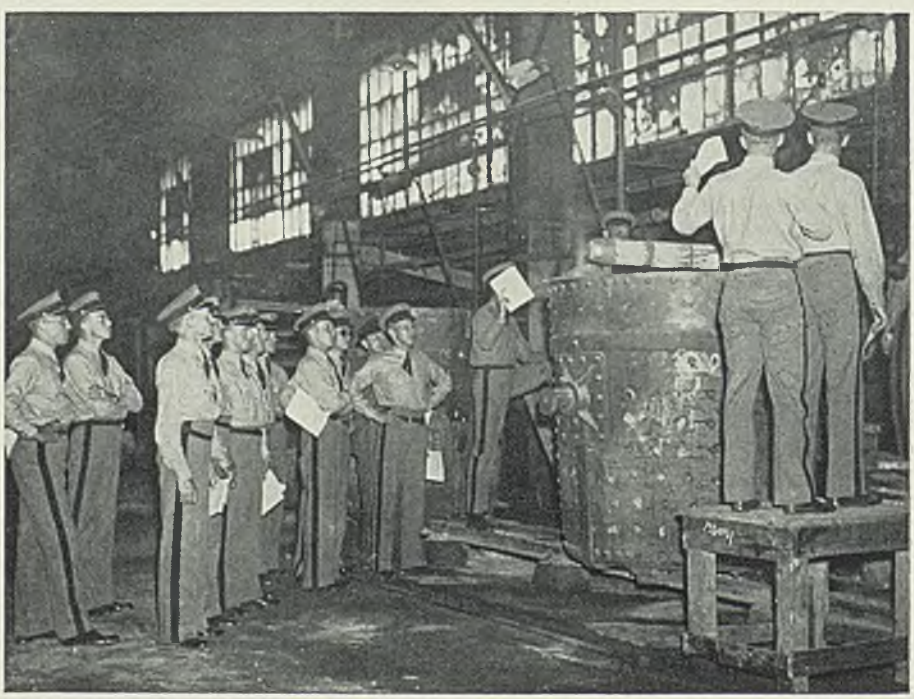
Tractor production has taxed the facilities of the industry for a number of month, and it appears likely that good operations will continue into the third quarter. Employment at tractor plants recently is reported the highest in history. Since tractors account for around 40 per cent of sales of all types of farm machinery, the important part this branch of the industry has played in boosting total sales is apparent.

Machinery Cuts Costs

Farmers steadily have become acquainted with the advantages of machinery, and equipment manufacturers are carrying the message of the savings which can be effected in farming costs through the use of modern implements and tractors.

When in 1934 rising prices of horses and feed—to say nothing of the short supply of animal power—

West Point Cadets Visit Steel Plant



Two-hundred and eighty senior cadets from the United States military academy at West Point made a peaceful "invasion" of the Ludlum Steel Co.'s Watervliet, N. Y., plant June 1. In small groups the expedition entered the mills from different points to observe the rolling of valve steel, the making of tool steel in the hammer shop and the pouring of one heat from a 12-ton electric furnace. Last year a slightly larger number of the West Point seniors inspected the plant

made it evident that the tractor had regained its economic advantage, the swing back to use of the latter was prompt. Introduction of the small, low-price tractor also broadened considerably the farm market for motive power and has been instrumental in helping to push output of such equipment to peak levels.

Figures on employment in the agricultural implement industry are none too reliable for the reason that government data segregates implements from tractors, and it is the latter in which best operations prevail. For agricultural implements alone the March index was 138.7 and payrolls were 171, based on the 1923-1925 monthly average. These compare with 167.5 and 187.4, respectively, for March, 1929.

Indices of the National Metal Trades association—also based on government labor figures—show that the farm implement industry in March had the highest employment of the important metalworking fields, the figure reported being 116.9 per cent of the 1925-1927 monthly average. Government data on tractor and machinery employment is lumped.

900,000 Tons of Steel

As a measure of what the improved situation in tractor and implement production means to the steel industry, it might be pointed out that in 1935 the former took 718,504 tons of finished steel products, according to STEEL'S annual compilation of rolled steel distribution. This seems likely to increase to around 900,000 tons this year, in addition to a substantial tonnage of pig iron.

In attempting to evaluate the future prospects for farm equipment sales, the trend in agricultural income is an important consideration. Following are figures showing the decline and recovery in farm cash income and domestic implement and tractor sales the past ten years, data being based on 1929 as 100:

	Domestic Implement Sales	Farm Cash Income
1925	74.2	98.7
1926	79.5	95.3
1927	85.3	95.6
1928	88.0	97.5
1929	100.0	100.0
1930	83.2	80.8
1931	46.8	51.3
1932	25.6	41.2
1933	26.2	48.8
1934	44.4	60.9
1935	71.1	66.3
1936 (estimated)	90.0	76.5

The foregoing estimate for farm cash income this year is predicated partly on returns for the first four months. Despite a curtailment in federal benefit payments, cash income through April was $2,079,000,000, against $1,970,000,000 in the similar 1935 period. Several private estimates place the total for 12 months at around $7,500,000,000, which, when added to the farmers' share of the soldiers' bonus distribution, brings total cash income to $8,000,000,000. This would be the largest return since 1930 and would compare with $6,943,000,000 in 1935.

Farm prices have tended lower the past several months and so far this year have been moderately behind the 1935 average. Index of the bureau of agricultural economics for the first four months of this year averaged 106.7, against 109.2 in 1935. This has been more than offset, however, by the increase in volume of business, while at the same time the index of prices paid by farmers for materials dropped to 121.5.

April Exports in Gain Over 1935

EXPORTS of iron and steel semifinished and finished products in April were 105,081 gross tons, of scrap 196,906 gross tons, giving a total of 301,987 tons, according to figures of the metals and minerals division of the department of commerce.

The gain in semifinished and finished steel exports over March was 8.5 per cent and over April, 1935, it was 53.5 per cent. For four months of 1936 the total was 15.8 per cent greater than in the corresponding period of 1935.

Exports of scrap, including iron and steel, tin plate and waste-waste tin plate aggregated 196,906 tons in April, which was 17.4 per cent greater than in March and 44 per cent greater than in April, 1935. For four months of 1936 scrap shipments were 6.6 per cent lower than for the corresponding period of 1935.

Tin plate was the largest item of exports, 24,886 tons, black steel sheets second at 12,250 tons and other products at much smaller totals. Exports of tin plate scrap were lower than in March and in April of last year, probably reflecting the embargo of these exports made effective April 16, to extend to July 1.

FOREIGN TRADE OF UNITED STATES IN IRON AND STEEL

Gross Tons

	1936		1935	
	Imports	Exports	Imports	Exports
Jan.	50,489	241,564	22,784	262,740
Feb.	43,358	213,802	28,905	228,537
Mar.	56,720	264,337	21,409	323,035
April	49,621	301,987	28,866	205,336
4 mo.	200,188	1,021,690	101,936	1,019,755
May	.....	.....	47,719	286,598
June	.....	.....	33,208	289,687
July	.....	.....	31,894	296,802
Aug.	.....	.....	31,312	247,312
Sept.	.....	.....	53,158	244,419
Oct.	.....	.....	59,569	238,358
Nov.	.....	.....	56,637	205,242
Dec.	.....	.....	53,678	239,268
Total	.....	.....	469,954	3,067,336

UNITED STATES EXPORTS OF IRON AND STEEL PRODUCTS

Gross Tons

Articles	April 1936	March 1936	Jan. thru Apr. '36
Pig iron	215	260	712
Ferromanganese and spiegeleisen	142	.....	150
*Other ferroalloys	280	110	810
Ingots, blooms, etc.	2,841	969	4,219
Bars, iron	170	78	441
†Bars, concrete	303	166	776
‡Bars, other steel	4,641	3,689	16,194
Wire rods	4,664	4,042	14,431
Boiler plate	411	193	1,048
Other plate, not fab.	6,390	4,494	18,966
Skelp, iron or steel	3,901	919	7,157
Iron sheets, galv.	58	66	352
Steel sheets, galv.	5,464	3,773	18,936
Steel sheets, black	12,250	14,538	44,910
Iron sheets, black	518	723	2,492
Strip steel, cold-rolled	1,943	2,394	8,800
Strip steel, hot-rolled	3,346	2,210	10,414
Tin plate, taggers' tin	24,886	23,444	79,221
Terne plate	267	193	1,096
Tanks, except lined, etc.	2,168	3,147	9,671
Shapes, not fabricated	5,282	3,840	16,350
Shapes, fabricated	2,320	2,413	6,313
Plates, fabricated	88	47	384
Metal lath	100	53	261
Frames and sashes	11	61	339
§Sheet piling	167	439	1,020
¶Rails, 60 lbs. and over	4,882	7,750	20,540
¶Rails, under 60 lbs.	114	323	967
Rail fastenings	492	601	1,769
Switches, frogs, crsgs.	130	79	454
Railroad spikes	237	178	951
R. R. bolts, nuts, etc.	75	53	235
Boiler tubes, seamless	702	436	1,900
Boiler tubes, welded	53	95	190
Casing and oil-line pipe, seamless	1,725	852	5,364
Do. welded	85	231	665
Seamless black pipe, other than casing	262	427	1,231
Malleable iron screwed pipe fittings	325	252	985
Cast iron Do	141	170	583
Cast iron pressure pipe and fittings for	610	892	2,220
Cast iron soil pipe Do.	425	700	1,608
Welded black steel pipe	563	432	3,863
Welded black wrought iron pipe	127	137	521
Welded galv. steel pipe	512	449	2,726
Welded galv. wrought iron pipe	191	130	560
Riveted iron or steel pipe, fittings	74	33	313
Plain iron or steel wire	1,474	2,368	7,473
Galvanized wire	1,814	1,179	6,314
Barbed wire	3,055	2,626	9,568
Woven wire fencing	149	235	795
Woven wire screen cloth	100	85	333
Wire rope	370	208	1,170
Other wire mfrs.	367	409	1,629
Wire nails	850	569	2,768
Horseshoe nails	54	49	211
Tacks	24	31	104
Other nails, inc. staples	288	162	770
Ordinary bolts, mach. screws, rivets, washers	561	540	2,010
Iron castings	381	592	2,732
Steel castings	338	171	928
Car wheels, tires, axles	379	704	1,784
Horseshoes and calks	3	48	56
Iron and steel forgings, n. e. s.	323	427	1,664
Total	105,081	96,884	353,367
Iron and steel scrap	190,845	163,295	650,211
Tin plate scrap	2,507	2,544	8,825
Waste-waste tin plate	3,554	1,614	9,287
Total	196,906	167,453	668,323
GRAND TOTAL	301,987	264,337	1,021,690

*New class. No comparable figures for previous year.

†New class. Previously included under former classification "Steel Bars."

‡New Class. Includes alloy, non-alloy, and stainless steel bars (excepting concrete reinforcement bars).

§New class. Previously included with "Frames and Sashes."

¶Previously shown at "50 pounds."

Men of Industry

J. CARLISLE MACDONALD has been appointed to the executive personnel of the United States Steel Corp., New York, as an assistant to Myron C. Taylor, chairman of the board in respect to public relations. He assumed his new duties June 1. Mr. MacDonald was educated at St. Louis university, Stevens Institute of Technology and in England. He engaged in newspaper work for many years,

J. Carlisle MacDonald

and more recently served as public relations counsel for Guggenheim Bros., New York.

♦ ♦ ♦

L. B. Schumacher, formerly identified with the reinforcing steel bar sales of Jones & Laughlin Steel Corp., has become identified with Truscon Steel Co., Youngstown, O., division of Republic Steel Corp., in a similar capacity.

♦ ♦ ♦

V. B. Edwards, president of the Dravo Corp., Pittsburgh, and J. D. Berg, chairman of the board, have left on a European trip to visit various shipyards there.

♦ ♦ ♦

A. J. Youber has been appointed sales manager in Birmingham, Ala., for the Truscon Steel Co., Youngstown, O., succeeding W. H. Stewart, who has been transferred to the St. Louis territory. Mr. Youber has been assistant sales manager at Birmingham for the past 10 years. Mr. Stewart went to Birmingham from Detroit five years ago.

♦ ♦ ♦

J. Frederick Rogers, vice president, Beals, McCarthy & Rogers, Buffalo, wholesale hardware firm, has been elected a director of the Manufacturers & Traders Trust Co. of that city.

♦ ♦ ♦

H. C. Wills, district manager at Boston for Joseph T. Ryerson & Son Inc., Chicago, will leave June 10 for a six weeks trip to Europe.

♦ ♦ ♦

Ray C. Skeel has been transferred from the Cleveland to the Youngstown plant of Truscon Steel Co., holding the position of plant engineer at both places.

♦ ♦ ♦

H. L. Breitenstein has been appointed district manager at Detroit for the All-Steel-Equip Co., Aurora, Ill., manufacturer of steel cabinets, lockers, files and other steel office and shop equipment.

♦ ♦ ♦

John Hughes, who retired as assistant to William A. Irvin, president of the United States Steel Corp., Jan. 31, has become associated with his son, John F. Hughes, in the co-partnership of Hughes & Co., members of the New York stock exchange. The new company will have offices with Harriman & Keech, 11 Broadway, New York. John F. Hughes, who has been a member of the New York stock exchange since 1929, was previously a partner in the firm of Barry & Hughes, which has been dissolved.

♦ ♦ ♦

Edward S. Fickes, senior vice president, Aluminum Co. of America, Pittsburgh, will be awarded the honorary degree of doctor of engineering by Rensselaer Polytechnic institute, Troy, N. Y., at commencement exercises, June 13.

Mr. Fickes was graduated from Rensselaer in 1894 and in 1899 became associated with the Pittsburgh Reduction Co., now the Aluminum Co. of America. He has served as trustee of the Rensselaer alumni association and on the metallurgical advisory board of Carnegie Institute of Technology.

♦ ♦ ♦

C. E. Sims has been named research metallurgist for Battelle Memorial institute, Columbus, O. Mr.

C. E. Sims

Sims formerly was assistant director of research for American Steel Foundries, Indiana Harbor, Ind. He is the author of numerous technical papers and with G. A. Lilliequist was awarded the Robert W. Hunt prize by the American Institute of Mining and Metallurgical Engineers in 1933 for the paper, "Inclusions, Their Effect, Solubility and Control in Cast Steel."

♦ ♦ ♦

Walter B. Lashar was elected chairman of the board of the American Chain Co. Inc., Bridgeport, Conn., at the annual meeting of the board of directors May 19. Other officers elected were: President, William T. Morris; executive vice president and treasurer, Wilmot F. Wheeler; vice president in charge of sales, Arthur P. Van Schaick; vice president in charge of production, Charles G. Williams, and secretary, William M. Wheeler.

♦ ♦ ♦

Ralph K. Clifford, general superintendent, Continental Steel Corp., Kokomo, Ind., has been elected president of the Wire association for the 1936-1937 term.

John Mordica, superintendent, rod and wire works, Bethlehem Steel Co., Sparrows Point, Md., and former president, has been appointed honorary president of the association.

Other officers elected include: Vice

M. W. Smith

Appointed manager of engineering of Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., as noted in STEEL June 1. He has been associated with Westinghouse 21 years

president, F. A. Westphal, superintendent of wire mills, Sheffield Steel Corp., Kansas City, Mo.; vice president of nonferrous division, E. W. Clark, mechanical engineer, wire and cable section, General Electric Co., Schenectady, N. Y., and secretary-treasurer, R. E. Brown, publisher of *Wire and Wire Products*, New York.

♦ ♦ ♦

Avery C. Adams, formerly vice president in charge of sales for the General Fireproofing Co., Youngstown, O., has been made manager of sales of the steel sheet division of Carnegie-Illinois Steel Corp. Before going with General Fireproofing, Mr. Adams was in the sheet sales department of the Republic Iron & Steel Co. He is a native of Youngstown and is a member of the board of directors of several steel companies and other industrial concerns. He began his career in 1920 in the sales department of Trumbull Steel Co., Warren, O., now a part of Republic.

George E. Totten, has been appointed manager of sales of the newly-created tin plate department of Carnegie-Illinois. He formerly was sales manager for tin plate with Republic Steel Corp. Before joining Republic in 1931, he was associated with the Jones & Laughlin Steel Corp. in the sales department for almost 21 years.

G. G. McGlaughlin and J. C. Eckel have been named assistant managers of sales in the new sheet steel department, headed by Mr. Adams. Mr. McGlaughlin formerly was assistant district sales manager at Cincinnati for American Sheet & Tin Plate Co., and more recently was in the Pittsburgh office of the company. Mr. Eckel came up through the operating department of Sheet & Tin Plate. and has been a contact man on sheet specialties.

John C. Whetzel, who has had operating experience as well as sales, and has been handling specialties such as enameling sheets, etc., has been named assistant manager of the tin plate sales department.

These appointments were effective June 1 and are a part of the reorganization program resulting from the merger of Carnegie-Illinois and American Sheet & Tin Plate.

♦ ♦ ♦

George C. Brainard, president, General Fireproofing Co., Youngstown, O., announces the following promotions:

Walter Bender, general superintendent since 1928, has been made vice president in charge of operations.

Edward A. Purnell has been named vice president in charge of sales, succeeding Avery C. Adams, who now is associated with Carnegie-Illinois Steel Corp.

George R. Farrell, formerly purchasing agent, has been advanced to vice president in charge of purchases.

Charles E. Brinley

Who as noted in STEEL for May 18 has been re-elected chairman of the national advisory committee of the Power Transmission council. He is president of the Philadelphia Pulley Co., Philadelphia.

A. J. Ball, assistant manager of sales, has been promoted to general manager of sales of the furniture division.

D. W. McClure was named general manager of sales of the contract division.

Leon B. McCarthy, formerly assistant superintendent of the plant, has been made general superintendent.

♦ ♦ ♦

J. V. Emmons, metallurgist, Cleveland Twist Drill Co., Cleveland, received the degree of metallurgical engineer of Case School of Applied Science, Cleveland, at its fifty-second commencement, June 1, for work done in connection with molybdenum tungsten high speed steels.

Dr. Harry A. Schwartz, manager of research, National Malleable & Steel Castings Co., Cleveland, was awarded the honorary degree of doctor of engineering at the same time.

E. P. Burrell, director of engineering, Warner & Swasey Co., Cleveland, was also awarded an honorary degree of doctor of engineering by Case school.

G. Cook Kimball

Who has been appointed executive vice president, Carnegie-Illionis Steel Corp., as referred to in STEEL June 1, page 20

Died:

WILLIAM BUTTERWORTH, 71, chairman of the board of Deere & Co., Moline, Ill., and former president of the United States Chamber of Commerce, at Absecon, N. J., May 31. Mr. Butterworth joined Deere & Co., in 1892 as an assistant buyer. He was elected president in 1907, retaining this position until 1928, when he became chairman. He was president of the Illinois Manufacturers' association from 1917 to 1920.

♦ ♦ ♦

Addison Gallien, 71, vice president, R. Hoe & Co., New York, printing press manufacturer, at his home in Upper Montclair, N. J., recently.

♦ ♦ ♦

Louis F. Reinhard, 51, sales manager, contract department, Geuder, Paeschke & Frey Co., Milwaukee, sheet metal products, June 2.

♦ ♦ ♦

Harold C. Rawlings, 41, production manager, Lauson Engine & Tractor Co., New Holstein, Wis., in Milwaukee, May 28.

♦ ♦ ♦

Glen E. Guy, 58, Cleveland district representative for the Baker Industrial Truck Co., Cleveland, in that city, June 1.

♦ ♦ ♦

Otis White, 68, vice president and one of the founders of the Sangamon Electric Co., Springfield, O., in that city, May 27.

♦ ♦ ♦

William F. Lloyd, 75, identified with Lloyd-Black Co., one of the early steel companies in the Pittsburgh district, and retired for the past 30 years, at Sewickley, Pa., May 27.

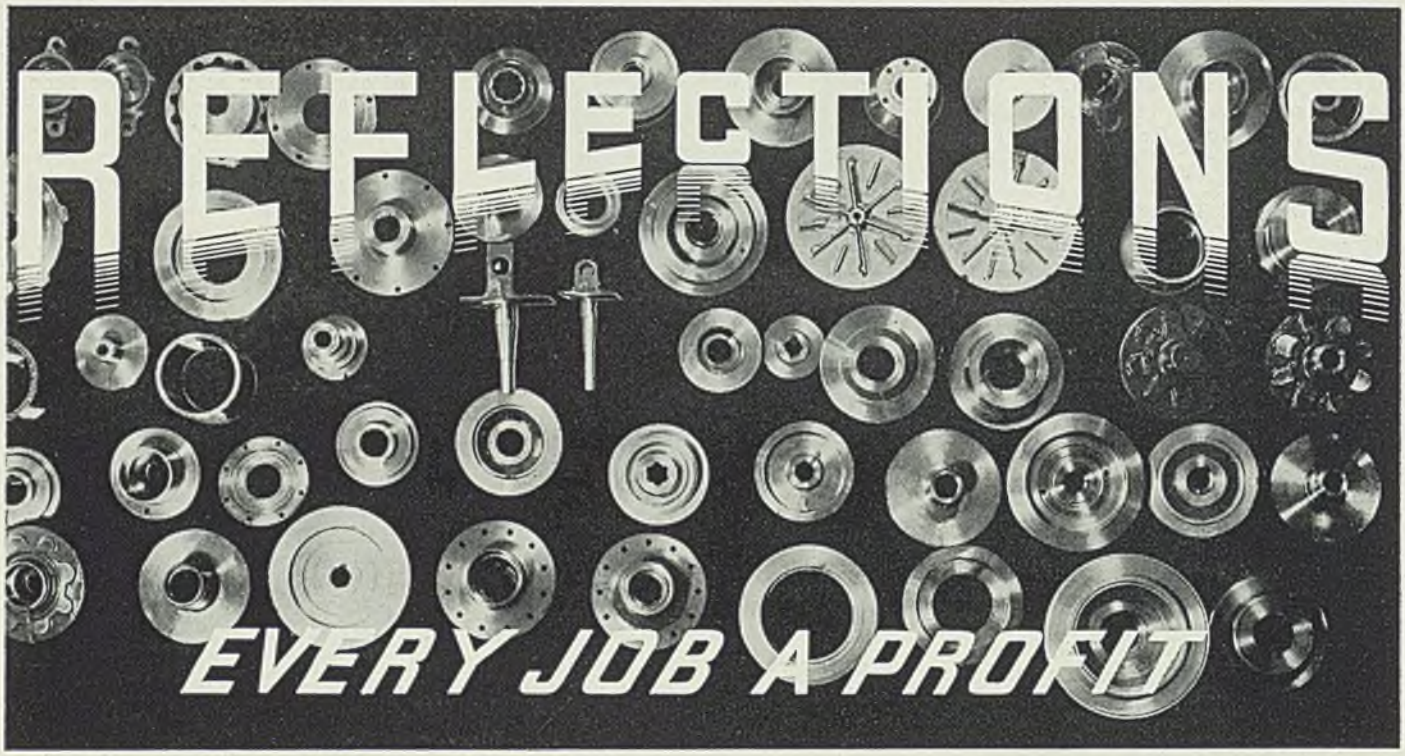
♦ ♦ ♦

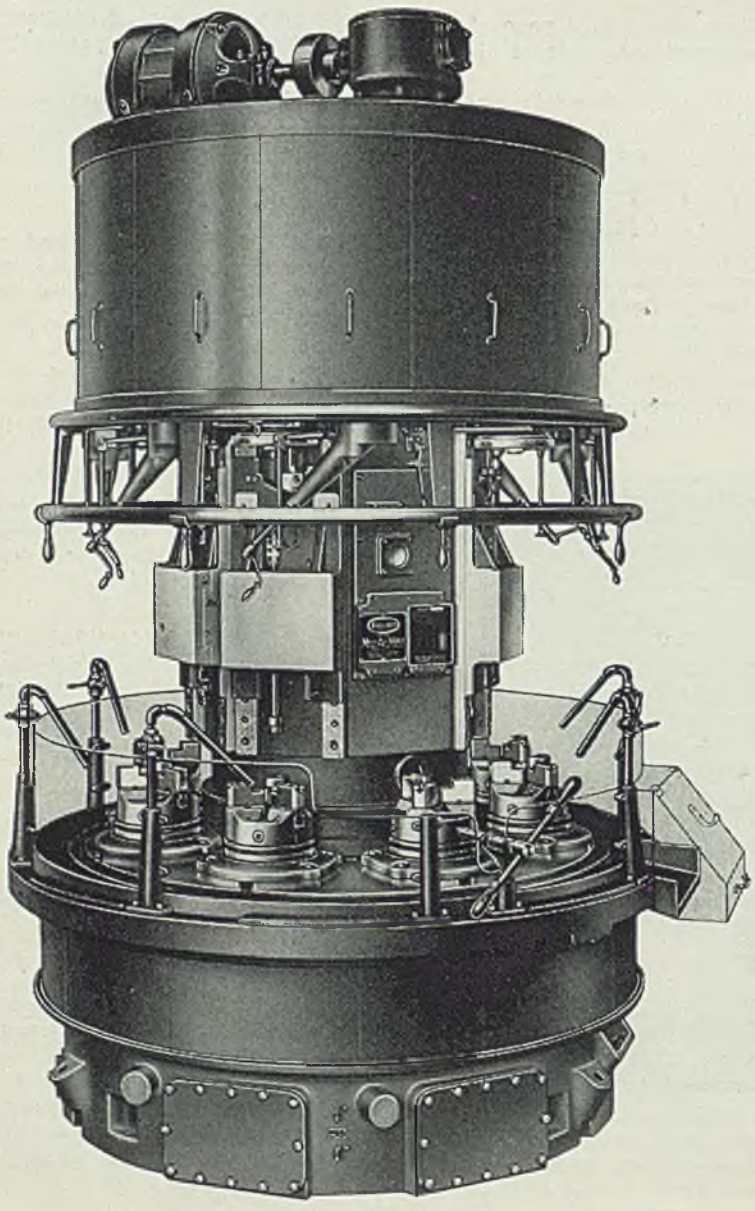
Frank H. Robinson, 73, sales representative in the New York area for Potter & Johnston Machine Co., Pawtucket, R. I., in New York, May 31. He had been associated with Potter & Johnston for the past 40 years.

♦ ♦ ♦

Joseph Dolar, 55, vice president, Templeton, Kenly & Co., Chicago, railroad supply manufacturer, in that city, May 31. He had been associated with the company for 30 years, having been successively draftsman, works manager and purchasing agent

(*Please turn to Page* 28)





Reflections on Mult-Au-Matic Performance result in the answer "Every Job a Profit".

In many cases results are based on volume production of a specific job.

In others Savings are made on shorter runs of variety work. As a matter of fact one manufacturer states that with his Mult-Au-Matic tooling he can set up at a Profit for a run of less than twenty pieces on each of several jobs.

Flexibility of machines and tooling makes for Practical and Profitable Performance with "Every Job a Profit".

Reflect—Time Saved is Money Earned—Save Time by asking Bullard Engineers for Estimates on Mult-Au-Matics as applied to your jobs.

THE BULLARD COMPANY

BULLARD

BRIDGEPORT, CONNECTICUT

MIRRORS OF MOTORDOM

DETROIT

ORDERS for all of the steel needed to complete the manufacture of 1936 models have now been placed by the motor companies located in the Detroit area.

A week ago two of the low-price cars wound up their steel purchasing, and thus wrote finis on the particular sizes of finished steel they will need, until a couple of months hence when they start in on new cars for the 1937 season.

Of course, a month to six weeks are always consumed in producing and shipping this steel, so that material now on order and in transit can well see the motor industry through July assemblies. By August they should be accepting shipments on new material.

According to advance information, inquiries for materials and parts to make 1937 automobiles should be in full swing along about July 1, at the time the rather general increase of $2 a ton in steel prices goes into effect. Small trial orders on new sizes have been more or less widespread for the last month.

Make Early Inquiry

Studebaker has had its inquiries for steel for 1937 models out for several weeks. Buick is another that has been in the market for some items, chief among which is crankshaft steel that has just been placed.

One interesting highlight of the Buick program is the decision to lengthen out wheelbases for 1937. Starting with the small "40", and including the "50" and "60", Buick will add about 5 inches to its frames with a proportionate step-up in wheelbase. The move will rectify certain retail complaints centering on lack of body room.

Speaking of the steel advance, there is a marked contrast in the attitude carmakers are taking today to the slant they took on the price increase two years ago.

In 1934 as the weeks of June passed there was a scramble here to buy as much steel as possible, lay it down, and consider the move smart purchasing. Chrysler, for example, was credited with laying in more than 300,000 tons of steel, mainly sheets and strip, all with a speculative motive against higher prices.

A bitter lesson was learned, for when the time came to work up this steel into automobiles, spoilage, double-handling and changed-size requirements had taken their toll of all the savings the buyers thought they had secured.

Some idea of the spoilage made can be deduced from the fact that even improvised tents were rigged up on certain vacant lots here in June of 1934 to cover piles of steel.

Attitude Has Changed

This year there is no undue haste to speculate on the part of steel users here. Rather, purchasing opinion is that it is wiser to accept the increase in steel costs on a when-as-needed basis. Some antagonism, as always, has developed to any move that makes an automobile more costly to assemble, but this time the markup should not result in any more than $3 to $4 per finished automobile.

This won't make much of a point when it is calculated that the six leading carmakers, exclusive of Ford, will net better than $90,000,000 for the second quarter of 1936.

These earnings will be some 50 per cent over net for the second quarter of 1935, and 40 per cent over and above the first quarter of 1936. The present quarter's profit for General Motors, Chrysler, Packard, Hudson, Nash and Studebaker, as a group, will be almost 80 per cent of the windfall record in the second quarter of 1929.

While automobile assemblies continued to beat an orderly retreat last week, as expected, the total for the industry still is above 100,000 models per week.

Observers believe this will drop to 75,000, or possibly 60,000, per week by July 1; and furthermore activity should be dulled for a four-week period beginning about the middle of July when the swingover to new models begins.

Several factors may upset this opinion. For one thing, the soldiers' bonus is considered important.

Meanwhile, last week Chevrolet's assembly total of approximately 30,000 models was leading among individual makers. Ford, dropping Fridays for the third successive week, held at around 23,000 jobs.

In many ways the surrender of first place by Ford to Chevrolet this year is not exactly unexpected. In the early 1935 season it was all Ford, and by a wide margin, as Dearborn capitalized heavily on the delays Chevrolet ran into through making manufacturing changes, plus the transmission strike at Toledo.

Therefore, there were more 1935 Ford buyers than there are on 1936 jobs. Add this to a retail buying swing that is more or less cyclical, plus the intensive publicity Chevrolet has put on the economy of a six and you have a few reasons for the present showing in the 1936 race.

Plymouth's assembly last week of 11,000, in round figures, was a proportionate drop with the industry. But a sustained demand for Olds and Pontiac held the former at 5700 models and the latter at 5300 assemblies in the week now closed.

Likewise, Buick held to the showing of two weeks ago in making some 4300 cars. To complete the General Motors story, Cadillac and LaSalle were off to 450 jobs, compared with 600 two weeks preceding.

Other Weekly Outputs

Dodge's rate was just shy of 9000 cars and trucks, Hudson's week aggregated 2800, Studebaker's 1850, Chrysler's 1600 and DeSoto's 1350, and the rest of the parade was made up of Graham at 650; Reo, 400; Lincoln at 150, and Auburn with 80, all on a weekly total production basis. Most of these assemblies were steady in comparison with two weeks ago, except Lincoln which had accounted for 260 jobs two weeks back.

Last week Chevrolet announced it had bought the former Durant plant at Oakland, Calif., a unit of 315,000 square foot space, originally built for assembly purposes. About Jan. 1 Chevrolet will have completed rearrangements and be operating there. The Oakland division is made up of one main building 600 feet long with one wing 600 feet deep and two wings each 400 feet deep.

Pontiac also made plant expansion news by confirming expenditures for a large lot of new machinery to make its own axles in a building now ad-

joining the present motor assembly line at Pontiac, Mich. A major part of Pontiac's fund of $6,000,000 for 1937 plant changes has gone into this new machinery and equipment.

The Pontiac foundry, which was reopened in January, added to its activities last week when a line was put in on casting the six-cylinder motor blocks. Pontiac now claims to be making all of its own castings and is building as high a percentage of its own parts as it was in 1929, or before the days of the depression expedient when the "B-O-P" organization was founded by General Motors. As will be recalled, Buick, Oldsmobile and Pontiac drew themselves together into one tight little organization until the storm blew over.

Plans Still Unknown

Hupp's future plans are still in a state of flux, for the new directors headed by Wallace Zweiner, president, have not made known their plans for raising additional working capital so they can commence operations.

The Hupp assembly line has been closed down since last December. The first quarter of 1936 accounted for a $265,965 loss, compared with a net loss of $688,253 for the first quarter of 1935. Of course, one factor was Hupp's liquidation this year of models built and on dealers' floors.

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
4 mo.	1,077,331	1,500,808	1,575,356
May	330,455	361,107	.....
June	306,477	356,340	.....
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	.....

1935 and 1936 figures revised.

Estimated by *Cram's Reports*

Week ended:

May 9	118,786
May 16	117,156
May 23	109,821
May 29	108,300
June 6	101,896

Hupp management has apparently abandoned the earlier attempt for a $1,500,000 R. F. C. loan and is reliably reported in Detroit to be negotiating for loans through private banking sources. Goodyear of Akron continues to keep an option warm for lease of at least Hupp's engineering building, diagonally across Milwaukee avenue from the main plant.

Willys at Toledo has some ambitious plans lined up for late 1936. Having temporarily engaged one of the Murray engineers to survey the situation, Willys will shortly put about $250,000 into a new retooling program and already has some new die work out under contract. Moderate refinements will be made, included in which will be a new treatment of the front headlamp. On present models this part is placed between the fender and the radiator but it seems likely it will be favored for placement in the front fenders direct in 1937.

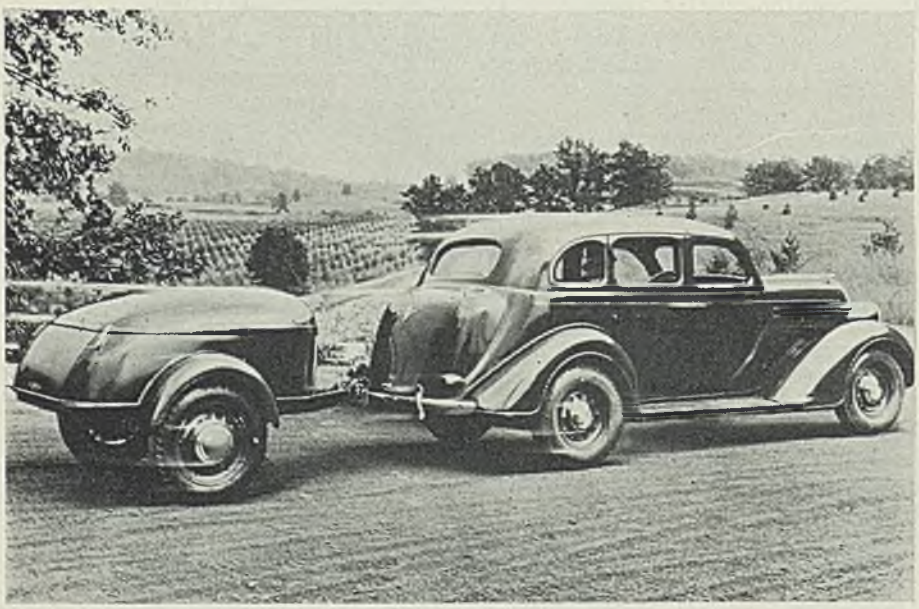
Makes Fender Change

Speaking of fenders, Packard has made a few changes from its first intent on the part for the small six. This, plus other design modifications including a recently revised instrument panel appearance, has caused some delay in the earlier plan to put the "115" on the assembly line before the next 45 days. Packard's assemblies, still preponderantly 120's, last week accounted for 1700 units.

Because two Detroiters are to be the guiding light, considerable interest here centers on what announcement A. J. Brandt and Alfred R. Glancey, one a Pontiac ex-vice president, will soon make on reopening the former bankrupt Franklin plant at Syracuse, N. Y. These parties closed an option last winter on the properties, since have had engineers looking over the ground to determine costs and as soon as the balance of the purchase price is paid over, they indicate a plan to make low-price cars and trucks.

Chrysler's Central American sales were up 46 per cent in the first quarter as against a year ago, due largely to heavier tourist business . . . . Buick has delivered over 100,000 1936 models so far and expects to sell to retail 170,000 before the 1937 models begin . . . . Hudson claims to be the first motor company to adopt all-metal tube radios for its cars . . . . . Plymouth has two giant carburetors in its Detroit plant, each capable of fueling 100 engines at once for block testing . . . . . Pontiac figures that 80 per cent of all the motor cars it has built in its history, totaling 1,072,926 units, are still in use . . . . . Apparently to disguise its new diesel engine division set up in the Cadillac-LaSalle plant in West End, Detroit, General Motors is designating it as an "export division," it is understood that experiments are proceeding for use in the domestic market.

The Rear Car Goes All-Steel Streamlined, Too



All-steel construction features this new, streamlined trailer, designed to carry a maximum load of about 1200 pounds. It is mounted on two standard automobile wheels and tires and has the standard tread of 56½ inches. Mullins Mfg. Corp. of Salem, O., plans to sell this compact unit in the low price range

DEPENDABILITY

Dependability . . . "The quality of being relied upon or of being trustworthy".

The things that go to make up this "quality" are part and parcel of the West Leechburg policy.

The product—*good strip steel*—may be relied upon and the service is trustworthy.

We have every facility, the experience (39 years), and up-to-date equipment for production.

The best proof we have is the long list of satisfied (and continuous) users of our product.

We also roll and sell all grades of ALLEGHENY *stainless steel in strip form.*

WEST LEECHBURG STEEL COMPANY

General Offices: UNION BANK BLDG., PITTSBURGH, PA.

Branch Sales Offices:

NEW YORK • CHICAGO • DETROIT • CLEVELAND • DAYTON, OHIO • ST. LOUIS • TOLEDO [Dean Higgins & Co.] • NEWARK [Edgcomb Steel Corp.] • PHILADELPHIA [Edgcomb Steel Co.] • TORONTO, ONT. [Jessop Steel Co.]
BUFFALO—ROCHESTER—SYRACUSE [Brace-Mueller-Huntley, Inc.]

Warehouse Stocks of Cold Rolled Strip Steel are carried by:

EDGCOMB STEEL CO.—PHILADELPHIA • EDGCOMB STEEL CORP.—NEWARK • JOS. T. RYERSON & SON—CHICAGO

Died:

(*Concluded from Page* 23)

prior to his appointment in 1914 as vice president in charge of purchases.

♦ ♦ ♦

John C. Williams, 60, president, Weirton Steel Co., Weirton, W. Va., subsidiary of the National Steel Corp., at his summer home near Weirton, June 1, due to heart attack. Mr. Williams had just returned from New York where he attended the meeting of the American Iron and Steel institute. A native of Wales, he received his education there and obtained his first experience in the steel business in the Welsh mills and later in Italy. In 1897 he became superintendent of the Champion Iron & Steel Co., Muskegon, Mich., and in 1903 and 1904, was assistant superintendent of the National works, Monessen, Pa., of the American Sheet & Tin Plate Co., where he was associated with E. T. Weir.

In 1904, Mr. Williams and Mr. Weir, with others, formed the Phillips Sheet & Tin Plate Co., and from this nucleus developed the present Weirton Steel Co. Mr. Williams had been president of Weirton since 1929. He also held important posts with other companies.

♦ ♦ ♦

Duane H. Newton, eastern sales representative, Vanadium Corporation of America, at Hartford, Conn., May 23.

♦ ♦ ♦

George R. Murphy, 61, manager of the Pacific coast district of the Electric Storage Battery Co., Philadelphia, in San Francisco, May 14.

♦ ♦ ♦

Hugh E. Hughes, 86, construction engineer at the Detroit plant of Semet Solvay Co. until his retirement in 1914, at Syracuse, N. Y., May 24.

♦ ♦ ♦

Leonard B. Miller, 75, for many years active in the Lake Superior iron ore mining affairs of Oglebay, Norton & Co., Cleveland, June 2, in that city. He entered the employ of Oglebay, Norton in 1890, having formerly been with Tuttle, Oglebay & Co., and in 1891 was admitted to partnership in Oglebay, Norton & Co. He retired several years ago.

♦ ♦ ♦

Emile Ramas, former president of the Association Technique de Fonderie, Paris, recently. M. Ramas was managing director of Societe Francaise Metallurgique "Griffin" and professor at the high school of foundry in Paris. He was president of the association from 1918 to 1926, and was honorary president until March 21, 1935, when he was re-elected president.

♦ ♦ ♦

Cyrus H. McCormick, 77, retired chairman of the board of International Harvester Co., Chicago, at his

John C. Williams

home in Lake Forest, Ill., June 2. A son of the inventor of the reaping machine, Mr. McCormick joined the McCormick Harvesting Machine Co. in 1879, retiring from active business in 1935. When the McCormick company was reorganized in 1902 into the International Harvester Co., Mr. McCormick was elected president, later serving as chairman.

♦ ♦ ♦

William B. Anderson, 80, president, Buckeye Iron & Brass Works, Dayton, O., in Dayton, May 27. He began his career with the foundry 60 years ago as bookkeeper, becoming president in 1917.

♦ ♦ ♦

Thomas Dewees Wood, 78, for many years associated with the steel industry and a director of the Alan Wood Steel Co., Conshohocken, Pa., at his

Ferdinand W. Roebling Jr.

home, Green Hill Farms, in Overbrook, a suburb of Philadelphia, May 28. Born in McKeesport, Pa., Mr. Wood was educated at the University of Pittsburgh and Cornell university, and shortly thereafter went into the steel business.

♦ ♦ ♦

Edward L. Hang, 63, treasurer and general manager of the United Electrical Corp., Canton, O., in that city, May 26. He formerly had served as secretary and treasurer of the United Alloy Steel Corp. for 20 years, which later became a part of the Republic Steel Corp.

♦ ♦ ♦

Charles A. Irwin, 63, prominent in the work of making Canton, O., an important steel center, in that city, June 2. Mr. Irwin was one of the founders of the Stark Rolling Mill which in subsequent mergers became a unit in the Berger Mfg. Co., the Central Alloy Steel Corp., and now is a unit of Republic Steel Corp. In 1909, with his brother, he founded the Canton Sheet Steel Co., serving as vice president, secretary and treasurer, until its sale in 1921. The same year he became president of the Milwaukee Rolling Mill Co. and in 1924 when it was sold to the Inland Steel Co., he was retained as president. He held that office until his retirement ten years ago.

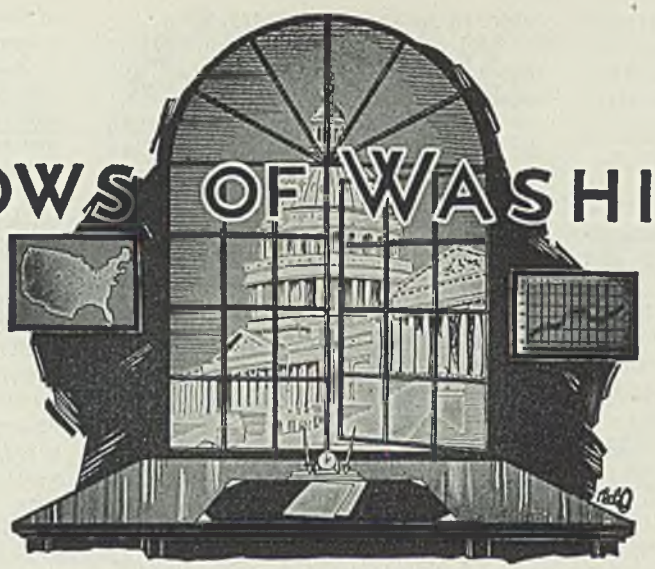
♦ ♦ ♦

Kenneth R. Jenson, 51, sales manager, Ridge Tool Co., Elyria, O., and formerly associated with H. M. Naugle and the late A. J. Townsend in manufacturing activities in Canton and Massillon, O., at his home in Elyria, May 27. With Messrs. Naugle and Townsend he organized the National Pressed Steel Co. in 1917, which was merged in 1921 with the Central Alloy Steel Co. and later became a part of the Republic Steel Corp. He left Canton, O., 14 years ago and went to Elyria, O., to take a position with the Columbia Steel Co. Later he became president of the Worthington Ball Co., Elyria, which position he held until 1933 when he became associated with Ridge Tool.

♦ ♦ ♦

Ferdinand William Roebling Jr., 57, president of John A. Roeblings Sons Co., Trenton, N. J., manufacturer of bridge cable and wire rope, in that city, May 29. Mr. Roebling was a grandson of John Augustus Roebling, pioneer builder of suspension bridges, and began as an engineer in his grandfather's firm in 1901, following graduation from Lehigh university with a degree in mechanical engineering. He was appointed assistant secretary and treasurer in 1905, became treasurer in 1917, and was elected president in 1926. He drew plans for the Williamsburg bridge in New York and for other spans. He also designed patterns for new machinery for wire drawing. Mr. Roebling was a member of numerous engineering and social organizations.

WINDOWS OF WASHINGTON



WASHINGTON

NO RECOMMENDATIONS are made in the uncompleted NRA report on the steel industry and unless something unforseen turns up it will never see the light of day. It has not been mimeographed as have some of the other industry reports of the dead Blue Eagle. Since there is no intention of ever making it public, it now rests in the old NRA files which are being consolidated by the department of commerce.

Certain chapters of the steel report have been completed by the experts who were working on them. These include chapter two, on raw materials; chapter three, on technical developments, and chapters on foreign trade, financial data, mergers and labor relations.

The main objective of the labor relations section is to discuss and compare employment conditions and employer-employe relations before, during and after the code.

A picture of the industry before the adoption of the code is drawn, and special consideration given also to working conditions, union organization and the employer-employe situation over a period of years.

Cities Change in Attitudes

Concerning the attitude of employers toward labor, the report says that "for about two decades following its first appearance in 1861, union organization of its workers was not opposed by the industry. Union representatives were recognized generally and dealt with as such by the relatively small number of employers then engaged in the industry, whose plants were likewise small compared with the great integrated steel plant of today.

"But as there came other changes in its general character and policy, the industry's attitude toward labor unions was also materially altered. * * * By 1900 the friendly conferring relationships of early history had changed to hostile attitudes and nonrecognition policies. * * * If the code may be credited with any perceptible effect on the industry's attitude toward unionization of its workers, such opinion would of necessity be based on the industry's acknowledged interest and its common activity in connection with the rapid expansion of a uniform type of company union just prior to and shortly after adoption of the code—a period in which material growth of established worker unions, free from any employer control or influence, was both predicted and expected."

Steel Mergers Surveyed

The chapter on steel mergers and consolidations is a survey from 1890 to 1935. An examination of the tables of this chapter shows a total of 53 well integrated and semi-integrated companies producing from 48 to 100 per cent of the principal products of the industry, and in most instances well over 80 per cent.

Further examination shows that the highest percentage of any one of the principal products turned out by concerns in the classification of semi-integrated companies is 10.66 per cent. Twenty-one integrated companies and two producer-consumer companies practically dominate the industry, the report states.

The formation of the United States Steel Corp. is discussed at length. A similar section is devoted to the organization of the Bethlehem Steel Corp. and another to the Republic Steel merger.

In the chapter on raw materials, Charles F. Marsh, professor of economics at William and Mary college, examines the problems fully, discussing iron ore, coal and coke, scrap iron and steel and ferroalloys.

"The extent of integration between iron and steel manufacturers, on the one hand," the report says, "and producers of iron ore, coal, coke, on the other, has been of prime importance in strengthening, or weakening, as the case may be, the competitive position of manufacturing units. The strong desire on the part of the iron and steel companies for this corporate accessibility to raw material supplies has been an important motivating factor in bringing about widespread consolidation in the industry, and has contributed toward the development of the industry's rather complex corporate and financial structure."

In the chapter on technical developments in the industry, written by Frank H. Crockard, who has been associated with the steel industry for many years, blast furnace fuels, pig iron, steel, rolling mills, special methods, new uses for steel and similar subjects are discussed.

Dealing with new uses for steel, this part of the report states that "the rolled products resulting from improved rolling mill methods have so greatly improved surface finish, with concurrent price reductions, that it is now possible to develop entirely new outlets, as in the case of beer containers and the many household gadgets. The recent coming of low alloy steels, because of their special properties and much lower cost than the higher alloy steels, promises to open new fields furnishing important tonnage outlets."

Foreign Trade Report

Luther Becker, a former chief of the iron and steel division of the department of commerce who later became associated with NRA, wrote the chapter on foreign trade. It deals with European steel cartels and takes up to some extent the effect of the American tariffs on our exports.

The financial study which was to have been included in the steel report was prepared by Prof. Richard N. Owens of the department of ac-

counting and statistics of George Washington university. It goes into every phase of the financial situation as applied to the steel industry.

TROUBLE FLARES UP IN LEWIS-GREEN DISPUTE

Trouble is brewing continually now between John Lewis of the committee for industrial organization and William Green of the A. F. of L.

An emphatic refusal to end its association with the Lewis group was unanimously voted here by the international executive committee of the United Mine Workers last week.

This action was taken in reply to a letter from a special committee of the federation executive council calling for the immediate dissolution of the C.I.O. and asking a reply within two weeks.

The board addressed its letter to President Green, advising him "we question the right and authority, or the propriety of the executive council of the A. F. of L. to make such demands upon any committee such as the C. I. O.; or upon any international organization to cease constructive work calculated to serve the best interests of American labor in bringing about effective organization of such labor in the mass production industries of this country."

"The United Mine Workers of America emphatically refuse to accede to either the call or request of the A. F. of L. to discontinue its constructive course of action in the premises."

PATMAN BILL SHORN OF BASING POINT PROVISION

As the Patman price discrimination bill passed the house the basing point provision was eliminated. This had been predicted consistently in these columns. With the basing point provision undisturbed, the bill would have been doomed in the house and senate. At one time it was reported that Senator Wheeler intended to submit his basing point bill as an amendment to the Robinson bill, companion bill in the senate to the house Patman bill, but no such move was made.

FEDERATION SAYS 726,000 GIVEN JOBS IN APRIL

The A. F. of L. estimates that during April 726,000 persons were put to work. It still maintains 11,500,000 persons are unemployed.

The federation says that "encouraging as these gains are, the employment figures alone do not show us whether re-employment is keeping pace with business recovery. This comparison is of vital consequence to the American people, for if business recovery fails to create jobs for the unemployed, something else must be done to give them their rightful place in American industry.

"All the recognized indicators show industrial activity in April this year well above April last year; nearly 1,500,000 have gone back to work in these 12 months, but population increases have added 600,000 to the army of job seekers, making a net reduction in unemployment of only 900,000. And eleven and a half million still have no place in American industry."

REPORT ON STEEL BIDS NEARS WHITE HOUSE

The collusive bidding investigation involving certain steel companies, which was called for by the President, has been completed by experts of the federal trade commission. The report is now before the commission for its approval before transmission to the White House, but it never will be made public unless it is released by the President.

Secretary Ickes became aroused by identical bids for public projects, despite the fact he was receiving identical bids in other commodities, and asked the President that the matter be investigated.

There is no intimation as to what the commission has found.

RECORD NUMBER OF LAWS HELD UNCONSTITUTIONAL

What might be termed the "unconstitutional" session of the United States Supreme Court has closed and the court will not sit again until Oct. 5. More laws have been declared unconstitutional during the recent session of the court than at any other one session in its history.

The decision ruling the New York state minimum wage law unconstitutional apparently has given the President a good political break. For instance, he has the chance to say that the court has created a "no man's" land where no government can function, either state or federal.

At a press conference last week the President could not be coaxed to reveal his probable plans in view of the decision. He merely pointed out again that the court previously had denied the federal government's jurisdiction and now had ruled the states had no rights in the matter.

Some of the keen political observers believe that this may be the turning point on the constitutional amendment question. Regardless of the legal aspects of the decision, it came just when it would help the New Dealers most.

The President emphasized at his press conference that the Chief Justice was with the minority.

The probability that congress would resort to three-day recesses during the Republican convention appeared to have become almost a certainty because of the death of Speaker Joseph W. Byrns and the inability of the senate to complete passage of the tax bill in time to allow for a lengtthy conference.

As the tax bill came from the senate finance committee it was considerably different from the measure which passed the house.

The senate committee put into the bill a 3-cent per pound tax on palm oil when used in the manufacture of tin plate. Under present law there is a 3-cent rate with an exemption for palm oil used in the manufacture of tin plate.

Senator Clark of Missouri made a report from the special committee on investigation of the munitions industry. This was in response to a senate resolution to make certain investigations concerning the manufacture and sale of arms and other munitions. During the inquiry several steel men were on the stand. No specific recommendations regarding the steel industry were made in the summary of the report.

CONTRACTORS WEARY OF BIDDING ON PWA WORK?

Many contractors are becoming weary of bidding on PWA work, according to numerous rumors here.

On some of the large contracts amounting to as much as $500,000, there have been no bids received at the first opening, it is said, and in other cases where ten to 20 bids could be expected normally, only two have been received.

About the only explanation available is that the plans are hard to work out, the price in most instances is very close and the inspectors sent out by the government are hard to work with.

RAPS "POWER TO SNOOP" IN WHEELER-RAYBURN BILL

Strenuous opposition to the Wheeler-Rayburn bill expanding the powers of the federal trade commission was expressed last week by Ernest A. Gross, assistant counsel of the National Association of Manufacturers, before the house interstate commerce committee.

Mr. Gross told the committee that the bill "seeks, unconstitutionally, to give the federal trade commission unprecedented powers to snoop into personal, private affairs of any individuals who are unfortunate enough to be engaged in interstate commerce." This bill has already passed the senate.

The bill, Mr. Gross told the committee, proposes to let the commission "upon its own initiative" investigate the business conduct, business practices and business management of any person, partnership or corporation engaged in interstate commerce.

"In effect," said Mr. Gross, "this bill would turn the commission into a police court to exercise censorship over business morals."

Editorial

Industry Deserves Square Deal on Party Platforms

WHILE it is beyond the province of a business paper to discuss politics from a partisan viewpoint, it is entirely proper to consider certain aspects of the approaching Republican and Democratic conventions which will have a direct bearing upon the welfare of industry in the next four years.

Viewed in the abstract, the situation is something like this: Both major parties are confronted with the task of drafting platforms for the November elections. The party in power in Washington faces the difficulty of preparing planks which correspond with reasonable accuracy to the policies pursued by the present administration. Many of these policies are diametrically opposed to the planks in the Democratic platform of 1932—the platform on which the present President was elected. If the Democratic platform of 1936 is written to the specifications of new deal policies, many voters who voted the Democratic ticket in 1932 will find it difficult to support that party's platform next November.

Industry Deeply Interested in Way Parties Handle Major Issues in Drafting Platforms

Sensing the potentialities in this split between so-called conservative Democrats and new deal Democrats, the Republican party is flirting with the idea of encouraging anti-new deal Democrats to come under the banner of the G. O. P. As this is written, politicians are considering the possibility of running a coalition ticket, with a Republican for President and an anti-new deal Democrat for Vice President. Regardless of the final outcome of this phase of political strategy, it is certain that efforts will be made by the Republicans to woo the votes of disgruntled Democrats in November.

Industry probably is only mildly interested in the political maneuvering which is a necessary part of the job of drafting a platform and selecting a candidate. But industry certainly is deeply interested in the policies to be pursued by the federal government during the next four years. This being true, every industrial executive who considers his obligations seriously must be concerned about the platforms of the major parties and about the sincerity of party leaders in fulfilling the pledges of their platforms.

This involves a consideration of important issues. The battle of June in Cleveland and Philadelphia will center about several basic differences of opinion, among which will be centralized authority versus states' rights, constitutionality versus pseudo social reforms, reckless financial experiment versus orthodox financial experience, self-perpetuating relief versus self-liquidating relief, the economic philosophy of production or plenty versus the doctrine of restricted production or scarcity, and numerous others.

Superimposed upon all of these major issues and cutting through them horizontally is the question of the relations between the federal government and industry. The Democratic platform of 1932 contained nothing on this point which could have alarmed honest or progressive industrialists, yet the policies of the administration that was placed in office on the strength of that platform have done much to incite animosity against industry.

Politicians Should Recognize Bond of Interest Between Industry and Public

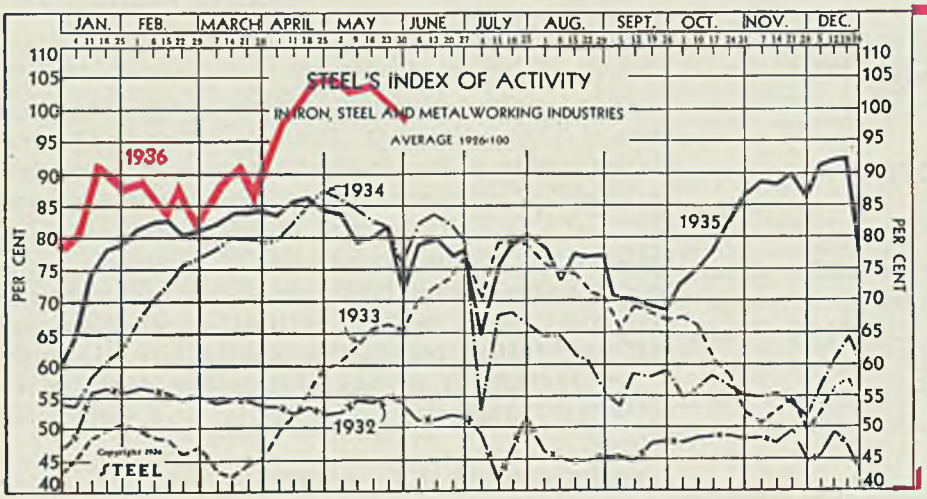
Many politicians—Republican and Democratic alike—seem to have an utter disdain for the views of industrialists. In some political minds, the editor of a farm paper in Squeedunk, South Dakota, rates higher than the industrial employer of 200,000 individuals—when it comes to political influence. Nevertheless, it is likely that the industrial employer has a higher sense of obligation to the best interests of the country at large than that exercised by the rural publisher.

Fortunately the conscientious industrialist holds views which are quite in accord with those of the thinking public. If that opinion prevails, as we believe confidently that it will, then success in November will go to the major political party which puts forth the most plausible platform in its June convention and in addition presents convincing assurance that its planks will be supported faithfully.

A platform that will serve the public interest best is one that recognizes that a prosperous industry is an asset and not a liability to public welfare. The emphasis placed upon this point at the recent meeting of the American Iron and Steel institute, particularly by President Grace, was appropriate and timely.

Industrial leaders should use their influence to see that the politicians recognize the common interest of industry and the public in drafting the planks of their party platforms.

THE BUSINESS TREND



STEEL'S *index of activity in the iron, steel and metalworking industries declined 1.8 points to 98.6 in the week ending May 30:*

Week ending	1936	1935	1934	1933
Mar. 21	86.0	84.0	79.7	44.6
Mar. 28	91.2	84.3	79.3	45.3
Apr. 4	96.8	83.4	79.6	49.1
Apr. 11	99.6	85.4	82.2	52.6
Apr. 18	103.1	86.3	85.0	55.8
Apr. 25	103.6	84.9	87.5	59.5
May 2	103.2	84.6	86.0	60.3
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

†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.*

Business Resisting Seasonal Influences Stubbornly

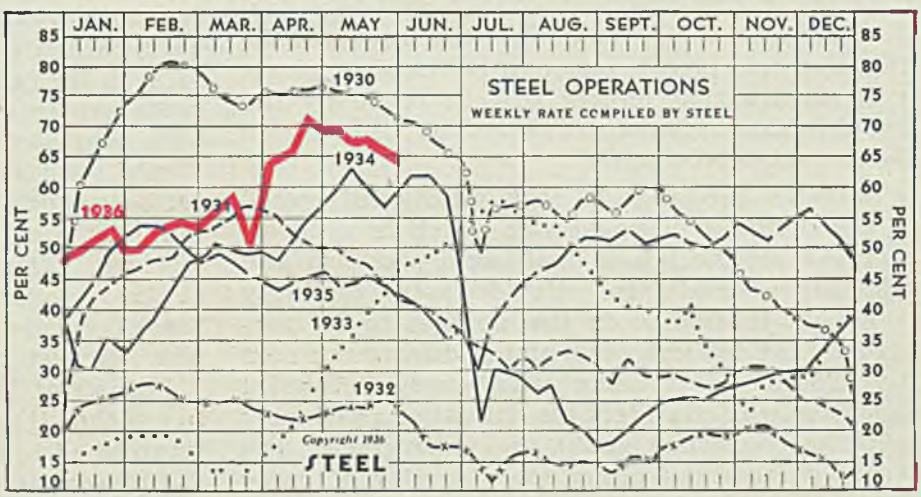
INDUSTRY met the test of the first of a series of week-end holidays with only a slight recession in its rate of activity. STEEL'S index dropped from 100.4 to 98.6 in the week ending May 30. Compared with the records for corresponding periods in 1934 and 1935, the decline is mild for the week which embraces Memorial day. The recession also is smaller than that registered in 1931, which was the most recent year in which May 30 fell on Saturday.

All factors contributing to the index showed moderate drops, but all are substantially above corresponding figures for 1935. Freight traffic, which usually is extremely sensitive to holiday interruptions, declined only 5 per cent and remains about 10 per cent above last year's volume.

Electric power output was down slightly, but not more than seasonally. It is running 13 per cent ahead of corresponding 1935 figures. The rate of steelmaking operations was even more stable, yielding only half a point. Automobile production also showed strong resistance to downward pressure. Total assemblies were 108,300 cars, compared with 109,821 in the previous week. This represents a drop of only 1.4 per cent, which is in sharp contrast with the decline of 33 per cent suffered in Memorial day week last year.

The general aspect of business in the metalworking industry is decidedly encouraging, particularly in that underlying strength is being demonstrated at a time which many observers had believed would reveal marked signs of a summer let-down. The index today is only five points below the spring peak of five weeks ago. A loss averaging only a point a week indicates strong resistance.

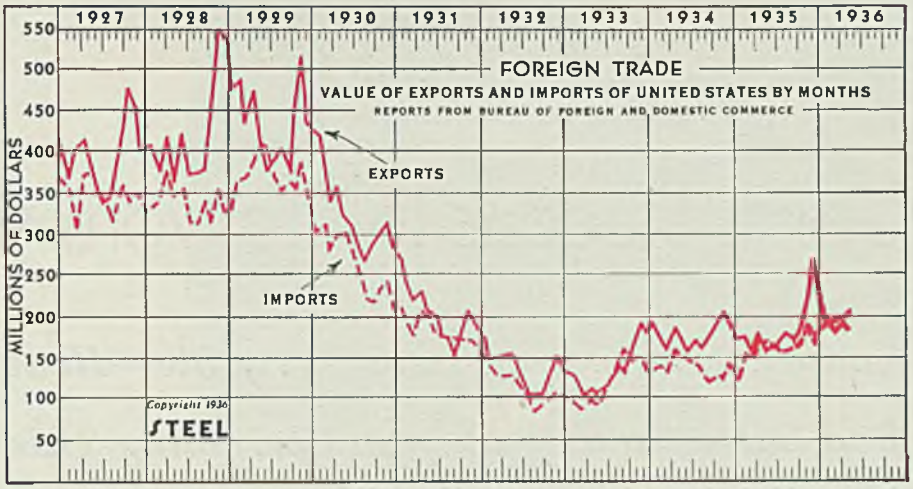
	1936	1935	1934
May 30	66	42.5	60
May 23	66.5	44	57
May 16	68.5	45.5	59
May 9	68.5	44.5	62
May 2	69.5	44	60
April 25	69.5	46	57
April 18	70.5	46	55
April 11	66.5	45	51
April 4	63.5	44	48
March 28	58.5	45	49
March 21	50	46	49
March 14	57.5	48	50
March 7	55.5	50	51



Unfavorable Trade Balance Continues as Imports Gain

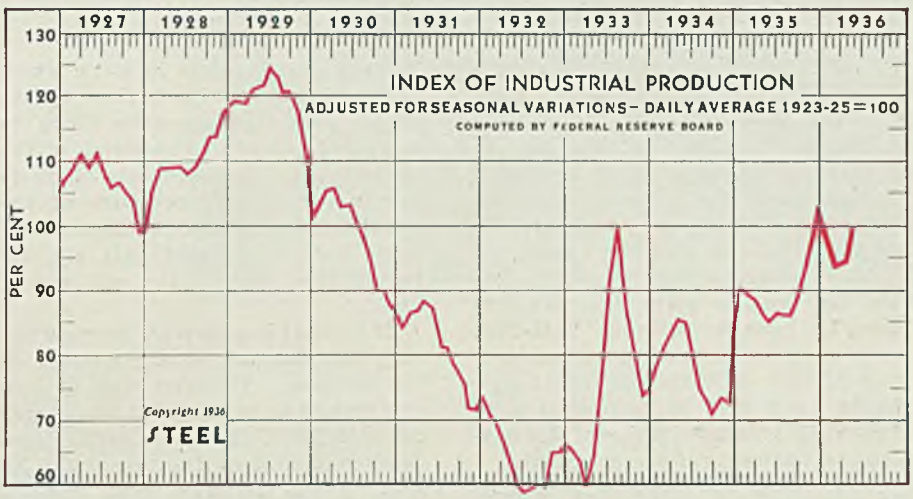
Dollars (000 omitted)

	1936		1935	
	Exports	Imports	Exports	Imports
Jan.	198,654	187,482	176,223	166,993
Feb.	182,030	192,771	162,999	152,491
Mar.	194,790	198,686	185,603	177,279
Apr.	193,490	202,437	164,350	170,567
May	.....	.....	165,457	170,207
June	.....	.....	170,193	156,756
July	.....	.....	173,371	177,698
Aug.	.....	.....	172,194	169,030
Sept.	.....	.....	198,189	161,653
Oct.	.....	.....	221,215	189,240
Nov.	.....	.....	269,400	168,955
Dec.	.....	.....	223,737	186,648



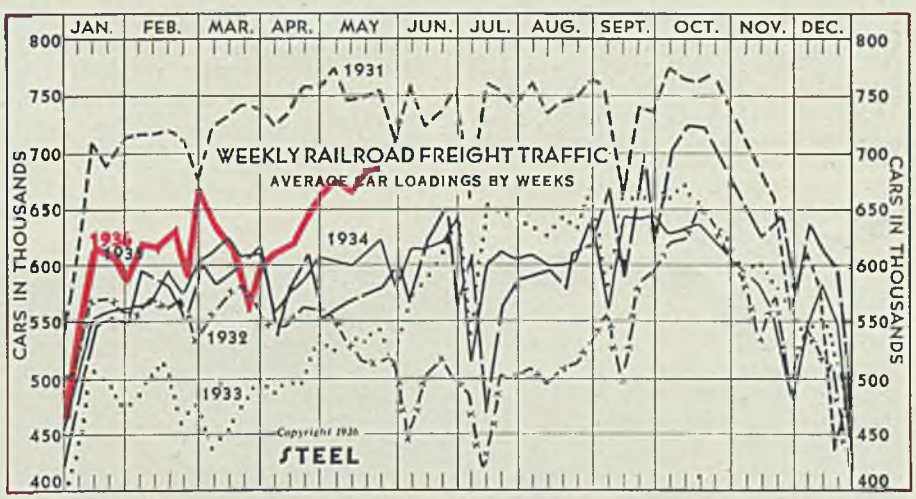
Industrial Production Up Sharply in April

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



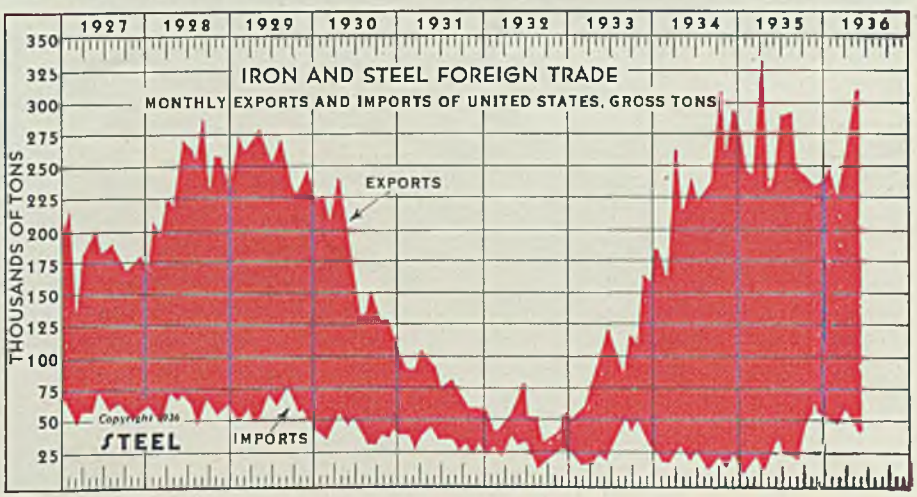
Weekly Car Loadings Hit 1936 Peak

	1936	1935	1934
May 23	683,406	598,396	625,990
May 16	681,447	582,950	612,331
May 9	668,935	575,020	602,798
May 2	671,154	568,927	605,246
April 25	666,181	558,936	609,704
April 18	642,657	611,141	591,705
April 11	622,138	586,568	579,981
April 4	613,867	545,456	559,070
March 28	600,487	616,520	610,190
March 21	566,808	607,178	610,036
March 14	616,862	597,431	627,549
March 7	634,828	587,190	614,120
Feb. 29	673,123	604,331	605,717
Feb. 22	586,712	553,165	574,908



Steel Imports Decline In April; Exports Up

	1936		1935	
	Imports	Exports	Imports	Exports
Jan.	50,489	241,564	22,784	262,740
Feb.	43,358	213,802	28,905	228,537
March ..	56,720	264,337	21,409	323,035
April	49,621	305,080	28,866	205,336
May	.....	.....	47,719	286,598
June	.....	.....	33,208	289,687
July	.....	.....	31,894	296,802
Aug.	.....	.....	31,312	247,312
Sept.	.....	.....	53,158	244,419
Oct.	.....	.....	59,569	238,358
Nov.	.....	.....	56,637	205,242
Dec.	.....	.....	53,678	239,268



Some Recent Noteworthy Advances in

Ending Transverse Fissure Trouble—Heat Treatment Methods—End-Batter and Means for Correcting This Difficulty

FIFTY years ago railroads experienced little trouble with rails. They were interested principally in wear. There was no cause for apprehension on account of breakage, since the weight of the rail was far in excess of that necessary for the light-wheel loads and low speeds.

This condition has been responsible for the statement that we frequently hear today that "old-time rails were better than those now produced," an unjustifiable conclusion based upon lack of appreciation of the much greater severity of the conditions modern rails must meet.

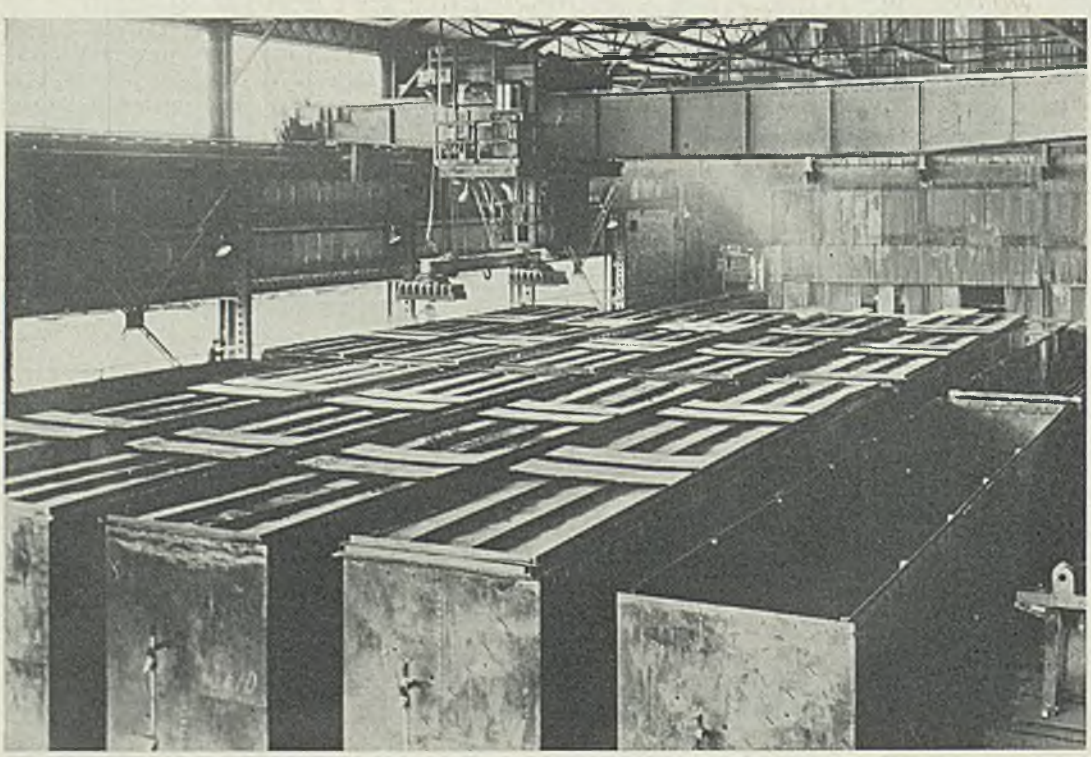
Rails have increased in weight, it is true, the 131-pound rail now being in common use as compared with the 100-pound rail which was the maximum of the former period. This 31 per cent increase in weight, however, is much more than offset by a 100 per cent increase in static wheel loads combined with higher speeds which raise the dynamic loads to measured values of twice that of the static loads. Consequently there is now a far greater pressure of the wheel on the rail and this is confined to an area of contact only slightly larger than under the old conditions.

The result has been an increase not only in wear but in the number of rail failures. The first type of failure occurring in large numbers was the split head. This was mainly confined to rails from the top of the ingot. These failures were troublesome, but as they gradually developed in plain sight of inspectors, the rails were generally removed from track before they became dangerous. As these split heads increased under the growing severity of traffic, railroads objected strenuously, but they were annoyed rather than alarmed.

They were alarmed, however, by a wreck which occurred in 1911 at Manchester on the Lehigh Valley railroad and which was traced to a broken rail. An examination of this rail showed that the breakage had taken place as a result of an internal transverse rupture during service which had gradually developed within the rail head without any external indications of failure. This marked a new phenomenon in rail failures which is now commonly known as the transverse fissure. In recent years transverse fissures, more through their insidiousness than through their frequency, have been the cause of more concern to the rail maker and rail user than all other types of rail failures.

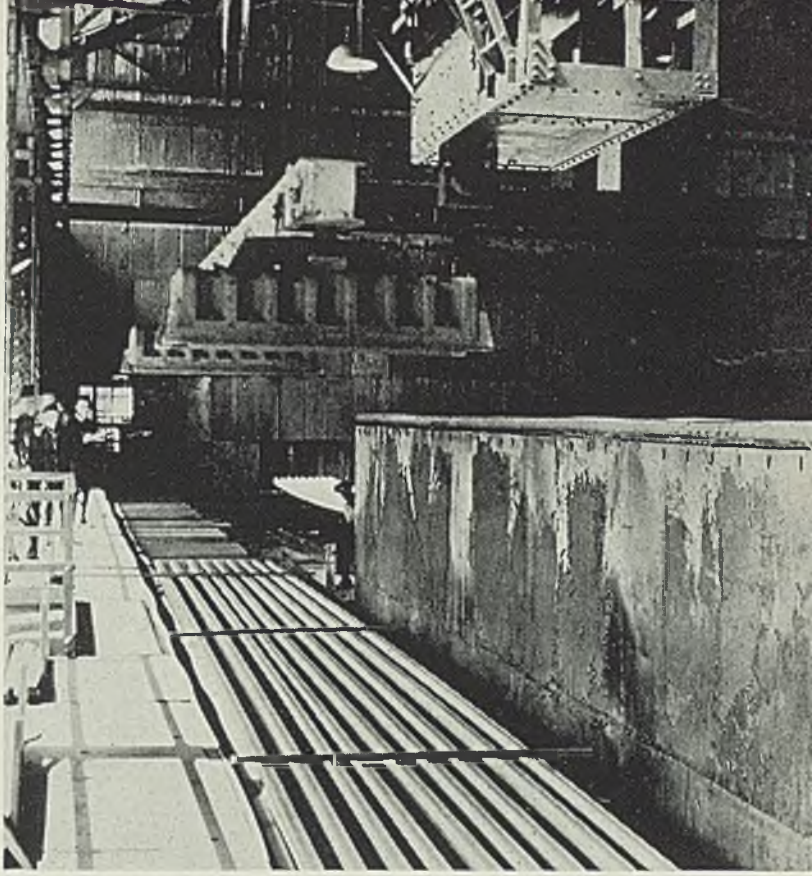
Much thought has been given to

—Illustrations courtesy Bethlehem Steel Co.



CONTROLLED cooling of rails is accomplished by loading them into these covered steel boxes, after the rails have cooled to slightly under 1000 *degrees Fahr. on the hot-bed*

Rail Manufacture



HERE is a group of nine rails on the hot-bed about to be picked up by a crane with dual magnets and loaded into the cooling box at the right. A sufficient number of rails is placed in each box to insure a slow and gradual drop in temperature

transverse fissures. What causes the disease? What is the cure? The last word has not yet been said as to the cause, but much has been done in the way of a cure.

Nearly ten years ago, Messrs. Sandberg of London, England, internationally known rail engineers, pointed out the probable connection between shatter cracks and transverse fissures. According to the Sandbergs the shatter cracks, which occur occasionally in rails as rolled may act as the focal points from which transverse fissures gradually develop within the heads of rails during service. According to the Sandbergs, "one of the chief causes" of shatter cracks is stresses caused by "a substantial difference of temperature during cooling between the outside metal and the interior metal, more particularly of the big mass in the head of the rails."

They believed that if the occurrence of shatter cracks could be prevented the transverse fissure problem would be solved. Accordingly, they instituted an exhaustive series of experiments in this direction. Before the end of 1928 they had developed a method of controlled-cooling at the Cargo Fleet Iron & Steel Works at Middlesbrough, England, which effectively prevented the occurrence of shatter cracks. In the succeeding year they introduced this method into the United States, where, after a period of several years experimentation on the higher carbon American rail by the Bethlehem Steel Co. the process was adopted by Bethlehem on a commercial scale. More recently the method has been adopted by Inland Steel Co. and the Colorado Fuel & Iron Co.

Other investigators, Gerhardt of the Bethlehem Steel Co., and Mackie, of the Dominion Steel & Coal Corp. Ltd., Sydney, Nova Scotia, likewise diagnosed shatter cracks as the principal cause of transverse fissures and, like the Sandbergs, found the cure of shatter cracks in the controlled cooling of rails. At the present time the last mentioned company is subjecting its entire output of rails to controlled-cooling.

Confirmed by Investigation

The ideas and practices of the Sandbergs, Gerhardt, and Mackie have been confirmed in essentials by recent scientific investigation. The work, for example, conducted at the University of Illinois, under the auspices of the Association of American Railroads and the Rail Manufacturers' technical committee, is especially significant.

In this work at the University of Illinois, equipment was used to subject rails, under laboratory control, to conditions simulating those of actual service and thus to develop transverse fissures in those rails having susceptibility thereto.

"Tests of rails under rolling loads" in this equipment "have yielded fairly convincing evidence that fissures in rails usually originated at shatter cracks which formed in the rails during the process of manufacture. All laboratory-developed fissures were in shatter-cracked rails and about 75 per cent of the service-fissured rails sent to the investigation showed evidence of shatter cracks outside the main fissure." (American Railway Engineering association bulletin No. 376, June 1, 1935).

From the above mentioned bulletin it also appears that the University of Illinois made comparative tests of hot-bed cooled and controlled-cooled rails from four different mills and that while some of the hot-bed cooled rails had shatter cracks and developed internal fissures when subjected to rolling load tests none of the controlled-cooled rails had shatter cracks or manifested internal fissures when subjected to such tests.

Not all the rails cooled in the usual way on the hot-bed contain shatter cracks. It is known that only a small percentage of the rails rolled contain shatter cracks, and even in those rails the number of shatter cracks is small. But their occurrence is insidious. Shatter cracks are sometimes found in rails produced from a particular ingot of a heat and absent from other ingots of the same heat. A limited portion of a rail is sometimes found to contain a few shatter cracks while the rest of the rail is entirely free from them. Obviously there can be no real assurance of freedom from shatter cracks unless all rails are subjected to the controlled cooling operation. Without vaccination the majority of human beings might not have smallpox, yet universal vaccination is the only sound prophylaxis.

Over five years of experimentation was necessary to determine the best conditions for controlled cooling of American rails, and to develop the

process on a commercially effective scale. As applied at the mills of the Bethlehem Steel, for example, the practice in its broader aspects may be outlined as follows:

The rails are cooled on the hot-bed in the usual manner until the temperature has dropped as low as 1000 degrees Fahr., but not less than 932 degrees Fahr. They are then placed in boxes or tanks for slow cooling, a sufficient number of rails being placed in each box to insure a slow and gradual drop in temperature. After being loaded, the boxes are carefully covered, and the joints are made sufficiently tight to avoid cool currents of air coming into contact with the rails. Moreover, the boxes are protected from exposure to snow and rain. The rails remain in the boxes or tanks until their temperature has dropped below 400 degrees Fahr.

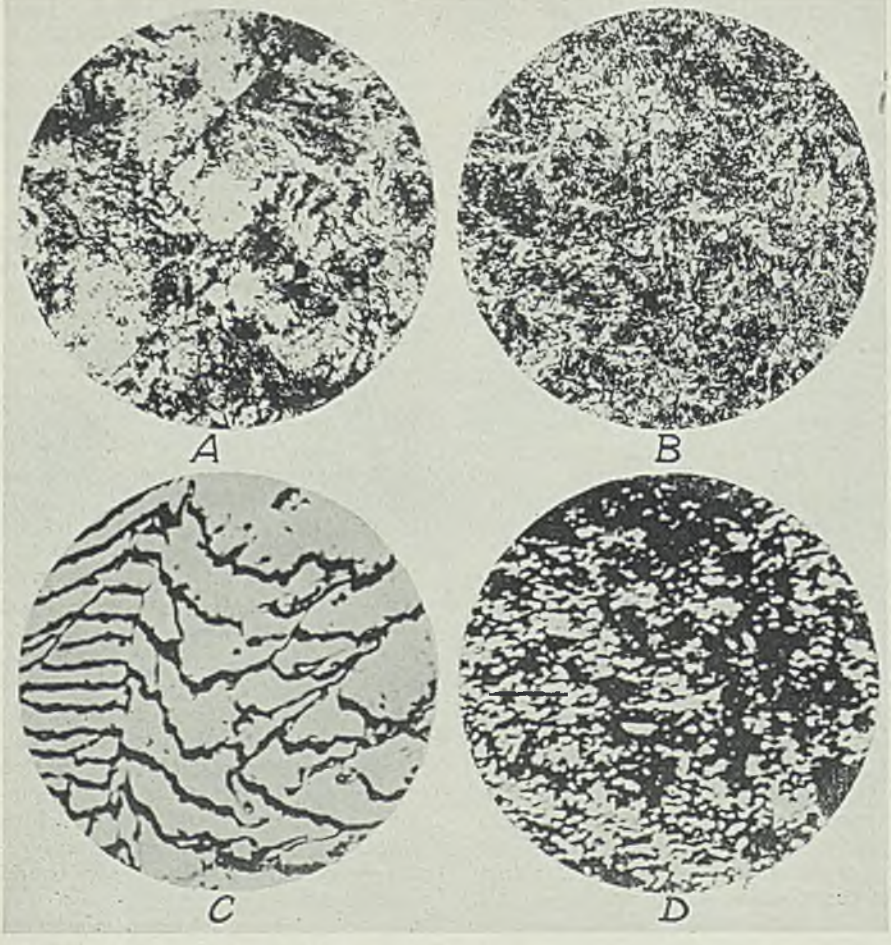
Practical experience, as well as extensive laboratory experimentation, has indicated the importance of starting the controlled cooling at a sufficiently elevated temperature but, of course, below the transformation range and to continue the retarded cooling to a temperature below 400 degrees Fahr.

There has been some difference in opinion among investigators as to within what ranges of temperature, during cooling, rail steel is most susceptible to the formation of shatter cracks. The Sandbergs, for example, inclined to the belief that the tendency to shatter cracks was greater between 932 and 650 degrees Fahr., while Gerhardt and Mackie had the view that the tendency to shatter cracks was greatest below 650 degrees Fahr. Both the Sandbergs and Gerhardt agreed, however, that in practice it was important to start at a sufficiently elevated temperature to allow a substantial margin of safety.

Mackie, in describing an application of his process which was "100 per cent effective in eliminating all traces of shatter cracks" stated that the rails were allowed to cool normally on the hot-bed until visible redness in a dim light had disappeared, and then were placed in the cooling tank as promptly as practicable.

Apart from the prevention of shatter cracks, the controlled cooling substantially reduces the residual stresses in the rails, thereby greatly minimizing the tendency to the development of weaknesses in the rail, other than transverse fissures, during service. The controlled-cooled rails show substantially higher results in bend tests than ordinary hot-bed cooled rails. The ductility is better. All these results are obtained without appreciably affecting the hardness of the rail as determined by laboratory tests as well as by measurements of the wear of the rails in track.

The production of controlled-cooled rails in Europe has reached the figure of approximately 1,000,000 tons and the production of such rails in the United States and Canada now aggregates about 385,000 tons.



Photomicrographs showing, A, *untreated rail, X*100; B, *heat treated rail, X*100; C, *untreated rail, X*2500; *and* D, *heat treated rail, X*3000

Rail Heat Treatment

In the efforts to meet the increasing need for rails of higher physical characteristics, substantial advances have been made through heat treatment. The term "heat treatment" is here used because of its general acceptance in the industry, instead of the more accurate, but also somewhat more cumbersome, expression "quenching and tempering."

When the demand for rails capable of greater and greater loads first appeared, metallurgists naturally began to consider the feasibility of applying to rails the well known effects of quenching steel in greatly increasing the hardness and strength. Some 30 years ago various methods of heat treating rails began to appear in the technical journals and patents.

It was soon discovered, however, that the problem was not simple. The usual methods of heat treating steel articles could not be applied successfully to rails.

A rail offers certain special obstacles to ordinary quenching operations. Its peculiar cross section with its unequal distribution of metal, its great length, the great mass of metal, particularly in the head, and the high carbon content, all contribute to the difficulty of effective, yet safe, quenching.

For years attempts were made to solve the problem with but indifferent success. All the ordinary methods developed stresses sufficiently great to cause ruptures in the metal, particularly within the interior of the head.

After a period of experimentation lasting some 20 years, Edward F. Kenney of Bethlehem Steel discovered a process of preventing these ruptures, which is described in United States reissue patent No. 17,240. The practical embodiment of the Kenney process as it has been practiced by Bethlehem Steel involves quenching the rail while cooling from mill heat, discontinuing the quench at a definite temperature, promptly effecting equalization at an elevated temperature and finally subjecting the rail to controlled cooling.

This treatment is exceedingly important. The present trend is decid-

Comparisons of Treated and Untreated Rails

Rail Section 130 R.E.

Heat	Analysis Per cent C.	Mn.	Tensile strength Lbs./sq. in. Treated	Untreated	Elastic limit Lbs./sq. in. Treated	Untreated	Elongation Per cent Treated	Untreated	Reduction of area Per cent Treated	Untreated	Brinell Average for head Treated	Untreated	Drop Test Permanent Set 1st blow Inches Treated	Untreated
82K253.....	0.74	0.69	173,500	134,000	124,700	79,000	9.5	7.5	14.5	9.5	347	269	0.57	0.90
86K205.....	0.72	0.70	185,000	137,000	131,000	83,300	6.5	10.0	9.5	14.2	368	278	0.50	0.85
82K255.....	0.71	0.68	170,500	135,000	124,500	81,300	7.5	10.5	10.3	14.8	351	274	0.57	0.93
85K246.....	0.79	0.72	184,500	144,300	123,700	86,500	8.2	8.5	11.8	11.0	356	294	0.55	0.80
84K247.....	0.78	0.82	182,000	151,000	126,000	89,000	10.0	8.5	15.0	11.5	363	307	0.50	0.80
84K249.....	0.72	0.72	171,500	137,300	124,700	84,200	9.0	9.5	15.3	13.7	372	290	0.51	0.83
84K250.....	0.77	0.84	172,500	149,500	126,000	86,500	10.5	8.0	20.5	11.5	375	311	0.52	0.82
85K249.....	0.76	0.70	184,800	142,500	131,000	86,200	7.5	9.0	13.8	12.7	375	291	0.50	0.85
82K279.....	0.71	0.63	177,000	133,800	128,500	77,800	7.7	6.5	12.0	9.0	361	277	0.66	0.90
Average.....	0.74	0.72	177,900	140,600	126,700	83,300	8.5	8.7	13.6	12.0	363	298	0.54	0.86

Izod Impact Tests: standard 0.4-inch diameter notched bars—Treated, 7 foot-pounds; untreated, 2 foot-pounds.

edly in the direction of higher speeds in train service. Under the higher speeds on tracks today, the dynamic wheel load sometimes exceeds 100,000 pounds. At times nearly all the enormous axle load on a pair of wheels is concentrated on a single wheel. The entire braking effect at high speed may be applied on a small area of contact between one wheel and the rail, amounting to only from 1/3 to 1/2 square inch.

Under these concentrated loads the surface metal of the rail tends to flow. This tendency to flow is opposed by the underlying metal thereby resulting in great tensile stresses of the interior metal. With the high speeds of today the need for high physical characteristics of rails is great; with the prospective, and probable, higher speeds of the near future, the need will be imperative. Heat treatment of rails effectively meets this need.

A study of the accompanying table and photomicrographs giving the comparative physical properties and structure of treated and untreated rails, will indicate plainly why the treated rails are superior in resisting the stresses induced by high train speeds.

High Elastic Limit Desired

Kenney's aim was to produce rails in which the elastic limit was sufficiently high to minimize greatly or to prevent entirely the plastic flow of the outer metal of the rail head due to the concentrated wheel loads. The table indicates the marked increase in elastic limit due to heat treatment. Not only does the greater elastic limit inhibit the tendency to plastic flow of the outer metal of the rail head but the high elastic limit of the inner metal enables the steel to resist effectively the tendency to flow of the outer metal.

Moreover, the heat treated rail has a far greater life than that of the untreated rail, due to its increased resistance to wear. According to recent reports from five railroads the average wear in the high rail, when heat treated, was only 54.6 per cent that of the untreated rail, and in the low rail, when heat treated, but 55 per cent of the untreated rail.

Messrs. Sandberg of England have developed a special method of heat treating rails involving the application of vaporized water ("Scotch Mist"), to the rail head, followed by a controlled cooling. This process is now used by most of the rail-making plants in Europe where up to March 31 of this year more than 100,000 tons of rails were produced through the use of this process. While this process has not had general application in this country, its possibilities should not be overlooked.

End Batter and Correction

One of the weakest elements of railway track under modern service conditions is the joint. Long before rails are worn out by the abrasive action of the wheels, the joints have usually become loosened by wear on the contact surface between the rails and joint bars, particularly under the heads of the rails and the tops of the bars. When the wear has become too great, rails are taken out of track, the ends cut off to remove badly worn parts, new holes drilled, and new joint bars installed on the shorter length rails. This relatively short life of the rail ends and joint bars is due in most part to the impact of the wheels in passing over the joints, especially where the impact has battered the rail ends to form a depression.

Efforts have been made to correct this battered condition by depositing molten steel to fill in these depressions, followed by grinding to an even surface. There is a danger in this practice because cracks in the rails thus treated may result. It is less costly and safer to prevent or minimize this battering than to attempt to correct it after it has occurred. The method most commonly used for accomplishing this is that of hardening the ends of the rails. Several methods of hardening rail ends are being used at the present time.

In one method, the top surface of the head of the region at and adjoining the end of a cold rail is brought to a high temperature by application of the electric arc or torch and then subjected to a quenching action by means of water, oil or air. The conduction of heat to the interior of the rail head, during the heating operation, is slow, and in many instances the depth of the metal heated to a quenching temperature may not be more than ⅛-inch. When the quenching medium is applied the thin layer of heated metal is almost instantly quenched by the combined chilling action of the quenching medium and the cold portions of the rail. Cracks frequently form at the junction of the hardened and unhardened metal. Rails which are laid in track before end hardening must, of necessity, be hardened while the body of the rail is cold.

Hardening Ends from Mill Heat

A highly satisfactory method for end hardening rails, not merely from the standpoint of safety, but also from technical and economical considerations, is to quench the end regions while the rails still retain the mill heat. At the rail mills of Bethlehem Steel, the end regions are treated as the rails lie cooling on the hot-beds. A multiplicity of water jets is applied to the end regions from a portable quenching head, which also protects the remainder of the rail from accidental contact with the water. The period of application of the spray is automatically controlled by electrical timing apparatus. The large reservoir of heat in a full length rail at a red heat and the plasticity of this red hot metal furnish ample assurance against any part of the rail being subjected to severe cooling strains.

Rails thus end quenched from the mill heat are either subjected to controlled-cooling throughout the length or, where the rails thus treated are not to be controlled-cooled, a portable annealing cover is applied to each end when it has cooled to approximately 1000 de-

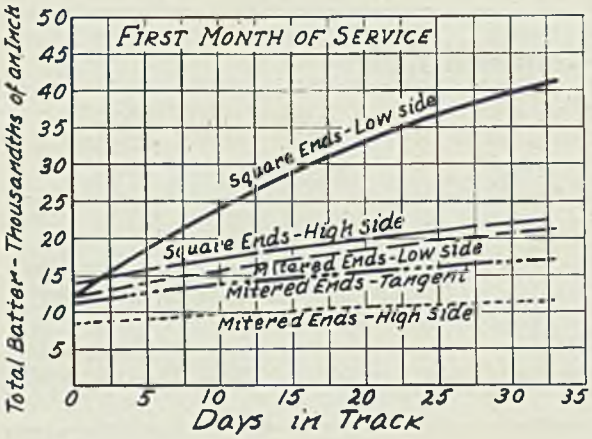


CHART (left) showing comparison of batter on mitered-end and plain-end rails laid on a sharp curve. Below is a closeup view of an insulated joint in a mitered-end rail

grees Fahr. and this cover is retained in place until the rail end has cooled to below 400 degrees Fahr. The degree of hardness and the depth of penetration within the head metal are controlled easily.

There are substantial advantages in end hardening rails from the mill heat and controlling the cooling of the entire rail from 932 to below 400 degrees Fahr. This treatment produces a rail having all the advantages set forth above for the controlled-cooled rail plus the added advantage of hardened ends.

Mitered End Rails

The high train speeds of the present and the future must be accompanied by riding comfort for passengers and reasonable costs in maintenance of rolling stock and track. The greater the speed the smoother must be the track. An important means to this end is the mitered-end rail.

About 30 or 40 years ago rails were tried out in track having 45-degree angle mitered-end faces, the mitered cuts extending the full depth of the rails. So far as giving better riding qualities and reducing batter at the joints they were a success. The movement of the rails, however, relative to one another, produced a wedging action which broke joint bolts and caused such a dangerous track condition that the rails were taken out of track and the idea abandoned.

Later the idea was proposed and carried out of providing a mitered cut to the head and a square cut through the base. This combination avoided the danger of wedging, but in preparing the rails it was necessary to machine the ends after they had become cold. This was so expensive that no considerable tonnage ever was installed.

A few years ago a method was devised for producing this combination of square-end base and mitered head end quickly and accurately while the rail was still at the mill heat. All rails thus produced are absolutely interchangeable. Tonnages of mitered end rails thus produced, some hardened and some unhardened, have been in service up to three years on some of the most important railroads of the United States. They were purposely installed at points of extremely heavy traffic. The batter of the joints has been reduced from 50 to 75 per cent of the ordinary square-end rails, and the noise and shock, as the wheels of trains pass over the joints, decidedly reduced.

In this connection it may be well to point out that some of the railroads having the heaviest traffic have made long time studies of joint batter. These studies show that of the total batter which occurs in a period of from three to five years, more than half occurs during the first few weeks. The passage of only a few trains is sufficient to batter the corners of the square rail ends and cause a marked blow as the wheel passes over. The mitered joints permit the load passing gradually from one rail to the next, thus reducing the reversal of shear in the joint bar and protecting the end corners of both rails. Furthermore, a greater degree of hardening is permissible in the mitered-end rails over that which could be safely given to the square end rails.

An accompanying chart shows a comparison of the batter on mitered end and plain end rails laid on a sharp curve in a heavy tonnage location. They were installed at that point to determine the behavior under heavy loads on a sharp curve. This chart shows that even under the most unfavorable conditions the mitered joint has definitely proved its utility.

An installation of mitered joints in the main line of one of the transcontinental railroads is shown here. Of particular interest is the insulated joint. This mitered joint is of special value under these circumstances. The gradual transmission of the load over the joint is effective in protecting the insulating fiber.

Summary

This article has been confined to certain improvements in rails after they have been given their final form as rolled products. It leaves untouched the manifold advances in steel making and shaping. From the blast furnace to and through the rail mill there has been an increasing application of scientific knowledge for the purpose of controlling and governing the many chemical, metallurgical and thermal factors involved in the manufacture of rails for track service.

Metal and slag analyses, mold preparation and use, design and operation of furnaces, temperature control of rolling, and chemical and metallographic checks, all have contributed to the steady advance of rail manufacture. All this care in preparing good steel and rolling it into a rail should not be vitiated by neglect in the subsequent treatment, thereby lessening its value as a safe and serviceable product for the use of our railroads. Nevertheless it still remains axiomatic that a good rail can be made only from good steel.

Iron and Steel Metallurgy Goes into Second Edition

An Introduction to the Metallurgy of Iron and Steel, by H. M. Boylston, cloth, 563 pages, published by John Wiley & Son Inc., New York, and supplied by STEEL, Cleveland, for $5, plus 15 cents postage; in Europe by the Penton Publishing Co., Ltd., London.

This is the second edition of a work written primarily for students in engineering and evening schools, and first published in 1927. Additional information has been included and statistical data have been brought up to date.

The scope of the discussion can be best understood by considering the various chapter headings which follow: Historical and economic background of the iron and steel industry; chemical and physical principles; raw materials of the iron industry; blast furnace and the manufacture of pig iron; the foundry; wrought iron; early steelmaking processes; the bessemer process; open hearth process; electric furnace process; manufacture of commercially pure iron; ingot making; mechanical treatment of steel; combination, structure and physical properties of iron and steel; and the heat treatment of steel.

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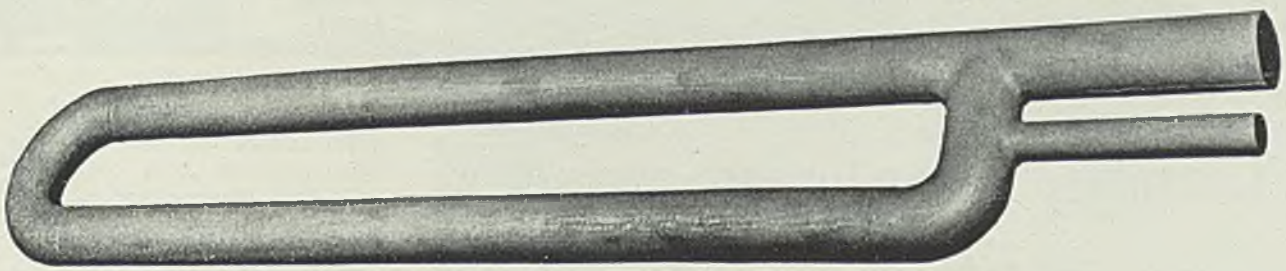

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Surface Treatment and Finishing

Selection, Application and Use of Finishes for Metals

V—Testing Organic Coatings

THIS is the fifth and concluding part of the short primer on metal finishing practices which began in the March 16 issue of STEEL. Part V will appear in two installments

ONE of the most important factors in the sales appeal of a metal product is its finish. The requirements of a good finish are not only pleasing and harmonizing appearance but good durability in service as well. Many manufacturers obtain finish appeal by coating their products with paints or enamels, following the advice and application instructions of reputable suppliers of these materials. Other manufacturers, however, have not been satisfied to rely wholly on this method, but have sought to develop testing procedures with which they could determinate accurately and quickly the durability of organic finishes.

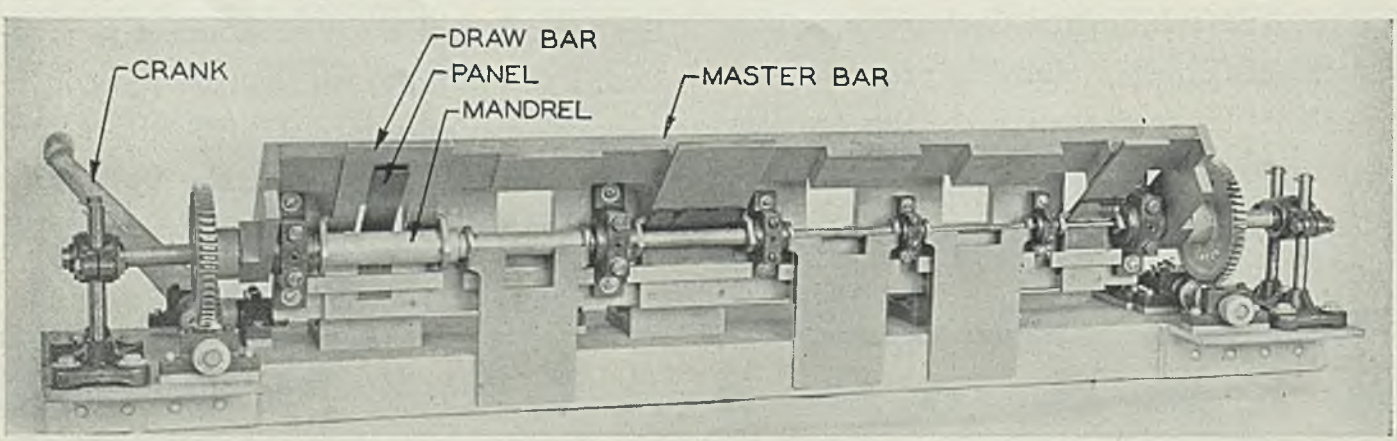
One of the earliest methods of testing for durability was service trial. By this method sample lots of various types of finishing materials are applied to the article in question, which is then put into actual service and inspected from time to time for finish failure. The best finish, naturally, is the one which maintains its appearance for the longest time. This method is entirely adequate, but usually several years must elapse before complete information is obtained, and even then the information is essentially of a qualitative nature. Since the paint industry is in a state of flux, new products being announced almost weekly, and since many manufacturers are unwilling to use new and at times more economical or better appearing finishes without adequate trial, an attempt is frequently made to speed up finish failure by submitting the finished product to a controlled environment more severe in character than that to which it is normally exposed.

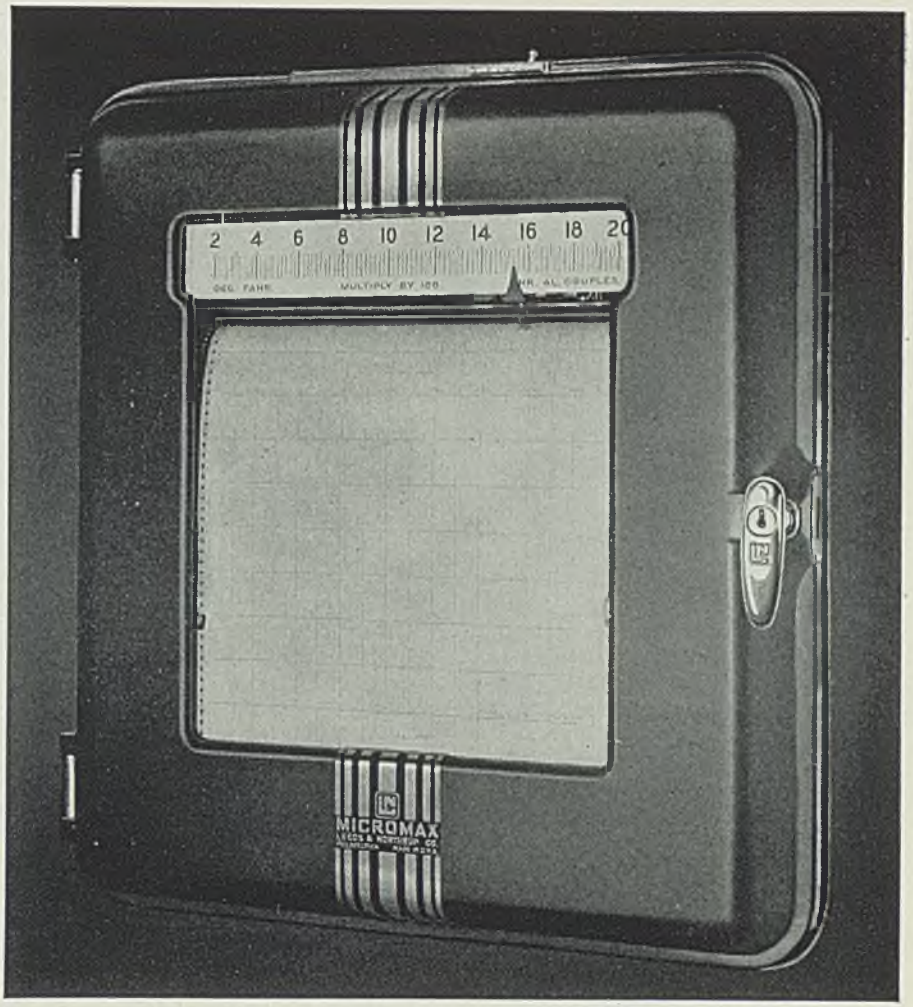
Fig. 1—The flexometer, which determines the distensibility of a finish by bending finished panels around mandrels of known diameter

The severe exposure tests are in general of two types; those designed for indoor finishes, and those designed for outdoor finishes. In the former type the finish samples are usually exposed to a high and low temperature and humidity cycle. For example, they may be exposed in a room or cabinet in which the conditions are changed during a 24-hour period from 50 degrees Fahr. and 20 per cent relative humidity to 125 degrees Fahr. and 95 per cent relative humidity. After several months of continuous exposure to such a cycle, the finish may have aged as much as it would in a year of normal indoor aging. The accelerated outdoor cycle is much more severe in character. In this cycle the finishes are subjected to ultraviolet light, water spray, and to high and low temperatures. A typical cycle is recorded below:

	Hours
Ultraviolet light (continuous)..	144
Water spray for 10 minutes at intervals of	½
Refrigeration at —40 degrees Fahr.	1
Heating at 140 degrees Fahr.	1

One complete cycle, which requires one week, usually ages the finish an amount roughly equivalent to several months of normal outdoor aging. An-





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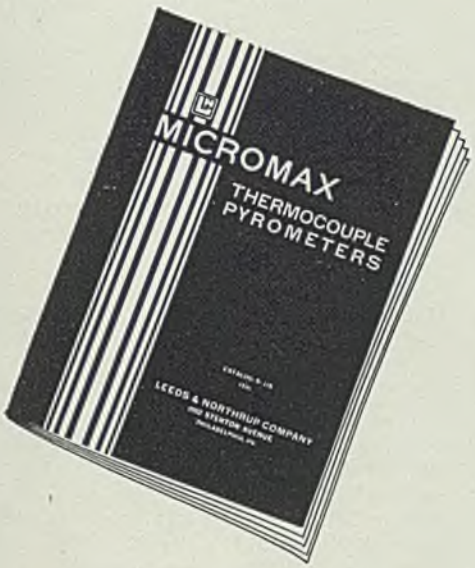

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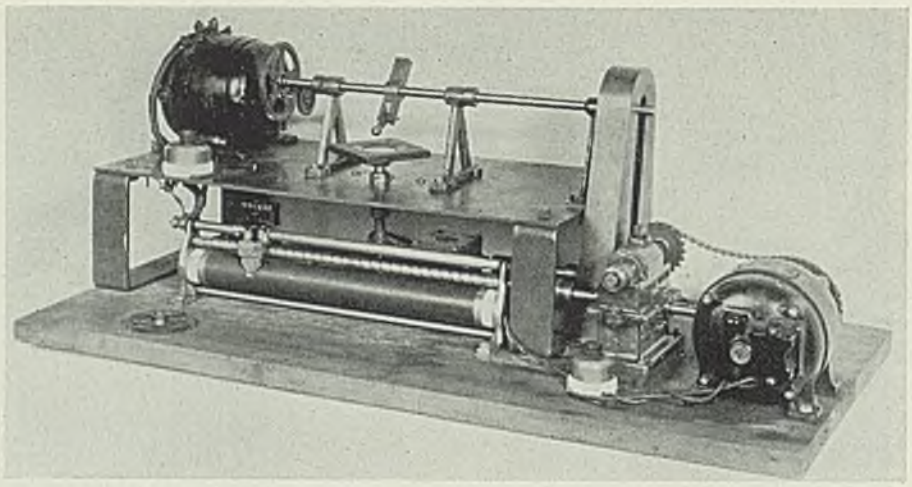


Fig. 2—The impactometer, which determines the impact resistance of a finish by measuring the intensity of the blow required to rupture the finish under definite conditions

other accelerated method of obtaining outdoor weathering data is that of exposure in Florida where the deteriorating factors of sunshine and high humidity are more severe than in a northern exposure.

Several exposure services are now available to anyone who is interested in obtaining Florida exposure data for their finishes. For a small fee, clients of these services can get their panels exposed in Florida, with the option of having the panels inspected by a member of the service, or of having the panels returned periodically for inspection.

Although the basic principles involved in these accelerated methods are sound, considerable difficulty has been experienced in their application to specific problems. For example, an accelerated outdoor cycle such as the above may give excellent correlation with actual exposure results when used to test house paints, but if the same cycle is applied to baked synthetic finishes, of the type used on car fenders, anomalous results may be obtained.

No Universal Cycle Found

As an illustration of this point, some baked finishes which fail by rusting within one month when exposed outdoors, remain intact for over a year in the supposedly accelerated exposure test. It may be said without fear of contradiction that no universal accelerated exposure cycle for all types of finishes has been found to date, although considerable experimentation has been conducted in an attempt to get one. Many technologists agree that the quest for a universal cycle is hopeless and that information obtained from an accelerated cycle must be interpreted in the light of its past performances with similar types of finishes.

The methods of finish evaluation discussed so far may be termed the autopsy methods, since the data collected indicate the causes of finish failure after normal life span. But the consumer is more interested in the health of a finish than in the manner of its death. True, it is a matter of some importance for him to know that the finish fails by checking, cracking, chalking or blistering; but he is more anxious to know how long the finish will endure. With this in mind a number of paint technologists have developed tests which evaluate quantitatively several of the physical properties of finishes, from which data they have been able to determine the quality of a material in its early life and predict its longevity.

The logic of the method is similar to that used by insurance companies, which examine the physical condition of clients in order to ascertain the probable life span of the client under examination.

One of the earliest forms of physical testing equipment was the free-film tensile-strength machine. The test is made by coating an amalgam surfaced brass panel with a uniform film of the finish to be tested. After the film has dried it can be easily peeled in a continuous sheet from the amalgam surface. A dumb-bell shaped specimen of this film is then cut from the sheet and clamped between the jaws of the testing machine, which are then drawn apart at a uniform loading rate. The amount the film stretches, per unit increase in load, and the final rupturing load are recorded. From these data a stress-strain curve can be plotted. This test is repeated at several intervals during the early age of the film. From the general shape of the curve, and from the change in its shape as the aging progresses, the paint technologist is able to predict the life of the film. The best film is the one which has high initial tensile strength and elongation, and which retains these properties with aging.

Unfortunately this test gives no indication of the adhesion of the film to the base metal to which it is normally applied. Moreover since the tests are made on the free film no indication of the magnitude of the shrinkage forces which are set up in the film during drying and aging are obtained. These shrinkage forces reduce the adhesion of an anchored film and often become so large as to overcome adhesion entirely, causing the film to snap free of the base metal. It is these shrinkage forces which frequently cause early failure of some finishes which otherwise have excellent life characteristics.

To date no entirely satisfactory test has been developed to measure directly this important factor of adhesion. However, several tests are available which indirectly take the adhesional and shrinkage factors into consideration. In these tests mechanical forces of bending, of impact or of abrasion, are applied to the film while it is anchored to the base metal. By determining the behavior of a series of finishes to these mechanical forces at intervals of one month for the first three months of their life, it is possible to predict with certainty the relative order of durability for the series. Before fully discussing the methods of evaluation it is desirable to describe briefly several of the more important tests.

Flexometer Test

The first test to be considered, which is used to determine the distensibility of finishes, is known as the flexometer or mandrel test. Bell Telephone Laboratories Inc., New York, has designed a flexometer, shown in Fig. 1. This device consists of a series of six mandrels (cylinders) ranging in size from ⅛-inch to 1 inch in diameter; clamping jigs, used to fasten the panels; and draw bars which bend the panels around the mandrels. The test is made by clamping panels behind each of the mandrels and then simultaneously drawing them around at a uniform rate, using the master bar which is driven through worm gears by the crank. In this process the paint film is stretched; the amount of stretch received increases as the sharpness of the bend is increased.

With this device, mandrel elongations are obtainable from approximately 20 per cent for the ⅛-inch mandrel to approximately 3 per cent for the 1 inch mandrel. With the aid of a low-power microscope, the mandrel size over which the paint first cracks open is ascertained. It is possible to determine the limiting distensibility of the finish at any time during its life by the use of this device. A good qualitative measure of adhesion is also obtained in this test by noting the ease with which the film can be scuffed from the bent specimens by the fingernail.

Several devices have been developed which subject finish systems to

impact stresses. Perhaps the simplest type is one in which a machinist's hammer is dropped from increasing heights onto the rigidly supported finish system. The impact resistance is recorded in terms of the distance through which the hammer must fall to cause shattering of the finish. Another type known as the "woodpecker test," is a device in which a small hammer gives the finish system repeated blows uniformly distributed over a small area. The force of blow is maintained constant by means of spring tension on the hammer lever.

A variation of this test was developed at Bell Telephone Laboratories using a device known as the "impactometer." In this machine a hammer is freely pivoted on the end of an arm which is attached to a shaft; the shaft is rotated at a fixed speed, say 400 revolutions per minute. The panel under test is mounted on a turntable located under the hammer in position such that the hammer strikes the panel and gives it a glancing blow. The turntable is rotated slowly which causes the hammer to strike out a circular area on the panel. This rotation increases the area tested and tends to average out errors due to surface irregularities such as dust spots and pigment lumps.

In this type of test, impact resistance is determined in terms of the number of blows required to cause the finish to break away from the metal base. Although there are service conditions where a finished object is repeatedly hammered, most cases of service impact failure are the result of one blow of sufficient magnitude to cause shattering.

Bell Telephone Laboratories has, therefore, developed another tool in which the intensity of a single blow which is required to break the finish away from the base metal is determined. This device is shown in Fig. 2. In this test the hammer is freely pivoted on a shaft as described above but the force of blow is varied by progressively increasing the speed of rotation. This is accomplished by uniformly varying the resistance in the armature of the driving motor. The panel is mounted on a turntable which is driven by direct gear reduction from the hammer shaft, in such a way that successive blows of the hammer are spaced 0.02-inch apart on the panel. In this way the energy, in terms of hammer speed, necessary to shatter an undamaged area of the panel as the result of a single blow is determined. The impact resistance is recorded in terms of the speed of hammer rotation which delivers a blow of sufficient energy to shatter the finish. This test gives excellent correlation with service failure.

(To be concluded)

Electroplaters See Scientific Control Valuable Asset to Plant Operations

INCREASED interest and appreciation of the value of scientific control and research in the field of electroplating, both practical and purely scientific, were evidenced in the twenty-fourth annual convention of the American Electroplaters' society held at the Hotel Carter, Cleveland, June 1 to 4. Registration, which totaled over 525, included representatives of the electroplating industry from all parts of the United States and Canada.

Subject of the opening address of the president, T. F. Slattery, bureau of printing and engraving, Washington, was "Forward March". The value of the educational programs being carried out by the various branches of the society was brought out as well as the desirability and need for active co-operation between the practical electroplater and the theoretical technician, both of whom stand to receive much mutual benefit.

The closing session was taken up with the election of officers and the selection of the convention city for 1937. The newly elected officers were: President, E. Steen Thompson, Cleveland branch; first vice president, Patrick Sheehan, Milwaukee branch; and second vice president, James Hanlon, Chicago branch. Election of a permanent secretary was placed in the hands of the society's executive board. New York will be host to the 1937 convention.

The educational sessions were all of a high order and featured by the presentation of many papers of both a highly technical and practical nature. The active interest displayed by those present was brought out by the discussions at the close of each paper. Some of these discussions became intense where the interest was especially high, and several trends toward a new order of things were definitely indicated in some of the applications reviewed.

The first day's session was featured by an active and at times heated discussion of the practicability of the use of rectifiers in electroplating plants. It was reported that the use of rectifiers was becoming general in England and that their use was meeting with success in that country. Rectifiers for electroplating purposes are not manufactured in this country on a production basis as yet, but some experimental work is being carried out.

An excellent paper entitled, "The Orientive Effects of the Geometric and Crystalline Structure of the Basis Cathode on the Crystal Structure of Electrodeposits," was presented by Walter R. Meyer, electrochemist, General Electric Co., Schenectady, N. Y. In this paper, profusely illustrated with slides, the effects of pin scratches, bubbles and blowholes in the basis metal on the crystalline structure of the plated metal were ably presented. Cases were shown where the effects were carried without interruption through hundreds of successive coatings. These effects were not confined to defects in the basis metal, however, other cases being shown in which the character of the crystalline structure of the basis metal had a profound effect upon the crystalline structure of the plated metal even when the basis metal and the plated metal were different.

Plating of Tungsten Discussed

The problem of electroplating tungsten in appreciable quantities, which is creating considerable interest at this time, was presented by M. L. Holt, instructor of chemistry, University of Wisconsin, Madison, Wis. The progress reported was encouraging and the discussion of the paper after its presentation indicated that electrodeposited tungsten will have commercial interest when it is fully developed.

The corrosion of electroplated and other parts of automobiles by the calcium chloride used to lay dust and melt ice on roads was the subject of a paper which attracted considerable interest. Dr. E. M. Baker of the University of Michigan, Ann Arbor, Mich., presented his experiments with potassium dichromate as an inhibitor of such corrosion. It was shown that if approximately ¼-pound of potassium dichromate is added to 100 pounds of calcium chloride, together with a small amount of aluminum chloride, the corrosive effects of the salt are almost entirely eliminated. The increased cost of the road salt was estimated at 2 per cent.

A manufacturers' exhibit was held in conjunction with the convention at which the latest developments in platers' equipment and supplies were shown. In the various booths were small scale electroplating plants demonstrating such processes as bright zinc plating, electrocleaning and other processes. Some full-size equipment was on display such as barrel platers, motor-generators and special tank equipment. Manufacturers of anodes, chemicals, abrasives, polishing compounds and other plating supplies had their products on display.

Methods and Materials

Modern Heat Treating Plant for Aircraft Steel is All-Electric

WHAT is declared to be one of the most modern heat treating plants on the Pacific coast has been developed at the plant of the Boeing Aircraft Co., Seattle, producer of commercial and military planes, with completion of a modernization program involving expenditure of approximately $20,000.

Faced with the need for more modern and adequate heat treating facilities, officials of the aircraft company tackled the problem with representatives of the Hevi Duty Electric Co., Milwaukee. The result is a scientifically equipped and arranged plant in which large and small steel parts for all-metal planes are given precision handling in minimum time.

Equipment includes two new Hevi Duty hardening and air draw furnaces, two Hoskins furnaces for both hardening and drawing, a Hevi Duty gas atmosphere controller, three Eclipse pot furnaces, a large oil bath, a small oil bath, a water quench tank, a gas muffle furnace, a large cleaning tank, a power distribution panel, and a control panel.

With these facilities, the Boeing company is able to heat treat parts up to 4 feet wide, 10 feet long or 2 feet in thickness. Temperatures are controlled precisely with automatic checks against overheating or underheating. The gas atmosphere controller so regulates the atmospheric content of the Hevi Duty hardening furnace that there is neither scaling nor decarbonization of parts, with the result that virtually all former pickling and sandblasting operations have been eliminated.

The entire heat treating plant, operating as a unit of the Boeing company's machine shop, is housed in a room 38 x 40 feet. Equipment is ranged around the sides, leaving ample floor space. An exhaust fan on the roof removes smoke and fumes.

The Hevi Duty hardening and air draw furnaces have interior dimensions of 4 feet wide, 8 feet long and 2 feet high. One of the Hoskins is 20 inches wide, 10 feet long and 1 foot high on the interior; the other is 20 inches wide, 6 feet long and 1 foot high.

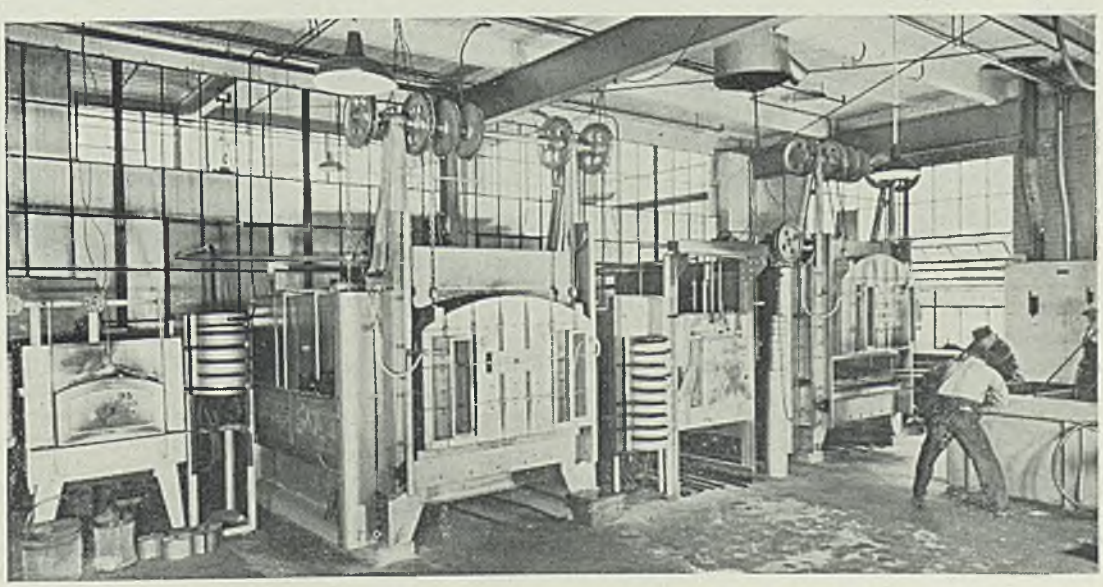
The gas atmosphere controller which operates in conjunction with the hardening furnace, has a capacity of 1400 cubic feet per hour.

Of the three pot furnaces, one is for hardening and a second for drawing. Each has a 10 x 16-inch pot. The third, used for cyanide hardening, has a 14 x 16-inch pot.

The large oil quench tank has inside dimensions of 5 feet wide, 11 feet long and 32 inches deep; the small oil bath, 3 x 3 feet x 32 inches, and the water quench tank, 2 x 4 feet x 21 inches.

The gas muffle furnace, used for heat treating tools, has inside dimensions of 8 inches wide, 1 foot long and 4 inches high.

The control panel includes an indicating pyrometer with a 20-point switch by means of which temperatures of any one of the furnaces or pots can be read on the one instrument; a potentiometer-type recording pyrometer which automatically maintains a continuous temperature record of the hardening, air draw and 10-foot Hoskins furnaces; five potentiometer-control pyrometers which maintain automatic temperature control of the hardening, air draw and 10-foot Hoskins furnaces; two input control instruments which regulate the rate of heat input to the hardening and air draw furnaces; two temperature cutouts which protect the hardening and air draw furnaces against overheating in the event the control pyrometers fail to



ONE section of the new heat treating department, showing four of the furnaces, with oil quench tank at extreme right

function; two time switches and one clock switch for turning the hardening, air draw and 10-foot Hoskins furnaces on and off at predetermined times; a recording pyrometer, used in connection with the pot furnaces, 6-foot Hoskins furnace and gas muffler furnace; a clock and two power meters showing the kilowatt-hours of power consumption in all electric furnaces.

With the tensile strength of structural steel parts frequently being doubled by the heat treating method, this plant occupies an important place in the factory setup of the Boeing company, particularly with the trend toward increasingly larger planes and the consequent use of more and larger steel parts.

Materials heat treated include chrome-molybdenum S.A.E. 4130, chrome-nickel molybdenum S.A.E. 4345, nickel steel S.A.E. 2330, and carburizing steel S.A.E. 2515. The company also uses its heat treating equipment for the annealing of both 17 and 24ST aluminum alloy sheet.

Parts heat treated include spar chords, also cylinders, gussets, landing gear parts, struts, trunnions, bolts, fittings of all kinds, and tools.

The Boeing firm now is in production on 13 giant four-engined Model 299 bombers for the army air corps, with deliveries scheduled to start this fall. Identical in all major respects with the initial Boeing 299 which flew nonstop from Seattle to Dayton, O., at an average speed of more than 232 miles an hour last year, the "flying fortresses" rank as America's largest landplanes and as the fastest, longest range bombers ever built.

$ $ $

Electric Heaters Used for De-Icing Roller Gates

Being necessary to operate frequently the roller gates in the dam located in the Mississippi river at Rock Island, Ill., to maintain a constant water level in the pool above the dam, a method is required in winter to free the gates of ice at all points of contact between the moveable roller gates and the piers of the dam. Electric heaters, manufactured by the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., have functioned satisfactorily on this dam and proved their reliability during the past two winters.

The roller gates are essentially structural steel cylinders with both ends closed by steel plate end-disks. Since the space between the end-disks and the pier masonry is subject to ice accumulation interfering with gate operation, electric heaters are attached to the inner surface of the end-disks to heat the area where ice may adhere.

Each heater element is rated 3 or 4 kilowatts, as required, at 440 volts, and consists of a helical coil of resistor wire centrally embedded in a refractory insulating material (magnesium oxide) within a corrosion-resisting metal tube. The elements are generally similar to those commercially employed in ranges and immersion heaters, but are of larger dimensions and require special features to insure hermetical sealing, since they must function in either water or ice.

$ $ $

Centrifugally Cast Pipe Is Poured in Two Layers

Elimination of a chilled surface on centrifugally cast pipe made in metal molds can be accomplished by using two layers of metal, according to a recent patent. The first layer is composed of iron containing 3.0 to 4.5 per cent carbon and 6.0 to 2.5 per cent silicon. The second layer of iron, which is poured immediately after the first, contains 2.5 to 3.5 per cent carbon; 1.0 to 1.25 per cent silicon; 0.5 to 2.0 per cent manganese, and 0.3 to 1.5 per cent phosphorus. Both layers fuse together, eliminating chill and line of demarcation, and providing a strong pipe.

$ $ $

Chrome-Molybdenum Steel Used for Landing Gear

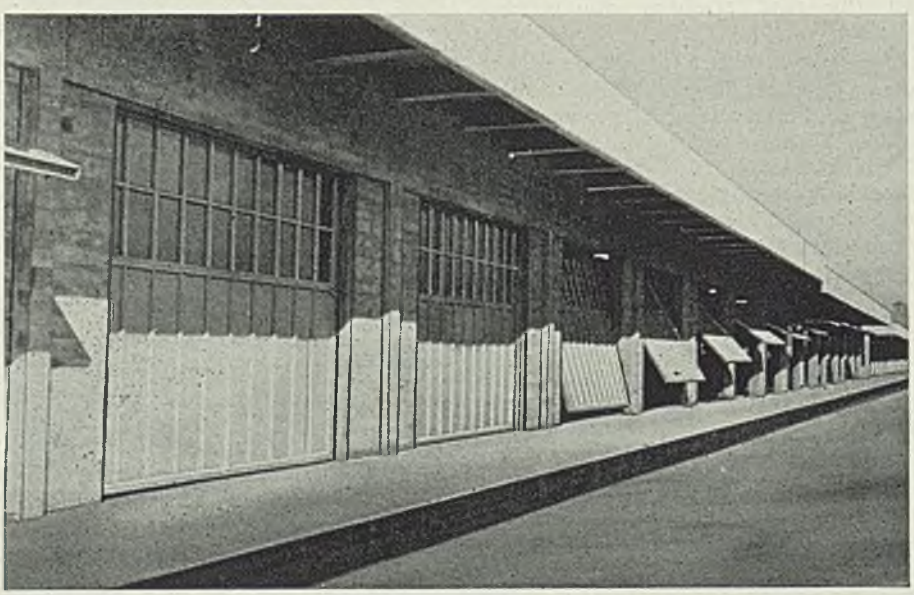
Airplane landing gear must be specially capable of withstanding the severe shock and impact during contact as well as the stresses set up as the plane bumps along the ground before rising or coming to a stop. For this reason, one of the large air lines whose planes fly an average of approximately 50,000 miles a day uses landing gear constructed largely of chromium-molybdenum steel. On the large transports, landing gear of this material is able to withstand 32½ tons, more than five times the weight of the plane fully loaded.

$ $ $

18-8 Stainless Steel Has Low Temperature Ductility

Engineers seeking a corrosion-resistant metal for low-temperature service will be interested in the fact that 18-8 chrome-nickel stainless steel retains its ductility and toughness at liquid air temperatures. Laboratory investigations indicate that the already excellent cold-resistant properties of austenitic stainless steels are further improved by lowering their carbon content. Stainless

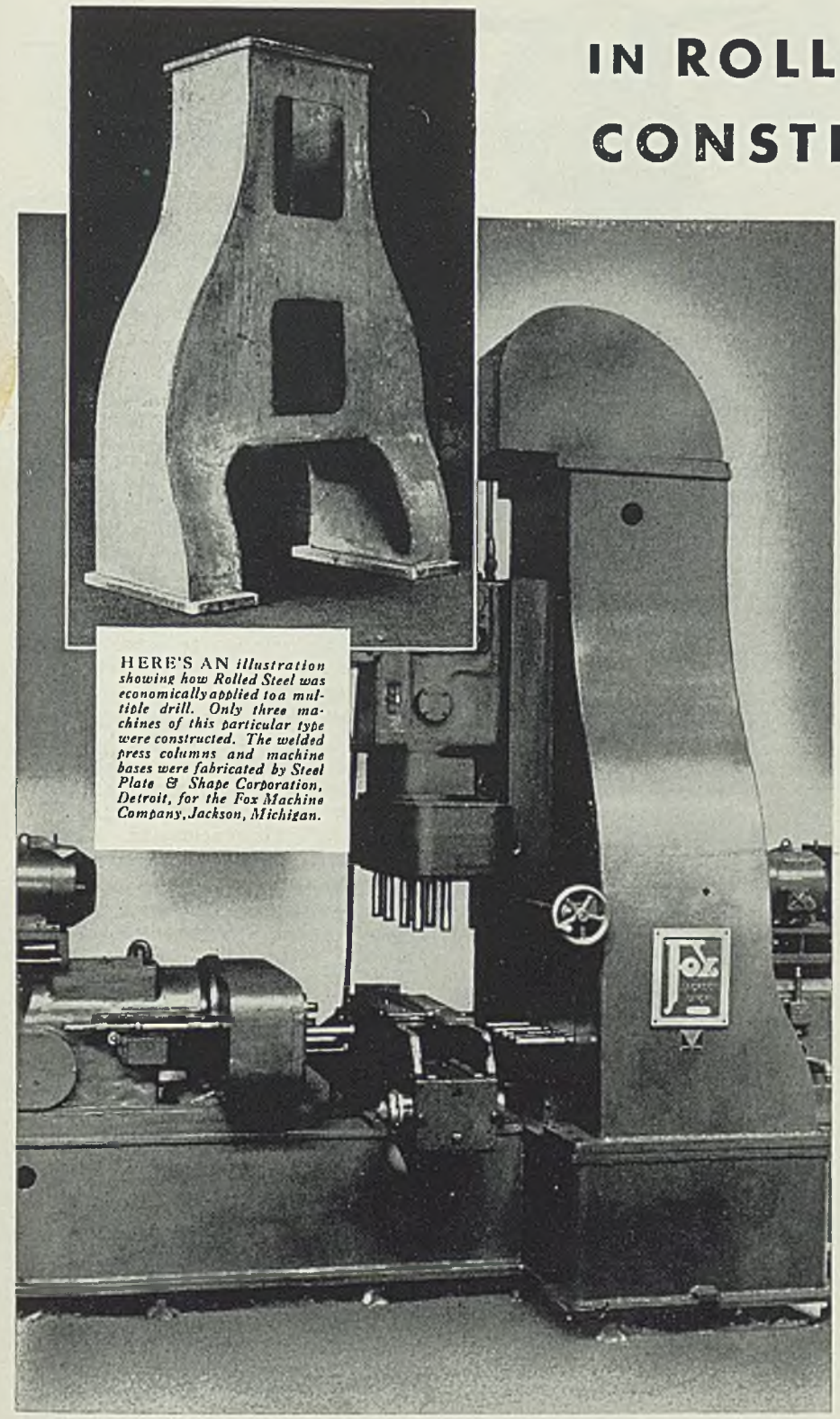
Market Stores Require Many Doors



FOUR HUNDRED AND FORTY-EIGHT doors, a string of nearly a mile, were required for a series of wholesale market stores erected recently by the City of New York in the Bronx. To facilitate prompt handling of produce, the stores, 40 x 60 feet, were provided with one-piece canopy doors which formed an almost continuous line for both front and back walls. These doors, manufactured by the Cornell Iron Works Inc., Long Island City, N. Y., open upward, take no floor or wall space and operate with ease and speed. Although the doors are made of cypress, the wood is set into steel channel frames for the 14-foot wide openings. Cast iron weights serve as counterbalances. Operating handles latch the doors open

There's new *freedom* for Designers

IN ROLLED STEEL CONSTRUCTION



HERE'S AN *illustration showing how Rolled Steel was economically applied to a multiple drill. Only three machines of this particular type were constructed. The welded press columns and machine bases were fabricated by Steel Plate & Shape Corporation, Detroit, for the Fox Machine Company, Jackson, Michigan.*

ASK any machine designer why Rolled Steel won his ready acceptance — why almost instantly it became popular throughout the machine tool field. He'll tell you quite a story.

He'll tell you, for example, that although its use was first confined to simple construction, Rolled Steel is rapidly becoming standard for precision machine tools as well. Why? Because the adaptability of Rolled Steel frees designers from old restrictions. Rolled Steel saves time and money by eliminating patterns, particularly when only a few machines are to be built. It gives designers known factors of strength to deal with. Stiffening and wearing members can be placed where needed. Excess weight and bulk can be discarded. Production costs cut. Time required for machining reduced. Cutting tool costs lowered. Quicker deliveries made possible. All of these advantages of Rolled Steel have created a new horizon for the machinery field.

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 investigate? Write for the new book "Rolled Steel for Machine Construction."

CARNEGIE-ILLINOIS STEEL CORPORATION, *Pittsburgh and Chicago*
TENNESSEE COAL, IRON & RAILROAD COMPANY, *Birmingham*
COLUMBIA STEEL COMPANY, *San Francisco*
United States Steel Products Company, New York, *Export Distributors*

UNITED STATES STEEL

steel would therefore seem to be an ideal material for many low-temperature applications in the chemical and refrigeration industries.

Products of Industry Form Basis of Modern Art Exhibit

Under the title, "Art of the Machine Age: The Challenge of Mass Production," an exhibition of industrial products selected and arranged by Walter Baermann, architect and designer recently opened in the Worcester art museum, Worcester, Mass. Three galleries have been remodeled to house the exhibit.

Mr. Baermann has designed an installation of interlocking planes and curves which make tables, shelves, and cases, as well as the objects exhibited, integral parts of a unified whole. The predominating color is white, but black, gray, Venetian red, lemon yellow and ultramarine blue are used for emphasis. A huge aerial view of Worcester and a montage illustrating Worcester products are among photomurals which help achieve an unusual effect. Objects exhibited were chosen by Mr. Baermann on their individual qualifications as examples of machine art and no attempt has been made to represent all manufacturers in the district.

Numerous steel and related companies are among the contributors, some of which are: Worcester Pressed Steel Co., Graton & Knight Co., George F. Wright Steel & Wire Co., John Bath & Co., Norton Co., Morgan Construction Co., American Steel & Wire Co., Heald Machine Co., Washburn Co., Reed Small Tool Works, Stevens-Walden Inc., Worcester Gear Works, Worcester Pressed Aluminum Co., Baldwin-Duckworth Chain Corp., Wickwire Spencer Steel Co., Wyman & Gordon Co., Mathews Mfg. Co., Coppus Engineering Corp., Eastern Bridge & Structural Co., and Riley Stoker Corp., all of Worcester, and Simonds Saw & Steel Co., Fitchburg.

Soldering of All Metals Possible With New Products

Alumaweld Co. of America, 2442 South Park Way, Chicago, announces two new products, a solder and a flux. Using the flux, it is possible to make high strength permanent repairs on joints of any metals. The soldering is done at a low temperature with ordinary tools, but a high temperature is required to melt it a second time. The flux is said to work well with any type of solder, but a greater tensile strength is obtained through the use of Alumaweld solder which, according to the company, has a tensile strength of 12,000 pounds per square inch. The finished joint can be worked or machined, and takes a polish over which any type of plating can be applied.

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.

Pattern of Life

SAMUEL AUSTIN, founder of the Austin Co., who died recently, directed his company to go in for welded building construction about eight years ago. Mr. Austin was then nearly 70, which seems to indicate that advanced age is no bar to acceptance of new ideas.

There have been arguments which were violent on the subject of building high buildings and large bridges with welded joints. But there is no question that the factory-type buildings designed for welding, for which Austin is well known, are economical and thoroughly practical. When Samuel Austin said to his associates some years ago, "We must learn how to build welded buildings," there were a number of excellent reasons why the practice was of doubtful value. The best reason was that only bare wire welding electrodes were available and the welds had no appreciable degree of ductility. The next best reason was that most of the connections with which anyone had any experience were designed for riveting rather than welding.

The life of Samuel Austin was one continual succession of adopting new ideas that were good and working them out to a successful conclusion. This pattern of life required courage and hard work. The pattern is easy to understand, difficult to carry out.

Boosting Our Own Game

IN OUR conversations with some of the leading consulting engineers of this time, the thought is frequently expressed that few people know what a consulting engineer does for a living.

The term consulting engineer has no meaning unless the field in which the individual operates is also specified. No man is competent to act as a professional adviser in any field except the one in which he has spent his professional life. It may be reasonably expected that a consulting engineer in a sharply defined field knows about all of the important work every other man in the world has done in that particular field.

With that equipment of knowledge and experience, he may be presumed to have one more qualification if he is competent to act as a professional adviser. The final qualification has to do with his mental perspective. Facts are of little use to anyone unless their relation to other facts is recognized, and their implications duly considered.

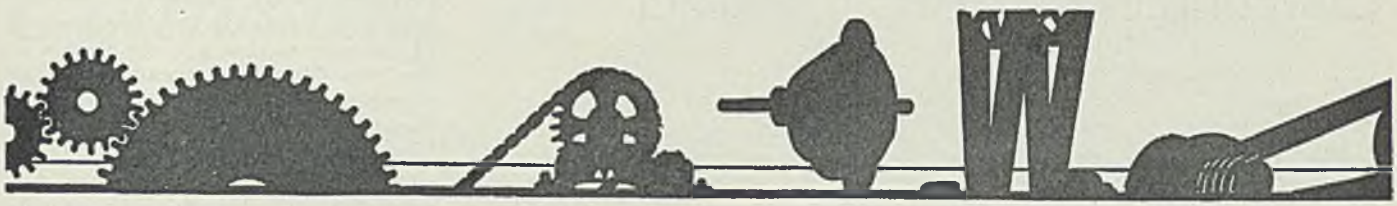
Finally, with all the facts, a knowledge of their relations to other facts, and all of the implications taken into consideration, the competent consulting engineer will draw and define clearly his conclusions. His professional fate depends on being right the first time.

Consulting engineers work for executives who are responsible for the employment of large numbers of people and vast aggregations of capital, which in most cases represents the savings of the thrifty. Such executives do not have the time to become expert in specialized fields of knowledge. They buy the best knowledge and experience they can obtain for their own protection.

* * *

TAYLOR-WINFIELD, progressive manufacturer of resistance, flash and spot welders takes over a welded steel machinery plant in Detroit to be assured of a source of supply of welded steel parts for its product. Few machinery builders who do not deal with the automotive industry realized the terrific speed at which machinery must be built to meet changing conditions in the automobile business. Welded steel construction lends itself to such emergencies. Often the job is built from a pencil sketch and no formal drawing is ever made. We have seen hundreds of tons of simple welded assemblies put in production by a telephone conversation before any sketch was made. That is speed.

Power Drives



Positive Lineshaft Speeds

OUTPUT of screw machines and other automatic equipment is determined by the speed. On group driven machines the lineshaft speed is generally taken at some arbitrary figure. Many times this assumed speed is in error because of miscalculations, use of the no-load rated speed of the motor instead of full-load speed, sometimes a change in pulley diameters to whatever is on hand from that originally intended, or losses in transmission. Any of these reasons will produce decreased output.

To establish a positive lineshaft speed many plants are using chain drives between the motor and the lineshaft to obtain a fixed definite reduction ratio at all times. There is, of course, some variation in speed due to fluctuating load but light loads tend to increase this speed instead of decreasing it as do other losses.

Use of chains on overhead drives eliminates practically all periodic maintenance except servicing and lubrication of the motor and chain. Encasing the chain is recommended in all cases and reduces still further the necessary attention.

One of the principle advantages, however, is in the positive speed base on which production computations and estimates are made. An error of only one per cent in the base speed means a similar miscalculation in the output of the automatic equipment.

♦ ♦ ♦

Preparing for Stoppages

HOW much will an emergency stoppage cost? Ordinarily loss of operator's time and machine time is considered as the only expense involved where a drive fails in service and must be replaced. However, production losses and interference with schedules or with the operation of other equipment may be much more serious items. In some processes a stoppage even of short duration may damage a considerable amount of work and in some cases entirely destroy its value.

On the probable total cost of stoppage depends the extent and cost of duplicate drive equipment. In extreme cases, entire duplicate drives, including electrical control and distribution lines connecting to an independent outside power source, where stand-by service is available, may be an economy should an emergency occur.

Such extreme requirements are exceptional, however. Usually duplicate equipment or "spares" in stock with all possible arrangements for easy and quick substitution are sufficient. Often it is only necessary to carry a spare belt, gear, chain or sprocket, and replacement parts for control equipment. With the improvements of control equipment and the wide variety of types of control available, singly or in combination to meet all requirements, a properly designed installation may be protected against overload hazards. Wear and atmospheric conditions may require an enclosed type of motor with sealed antifriction bearings to be on the safe side. Simply increasing the size of the motor rather invites failure by inserting superstrength at one point and throwing the overloads on weaker elements of the drive which are less easily protected.

Any drive which fails frequently deserves careful study of the complete electrical and mechanical elements to determine the cause. Merely replacing the damaged element often leaves the installation no more reliable than before. Strengthening the failed part may throw the strain on a more expensive element. Drives operate as a unit and should be designed, installed and maintained to provide the proper balance and protection between the parts, together with necessary facilities for emergencies particularly on the important drives.

♦ ♦ ♦

Double-Pulley Motors

USE of two pulleys on one end of an extended shaft on a motor is seldom recommended except where an outboard bearing is added to prevent creating an excessive bending load on the shaft and abnormal pressure on the adjacent bearing. However, installations of this type are often made. In such cases the drive from the narrow pulley is usually very light.

Placing the wider pulley with the heavier load next to the motor, where it has the shorter leverage, and the lightly loaded narrow pulley on the outside reduces the bending load and also the resultant pressure on the adjacent motor bearing, in some cases as much as 50 per cent. This gain is partially compensated for by an increase in the pressure from the lighter load on the longer leverage. However, a net gain of from 10 to 25 per cent may be expected if the narrow pulley has a light load. If the loads are proportional to the widths of the pulleys, the decrease in bearing load will be less.

To have the belts extending in opposite directions is an advantage as the pulls tend to counteract each other. However, this is not always possible as usually both drives are connected to the same machine.

♦ ♦ ♦

Dirt and Noise

A SPECIAL polishing machine for polishing parabolic bowl reflectors had been designed to use gear trains to drive the polishing spindle heads. The wet abrasive rapidly wore the gear teeth until they became noisy and soon had to be replaced.

By a slight change in the design the gears were replaced with silent chain drives but sufficient clearance was not available to permit enclosing them. The chain drives, therefore, are exposed to the same amount of moisture and abrasive but give much longer life and even after considerable wear are not as noisy as the gears.

If the speed had been lower roller chains probably would have been more satisfactory on this drive because the openings in the links would have presented less surface and permitted the abrasive to fall through.

♦ ♦ ♦

Sticky belt dressings, such as resin, tar or pitch, sometimes stick too well to the pulley. Also, such dressings soon get covered with dust and become too stiff and hard to provide a good driving surface.

Galvanizing Kettle Heated Through Gas-Fired Vertical Alloy Tubes in Walls

BY W. H. SPOWERS JR.
Consulting Galvanizing Engineer, New York

IN SEPTEMBER, 1931, the writer reported to the Wire association data on the first hot galvanizing kettle heated by glowing metal This report revealed a setting fired on the deep-fired principle and started on Jan. 8, 1931. This kettle was first drossed on April 18, delivering 1020 pounds of dross. It was drossed the second time on May 23, delivering 860 pounds of dross. Some 175,822 pounds of spelter had been consumed in five months with 1880 pounds of dross. This is a loss of slightly over 1 per cent in five months.

This condition continued with but slight gain in dross percentage for four years when the writer advised the installation of a new pot. The kettle, when examined after removal, showed excellent condition and uniform breakdown and held forth the possibility of at least one year more of life. It should be understood that this installation was on continuous production, night and day the entire period given.

Relationship Indicated

A companion installation operated on the same basis but of the shallow underfired type, operated in the same five months with a yield of 21 per cent dross and a kettle life of six months. This appears to indicate a distinct relationship between capacity and type of heat application with kettle life and dross consumption.

The first mentioned installation was electrically heated by glowing ribbons of such design as to offer close control of heat input not only from end to end of the kettle, but also from top to bottom. However, this method of heating was uneconomical in many localities because of high fuel cost, and the writer has searched continuously and experimented in adapting gas and oil to this principle.

Several months ago the writer approached the Lee Wilson Engineering Co., Cleveland, for the purpose of obtaining permission to use this company's patents on vertical tube heating—now used in sheet annnealing operations—for the purpose of heating galvanizing kettles and the result of this conference was the installation of the first galvanizing kettle heated by vertical alloy tubes heated from the inside by gas and applying to the side walls of the galvanizing kettle heat given off by the glowing tubes.

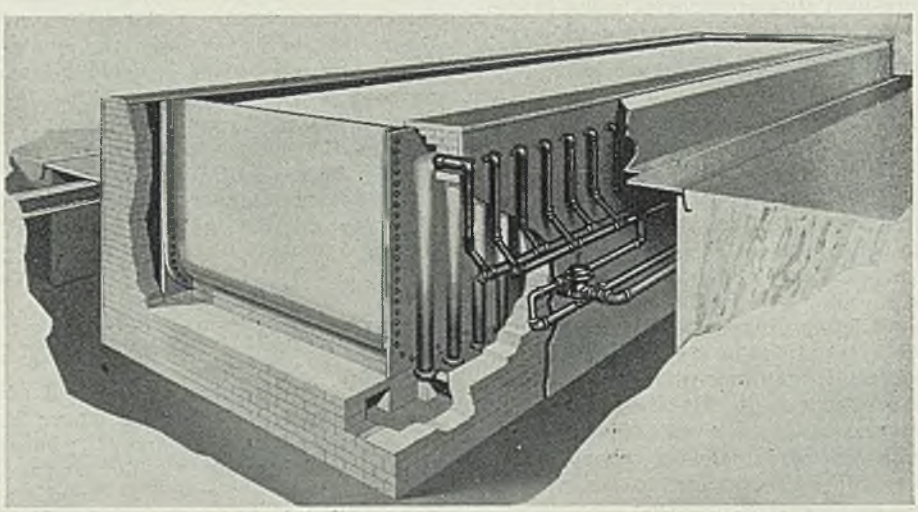
The feature of this installation is the system of heating which uses a series of vertical tubes located inside the furnace walls. Gas burners fire into the upper ends of the tubes and the hot products of combustion exit from the lower. The vertical portions of the tubes are heated and the heat is radiated into the interior of the furnace. One reason for the success of this type of firing is that the vertical heating element allows the fuel to be burned in the upper section of the tube so that a large portion of the heat liberated is radiated to the upper portion of the kettle where it is most needed.

These vertical hot tubes are located within the brickwork of the furnace along the sidewalls of the kettle at any intervals necessary according to the tonnage and capacity of the kettle. The hot tubes are of chrome-nickel alloy and are all alike, each being approximately 4 inches in diameter and equal in height to the depth of the kettle with a solid cast elbow at the top welded into the sleeve. The gas burners are of the blast type and fire into the upper ends of the tubes.

Effects of Corebusters

A new principle to improve efficiency in tube-type heating is the application of refractory corebusters, developed by the Lee Wilson company. These are star-shaped baffles, several of which are inserted within each tube to form a chain, from the lower portion of the tube to a point about half way to the elbow. The dual effect of these corebusters is to cause the hot products of combustion to scour the tube, thereby giving up the maximum amount of heat and at the same time they become incandescent so that considerable additional heat is forced through the tube by radiation. A third effect of the corebusters is to baffle the tubes so that the combustion is completed in the upper portion of the tube, thereby concentrating the greatest amount of heat at the upper part of the kettle where it is needed.

Nine major advantages of this type of heat application for galvanizing kettles affect materiallly the economy of operation and quality of product.



Cutaway view of galvanizing furnace showing relative positions of vertical tubes and kettle

Equivalent to Ten Times Around the World

Without Boiler Repairs

Result of Bethlehem's handling of a boiler and firebox plate job

When the Lehigh Valley Railroad ordered two locomotives with boiler and firebox elements of Bethlehem Nickel-Steel Plate a few years ago, it was somewhat of an experiment. Such impressive economies, however, were obtained with the first two locomotives that twenty-five additional units have since been built and put into service. The nickel-steel boiler and firebox plates occupied an important place among the refinements in design that resulted in an annual return of approximately 38 per cent on the investment. All of these plates were rolled by Bethlehem.

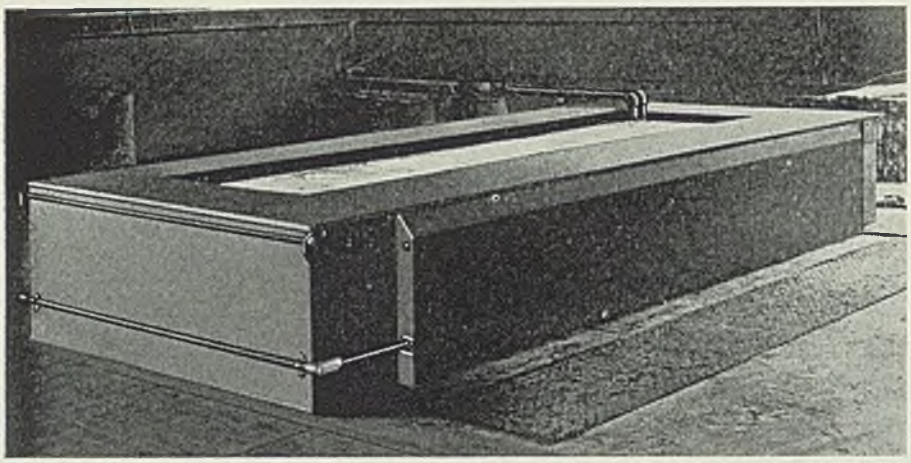
One of these twenty-seven locomotives has covered more than 257,000 miles—more than ten times the circumference of the world—without need for even minor repairs to either boiler or firebox. Records to date on all twenty-seven engines show promise of equally impressive results.

Performances like this are indicative of the results obtainable with Bethlehem Nickel-Steel Plates—even when the plate is subjected to severe stress due to the constant pounding and vibration of locomotive boiler service. They are effecting equally decided economies and operating improvements in many other fields of industry where their successful application has earned widespread approval.

Nickel-Steel Plates—like those supplied the Lehigh Valley Railroad—are but one of the many types of quality plates for special purposes produced by Bethlehem. They supplement the wide range of carbon steel plates which Bethlehem has been supplying to all branches of industry for many years. After careful study of specific problems, Bethlehem metallurgists gladly cooperate with users in recommending the most suitable grade of special or carbon steel plate to meet the requirements of the intended service.

BETHLEHEM STEEL COMPANY

BETHLEHEM STEEL



Installation of galvanizing kettle using vertical tube type of heating

These may be reviewed as follows:

1. *No possibility of flame impingement on the kettle.* By referring to the illustration herewith it can be seen that the burners and the flame given off are entirely self contained in the tubes. There can be no possibility of flame impingement on the kettle. Neither is there any heat flow against the side walls of the kettle The heating area is a tight chamber utilizing all heat given off by the glowing tubes for the purpose of heating the kettle and losing no heat to the outside. There is an entire absence of any burning gas or gas flow in this chamber and the heat against the kettle walls, therefore, results in the softest possible quality.

2. *Close control of heat input from top to bottom of the kettle.* It is recognized the two greatest sources of heat loss in galvanizing kettles are: (1) Radiation from the top, and (2) from the work immersed in the top half of the kettle. These two points alone require that the greatest heat be applied to the upper portions of the kettle.

The necessity for high heat, however, is more fundamental than either of these factors and has to do with the dross formation. To heat a galvanizing kettle from the bottom, or up through the dross, or too low on the sides, or by the use of too concentrated a heat transfer area, creates a dross flow upward when it should be downward, and produces more and more dross. Heat application too low results also in a dross continuated galvanizing area with resulting bad effects on bonding, smoothness of coat and the like. By the use of the core busters the heat given off by the tubes may be controlled in any manner desired by the designer and enables him to control to a nicety the heat application from top to bottom of the kettle

3. *Close control of heat input from end to end of the kettle.* By reference to the illustrations, it will be noted that good heat control from end to end of the kettle can be had. The importance of this feature to the continuous galvanizer can be recognized at once, and is accomplished by the control of the individual tubes, which are adjustable to suit any given galvanizing situation existent.

4. *Low dross losses.* Earlier in this article the writer referred to actual results as to dross on a similar type of heat application. Ease of heat input, softness of heat application, absence of gas flow on the sidewalls, and, of most importance positive control of any dross flow within the molten zinc make conclusively for low dross losses in this type of furnace.

5. *Long kettle life.* The dissolving away of the side plates of the kettle makes a large contribution to dross losses. By the same reasoning, low dross losses make for long life of the kettle.

6. *Low fuel cost.* In this design there is no opening in the heat chamber. All heat delivered for use by the tube is held ready for service in heating the kettle, with the exception of a small amount disappearing with exhaust gases.

7. *Availability for either gas or oil.* The design is sufficiently flexible that either gas can be burned direct or oil by conversion to gas by the simple use of a gasofier may be just as well adapted. In some localities this means considerable economy in fuel.

8. *Kettle can be replaced without disturbing the setting brickwork.* This installation is so designed that when eventually a replacement of kettle is considered advisable, this replacement may be accomplished simply by lifting out the old and dropping in the new kettle. The advantage of this procedure over the old rebuilding process is apparent both in economy and saving of operating time.

9. *Compact setting.* Due to the grade of insulating brick usable in this type of furnace and the fundamental design of the furnace, the distance between the sidewalls of the kettle and outside brickwork is lessened some 10 inches over impact-fired designs, without incurring additional heat losses.

Low-Priced Communication Equipment Now Available

Incorporating certain principles of radio, a new interoffice sound system is being introduced by Bell Sound Systems Inc., 61-63 Goodale street, Columbus, O. The units are housed in boxes about the size of the smaller midget radios. To operate, the speaker flips a key and talks in a normal voice. Voices at a distance of 25 feet or more from the unit are transmitted clearly. A volume control and two different types of loudspeakers permit the voice received to be of any degree of loudness.

No switchboard or central control mechanism is required, each unit being complete in itself. A selector key on each unit enables the operator to talk to any other station in the system, and with a multiple hook-up there can be a number of simultaneous conversations.

Weights of Washers Are Shown by New Slide Rule

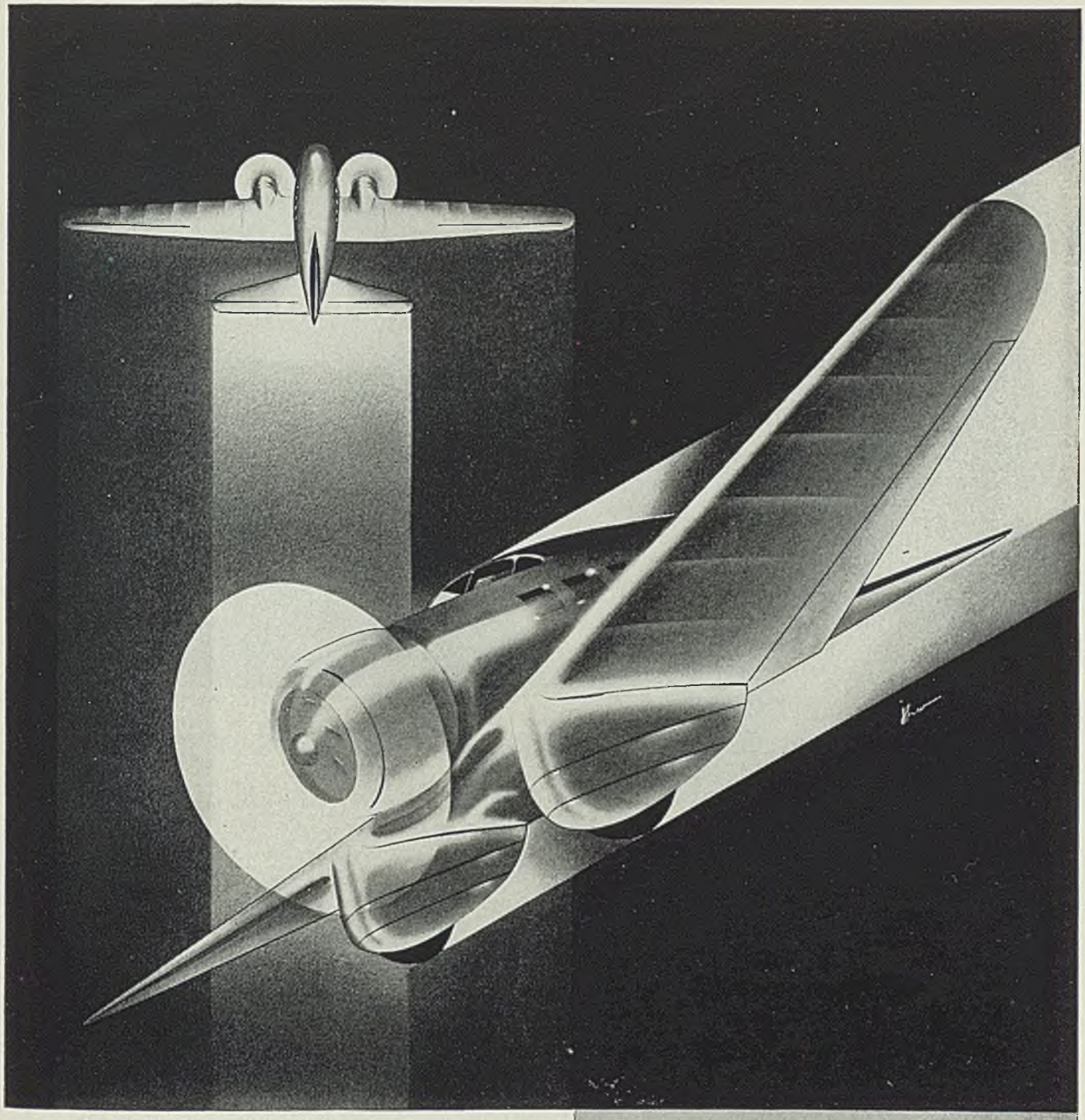
Ingenious and time-saving, a new slide rule has been developed by Wrought Washer Mfg. Co., Milwaukee. The rule automatically calculates weight per thousand pieces or pieces per pound of any size washer made from any material, including steel, brass, fiber, paper, copper, aluminum, and the like. The company is offering the rule without charge to firms requesting it on company letterheads.

Formulas for Industry And Chemical Names

Chemical Formulary, Vol. III, edited by H. Mennett, 566 pages, published by D. Van Nostrand Co. Inc., New York, and supplied by STEEL, Cleveland, for $6, plus 15 cents postage; in Europe by the Penton Publishing Co. Ltd., London.

This book presents a collection of valuable, timely and practical formulas for making thousands of products in all fields of industry. Volume III is not a duplication or revision of the previous two volumes, but contains new and additional formulas. As far as possible, the editors have included information especially requested by users of the previous two volumes.

A special section is devoted to common names of chemical products, trade name chemicals, and an extensive index.



Motors that master the air are made more dependable with NICKEL

FREE Send for our handy celluloid vest pocket size "Hardness Conversion Table." Quickly gives approximate relation between Brinell, Rockwell and Shore hardness values and corresponding strengths of Nickel Alloy Steels. Address Dept. L-t

The fact that Nickel Alloys are almost universally used by the aviation engine industry, may be considered a guide to their value in all machinery subjected to hard service.

THE INTERNATIONAL NICKEL COMPANY, INC., 67 WALL ST., NEW YORK, N. Y.

WHERE THERE'S SMOKE

There's fire under boilers that have been cold for months and even years. Wheels are turning again. Budgets are being "upped" with an eye to expansion—a carefully planned expansion that demands a full dollar for every dollar spent.

What about your sheet steel requirements for plant modernization, for new construction and for your fabricated products? Just as you are carefully tailoring your budget for sales, production and overhead to fit an intelligent expansion program, so Granite City Steel Company "tailor-makes" your steel to specifications which exactly fit your special fabricating requirements. At Granite City your steel on quantity order is "tailor-made" from raw materials to finished sheet for you and you alone. And Granite City Steel Company's ideal location served by 29 railroads, and the Mississippi River, assures better service to the Mississippi Valley, the West and the Southwest.

GALVANIZED SHEETS
STEEL SHEETS
PLATES AND
TINPLATE

SINCE
GRANITE CITY STEEL
1878

GRANITE CITY STEEL CO

GRANITE CITY, ILLINOIS
5719 Ellsworth Ave., Dallas
1208 R. A. Long Bldg., Kansas City, Mo.
8 South Michigan Blvd., Chicago
1805 Boatmen's Bank Bldg., St. Louis
1613 Pioneer Building, St. Paul
1502 Mariner Tower, Milwaukee
1750 Army St., San Francisco

Progress in Steelmaking

Self-Cleaning Filter Prolongs Life Of Rolling Mill Lubricants

PROPER lubrication includes the conditioning of the lubricant and elimination of foreign solids. A means of removing these solids from the system, thus prolonging the life of both the lubricant and the bearing, is afforded by a recently developed filter. The motor-operated self-cleaning features permit continuous service; an occasional blowdown of the sump removes the sludge accumulated by the filter.

The filter uses the edge filtration principle. Fluid to be filtered enters the casing so as to surround completely the filtering cartridges which consist of a stack of wheel-shaped flat metal disks mounted on a central shaft and spaced a predetermined distance apart by metal spacers.

The fluid passes radially inward between the disks, all solids larger than the space between disks being held back. The fluid then passes through internal passages parallel to the shaft to the end of the cartridge and is discharged through a suitable outlet connection.

Cleaning Blades Provided

Fixed alongside the cartridge is a rod containing cleaner blades, a blade opposite each opening between cartridge disks and penetrating this opening to a depth slightly greater than the rim of the disk. Rotating the cartridge by an external motor drive causes the openings to pass the cleaner blades in such a manner that all solids collected on the cartridge surface and held there by the velocity of the passing fluid are combed off and out of the slots leaving each slot free and clean. The solids collected by the cleaner blades build up to form lumps of sufficient size to break away and fall to the sump chamber below where they are removed by blowing down the unit.

This type filter also is applicable for other purposes in the steel industry. Mills, which recirculate cooling and descaling water, have found it possible by the use of this device to decrease the size of nozzles and in turn the quantity of high-pressure water. The filter will stop scale and wood splinters which are a great source of trouble on the sprays.

Cold mills are protected from foreign solids in the soluble oil spray solutions used. The debris collected in the mill pit is prevented from circulating through the system, greatly reducing nozzle trouble. Fuel burning equipment including tar burners at by-product coke ovens and fuel burners at soaking pits also is afforded protection. Pressure drops through the filters, which are made by the Cuno Engineering Corp., Meriden, Conn., range from 1½ to 2 pounds per square inch.

♦ ♦ ♦

Aids Machining Operations

Machining stainless steel is facilitated by the application of a cutting compound consisting of 34 per cent carbon tetrachloride and 66 per cent high-sulphur cutting oil. The compound gives highly satisfactory results in turret lathes, milling machines, power hack saws in machining valve seats and stems, bodies and other parts made of stainless steel.

♦ ♦ ♦

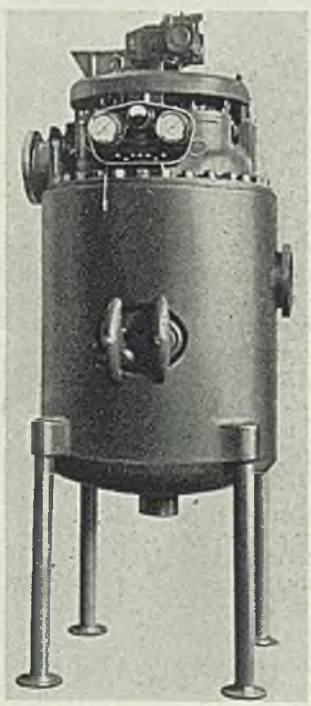
Special Gas Widely Used

Use of "DX" gas as a special atmosphere for the protection of metals during heat treatment is growing. This atmosphere is produced by the partial combustion of fuel gas and air. It received its designation "DX" from one of its first applications wherein it was used for the deoxidation of scale found on hot rolled sheets. The air-gas ratios used are such as will support combustion and are made to react together in a combustion chamber to form products of combustion of definite composition. The resulting gas is washed and dried by suitable means in a number of units mounted on a single platform and available in capacities of 500 to 15,000 cubic feet per hour. It is being used largely for bright annealing steel sheets in radiant tube annealing covers as well as in furnaces of other types. Silicon steel is being produced with a satisfactory surface in an atmosphere of this kind.

♦ ♦ ♦

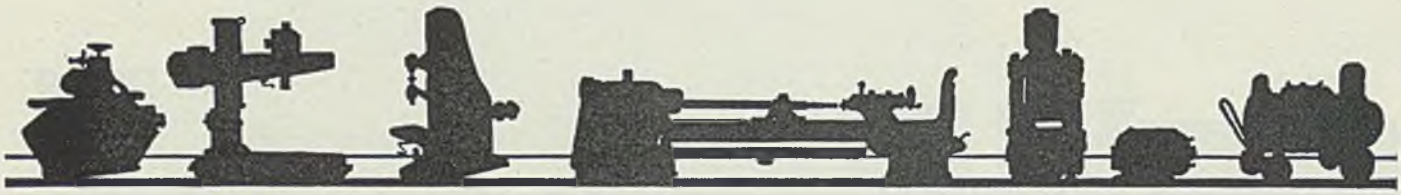
Develops Elastic Coating

A synthetic coating for metals, sufficiently adherent and elastic to permit bending, stamping and even drawing operations without cracking or marring of the finish is being marketed. The product, which may be applied by spraying or roller coating, is recommended for lining beverage and food containers, because of its nontoxic, odorless, tasteless and nonporous properties.



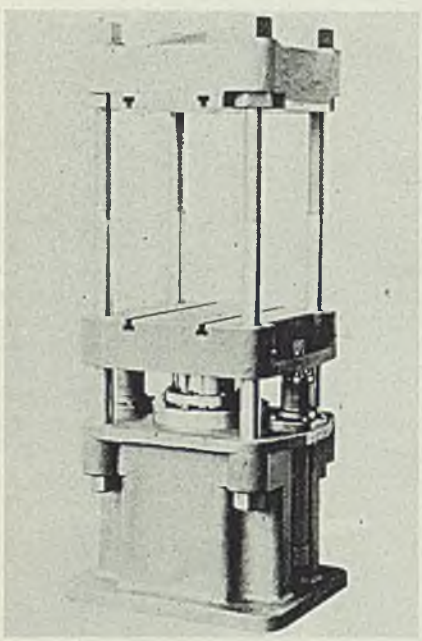
Self-cleaning filter which removes solids from pressure oiling systems

New Equipment



Hydraulic Press—

Defiance Machine Works, Defiance, O., has designed and built a new four-column hydraulic press, illustrated here, specially for molding plastics, rubber, and similar molded products. The base of the press is heavy and of cored design. The main cylinder is mounted on the base and the pull-back cylinders are mounted



Defiance four-column hydraulic molding press

on each side. The main cylinder is of cast steel and has a 9-inch bore. Upper and lower platens are of cored section construction, having two T-slots running from front to back for bolting the molds. Their size is 24 x 26½ inches, and the upper platen is adjustable to give from 12 to 24 inches clearance between them.

♦ ♦ ♦

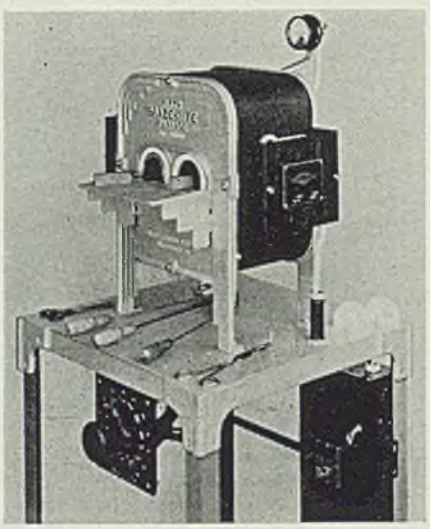
Pre-Formed Tool Bits—

Equipment Co., 11246 East Vernor highway, Detroit, is placing on the market a complete line of standard size tool bits, ground all over, including the ends. These bits are produced by the General Tool Bit Corp., Detroit. The ends are ground at compound cutting angles and are ground deeply enough to insure getting under the decarbonized surface before they are put into operation. The producer claims that appreciable time is saved by the operator in putting these bits into shape. They receive a series of heat treatments, tempering operations and several grinds, and are available in both cobalt steel and super-high speed steel.

♦ ♦ ♦

Brazing Furnace—

Firth-Sterling Steel Co., Firthite division, McKeesport, Pa., has announced an electrically operated hydrogen brazing furnace designed especially for the tipping of sintered carbide cutting tools. Known as the Firth Braze-Rite furnace, it provides a simplified method of brazing carbide blanks to steel shanks. Heat is localized at the end of the tool, making heating of the entire shank unnecessary. The furnace has two separate muffles of 2-inch capacity. Tools with



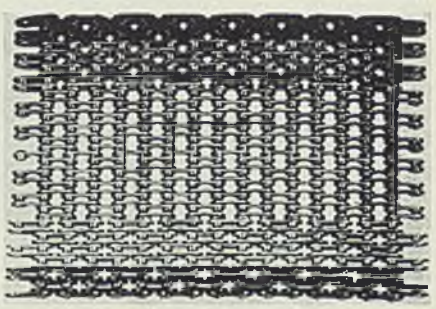
Firth-Sterling brazing furnace for tipping tools

shanks up to 1½ inches square can be accommodated. Either 110 or 220 volts, alternating or direct current can be used. A direct-reading pyrometer at the rear of the furnace gives temperature readings.

♦ ♦ ♦

Conveyor Chain—

Whitney Chain & Mfg. Co., Hartford, Conn. has recently introduced a new type of conveyor chain of open mesh construction. This chain, shown in the accompanying illustration, was designed for use in the glass industry to convey products from the molding machine to the annealing oven, where it was necessary to have a cooling blast come up through the conveyor. Chains can be supplied in steel, steel with bronze



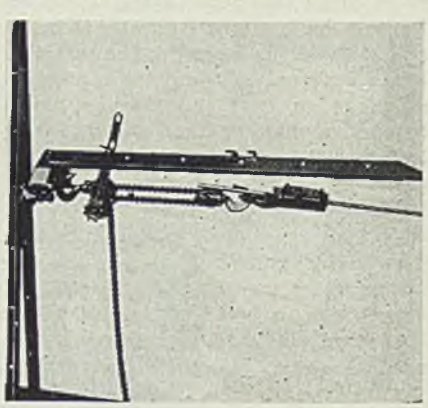
Whitney all-metal conveyor chain

center links, or stainless steel, according to the specifications. The chains are driven by a wide-face silent chain sprocket engaging with silent chain link units in the center section of the chain.

♦ ♦ ♦

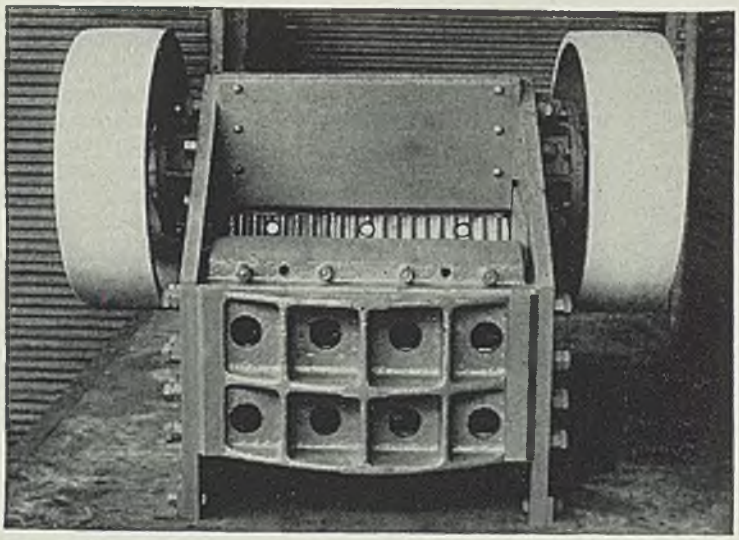
Universal Tripod—

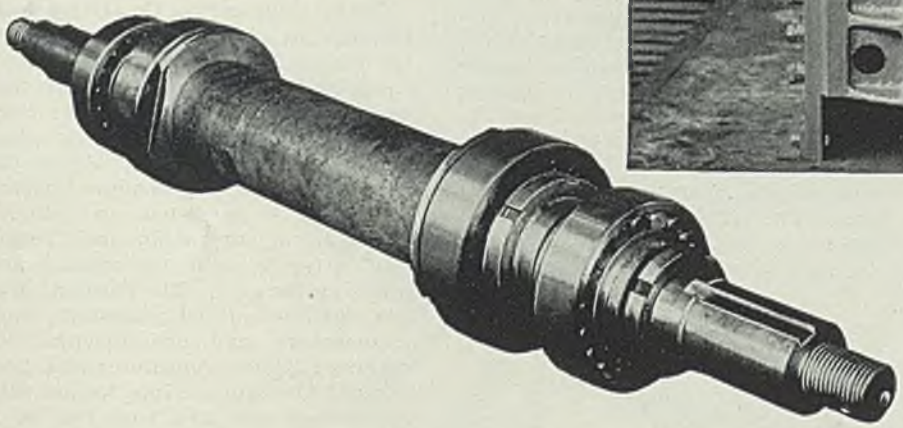
Smith Devices, 2245 North Twelfth street, Philadelphia, has developed a universal tripod which can be used in any position on rough or smooth surfaces. It is readily adaptable for use in pulling drills in quarries, mines, and excavations; or for pulling or lifting water or sewer pipe. It is constructed in all capacities and



Smith universal tripod

"There Can Be No Weak Spots IN A GOOD ROCK CRUSHER"





Good Roads, Champion Rock Crusher, designed to reduce "one man" stone (pieces about 10 inches in diameter, which can be handled by a husky man), to pieces of ¾" or less in one operation. The eccentric shaft, a most important part of the crusher, is Chromium-Vanadium Steel.

Ask the Good Roads Machinery Corporation, of Kennett Square, Pennsylvania, why they use Chromium-Vanadium Steel in the eccentric shaft of their heavy duty crusher and they will tell you, as they told us: "There can be no weak spots in a good rock crusher; therefore we spare nothing when it comes to materials that will provide the required strengths for this severe service. We tried various other steels for this unit, (i. e., the eccentric shaft), but found chromium-vanadium steel the most satisfactory and adopted it as standard in these machines."

Vanadium Steel has solved many a problem for designers of heavy duty machinery. The useful strength of Vanadium Steel, its exceptional toughness and high resistance to fatigue make it ideal for shafts and other severely stressed parts.

Whether your steel problem involves heavy duty forgings or light parts, the Metallurgists of the Vanadium Corporation will welcome the opportunity to confer with you.

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VANADIUM CORPORATION OF AMERICA
420 LEXINGTON AVENUE, NEW YORK, N. Y.

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

Vanadium Steels

METALS VANCORAM ALLOYS

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

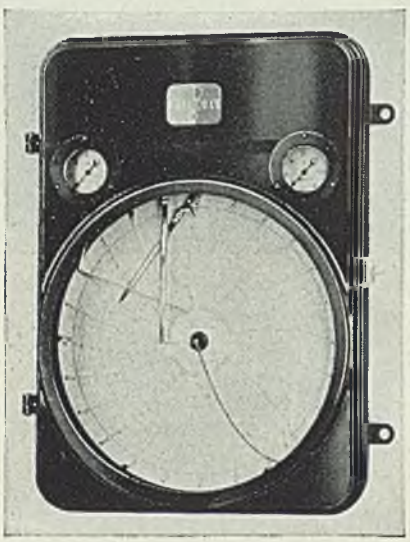
FOR STRENGTH · TOUGHNESS · DURABILITY

heights to meet the requirements of the individual purchaser. Yale & Towne Mfg. Co. Pul-Lifts are furnished with the tripod if desired, as shown in the illustration on page 62.

♦ ♦ ♦

Controller—

Bristol Co., Waterbury, Conn., announces a new series of pneumatic-type controllers known as Ampliset free-vane controllers. These instruments are now available for automatically controlling temperature, time-temperature, flow, liquid level,



Bristol Ampliset free-vane controller

pressure, time-pressure, and humidity. In the new instruments, one of which is illustrated herewith, field adjustability has been added to the features found on the older models in order that the sensitivity can be changed to fit the lag peculiarities of the process on which it is used. This same adjustment enables the scale to be changed from direct-acting to reverse-acting without disturbing the operation of the controller.

♦ ♦ ♦

Conveyor Bearing—

Standard Conveyor Co., North St. Paul, Minn., has announced development of four new types of protected

Standard Conveyor protected bearing for steel mill use

bearings for use in gravity conveyors. The bearings fall into two classifications, for foundry use and for steel mill use. The latter type is illustrated herewith. An inner and an outer felt seal has been provided, holding grease within the bearing and effectively prohibiting the entry of injurious dust. This feature also adapts the bearing for use where grease drippings would be objectionable. The foundry type bearing is provided with an outer seal of steel to protect the bearing from molten metal. Both types of bearings are built so that new grease may be introduced, or with a permanent reservoir of grease as the needs of the user require.

♦ ♦ ♦

Tin Plate Lift Truck—

Lewis-Shepard Co., Watertown, Mass., is introducing a new tin plate lift truck illustrated herewith. Hydraulic in action, it is designed for use with heavy loads which require shockless lowering at either high or low speed. The mechanism drops the load to within 3½ inches of the floor, and has a high lift with low headroom to facilitate operation in restricted space. The lift is foot operated, making a short handle possible. The load may be locked at any height of lift.

Lewis-Shepard tin-plate lift truck

The truck is built entirely of steel, arc welded construction being used throughout. Front wheels are roller-bearing equipped, and rear wheels are furnished with ball bearings.

♦ ♦ ♦

Lightweight Welding Torch—

Modern Engineering Co., 3411 Pine street, St. Louis, is now in production on its new Weldmaster lightweight welding torch. Fitted with a standard tip, this torch weighs 17½ ounces. According to the maker, the light weight of the torch makes for perfect balance and thus easier handling on the part of the operator. Spring tension on wheel handles assures permanent adjustment under all conditions of use. The circle mixer used on former models has been improved and its capacity increased.

Weldmaster lightweight welding torch

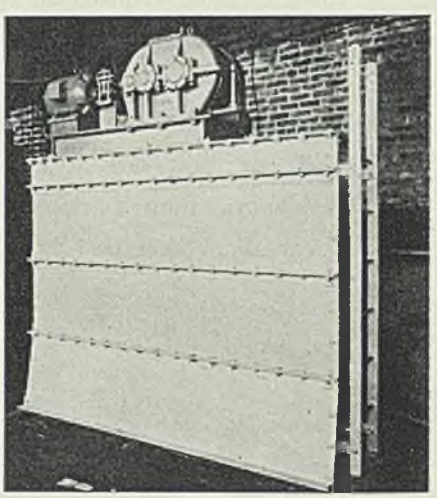
Largest size tips may be used efficiently with low gas pressures.

♦ ♦ ♦

Flue Damper—

Freyn Engineering Co., Chicago, is introducing a noncooled flue damper for regulating and reversing service on open-hearths, soaking pits and heating furnaces. This damper comprises a heat resisting, alloy steel seat and gate enclosed above the floor level with a steel plate housing on which is mounted an integral motor-driven operating mechanism. The latter is used for raising and lowering the gate. The gate and seat are capable of withstanding high temperature and are resistant to chemical attack from flue gases. Sections of the gate are interlocked with each other and are mounted on a central stem which permits individual units to expand and contract independently, thereby preventing warpage and leakage. The hood, enclosing the valve assembly, also serves as a support for the integral motor-driven operating mechanism.

The operating mechanism consists of a winding drum, motordriven through a gear unit. A magnetic brake holds the gate in any desired position, while limit switches fix the



Freyn flue damper for open-hearth furnaces, soaking pits and heating furnaces

upper and lower limits of travel. The motor is operated by pushbutton control.

ROEBLING—
the custom-made wire for exacting welders

A welding wire for use where uniformity requirements are exceptionally high.

Made by Roebling's special custom methods ... absolutely uniform in quality and free of non-metallic impurities.

Types for electric and gas welding, in a variety of standard straight lengths and in coils.

Roebling Welding Cables: Made in a complete line of rubber and braided types for arc welding purposes.

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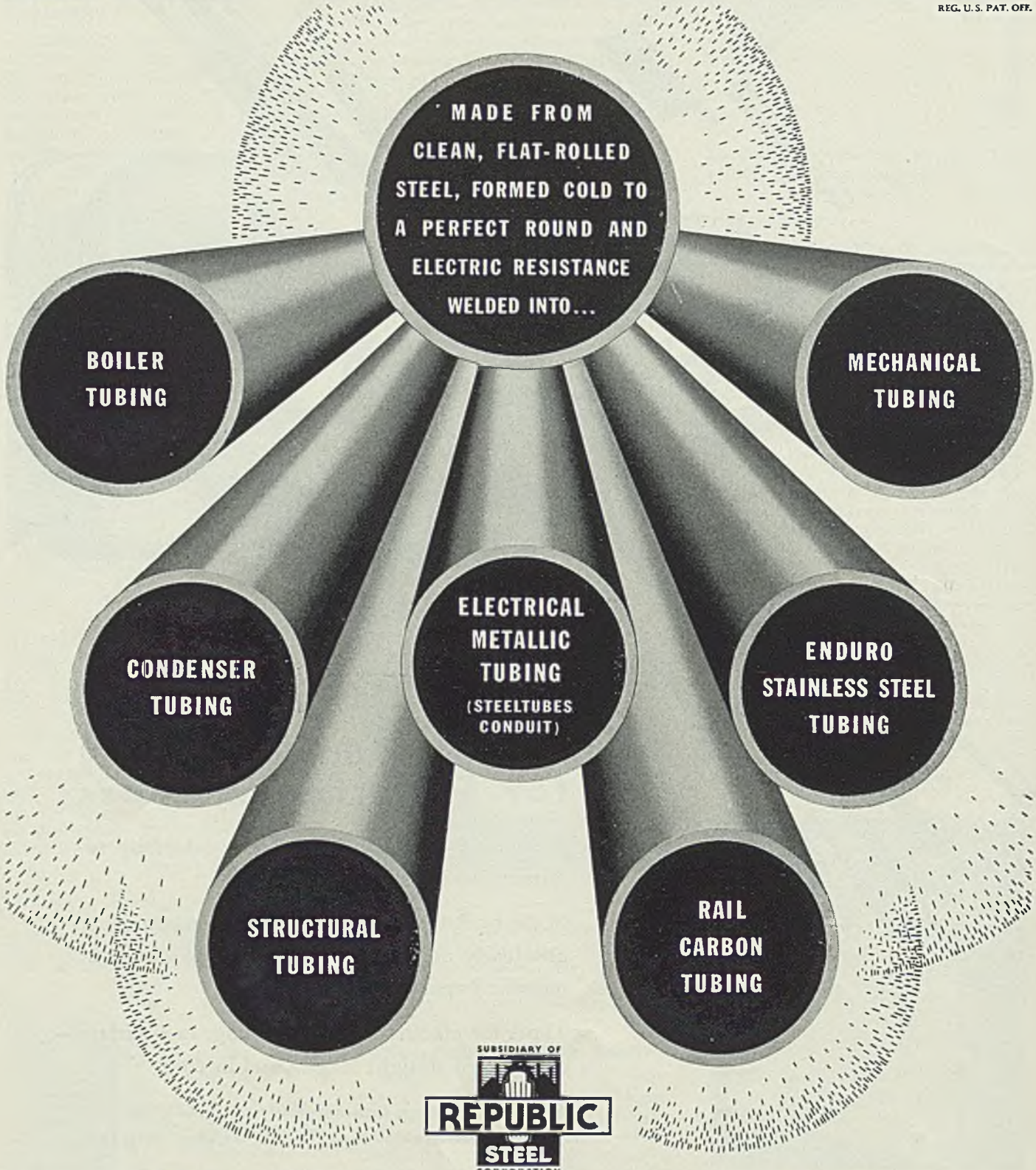

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Steel and Tubes *Inc.*

WORLD'S LARGEST PRODUCER OF ELECTRICALLY WELDED TUBING

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Steel Demand Steady at High Level

Bulk of Purchasing For Immediate Use; Rate Rises to 67

MARKET IN TABLOID

DEMAND . . . . . *Strong.*

PRICES . . . *Firm. Rail prices extended. Scrap lower.*

PRODUCTION . . . *Steel ingots up 1 point to 67 per cent.*

SHIPMENTS . . . *Steady.*

SHIPMENTS of finished steel hold to an unusually high average, with most of the current purchasing for immediate consumption, the steelworks operating rate last week advancing 1 point to 67 per cent.

Demand has held up without the impetus of heavy speculative buying following the general price advance for third quarter.

Orders for cold-rolled strip, wire rods, plain wire and merchant wire products are being accepted for next quarter at unchanged prices. Tool steel makers have announced increases of 5 to 6 per cent, and increases of about 5 per cent have been scheduled for the principal items of bolts and nuts. The market on standard rails has been extended unchanged for the third quarter.

Railroad, structural, agricultural and miscellaneous specifications served to offset the slow recession in shipments of automotive steel. Automobile assemblies dropped to 101,896 last week, 6404 units under the previous week. Orders for steel for the remaining 1936 models have been placed and the material now on order or in transit will see the industry practically through July. Inquiries for steel for 1937 models should be in full swing by July 1, at the time the $2 a ton price increase on sheets, hot-rolled strip, bars and other materials goes in effect. In sharp contrast with the last price change, automobile manufacturers are not stocking, having found that spoilage and costs of double-handling more than offset savings.

Contemplated railroad car construction in the East includes one lot of 35,000 tons of plates. Missouri Pacific placed 10,000 tons of rails and fittings and American Refrigerator Transit Co. came into the market for 1000 cars last week. Domestic freight car buying in May, 8900 cars, was the heaviest this year.

Shape awards totaled 16,000 tons, up 2000 tons from the preceding week. Contracts pending include 12,000 tons for the marine highway authority, New York, and 5000 tons for the Chicago river lock and flowage control works. Shell Union Oil Co. awarded 25,000 tons of pipe for a California oil line.

Farm implement and tractor orders are near 90 per cent of the 1929 peak. Tin plate mills are operating at full capacity for the fourth consecutive week.

Daily steel ingot output in May averaged 155,625 gross tons, the highest of any month since April, 1930, and 2.6 per cent above April this year. Total output was 4,046,253 tons, up 103,999 tons. The five months total, 17,341,490 tons, represented a gain of 25.8 per cent over the same period last year.

Daily average pig iron production in May, 85,795 gross tons, was 6.8 per cent over April, while the total for the month, 2,659,643 tons, was 10.4 per cent higher than April. Both daily average and total were the largest since June, 1930. Output for the first five months this year was 10,983,474 tons, 32.8 per cent above that in the comparable period last year. At the close of May 145 stacks were in blast, a net gain of two.

Although pig iron prices are reaffirmed, makers at present have little occasion for quoting. They are confident of improvement this month, however, as consumer stocks are low.

Steelworks operations in the Chicago district last week were up 2 points to 70 per cent; Youngstown, 1 to 77; Buffalo, 3 to 84; Cleveland, 6½ to 82; Cincinnati, 8 to 80. Pittsburgh was down 1 point to 62; New England, 7 to 70, Wheeling, 2 to 68. Others were unchanged.

Scrap prices continued to decline, dropping 25 cents to $12.79. STEEL's iron and steel price composite is off 2 cents to $32.81 because of the change in scrap. The finished steel index remained unchanged at $52.20.

COMPOSITE MARKET AVERAGES

	June 6	May 30	May 23	One Month Ago May, 1936	Three Months Ago March, 1936	One Year Ago June, 1935	Five Years Ago June, 1931
Iron and Steel	$32.81	$32.83	$32.87	$32.92	$33.20	$32.42	$30.82
Finished Steel	52.20	52.20	52.20	52.20	52.32	54.00	48.60
Steelworks Scrap	12.79	13.04	13.13	13.40	14.48	10.45	8.84

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

A COMPARISON OF PRICES

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

Finished Material

	June 6, 1936	May 1936	March 1936	June 1935
Steel bars, Pittsburgh	1.85c	1.85c	1.85c	1.80c
Steel bars, Chicago	1.90	1.90	1.90	1.85
Steel bars, Philadelphia	2.16	2.16	2.16	2.11
Iron bars, Terre Haute, Ind.	1.75	1.75	1.75	1.75
Shapes, Pittsburgh	1.80	1.80	1.80	1.80
Shapes, Philadelphia	2.01½	2.01½	2.01½	2.01½
Shapes, Chicago	1.85	1.85	1.85	1.85
Tank plates, Pittsburgh	1.80	1.80	1.80	1.80
Tank plates, Philadelphia	2.00	1.99	1.99	1.99
Tank plates, Chicago	1.85	1.85	1.85	1.85
Sheets, No. 10, hot rolled, Pitts.	1.85	1.85	1.85	1.85
Sheets, No. 24, hot ann., Pitts.	2.40	2.40	2.40	2.40
Sheets, No. 24, galv., Pitts.	3.10	3.10	3.10	3.10
Sheets, No. 10, hot rolled, Gary	1.95	1.95	1.95	1.95
Sheets, No. 24, hot anneal., Gary	2.50	2.50	2.50	2.50
Sheets, No. 24, galvan., Gary	3.20	3.20	3.20	3.20
Plain wire, Pittsburgh	2.40	2.40	2.30	2.30
Tin plate, per base box, Pitts.	5.25	5.25	5.25	5.25
Wire nails, Pitts.	2.10	2.10	2.15	2.60

Semifinished Material

Sheet bars, open-hearth, Youngs.	$28.00	$28.00	$28.50	$28.00
Sheet bars, open-hearth, Pitts.	28.00	28.00	28.50	28.00
Billets, open-hearth, Pittsburgh	28.00	28.00	28.40	27.00
Wire rods, Pittsburgh	40.00	40.00	40.00	38.00

Pig Iron

	June 6, 1936	May 1936	March 1936	June 1935
Bessemer, del. Pittsburgh	$20.8132	20.8132	20.8132	19.81
Basic, Valley	19.00	19.00	19.00	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	$14.25	$14.75	$15.75	$12.25
Heavy melt. steel, No. 2, east Pa.	11.00	11.71	12.55	9.30
Heavy melting steel, Chicago	12.75	13.05	14.75	10.25
Rail for rolling, Chicago	14.00	14.65	15.75	11.25
Railroad steel specialties, Chicago	14.25	14.65	16.25	11.75

Coke

Connellsville, furnace, ovens	$3.50	$3.50	$3.50	$3.50
Connellsville, foundry, ovens	4.25	4.25	4.10	4.60
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	1.85c
Gary	1.95c
Chicago, delivered	1.98c
Detroit, del.	2.05c
New York, del.	2.20c
Philadelphia, del.	2.16c
Birmingham	2.00c
St. Louis, del.	2.18c
Pacific ports, f.o.b. cars, dock	2.40c

Hot Rolled Annealed No. 24

Pittsburgh	2.40c
Gary	2.50c
Chicago, delivered	2.53c
Detroit, delivered	2.60c
New York, del.	2.75c
Philadelphia, del.	2.71c
Birmingham	2.55c
St. Louis, del.	2.72c
Pacific ports, f.o.b. cars, dock	3.05c

Galvanized No. 24

Pittsburgh	3.10c
Gary	3.20c
Chicago, delivered	3.23c
Philadelphia, del.	3.41c
New York, del.	3.45c
Birmingham	3.25c
St. Louis, del.	3.43c
Pacific ports, f.o.b. cars, dock	3.70c

Tin Mill Black No. 28

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

Cold Rolled No. 10

Pittsburgh	2.50c
Gary	2.60c
Detroit, delivered	2.70c
Philadelphia, del.	2.81c
New York, del.	2.85c
Pacific ports, f.o.b. cars, dock	3.10c

Cold Rolled No. 20

Pittsburgh	2.95c
Gary	3.05c
Detroit, delivered	3.15c
Philadelphia, del.	3.26c
New York, del.	3.30c

Enameling Sheets

Pittsburgh, No. 10	2.35c
Pittsburgh, No. 20	2.95c
Gary, No. 10	2.45c
Gary, No. 20	3.05c

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.	3.40c
Do., Gary	3.50c

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 Plates

Pittsburgh	1.80c
New York, del.	2.09c
Philadelphia, del.	1.99c
Boston, delivered	2.22c
Buffalo, delivered	2.05c
Chicago or Gary	1.85c
Cleveland, del.	1.99½c
Birmingham	1.95c
Coatesville, base	1.90c
Sparrows Pt., base	1.90c
Pacific ports, f.o.b. cars, dock	2.35c
St. Louis, delivered	2.08c

Structural Shapes

Pittsburgh	1.80c
Philadelphia, del.	2.01½c
New York, del.	2.06½c
Boston, delivered	2.20½c
Bethlehem	1.90c
Chicago	1.85c
Cleveland, del.	2.00c
Buffalo	1.90c
Gulf Ports	2.20c
Birmingham	1.95c
Pacific ports, f.o.b. cars, dock	2.35c

Bars

Soft Steel

(Base, 3 to 25 tons)

Pittsburgh	1.85c
Chicago or Gary	1.90c
Duluth	2.00c
Birmingham	2.00c
Cleveland	1.90c
Buffalo	1.95c
Detroit, delivered	2.00c
Pacific ports, f.o.b. cars, dock	2.40c
Philadelphia, del.	2.16c
Boston, delivered	2.27c
New York, del.	2.20c
Pitts., forg. qual.	2.10c

Rail Steel

To Manufacturing Trade

Pittsburgh	1.70c
Chicago or Gary	1.75c
Moline, Ill.	1.75c
Cleveland	1.75c
Buffalo	1.80c

Iron

Troy, N. Y.	1.70c
Terre Haute, Ind.	1.75c
Chicago	1.80c
Philadelphia	2.06c
Pittsburgh, refined	2.75-7.50c

Reinforcing

New billet, straight lengths, quoted by distributors.

Pittsburgh	1.95c-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.	2.10c
20,000 to 59,999 lbs.	2.05c
60,000 to 99,999 lbs.	2.00c
100,000 lbs. and over	1.97½c

Gary, Ind., Cleve., Chi., up 5c
Buffalo, up 10c; Detroit, up 20c; eastern Michigan, up 25c

Alloy Steel Bars (Hot)

(*Base, 3 to 25 tons.*)

Pittsburgh, Buffalo, Chicago, Massilon, Canton, Bethlehem 2.45c

Alloy	Diff.	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	2.15c
Chicago, Buffalo	2.25c

Strip and Hoops

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

Hot strip to 23⅛-in.	
Pittsburgh	1.85c
Chicago or Gary	1.95c
Birmingham base	2.00c
Detroit, del.	2.05c
Philadelphia, del.	2.16c
New York, del.	2.20c
Cooperage hoop,	
Pittsburgh	1.95c
Chicago	2.05c
Cold strip, 0.25 carbon and under,	
Pitts., Cleveland	2.60c
Detroit, del.	2.81c
Worcester, Mass.	2.80c

Rails, Track Material

(Gross Tons)

Standard rails, mill	$36.37½
Relay rails, Pitts.	
20-45 lbs.	$28.00
45-50 lbs.	$25.00
50-60 lbs.	$26.00
70-75 lbs.	$25.50
80-90 lbs.	$26.00
100 lbs.	$27.00
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	70-10-5 off
Do. larger	70-10 off
Tire bolts	55 off

Plow Bolts

All sizes	70-10 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	65-5 off
Elevator bolts	65-5 off

Nuts

S. A. E. semifinished hex.; ½ to ⅞-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	2.90c
Struc., c. l., Chicago	3.00c
⅞-in. and smaller, Pitts., Chi., Cleve.	70 and 5 off
Wrought washers, Pitts., Chi., Phila. to jobbers & large nut, bolt mfrs.	$6.25 off

Cut Nails

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

Pipe and Tubing

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

Welded Iron, Steel Pipe

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

Butt Weld

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

Lap Weld

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

Line Pipe

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

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

Boiler Tubes

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

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

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

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

Seamless Boiler Tubes

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

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

Seamless Tubing

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

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

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

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

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

Semifinished Steel

Billets and Blooms

4 x 4-inch base; gross ton

Pitts., Chi., Cleve., Buffalo & Youngstown	$28.00
Philadelphia	34.67
Duluth	30.00

Forging Billets

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

Pitts., Chi., Buff.	35.00
Forging, Duluth	37.00

Sheet Bars

Pitts., Cleve., Young., Chi., Buff., Canton, Sparrows Pt.	28.00

Slabs

Pitts., Chi., Cleve., Young.	28.00

Wire Rods

Pitts., Cleve., No. 4 to 5	$38.00
Do., No. 5 to 15/32-inch	40.00
Do., over 15/32 to 47/64-inch	42.00

Chicago up $1; Worcester up $2

Skelp

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

Coke

Price Per Net Ton

Beehive Ovens

Connellsville, fur.	$3.50- 3.65
Connellsville, fdry.	4.25- 4.35
Connel. prem. fdry.	5.35- 5.50
New River fdry.	6.00
Wise county fdry.	4.45- 5.00
Wise county fur.	4.00- 4.50

By-Product Foundry

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

Coke By-Products

Per gallon, producers' plants.

	Tank lots	Spot
Pure and 90% benzol	18.00c	
Toluol	30.00c	
Solvent naphtha	30.00c	
Industrial xylol	30.00c	

Per lb. f.o.b. New York.

Phenol (200 lb. drums)	16.30c
Do. (100 lbs.)	17.30c

Eastern Plants, per lb.

Naphthalene flakes and balls, in bbls., to jobbers	7.25c

Per 100 lb. Atlantic seaboard

Sulphate of ammonia	$1.30

†Western prices, ½-cent up.

Pig Iron

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

Basing Points:	No. 2 Fdry	Malleable	Basic	Bessemer
Bethlehem, Pa.	$20.50	$21.00	$20.00	$21.50
Birdsboro, Pa.	20.50	21.00	20.00	21.50
Birmingham, Ala., southern del.	15.50	15.50	14.50	21.00
Buffalo	19.50	20.00	18.50	20.50
Chicago	19.50	19.50	19.00	20.00
Cleveland	19.50	19.50	19.00	20.00
Detroit	19.50	19.50	19.00	20.00
Duluth	20.00	20.00	.....	20.50
Erie, Pa.	19.50	20.00	19.00	20.50
Everett, Mass.	20.50	21.00	20.00	21.50
Hamilton, O.	19.50	19.50	19.00	.....
Jackson, O.	20.25	20.25	19.75	.....
Neville Island, Pa.	19.50	19.50	19.00	20.00
Provo, Utah	17.50	.....	17.00	.....
Sharpsville, Pa.	19.50	19.50	19.00	20.00
Sparrows Point, Md.	20.50	.....	20.00	.....
Swedeland, Pa.	20.50	21.00	20.00	21.50
Toledo, O.	19.50	19.50	19.00	20.00
Youngstown, O.	19.50	19.50	19.00	20.00
Delivered from Basing Points:				
Akron, O., from Cleveland	20.76	20.76	26.26	21.26
Baltimore from Birmingham	21.08	.....	19.96	.....
Boston from Birmingham	20.62	.....	20.50	.....
Boston from Everett, Mass.	21.00	21.50	20.50	22.00
Boston from Buffalo	21.00	21.50	20.50	22.00
Brooklyn, N. Y., from Bethlehem	22.93	23.43	.....	.....
Brooklyn, N. Y., from Bmghm.	22.50	.....	.....	.....
Canton, O., from Cleveland	20.76	20.76	20.26	21.26
Chicago from Birmingham	†19.72	.....	19.60	.....
Cincinnati from Hamilton, O.	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	20.07	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 $1.21 switching charges		67c, 81c and	
Saginaw, Mich., from Detroit	21.75	21.75	21.25	21.25

Delivered from Basing Points:	No. 2 Fdry	Malleable	Basic	Bessemer
St. Louis, northern	20.00	20.00	19.50	.....
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, Ga.,	$38.00-45.00

Second Quality

Pa., Ill., Ky., Md., Mo.	40.00
Ga., Ala.	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

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
Chemically bonded chrome brick	45.00
Magnesite brick	65.00
Chemically bonded magnesite brick	55.00

Fluorspar, 85-5

Washed gravel, duty paid, tide, net ton	$20.50
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. Spot, $5 a ton higher.	126-130.00
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: New York N. Y.	Lead: East St. L.	Zinc St. L.	Aluminum 99%	Antimony Chinese Spot, N. Y.	Nickel Cathodes
May 29	9.50	9.62½	9.12½	44.87½	44.12½	4.60	4.45	4.90	*19.00	13.50	35.00
May 30	Holiday										
June 1	9.50	9.62½	9.12½	44.50	43.50	4.60	4.45	4.90	*19.00	13.50	35.00
June 2	9.50	9.62½	9.12½	44.00	43.12½	4.60	4.45	4.90	*19.00	13.50	35.00
June 3	9.50	9.62½	9.12½	42.87½	42.00	4.60	4.45	4.90	*19.00	13.50	35.00
June 4	9.50	9.62½	9.12½	43.12½	42.50	4.60	4.45	4.90	*19.00	13.50	35.00
June 5	9.50	9.62½	9.12½	43.85	43.20	4.60	4.45	4.90	*19.00	13.50	35.00

*Nominal range 19.00 to 21.00c.

MILL PRODUCTS

F.o.b. mill base, cents per lb. except as specified. Copper brass products based on 9.00c Conn. copper.

Sheets	
Yellow brass (high)	15.12½
Copper, hot rolled	17.00
Lead cut to jobers	8.25
Zinc, 100-lb. base	9.50
Tubes	
High yellow brass	17.37½
Seamless copper	17.50
Rods	
High yellow brass	13.12½
Copper, hot rolled	13.75
Anodes	
Copper, untrimmed	14.50
Wire	
Yellow brass (high)	15.37½

OLD METALS

Deal. buying prices, cents lb.

No. 1 Composition Red Brass	
New York	6.00- 6.25
*Cleveland	6.00- 6.25
Chicago	5.75- 6.00
St. Louis	6.00- 6.25
Heavy Copper and Wire	
New York, No. 1	7.50- 7.75
Chicago, No. 1	7.00- 7.25
Cleveland	6.75- 7.00
St. Louis, No. 1	7.00- 7.50
Composition Brass Borings	
New York	5.75- 6.00
Light Copper	
New York	6.12½- 6.25
Chicago	5.50- 5.75
Cleveland	5.75- 6.00
St. Louis	5.50- 6.00
Light Brass	
Chicago	3.50- 3.62½
Cleveland	3.25- 3.50
St. Louis	3.25- 3.75
Lead	
New York	3.50- 3.75
Cleveland	3.50- 3.75
Chicago	3.25- 3.50
St. Louis	3.25- 3.75
Zinc	
*New York	2.87½- 3.00
Cleveland	2.25- 2.50
St. Louis	2.25- 275
Aluminum	
Borings, Cleveland	8.50- 8.75
Mixed, cast, Cleve.	12.00-12.25
*Mixed, cast, St. L.	12.50-12.75
Clips, soft, Cleve.	14.00-14.25

SECONDARY METALS

Brass ingot, 85-5-5-5	9.50
Stand. No. 12 alum.	16.50-17.00

Iron and Steel Scrap Prices

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated

HEAVY MELTING STEEL

Birmingham	9.50-10.00
Boston, dock, expt.	10.50
Boston, domestic	9.50-10.25
Buffalo, No. 1	12.50-13.00
Buffalo, No. 2	11.00-11.50
Chicago, No. 1	12.50-13.00
Cleveland, No. 1	13.00-13.50
Cleveland, No. 2	12.00-12.50
Detroit, No. 1	10.00-10.50
Detroit, No. 2	9.00- 9.50
Eastern Pa., No. 1	12.00
Eastern Pa., No. 2	11.00
Federal, Ill.	10.50-11.00
Granite City, R. R.	11.75-12.25
Granite City, No. 2	10.00-10.50
N. Y., brokers, No. 2	7.25- 7.75
N. Y., brokers, barge (No. 1 for export)	9.50
Pitts., No. 1 (R. R.)	14.25-14.75
Pitts., No. 1 (dlr.)	14.00-14.50
Pittsburgh, No. 2	12.75-13.25
St. Louis	11.00-11.50
Toronto, dealers	7.50
Valleys, No. 1	14.00-14.50

COMPRESSED SHEETS

Buffalo, dealers	11.00-11.50
Chicago, factory	11.50-12.00
Chicago, dealer	11.00-11.50
Cleveland	12.75-13.25
Detroit	10.50-11.00
E. Pa., new mat.	11.50-12.00
Pittsburgh	14.00-14.50
St. Louis	7.75- 8.25
Valleys	13.75-14.00

BUNDLED SHEETS

Buffalo	10.00-10.50
Cincinnati, del.	7.75- 8.25
Cleveland	9.00- 9.50
Pittsburgh	12.75-13.25
St. Louis	6.25- 6.75
Toronto, dealers	4.50

SHEET CLIPPINGS, LOOSE

Chicago	8.00- 8.50
Cincinnati	5.75- 6.25
Detroit	7.50- 8.00
St. Louis	5.50- 6.00

STEEL RAILS, SHORT

Birmingham	12.00-12.50
Buffalo	15.50-16.00
Chicago (3 ft.)	14.50-15.00
Chicago (2 ft.)	15.00-15.50
Cincinnati, del.	14.00-14.50
Detroit	14.50-15.00
Pitts., open-hearth, 3 ft. and less	15.75-16.25
St. Louis, 2 ft. & less	14.00-14.50

STEEL RAILS, SCRAP

Boston	9.00- 9.50
Chicago	12.50-13.00
Pittsburgh	14.00-14.50
St. Louis	12.50-13.00
Buffalo	13.00-13.50
Toronto, dealers	8.50

STOVE PLATE

Birmingham	7.00- 7.50
Boston, dealers	5.00- 5.25
Buffalo	10.75-11.00
Chicago	7.50- 8.00
Cincinnati, dealers	7.75- 8.50
Detroit, net	9.00- 9.50
Eastern Pa.	10.00-10.50
N. Y., brokers, fdry.	6.00- 6.50
St. Louis	7.50- 8.00
Toronto, dealers, net	5.50

COUPLERS, SPRINGS

Buffalo	14.75-15.25
Chicago, springs	14.00-14.50
Eastern Pa.	16.00-16.50
Pittsburgh	16.50-17.00
St. Louis	12.75-13.25

ANGLE BARS—STEEL

Chicago	14.00-14.50
St. Louis	12.75-13.25
Buffalo	14.50-15.00

RAILROAD SPECIALTIES

Chicago	14.00-14.50

LOW PHOSPHORUS

Buffalo, billet and bloom crops	14.75-15.25
Cleveland, billet, bloom crops	17.50-18.00
Eastern Pa., crops	16.00
Pittsburgh, billet, bloom crops	16.50-17.00
Pittsburgh, sheet bar crops	16.00-16.50

FROGS, SWITCHES

Chicago	12.50-13.00
St. Louis, cut	12.50-13.00

SHOVELING STEEL

Chicago	12.50-13.00
Federal, Ill.	10.50-11.00
Granite City, Ill.	10.00-10.50
Toronto, dealers	6.50

RAILROAD WROUGHT

Birmingham	7.50- 8.00
Boston, dealers	7.25- 7.50
Buffalo, No. 1	11.00-11.50
Buffalo, No. 2	12.50-13.00
Chicago, No. 1, net	12.50-13.00
Chicago, No. 2	12.50-13.00
Cincinnati, No. 2	10.00-10.50
Eastern Pa.	13.00-13.50
St. Louis, No. 1	10.25-10.75
St. Louis, No. 2	11.75-12.25
Toronto, No. 1, dlr.	7.00

SPECIFICATION PIPE

Eastern Pa.	12.00
New York, dealers	7.75- 8.00

BUSHELING

Buffalo, No. 1	11.00-11.50
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	9.50-10.00
Valleys, new, No. 1	13.00-13.50
Toronto, dealers	6.00

MACHINE TURNINGS

Birmingham	5.50- 6.50
Boston, dealers	3.25- 3.50
Buffalo	7.00- 7.25
Chicago	6.00- 6.50
Cincinnati, dealers	5.75- 6.25
Cleveland	7.50- 8.00
Detroit	5.75- 6.25
Eastern Pa.	8.50
New York, brokers	3.00- 3.50
Pittsburgh	9.25- 9.75
St. Louis	4.00- 4.50
Toronto, dealers	4.00
Valleys	9.75-10.25

BORINGS AND TURNINGS

For Blast Furnace Use

Boston, dealers	2.00
Buffalo	8.50- 9.00
Cincinnati, dealers	5.25- 5.75
Cleveland	8.25- 8.75
Detroit	6.50- 7.00
Eastern Pa.	6.50- 7.00
New York, brokers	2.75- 3.25
Pittsburgh	8.00- 8.50
Toronto, dealers	4.00

CAST IRON BORINGS

Birmingham, plain	4.50- 5.50
Boston, chemical	6.00- 6.25
Boston, dealers	3.50- 4.00
Buffalo	8.00- 8.50
Chicago, dealers	6.00
Cincinnati, dealers	5.00- 5.50
Cleveland	8.25- 8.75
Detroit	6.50- 7.00
E. Pa., chemical	11.00-13.00
New York, brokers	4.00- 4.25
St. Louis	4.00- 4.50
Toronto, dealers	5.00

PIPE AND FLUES

Cincinnati, dealers	7.75- 8.25
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, brokers	6.00- 6.50
St. Louis	7.50- 8.00

FORGE FLASHINGS

Boston, dealers	6.50- 6.75
Buffalo	11.00-11.50
Cleveland	11.75-12.25
Detroit	9.00- 9.50
Pittsburgh	13.00-13.50

FORGE SCRAP

Boston, dealers	5.50- 6.00
Chicago, heavy	14.00-14.50
Eastern Pa.	12.50-13.00

ARCH BARS, TRANSOMS

St. Louis	13.50-14.00

AXLE TURNINGS

Boston, dealers	5.75- 6.00
Buffalo	11.00-11.50
Chicago, elec. fur.	12.75-13.25
Eastern Pa.	11.00-12.00
St. Louis	9.00- 9.50
Toronto	4.50

STEEL CAR AXLES

Birmingham	11.50-12.50
Boston, ship. point.	11.00-11.25
Buffalo	15.50-16.00
Chicago, net	14.25-14.75
Eastern Pa.	17.00
St. Louis	13.00-13.50
Toronto	8.50

SHAFTING

Boston, ship point.	13.25-13.50
Eastern Pa.	18.50-18.75
New York, brokers	13.50-14.00
St. Louis	13.50-14.00

CAR WHEELS

Birmingham	11.00-11.50
Boston, iron deal	8.75- 9.00
Buffalo, iron	13.50-14.00
Buffalo, steel	15.50-16.00
Chicago, iron	13.25-13.75
Chicago, rolled steel	14.00-14.50
Cincinnati, iron	10.50-11.00
Eastern Pa., iron	14.00-14.50
Eastern Pa., steel	16.00-16.50
Pittsburgh, iron	14.00-14.50
Pittsburgh, steel	16.50-17.00
St. Louis, iron	11.50-12.00
St. Louis, steel	13.00-13.50
Toronto, net	8.50

NO. 1 CAST SCRAP

Birmingham	10.50-11.50
Boston, No. 1 mach.	9.25- 9.75
Boston, No. 2	9.50-10.00
Boston, tex. con.	11.50-12.00
Buffalo, cupola	12.00-12.50
Buffalo, mach.	12.50-13.00
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	10.75-11.25
Cleveland, mach.	15.25-15.75
Eastern Pa., cupola	13.50-14.00
E. Pa., mixed yard	11.00
Pittsburgh, cupola	15.00-15.50
San Francisco, del.	13.50-14.00
Seattle	10.00-11.00
St. Louis, No. 1	11.00-11.50
St. L., No. 1 mach.	11.50-12.00
Toronto, No. 1, mach., net	9.00

HEAVY CAST

Boston, del.	7.25- 7.75
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.	12.50-13.00
New York, break. brokers	8.50- 8.75
Pittsburgh	13.00-13.50

MALLEABLE

Birmingham, R. R.	11.50-12.50
Boston, consum.	15.00-16.00
Buffalo	16.00-16.50
Chicago, R. R.	15.50-16.00
Cincinnati, agri. del.	12.50-13.00
Cleveland, rail	16.25-16.75
Detroit, auto, net	14.50-15.00
Eastern Pa., R. R.	16.00-16.50
Pittsburgh, rail	17.50-18.00
St. Louis, R. R.	13.50-14.00
Toronto, net	7.00

RAILS FOR ROLLING

5 feet and over

Birmingham	11.50-12.50
Boston, dealers	9.00- 9.50
Buffalo	13.00-13.50
Chicago	13.75-14.25
Eastern Pa.	15.00-15.50
New York, brokers	9.50-10.00
St. Louis	13.75-14.25

LOCOMOTIVE TIRES

Chicago (cut)	14.00-14.50
St. Louis, No. 1	12.00-12.50

LOW PHOS. PUNCHINGS

Buffalo	14.75-15.25
Chicago	15.00-15.50
Eastern Pa.	16.00-16.50
Pittsburgh (heavy)	16.75-17.25
Pittsburgh (light)	15.75-16.25

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*	3.00c
Boston††	3.10c
Buffalo	3.00c
Chattanooga	3.36c
Chicago (j)	3.00c
Cincinnati	3.22c
Cleveland	3.00c
Detroit	3.09c
Houston	3.00c
Los Angeles	3.60c
Milwaukee	3.11c-3.26c
New Orleans	3.35c
New York‡ (d)	3.31c
Pitts. (h)	2.95c-3.10c
Philadelphia*	3.03c
Portland	3.50c
San Francisco	3.25c
Seattle	3.70c
St. Louis	3.25c
St. Paul	3.25c-3.40c
Tulsa	3.25c

IRON BARS

Portland	3.40c
Chattanooga	3.36c
Baltimore*	3.05c
Chicago	2.75c
Cincinnati	3.22c
New York‡(d)	3.36c
Philadelphia*	2.93c
St. Louis	3.25c
Tulsa	3.25c

REINFORCING BARS

Buffalo	2.60c
Chattanooga	3.36c
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	2.45c
St. Louis	3.25c
Tulsa	3.25c
Young	2.30c-2.60c

SHAPES

Baltimore*	3.00c
Boston††	3.19c
Buffalo	3.25c
Chattanooga	3.56c
Chicago	3.20c
Cincinnati	3.42c
Cleveland	3.31c
Detroit	3.42c
Houston	3.00c
Los Angeles	3.60c
Milwaukee	3.31c
New Orleans	3.55c
New York‡(d)	3.37c
Philadelphia*	2.98c
Pittsburgh (h)	3.15c
Portland (i)	3.50c
San Francisco	3.25c
Seattle (i)	3.70c
St. Louis	3.45c
St. Paul	3.45c
Tulsa	3.50c

PLATES

Baltimore*	3.00c
Boston††	3.21c
Buffalo	3.37c
Chattanooga	3.56c
Chicago	3.20c
Cincinnati	3.42c
Cleveland, ¼-in. and over	3.31c
Detroit	3.42c
Detroit, ⅛-in.	3.65c
Houston	3.00c
Los Angeles	3.60c
Milwaukee	3.31c
New Orleans	3.55c
New York‡(d)	3.40c
Philadelphia*	2.98c
Phila. floor	4.95c
Pittsburgh(h)	3.15c
Portland	3.35c
San Francisco	3.25c
Seattle	3.55c
St. Louis	3.45c
St. Paul	3.45c
Tulsa	3.50c

NO. 10 BLUE

Baltimore*	3.10c
Boston††	3.30c
Buffalo	3.62c
Chattanooga	3.36c
Chicago	3.05c
Cincinnati	3.22c
Cleveland	3.11c
Det., 8-10 ga.	3.14c
Houston	3.35c
Los Angeles	3.75c
Milwaukee	3.16c
New Orleans	3.55c
New York‡(d)	3.31c
Portland	3.35c
Philadelphia*	3.08c
Pittsburgh(h)	2.95c
San Francisco	3.35c
Seattle	3.70c
St. Louis	3.45c
St. Paul	3.30c
Tulsa	3.70c

NO. 24 BLACK

Baltimore*†	3.60c
Boston (g)	3.95c
Buffalo	3.25c
Chattanooga	4.16c
Chicago	3.85c
Cincinnati	4.02c
Cleveland	3.91c
Detroit	3.94c
Los Angeles	4.35c
Milwaukee	3.96c
New Orleans	4.50c
New York‡(d)	3.89c
Philadelphia*†	3.60c
Pitts.** (h)	3.55c
Portland	4.10c
San Francisco	4.00c
Seattle	4.40c
St. Louis	4.10c
St. Paul	3.90c
Tulsa	4.75c

NO. 24 GALV. SHEETS

Baltimore*†	4.30c
Buffalo	4.00c
Boston (g)	4.00c
Chattanooga	4.86c
Chicago (h)	4.55c
Cincinnati	4.72c
Cleveland	4.61c
Detroit	4.72c
Houston	4.40c
Los Angeles	4.40c
Milwaukee	4.66c
New Orleans	4.95c
New York‡(d)	4.30c
Philadelphia*†	4.40c
Pitts.**(h)	4.15c-4.45c
Portland	4.50c
San Francisco	4.50c
Seattle	5.00c
St. Louis	4.65c
St. Paul	4.50c
Tulsa	5.10c

BANDS

Baltimore*	3.20c
Boston††	3.30c
Buffalo	3.42c
Chattanooga	3.61c
Chicago	3.30c
Cincinnati	3.47c
Cleveland	3.36c
Detroit, ¾-in. and lighter	3.39c
Houston	3.25c
Los Angeles	4.10c
Milwaukee	3.41c
New Orleans	3.95c
New York‡(d)	3.56c
Philadelphia	3.18c
Pittsburgh (h)	3.20c
Portland	4.25c
San Francisco	4.10c
Seattle	4.25c
St. Louis	3.55c
St. Paul	3.55c
Tulsa	3.45c

HOOPS

Baltimore	2.30c
Boston††	4.30c
Buffalo	3.42c
Chicago	3.30c
Cincinnati	3.47c
Det., No. 14 and lighter	3.39c
Los Angeles	5.85c
Milwaukee	3.41c
New York‡(d)	3.56c
Philadelphia	3.43c
Pittsburgh (h)	3.70c
Portland	5.60c
San Francisco	6.15c
Seattle	5.60c
St. Louis	3.55c
St. Paul	3.55c

COLD FIN. STEEL

Baltimore (c)	3.73c
Boston	3.90c
Buffalo (h)	3.55c
Chattanooga*	4.13c
Chicago (h)	3.50c
Cincinnati	3.72c
Cleveland (h)	3.50c
Detroit	3.79c
Los Ang. (f) (d)	5.85c
Milwaukee	3.61c
New Orleans	4.30c
New York‡(d)	3.81c
Philadelphia	3.76c
Pittsburgh	4.50c
Portland (f) (d)	6.15c
San Fran.(f) (d)	5.95c
Seattle (f) (d)	6.15c
St. Louis	3.75c
St. Paul	4.02c
Tulsa	4.65c

COLD ROLLED STRIP

Boston, 0.100-in., 500 lb. lots	3.245c
Buffalo	3.39c
Chicago	3.27c
Cincinnati (b)	3.22c
Cleveland (b)	2.85c
Detroit	3.18c
New York‡(d)	3.36c
St. Louis	3.45c

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	11c

Uniform extras apply.

BOLTS AND NUTS

(100 pounds or over)

	Discount
Chicago (a)	70
Cleveland	70
Detroit	70-10
Milwaukee	70
Pittsburgh	70

(a) Under 100 pounds, 65 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, 3.15c.

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

Prices on heavier lines are subject to new quantity differentials; 399 lbs. and less, up 50 cts.; 400 to 9999 lbs., base; 10,000 to 19,999 lbs., 15 cts. under; 20,000 to 39,999 lbs., 25 cts. under; 40,000 lbs. and over, 35 cts. under base.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, June 4

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

	British gross tons U. K. ports £ s d		Continental Channel or North Sea ports, metric tons (Quoted in dollars at current value	**Quoted in gold pounds sterling £ s d
PIG IRON				
Foundry, 2.50-3.00 Silicon	$15.69	3 2 6*	$13.86	1 15 0
Basic bessemer	15.69	3 2 6*	11.89	1 10 0
Hematite, Phos. .03-.05	17.82	3 11 0	.....	.....
SEMIFINISHED STEEL				
Billets	$29.49	5 17 6	$18.61	2 7 0
Wire rods, No. 5 gage	44.93	8 19 0	35.65	4 10 0
FINISHED STEEL				
Standard rails	$41.42	8 5 0	$43.57	5 10 0
Merchant bars	1.74c	7 15 0	1.12c to 1.16c	3 2 6 to 3 5 0
Structural shapes	1.68c	7 10 0	1.11c	3 1 6
Plates, †¼ in. or 5 mm.	1.81c	8 1 3	1.53c	4 5 0
Sheets, black, 24 gage or 0.5 mm	2.18c	9 15 0	2.08c	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.	$ 4.71	0 18 9	.....	.....

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

Domestic Prices at Works or Furnace—Last Reported

	£ s d		French Francs		Belgian Francs		Reich Marks
Fdy. pig iron, Si. 2.5	$17.57	3 10 0(a)	$17.16	260	$13.87	410	$25.38	63
Basic bessemer pig iron	18.20	3 12 6(a)	12.54	190	11.84	350	28.00(b)	69.50
Furnace coke	5.65	1 2 6	6.27	95	4.13	122	7.66	19
Billets	29.49	5 17 6	28.38	430	18.77	555	38.88	96.50
Standard rails	1.85c	8 5 0	2.30c	671	1.53c	1,000	2.40c	132
Merchant bars	2.03c	9 1 0	1.67c	560	.99c	650	2.00c	110
Structural shapes	1.96c	8 15 0	1.64c	550	.99c	650	1.95c	107
Plates, †¼-in. or 5 mm.	2.03c	9 1 3	2.09c	700	1.22c	800	2.32c	127
Sheets, black	2.58c	11 10 0§	1.78c	600‡	1.35c	875‡	2.63c	144‡
Sheets, galv., corr., 24 ga. or 0.5 mm	3.02c	13 10 0	2.84c	950	2.30c	1,500	6.76c	370
Plain wire	2.18c	9 15 0	2.68c	900	1.76c	1,150	3.16c	173
Bands and strips	2.20c	9 16 0	1.98c	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 62.64 per cent over paper sterling.

Bars

Bar Prices, Page 68

Pittsburgh—Announcement of a $2 a ton increase on alloy hot-rolled bars for the third quarter, which will make the market 2.55c, base, at that time, was made last week. It followed a similar announcement in merchant carbon bars ten days ago. Both decisions have caused the beginning of some advance buying, which should continue through June. On the other hand, automotive buyers have concluded their purchasing against 1936 assemblies.

Cleveland—Steel bar consumers are specifying more freely for plain carbon bars than in two months. A wide variety of miscellaneous users have begun placing orders for delivery this month. Stampers and forging shops report a slight falling off in demand from automotive customers.

Chicago—Bar sales and specifications so far have failed to reflect speculative buying. Some purchasing in anticipation of the advancement for next quarter is expected during the next two weeks. With automotive requirements declining, total business shows no sign of increasing this month. Approach of a quieter period in production of certain types of farm implements is influencing bar sales to this industry, although the volume still is at a higher rate than during the corresponding period of the last six to seven years. Third quarter bookings at the new prices so far are light.

Boston—Good demand features the merchant steel bar market. In view of the $2 a ton advance, which will move the market from 1.85c to 1.95c, base, Pittsburgh, considerable buying is expected during the latter part of June to anticipate the increase. The 1.95c base Pittsburgh price is equivalent to 2.37c delivered Boston. An increase in the price of cold-finished bars of $3 a ton has been announced to become effective July 1. Mills will continue booking at the present rate of 2.10c base Pittsburgh up to the end of June for shipment at mills' convenience. The new price will be 2.25c, base, Pittsburgh.

New York—Commercial bar tonnage is more active, with consumers covering against the impending price advance. No increase in billet reinforcing bars is expected now.

Philadelphia—Commercial steel bar consumers are showing quickened interest in specifications in view of the impending $2 advance. In hot-rolled alloy bars producers are well ahead.

Plates

Plate Prices, Page 68

Pittsburgh—In spite of the favorable outlook for further river barge buying and the apparent need for coal and general utility barges, no new contracts were reported last week. Barge shops are operating on backlogs which will keep them busy for the next couple of months. Last week American Bridge Co. launched the last of a fleet of six standard coal barges for the Tri-State Transportation Co., Morgantown, W. Va., from its Ambridge, Pa., shops, and Dravo Contracting Co., Neville Island, commenced laying bottom plates for the 20-inch suction dredge Jewett. Bids on two steel dump scows will be taken by the Cincinnati army engineers until June 16 for delivery to the federal marineways, Fernbank, O. Plates are quoted 1.80c, base, Pittsburgh, until July 1 when the market becomes 1.90c.

Cleveland—New work in steel plate construction is being brought out through the $2 advance for third quarter. This also includes some heretofore delayed railroad bridge construction such as the Pennsylvania lines project at Mount Vernon, O., and others. Platemakers report better volume of new business this month than in May. Considerable boiler steel also is being placed.

Chicago—While little speculative buying of plates is looked for in anticipation of higher prices next quarter, shipments will be well supported by backlogs during the next 30 to 60 days. Movement to freight car builders will be bolstered by the placing of material for equipment booked recently. Structural fabricators are taking heavier shipments and have fairly good schedules in prospect for this summer. Jobbers also are receiving larger lots.

Boston—Steel plate demand is active. Most orders are small but some good sized tonnages are involved. Most current business involves material for prompt shipment. However, demand is being stimulated by the recent $2 advance, from 1.90c to 2.00c, base, Coatesville, Pa., as of July 1. The 2c price is equivalent to 2.32c delivered Boston. It is expected the tendency to lay in stocks at the present price will become more noticeable later in the month.

Philadelphia—Plate makers report little improvement in volume. Nevertheless, with an impending advance of $2 a ton on third quarter shipments, they are anticipating improvement shortly. Sellers generally indicate their intention of adhering rigidly to the June 30 deadline on all shipments of tonnage booked at current levels. The dredge GOETHALS for the war department, requiring approximately 1000 tons of hull steel, will be built by the Bethlehem Shipbuilding Co., at San Francisco.

St. Louis—The plate situation is more satisfactory than for a number of months. Requirements of the petroleum industry are considerably more in evidence. The Laclede Gas Light Co. will require 500 tons for repairing a gas tank in St. Louis.

Birmingham, Ala.—Plate mills are in steady operation, and demand is good. Considerable tonnage is now being asked for by fabricators with several contracts in hand, wherein plate is being used. Indications point to the activity continuing for some time.

San Francisco — Several large plate projects are either up for figures or pending and aggregate more than 18,000 tons. So far this year 69,313 tons have been booked, compared with only 19,707 tons for the same period a year ago. No action has yet been taken on close to 6000 tons for freighters for the Matson Navigation Co., San Francisco.

Seattle—Conditions are much improved with tank and boiler shops, which report a heavy influx of new construction in small tonnages. The

total has been sufficient to tax the capacity of some plants, idle many months. Soundview Pulp Co., Everett, Wash., plans a $2,000,000 expansion, including three large digesters when the city furnishes additional water supply for which a large steel pipe will be required, costing $1,300,000.

New York—Plate tonnage is expanding, reflecting perhaps for the first time protective buying against an impending $2 advance. Brisk movement is expected over the remainder of the month. Prospective car work is still promising and includes one lot of 35,000 tons of plates. Between 10,000 and 15,000 tons of plates are required for pipe line projects in Russia and the Orient in addition to several thousand tons pending for domestic pipe work.

Contracts Placed

565 tons, pipe line, Climax, Colo., to Thompson Mfg. Co., Denver, Colo.
280 tons, four tanks, Richfield Oil Co., Utica, N. Y., to Chicago Bridge & Iron Works, Chicago.
170 tons, tanks High Grade Oil Co., Rocky Hill, Conn., to Chicago Bridge & Iron Works, Chicago.
170 tons, tanks, Ballard Oil Co., Wetherfield, Conn., to Chicago Bridge & Iron Works, Chicago.
124 tons, pipe for Ralston Creek dam, Denver, Colo., to unnamed interest.
110 tons, 54-inch pipe line, Niagara Falls, N. Y., to Alco Products Co., New York.

Contracts Pending

7780 tons, Stone canyon pipe line, 36-inch welded steel pipe, metropolitan water district, Los Angeles; Southwest Welding & Mfg. Co., Los Angeles, low at $667,403.
1326 tons, 24 and 36-inch welded steel pipe, specification X-26, water and power department, Los Angeles; Western Pipe & Steel Co., San Francisco, low bidder.
130 tons, elevated tank, Cotuit, Mass., to R. H. Newell Co., Uxbridge, Mass.

Sheets

Sheet Prices, Page 68

Pittsburgh—Some sheet users are beginning to anticipate the higher market three weeks away by placing heavier orders, but there have been few cases where buyers have sought to enter orders now for shipment specifically in July. Producers have not clearly defined the effective date on shipments. Some say the higher market automatically becomes effective on everything shipped after June 30, but others will make provision for orders placed in the last half of June which cannot possibly be shipped by July 1. The market still reflects well diversified buying interest. Average of operations remained fairly steady last week at close to 65 per cent of capacity.

Cleveland—Steel sheet requirements continue at a rate that insures further steady operations well into July. The expected recession from automotive partsmakers is not believed likely to appear much if any before late July or August.

Chicago—Sales have increased since the announcement of higher prices, and heavy production is scheduled for this month. Automotive interests are in an unfavorable position to buy speculatively because of the approaching model changes, however, and business from that direction lacks improvement. Few orders have been placed at the new prices for third quarter delivery.

Boston—Current consumption of steel sheets in New England is high. The $2 a ton advance July 1 on galvanized, hot-rolled and hot-rolled and annealed sheets is expected to result in good anticipatory buying later this month.

The state of Maine has placed with E. Corey & Co., Portland, Me., representing American Sheet & Tin

Plate Co., Pittsburgh, 110 tons of automobile license plate sheet, at 3.02c per pound. To the Youngstown Sheet & Tube Co., Youngstown, O., at 4.27c per pound on 18-gage and 4.32c on 20-gage went 20 tons of galvannealed sheets for sign work.

New York—Increasingly heavy specifications are reported as the time approaches for the new price advance to become effective. So heavy is pressure for some grades of cold-finished, on which mills are already sold well ahead, that extension of the June 30 deadline for shipments at current prices is regarded as probable in some quarters.

Philadelphia—Leading sellers of sheets continue to quote June 30 as their deadline on all orders taken at current prices. However, some buyers anticipate an extension of this deadline. Several producers are practically out of the market on tonnage of some grades of cold-finished sheets. Volume is expanding, due to the proposed third-quarter price increase. The Gordon Metal Co., Richmond, Va., which recently booked 240 tons of sheets for the state of Virginia, has also booked for the same buyer a carload comprised about equally of hot-rolled annealed pickled sheets and galvannealed sheets.

Buffalo—Sheet works continue to operate at 85 per cent of capacity. Pressure for deliveries continues. Output will show little decline in the first half of June, it is now predicted.

Cincinnati—Ordering of sheets for June delivery before the price advance continues heavy. Before long, it is predicted, books for this quarter will be filled. Level of actual requirements and the modest carryover present an optimistic view for third quarter, depending largely on volume for automobile manufacturers.

St. Louis—Producers and distributors of sheets report May business above expectations and the best for that month since pre-depression times. The anticipated advance of $2 per ton had a stimulating effect. Refrigeration and farm implement manufacturers figure prominently in current activity.

Birmingham—No lagging is noted in the operations of sheet mills in the Southern territory. Demand remains steady. Warehouse stock is being kept active also to meet numerous demands for small tonnages.

Transportation

Track Material Prices, Page 69

Car builders await the distribution of orders for 2800 freight cars by the Southern Pacific, which took bids on this equipment June 1. A quiet period in new business is expected during the next few weeks. Mills are shipping plates, shapes and other car material in steady volume, with prospects favorable for a continuation or improvement during the next several months. Spot orders for track accessories lately have been in excess of 1000 tons weekly.

Missouri Pacific placed additional orders for 10,000 tons of rails and fittings with the Colorado Fuel & Iron Co., the Illinois and Inland Steel Cos. for delivery next quarter.

Pennsylvania railroad has announced it has completed and placed in service over 4700 new freight cars out of the program for building 10,000 cars, which began early in 1936. Production of the balance of 5300 cars will continue over the remainder of this year.

Prices on railroad track spikes have been extended unchanged at 2.60c for the third quarter, likewise track bolts at 3.60c, base, and tie plates at 1.90c. The market on standard rails has been also extended at $36.37½ per ton, with billet

quality light rails likewise steady at $35 per ton, Pittsburgh.

American Refrigerator Transit Co. has entered the market for 1000 refrigerator cars requiring approximately 11,000 tons of rolled steel. Contemplated car work in the East includes one lot of 35,000 tons plates.

Due to heavy orders by the Chesapeake & Ohio, Missouri Pacific, Norfolk & Western and Pere Marquette railroads, domestic freight car buying in May, involving 8900 cars, was the heaviest this year, exceeding 4427 in April and 6900 in February, the runners-up.

The total for the first five months stands at 22,909, against 1182 in the corresponding period last year, 21,424 in the first five months of 1934, and 66 in the same period in 1933. Further comparisons follow:

	1936	1935	1934	1933
Jan.	2,050	24	152	3
Feb.	6,900	806	19,725	0
March	632	0	30	5
April	4,427	350	800	50
May	8,900	2	717	8
5 mos	22,909	1,182	21,424	66
June		5,151	1,835	500
July		500	19	306
Aug.		200	105	202
Sept.		875	7	23
Oct.		1,250	75	514
Nov.		100	254	533
Dec.		10,050	110	316
Total		19,308	23,329	2,460

Rail Orders Placed

Missouri Pacific, 10,000 tons rails and fittings to Colorado Fuel & Iron Co., Illinois Steel Co. and Inland Steel Co.

Car Orders Pending

American Railways of Porto Rico, seven freight cars; bids asked.

Locomotives Pending

Central of Brazil, possibly as many as three 4-10-2 type locomotives, bids asked.

Portland Terminal Co., five diesel electric locomotives.

Toledo, Peoria & Western, four locomotives.

Buses Booked

White Motor Co., Cleveland: Sixteen 21-passenger for Third Avenue Railway Co., New York; twelve 21-passenger for Virginia Electric & Power Co., Norfolk, Va.; five without bodies for Auto Service, Mexico City, Mexico; four 25-passenger for Ohio River Motor Coach Co., Ambridge, Pa.; three airstream for Westwood Transit Lines Inc., Newark, N. J.

African Metals Corp., 25 Broadway, New York, has been appointed American sales agent, except for a section in the South, for Usines Gustave Boel s.a., La Louviere, Belgium, producer of finished and semifinished steel and steel castings.

Pipe

Pipe Prices, Page 69

Pittsburgh—Shell Union Oil Corp., through its West coast subsidiary, Shell Oil Co., San Francisco, has allocated orders for about 25,000 tons of steel line pipe to be installed between Bakersfield, Calif., and Martinez, Calif. The order included 20,000 tons of seamless and about 5000 tons of electric weld pipe. The former tonnage was divided between Spang, Chalfant & Co. Inc., National Tube Co., and Jones & Laughlin Steel Corp., with the electric-weld portion being divided between Republic Steel Corp. and A. O. Smith Corp. Bids have been accepted by the Socony-Vacuum Oil Co. Inc., through its White Eagle division subsidiary, for the 178-mile 6-inch gasoline pipe line from Augusta, Kans., to Kansas City, but no award has been announced. Last week National Tube finished production on the last of the 74,000-ton gas pipe line from Dana, Ill., to Detroit.

Chicago — Glamorgan Pipe &

Foundry Co. and United States Pipe & Foundry Co. are low on 2827 tons of 4, 8, 12 and 24-inch cast pipe for Chicago. Shipments against old orders are well maintained, and with new business lately aided by the placing of several large lots, deliveries are expected to be in fairly good volume through third quarter. Prices remain fairly steady.

Boston—Considerable activity features the cast pipe market here. A number of good sized tonnages have been let and there are numerous releases on old orders. Prices are quite firm. New inquiry is rather slow.

New York—Only one letting of size, involving about 100 tons, featured the cast pipe market last week. There is very little inquiry before the trade. Pipe foundries, however, continue very busy on old orders. Prices are unchanged. Prices on standard line pipe are unchanged, although an increase is expected shortly on some specialties, including seamless. Approximately 530 tons of foundation pipe is required by the New York Central for an elevated highway project between 111 and 121st streets, on which bids will be opened June 16. Commercial pipe is moving actively. Several thousand tons of steel pipe are pending for shipment to the Orient.

Philadelphia—District pipe mills report good business, with one maker still operating three eight-hour shifts daily. No price increase in steel pipe and tubular goods for third quarter is contemplated, but seasonal conditions are sustaining operations at an excellent rate. Demand from the southwest oil fields is holding well.

San Francisco — Of outstanding importance was the award of 25,000 tons of seamless and electric welded line pipe, by the Shell Oil Co., San Francisco. Columbia Steel Co. secured half the tonnage of seamless pipe and Jones & Laughlin Steel Corp. and Republic Steel Corp., the balance. The electric welded pipe was divided between Republic, and A. O. Smith Corp. Cast pipe lettings were all confined to lots of less than 100 tons.

Seattle—There is no improvement in the cast pipe market, few new projects coming up for figures. Some tonnages are pending, including 525 tons of 6, 8 and 12-inch at Portland, Oreg. Everett, Wash., opened bids June 8 for 4000 feet of 6 inch wrapped steel pipe. Genesee, Idaho, held a special election to approve a proposed $15,000 system improvement and new water mains.

Cast Pipe Placed

1300 tons, for Harwich, Mass., to United States Pipe & Foundry Co., Burlington, N. J., through Eugene Peppucci, Boston.

328 tons, Westerly, R. I., to United States Pipe & Foundry Co., Burlington, N. J., previously reported as 250 tons.

205 tons, Marlborough, Mass., to Warren Foundry & Pipe Corp., Everett, Mass.

200 tons, Athol, Mass., to Warren Foundry & Pipe Corp., Everett, Mass.

175 tons, George Wright golf course, Hyde Park, Mass., to United States Pipe & Foundry Co., Burlington, N. J.

142 tons, Fall River, Mass., to United States Pipe & Foundry Co., Burlington, N. J.

100 tons, 12 and 16-inch, for White Plains, N. Y., to Donaldson Iron Co., Emaus, Pa., through procurement division, treasury department, New York.

Cast Pipe Pending

2827 tons, 4, 8, 12 and 24-inch, Chicago; Glamorgan Pipe & Foundry Co., Lynchburg, Va., low on 1675 tons, United States Pipe & Foundry Co., Burlington, N. J., low on 1152 tons.

800 tons, Cotuit, Mass.; low bidder, Warren Foundry & Pipe Corp. Everett, Mass.

165 tons; Charlestown, N. H.

Strip Steel

Strip Prices, Page 69

Pittsburgh—The 2.60c, Pittsburgh or Cleveland, base on cold-rolled strip will be carried into the third quarter unchanged. No change will be made in prices on fender stock and the commodity classification. However, producers are still adhering to their intention of advancing hot-rolled strip $2 a ton to 1.95c, base, Pittsburgh, effective July 1. The unchanged status of cold-rolled strip is due partly to the competitive situation in cold-rolled sheets. The strip market is quieter in view of the termination of automotive buying on 1936 models, but mill operations hold at around 50 per cent for both hot and cold-rolled grades.

Cleveland — Several makers of cold-rolled strip steel have just announced unchanged prices for third quarter delivery. Specifications are increasing moderately with some consumers stocking against possible third quarter needs, and others reporting expanding business, especially in narrow widths. Works operations continue at satisfactory rate.

Chicago—Some improvement in hot-rolled strip demand is apparent, partly due to higher prices next quarter. Producers of cold-rolled strip, however, plan to extend recent prices into the next period. Demand for this material lacks improvement. Automotive shipments continue to decline and little speculative buying is expected. Miscellaneous buying has shown little seasonal recession and is expected to holdup for at least another 30 days. Third quarter contracting so far is quiet. New business for that period is to be taken at 2.05c, base, for hot-rolled strip and 2.60c, Pittsburgh-Cleveland, for cold-rolled.

Boston—Current consumption of strip steel is high. Demand involves mostly material for nearby consumption. Cold rolled strip is suffering slightly from the increasing extent to which wide cold-rolled sheets are being slit to narrow widths, with the result that the product of cold strip mills is being undersold.

Wire

Wire Prices, Page 69

Pittsburgh — Prices on both merchant and manufacturing wire products will be unchanged for the third quarter. These include $2.10 per keg, Pittsburgh or Cleveland, for standard wire nails, 2.65c on annealed fence wire, 3.00c on galvanized fence wire, 2.80c for polished staples, and $58 per base column for woven wire fence. Plain manufacturing wire, 6-9 gage base, is being extended at 2.40c, Pittsburgh or Cleveland, and spring wire at 3.05c, same bases. Some upward revision may be considered shortly after the beginning of the quarter.

Chicago—Reaffirmation of recent prices on plain wire and merchant wire products on third quarter shipments has given buyers no speculative incentive to order beyond early needs. Demand is expected to continue moderating gradually during the balance of June. Automotive needs continue to recede, the decrease being more rapid than among miscellaneous consumers of manufacturers' wire. Merchant wire products remain in fair demand in farm districts, but shipments to distributors have been retarded seasonally.

Boston—Consumption of steel wire and wire products in New England is fairly active. It now is regarded as quite definite that no advances will be announced on wire and wire products for third quarter. Manufacturers' wire continues firm at 2.40c base Pittsburgh, or 2.50c base Worcester, Mass., equivalent to 2.60c delivered Boston.

Shapes

Structural Shape Prices, Page 68

New York—While awards aggregated less than 1000 tons, a large number of projects which have been on the pending lists for some weeks are being moved to a conclusion. Scheduled price advance of $2 a ton on plain structural shapes is held largely accountable for the tendency to push action in many cases. There is a possibility that as much as 30,000 tons altogether may be placed prior to the end of the month when the price advance becomes effective. The largest pending jobs are an 11,000-ton toll lift bridge and approaches at Far Rockaway, N. Y., on which bids are to go in June 24 and a 6000-ton elevated highway extension here on which bids are to be opened June 16. Plain shapes now are quoted at 1.90c base, Bethlehem, Pa., with 2.00c slated as the price beginning July 1.

Pittsburgh — Jones & Laughlin Steel Corp. will soon allocate approximately 7000 tons additional for the mill building on South Side, Pittsburgh, needed to house the new continuous sheet mill. STEEL, May 18, reported the initial lots of 5000 tons placed. American Bridge Co. closed on a 250-ton bridge at Saltsburg, Pa., for Keystone Coal Co. and a 310-ton bridge at Brighton, O., for the Chesapeake & Ohio, as well as a 350-ton Pennsylvania state bridge. Among inquiries are an 800-ton plant addition for the Carpenter Steel Co., Reading, Pa., a 1250-ton bridge at Rouses Point, N. Y., and a 250-ton plant addition at Warren, O., for the Packard Electric Co. Plain structurals hold at 1.80c, base, Pittsburgh, with the market scheduled for an advance to 1.90c, July 1. Steel sheet piling is quoted 2.15c, base, Pittsburgh, with a similar advance of $2 a ton to go into effect for the third quarter.

Chicago—Inquiry is in fair volume and considerably in excess of awards. Plans are to be out soon for the Chicago river lock and flowage control works, estimated to take around 5000 tons, while bids are to be taken over the next several months on five Mississippi river dams. Bridge work in several mid-western states will involve about 4000 tons. Industrial work includes plant additions for the Wisconsin Steel Works and Electro-Motive Corp.

Boston — Activity continues in structural steel. Fabricating shops all are operating on full schedules and have difficulty in meeting prompt deliveries. Current activity is stimulated by the price advance announced for July 1. There is a tendency to speed up action so as to get a good many of the contemplated projects covered at 1.90c.

Birmingham, Ala.—Steel fabricating shops are adding to their order books steadily and reiteration is given to statement that there will be steady operation for three months and longer. Among new business booked is order for 500 tons for the new packing plant at Albany, Ga., by Cudahy Co. to Virginia Bridge & Iron Co., Birmingham.

Philadelphia—While eastern Penn-

Shape Awards Compared

	Tons
Week ended June 5	16,001
Week ended May 29	13,934
Week ended May 22	13,205
This week, 1935	5,406
Weekly average, 1935	17,081
Weekly average, 1936	19,627
Weekly average, May	20,117
Total to date, 1935	326,778
Total to date, 1936	451,414

sylvania shape mills are operating at a good rate, much of this tonnage is fabrication for projects outside the district. Few sizable projects have been awarded recently, although a few, including a 2700-ton school and an 1850-ton bakery, both in this city, are active. Impending increases of $2 a ton on shapes are expected to further stimulate mill tonnage before the month is over.

San Francisco—Structural material continues in good demand and more than 34,000 tons are now pending. New inquiries include 458 tons for a bridge in Park county, Wyoming, up for bids June 9 and 103 tons for Boulder Creek bridge in Arizona. Bids open June 10 for the Neches river bridge near Port Arthur, Tex., involving 9750 tons.

Seattle — Fabricating plants are generally busy, awards of the last two months having been in excess of last year. Additional projects are announced but are not yet up for figures. Isaacson Iron Works, Seattle, took 100 tons for the women's dormitory, Washington State College, Pullman, Wash. Sather & Sons, Seattle, are low at $116,452 for rebuilding the Pasco-Kennewick state bridge, involving 250 tons of shapes, 100 tons of H steel piling and 63 tons of reinforcing. Fort Peck engineers opened bids June 1 for 232 tunnel bracing frames and 324 tons for gate shafts for the same project are pending.

Shape Contracts Placed

1800 tons, nurses home, Welfare Island, N. Y., to Bethlehem Fabricators Inc., Bethlehem, Pa.

1600 tons, mill building, Wisconsin Steel Works, South Chicago, Ill., to Wisconsin Bridge & Iron Co., Milwaukee.

1525 tons, extension to 40-inch mill, International Harvester Co., Chicago, to Wisconsin Bridge & Iron Co., Milwaukee.

1170 tons, Home Owners' Loan Corp. building, Washington, to Bethlehem Steel Co., Bethlehem, Pa.

1025 tons, converter flue, Garfield, Utah, for American Smelting & Refining Co., to Minneapolis-Moline Power Implement Co., Minneapolis.

900 tons, manufacturing building, United Aircraft Corp., East Hartford, Conn., to Bethlehem Steel Co., Bethlehem, Pa.

830 tons, Moorehead bridge, Fargo, N. Dak., to American Bridge Co., Pittsburgh.

815 tons, state highway grade separation, Jefferson county, Kentucky, to Virginia Bridge & Iron Co., Roanoke, Va.

615 tons, 426 ricks, Brown-Forman Distillery Co., Louisville, Ky., to West Virginia Rail Co., Huntington, W. Va.

600 tons, bridge, Will county, Illinois, to Bethlehem Steel Co., Bethlehem, Pa.

510 tons, clinic building, Medical College of Virginia, to Bethlehem Fabricators Inc., Bethlehem, Pa.

500 tons, Cudahy Packing Co. project to Virginia Bridge & Iron Co., Birmingham, Ala.

460 tons, state highway bridge, Sidney, N. Y., to American Bridge Co., Pittsburgh.

350 tons, state highway bridge, Oak Lane, Pa., to American Bridge Co., Pittsburgh.

350 tons, Triskett road bridge, Cleveland, to Fort Pitt Bridge Works, Pittsburgh.

290 tons, state highway bridge, Highland, Ind., to Bethlehem Steel Co., Bethlehem, Pa.

250 tons, bridge for Keystone Coal Co., Saltsburg, Pa., to American Bridge Co., Pittsburgh.

220 tons, New England Baptist hospital, Roxbury, Mass., to A. O. Wilson Structural Co., Cambridge, Mass.

215 tons, hospital, Hackensack, N. J., to Bethlehem Steel Co., Bethlehem, Pa., through Wigton-Abbott Corp., New York.

210 tons, manufacturing building, Budd Wheel Co., Detroit, to R. C. Mahon Co., Detroit.

200 tons, high school, Cranford, N. J., to Selbach-Meyer Co., West New York, N. J.

190 tons, state highway bridge, Rockland county, New York, to Bethlehem Steel Co., Bethlehem, Pa.

190 tons, state highway bridge, Sonyea, N. Y., to Mt. Vernon Bridge Co., Mt. Vernon, O.

190 tons, town hall, Harrison, N. J., to Oltmer Iron Works, Jersey City, N. J.

175 tons, forge shop, Moore Drop Forging Co., Springfield, Mass., to Haarmann Steel Co., Holyoke, Mass.

170 tons, fertilizer building extension, Wilson dam, Alabama, to Converse Bridge & Steel Co., Chattanooga, Tenn.

165 tons, Lafayette school, Long Beach, Calif., to Minneapolis-Moline Power Implement Co., Minneapolis.

150 tons, state hospital building, Cranston, R. I., to James H. Tower Iron Works, Providence, R. I., through Mathew Cummings Co., Boston.

130 tons, West End power station, Cincinnati, to Fort Pitt Bridge Works, Pittsburgh; placed by Union Gas & Electric Co., Cincinnati.

105 tons, power house, Boulder dam, Nevada, to unnamed interest.

101 tons, Hood Milk Co. garage, Charlestown, Mass., to New England Structural Co., Everett, Mass.

Unstated tonnage, plant addition, Electro-Motive Corp., McCook, Ill., to Austin Co., Cleveland.

Shape Contracts Pending

12,000 tons, marine highway, for marine highway authority, New York; bids June 24.

6000 tons, West Side elevated highway extension, 111th to 121st streets, New York; bids June 16.

5000 tons, Chicago river lock and flowage control works, Chicago; plans approved by War department; bids by Chicago sanitary district soon.

3000 tons, buildings, Rockland county hospital, Orangeburg, N. Y.

2700 tons, state bridges, Texas.

2500 tons, sheet steel piling, Cape Cod canal bulkhead project at Sagamore, Mass.; to be advertised by United States engineer's office, Boston.

1500 tons, Mississippi river lock No. 24, Clarksville, Mo.

1200 tons, sheet steel piling, Cape Cod canal bulkhead at Sandwich, Mass.; bids to be advertised by United States army engineer's office, Boston.

1200 tons, state bridge, Rouses Point, N. Y.

1125 tons, state bridges, Iowa.

1000 tons, Brooklyn state hospital, Brooklyn, N. Y.

800 tons, building for Carpenter Steel Co., Reading, Pa.

740 tons, five bridges over New York Central tracks, New York; general contract to H. H. Sherwin, New York.

700 tons, highway bridge, Woods county, Oklahoma; bids June 2.

700 tons, club house and grandstand, Roosevelt field, New York; general contract to Emund J. Rappoli, Cambridge, Mass.

700 tons, bridge, Alva, Okla.

600 tons, lock and dam, Peoria, Ill.; bids to United States engineers, Chicago, July 1.

600 tons, piling, Columbus, Nebr.

500 tons, state bridges, Wyoming.

500 tons, high school, Cranford, N. J.

460 tons, highway bridge, Cody, Wyo., for United States bureau of public roads.

458 tons, bridge in Park county, Wyoming; bids June 9.

403 tons, comprised of 308 tons of fabricated structural and 95 tons of plain structural steel, deck plate girder bridge, Montgomery county, Pennsylvania; Yeo Construction Co., Chestnut Hill, Pa., low at $365,917.13 on May 29 bid.

375 tons, state highway bridge, Edwardsville, Ill.

350 tons, including 100 tons H piling, Pasco-Kennewick, Washington state bridge; Sather & Sons, Seattle, general contractor.

310 tons, state bridge, Goodmans N. J.

280 tons, state highway bridge, Wanda, Ill.

250 tons, plant building, Warren, O., for Packard Electric Co.

250 tons, high school, Ansonia, Conn.; general contract to William Crow, New York.

200 tons, School of the Good Shepherd, Brooklyn, N. Y.; general contract to William Kennedy Construction Co., Brooklyn.

150 tons, state bridge at Dyer Brook, Me.

125 tons, state bridge at South Londonderry, Vt.

103 tons, pony truss bridge, Gerard township, Erie county, Pennsylvania; bids to state highway department, Harrisburg, Pa., June 19. Included, 24 tons of plain steel bars.

100 tons, comprised of 68 tons of fabricated structural and 32 tons of plain steel bars, highway work, Lebanon county, Pennsylvania; C. L. Miller, Pottsville, Pa., low on May 29 bid at $73,350.88.

100 tons, bridge, Caribou, Me.

Unstated tonnage, ring gates for Alcova dam project, Wyoming; Steacy-Schmidt Mfg. Co., York, Pa., low

Unstated tonnage, Mississippi river dam, Nos. 3, 12, 21 and 22; bids to be taken next few month.

Unstated tonnage, various grade crossing elimination projects in Massachusetts, to be advertised shortly.

Behind the Scenes with STEEL

Out of the Money

THEY'RE still repeating the yarn Republic's Tom Girdler told recently at the Institute meeting in New York. Don't stop us if you've heard it.

Briefly it concerns a proud gentleman of the old South who was bent on displaying the speed of his favorite pack of hounds to an English friend who here might as well be called Lord Lounsberry-Tithers, a bit of a hound-fancier himself.

The two gentlemen had assembled at the top of a hill waiting for the dogs to rustle up a fox and streak by them. Shortly this was accomplished and midst a terrific baying the pack tore up the hill and shot past the two onlookers.

In the pack of hounds was one, Lucy by name, who was the owner's favorite and who, despite the master of hounds' warning she was in no condition to chase foxes, at her boss' request was let loose.

"Look at those critters git," said the p. g. to Lord L-T, "never saw anything like it, suh, and good old Lucy at the head of the pack!"

"Rawthuh," exclaimed Lord L-T as he adjusted his monocle, "and did you notice, old boy, that the fox himself wasn't a bad fourth?"

Not to be outdone by a competitor, Hugh Morrow of Sloss-Sheffield captivated the crowd at the banquet with the incident of the colored lady who, upon being questioned by her doctor as to whether she had ever had any X-rays taken, replied in the negative, but added that she had been "ultra-violated."

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Local Color

THE home town (Cleveland) is a busy place this summer, as you may have heard. Socialists, high school bands, GOP's, electroplaters, expositionites, American Legion, Coughlinites, National Metal Congress are only a few of the stellar attractions which either have been here, are here or are coming. The city is mad with bunting and beer, delegates and dither, fun and floozies.

Here at STEEL *we could take a pot shot at the Great Lakes Expo and with a little luck knock over a horticultural building or something. Twelve days more of peace and the crowds move in, parking lots raise their ante to about 50 cents, and sandwiches probably will be auctioned off at upward of a dollar.*

This week the GOP's are here and the streets are crowded with delegates looking up for straws in the wind. We bought a small elephant and stuck a flag in his tusks. During the week, we will open our window every morning at 10 a.m., wave the emblem and shout loudly, "Hurray for Landenburg!"

Looks like a bad summer to attempt any real concentration on working.

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INQUISITIVE CAMERA DEPT.—V

George O. Hays, business manager of STEEL *since 1929 and associated with Penton Publishing Co. since 1912, musing over two-color spreads, bleed-offs, 52-page contracts and other commercialities.*

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Word Weaver

A MANUSCRIPT on the subject of steel homes was received recently by STEEL'S editors who examined it carefully, as they do all manuscripts, and then let us have the privilege of looking it over. It began like this:

"Home building through co-operative marriage being the trend of our present generation, engenders many changes in the environment in which we are to live. Participation and mutual interest in building a fine life together necessitates equality by the lifting of many burdens of toil which naturally have been assumed by man and woman, as having in previous generations been tasks relished because of the lack of an appropriate method of elimination and fear of idleness without these tasks. . . ."

We think the author really has hold of something there, but it happened to be 5 p. m. when we got through that first part, so we had to let it go.

—SHRDLU

Reinforcing

Reinforcing Bar Prices, Page 69

New York—About 1600 tons of bars are involved in six new projects which have been closed in this district. There also has been a substantial business involving small tonnages. The market on the whole reflects more activity than has been noted in nearly two months. Several new tonnages are up for bids. The market continues to be quoted at 1.95c to 2.05c base, Pittsburgh, for bars rolled from new billets.

Pittsburgh—As a result of the May 29 opening of bids at Harrisburg, Pa., Yeo Construction Co., Chestnut Hill, Pa., is low on Montgomery county work which requires 228 tons of plain steel bars. Also on inquiry are 123 tons of plain bars for Crawford county and 36 tons for Erie county, both June 12. Concrete Steel Co.'s recent order for 1500 tons of bars with Carnegie-Illinois Steel Corp. was against 12 identified projects, rather than a blanket requirement as reported last week. New billet reinforcing steel bars have been reaffirmed for the third quarter at 2.05c, Pittsburgh, and 2.10c, other basing points. Rail steel bars have also been reaffirmed at 1.90c, base, Pittsburgh.

Cleveland—No large tonnage is in sight. Prices and shipments are steady, stocks normal. Demand for small structural material is increasing. The stock situation is tightening; general outlook appears brighter.

Chicago—While new awards have been confined principally to small lots, heavier buying is in sight. Specifications are to be issued during the next 30 to 60 days for five Mississippi river dams while a substantial tonnage of bars will be required for state highway and bridge building in the Central West. Private inquiries and orders usually are confined to lots of less than 100 tons. Mills continue well engaged in shipping against previous contracts. Changes in prices for third quarter shipments have yet to be announced.

Boston—Fair volume of business features the concrete reinforcing bar market in New England. Most orders involve small tonnages but some good sized lots are included.

Philadelphia—The market is active, with orders not particularly large, but numerous. Leading awards included 400 tons for a state bridge in Montgomery county and 300 tons for a dam in Pennsylvania, the latter placed through the York Engineering Construction Co., York, Pa. A $2 increase of the 2.05c, Pittsburgh, price on billet steel bars is still pending.

San Francisco—Demand for reinforcing steel bars continues active and awards aggregated over 2700 tons, bringing the total for the year to 101,248 tons as compared with 60,661 tons for the corresponding period in 1935. Pending business exceeds 13,000 tons.

Seattle — Important tonnages are scarce but mills and jobbers report good demand for small lots, the ag-

Concrete Awards Compared

	Tons
Week ended June 5	4,315
Week ended May 29	5,029
Week ended May 22	2,739
This week, 1935	4,742
Weekly average, 1935	6,862
Weekly average, 1936	6,229
Weekly average, May	6,368
Total to date, 1935	114,400
Total to date, 1936	143,283

gregate of which is much larger than a year ago. While WPA projects have been reduced, purchases from private sources are improved. Awards this week included 250 tons to Columbia Steel Co. for the women's dormitory, Washington State College, Pullman, Wash. Projects pending involve more than 1000 tons.

Reinforcing Steel Awards

600 tons, American Can Co. building, Jersey City, N. J., to Jones & Laughlin Steel Service Inc., Brooklyn, N. Y.

500 tons, building, Colgate-Palmolive-Peet Corp., Jersey City, N. J., to Joseph T. Ryerson & Son Inc., Chicago, through Turner Construction Co., New York.

475 tons, building for United Parcel Service, Los Angeles, to Consolidated Steel Corp., Los Angeles.

400 tons, wire mesh, metropolitan water district, Los Angeles, to Pittsburgh-Des Moines Steel Co., Pittsburgh.

400 tons, state bridge, Montgomery county, Pennsylvania, to Taylor-Davis Inc., Philadelphia.

300 tons, dam in Pennsylvania, awarded through York Engineering Construction Co., York, Pa., to Bethlehem Steel Co., Bethlehem, Pa.

300 tons, Erie grade crossing elimination at Wick avenue, Youngstown, O., to Truscon Steel Co., Youngstown, O.

200 tons, Pond's Extract Co. building, Clinton, Conn., to Bancroft & Martin Rolling Mills Co., South Portland, Me.

170 tons, stadium, Jersey City, N. J.; 120 tons to Joseph T. Ryerson & Son Inc., Chicago; 50 tons to Capital Steel Co., Brooklyn, N. Y.

150 tons, community playhouse, Pasadena, Calif., to Consolidated Steel Corp., Los Angeles.

120 tons, high school, Binghamton, N. Y., to Capital Steel Co., Brooklyn, N. Y.

100 tons, state hospital building, Augusta, Me., to Bancroft & Martin Rolling Mills Co., South Portland, Me., through F. W. Cunningham, Portland, Me.

100 tons, addition to Chatsworth Park school, Los Angeles, to Blue Diamond Corp., Los Angeles.

[illegible] tons, school, Avenal, Calif., to unnamed interest.

[illegible] tons, Stevenson junior high school, Los Angeles, to unnamed interest.

100 tons, bridge, Oceanside, Calif., to Soule Steel Co., Los Angeles.

100 tons, school, Baldwin Park, Calif., to unnamed interest.

100 tons, regional market, Newburgh, N. Y., to Concrete Steel Co., New York, through L. H. Swenson, Poughkeepsie, N. Y.

Reinforcing Steel Pending

600 tons, housing project, Philadelphia; Starrett Bros. & Eken Inc., New York, general contractors.

500 tons, Erie railroad, Port Jervis, N. Y.; bids in June 15.

175 tons, grade crossing elimination, Ayer, Mass.; general contract to Coleman Bros., Boston.

170 tons, administration building, Mills Field, San Francisco; general contract to Reed & Reed, San Francisco.

150 tons, state bridge in Park county, Wyoming; bids June 9.

142 tons, grade crossing elimination, Hightstown, N. J.; bids June 22.

132 tons, Harrison street viaduct, San Francisco; general contract to Sibley Grading & Teaming Co., San Francisco.

130 tons, grade crossing elimination project, Sharon, Mass.; general contract to Arute Bros., New Britain, Conn.

123 tons, highway work, Crawford county, Pennsylvania; bids to state highway department, Harrisburg, Pa., June 12.

100 tons, grade crossing elimination, Goodmans, Union county, New Jersey; bids June 22.

100 tons or more, two undercrossings, Wenatchee, Wash.; M. P. Butler, Seattle, general contractor.

Unstated tonnage, ship-to-rail terminal, Bayonne, N. J.; general contract to Standard Dredging Co., New York, and J. Rich Steers Inc., New York.

Pig Iron

Pig Iron Prices, Page 70

Pittsburgh—The market on foundry and malleable pig iron has been reaffirmed for the third quarter at $19.50 per gross ton, Pittsburgh district furnace, and also on basic at $19 and bessemer grades at $20, base. Although shipments are fairly steady, the market lacks any forward buying and continues disturbed by a Valley interest's offers to sell a distress tonnage in small lots at cut prices, which in some cases have been $1 a ton beneath the market.

Chicago—New business for third quarter delivery has been in fair volume, following the opening of books at unchanged prices. Foundries anticipate good schedules during the next several months and, seeing little likelihood of lower quotations, are willing to contract for future needs. Advances in steel prices lead some consumers to look for an upward revision in pig iron next quarter. Operations are steady despite the slackening in demand for automotive castings. Some recession in consumption is looked for next month, but the letdown is expected to be less than seasonal.

Boston—For the first time in several years, pig iron is being produced in New England. Mystic Iron Works, June 1, lighted its furnace at Everett, Mass., and shortly will be producing approximately 500 tons per day. Some producers have opened books for third quarter and have booked considerable tonnage. The price will continue unchanged at $20.50, Everett furnace. While some interests still have large stocks on hand, the great majority of foundries are expected to buy for third quarter.

New York—Eastern sellers report little third quarter interest to date, although they are anticipating better volume this month, notwithstanding the fact that there will be no increase in prices on third quarter shipments. Buying is still of hand-to-mouth character.

Philadelphia — Although sellers have reaffirmed prices for third quarter, they anticipate some improvement in bookings this month. Consumers' stocks are now the lightest in several months, and while hand-to-mouth buying may continue to characterize trading, it is believed that orders this month may be more numerous and, in some instances, a little larger than they have been.

Buffalo—With third quarter pig iron prices fixed at current levels, buying has been resumed on a broad scale. Shipments by canal and lake are at a high rate and purchases are being accompanied by shipping in-

structions for large portions of each order. Melt in works of producers of heating equipment is reported increasing.

Cincinnati—Pig iron producers have opened books for next quarter at unchanged prices, preserving the usual differential of 38 cents. Shipments are holding steady, with all new buying on prompt basis and in small lots. Hamilton Coke & Iron Co.'s furnace will be enlarged and resume within three months. Supplies of merchant iron have been stocked by this company.

St. Louis—Blast furnace interests have opened books for third quarter, with prices unchanged. Buying for third quarter has already developed in fair amount, with some interests having placed their entire requirements. Final reports indicate a slight gain in shipments during May over April. The melt is holding steady, some recessions being counterbalanced by increased activities elsewhere.

Birmingham, Ala.—Order books of producers are in good shape, and indications point to melters taking a greater tonnage of iron this month than during the last few weeks. Sales for third quarter have not opened up as yet. Surplus stocks of iron in this district are large.

Scrap

Scrap Prices, Page 71

Pittsburgh—Complete disinterest in forward buying leaves Wheeling district consumers conspicuous for their position in the market whereby they are paying between $14 and $14.50 for No. 1 steel. In the immediate Pittsburgh district, dealers' shortages are rapidly vanishing and the market's interest last week centered upon with what ability railroad lists would be absorbed. The Baltimore & Ohio's small list was applied against a $14.50 mill order, and the 10,000 tons of No. 1 steel sold by the Pennsylvania on June 3 virtually confirmed the present range. Norfolk & Western railway asks bids by June 11 on a 53-item list, largest of which is 600 tons of 130-pound rails.

Cleveland—Aside from a few price adjustments of a minor nature to bring the market more in line with heavier grades of iron and steel scrap, the trade appears to be marking time. Shipments are going forward in routine fashion and small sales are being made. But the market continues strong with supplies closely held.

Chicago—Prices are steady, but new orders are light. Sellers are active in covering old contracts, and such shipments easily are absorbing what scrap is coming into the market. No. 1 heavy melting steel continues $12.50 to $13, though some mills are offering less than $13 in discussing new commitments.

Boston—Shipments against export orders form the principal activity in iron and steel scrap. Brokers continue to pay $10.50, delivered Boston docks, for No. 1 heavy melting steel and $9.50 for No. 2. Domestic demand is small. Current prices are regarded as fair and the only difficulty is absence of demand. Under the circumstances dealers are collecting scrap in normal volume.

New York—The market continues fairly quiet. Principal activity consists of loading scrap for export on old orders. No. 1 heavy melting steel for export continues $9.50, delivered on New York or Brooklyn docks. The only change in the domestic market is in connection with rails for rolling, brokers now quoting $9.50 to $10, f.o.b. New York.

Philadelphia—Heavy melting steel has dipped to a flat price of $12, for No. 1 grade and $11 for No. 2. Several other grades have undergone a slight reduction, including No. 1 cupola cast, now holding at $13.50 to $14; mixed yard cast, $11.50; railroad grate bars $10 to $10.50; new compressed sheets $11.50 to $12; low phosphorus steel crops $16, and stove plate $10 to $10.50. Dealers continue to quote $11, Port Richmond, for No. 1 steel for export, but have withdrawn all offerings for No. 2 steel for export.

Buffalo—Scrap is nominally weaker with $12.50 offered for small lots and $13 for real tonnage of No. 1 heavy melting steels. Bids for several other materials have been reduced proportionately. Dealers are making heavy shipments and report difficulty in buying scrap at profitable prices.

Detroit—Apparently the downward course of scrap prices was arrested last week following five to six weeks of steady decline. No. 1 steel appeared to firm up at around the $10 to $10.50 level, with the likelihood that the market may hold at this level for the next 30 days. Automotive scrap offerings show some dwindling.

Cincinnati—Iron and steel scrap market is stagnant, prices remaining unchanged and activity being confined chiefly to acquisition of material to fulfill old contracts. Dealers show little activity, but in some cases are adding to stocks.

Birmingham, Ala.—Despite the fact that quotations are low, the market is showing no renewed life. Sloss-Sheffield Steel & Iron Co. has sold its two obsolete blast furnaces at Gadsden, Ala., to Max Solomon Co., Pittsburgh. North Birmingham blast fur-

naces of Sloss-Sheffield were not sold and one is being put in shape for early operation.

St. Louis—The market for iron and steel scrap remains quiet, with prices unchanged, but in most instances untested. Sales are confined to a few scattering lots, the largest reported being 140 tons of heavy melting steel at current quotation.

Seattle — The export market is weak but continued buying is sustaining domestic prices. Exporters state that although local buyers are still paying $10 gross for No. 1, the export price is around $8.50. Japan has stopped buying, reports from that country stating that large consumers are stocked ahead to October and December.

Warehouse

Warehouse Prices, Page 72

Pittsburgh—June so far has kept pace with the heaviest volume of steel warehouse business in this district in over four years, this latter showing being the record for both May and April. In about two weeks warehouse interests will begin announcing third quarter prices to take effect July 1, and generally will be $2 a ton advances in most finished steel products.

Chicago—Warehouses are considering price advances to compensate for recent mill increases, but new figures have yet to be announced. Business is holding well, with improved demand for heavy products a feature.

Boston — Jobbers have dropped prices on galvanized sheets. They are now asking 4c per pound delivered in this territory on No. 24 gage galvanized sheets in lots of 50 bundles or more. The price rises to 4.15c on 25 to 49 bundles, 4.30c on 3 to 24 bundles, 4.80c on 2 bundles and 5.30c on 1 bundle. Otherwise, current prices are unchanged, but jobbers plan to advance prices early in July to correspond to the mill advances. Demand for products out of stock has improved, and jobbers now are enjoying the best volume of the year.

New York—Volume of warehouse business is slightly off as compared with the April and May rate, but it is believed this drop is temporary inasmuch as consumption is at the best rate of the year. Prices continue unchanged, but it is regarded as settled that prices on bars, plates, shapes, sheet and strip will go up after the expected mill advances on July 1.

Philadelphia—Jobbers are experiencing a brisk business, with the rate so far comparing favorably with May. An advance in prices for third quarter is under consideration by many jobbers, in view of the proposed increases in mill products.

Detroit—Local bookings are maintaining the May rate. Warehouse prices are expected to advance about July 1, in line with recent mill increases.

Seattle—The month's turnover has been satisfactory and registers substantial gains over a year ago. Offsetting less buying by the WPA, private industries are making replacements and extensions. The Alaska railroad and Puget Sound navy yard are placing seasonal requirements, while ship repair plants have much work in hand. Prices are unchanged. Jobbers are expected to follow the price advances of the mills, announced for July 1, but no action has been taken.

Cincinnati—Warehouse prices will likely be unchanged during June, but an advance next quarter is anticipated. No gain in volume is being traced to this outlook, but tonnage is close to May, with undiminished demand for small lots of building materials.

St. Louis — Warehouse demand is reported active. All items in the building field are moving in satisfactory volume. General manufacturing trade is accounting for liberal tonnages, with purchasing by the refrigeration and air conditioning interests especially heavy.

Tin Plate

Tin Plate Prices, Page 68

Pittsburgh—For the fourth successive week, the tin plate industry operated at a full 100 per cent of its capacity. Several mills scheduled extra turns beyond 16 weekly. In spite of heavy production, current mill output is not up to the level of shipments and canmakers are pressing for deliveries. The mills, however, have built up and maintained heavy finished stocks of tin plate for approximately the past year. A feature at present to tin plate buying is continued preference for cold-reduced plate, where mills are running six weeks to two months behind. The market is quoted firmly at $5.25 per base box, Pittsburgh, for standard tin plate, with tin plate waste-waste, 2.75c, and tin plate strips, 2.50c. No. 24 unassorted long ternes are quoted 3.40c, Pittsburgh, and 28 gage tin mill black sheets, 2.75c.

Cleveland—Tin plate mills are keeping up their rapid operating rate. Canners and mill operators believe that 1936 will be the heaviest canning and tin plate year in the history of the American trade.

Semifinished

Semifinished Prices, Page 69

Pittsburgh—Wire rods have been reaffirmed for the coming three months at $38 per gross ton for Nos. 4 and 5, $40 per gross ton for No. 5 to 15/32-inch and $42 base, Cleveland or Pittsburgh, for 15/32 to 47/64-inch rods. Orders for rerolling billets and sheet bars, increased slightly last week, partially due to some buying by users in anticipation of the price increase on July 1. Some mills will apply the $2 a ton higher

market uniformly on all shipments beginning July 1 and thereafter. Others indicate that on business placed late in June shipments will have to proceed at mills' convenience through July. It appears the higher market will become uniformly observed by Aug. 1. For present shipment, billets, blooms, sheet bars and slabs are quoted $28, all basing points, and forging billets, $35, base. Explanation for the reduction of the $2 size extra on forging quality billets for sizes under 5 x 5 to 4 x 4, lies in a competitive situation on these sizes with merchant steel bars, whereby the latter on some sizes had been lower priced than the former forging billet setup.

Cold Finished

Cold Finished Prices, Page 69

Pittsburgh—Last week the widespread knowledge that cold-drawn carbon steel bars would be advanced $3 a ton, effective July 1, caused the appearance of more buyers in the market slightly heavier specifications per individual order. Undue speculation was not apparent. Meanwhile, the market reverts to a base price of 2.10c base, Pittsburgh, with other basing points quoted 2.15c, Cleveland, Chicago, and Gary, Ind.; 2.20c, Buffalo; 2.30c, Detroit, and 2.35c, Eastern Michigan.

Ferroalloys

Ferroalloy Prices, Page 70

New York—Ferromanganese sellers are likely to open their books for third quarter before the end of this week. It is expected the present price of $75, duty paid, Atlantic and Gulf ports, will be reaffirmed, although this is not assured. Shipments continue heavy, reflecting active steelmaking operations, and in some quarters it is believed that the movement this month will be fully on a parity with April, the best month so far this year in point of shipments. Domestic spiegeleisen, 19 to 21 per cent, is expected to be reaffirmed at existing levels, although there has been no official action yet. The current market is $26, Palmerton, Pa., on lots up to 50 tons, and $24 on 50 tons and over.

Metallurgical Coke

Coke Prices, Page 69

Requirements of a number of Middle West foundries for both beehive and by-product coke appear to be subjected in size to blast furnace coke commitments at present. For shipment both through the balance of this month and July, beehive coke producers are quoting the market at $3.50 to $3.65 per ton f.o.b. Connelsville, Pa., ovens, for standard furnace grade, and an unchanged market of $4.25 to $4.35 for common foundry.

At Chicago, steady consumption sustains foundry coke shipments, holding deliveries close to the active rate of the last 30 to 60 days. Contract market is being continued through June at $9 per ton, ovens, for outside delivery and $9.75, delivered Chicago.

Steel in Europe

Foreign Steel Prices, Page 72

London — (*By Cable*) — Domestic pig iron supplies in Great Britain are slightly easier but none is available for export. Domestic iron and steel prices have been increased 2s 6d to 12s 6d on various products, the first important change since 1929. New business is quiet but most producers are late on current deliveries. The outlook continues bright.

The Continent reports export trade quiet, Great Britain taking increased quotas of semifinished steel. The Far East and South America are showing slightly more activity.

Bolts, Nuts and Rivets

Bolt, Nut, Rivet Prices, Page 69

Leading producers of bolts and nuts announced their third-quarter price schedule June 1, with a 5 per cent increase from the present market. This increase will be quoted by deducting the final 5 off from the present market, which names until July 1 70-10-5 off for ½ x 6-inch and smaller carriage and machine bolts, 70-10 off for larger sizes, with plow bolts quoted 70-10 off, step and elevator bolts, 65-5 off, and stove bolts in packages with nuts attached, 72½-10-10 off. The third-quarter market on large structural rivets will be announced early this week and probably will represent an advance from the present 2.90c, Pittsburgh or Cleveland, base.

Nonferrous Metals

Nonferrous Metal Prices, Page 70

New York—Sharp recessions followed by a strong upswing in tin prices were the outstanding develop-

ments in nonferrous metals last week.

Copper—Leading sellers continued to quote electrolytic at 9.50c, Connecticut. Strength in the market is attributed to the strong statistical position of the industry and comparatively heavy rate of consumption.

Lead—Despite a slower pace in demand the market gave a good account of itself and prices held firm at 4.45c, East St. Louis, and 4.60c, New York, with St. Joseph Lead Co. asking $1 premium on the latter market.

Zinc—Consumption is well sustained although galvanizing operations have declined steadily during recent weeks. Persistent low levels in London retard price strength here. Prime western held at 4.90c, East St. Louis.

Tin—Sales of Straits tin for July delivery were made last week as low as 41.87½c but the market recovered to close around 43.85c on spot.

Antimony — American spot declined ⅛-cent to 12.12½c, c.i.f. in bond New York on reports of lower levels in China. The threat of war in China has had no effect on the market as yet.

Quicksilver

New York—A firmer undertone has developed in quicksilver this week following several weeks of easiness in prices. Domestic demand has increased with sales centering mostly on lots of 25 flasks. Small lots of 15 to 25 flasks are unchanged at $75 to $75.50 a flask and the nominal price on round lots of 100 flasks is $74.50.

Car Scrapping Program Denied By Co-Ordinator

Reports of a billion-dollar program by the federal government for scrapping old freight cars and building new ones were denied last week by Railroad Co-ordinator Eastman. He said there was no basis for the rumor, published in New York.

According to the story, plans for such a program had been prepared by Eastman but were being withheld temporarily by President Roosevelt.

Ohio Foundrymen Discuss Dust Prevention, Safety

Problems pertaining to workmen's compensation and good housekeeping practices were emphasized at the foundry sectional meeting of the seventh all-Ohio safety congress, in Columbus, O., June 3. George J. Leroux, National Malleable & Steel Castings Co., Cleveland, chairman of the section, presided.

E. O. Jones, director, safety and hygiene section, American Foundrymen's association, Chicago, spoke on "It's Housecleaning Time in the Foundry." J. W. Beall, commissioner, industrial commission of Ohio, told of the necessity of supplying all facts concerning industrial accidents.

Mr. Leroux was re-elected chairman of the foundry section for the next year.

Die, Tool Steel Advances

Vanadium-Alloys Steel Co., Pittsburgh, has announced the following prices on high-speed and hot-working die steel for effect June 1 and for third quarter. Net increases range from 5 to 6 per cent from the second-quarter market.

High speed "red cut superior" tool steel will be quoted 57½c per pound, with the market on high speed "red cut cobalt" 95c per pound, and the price on high speed "E.V.M." tool steel, 67½c per pound.

Hot working "vasco marvel die steel" is named 44c a pound, with "Colonial No. 3," 44c per pound, high carbon high chrome die steel, 37c a pound, and "vasco crocar," 37c per pound.

Coke By-Products

Coke By-Product Prices, Page 69

New York—Demand for all coal tar by-products continues at least equal to the supply, with a shortage in some of the distillates and in phenol and naphthalene. Prices are unchanged and firm.

Equipment

Chicago—Machinery and equipment business is holding in most directions. Machine tool buying remains around the active rate of the past two months, and sellers report an encouraging volume of inquiries, the latter made up principally of individual items. Small tool demand has yet to experience a seasonal letdown, though the approaching curtailment of automotive operations is expected to have some influence on this type of equipment. Farm implement and tractor builders are furnishing a good volume of small tool business, while needs of railroad shops and car builders are increasing. Machine tool manufacturers are making little headway in improving deliveries.

Pittsburgh—Crucible Steel Co. of America has awarded contract to W. T. Grange Construction Co., Pittsburgh, for a new plant addition at the LaBelle works, North Side, Pittsburgh, which was destroyed by fire, March 17. A newly equipped pickling plant is being installed, among other facilities.

Seattle—Turnover of both new and used equipment and machinery is active and volume of sales is being well maintained. Industrial expansion in mining, canning, lumbering and logging is calling for equipment of all types. Alaska and the agricultural sections buying heavily. Road machinery is also in strong demand.

Construction and Enterprise

Ohio

ADENA, O. — Village, L. E. Burdick clerk, Frank Ritter WPA director for district No. 3 with offices in Canton, O., is having the Jennings-Lawrence Co., 538 Rowlands building, Columbus, O., complete plans for a waterworks system. (Noted STEEL May 4).

AKRON, O.—Portage Machine & Mold Co. has been incorporated by Arthur Nokov, Olga Patterson, Earl M. Patterson and Smoyer Kennedy. Capital is $10,000. Office of the correspondent is located at 2110 First Central Tower building.

ASHLEY, O.—Ray Whipple, mayor is asking bids until noon, June 9 for cast iron water mains, valves, hydrants, turbine pump, etc., on contract No. 2; and for a 100,000-gallon elevated steel tank, on contract No. 3. (Noted STEEL May 25).

CLEVELAND — Ohio Electric Mfg. Co. will construct a $15,000 one-story addition to its factory at 5900 Dellford avenue.

CLEVELAND—City, division of light and power, Room 105, City hall, proposes replacement of stokers and boiler accessories at the East Fifty-third street generating station.

CLEVELAND — City, department of public service, Miles E. Evans director, room 213, City hall, will receive bids until June 11 for return sludge pumps, contract No. 76, and a heating system on contract No. 89. PWA project.

DAYTON, O. — Air corps, contracting officer, materiel division, Wright field, will receive bids until June 15 for a rotary pump and motor, Circular No. 36-957.

GEORGETOWN, O. — Village has adopted an ordinance empowering the board of public affairs to purchase local waterworks, to retain an engineer to plan for construction of additions to the existing plant and to make various improvements. A bond issue of $40,000 is to be provided.

HAMILTON, O. — City is accepting bids for furnishing and installing a 10,000 kilowatt steam turbine generator unit, one surface condenser and auxiliary equipment, one closed type feed water heater, turbine instruments and panel, additions to present switch gear, four generators and voltage regulators. Total project, with buildings, is estimated to cost $465,000. (Noted STEEL May 20).

RIO GRANDE, O.—Village has approved a $7500 bond issue for carrying out a proposed $40,000 waterworks and sewage system. Ernest Wiseman is mayor, Burgess & Niple, 568 East Broad street, Columbus, O., is consulting engineer, and Ray Noble, district No. 5, Athens, O., is WPA director. (Noted STEEL May 25).

SABINA, O. — Board of public affairs is advertising for bids for furnishing and installing a diesel engine and generator unit, complete switchboard, fuel storage equipment, auxiliaries and other equipment in a light plant improvement program. Total cost is estimated at $30,000. F. M. Stewart is mayor, and R. L. Allen, clerk.

TOLEDO, O. — Seeger Brass Co., 21 St. Clair street, has been incorporated by Valentine Seeger, Valentine Seeger Jr., and Norman W. Reed.

TOLEDO, O.—City, George N. Schoonmaker service director, is taking bids due June 9 for furnishing all labor and material to install two gas engines and accessory equipment, to relocate and connect existing synchronous motor to act as generator, and to make necessary changes in the electrical system. Cost is estimated at $35,000. H. P. Jones & Co., Second National Bank building, is consulting engineer.

YOUNGSTOWN, O. — Cold Metal Process Co., Venice J. Lamb president, has leased and moved into old Haselton plant of the Sharon Steel Corp. The company will construct mills to replace those damaged by fire in March.

Michigan

BATTLE CREEK, MICH. — Consumers Power Co. plans to begin work soon on a power plant project that will include construction of a new steam-electric generating plant capable of producing 51,000 kilowatts.

DEERFIELD, MICH. — Village is asking bids for a 75,000 gallon elevated tank, miscellaneous pipe, 24 hydrants, and 23 valves. A. H. Smith & Niles, 112 East Woodruff avenue, Toledo, O., is consulting engineer.

DETROIT — Art Metal Works has leased property at 6188-6190 Twelfth street. Joseph Dunker is president.

DETROIT—B. G. H. Machine Tool & Die Co., 9325 East Forest street, has been incorporated by Joseph J. Hochbein, 3580 Seventeenth street, to manufacture tools and dies.

DETROIT — Federated Engineering Co., 2519 Bellevue avenue, plans to install electric power equipment in a new 2-story building on Oakman boulevard. Building and equipment is to cost approximately $100,000.

Connecticut

EAST HARTFORD, CONN.—Hamilton Standard Propeller Co., division of United Aircraft, will erect, immediately, a large factory.

Massachusetts

PITTSFIELD, MASS.—Gulf Oil Refining Co., with offices in Pittsfield, and at Seventh and Grant streets, Pittsburgh, has under consideration plans for altering and repairing the storage plant here recently damaged by explosion. Private plans have been drawn, and the cost estimated at $38,000.

New York

BINGHAMTON, N. Y. — City is taking bids for furnishing two steam pumps for the waterworks system. C. A. Harrell is city manager, and J. A. Giles is city engineer. (Noted STEEL May 4).

BROOKLYN, N. Y. — Department of

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(*Continued from Page* 89)

hospitals, room 519, 125 Worth street, will receive bids on contract No. 5 for heating and ventilating equipment for nurses' home and training school in Kings county.

MARCY, N. Y. — Department of mental hygiene, State Office building, Albany, N. Y., will receive bids June 24 for construction of a sewage disposal plant and a water supply system for the Marcy state hospital. W. E. Hangood is architect for this $156,000 project. (Noted STEEL March 9).

NORTHPORT, N. Y.—Construction service, veterans' administration, Washington, will accept bids until June 16 for boiler plant equipment and other equipment for installation in a new institution building here.

ORANGEBURG, N. Y. — Department of mental hygiene, State Office building, Albany, N. Y., extended bidding time from April 15 to June 17 for the sewage disposal plant for the Rockland state hospital. Cost estimated at $151,000.

New Jersey

WOODBINE, N. J.—Common council is considering construction of a new municipal electric light and power plant. Estimates have been authorized. William Abramson and C. P. Wood are the committee members investigating the project.

Pennsylvania

ETNA, PA.—Metzer Bolt & Nut Co. has plans under consideration for rebuilding the plant recently damaged by fire.

HANOVER, PA. — A machine shop controlled by Elmer C. King, 345 Popular street, was damaged by fire recently.

LANCASTER, PA. — School district of Lancaster will receive bids until June 22 for a heating and ventilating system estimated to cost $117,000. Separate proposals will be taken on this PWA docket No. 1052 for the general contract for a senior high school building. Henry Y. Shaub, architect, 20½ North Queen street, Lancaster, has the plans and specifications.

PHILADELPHIA—Frankford Arsenal, Administration building, will accept bids until June 16 for an automatic milling machine on inventory 314-36-506.

PHILADELPHIA — North American Smelting Co. Inc., Ninth and Thompson streets, has leased an iron works at Edgemont and Tioga streets. A factory building at 3562 Salmon street is included in the lease.

PITTSBURGH — Steel City Electric Co., 1207 Columbus avenue, has secured a permit to construct an extension at a cost of about $20,000. W. F. Trimble & Sons, 1719 Pennsylvania avenue, is contractor.

PITTSBURGH — Bendix - Westinghouse Automotive Air Brake Co., 5001 Centre avenue, has purchased property at Centre avenue and Enfield street, which will be altered and improved for a distributing plant for automobile parts.

PITTSBURGH—Board of public education will accept bids until June 16 for electrical supplies and equipment. Bidding blanks are obtainable from office of superintendent of supplies, room 300, Administration building.

PITTSBURGH—H. L. Mitchell, president of the West Penn Power Co., West Penn boulevard, announces that $5,500,000 is available for the purchase of a 50,000 kilovolt turbine generator, improvement of transmission facilities, and construction of new buildings, in an expansion program centering around Springdale, Pa.

QUAKERTOWN, PA.—John E. Berlenbach, Irvington, N. J., has leased the foundry property of Quakertown Stove Works, and will organize the Berlenbach Foundry Co. here. Modern molding machines and cleaning equipment is to be purchased.

WILKES-BARRE, PA. — Kingstown township and the Hillcrest Water Co. plans extension of the local water system into Mt. Airy Terrace. N. Chrisman, of the water company, is prominent in the proposed project.

WILKINSBURG, PA. — Wilkinsburg school district will accept bids until June 15 for feed pumps, in addition to bids for a furnace and for waterproofing walls.

Indiana

INDIANAPOLIS — C. & G. Foundry, 2440 Yandes street, is expanding its plant to include 6000 feet of additional space. A cupola is to be built and alloyed light castings are to be made. Charles J. Gisler is president.

INDIANAPOLIS—Superior Bearings Corp., 518 East McCarty street, has been incorporated to manufacture metal products and machinery. F. W. Pintzke, 518 East McCarty street, is resident agent. Pintzke J. Downing and G. Oburn are the incorporators.

Illinois

CHICAGO—Acme Industrial Co., 413 North Carpenter street, is considering installing for factory service electrical power equipment in a new 1-story building at Union and Lake streets. Alfred S. Alschuler, 28 East Jackson boulevard, is architect for this $100,000 program.

PEORIA, ILL. — Peter Rutten, Osakis, Minn., plans to acquire factory space here and start the manufacture of steel silo roofs. The product will be manufactured by the Railoc Co., Osakis, with principal offices in Peoria.

SPRINGFIELD, ILL. — Allis-Chalmers Mfg. Co., William E. Yunkes manager, is planning to spend $1,000,000 in enlarging and improving the present plant to increase the output of tractors 100 per cent.

ST. DAVID, ILL. — City has engaged Wood, Walraven & Tilley, 322½ South Sixth street, Springfield, Ill., engineer, to make plans for construction of a $63,000 water supply and distribution system. PWA project.

Maryland

DENTON, MD. — Phillips Packing Co., Cambridge, Md., has acquired the West Denton Packing Co. here.

PERRYVILLE, MD. — Cooper Machine & Mfg. Co. has been incorporated by Clarence N. Cooper, Perryville, and D. E. Rollins, Elkton, Md.

SALISBURY, MD.—Eastern Shore Public Service Co. is working on funds with which to finance a proposed expenditure of $750,000 for increased power facilities and to carry out an extension program of rural electrification. Frank A. Mitchell is president. (Noted STEEL May 11).

SHARPSTOWN, MD.—Commissioners will receive bids until June 19 for construction of a pumping station, furnishing and installing pumping equipment, piping and electrical work for the local waterworks. Clarke Gardner, Salisbury, Md., is consulting engineer.

District of Columbia

WASHINGTON—Marine Corps will accept bids for boiler feed pumps until June 11, schedule No. 863, and for pumps until June 12, schedule 869.

WASHINGTON — Navy department, bureau of supplies and accounts, is asking bids until June 12 for furnishing

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one motor-driven, radial drilling machine to be delivered at Charleston, S. C., schedule 8060.

WASHINGTON — Veterans' administration, procurement division, Arlington building, will receive bids until June 9 for an air compressor, inventory 923; and until June 11 for a slip roll forming machine, a bar folder, rotary machine, combined shears and punch, circle shears, flexible shaft grinder, power hack saw, bench drill, tool post grinder, arbor press, punch press, and an electric grinder, inventory 646-M.

WASHINGTON — Navy department, bureau of supplies and accounts, will receive bids until June 9 for miscellaneous corrosion-resisting forgings and separators delivered at Washington, schedule 8017; one single frame, air driven forging hammer, schedule 8010; one self-propelled, gasoline engine driven crane, schedule 8005; and miscellaneous insulated electric cable, schedule 8004. Bids will be accepted until June 12 for miscellaneous crucibles without covers, schedule 8013, and miscellaneous turbine driven pumps delivered Brooklyn, N. Y., schedule 8018.

Kentucky

BARDSTOWN, KY. — Fairfield Distillery Co., 234 East Main street, Louisville, Ky., will install a power plant in a new distillery to be built here. Total cost is estimated at $150,000. Walter C. Wagner is architect-engineer.

Florida

ORLANDO, FLA. — P. Phillips Co., 70 Robinson avenue, plans rebuilding its packing plant recently damaged by fire. Carol Floyd is engineer.

TALLAHASSEE, FLA.—Florida state road department, C. B. Treadway, chairman, is asking for bids for a core drill, powered with not less than an 18-horsepower motor, equipped with swivel head, built-in circulating pump, oil gear pump and oil circulating system. Drill is to be mounted on skid.

Georgia

ATLANTA, GA.—William E. Dunn Jr., a dealer at 470 Peachtree arcade, is in the market for a 4-side planer that can turn out one or two cars capacity per day.

Louisiana

ALEXANDRIA, LA. — Weiss-Golding department store is having plans prepared for a 55-ton air conditioning system to cost approximately $15,000. Leo S. Weil and Walter B. Moses, 427 South Peters street, engineers, soon will ask for bids.

BATON ROUGE, LA. — Dalton's department store is having plans drawn for installation of $30,000 worth of air conditioning equipment. Leo S. Weil and Walter B. Moses, 427 Peters street, New Orleans, are the engineers.

Mississippi

DUCK BILL, MISS. — Town receives bids until June 18 for construction of waterworks and sewage systems. A booster pump and a 50,000 gallon steel elevated tank are to be purchased. John M. Gilfilian and associates, 416-7 Lyric building, Birmingham, Ala., is consulting engineer.

VICKSBURG, MISS. — United States engineer, Box 667, will accept bids until June 12 for a bulldozer on inventory No. 1106-36-285.

VICKSBURG, MISS. — United States engineer, Box 667, will ask bids until June 16 for a double-drum, steam hoist, without boilers, delivered free on board at Vicksburg.

North Carolina

HENDERSON, N. C. — Henderson Roller Mills Co. plans to rebuild its plant damaged by fire. W. A. Henderson is president.

RALEIGH, N. C. — Carolina Power & Light Co. has begun a program of improvements that will include installation of additional equipment in the Method substation, and erection of a new substation and installation of new equipment.

South Carolina

CHARLESTON, S. C.—West Virginia Pulp & Paper Co. Inc., 230 Park avenue, New York, plans to build a $5,000,000 mill on a site deeded by the federal government to the city for industrial development. J. Waties Waring is corporation counsel, and James E. Gibson is engineer and manager for the city commissioners. Mayor Burnet R. Maybank says construction will begin as soon as legal difficulties can be settled.

Tennessee

CLARKSVILLE, TENN. — Thomas H. Allen, 65 McCall street, Memphis, Tenn., has been commissioned by the city to make a survey of electrical facilities in a program designed to distribute in Montgomery county power from the Tennessee Valley Authority.

COLUMBIA, TENN. — Monsanto Chemical Co., 1700 South Second street, St. Louis, has approved plans calling for installation of electric power equipment for mill service in a proposed phosphate treating and refining plant here. Total project is estimated to cost $500,000.

MEMPHIS, TENN. — Armour & Co., Chicago, will remodel and equip with new machinery at a cost of approximately $100,000 the plant of the Memphis oil mill, which was recently acquired. Practically all the old machinery will be replaced.

SHELBYVILLE, TENN.—Dale Machine Co. Inc. has been incorporated by James H. Dale and W. H. Wyatt.

Virginia

ALEXANDRIA, VA.—Virginia Public Service Co., Charlottesville, Va., has under consideration plans for the expenditure of $500,000 for the purchase of a steam generating unit for the local plant.

FAIRMONT, VA.—Domestic Coal & Coke Co. plans to purchase a conveyor system, a revolving crane, and other equipment in an improvement program that will make it feasible for the company to receive fuel by barges.

Missouri

CAMPBELL, MO.—Common council is considering making improvements and extending facilities of the municipal electric power plant. Estimates being prepared include cost of new equipment. H. V. Seward is mayor.

HANNIBAL, MO. — International Shoe Co., 1505 Washington street, St. Louis, plans construction of a new $200,000 factory here. Electrical power equipment is to be purchased.

ST. LOUIS—Mississippi Valley Equipment Co., 511 Locust street, is in the market for a 600-ton hydraulic press.

ST. LOUIS—Mississippi Valley Equipment Co., 511 Locust street, is in the market for a 600-800 horsepower Fairbanks-Morse diesel generating set.

ST. LOUIS — Atlas Tool & Mfg. Co., 1319 Manchester avenue, has purchased a plant in the northwestern industrial

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area formerly occupied by the American Laundry Machinery Co. The 60,000 square feet of floor space in this plant is four times the tool company's present space.

Oklahoma

STILLWATER, OKLA. — Common council plans improving and extending the municipal electric light plant, and the purchase of a turbogenerator and auxiliary equipment at a total cost of $80,000.

Texas

PERRYTON, TEX.—Common council is considering construction of a new municipal electric power plant, and the installation of a diesel generating unit. The plant, equipment, and extended distributions lines will cost $150,000. E. T. Archer & Co., New England building, Kansas City, Mo., is consulting engineer.

Wisconsin

BELOIT, WIS. — Beloit Iron Works, 815 Second street, is constructing a 1-story machine shop addition, 75 x 190 feet.

NEENAH, WIS. — Neenah Foundry Co., Winneconne avenue, is constructing a plant extension, 42 x 60 feet.

Minnesota

DULUTH — United States engineer, Canal Park, is asking bids until June 9 for a portable electric threading machine, circular 379-36-26.

ST. PAUL—Brandtjen & Kluge Inc., Blair and Gaultier streets, has laid plans for the purchase of electric power equipment for service in a 2-story factory addition to its precent plant where printing machinery is manufactured. This is an $80,000 project. Allen & Fleisbein, Endicott building, is architect.

Kansas

IOLA, KANS.—United Brick & Tile Co. is considering plans for purchasing new power and mechanical handling equipment to install in a portion of the plant that is to be rebuilt. Total cost is approximately $100,000.

North Dakota

MINOT, N. DAK.—Northern States Power Co., 15 South Fifth street, Minneapolis, has authorized plans for expenditure of $100,000 in improving and enlarging the steam generating unit here.

Iowa

EAGLE GROVE, IOWA — Voters have approved the issuance of $37,000 bonds for the local waterworks.

Nebraska

LAUREL, NEBR. — Fire damaged the Carl Peterson machine shop here, recently.

OMAHA, NEBR. — United States engineer, 819 City National Bank building, will ask bids soon for four 50 horsepower, gasoline-driven, crawler type tractors.

Montana

BOZEMAN, MONT.—Bozeman Canning Co. plans installation of a machine shop, extension of the boiler plant, and addition of a 175-horsepower boiler in a large frame seed mill now being constructed.

Nevada

MOUNTAIN CITY, NEV.—Mountain City Copper Co., subsidiary of Anaconda Copper Mining Co., 25 Broadway, New York, plans the purchase of electric power equipment for a new 300-ton flotation mill. Total project will cost approximately $400,000.

Utah

SALT LAKE CITY, UTAH — Utah Power & Light Co., Kearns building, has applied to the federal power commission for a permit to construct a power project on South Willow creek in Tooele county.

Pacific Coast

BURBANK, CALIF.—Lockheed Aircraft Corp. 1705 Victory place, has plans under consideration for equipping the factory with power equipment. Total cost of new buildings and the power equipment is estimated at $200,000.

LOS ANGELES—American Foundry Inc., 906 Date street, is planning to enlarge its factory.

LOS ANGELES—Independent Foundry & Supply Co., 2479 Porter street, has ordered construction of a new plant at 2325 East Thirty-Eighth street. Total project is to cost $20,000. Steven Moosny is the owner.

LOS ANGELES—Balbon Brewing Co., 1834 North Main street, will install electrical power equipment and mechanical handling devices in a new 2-story addition to be used for bottling. Wayne D. McAllister, 1709 West street, is architect for this $200,000 project.

LOS ANGELES — Directors of the Metropolitan water district will accept bids until June 19 for two 60-ton, one 40-ton, and two 75-ton traveling cranes for the Colorado river aqueduct project. Bids for this $70,000 worth of equipment are to be received on specification 156. F. E. Weymouth, 306 West Third street, is engineer.

UNION CREEK, OREG. — E. W. Regnier has applied for a license to construct a power project on the Rouge river in Jackson county.

EVERETT, WASH. — Sound Stove Co., 2630 Colby avenue, has been incorporated by J. M. Pashley and associates with capital of $25,000.

EVERETT, WASH.—Soundview Pulp Co. has announced plans for a proposed $2,000,000 expansion program to be undertaken as soon as the city guarantees an adequate water supply. City council has called a special election to pass on water main improvements costing $1,300,000 to serve the Soundview plant.

SEATTLE—Swedish hospital, Summit street, plans construction in near future a $50,000 heating plant, in addition to a nurses' home.

SEATTLE—Baker Ice Machine Co., 1310 Airport way, was damaged by fire May 28. Both buildings and equipment were damaged considerably.

SEATTLE—James Smyth Inc., Spokane, has been incorporated with $25,000 capital to manufacture and sell heating and plumbing equipment. Smythe, F. C. Brock and A. E. Russell are the incorporators.

SPOKANE—Paul G. Oettel, representing unnamed interests, has acquired a site at Olive and Freyn streets where it is proposed to construct a $35,000 match block factory having capacity of three cars per week. Plant is to be in operation by Sept. 1.

Canada

HALIFAX, N. S. — Department of public works and mines, is in the market for a transformer and three new pumps for the Inverness coal mine. Cost is approximately $35,000.

HAMILTON, ONT. — Steel Co. of Canada Ltd., Wilcox street, is considering construction of five buildings in a plant improvement program expected to cost approximately $1,000,000.

CLASSIFIED

Bids Wanted

PROCUREMENT DIVISION, Public Works Branch, Washington, D. C., May 28, 1936.—Sealed proposals in duplicate will be publicly opened in this office at 1 P. M., June 26, 1936, for furnishing all labor and materials and performing all work for extension and remodeling of the U. S. P. O. at Greenville, Ohio. Attention is directed to the special conditions of bidding set forth in the specification. Upon application, one set of drawings and specifications will be supplied free to each general contractor interested in submitting a proposal. The above drawings and specifications MUST be returned to this office. Contractors requiring additional sets may obtain them by purchase from this office at a cost of $7 per set, which will not be returned. Checks offered as payment for drawings and specifications must be made payable to the order of the Treasurer, U. S. Drawings and specifications will not be furnished to contractors who have consistently failed to submit proposals. One set upon request, and when considered in the interests of the Government, will be furnished builders' exchanges, chambers of commerce or other organizations who will guarantee to make them available for any subcontractor or material firm interested, and to quantity surveyors, but this privilege will be withdrawn if the sets are not returned after they have accomplished their purpose. W. E. Reynolds, Assistant Director of Procurement, Public Works Branch.

Bids Wanted

PROCUREMENT DIVISION, Public Works Branch, Washington, D. C., May 25, 1936.—Sealed proposals in duplicate will be publicly opened in this office at 1 P. M., June 23, 1936, for furnishing all labor and materials and performing all work for construction of the U. S. P. O. at Nelsonville, Ohio. Attention is directed to the special conditions of bidding set forth in the specification. Upon application, one set of drawings and specifications will be supplied free to each general contractor interested in submitting a proposal. The above drawings and specifications MUST be returned to this office. Contractors requiring additional sets may obtain them by purchase from this office at a cost of $5 per set, which will not be returned. Checks offered as payment for drawings and specifications must be made payable to the order of the Treasurer, U. S. Drawings and specifications will not be furnished to contractors who have consistently failed to submit proposals. One set upon request, and when considered in the interests of the Government, will be furnished builders' exchanges, chambers of commerce or other organizations who will guarantee to make them available for any subcontractor or material firm interested, and to quantity surveyors, but this privilege will be withdrawn if the sets are not returned after they have accomplished their purpose. W. E. Reynolds, Assistant Director of Procurement, Public Works Branch.

Bids Wanted

PROCUREMENT DIVISION, Public Works Branch, Washington, D. C., May 21, 1936.—Sealed proposals in duplicate will be publicly opened in this office at 1 P. M., June 19, 1936, for furnishing all labor and materials and performing all work for the extension and remodeling of the U. S. P. O. at Marion, Ohio. Attention is directed to the special conditions of bidding set forth in the specification. Upon application, one set of drawings and specifications will be supplied free to each general contractor interested in submitting a proposal. The above drawings and specifications MUST be returned to this office. Contractors requiring additional sets may obtain them by purchase from this office at a cost of $7 per set, which will not be returned. Checks offered as payment for drawings and specifications must be made payable to the order of the Treasurer, U. S. Drawings and specifications will not be furnished to contractors who have consistently failed to submit proposals. One set upon request, and when considered in the interests of the Government, will be furnished builders' exchanges, chambers of commerce or other organizations who will guarantee to make them available for any subcontractor or material firm interested, and to quantity surveyors, but this privilege will be withdrawn if the sets are not returned after they have accomplished their purpose. W. E. Reynolds, Assistant Director of Procurement, Public Works Branch.