STEEL

PRODUCTION • PROCESSING • DISTRIBUTION • USE

For forty-eight years—IRON TRADE REVIEW

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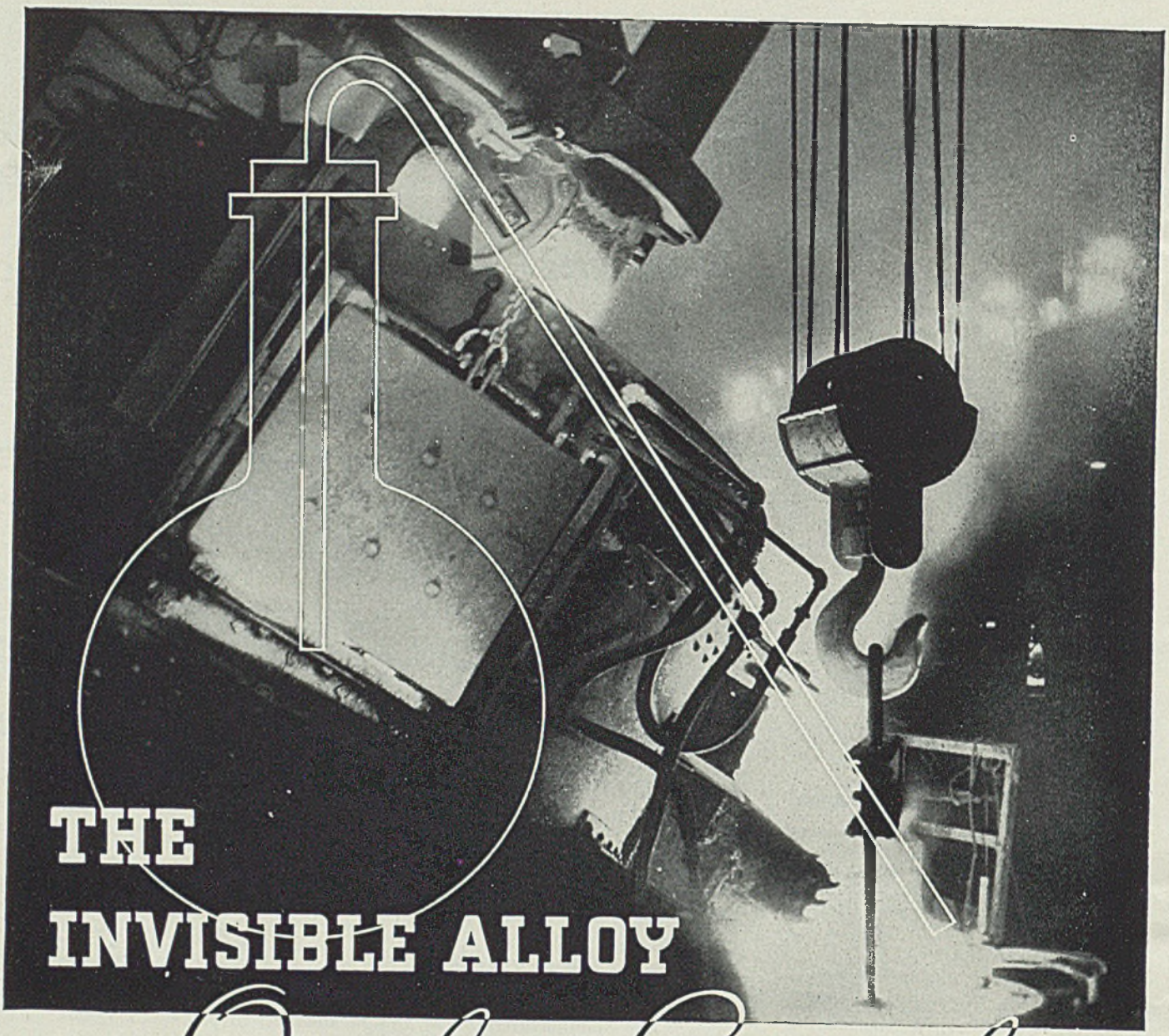

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As the Editor Views the News

IN RECENT months, activity in the export market for industrial machinery has drawn the attention of American manufacturers to an unusual situation in Europe. In England, and to a slightly lesser extent in Germany, manufacturers are so busily engaged with domestic orders that their export business is being neglected. United States manufacturers, whose machinery exports gained moderately in 1932, 1933 and 1934 (p. 22), since the beginning of 1936 have been taking an even larger share of the export business. Since February of this year, the machinery exports of the United States have exceeded those of Germany by a slight margin.

• • •

As time goes on, American machinery executives will be drawn more and more into contact with the intricacies of the export market. It is a complex business, in which merit of product vies with price, exchange, facilities for trading, government assistance and a host of other important factors. In point of quality, American exporters have little to fear, but in some of the other considerations they are at a distinct disadvantage. It would be gratifying if the present experience in machinery exports could induce American manufacturers to study the foreign situation more closely. Knowledge of it gained now may be priceless a year or two hence.

Study Export Markets Now

• • •

During the week newspapers gave liberal space to the hearings of the La Follette civil liberties subcommittee. Evidence was presented to show that industry has hired private detective agencies and purchased firearms and gas bombs, etc. That some of the activities revealed are revolting will be admitted by all conscientious employers. It is difficult to condone agitation by representatives of industry who "plant" outrages so that they will be blamed upon strikers. Unfortunately, however, the committee seems to be interested in only one side of the story. It has not and probably will not reveal evidence (p. 37) to show that under many circumstances industry is fully justified in seeking facilities for protecting life and property. If the committee wants to be fair, it should try to uncover the unjustified acts of both principals in labor strife.

Tells Only One Side of Story

• • •

The time element is important in many industrial operations. The need for speed often influences and sometimes dictates how a job shall be done. Faced with the necessity of erecting a plant in Canada in three months in zero weather, an American engineering and contracting firm resorted to the unusual expedient (p. 45) of enclosing the job in a large canvas storm jacket. Again, on a stack repair job in Ohio (p. 46), a contractor saved three days of valuable time by assembling the newly erected stack rings with rivet-bolts. Users of large rubber belts once were obliged to have them spliced at the belt manufacturers' plant in order to obtain satisfactory joints. Today a splice can be made locally by portable vulcanizing equipment (p. 68) in two or three hours.

Speed Dictates the Method

• • •

Persons who attended the convention and exposition of the Association of Iron and Steel Engineers in Detroit last week (pp. 26, 39, 54) were made conscious of the close relationship between the development of the motor car industry and the demand for products of the iron, steel and metalworking industries. The automobile people are optimistic about the future of their business. They visualize a registration of 35,000,000 cars instead of the present figure of 25,000,000. Their motto is "more car value for less money" and they have unbounded confidence in its efficacy. Material producers and partsmakers have co-operated wholeheartedly to make that policy successful —particularly from 1933 to date—and will do well to continue their efforts in this direction.

More Cars for More People

E. L. Shaner

American Machinery Gains In World Markets

BY LEWIS M. LIND
Acting Chief, Machinery Division,
Department of Commerce

ANY comparisons among the leading machinery exporting countries should be prefaced with a bird's-eye description of how those countries fit into the world machinery picture. England, the United States, and Germany constitute the "Big Three" of the world machinery trade. A few figures as closely comparable as possible will give a fair idea of the relative importance of Germany, England, the United States, and the other countries worth mentioning, which are France, Italy, Czechoslovakia, Japan, Russia, Sweden, and Canada.

In a business census made available this year, British production in the mechanical engineering trades in 1934 is shown to have been approximately $517,900,000. Machinery exports amounted to $114,800,000, of which $2,770,000 represented equipment imported and re-shipped abroad. Machinery in the amount of $1,174,000 was sold to American buyers. Imports of machinery in 1934 were valued at $32,835,000, of which $14,600,000 came from the United States. In 1930, when production had been 50 per cent higher, 444,530 persons had been employed.

Rearmament Increases Demand

Since 1934, as described later, the British rearmament program and civilian orders have so increased machinery production and employment in the engineering industries that machinery builders are unable to fulfill their domestic or export demand. A serious shortage of skilled mechanics has existed for the past six months.

German investments in machinery during 1934 were in the neighborhood of $740,000,000, of which four-fifths were government purchases. This approximate figure represents 80 to 85 per cent of the total German sales of equipment in that year. The remainder was for export account. Employment figures are not strictly comparable with those of England.

The best estimate for 1934 is probably that employment increased 42 per cent from the 1933 German industrial census count of 232,600 persons, or up to 330,000. This is near the British machinery-building employment figure for the same year.

The United States department of commerce figures for Germany's machinery exports are $102,696,000 for 1934, while the purchases of foreign-built equipment by that country were $10,275,000 in the same year. German statistics list machinery with a value of $429,000 purchased from the United States in 1934, and $1,443,000 worth bought by the United States from Germany.

The United States census of manufactures gave $2,069,419,000 as the value of machinery built in the United States in 1933, and counted the number of wage earners as 538,593. The census is taken in the odd years, so no accurate estimate of the increase in the United States from 1933 to 1934 is available. It will be noted, however, that the 1933 production of American machinery was about four times that of British equipment in 1934 and a little less than three times as large as the German production in 1934.

French Statistics Ambiguous

The French official statistics do not show exactly the production nor employment in their machinery industries. In 1926, the French census showed 333,000 persons employed in "mechanical construction." On annual production volume it is impossible to get the values for 1934, although it is fairly accurately known that machinery production in that year was slightly lower than the 1913 rate. Machinery exports in 1934 were valued at $30,504,000, while imports amounted to $39,375,000. Of the latter figure, the United States supplied $7,705,000.

Italian employment in the machinery industries early in 1935 was estimated at 105,000, down 30,000 from the 1926 peak. Production figures are not known. Imports of strictly industrial machinery amounted to $16,400,000 in 1933, principally machine tools, knitting and braiding machinery, and reciprocating engines. In the same year, the industrial machinery exports, in which ball and roller bearings, machine tools, and weaving machinery were important, totaled $7,962,000.

Sweden's machinery production in 1932 amounted to about $20,800,000. In 1930 the figure had been more than $52,500,000. The decrease was not really so marked between 1930 and 1932 as it seems, however, because of the depreciation of the Swedish crown in terms of dollars in that interval. The average exchange rate in 1930 was $0.2685, whereas in 1932 it was only $0.1847. Exports of machinery in 1932 were approximately $12,820,000, chiefly ball and roller bearings and cream separators, while the value of imports was only a little more than half as much, or $6,570,000.

Austrian production figures are not available, but exports of industrial machinery, exclusive of electrical equipment, were valued at $3,026,000 in 1933, and imports of the same kind of equipment amounted to $2,295,000.

Official Japanese figures list the industrial machinery production of that country at 158,396,695 yen for 1932, or about $44,530,000. The industrial machinery exports in 1932, listed at $3,076,000, were completely overshadowed by the imports of $16,534,000 worth of machinery. It is of interest that three years later, in 1935, Japan's machinery exports had jumped to $18,333,000, while the imports, valued at $29,477,000, represented much less of a percentage increase from 1932.

Russian imports of machinery, exclusive of electrical equipment, dropped from $225,095,000 in 1931, the highest machinery-buying year of the Soviet Union, to $20,271,000 in 1934. Exports of the same type of equipment were $2,353,000 and $1,939,000 in 1931 and 1934, respectively. Data on total domestic machinery production in Russia are not available.

Canadian production of industrial machinery in 1933 was approximately $20,500,000. Imports were about $11,700,000 in that year, and more than $19,000,000 in 1934. Exports of machinery in 1933 were valued at $1,469,000, and in 1934 totaled $3,257,000.

Figures Are Misleading

The foregoing figures for the leading industrial nations should not be taken too seriously in making comparisons among them, since it will be noticed that the data are available for different years in the various countries, which naturally changes the picture considerably. Exchange rates also, as in the case of Sweden, tend to cloud the trends somewhat from year to year. A third unavoidable factor is the lack of uniformity as to what is included under the heading of industrial machinery. Canada's machinery exports, for instance, are largely agricultural equipment. Farm machinery likewise plays an important part in the trade of the Soviet Union.

From the foregoing description of manufacture and world trade in machinery, it is plain that the United States, Germany, and the United Kingdom are by far the most important. The German Wirtschafts-

gruppe Maschinenbau, whose figures on machinery are usually comprehensive and complete, shows the machinery export trend of the "Big Three" in the following table. The values are in thousands of marks, and include all types of machinery sold abroad by the three countries:

	1932	1933	1934
Germany	749.7	543.0	456.5
England	370.3	336.3	364.3
United States	365.5	285.3	380.8

The shifts in competitive advantages for those years are better shown by expressing the above values as percentages, indicating the relative shares of these three principal machinery exporting countries for each year:

	1932	1933	1934
Germany	50.5	46.5	38.0
England	25.0	29.0	30.5
United States	24.5	24.5	31.5
	100.0	100.0	100.0

The important facts shown in the above tables are that Germany lost ground in relative importance as a machinery exporter among the three nations between 1932 and 1934, and that the United States enjoyed the greatest gain during the period.

England Busy at Home

The picture has changed rapidly since the beginning of 1936. England's domestic market is making great demands on British machinery builders, particularly for machine tools.

It is generally known to machine tool builders that British manufacturers of this equipment are booked up for many months with orders on hand. England is, correspondingly, falling behind in machinery available for export. Expenditures authorized during 1935 for strengthening the defense services have during 1936 played the largest part in causing the present machinery shortage.

Germany Forcing Export Sales

In Germany the machinery export situation has many features which differ from those of England. While in 1931, 56 per cent of Germany's output of machinery was sold in the export market, in 1935, as previously mentioned, only about 15 per cent was marketed abroad. Of the remainder, with an aggregate value of $740,000,000, about four-fifths was sold to the government. The decrease in percentage importance of exports is due solely to the increased domestic demand, since the following table shows there was in reality an increased activity in foreign machinery selling by German manufacturers during the past three and a half years:

GERMAN MACHINERY EXPORTS 1933-1936

	Reichsmarks
1933 (monthly av.)	45,232,000
1934 (monthly av.)	38,050,000
1935 (monthly av.)	38,487,000
1936 January	48,267,000
February	48,520,000
March	44,952,000
April	48,709,000
May	49,119,000

Index figures on labor show a remarkable improvement from 1932 to 1935. In employment the increase in the three years was from 37.4 to 69.4, in "possible working hours" from 29.7 to 70.6, and in average daily working hours from 6.57 to 8.02.

One of the compelling reasons for this forcing of machinery sales abroad has been a need for foreign exchange.

Published statistics of the gold coverage for currency in the Reich show that it is about 2 per cent. This means that commodity imports from month to month dare not be much, if any, in excess of the value of merchandise exported. To permit purchases to outstrip sales abroad would almost immediately require the relinquishment of part of the gold reserves. The gold reserves would already be, were it not for the exercise of rigid exchange control, far below the amount necessary to maintain the present currency in circulation.

One method of avoiding loss of gold, of course, is by barter. A number of agreements with foreign countries have been made which provide that Germany supplies Greece, Yugoslavia, Bulgaria, and other countries with machinery and equipment, while accepting in return raw materials.

In some instances the raw materials secured by Germany are re-exported for foreign exchange. Dr. Schacht made visits in June and July to Belgrade, Athens, Sofia, and Salonika in furtherance of such a program. Administration problems in these barter deals become cumbersome, and could not possibly be justified as business propositions by any less dire necessity than that with which Germany is now faced. A full discussion of the complicated system of German trade relations would require a more detailed interpretation than is possible here.

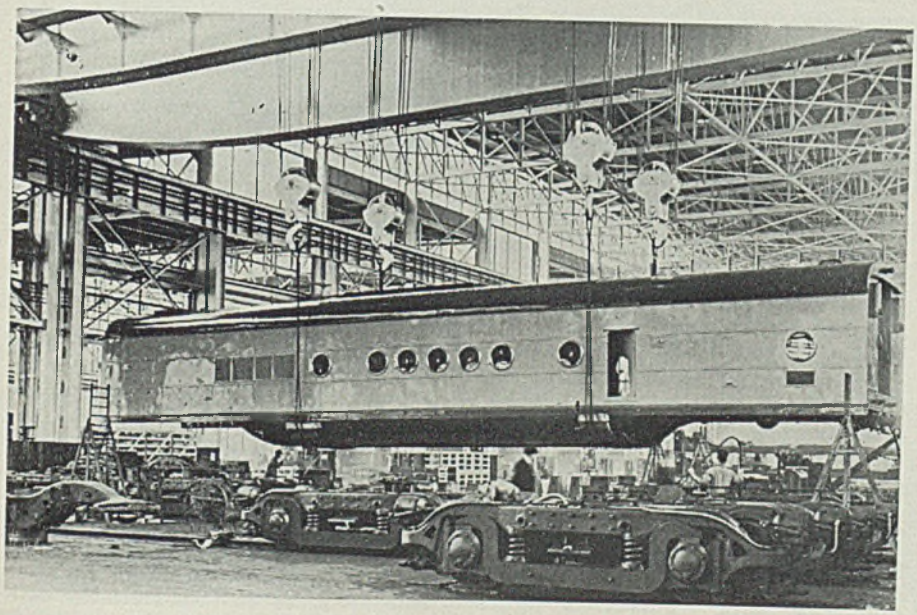
Devaluation Hurt Germans

The actions of the countries which are the chief exporting competitors of the Reich in decreasing the gold content of their monetary units have also militated against German foreign sales of equipment. England and the United States, by devaluating the pound sterling and dollar, doubtless gained some advantages in the world machinery markets.

Depreciation of the currency of competitors and a greatly increased domestic demand for machinery in Germany would ordinarily have a tendency to reduce the quantity available for sale overseas. The compulsion to ship abroad for purposes of obtaining exchange for raw material imports, however, coupled with the well-established German foreign trade traditions, have so far caused the continuation of a large volume of industrial equipment exports.

(This is the first installment of an article written by Mr. Lind for STEEL on world machinery markets. The second and concluding section will appear in STEEL, Oct. 5.)

A Comet of the Rails Takes Form



DIESEL locomotive unit is shown being eased into position upon its trucks inside the Electro-Motive Corp. plant at LaGrange, Ill. This is done by means of a huge electric traveling crane which operates over a clear span of 104 feet. A $100,000 addition to the plant has been completed by the Austin Co. It will be used for the storage of parts and other materials

What Makes Industries Valuable to Communities

BY E. L. SHANER
Editor, STEEL

PROBABLY the phase of economics which is of most practical importance today is the distribution of wealth, which is the term used to describe the division of the ownership of valuable goods between individuals within a nation.

It is not generally understood, nevertheless it is a fact that there probably is no question of economics on which there is as high a degree of universal agreement as on the premise that wealth should be distributed more equitably. Everybody who has given the subject any thought knows that a broader distribution of goods is desirable. Everybody is in favor of it. Every worthy enterprise or activity of any kind anywhere would profit from a more equitable division of wealth.

Unfortunately however, we are not in accord as to how the good things of life may be distributed more fairly. Some persons of radical mind say that the solution lies in turning everything over to the state. Others would confiscate all existing wealth and redivide it equally. Still others are for passing punitive laws which will force those who have much to give something to those who have little.

Of course, the weak points in all schemes of this kind are first, that the equal division of our total wealth would mean only a drop in the bucket to each family, and secondly that no thought is given to the creation of wealth, which to thoughtful persons is as important as its distribution or division.

Better To Preserve Our System

The better way is to preserve our present system, which has made such an enviable record in the creation of wealth, and to strive constantly to distribute its benefits more widely among our people.

Perhaps in the trials of the depression some of us have forgotten just how well our American mechanism for creating and distributing wealth has functioned. Possibly it is a better system than we realize. Certainly it is the envy of peoples in all of the other nations of the world.

In the 160 years of the existence of this republic we have produced three times as much wealth as the entire world produced from the beginning of time up to 1776. Since 1900 we have more than doubled our average wealth and average income. We have distributed wealth so widely that even in the darkest days of the depression our people had 44,000,000 savings accounts with deposits of more than $24,000,000,000. Our citizens have 121,000,000 life insurance policies with a face value of $108,885,000. . . .

ABSTRACT of an address, "The Value of Industry to a Community," at a meeting in Ellwood City, Pa., Sept. 18, arranged by the Ellwood City chamber of commerce, in conjunction with the Rotary and Kiwanis clubs. The meeting was largely attended, including industrial managers from Ellwood, McKeesport, New Castle and Pittsburgh.

But our advantages are not confined to material things. We have made great progress in education, recreation and cultural pursuits. We spend more for education in the United States than all of the other countries of the world combined. We spend $10,000,000,000 a year for recreation alone.

While we have been producing and accumulating the wealth required to support this standard of living we have improved the conditions of labor. From 1890 to 1929 industrial workers' wages increased three times. The purchasing power of wages—that is, the relation of money wages to the cost of living—increased 48 per cent. Meanwhile the average hours of labor dropped from 50 per week to 48 per week.

The share of the national income that went to gainfully employed persons was only 38 per cent in 1850. In 1929 it was 65 per cent, and it did not drop below that percentage even during the depression.

All of the foregoing has been accomplished on a comparatively low average profit of 4 cents out of each dollar of sales. This is a figure derived from the records of 1919 to 1929 inclusive.

The system responsible for so many benefits not only is worthy of our best efforts to preserve and perpetuate it, but also merits our support of it against the attacks of those who would foolishly impair its effectiveness.

You realize, of course, that the two basic elements of this system are industry and agriculture. It is the activity in these two fields which creates the major portion of the nation's wealth. Prosperity for our industries and our farms is essential to the well-being of all of our people.

Sometimes it appears that the role of the farmer is better known and appreciated than that of industry. Certainly the welfare of the farmer is given far more careful attention by our public officials in Washington than are the interests of industry. Industry is misunderstood by many holders of public office and by many of our citizens. It, more than agriculture, needs more friends in court.

To preserve and advance the capacity of your industries to serve the community involves co-operation You are unfair if you conclude that the success of your local industries depends entirely upon the ability of the executives who are charged with the management of these industrial companies. It stands to reason that management should be efficient, but that is only one of many factors to be considered.

In this immediate locality, the plants of the National Tube Co., the Mathews Conveyor Co., the Aetna-Standard Engineering Co. and other concerns are important employers of labor, payers of taxes and participants in the economic and social life of this community. Take these plants away and you are reduced almost to the status of an agricultural center. Naturally all of you are anxious to retain these industries, and you ask, "What can we do to make Ellwood City an attractive site for these and other industries?"

Some Factors Beyond Control

The answer to that question is not a simple one, for the reason that some of the factors involved are beyond your control. For instance, unwise federal legislation such as the 1936 federal tax law, which penalizes undistributed profits, is a terrific handicap to industrial companies. Had that law been in effect in 1928 and 1929, still fewer persons would have been employed by industrial companies during the acute period of the depression. It would have destroyed the cushioning effect of reserves, from which a major portion of wages were paid in the dark days of 1932. . . .

The question of labor relations is considered to be an extremely delicate subject, but it should not be so. Some politicians in high public office have confused the issue by intimating that the interests of employes and employers are diametrically opposed. This is an unfortunate view, be-

cause it arouses thoughts of class conflict which not only are destructive in effect, but are absolutely futile insofar as the attainment of deserved treatment of employes is concerned. The interests of employer and employe are so mutual in so many respects that it is deplorable that the relationship between the two should be reduced to the status of a political football.

If employers and employes can understand each other and can work with each other amicably in settling all differences in regard to wages and working conditions without the offices of a third party then both employer and employes are infinitely better off.

Industry Must Be Active

An industrial company is valuable to a community only as long as it is operating at a fair rate of capacity. Let its activity be curbed by disagreement over wages or working conditions and that value diminishes rapidly. An idle plant is a liability rather than an asset to a community.

This being true, how much better it is that employer and employe contrive in every way possible to meet every disagreement and settle it amicably before the breach of dissension becomes serious. The burden of understanding lies upon the shoulders of both executives and employes alike, but the initiation of machinery for peaceful labor relations rests most heavily upon the management. . . .

What of the Owners?

Right now it is important that the position of management be clarified. Sometimes we hold the executives of companies responsible for acts that are beyond their control. In the majority of companies, the executive officers are the trustees of the properties which are owned by thousands of stockholders. In the case of many large corporations the number of owners is almost as great as the number of employes. United States Steel, for instance, has 229,461 employes and 228,662 owners. Of these 228,662 owners, 53,648 are employes and 86,818 are women.

The owners have certain claims which must be satisfied. They performed a service which sometimes is overlooked. They saved money and invested it in company stock. The company used it to build up the properties and to perfect an organization that would return a profit to the owners. . . .

Stockholders are somewhat sensitive because most of them have not been receiving the dividends they had expected. Many corporations owe considerable sums in back dividends. Consequently it is natural that today when the matter of employe wages come up, the executive officers of the company are forced to weigh the desirability of paying higher wages against the desirability of being fair with the stockholders.

The ability of management to satisfy both stockholders and wage earners increases with the ability of the company to earn profits. In the situation which exists in many companies today the time element is extremely important. Many concerns which ate up practically all of their reserves to survive the depression need a little time to get back on a sound financial basis. Hundreds of companies need more working capital. Many should have greater reserves. Many others should put more money into modernization of equipment.

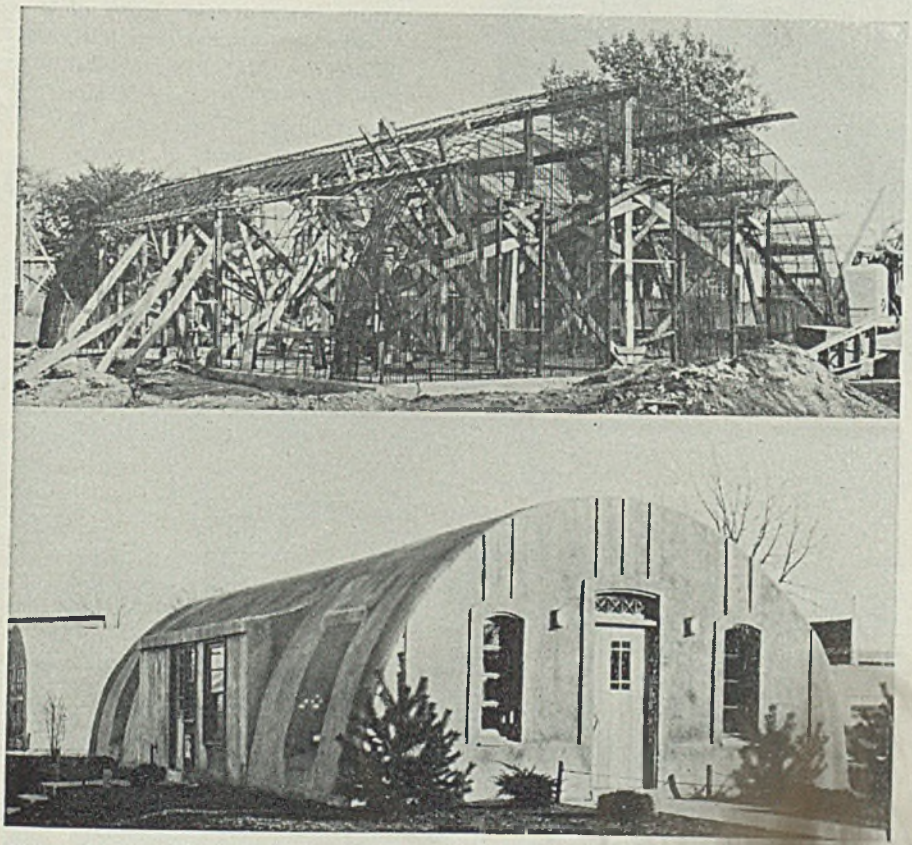
Management Needs Time

Management needs time to do all of these things, all of which are so essential to the future success of the company. Therefore stockholders and employes should not press too hard for bigger dividends or higher wages unless they know for a certainty that the company can pay them without endangering its future.

In many situations it will be to the overwhelming advantage of stockholders and employes to be patient. Today industry generally is operating at a good rate of capacity. The prospect for a continuance of the present activity over the short-term future is bright.

But even more encouraging are the potentialities of the long-term future. Note that I say potentialities. Great opportunities are ahead of us, but unless we conduct ourselves intelligently—as individuals, as members of a community, and as citizens of the nation—we may not enjoy the full benefit of these opportunities.

Streamlined House, with Steel Channels and Lath



REGULAR cold-rolled channels, bent to the form shown, were used to support the arch in this streamlined house, which has been dubbed "the Igloo." Metal lath was then tied to these supports, and concrete was united both the outside and inside to form the solid concrete wall. Roy Papenthien, Milwaukee architect, developed the design

Security Act Leads To Modifying Annuity Plan

Under the Westinghouse Electric & Mfg. Co.'s annuity plan $386,195 was paid to 1179 pensioned employes during 1935.

Since 1929 when the plan was placed in operation, a total of $1,748,253 has been paid to annuitants.

Due to the increased obligations imposed by the social security act, the company portion of the annuity plan was discontinued Dec. 31, 1935, it is announced. Employes still have the privilege, however, of purchasing annuities at favorable group rates.

Steel Show Draws Many To Motor Capital

ABLAZE with light and color, the displays of 145 exhibitors at the nineteenth annual iron and steel exposition of the Association of Iron and Steel Engineers magnetized the attention of thousands from Tuesday through Friday last week in Convention Hall, Detroit.

Ranging from small plug fuses to modern heavy equipment for rolling steel, the varied exhibits testified to the ingenuity of manufacturers and suppliers, both in furnishing a product suited to today's needs and in arresting the attention of prospective buyers by dramatic and colorful means. A new technique in industrial exhibits has been in process of development over the past eight or ten years, and this show marked a new high point in forceful merchandising efforts.

While technical sessions and inspection trips to nearby steel mills cut in on attendance at the show to some extent, nevertheless on Friday officials seemed well pleased with both attendance and sales. It was announced that next year's annual meeting and exposition will be held in Chicago, Sept. 21-24, with association headquarters at Hotel Stevens. An effort is being made to schedule both technical sessions and show in the same building, several locations such as the International Amphitheater at the stockyards and Municipal Pier being under consideration.

Theme running through all convention sessions (pp. 54, 56, 76) was the close relation between steelmaking and automobile production—a natural outgrowth of the meeting being held in Detroit. The automotive industry is unquestionably the No. 1 customer for steel—especially flat-rolled varieties—and several speakers stressed the need for continuation and expansion of research into methods of producing better steel at lower cost, to the end that automobile producers may further their policy of attempting to make more of their product available to more people. One speaker declared that a market for 35,000,000 automobiles exists in this country before a saturation point is reached.

* * *

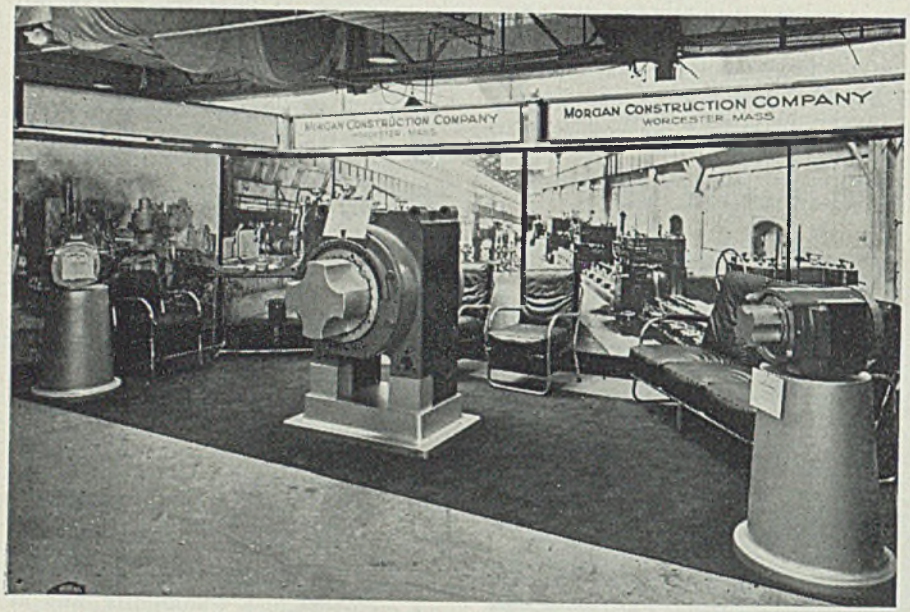
Indicative of the extent to which power is used in the processing of steel, an engineer reported that in the forming and finishing of a single rear window garnish molding for a popular make of automobile 186 connected horsepower is required.

* * *

Great Lakes Steel Corp., Detroit, drew large crowds to its "exposition theater" where sound pictures of the Louis-Schmeling prize fight were shown at regular intervals. Added attraction was a movie of operations in the corporation's plants. United Engineering & Foundry Co., Pittsburgh, also showed motion pictures of two new mills using its equipment.

* * *

Model of a full-size rolling mill stand, brilliantly illuminated, was the central portion of the display of Timken Roller Bearing Co., Canton, O.



TWO of the 145 exhibits at the nineteenth annual iron and steel exposition of the Association of Iron and Steel Engineers in Detroit, Sept. 22-25. Above is the booth of Morgan Construction Co., Worcester, Mass.; at left, that of Joseph T. Ryerson & Son Inc., Chicago. They typify the striking use made of models, cut-outs, enlarged photographs, lights and other decorative treatment

From the rolls emerged a placard resembling a steel sheet, on which certain features of the company's mill bearings were explained.

* * *

A powerful overhead light, with reflector, was placed just above a large blackboard in the booth of Holophane Co. Inc., New York. Visitors were invited to step up to the board to measure the radius of intensity of the illumination from the lamp.

* * *

A so-called "mechanical book" was a feature of the exhibit sponsored by Mathews Conveyor Co., Ellwood City, Pa. The book contained 12 pages about 2 feet wide and 2½ feet high which were turned mechanically to show illustrations of some 24 conveyor installations made by the company in leading steel plants.

* * *

Electrical equipment naturally occupied a large portion of the display space, with material handling and lubrication devices not far behind.

* * *

Analysis of headquarter cities of the various exhibitors showed 17 from Chicago, 14 from New York, 14 from Cleveland, 12 from Pittsburgh, nine from Philadelphia, seven from Detroit, five from Milwaukee, and three or less from 47 other cities. Of the latter cities, eight are in Connecticut, eight in New Jersey, seven in Pennsylvania, five in Ohio, four in New York, four in Massachusetts, three in Indiana, two in Illinois, two in Minnesota and one each in Michigan, Missouri, Maryland and Kentucky.

Concrete Data Book Issued

A handbook on "Concrete Joist Construction" has just been issued by the Concrete Reinforcing Steel institute to fill an increasing demand from architects and engineers for information and practical data on building materials and construction details.

The book contains a complete set of safe load tables which permit the designer to select the total depth of floor and the number and size of reinforcing bars required for a given combination of load and span. In addition, specifications for both reinforcing steel and concrete of 3000-pound strength, as well as specifications for metal lath ceiling construction of various types, are listed.

W. S. Thomson is secretary of the institute, with offices at 201 North Wells street, Chicago.

Weirton Orders Stoves

Weirton Steel Co., Weirton, W. Va., has authorized the construction of two hot-blast stoves to replace two of the original stoves at the Weirton plant. The units will be built by the H. A. Brassert Co., Chicago.

District Steel Rates

Percentage of Open-Hearth Ingot Capacity Engaged in Leading Districts

	Week ended Sept. 26	Change	Same week 1935	Same week 1934
Pittsburgh	74	+ 2	46	17
Chicago	73	+ ½	59	26
Eastern Pa....	48½	+ ½	35½	17
Youngstown...	80	None	54	28
Wheeling	95	+ 3	81	31
Cleveland	80½	— 1½	67	28
Buffalo	81	+ 5	47	24
Birmingham...	64	None	55½	25
New England	88	+18	55	31
Detroit	95	None	94	77
Cincinnati	84	+ 8	†	†
Colorado	63	None	†	†
Average.....	73	+ ½	51	25

†Not reported.

Production

STEEL ingot production last week advanced ½-point to 73 per cent. Increases ranging from ½ to 2 points were noted at Chicago, eastern Pennsylvania and Pittsburgh. Cleveland registered a slight loss, while other centers showed increases or held steady. Details follow:

Youngstown—Averaged 80 per cent last week, unchanged from the week previous. Sixty-six of 83 open-hearths and three bessmer units are making steel. Youngstown Sheet & Tube Co. started one additional open-hearth at its Brier Hill plant and is planning to start another this week, but Carnegie-Illinois was forced to shut down one unit for repairs, offsetting this gain.

Buffalo—Gained 5 points last week to 81 per cent, with 30 open hearths melting.

Colorado—Held at 63 per cent, with ten furnaces operating.

Cleveland-Lorain—Off 1½ points last week to 80½ per cent. National Tube Co. at Lorain scheduled 12 open hearths the first four days of the week and 11 the final three days of the week. Corrigan, McKinney continues with 12, and Otis with all 8.

Detroit—Unchanged at 95 per cent, with steel ingot melting schedules in 20 out of 21 basic open-hearth furnaces. Over the past week the capacity for the district has been increased by two open hearths, with the Great Lakes Steel Corp. now having virtually completed the last of its new furnaces, giving that producer 12 units.

Wheeling—Up 3 points to 95 per cent last week, with 35 out of 37 open-hearth furnaces in operation.

Pittsburgh—Up 2 points to 74 per cent, a new high since 1929. United States Steel Corp. subsidiaries operated at 71 per cent through the week and the independents at slightly better than 75 per cent. Forty blast furnaces are now active, compared with 24 on a year ago at this time. Carnegie-Illinois has blown in another Edgar Thomson furnace, the output of which is ferromanganese, giving that company 18 out of 32 stacks. National Tube continues with 3, Jones & Laughlin all 11, Pittsburgh Steel 2, Bethlehem at Johnstown, Pa., 5; Pittsburgh Crucible Steel with 1 on, will resume with its second furnace in November.

New England—Rose to 88 per cent last week, a gain of 18 points. This rate will be maintained this week.

Chicago—Advanced ½-point to 73 per cent, the best rate for the year to date. Inland Steel Co. has lighted two of its four new open-hearth furnaces, and will have the remaining units as well as the new blooming mill in operation next month.

Central eastern seaboard—Fractionally higher to 48½ per cent. The trend continues slightly upward and it is possible that 50 per cent may be reached before this month is over.

Cincinnati—Rose 8 points to 84 per cent, highest level this year. Only 3 of the 24 open hearths are idle.

Birmingham — Steady operating schedules at mills and fabricating shops maintained the rate at 64 per cent.

AUGUST SHEET SALES UP

Daily average sheet sales in August, as reported by the National Association of Flat Rolled Steel Manufacturers, Pittsburgh, amounted to 6926 net tons, compared with 6429 tons in July. Production averaged 6749 tons, against 7255 tons in July, while shipments were 6572 tons in August and 7124 tons in July. Totals for August: Sales 207,781 tons; production, 202,456 tons; shipments, 197,156 tons.

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

One-Third Ton Is Scrapped For Every Ton of Ingots

For every ton of steel ingots produced last year, almost one-third of a ton of scrap was produced during the various processes of manufacturing finished products, according to American Iron and Steel institute.

The blast furnaces and steel furnaces of the industry consumed a total of 20,542,000 gross tons of scrap iron and steel last year. Of this total, 9,620,000 gross tons were purchased from scrap dealers and 10,922,000 gross tons were produced in the companies' own works during the production of about 24,000,000 gross tons of finished products from approximately 34,000,000 tons of ingots.

CIO Loses Prestige as Men Deal with Management

THE labor situation in the steel industry in the Pittsburgh district has been developing a significant trend.

While early in the summer the committee on industrial organization was attracting considerable attention, the rise into prominence and importance of the employes' unions has been a more consequential development. Today militant wage earners are making their demands on steel's management through their own unions.

That the CIO has lost prestige thereby is evident, even though it has not diminished its efforts to enroll members. The slow task of making converts to the CIO, compared to the employes' insistence for revision of wages upward immediately, has inherently reacted to the disadvantage of the Lewis group.

From the progress of enrolling men in this outside union to date, the CIO has not gained sufficient strength to risk a call for a strike. Steel managers have seen this point clearly, and have tactfully agreed to discuss wage and other problems directly with the men through their chosen representatives.

This, of course, is in accordance with the usual procedure, but the relegation of the CIO to the background is the far-reaching effect, notably so in view of its announced determination to become labor's bargaining agent.

Carnegie-Illinois Is Center

In the Pittsburgh district virtually all important developments to date have centered on the Carnegie-Illinois Steel Corp.—namely, the demands from employes and the statements and negotiations by the company's management.

At present employe representatives of several of Carnegie divisions have requests for wage increases pending with the management. The four-page letter from B. F. Fairless, Carnegie-Illinois president, which refused the requests, however, left the door open for repeated negotiations.

"I am not trying to prove by these references that a wage increase should not be granted . . . The management is sympathetic with the payment of highest wages which the successful operation of a business will permit. It is unable to see at this time how any increase may be granted without jeopardizing the successful operation of the business. We ask you to see the picture as fully and as clearly as do we. We invite any and all questions that you may have in your minds, some of which we may not be able to answer, but if there are such, we will get the answers for you. Principally, we want you to work with us to help us do sanely and intelligently whatever can be done in the present situation."

Such words from Mr. Fairless' letter to employe representatives were typical of the attitude the Carnegie-Illinois Steel Corp. management has taken toward the labor problem.

Employes Ask Questions

Soon after the letter was circulated, three employe groups came out in the open in answer to the invitation to "any and all questions that you may have in your minds."

One was the Homestead committee which reiterated its request for an increase of $1.12 a day for all employes regardless of position, to bring the minimum rate of wages to $5 a day.

A statement came from a group of 36 employe representatives of 12 sheet and tin plate mills formerly operated by American Sheet & Tin Plate Co., recently absorbed by Carnegie-Illinois. This group began an annual convention in Pittsburgh and went on record favoring wage increases, longer vacations with pay, seniority rights, and other matters pertaining to general employe welfare. Frequently during the three-day convention, they met with plant superintendents of Carnegie-Illinois, and terminated the convention with a banquet in Pittsburgh to which Carnegie-Illinois executives were invited, and attended.

A third militant group has appeared at the Clairton works where early last week employe representatives addressed a letter to the management through F. F. Marquard, plant superintendent, listing 17 questions relative to the condition of United States Steel Corp.'s surplus, the number of company employes receiving $5000 a year and over, as well as those receiving less than that amount, and such queries as: "What is the percentage of the corporation's business in each of the different classes of steel products it makes?" and "How does the margin of profit vary in relation to the rate of production of the various products?"

E. R. Crawford Leaves $1,500,000 to Charity

Of the $3,800,000 estate of the late Edward Robert Crawford, former president, McKeesport Tin Plate Co., approximately $1,500,000 was left to charity, under the will filed last week in Pittsburgh. The will instructs that "first consideration" be given in the charity bequests to employes of the tin plate company who have "suffered through illness or misfortune."

Training School Combats Skilled Labor Shortage

WITH a shortage of skilled workers in some industrial sectors of the country, the Toledo vocational high school, second oldest public trade training school in the country, is receiving considerable attention. It is said to be an important factor in building up the ranks of skilled tradesmen in Toledo industries. Its complete training for young men includes vocational guidance and a selection of the right trade, training in 17 different trades, and 21 related subjects, and a junior employment service to place students on jobs. Welding, forging and heat treating are part of the training courses

Meetings

OF INTEREST to iron and steelworks operating men are two sessions to be held during the fall meeting of the American Institute of Mining and Metallurgical Engineers in Cleveland, Oct. 20-22, in conjunction with the National Metal congress. One session, on the morning of Oct. 20 will deal with blast furnace practice and the other in the afternoon of the same day, with the open-hearth steel plant.

Papers to be read at the blast furnace session are: "Recovery of Fine Flue Dust from Scrubber Water," by T. B. Counselman; "Offsetting Increased Labor Cost in Southern Blast Furnace Operation," by J. M. Hassler; and "Blast Furnace Operation and Refractories," by R. A. Lindgren.

The following papers will be presented at the open-hearth meeting: "Factors Affecting Life of Ingot Molds," by W. J. Reagan, open-hearth department, Edgewater Steel Co., Oakmont, Pa.; "Speeding Up Steel Refining," by B. A. Rogers, Pittsburgh experiment station, bureau of mines, Pittsburgh; and "Resume of Reports of the British Heterogeneity Committee," by R. C. Good, Electro Metallurgical Co., Pittsburgh.

MACHINE TOOL DEALERS NAME NEW OFFICERS AT MEETING

Harry Barney, Barney Machinery Co., Pittsburgh, was elected president of the Associated Machine Tool Dealers at the association's fall meeting at the Granville Inn, Granville, O., Sept. 21-22. A. G. Bryant, Bryant Machinery & Engineering Co., Chicago, was named vice president, and John Sauer Jr., Peninsular Machinery Co., Detroit, was re-elected secretary-treasurer.

New directors were elected as follows: A. S. Bush, Charles A. Strelinger Co., Detroit; and E. R. Motch Jr., Motch & Merryweather Machinery Co., Cleveland.

Directors holding over are C. C. Brogan, W. E. Shipley Machinery Co., Philadelphia; R. G. English, English & Miller Machinery Co., Detroit; N. A. Booz, Federal Machinery Sales Co., Chicago; O. S. Hunt, Marshall & Huschart Machinery Co. of Indiana, Indianapolis; C. E. Moore, Herberts-Moore Machinery Co., San Francisco; Percy Ridings, Syracuse Supply Co., Syracuse, N. Y.; A. M. Stedfast, Stedfast & Roulston Inc., Boston; and G. J. Zimmerman, Strong, Carlisle & Hammond Co., Cleveland.

OFFICE MANAGERS TO MEET IN NEW YORK

Problems faced by those in charge of office work as a result of the depression years and of recovery will be discussed at the annual conference of the office management division of the American Management association to be held at Hotel Commodore, New York, Oct. 21-22. Experiences of progressive companies in restarting essential office management activities that had been curtailed or suspended will be related. Recent progress will be appraised.

Papers will presented upon the scope of the office manager's job, organization for control of office work, office gadgets, office personnel problems, pre-employment training, worker training, supervisory training, measurement of office work, incentive wage plans, branch office control, division of work between the home office and branches, budgeting office expense.

Alvin E. Dodd, 330 West Forty-second street, New York, is president of the association, and G. L. Harris, manager of sales research and systems department, Addressograph-Multigraph Corp., Cleveland, is vice president in charge of the office management division.

GE Profit Sharing Payments To Be Double Those of 1935

A semiannual distribution of profits of the General Electric Co. to its employes, under the new general profit sharing plan set up by the company a year ago, will be made soon after Oct. 1, President Gerard Swope announced last week. He said the profit sharing for the first half of 1936 would be approximately double that for 1935.

Payments formerly had been made annually, but a number of employes requested semiannual distribution. Cash payments will be made, unless employes desire to save their shares for purchase of General Electric Employes Securities Corp. bonds when next offered.

Steel Corporation Selling Unimproved Acreage

Various plant properties, largely unimproved acreage, belonging to Carnegie-Illinois Steel Corp., National Tube Co., American Steel & Wire Co., and American Bridge Co., all in the Pittsburgh district, are being offered for sale. L. E. Jones, Tenth floor, Carnegie-Illinois building, Pittsburgh, is in charge. The sites, which have been held for some time, comprise housing and industrial locations adjoining plants.

American Foundrymen's association has decided to hold molding and patternmaking contests in 1937 similar to the events held at the May, 1936, convention.

Financial

OTIS STEEL CO., Cleveland, has decided to submit to stockholders a plan for recapitalizing the company. Under the plan, exchanging prior preference shareholders will receive for each share of prior preference stock:

1.—1.28 shares of new convertible first preferred stock providing cumulative preferential annual dividends aggregating $7.04 and an aggregate redemption price of $134.40, plus accrued dividends from March 15, 1936;

2.—$5.28 in cash dividends during the year 1936, if the plan promptly can be declared operative and no unforeseen contingencies develop;

3.—½ share of common stock;

4.—A conversion right which will give for each present share of prior preference stock 5.12 shares of common stock if exercised during the first two years, 3.84 shares of common stock if exercised during the succeeding two years, and 3.20 shares of common stock if exercised during the succeeding six years.

Stockholders will meet Nov. 2 to pass upon the plan.

DECLARE $4.50 ON REPUBLIC PRIOR PREFERENCE STOCK

Republic Steel Corp. has declared a dividend of $4.50 per share on the 6 per cent cumulative convertible prior preference stock, series A, payable Oct. 23 to stock of record Oct. 5. This payment will clear up all accumulations of dividends to date on the prior preference stock. This stock was entitled to cumulative dividends at the rate of $6 per year from Jan. 1, 1935. Dividends of $1.50 per share were paid Jan. 1, April 1 and July 1, 1936, and dividend of $1.50 per share has been declared, payable Oct. 1, 1936, to holders of record Sept. 12.

* * *

Michigan Seamless Tube Co., South Lyon, Mich., declared a dividend of 50 cents, payable Sept. 28, to stock of record Sept. 24, against 25 cents paid July 15.

* * *

Link Belt Co., Chicago, declared an extra dividend of 15 cents and regular quarterly dividend of 30 cents, both payable Dec. 1, to stock of record Nov. 16.

Air Shipments Increasing

More than 700 machinery parts were air-expressed during July, many of them for construction machinery, and for road making machinery vital to the emergency road building program, according to a report by the air express division of Railway Express Agency. Parts shipments, the report reveals, are rapidly increasing.

Men of Industry

EVERETT CHAPMAN, formerly vice president of Lukenweld Inc., Coatesville, Pa., has been elected president of the company. He succeeds G. Donald Spackman, who as noted in STEEL, Sept. 14, page 28, was promoted to general superintendent of Lukens Steel Co., of which the Lukenweld organization is a division.

Robert J. Whiting, heretofore superintendent of Lukenweld, in charge of all manufacturing, has been elected vice president.

Mr. Chapman joined Lukenweld in 1930 as director of development and

Everett Chapman

research and was elected vice president in 1934. Mr. Chapman has been credited with responsibility for Lukenweld's achievements in the design and application of welding to dynamically loaded structures, such as diesel engine crankcases, railway trucks, railway underframes, press frames and general industrial equipment. He previously had been identified with the Lincoln Electric Co., Cleveland, as experimental engineer, and before that was an instructor in electrical engineering at Purdue university.

Mr. Whiting joined Lukenweld in May, 1934, as superintendent. He began his career with the Keller Mfg. Co., Scranton, Pa., in 1906. In 1909 he entered the employ of Pickering Engineering Co., Hartford, Conn., where he remained for four years. He then became master mechanic on plant equipment for the Ford Motor Co., later being promoted to superintendent of body construction. In 1923 he became production engineer for the Fisher Body Corp. and supervised the erection of body plants and equipment. As manager of Fisher's Flint, Mich., unit No. 1 for a period of four and one-half years, Mr. Whiting was in charge of engineering and construction of the largest body building plant in the country, employing about 10,000 men.

♦ ♦ ♦

A. W. Carey, traffic manager for the Tennessee Coal, Iron & Railroad Co., Birmingham, Ala., has been elected to the board of governors of the Southern Traffic league.

♦ ♦ ♦

W. O. Will, formerly identified with the engineering department of the Illinois Tool Co., has been named sales engineer of the Tool Equipment Sales Co., Chicago.

♦ ♦ ♦

C. S. Roberts, recently associated with the Chicago sales office of Bethlehem Steel Co., has been appointed Chicago representative in the sale of industrial lubricants for the Brooks Oil Co., Cleveland.

♦ ♦ ♦

Harry C. Hicks, associated with the New York Belting & Packing Co., New York, since 1913, has been appointed sales manager of the Chicago district, with headquarters at 3550 South Morgan street.

♦ ♦ ♦

J. T. Howat has been appointed chief metallurgist and superintendent of the heat treating department of the American Spiral Spring & Mfg. Co., Pittsburgh. Mr. Howat was formerly with the Pittsburgh Steel Foundry Corp.

♦ ♦ ♦

H. H. Steck has been named grinding wheel sales representative in the Pittsburgh territory for United States Rubber Products Inc., New York. He has been engaged in selling grinding wheels in that district for the past 20 years.

♦ ♦ ♦

George W. Duncan, connected with the fractional motor department of the General Electric Co. at Fort Wayne, Ind., for the past 16 years, has resigned his position and joined the sales staff of the Ohio Electric Mfg. Co., Cleveland, as assistant motor sales manager.

Robert J. Whiting

♦ ♦ ♦

S. J. Garahan, identified with the General Electric Co., Schenectady, N. Y., since 1904, has been made manager of sales of the cable section of the company's central station department. He succeeds R. C. Bellezza, who has become associated with the Locke Insulator Corp., Baltimore, as vice president and manager of sales.

♦ ♦ ♦

George W. Sheridan, for 30 years secretary, treasurer and comptroller of West Leechburg Steel Co., now merged with Allegheny Steel Co., has severed his affiliation with the West Leechburg division of the Allegheny company.

Charles S. Todd, formerly vice president of West Leechburg Steel Co., has also severed his connection with the former concern.

E. J. Anglin

Who, as announced in STEEL, Sept. 14, page 28, has been elected vice president in charge of operations for Weirton Steel Co., Weirton, W. Va.

♦ ♦ ♦

George S. Davison, founder of the former Davison Coke & Iron Co., now known as the Pittsburgh Coke & Iron Co., former president of Gulf Refining Co. and prominently identified with other enterprises at Pittsburgh, was honored at a luncheon of prominent Pittsburgh engineers, Sept. 21, in celebration of his eightieth birthday.

♦ ♦ ♦

A. A. Jamieson has joined the Pittsburgh sales force of William K. Stamets, machine tools and special machinery, and will cover the Ohio territory. Mr. Jamieson had been connected with the Westinghouse Electric & Mfg. Co. for many years and more recently had been identified with the Carboloy Co.

♦ ♦ ♦

Frederick R. Ward, former superintendent of the bar and structural mills of the Jones & Laughlin

Steel Corp., Pittsburgh, has become associated with the Republic Steel Corp. as assistant superintendent of the finishing mills and special process department at the South Chicago, Ill., works.

♦ ♦ ♦

Tom Barlow, formerly chief metallurgist, Ecorse Foundry Co., Ecorse, Mich., has been made research metallurgist, Battelle Memorial institute, Columbus, O.

♦ ♦ ♦

Hanson T. Thomas, vice president and general manager of sales of the Oliver Iron & Steel Corp., Pittsburgh, has resigned. He was appointed assistant general manager of sales in May, 1930, becoming general manager of sales in 1932. In May, 1935, he was elected a vice president of the company.

♦ ♦ ♦

Charles H. Hoefer has been made superintendent of the alloy casting division, Lebanon Steel Foundry, Lebanon, Pa. Mr. Hoefer formerly was connected with the Eastern Steel Castings Co., Newark, N. J.; Forging & Casting Corp., Ferndale, Mich.; the Duraloy Co., Pittsburgh, and the Empire Steel Castings Co., Reading, Pa.

♦ ♦ ♦

Walter L. Berghoefer has been appointed manager of casting sales of the Continental Roll & Steel Foundry Co., East Chicago, Ind. Mr. Berghoefer has been identified with the steel foundry industry for many years as vice president of National Steel Foundries, Milwaukee, and recently resigned as manager of industrial sales of the Westinghouse Air Brake Co., to assume his new connection.

♦ ♦ ♦

Erwin J. Boettcher has been appointed district representative by the Acme Steel Co., Chicago, in the Wisconsin territory. Mr. Boettcher will handle sales of Acme superstrip, galvanized strip steel and stainless strip steel. Sales of general line Acme products for this territory will continue to be handled by Harold S. Diehl. Milwaukee office of the company has been moved from 208 East Wisconsin avenue to 312 East Wisconsin avenue.

♦ ♦ ♦

G. V. Parkins has been elected president of the McKeesport Tin Plate Co., succeeding the late Edwin R. Crawford. Mr. Parkins has been connected with the company for the past 30 years, having gone with the company as a clerk and working up to the position of vice president and director.

Charles Brechemin, eastern sales manager of the company for a number of years, has been named vice president succeeding Mr. Parkins.

L. J. Bieau, identified with the New York office of the company, has been named eastern sales manager to succeed Mr. Brechemin.

Died:

COL. A. W. WYCKOFF, 63, president, Wyckoff Drawn Steel Co., Ambridge, Pa., at Pittsburgh, Sept. 25. A native of Elmira, N. Y., he was graduated from Elmira university in 1896. Prior to founding the Wyckoff Drawn Steel Co. in 1919, he was identified with the Bethlehem Steel Co., Colorado Fuel & Iron Co. and Bullock Engineering Co., now a part of Allis-Chalmers Mfg. Co. He also established the A. W. Wyckoff Co. at Pittsburgh, representing the Western Electric Co. and Wagner Electric Co.

♦ ♦ ♦

Shirley S. French, former president, Berger Mfg. Co., Canton, O., and vice president, treasurer and director, Central Alloy Steel Corp., at Youngstown, O., Sept. 18. He also had been vice president and general manager of the General Fireproofing Co., Youngstown, O. Resigning as president of Berger Mfg. Co. in May, 1930, he became associated with Lyon Metal Products Inc., Aurora, Ill., in general charge of a new division of that company.

♦ ♦ ♦

H. C. Gardner, 79, formerly a member of the firm of Gardner & Lindberg, Chicago, industrial engineers and architects, at his home in Evanston, Ill., Sept. 20.

♦ ♦ ♦

William Garrow Fisher, 42, president Paragon Steel & Tool Co., East Rutherford, N. J., at his home in Lyndhurst, N. J., Sept. 19.

♦ ♦ ♦

George M. Bartlett, 63, professor of machine design and head of the department in the school of engineering, Purdue university, West Lafayette, Ind., in that city, recently. He formerly had been identified with the Diamond Chain Co., Indianapolis, as chief engineer, for 17 years, and was retained by the company as consulting engineer after his appointment to Purdue.

♦ ♦ ♦

Sherard Osborn Cowper-Coles, 70, inventor of the sherardizing process of galvanizing iron, at Sunbury-on-Thames, England, Sept. 9. Mr. Cowper-Coles devoted most of his life to problems connected with the electrodeposition of metals. He invented a number of electrolytic processes for making iron and copper tubes and sheets, for the recovery of zinc from its ores, and for aluminum welding without a flux. He was a member of the Institution of Electrical Engineers, American Institute of Electrical Engineers, Iron and Steel institute, and American Electrochemical society.

Preparing First Patman Complaint

WHILE it had been announced at the offices of the federal trade commission that the first formal complaint under the Robinson-Patman act will probably be made public during the latter part of September, it is now stated that the complaint will be announced during the coming two weeks. This is the most definite information available at this time.

Charles H. March, chairman of the commission, in a speech last week during which he discussed the law without divulging any information not already known to the public, called attention to the fact that the law is not in terms confined to chain store merchandising or even to retail distribution.

"It applies," he said, "to all commodities and to the effect of discrimination on purchasers who compete in their resale regardless of who they may be."

Mr. March called attention to the fact that "price discrimination is now declared unlawful where the effect may be 'to injure, destroy, or prevent competition with any person who either grants or knowingly receives the benefit of such discrimination, or with customers of either of them.' The general effect of that provision is to enlarge enormously the ability of one who is unlawfully discriminated against to protect himself."

Tin Consumption Up 17.9% To 152,168 Tons in Year

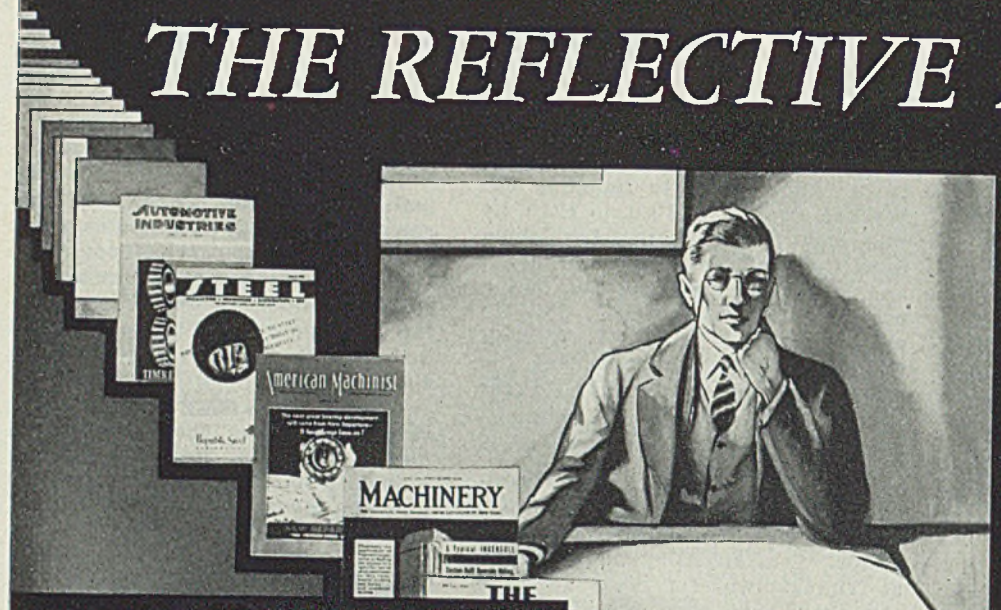
World apparent consumption of tin in the year ended July, 1936, totaled 152,168 tons, against 129,101 tons in the preceding year, an increase of 17.9 per cent, according to the International Tin Research and Development council. Corresponding production statistics were 162,183 tons and 121,366 tons, respectively.

Most countries showed substantial consumption increases, including the United States, 33.6 per cent; France, 13.9 per cent; Russia, 25.1 per cent; Italy, 20.3 per cent, and Japan, 19.0 per cent. German and Spanish consumption decreased 16.1 per cent and 8.0 per cent, respectively.

World production of tin plate in the year ended July, reached a new high of 3,363,000 tons, against 3,078,000 tons in the previous year, according to the council. The former figure represents a production increase of 8.8 per cent over 1929.

World visible stocks at the end of August, 1936, stood at 16,772 tons.

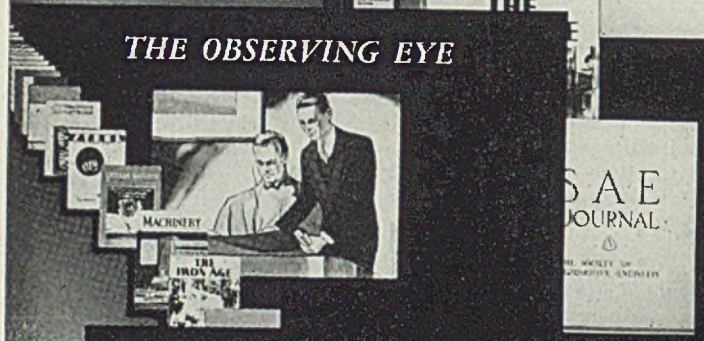
THE REFLECTIVE MIND



Reviews Facts

IN THE LIGHT OF PRESENT AND FUTURE NEEDS

THE OBSERVING EYE



THE ATTENTIVE EAR

Receives Suggestions FOR

IMPROVED MANUFACTURING METHODS

OBSERVATION of illustrated facts and Attentive hearing of presented evidence provide the Reflective mind with information for Accurately analyzing and comparing manufacturing equipment.

The Reflective Mind selects equipment not alone on reputed Performance, but more especially on "What can it do for me?" Quality production with the Greatest Saving of manufacturing Costs is the answer.

Bullard Engineers are at your service to survey your jobs and suggest the Best Method for Reducing costs on Boring, Turning, Drilling, Reaming, Threading, and other operations.

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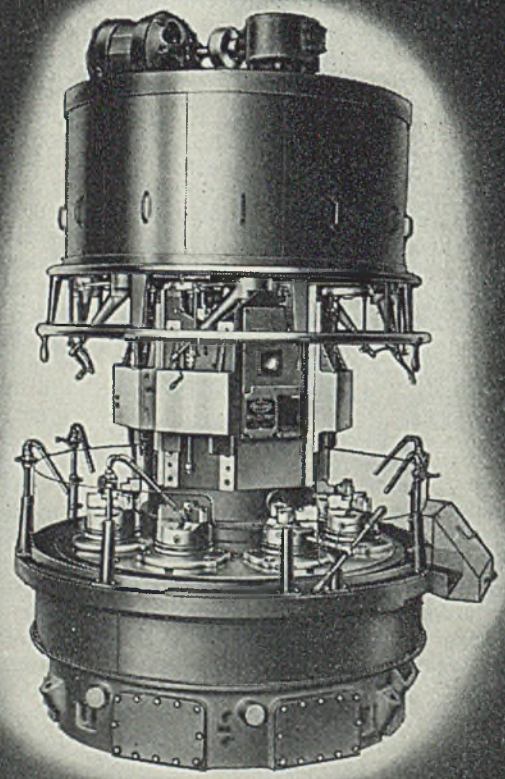

TYPE "D"
MULT-AU-MATIC

MIRRORS of MOTORDOM

DETROIT

SALES trends this year have proved that an increasing number of American motorists are graduating from the lowest price field to medium-priced cars because of the additional comforts and conveniences in the latter type."

This statement was made by Byron C. Foy, DeSoto's president, as he stepped from the gangplank of the EUROPA last week at New York. For the most part he was correct. What he said about America growing up to higher income brackets is as true as gospel. But by conceding the comforts of the middle-priced car he relayed a keynote in the 1937 drive that not only the middle-priced, but every last one of the motor makers, will follow.

As the automobile people have bent their efforts toward something new for 1937, they have been guided by the idea of exploiting comfort. "Comfort comes first" may well go down as the 1937 slogan.

Witness the 1937 jobs already out. Studebaker emphasizes more leg room, luggage compartments up to 22 cubic feet, hypoid gears in the rear axle for body roominess and a double-cam steering mechanism to help overcome road shock. Packard follows with similar emphasis.

Comfort Is Emphasized

So with Ford, Chevrolet and all the others to come. The absence of major mechanical changes, other than the first appearance of overdrive in a widespread manner, leaves the industry with all the latitude it has been asking for to play up roominess and other comfort qualities.

One certain tip that comfort would be exploited cropped out when the Society of Automotive Engineers gathered at White Sulphur Springs last spring. From that engineering discussion the twins "comfort and safety" were given the nod over "speed and power" as the descriptive couplet most likely to garner adherents in 1937.

The new Dodges and Plymouths, bearing as usual a brotherly similarity of feature, are making much of a wider body for 1937.

This results in narrower rear fenders and reduction of the running board to a mere shadow of its former self. Radiator shells on both Plymouth and Dodge bear a close resemblance, the design making the appearance of two oval-shaped sections set vertically. Headlamps are mounted on horizontal brackets set out from the hood. A moderate display of stainless steel ornaments the front end of each, in both radiator grille trim and vertical bands between hood and fender. A new curve has been worked in the vertical line between rear-quarter panel and fender.

Dodge Starting 1937 Jobs

Dodge has already started the assembly of 1937 jobs, although last week's output of better than 2000 cars was mainly commercials to the 1936 specification. Plymouth, making '37 jobs in a desultory manner to date, should swing over wholeheartedly, likely by late this week or next.

With Ford out of the assembly picture, for Dearborn has now made the last of its 1936 jobs, production seems temporarily at low ebb. Ford's lines should be down for another couple of weeks, though Chevrolet's resumption on assemblies late this week will bolster the picture.

Chevrolet predetermined on Oct. 1, or as close to that date as possible, to restart the Flint lines. Since most of its feeder parts plants have been humming since the day after Labor Day, a parts' bank has been built up and all original plans should go through on schedule.

Incidentally, the final figures on Chevrolet's 1936 model can now be written—1,045,440 units at retail, better by 326,927 than 1935 and ahead of all-time heights of 1929 by 116,760. No wonder Chevrolet has cause for elation!

Buick's assemblies have crossed the 1000-per-week mark on the way up. All of these are 1937 lines, most so far being 80's and 90's. This week the 40's and 60's start coming through. If all 1937 forecasts of General Motors come to pass, 1000 Buicks in the 1937 season will constitute a capacity daily production, not weekly. Most of the fourteen millions going into the new Buick plant account are to boost capacity from the present 800 per day. Buick's field forces come in to Flint for a series of meetings Oct. 5-13.

Incidentally, General Bumper Co., Detroit, is now making the Buick bumper part. This has been made by Standard Steel Spring Co. at Coraopolis, Pa., near Pittsburgh, which had to shut down after strike fomenters had been at work. The management vowed it would never reopen its plant and transferred its spring business to its other plant at Racine, Wis.

Dies at Coraopolis which belonged to General Motors were jerked and shipped back to Detroit. Aside from the Buick bumper business, Standard Steel Spring Co. had been making the same part for Olds, but in this case the contract apparently has not been relocated.

Studebaker knocked out better than 2600 models last week. Making capital out of the November election, Studebaker is giving away five new cars in a national contest to entrants who guess closest to the balloting's results.

Packard has had many a word of encouragement from the field on its new sixes and is beginning to believe that scheduling 9000 cars for the last four months of 1936 will be conservative. Slightly better than 2000 models were made last week, mainly sixes.

Christopher Gets Credit

Those in Detroit close to the industry are coming to place a good deal of credit for Packard's remarkable growth last year right at the doorstep of George Christopher. Brought into the organization a few years back, when the 120 was still on the boards, to share the title of responsibility for making the new model, he has since emerged to take full charge of the 120 and now the 115-inch wheelbased six. A true character behind the scenes, he is little given to personal publicity, but when the credits are handed out Detroit is prone to check him for most of the progress in Packard's double entry down in the lower-priced fields.

At Pontiac the new models seem set to go around early October, likely before the 15th. Some of the 37's have been coming through the back door of the assembly line for ten days now. This division of General Motors can also count noses. On the 1936 job 154,338 units were actually made, almost 50 per cent up from the 106,-

527 cars turned out a year ago.

Pontiac, with Olds, apparently has some noteworthy ambitions for next year. Respectively, they shared sixth and fifth place in motordom popularity this year, both entrenched each month behind Dodge in fourth bracket.

While none of the three can reach out into one-two-three or the win, place and show positions, they will put on a merry battle for fourth place. Look for warm competition in the coming year between Olds and Pontiac on the General Motors side, Dodge from Chrysler, and not to forget what inroads the "independents," such as Packard and Hudson, can carve for themselves.

Like Hupp, Franklin, Austin and Willys, to mention a few in the passenger car business who have known more prosperous days but who have been making news recently through reopenings, a stir of life has come from defunct Marmon.

Last Friday, Sept. 25, federal court at Indianapolis heard certain creditors ask for a modified plan of reorganization. No mention has been made yet on whether Marmon, now admittedly insolvent, will ever operate again. But when the creditors start picking over the bones, that is one preliminary step clearing the way.

Hupp Lacks Funds for 1937

Hupp doesn't seem to be getting anywhere with its postponed stockholders' meetings that might shed some light on where funds for a 1937 model are coming from. Franklin, however, is close onto announcing its new cars; Willys and Austin have set November for debut.

The depression (Detroit says it has been definitely in the laps of the historians since 1933) seems to have taught many a motor plant a lesson on diversification.

This statement is more fitting to the plants that make and feed parts into the assembly lines. Present prospects in the parts' game may be very excellent, but the partsmakers themselves are all holding onto the product sidelines they developed during the depression.

Forecasts of "business enough for all" in a coming 4,500,000-car year are very cheering, yet in this game you can't tell when a Chrysler will pull a DeSoto on you. That is, build their own plant for making heavy stampings and recall all the work. Or for Chevrolet to decide to make its own springs and bumpers.

So the parts' people are wise in keeping up research for new products. Most of them have kept alive their aces in the hole — products developed in the last five years that have no relation to the automobile business but which help carry overhead and make for diversity.

It took the depression for Briggs to develop refrigerator cabinet, sinks and plumbing ware. Sheet metal stampings, they are well fitted to the automobile body business.

Midland Steel Products Co., with plants at Cleveland and Detroit, is always construed as a maker of automobile frames, yet the company makes refrigerator units, gasoline pressure stoves and kerosene stoves.

So with Kelsey-Hayes Wheel Co. Besides wheels and brake drums, this company is in the steel house market with Stran-Steel houses. Continental Motors has taken on farm lighting equipment as a side issue, not to overlook Murray Body and A. O. Smith, both with their steel beer barrels.

More Diversified Products

Then there is Mullins Mfg. Co., making nickel sinks and wash tubs; Borg-Warner, offering a pedal-less bicycle and McCord Radiator which is also in the game of making industrial air-heating units and trays for electrical refrigerators.

Not to forget Motor Wheel, which turns out oil burners and both gas and electric refrigerators, or Budd and its streamlined trains.

In a similar vein, the time when Chrysler Corp. was not in the air-conditioning equipment business is not long back. And how many can remember when General Motors didn't make radios, electrical irons, air-conditioning cabinets, rubber ice trays, desk fans, pumps and water systems?

The Buckeye Jack Mfg. Co. plant at Alliance, O., has been purchased by Kelvinator Corp., Detroit, and will be remodeled for the manufacture of washing machines. . . . Pontiac's big play on safety in the plant works is through periodically mailing employes 3 x 5-inch cards, each with a different safety slogan. . . . Plymouth has given a 30-foot long miniature in three dimensions of its Detroit plant to the business school at Harvard. Complete in every detail, it details 17 miles of conveyors and each piece of machinery. . . . The new 11-story General Motors research laboratories building in Detroit was about two-thirds up last week. . . . Rights to buy the Willys-Overland new preferred and common expire on Oct. 2. . . . The new addition to A. C. Spark Plug Co.. adding 50,000 square feet, will be completed this month. . . . Studebaker added 50 new dealers in 21 states during August. . . . The last two open hearths of the four which Great Lakes Steel Corp. is building here will be pouring steel in a short time. . . . General Motors has placed the general contract for the new Linden, N. J., plant with J. A. Utley Co., Detroit. The plant may be completed in January. . . . Graham, now in 1937 production, tentatively will set up about half of its cars with superchargers. This year the percentage was about 30 per cent. . . . Hudson reports an exceptional demand recently for "extras" in the form of heaters, mirrors, clocks, special steering wheels, horns and tail lights. . . . Chrysler showing it will make many of its own stampings in the new DeSoto plant has led some outside stamping suppliers to serious thought. One prominent stamping supplier in Toledo, O., has been negotiating quietly to sell its properties. . . . Willys is concentrating much of its production equipment in a section of the Toledo plant, making ready for assemblies on the 100-inch wheelbase models it brings out in November. . . . Packard has been leasing some Hupp space for storage purposes. . . . Murray Body's recent purchase of about 75 dies for blanking purposes was one of the last die programs completed. . . . Rumor has it the Lincoln-Zephyr will add a convertible sedan, limousine sedan and coupe for 1937. . . . Windshield defrosters likely will be standard equipment on many cars next year.

Automobile Production

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

	1934	1935	1936
Jan.	155,666	289,728	364,004
Feb.	230,256	332,231	287,606
Mar.	338,434	425,913	420,971
Apr.	352,975	452,936	502,775
May	330,455	361,107	460,565
June	306,477	356,340	452,955
July	264,933	332,109	440,999
Aug.	234,811	237,400	271,291
8 mo.	2,214,007	2,787,764	3,201,166
Sept.	170,007	87,540	.....
Oct.	131,991	272,043	.....
Nov.	83,482	395,059	.....
Dec.	153,624	404,528	.....
Year	2,753,111	3,946,934	.....

Estimated by *Cram's Reports*

Week ended:	
Aug. 29	53,037
Sept. 5	31,628
Sept. 12	26,750
Sept. 19	33,615
Sept. 26	15,680

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Activities of Steel Users and Makers

GULF States Steel Co., Birmingham, Ala., has developed a new line of steel shingles which will be placed in production soon. They will be made of galvanized sheets, mainly 28 and 29 gage, in 16-inch squares. In laying roofs with these shingles, galvanized strips, 11 inches wide, first are fastened along the edges of the roof after which the shingles are placed and nailed fast. The shingles are so made that they may be placed in proper alignment and locked to each other. The shingles overlap each other by about 2½ inches, thus covering the nails by which they are fastened. The new shingles are to be marketed under the tradename Super-X.

♦ ♦ ♦

Vulcan Foundry Co. recently has been established at Homer, Mich., by James A. Murphy and James T. Wadsworth.

♦ ♦ ♦

DeVlieg Milling Machine Co., Detroit, has appointed the J. C. Whitney Machinery Co., Cleveland, as dealer in the Cleveland territory.

♦ ♦ ♦

H. E. Eaton Co., eastern sales representative for New York and New England for Michigan Tool Co., Colonial Broach Co., and Detroit Tap & Tool Co., has moved its headquarters to 51 East Forty-second street, New York.

♦ ♦ ♦

Pittsburgh Steel Co., Pittsburgh, has opened a new district sales office in Cleveland, serving the state of Ohio. The new office, located at 1811 Union Trust building, is in charge of Joseph A. Hague.

♦ ♦ ♦

Poldi Steel Co. has been incorporated at Chicago for the distribution of tool steel manufactured by the Poldi Steel Works, Kladno, Czechoslovakia. The company has established a warehouse at 1724 Carroll avenue, Chicago. Paul Kruger is president of the new organization.

♦ ♦ ♦

Whiting Corp., Harvey, Ill., has made an arrangement with the Griffin Wheel Co., Chicago, whereby the former will manufacture and sell the Griffin hot-blast process for cupolas. Whiting also will continue to handle the Whiting pulverized coal fired and stoker fired types of hot-blast.

♦ ♦ ♦

Hagan Corp., Pittsburgh, has been awarded the contract for oil-operated combustion control for three Rust triple-fired slab heating furnaces being installed to serve the new wide strip mill of Jones & Laughlin Steel Corp., at Pittsburgh works. It has also received the order for automatic combustion control for two batteries —5 holes each—of Surface Combustion Co. one-way fired soaking pits to be installed at South Side works, Pittsburgh, of Jones & Laughlin.

Weirton Steel Co., Weirton, W. Va., has awarded a contract for soaking pit control and gas mixing station control to the Hagan Corp.

Republic Creates New Farm Bureau

EARL D. ANDERSON has been appointed agricultural engineer in charge of a new agricultural extension bureau of the Republic Steel Corp., Cleveland.

Earl D. Anderson

Republic at present is pushing the construction of a new wire mill at South Chicago which will produce a complete line of farm fencing by a new electro-galvanizing process.

In commenting on the creation of an agricultural extension bureau T. M. Girdler, president and chairman of the board of Republic, said: "Too long has the steel industry been neglectful of its opportunity and obligation to co-operate with agricultural leaders in activities looking toward the improvement of rural conditions."

Mr. Anderson was graduated from Iowa State college with a master's degree in agricultural engineering. For a time he was associated with the government as farm representative of the federal housing administration in Iowa. His new activities will be on a national basis in contacting the department of agriculture, American Society of Agricultural Engineers, agricultural colleges, 4H clubs, county agents and farm association officials. The new bureau will be located in Chicago.

Issue Another Report on Columbia River Iron Industry

The office of the division engineer, North Pacific division, corps of engineers, has issued a report entitled: "The Feasibility of Establishing an Iron and Steel Industry in the Lower Columbia River Area Using Electric Pig Iron Furnaces."

The report, prepared by Raymond M. Miller, metallurgical engineer, is based on an investigation of the iron and steel industry on the Pacific coast, and of the possibility of using electric furnaces as the basis of a plant in the Columbia river area.

The report, published in two mimeographed volumes, can be obtained at the office of the division engineer, 533 Pittock block, Portland, Oreg.

A similar report entitled "Available Raw Materials for a Pacific Coast Iron Industry", by Dr. Edwin T. Hodge, consulting geologist, giving estimated costs, was issued by the North Pacific division last spring, "in view of the imminent completion of the Bonneville, Oreg., hydroelectric project." (STEEL, March 3, page 25.)

Ancient Iron and Steel Workmanship on Display

An interesting group of iron and steel exhibits, including rare samples of early Chinese castings as well as those of modern times, is on current display at Metal Products Exhibits Inc., International building, Rockefeller Center, New York. The group has been lent by John M. Higgins, president of the Worcester Pressed Steel Co., Worcester, Mass.

One feature is Prussian cast iron of the early nineteenth century, which originated during the Napoleonic wars. The inhabitants of the Prussian states turned over their jewelry to the government for the common cause of defeating the French dictator. Certain master-craftsmen duplicated important pieces in cast iron and some of this is now on display.

A collection of Toledo and Damascus blades also is being shown as a part of the Higgins exhibit.

Foundry Cost System Issued

A simplified cost system and foundry business record has been issued by the Gray Iron Founders' society, Cleveland. It includes special journal sheets, combination payroll and distribution sheet, a recapitulation of cost data from general ledger, and a cost estimate sheet. The general lack of any basic records in small foundries for the assembling of data essential to cost information has prompted building of the combined bookkeeping and cost finding system.

WINDOWS OF WASHINGTON

WASHINGTON

WHAT might be termed an informal survey is being made by the bureau of the customs into the alleged dumping of German steel sheet piling in the United States. No formal complaint has been filed with the bureau on this matter, but several "conversations" have been held with officials. These evidently have been interesting enough to arouse the belief among government officials that the matter might be worth investigating.

Department of commerce figures show that for the January-July period of this year 2070 tons of German steel sheet piling came into the United States, valued at $72,004, while during the same period last year Germany did not export any of this material to the United States. Further, it is interesting to note that of this amount 1024 tons, valued at $37,461, came into the country during July of this year, principally through Florida and California ports. It cannot be ascertained through government channels whether this can be traced to government emergency work. However, there was a definite understanding that no more German piling would be used by the government after the Tri-Borough bridge fiasco.

LAFOLLETTE COMMITTEE AWAITS CHANCE AT STEEL

The steel industry is bound to come up during the course of either the present hearings before the LaFollette civil liberties subcommittee or those which will follow. For some unknown reason, the senator from Wisconsin has always had considerable antipathy for the steel industry, probably due to the labor situation. He always has been strong for the laboring classes and he doubtless feels, probably without having gone into the matter very thoroughly, that the steel industry has not given labor a fair deal.

These hearings have been fraught with all kinds of trouble. Officials of the Railway Audit & Inspection Co., a private detective agency, have refused to be stampeded by the committee. At one time a few weeks ago they obtained a court order against appearing and submitting evidence. The end of this controversy is not yet in sight.

During testimony last week by one John Davidson, a steel worker of Sharon, Pa., Senator LaFollette introduced a letter into evidence. In connection with questions by the committee in regard to this communication, Davidson admitted that he had jumped at a chance to spy on his fellows for extra money offered by a "Pete Goodwin" of the Railway Audit & Inspection Co. service, because he was married and had three children. His letter, in evidence, stated to the committee that to continue spying he was forced to "sell out" two life-long friends, who were union officials. Later, Davidson stated, he confessed to union men that he was filing these reports with the detective agency, and after that the union chiefs edited the reports for him.

AUGUST EMPLOYMENT GAINS OVER JULY

Employment in August in blast furnaces, steelworks and rolling mills increased 1.4 per cent over July, according to the bureau of labor statistics, department of labor. Foundry and machine shop employment increased by the same amount.

Taking the three-year average, 1923-1925 at 100, employment in iron and steel and their products industries was 85.4 in August, compared with 83.8 in July and 73.2 in August of last year. On the same basis payrolls in this industry in August were 79.8, against 75.8 in July and 59.4 in August, 1935.

The bureau shows that a substantial increase in factory employment was made between July and August, with gains in ten of the 16 manufacturing industries which the bureau surveys each month. A net gain of 166,000 workers is shown in these combined industries over the month interval, and weekly payrolls in these same industries increased by approximately $7,300,000.

The bureau says that "while a large proportion of the durable goods industries showed gains in employment, the level of employment for the durable goods group as a whole remained unchanged, due largely to a sharp decline in employment in the automobile industry."

WALSH-HEALEY REGULATIONS EXCEED LAW, IT IS CHARGED

As an aftermath of the first set of regulations issued by the department of labor in connection with the Walsh-Healey government contract bill, which becomes effective Sept. 28, numerous complaints have been received. Most of these assert that the secretary of labor has read into the law a good many things which apparently are not contained there. If such statements are true, no end of confusion may result.

For example, as the bill finally passed congress and was signed by the President it exempted livestock as being perishable. The regulations apparently have put livestock back in the law and that industry is up in arms about it. As a matter of fact, this industry originally was in the law but a very smart lobbyist saw to it that it came out before the bill finally passed.

In another industry, it has been pointed out, Section 9 of the law provides that it shall not apply to purchases "as may usually be bought in the open market."

It is charged that the secretary of labor, in the regulations, has attempted to broaden this in Section (a), Article 2 of Part I. It is now being asked what justification the department has for this attempt to change the plain intent and language of the statute.

CARRIERS STILL UNDECIDED ON FREIGHT SURCHARGES

Of course the iron and steel industry is interested in the freight rate

surcharges which are scheduled to end Dec. 31 unless some action is taken by the interstate commerce commission. At the moment such action appears doubtful.

Just what the carriers are doing about this, aside from having many conferences among themselves, cannot be learned. Representatives of the roads here in Washington parry all questions on the matter by stating that they have not yet reached any decision as to what they will do.

It may be recalled that some months ago the roads filed an application with the commission asking that the rates be allowed to go on as at present for six months or a year. The commission turned a deaf ear to this appeal and issued a decision against the continuance of the general increase as such.

The railroads then proceeded with conferences of their representatives on the theory that they would file applications for increased tariffs on various commodities that could stand the gaff. Whether iron and steel are considered able to endure continued high rates cannot be learned.

If the surcharges do come off on Dec. 31 the steel industry will be saved many thousands of dollars a year.

EXCHANGE OF MERCHANDISE VITAL, SAYS DRAPER

In talking last week on reciprocal trade agreements, Ernest G. Draper, erstwhile business man and now assistant secretary of commerce, who is making an effort to get as much of the business attitude into the department as possible, said that the trade agreement program of the present administration "is based upon one incontrovertible fact — that modern progress and prosperity are absolutely dependent upon the exchange of merchandise."

Discussing the same subject further, he said that the present effort is to combat "the growing tendency to close the channels of international trade.

"The trade agreement program," he said, "is not, and by no stretch of the imagination can be considered as a drive toward free trade.

"The objective of this program," he continued, "can be explained very briefly and clearly as follows: The government believes that it is wise economy for the nations of the world to buy from foreign sources of supply those products which they do not possess or which they cannot produce economically, and that unreasonably high duties or other exaggerated import restrictions on such products are a burden on consumers and a barrier to lasting world recovery."

In concluding the talk Mr. Draper said that the "decline in international trade from 1929 to 1933, representing a loss of over 20 billion dollars in business activity, was one of the primary factors in this greatest of world economic depressions. The restoration of that lost trade, already well under way, will mean much to us nationally as well as to the entire world."

AMBIGUITY FOUND IN SCRAP EXPORT FIGURES

Figures at the department of commerce for the seven-month period ending July show our exports of scrap to Europe increased this year compared with the same period of last year, while the June and July exports show a tapering off of these exports. No one in government circles has offered any explanation.

It is shown, for instance, that for the seven months ending July last year, our exports of scrap to Europe totaled 418,201 tons, increasing for the comparable period of this year to 544,807 tons. In June of last year our exports to Europe were 56,506 tons, dropping in June of this year to 38,394. In July of last year they were 87,387, falling off in the same month of this year to 48,203 tons.

Our iron and steel exports to Europe for the seven months ending July of last year totaled 44,668 tons, increasing for the same period of this year to 96,533 tons. In June of last year the exports were 4078 tons, increasing in June of this year to 17,167 tons and in July of last year exports totaled 8981 tons, increasing in July of this year to 19,094 tons.

TWO COMMITTEES START SURVEYS ON ECONOMIZING

Work was begun last week by two committees both looking to the reorganization of government departments on the basis of economy and efficiency. It seems strange that these committees are starting work during the closing weeks of the presidential campaign.

One of the committees was appointed by the senate itself, with Senator Byrd of Virginia as chairman. The other was appointed directly by the President and is headed by Louis Brownlow, former commissioner of the District of Columbia and previous to that a Washington newspaper correspondent.

These investigations will try to determine where one government department overlaps another, with the intention, it is stated, of trying to eliminate such situations.

Whether it is entirely propaganda or not, there is a very definite word seeping down through government channels that if Mr. Roosevelt is re-elected there will be a drastic cut in government personnel and expenditures. This has many of the "boys" very much worried for their jobs.

It is pointed out in some quarters that if Mr. Roosevelt is re-elected he undoubtedly will feel that there would be no chance for a third term and that he can make his mark by being economical during a second term of office and go down in history as a saver as well as a spender. There may be some truth in this theory. It is being expressed freely in the corridors of many of the government buildings.

FARM MACHINERY PROBERS RECEIVING ANSWERS

Answers are now being received by the federal trade commission to a questionnaire sent out in connection with its agricultural implement and machinery study. It is making this study for congress as the result of a senate joint resolution passed during the closing hours of the last session.

The inquiry, it will be recalled, is mainly for the purpose of ascertaining whether violations of the anti-trust acts have occurred in connection with the manufacture, sale or distribution of agricultural implements and machinery, and costs, prices and profits of companies engaged in this business.

Trade commission officials in charge of this investigation say that plans for conducting it are still in the formative stage because of the many phases of the industry to be considered, including prices of American farm machinery in foreign countries, and the only thing of note that has been done to this time is the sending out of the first questionnaire.

MORE "CONCLUSIONS" DRAWN BY BERRY'S COUNCIL

Major George L. Berry's council for industrial co-operation, which is always messing around with government figures and making them seem to be just what he wants them to be, has now prepared a tabulation of the change in value added by manufacturing and total wages for various industries, including iron and steel and machinery.

In the iron and steel industry it is pointed out that during the period of 1919-1929 the value added by manufacture was 33 per cent, while wages increased 11 per cent. In the period 1929-1933, the council says, the value added by manufacture declined 68 per cent, while wages declined 64 per cent.

In the machinery (not including transportation equipment) industry the tabulation shows that in the 1919-1929 period the value added by manufacture was 56 per cent, while wages increased 32 per cent. In the period 1929-1933, however, the value added by manufacture decreased 70 per cent, while wages declined 69 per cent.

In explanation of the whole tabulation the council points out that "in some individual groups, it will be found that the value added by manufacture increased three times faster than did total wages during the 1919-1929 period while all groups show the same tendency to make the reduction in total wages equal or exceed the reduction in the value added by manufacturing during the 1929-1933 period."

Editorial

"More Goods for More People" Idea Is Gaining

PERSONS who heard the addresses at the opening sessions of the annual convention of the Association of Iron and Steel Engineers in Detroit last Tuesday were lacking in imagination if they failed to sense the close relationship of the iron, steel and metalworking industries to the economic trend of the automobile industry.

Several speakers touched upon this relationship realistically, but it remained for C. E. Wilson, vice president of General Motors Corp. to paint a word picture which shows vividly what development of the automobile industry means to producers, manufacturers, parts and equipment makers and others who serve motordom.

Mr. Wilson, like other speakers who preceded him, paid a tribute to steel producers and fabricators for their enterprise in improving the quality of steel and steel products. But in the same breath, he urged that the drive for higher standards of quality be carried forward and that prices be lowered as rapidly as possible. While these suggestions were directed mainly to the steel producing industry, the implication is that they apply with equal force to the suppliers of all materials and parts.

Doctrine of Low Prices and Big Volume Is Strongly Entrenched in Automobile Industry

One can be sure that Mr. Wilson's reference to better quality and lower prices was not prompted by a sense of criticism nor by a desire to have the automobile purchasing agents quibble over prices. He was viewing the factors of quality and price from a long-range perspective. He was simply reflecting the attitude which is common in automotive circles, namely, that lower prices for automobiles spell greater volume of demand and production, which in turn means a heavier consumption of steel. Some eminent authorities in the motor car field are frank enough to say that they believe automobile manufacturers are the steel industry's best salesmen of steel to the American public.

Mr. Wilson quoted authorities to the effect that the present registration of 25,000,000 motor vehicles can be pushed up to 35,000,000 without saturating the market, providing that taxes are not exorbitant, legislation is not unduly restrictive and public roads are adequate.

He cited statistics to show that national expenditures for automobiles mount more rapidly than national income. For instance, when national income is $40,000,000,000 per year, 2.4 per cent of it is spent for motor vehicles. When national income is $80,000,000,000, the percentage going for the purchase of automobiles is 4.1 per cent.

Present Marked Gain in Demand Is Credited To Appeal of Better Product at Lower Price

Mr. Wilson also pointed to the current spurt in automobile demand, which he believes is due largely to the fact motor car builders are giving so much more value for less price. Today's car sells for 25 per cent less per pound than its prototype of 1929, in spite of the fact it is a much better car and is more economical to operate.

This, he claims, is a primary reason why automobile business in 1933, 1934, 1935 and thus far in 1936 has been increasing at an average of 2.75 per cent per month.

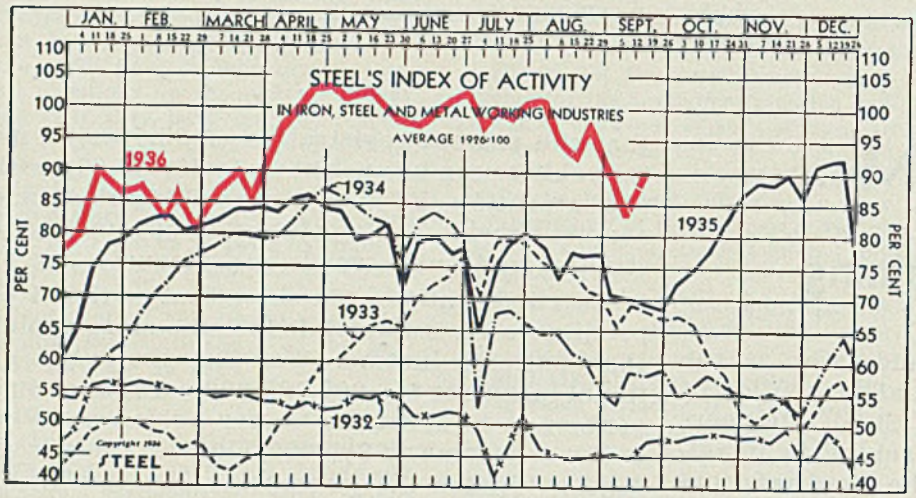
It is clear from the foregoing that the motor car executives are thoroughly convinced of the soundness of the economic principle of "more goods for more people." In economical mass production, they see opportunity for lower prices, which extend markets into lower-income groups. This is the basic theory upon which the refrigerator, washing machine, radio, and similar businesses have been developed so vigorously in recent years.

Undoubtedly this is the trend of development in manufacturing. It is the latest phase in the evolution of a distinctly American technique, which has unlimited possibilities.

This technique or system, which has been called mass production, is developing rapidly and will continue to gain favor. It is advantageous from economic and social standpoints.

Therefore producers, fabricators, equipment and partsmakers will do well to tie into this system. It means not only "more goods for more people," but also "more business for more companies."

THE BUSINESS TREND



STEEL'S *index of activity in the iron, steel and metal-working industries gained 7.0 points to 90.1 in the week ending September 19:*

Week ending	1936	1936	1934	1933
July 4	97.5	64.1	52.3	71.4
July 11	100.9	76.5	67.8	79.1
July 18	99.9	79.8	68.1	79.4
July 25	102.1	80.8	66.4	78.8
Aug. 1	102.5	78.4	64.8	75.9
Aug. 8	98.7	73.4	64.6	74.7
Aug. 15	92.6	77.5	61.4	74.2
Aug. 22	97.7	77.0	60.3	71.6
Aug. 29	94.0	77.3	55.1	70.3
Sept. 5	87.5	70.9	53.5	65.5
Sept. 12	83.1†	70.1	58.7	69.1
Sept. 19	90.1*	69.4	58.1	68.2

†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.

Industry Quickens Pace as Final Quarter Nears

SOMETIME ago when automobile manufacturers were considering the question of advancing the date for announcing new models, they weighed carefully the possibility of smoothing out the industry's curves of sales and production. Above all, they desired to level off the peaks and fill up the valleys so that activity, and of course employment, would be spread more evenly throughout the year.

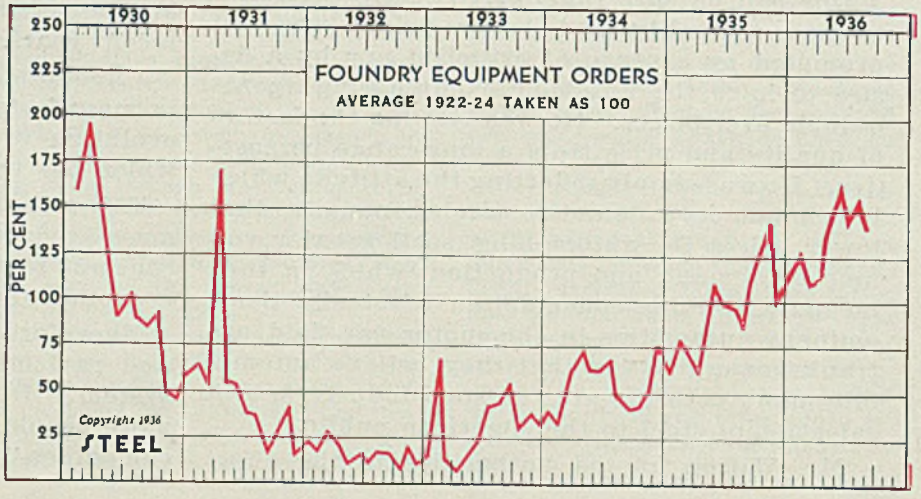
Right now the new schedule is undergoing a good test. Automobile assemblies are near the low point for the year. Some companies still are turning out a few old models, while an increasing number are beginning to get under production on 1937 cars. In about two weeks, assemblies will be climbing upward rapidly, as the industry turns more and more to production of the new lines.

In the meantime, the quiet season in motordom comes when other divisions of industry are operating at encouraging rates of capacity. If it were not for the low volume of automobile output, industrial barometers would be soaring at new post-depression highs.

As it is, the off-season in motor car activity has occurred at a time when it could do a minimum of harm to the overall business situation. Activity in other directions is so brisk that the lull in the automotive industries does not inflict any serious hardships.

This, in brief, is the outstanding characteristic of the record of industrial activity for September. Shortly followng the Labor day interruption, mills and factories resumed the brisk pace held throughout the summer. Steelworks op-

	Per Cent			
	1936	1935	1934	1933
Jan.	127.0	86.6	37.2	68.4
Feb.	110.4	75.7	65.8	16.1
March	115.0	69.4	75.4	9.8
April	134.0	113.2	67.9	19.4
May	165.4	100.7	66.5	25.6
June	141.4	100.2	70.4	45.5
July	159.6	94.0	50.7	48.8
Aug.	144.8	113.0	43.1	56.3
Sept.	.....	128.5	46.4	34.9
Oct.	.....	140.0	55.3	42.5
Nov.	.....	100.4	80.4	36.6
Dec.	.....	118.1	66.9	43.8



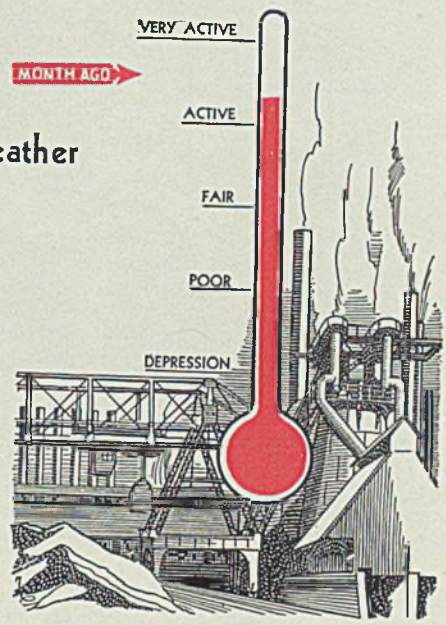
erations not only have snapped back to the previous rate but actually have advanced to a new high for the year. Revenue freight traffic likewise has established a new record for 1936. Loadings in the week ending Sept. 19 topped those for any previous week of the year and are the highest since November, 1930.

Electric power output touched virgin heights in the same week, when 2,170,807,000 kilowatt-hours were produced. The highest previous figure was 2,135,000,000 kilowatt-hours, recorded in the week ending Aug. 31.

As against these record-breaking showings automobile output in the week ending Sept. 19 was 33,615 units, a modest gain from 26,750 in the previous week. Relatively restricted output will continue into October, but sometime in that month the increasing rate of motor car production will reinforce the activity in other industrial lines, with the result that general business indexes will soar in late October and November.

STEEL's index of activity for the week ending Sept. 19 stands at 90.1, representing a strong rebound from the low point of the previous week.

Industrial Weather



TREND: *Steady*

Where Business Stands

Monthly Averages, 1935=100

	Aug., 1936	July, 1936	Aug., 1935
Steel Ingot Output	150.1	140.4	100.5
Pig Iron Output	151.6	144.6	98.4
Freight Movement	122.1	116.5	103.3
Building Construction	192.1	185.0	102.8
Automobile Production	79.0	129.5	71.1
Wholesale Prices	.....	101.5	100.1

The Barometer of Business

Industrial Indicators

	Aug., 1936	July, 1936	Aug., 1935
Pig iron output (daily average, tons)	87,484	83,735	56,767
Machine tool index	135.5	132.6	112.2
Finished steel shipments	923,703	950,851	624,497
Ingot output (daily average, tons)	161,351	150,874	107,997
Dodge building awards in 37 states (sq. ft.)	40,285,100	38,762,500	21,545,400
Automobile output	*275,000	451,474	247,743
Coal output, tons	32,818,000	32,054,000	26,112,000
Business failures; number	.....	639	884
Business failures; liabilities	.....	$9,904,000	$13,266,000
Cement production, bbls.	.....	11,446,000	7,235,000
Cotton consumption, bales	408,000	603,000	408,410
Car loadings (weekly av.)	740,211	706,387	626,246

*Estimate.

Financial Indicators

	Aug., 1936	July, 1936	Aug., 1935
25 Industrial stocks	$221.36	$220.37	$177.33
25 Rail stocks	$41.45	$39.60	$27.96
40 Bonds	$83.74	$87.27	$81.93
Bank clearings (000 omitted)	.....	$24,918,000	$22,347,540
Commercial paper rate (New York, per cent)	¾	¾	¾
*Commercial loans (000 omitted)	$8,454,000	$8,294,000	$7,345,000
Federal Reserve ratio, per cent	79.4	79.2	75.1
Railroad earnings	†$61,773,765	$50,512,580	$26,851,397
Stock sales, New York stock exchange	26,564,032	34,786,729	42,923,190
Bond sales, par value	$215,242,300	$281,873,100	$283,270,600

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

Foreign Trade

	Aug., 1936	July, 1936	Aug., 1935
Exports	.....	$178,324,000	$172,204,000
Imports	.....	$193,409,000	$170,139,000
Gold exports	.....	$695,000	$102,000
Gold imports	.....	$16,074,000	$46,084,999

Commodity Prices

	Aug., 1936	July, 1936	Aug., 1935
STEEL's composite average of 25 iron and steel prices	$33.88	$33.49	$32.68
Bradstreet's index	.....	$10.14	$10.00
Wheat, cash (bushel)	$1.25	$1.25	98c
Corn, cash (bushel)	$1.27	$1.02	97c
Petroleum, crude (bbl.)	.....	$1.04	98c

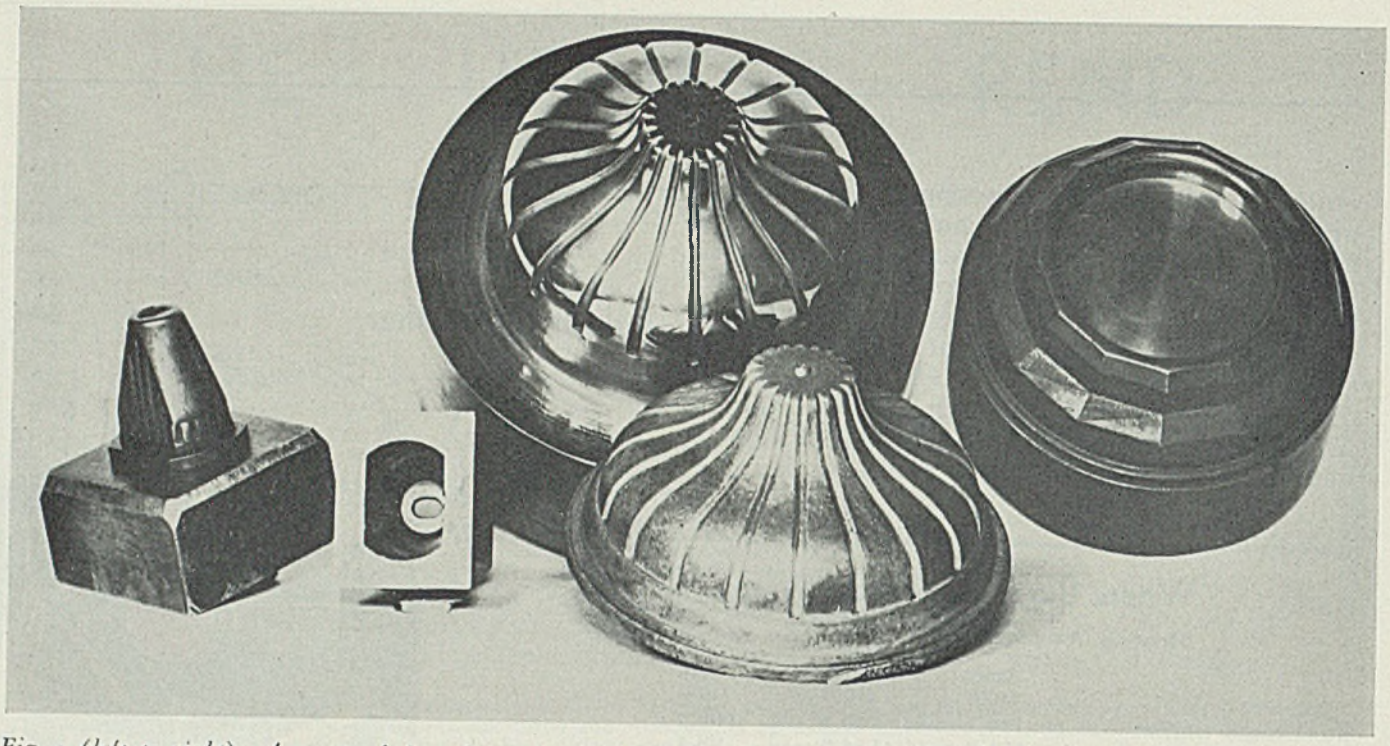


Fig. 1 (left to right)—A master hob and press cavity mold for an electric extension cord plug housing; a master hob and zinc-base casting for an electric lamp base; and a master hob for a rubber barber spray mold

Making Molds for Die Castings And Plastics by the Hob Sinking Method

BY A. C. GRAHAM and JOHN DE CARDY
Chicago Representatives, Jessop Steel Co.

IN THE die casting process, the casting is produced by forcing a liquid metal or alloy under pressure into a steel mold or die in which the metal is permitted to freeze or solidify. The pressure may be mechanical, as a plunger working in a cylinder, or may be by air pressure. The castings are well finished and have accurate dimensions, and as made are in condition for use, requiring little or no machining other than drilling for screws, bolts, and the removal of fins by dressing.

As is the case with other processes involving metallic molds, die casting is essentially a quantity production process. This is necessarily so because of the heavy expense involved in designing and preparing the dies. In small lots, the heavy die expense will be proportionately reflected in the cost of the castings.

Properties Required in Steel

Since the molds or dies are continuously subjected to high temperatures and high pressures and under these severe conditions must retain their high finish, interest naturally centers upon the die steel and some of the methods by which the dies are produced and heat treated. Equally severe conditions are imposed upon cavity dies employed in the molding of plastics such as rubber, bakelite, and other well-known materials. In this work, the material is placed in the dies in the raw state and subjected to high temperatures and pressures.

The two most important qualifications of a cavity die steel are easy sinking properties and the ability to take a high polish. Another important quality of the steel is its ability to absorb carbon during the carburizing process for the hardness and strength developed are dependent upon this carbon penetration.

A cavity die steel which possesses these important attributes is made by the Jessop Steel Co., Washington, Pa., under the tradename of Jessop

Press E-Z Cavity Die steel. It is a specially-melted electric furnace steel, made from clean base material and slightly alloyed. It is forged, rolled and annealed under closely controlled temperatures to insure the best possible grain structure for easy sinking. It is annealed to approximately 100 brinell hardness, in which condition it offers the least resistance to pressure.

The physical properties which make the steel suitable for its purpose are partly obtained from the alloying elements which help to make up the analysis of this steel. The method of sinking the die, or hobbing, as it is frequently called, is first to prepare a master die and then to press this master into the block of cavity die steel.

This is accomplished by placing the cavity die steel block heated to the proper plastic temperature, and the master hob in a hydraulic press and applying the pressure slowly. The rate of sinking depends largely upon the section to be sunk, but the usual rate is about ¼-inch in 5 minutes. Pressure required to effect this sinking varies from 50 to 1800 tons and is dependent upon the depth and size of the cavity.

Dies Heat Treated

After the impression or cavity has been pressed into the cavity steel, the block is machined on the outside to fit the bored hole of a holder plate made from Jessop Truform oil-hardening, nonshrinkable die steel. This machining and fitting completed, the cavity die is carburized and hardened.

The die is packed in charcoal or some other good carburizing material and heated to 1650 degrees Fahr. After being uniformly heated through, it is held at this temperature for approximately 2 hours. It is then removed from the furnace and allowed to cool to at least 600 degrees Fahr.

At this point, the die is ready to be hardened. It is returned to the furnace and heated to 1450 degrees Fahr., and when it is uniformly heated through, it is quenched in oil and then drawn or tempered at 425 degrees Fahr. for at least 2 hours. This treatment should give a Rockwell hardness of approximately C 60 and should produce a case depth of 1/32-inch. If greater case depth is desired, it can be obtained by holding the dies at the carburizing temperature for longer periods of time.

Master hobs used in this process are made from Jessop Top Notch Master Hobbing steel, cut and engraved in the desired design. This steel is supplied in the spheroidized annealed condition, in which it is very easily machined or engraved. This factor is important, because the design of some of the hobs is quite intricate, and necessitates extremely fine cutting by hand. When the master hob is in its final form, it is heat treated to bring it to the proper degree of hardness.

Hobs Quenched in Oil

The hob is packed in any of the recognized packing materials and heated to 1750 degrees Fahr. When uniformly heated through, it is quenched in oil. Drawing or tempering is done at approximately 500 degrees Fahr., and the steel is held at this heat for a period of from 2 to 4

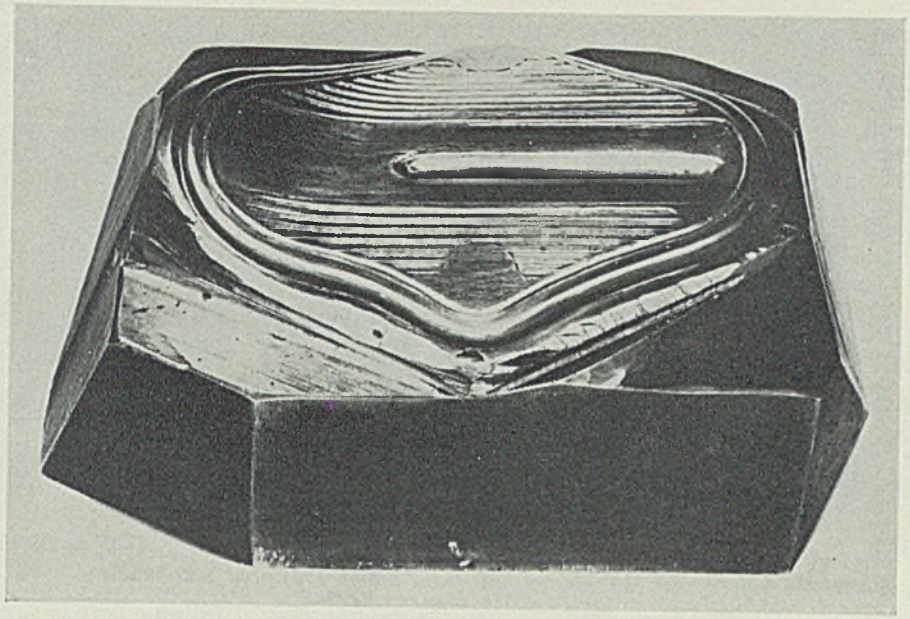


Fig. 2—A master hob for an emergency shift lever rubber pad. This hob has made 40 sinkings in cavity molds

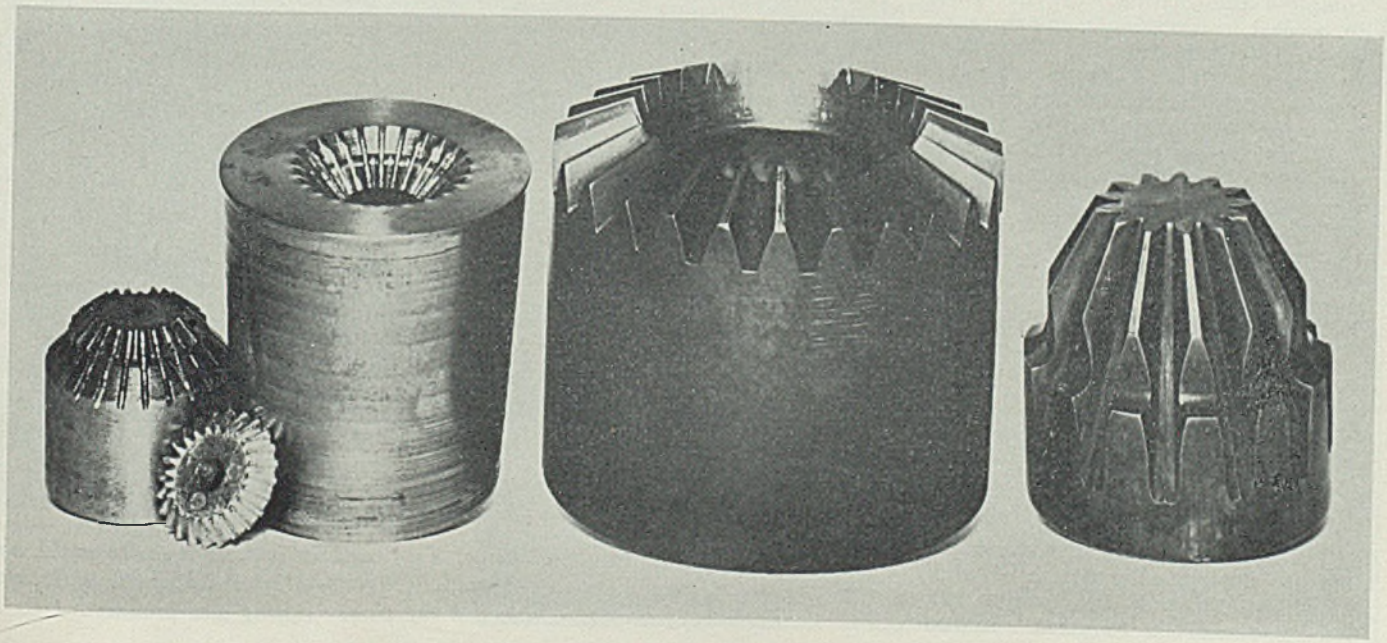


FIG. 3 (left to right)—A master hob, cavity mold and zinc-base gear casting made in the mold; a master hob for a bevel gear; and a master hob for another type of bevel gear

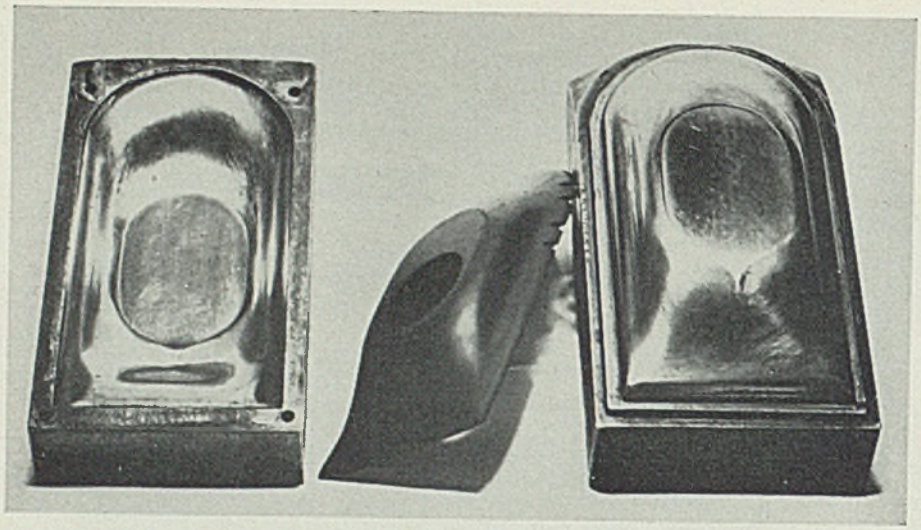


Fig. 4 (left to right)—A cavity mold, a rubber steering post pad made in the mold and the master hob from which the mold was made

hours, depending upon the size of the hob.

This treatment should give a Rockwell hardness of approximately C 55 to 58. It is essential that the hardness of the master hob does not exceed Rockwell C 58 as the pressure on these hobs during the sinking operation is very great and they must be extremely tough to withstand the stress.

The production from cavity dies sometimes runs into the millions per die, but this depends upon the size and shape of the casting. If more parts than one die will produce are required, another die is sunk by the same master hob. These master hobs last almost indefinitely and have been known to make more than 100 sinkings, in many instances without showing any wear.

Multiple Impressions Used

Some of the parts manufactured by the die casting method require more than one cavity to the die to complete the casting. If the part to be cast is large, only one impression is made in the die. At other times, when parts are very small, from 10 to 12 impressions or cavities are made in a single die.

When casting base metal, a pressure of 200 to 300 pounds is used to force the molten metal into the cavity jets or spews. Rubber is placed in the cavities in the raw state and baked. Bakelite is put in in powdered form.

The rate of wear on a properly treated cavity die made from this steel is negligible, and the average run of castings seldom requires the making of a new cavity.

Accompanying illustrations show examples of cavity dies, master hobs and cast or molded products made in the cavity dies. Fig. 1 shows at the left a master hob and a cavity mold for an electric extension cord plug housing. To sink the cavity, 175 tons pressure was required. In the center are a master hob and a zinc-base casting for an electric lamp base, for which 600 tons pressure was employed in sinking. At the right is a master hob for sinking a rubber barber spray mold. This master was sunk into a cavity die with a pressure of 750 tons.

A master hob for an emergency shift lever rubber pad is illustrated in Fig. 2. A pressure of 1800 tons was required to sink this master into a cavity mold. This master hob has already made 40 sinkings in cavity molds.

Fig. 3 shows in the group of three at the left, respectively, a master hob, the cavity mold and the zinc-base gear casting produced in the mold. To sink the master in the cavity mold required a pressure of 100 tons. The large object in the center is a master for a beveled gear which was sunk in a cavity mold with a pressure of 750 tons. At the extreme right is a master hob for a beveled gear for the sinking of which a pressure of 450 tons was employed.

Fig. 4 shows from left to right a cavity mold, a rubber steering post pad made in this mold, and the master hob.

At the left in Fig. 5 is shown a master hob and casting for a plaque of Helen of Troy. At the right is the master hob and casting for a plaque of Menalaus. Each hob required a pressure of 350 tons to sink the impression.

Flush-Welded Steel Hull For 1937 Cup Defender?

All-steel hull is planned for a sloop which will be a contender for the defense of the America's cup next summer, according to Starling Burgess and Olin Stephens, designers of the craft which will be built at the Bath Iron Works, Bath, Me.

Steel is replacing the traditional bronze hull plates and, it is claimed, will result in a saving of 4 tons in construction weight, with an additional 4-ton saving possible if the plates can be welded flush at the edges instead of being lapped or riveted.

Principal discussion at present centers around whether the flush-welded hull plating will have sufficient strength to withstand heavy stresses encountered by racing yachts, and will be smooth enough to avoid skin friction which would slow the craft down in light weather. However, the Bath plant reports success with similar construction in larger vessels such as navy destroyers, in recent years.

The steel hull is estimated to cost about $100,000, somewhat less expensive than the bronze hull of the RAINBOW, last cup defender.

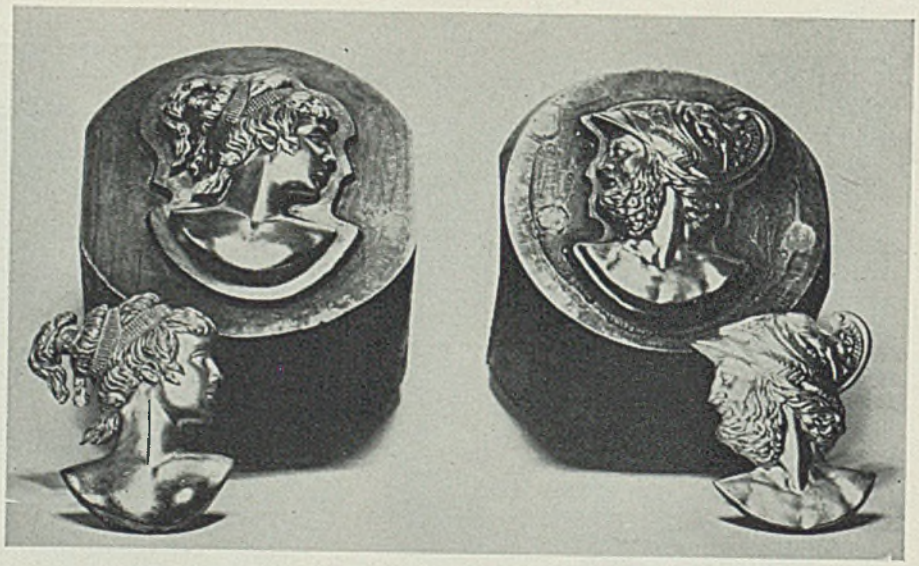


Fig. 5 (left)—Master hob of Helen of Troy used in making a cavity mold, also a plaque casting turned out in the mold. (Right)—Master hob of Menelaus used in making the mold in which the plaque casting was produced

Canadian Factory Built in Steam-Heated Enclosure

A TARPAULIN Eskimo suit, 950 feet around the waist, enabled men up to a total of 500 to work through the record-breaking Canadian winter at New Toronto, Ont., so that the Austin Co. of Canada Ltd., could complete a 3-story reinforced concrete can factory for the Continental Can Co. of Canada Ltd. in time to get the crops and brews of 1936 inside its cans.

Under an acre of adjustable roof that served as the hood of this snug, steam-heated arctic outfit which grew up with the building, men worked three shifts a day while temperatures around zero paralyzed construction throughout Canada and almost half of the United States. Starting in the dead of winter, Jan. 14, with 6500 cubic yards of concrete to be poured, the Austin organization agreed to have the plant ready for occupancy on April 15.

With a battery of unit heaters and a network of electric lights secured to the floating roof, the men were able to work day and night, regardless of temperature, without risk of health or workmanship. Albert S. Low, vice president and chief engineer of the Austin Co., Cleveland, designed this first enclosure of the kind when allowed three months for a job that ordinarily would require seven.

The storm jacket surrounded the entire plant at a distance of several feet outside the interior walls, the canvas tarpaulins being stretched upon a stout stud wall, which grew upward with the roof as the building progressed, as shown in an accompanying illustration. The roof, sloped to facilitate clearing the snows, was waterproofed as well, and was moved upward in sections with construction, always standing about 8 feet above the floor about to be poured and remaining there until after the concrete had time to set thoroughly.

Roof Supported by Jacks

The roof stood upon a forest of 400 jacks, which rose upward through temporary wedge-shaped openings in e center of each 20-foot bay, entirely independent of concrete forms and columns. Originally standing upon the earthy subfloor of the building and rising to a height of 8 feet above the second floor level to permit the pouring of concrete into first-floor columns and forms for the second floor, the roof was raised on a second set of jacks placed upon the finished second floor at the wedged openings which transferred the roof burden upward as the jacks were raised. Thus the enclosure grew with the building to keep workers and newly poured concrete protected from the cold.

By this means, concrete delivered hot by transit-mix from a material yard a quarter-mile away was poured and vibrated at temperatures which seldom varied more than 10 degrees, from 60 to 70, when the weather outside ranged between zero and the freezing mark.

Plywood and masonite were used in concrete forms for beams and ceiling panels throughout the plant, which, it is stated, was the first Canadian project to employ these materials applied extensively by the Austin organization in industrial work in the United States last year. By substituting light-weight plywood or masonite in 4 x 6 or 4 x 8-foot sections for common 6-inch boards, the company's engineers are able to produce more regular surfaces which obviate the necessity for surfacing after forms are stripped. In addition, greater speed results because fewer pieces are worked with.

The Austin organization standardized this practice in Chicago about a year ago and since then it is re-

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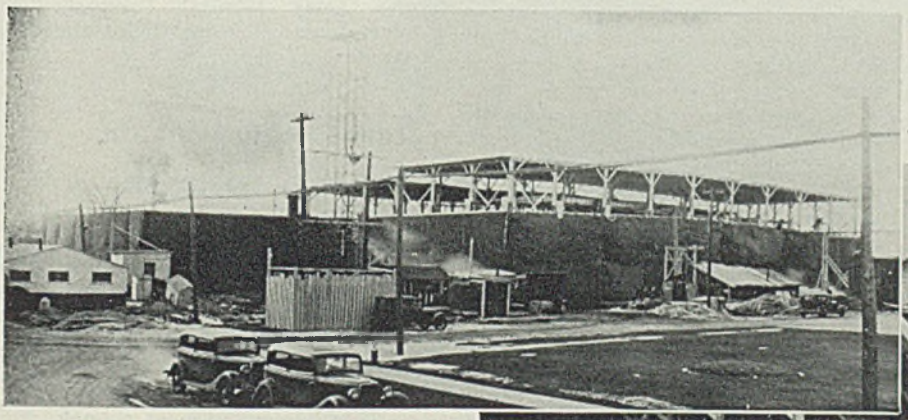
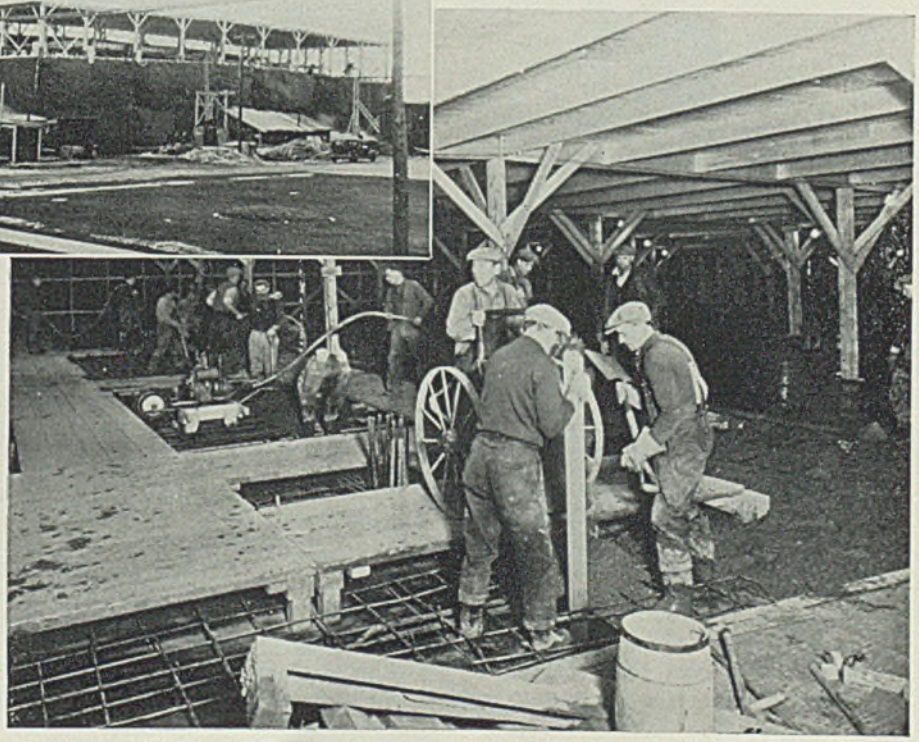
AS SHOWN in the illustration below, gloves were a matter of choice with workmen even in zero weather. Steam unit heaters maintained the temperature within the enclosure at between 60 and 70 degrees





THROUGH protection of a heated enclosure with adjustable roof and sides which was extended as construction progressed, this three-story reinforced concrete building was erected in Canada during severe winter weather. The roof was made in three sections. In the illustration above, the right section is at a level underneath which the third floor and columns for the second story were poured after the sides had been enclosed; the center section is being jacked up to meet this level; the left section is still in the position occupied for the second-floor pour into forms about 8 feet below the roof

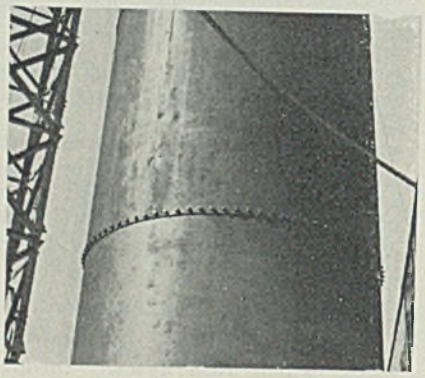
ported that sales of plywood in that area have increased more than 1000 per cent. During this period the company has completed buildings valued at over $1,000,000 by this method in the Chicago territory alone.

Rivet-Bolts for Field Joints Speed Erection of High Steel Stacks

WORKING against time on a stack repair job, Muth Bros., Dayton, O., were able to meet requirements through the use of the rivet-bolt type of construction. The contract involved the removal of the top halves of the two stacks shown in one of the accompanying illustrations, and replacing with new rings, at the plant of the Auglaize Box Board Co., St. Mary's, O.

These stacks are 175 feet high and 6½ feet in diameter. Maximum shutdown allowed for the boilers was six days. The usual method of dismantling and rebuilding the stacks one sheet at a time, requiring some 18 days per stack, was out of the question. Erectors agreed to make the repairs in the allotted six days.

A 175-foot steel tower was erected between the two stacks and the top halves of the old stacks lowered in sections. In the meantime the new stacks, previously fabricated in the boiler shop, were delivered to the job in 25-foot sections. After hoisting these 25-foot sections into place,



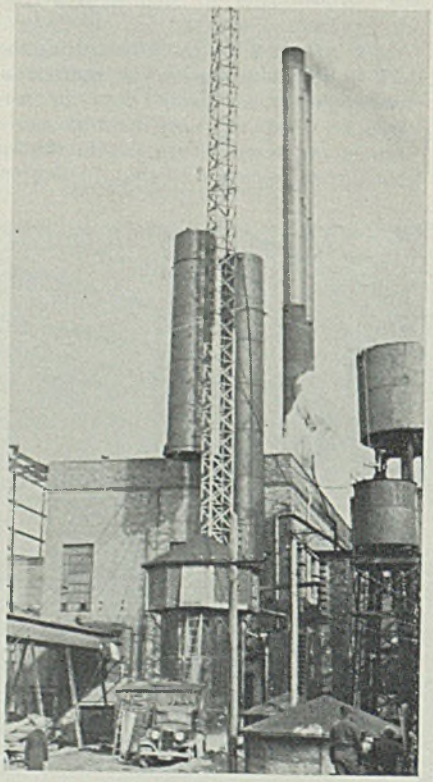
Closeup of field joint in stack, showing rivet-bolts used for quick assembly

the field joints were made with Dardelet rivet-bolts, instead of the usual hot driven rivets. The rivet-bolt assembly in this case saved one and one-half days per stack or three days for the job.

Sections were joined temporarily with fitting-up bolts as in riveting, then rivet-bolts were driven home with a sledge and tightened with spud wrenches. The nut runs finger-free until it meets resistance and the final locking action is secured by the wrench torque. The grip section of the rivet bolt is ribbed and of slightly larger diameter than the standard hole which gives a stiff, rivet-like joint permanently sealed by the nut. The ribbed section is gaged so as to come out flush with the outer edge of the plate, enabling the nut to be tightened against the plate with no play.

A short time later the Muth company was called upon to erect a new stack at the same plant. The new stack is 8 feet in diameter and 150 feet high. The upper half of the stack is made of 5/16-inch and the lower half of ⅜-inch steel plate. It was fabricated at the boiler shop in three 40-foot and one 30-foot section and delivered to the job. Using the steel tower, these sections, weighing 9 tons each, were hoisted in place and bolted together with rivet-bolts.

This stack was of welded construction throughout and the original specifications called for welded field joints. However, the previous success of the erectors with rivet-bolts led them to use this type of fastening for the field joints on this job with an estimated saving of three days in erecting time.



Hoisting a 9-ton section of the 150-foot stack into position for making field joints. Upper halves of the two 175-foot stacks in the background have been rebuilt

Synthetic Rubber Is Used In New Sulphur Cements

Uses for new sulphur cements for which the iron and steel industries may find wide application have been developed with the aid of Thiokol, synthetic rubber manufactured by the Thiokol Corp., Yardville, N. J. The cements were discovered through the research activities of the Texas Gulf Sulphur Co.'s multiple fellowship at Mellon Institute of Industrial Research, Pittsburgh.

Trade names of the three new products are "Te-Gul Vitrobond," "TeGul Tileset" and "TeGul Mineralead." Vitrobond is intended for use in the construction of acidproof masonry linings for tanks and in all acidproof equipment. It is claimed that the new material has increased bonding strength, greater resistance to thermal and mechanical shock.

Tileset is compounded for use in acid-proof floors. Applied in the molten state, this cement is allowed to solidify in the joints and is practically nonabsorbent.

Mineralead is made especially for producing bell and spigot joints in cast iron or terra cotta pipe. These joints are leakproof and resist vibration and temperature, according to the Atlas Mineral Products Co., Mertztown, Pa., maker of these cements.

Text for Students on Industrial Materials

Materials of Industry, by Samuel Foster Mersereau; cloth, 541 pages; published by the McGraw-Hill Book Co., New York; supplied by STEEL, Cleveland, for $2, plus 15 cents postage; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London.

This is a revision of a book, written primarily as a text for students in high schools, industrial and vocational schools. The basis is a course developed by the Brooklyn Technical high school over a period of years, particularly to give students a working knowledge of the main facts of industry, including distribution and production of raw materials, general properties, transportation, conversion into commercial products and economic importance.

The text discusses forest products, nonmetallic materials such as petroleum, asphalt, asbestos, cement, etc.; iron and steel; nonferrous minerals, and miscellaneous including rubber, bakelite, paint, varnishes.

Plates of FOURSQUARE *Steel*

At no point during the manufacture of *CENTRAL OPEN-HEARTH STEEL PLATES* does *"CENTRAL-IZED"* control play a greater part than during the melting down process in the open-hearth. Here—raw materials and select scrap fuse under expert metallurgical supervision that results in an ingot of *QUALITY* steel.

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1 Duplex voltage control by means of easily grasped knob and handle, and clear indicating nameplate, enables operator to select *exact* volts and amperes required for the job.

2 Accurately calibrated, clear- and positive-indicating volt-ammeter with unbreakable crystal gives operator *correct* values of volts and amperes throughout entire range of set.

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4 Overload and undervoltage protection for motor prevents burn-outs. Convenient button on side of control box permits resetting overload relay without removing cover.

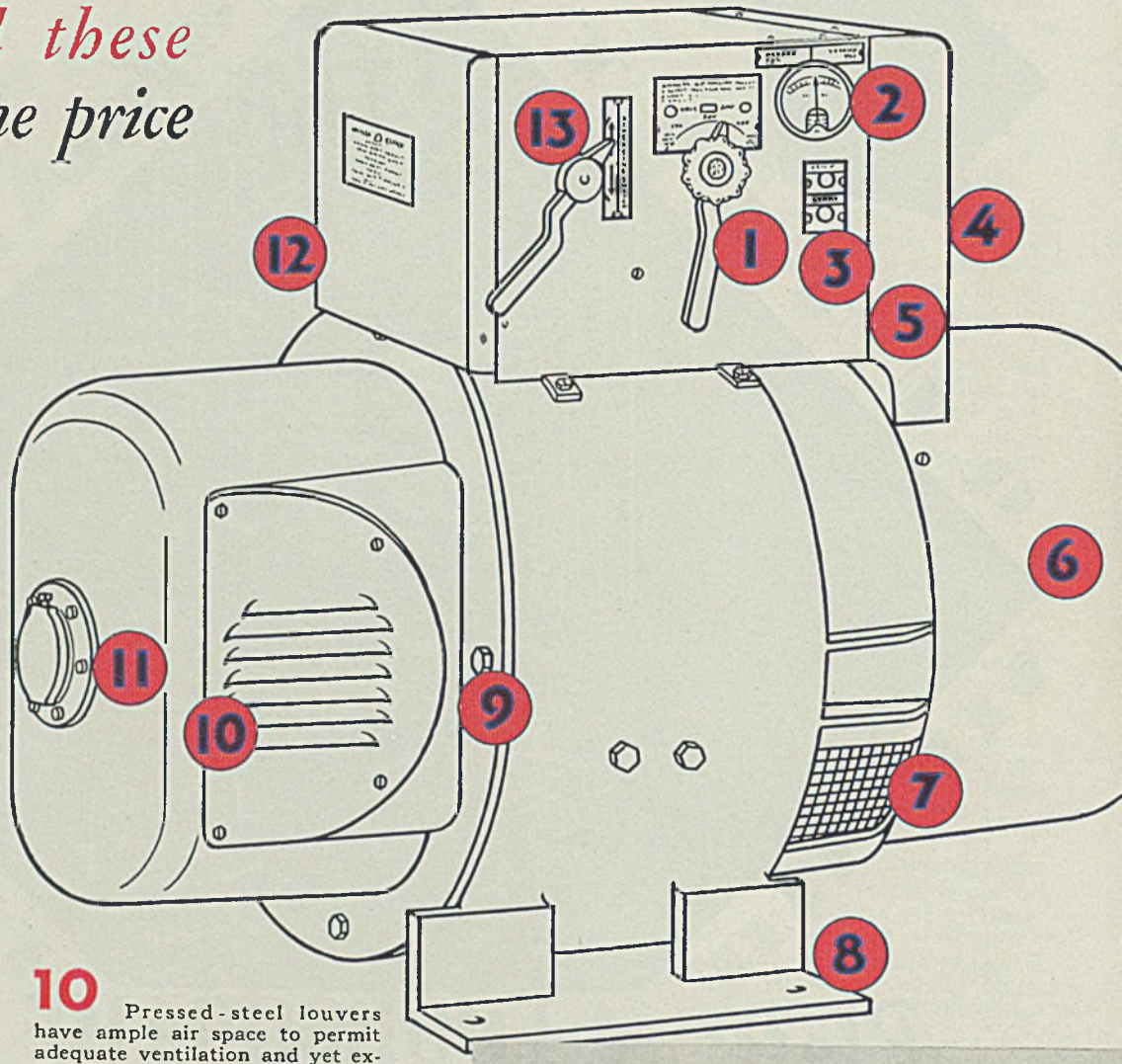
5 Readily removable cover makes motor starter easily accessible for periodic inspections.

6 Drawn-steel shell offers complete protection to motor, increasing life of the wearing parts and insulation.

7 Screened opening provides for adequate exhausting of ventilating air and protects fan blades against damage.

8 Strong steel feet arc-welded to frame to give maximum strength and rigidity.

9 End shields are bolted to field frame to make it easy to disassemble set for inspection or cleaning — another convenience and time-saving feature.

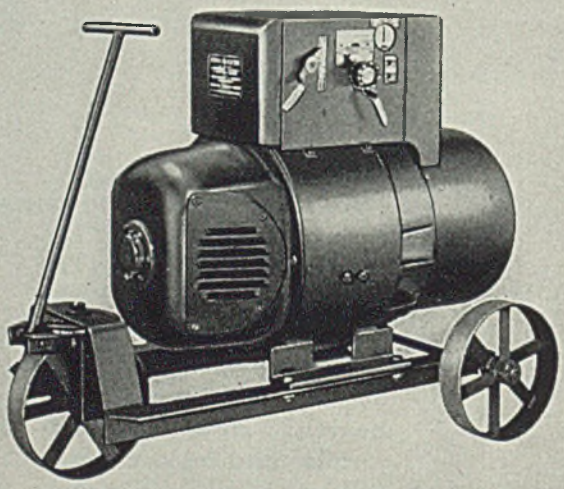


10 Pressed-steel louvers have ample air space to permit adequate ventilation and yet exclude dripping liquids and falling objects—minimizing maintenance costs.

11 Cartridge-type ball bearing keeps out dust, dirt, and grit.

12 Hinged cover over welding-cable terminals prevents damage to terminals and obviates short circuits. Smooth, heavily beaded edge on cover prevents chafing of cable, which extends down through opening under cover. These additional features safeguard both operator and set.

13 Polarity-reversing switch handle is large and conveniently grasped—saving time in manipulating controls.



This welder is easily portable by means of a steel- or rubber-tired running gear

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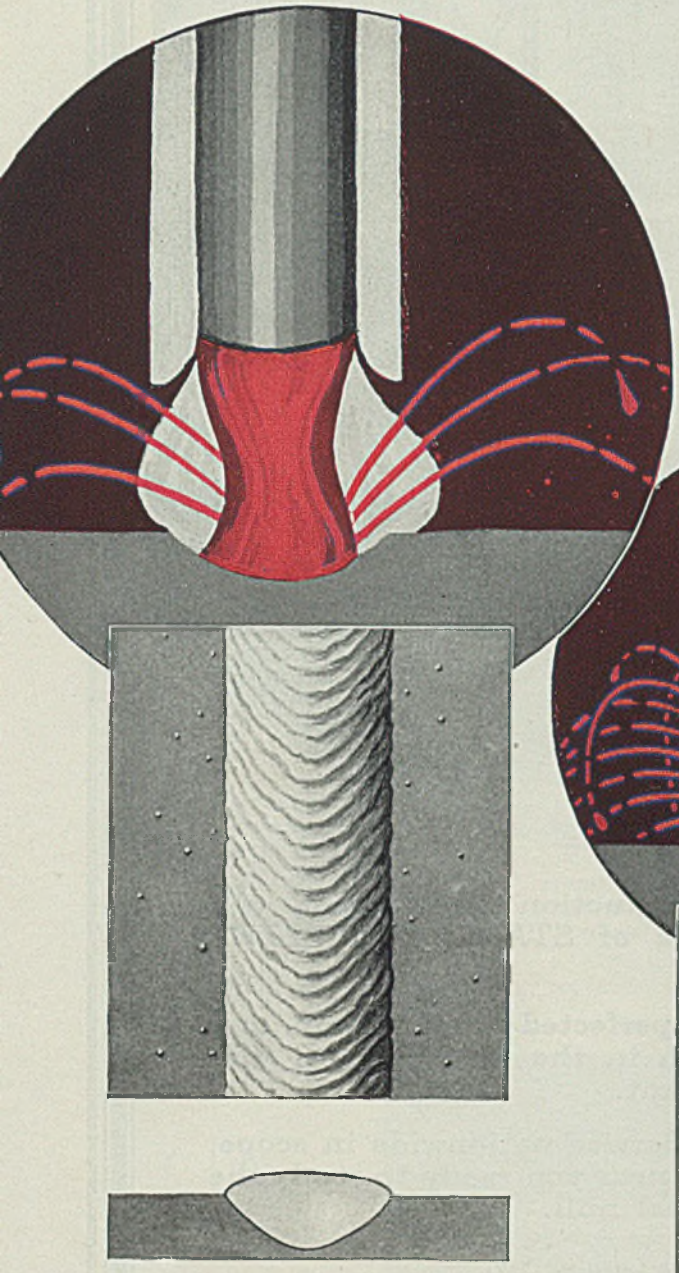
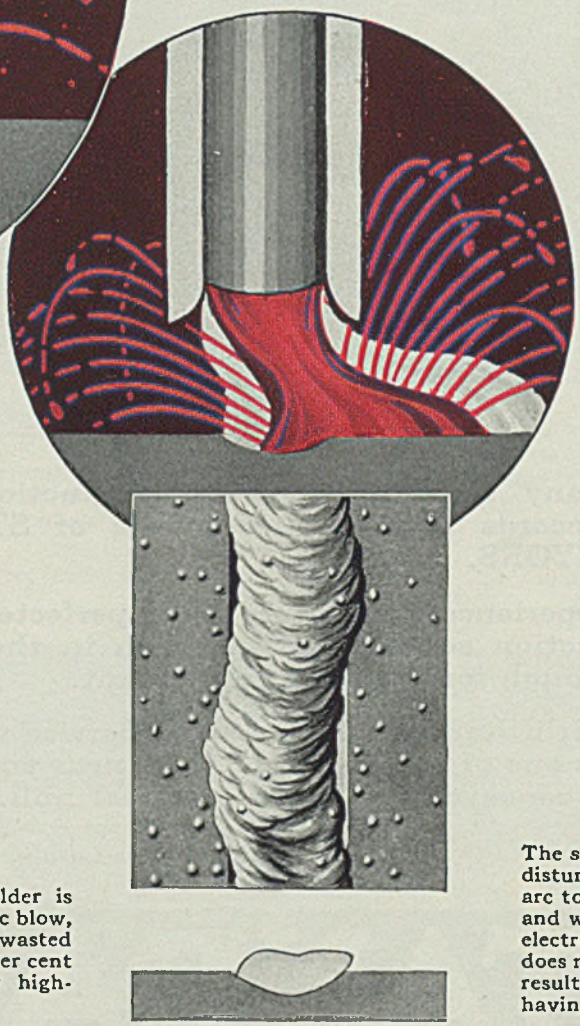


SIMPLY specify G-E single-operator welders, and you are assured of getting 5 per cent more welds per electrode.

Tests show that ordinarily 15 to 18 per cent of the welding electrode is thrown away in spatter. Tests also show that 30 per cent of this spatter—or 5 per cent of the electrode—can be saved when you use G-E welders. The *adequately stabilized arc* of the G-E welder is the least affected by magnetic blow, and *directs* the weld metal *into the joint* rather than scattering it about in the form of spatter loss.

This 5 per cent saving means that out of every 10,000 pounds of electrodes, *500 more pounds are available to you at no extra cost* when you use G-E single-operator sets.

You naturally want the welder that will give you the highest-quality welds at the lowest cost—ask the G-E welding distributor or the G-E sales office nearest you to demonstrate this welder. General Electric, Schenectady, N. Y.



The *directed* arc of the G-E single-operator welder is smooth and stable and offers resistance to magnetic blow, thus saving 30 per cent of the electrode otherwise wasted in spatter loss. This is equivalent to a saving of 5 per cent in electrode costs. This arc provides uniformly high-quality, sound welds having ample penetration.

140-39

The *scattered* arc of other welders is readily disturbed by magnetic blow. This causes the arc to veer from side to side during welding and waste as much as 18 per cent of the electrode in spatter loss. This type of arc does not provide sufficient penetration, and results in low-quality, nonuniform welds having excessive slag inclusions.

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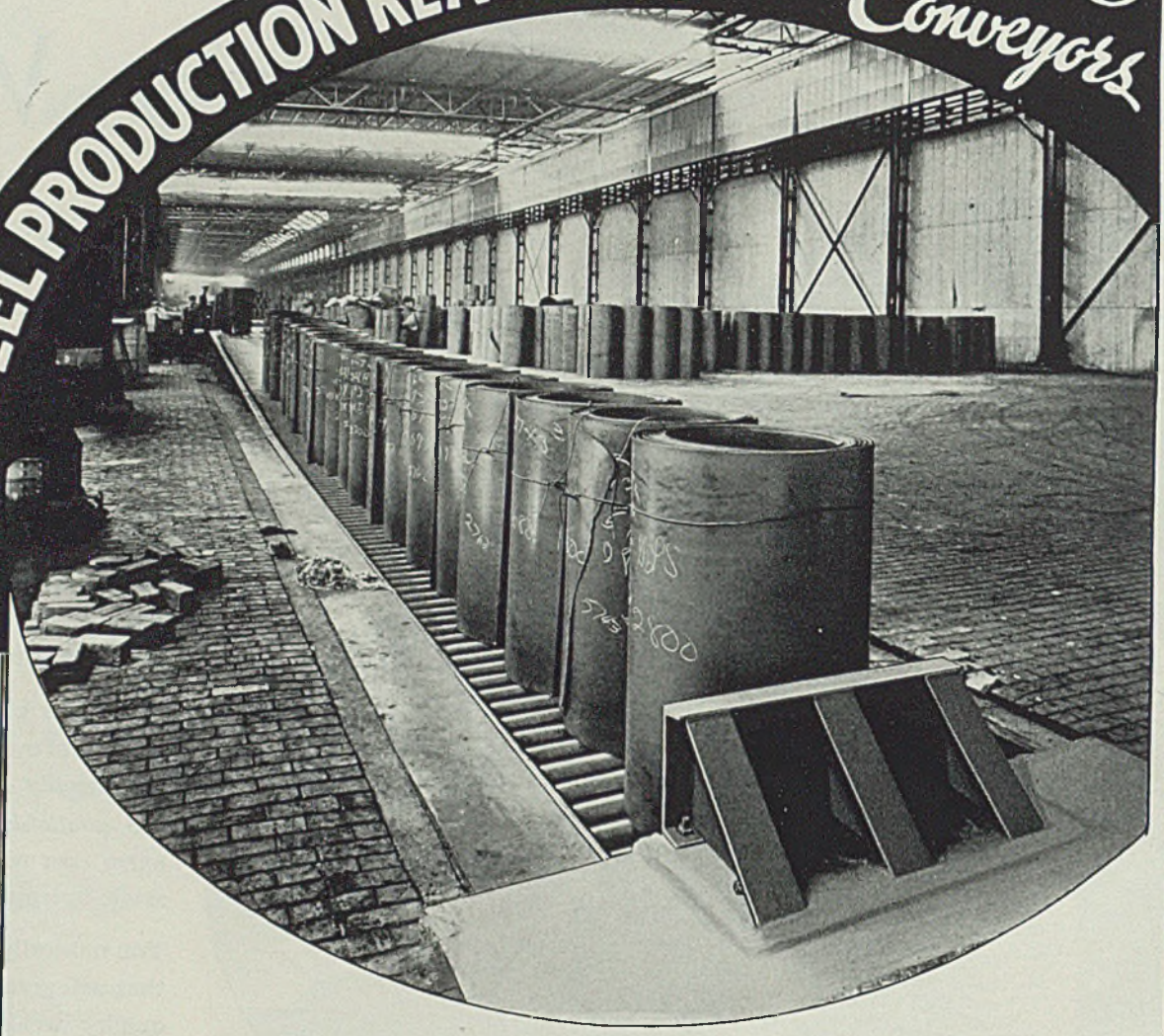

Many steel mills where production has broken all-time records this year are users of STANDARD ROLLER CONVEYORS.

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Co-ordination of Facilities Is Important Factor in Handling Product of Hot Strip Mills

THAT materials handling is assuming greater importance in the current trend of development of the iron and steel industry was demonstrated convincingly by the emphasis placed upon the subject at the annual convention and exposition of the Association of Iron and Steel Engineers held in Detroit last week.

No fewer than 16 of the exhibits at the show were devoted to materials handling equipment, including traveling cranes, lifting magnets, hoists, tramrails, conveyors, tractors, trailers, lift trucks, and other units. To many visitors it was apparent that next to electrical equipment and supplies, materials handling apparatus was the dominant feature of the exposition.

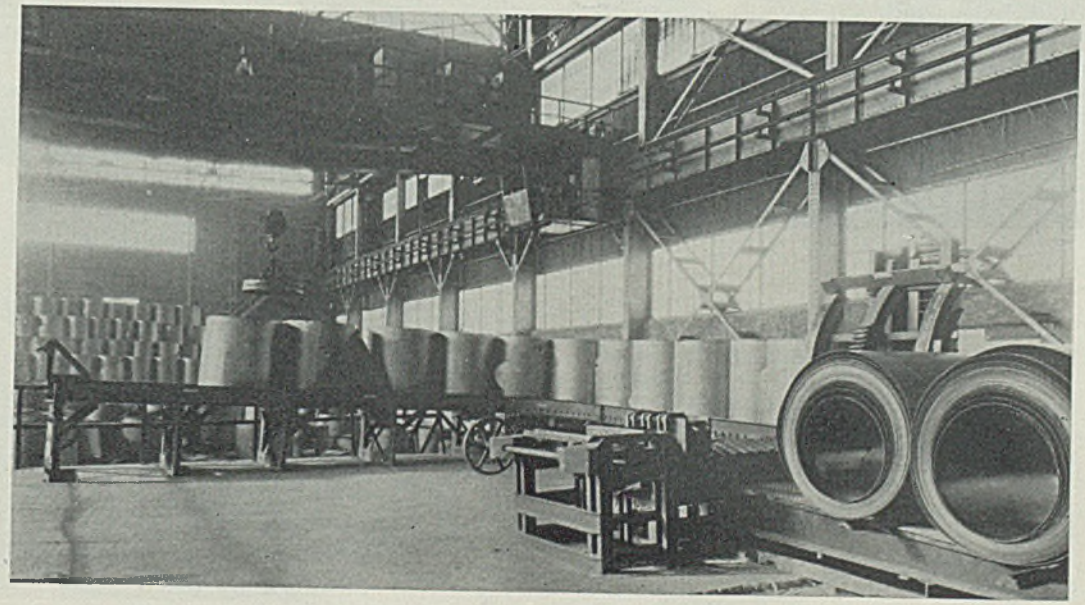
In the technical program, the principal discussion on materials handling problems centered upon a paper entitled "Materials Handling in Hot Strip Mills," by F. M. Gillies, assistant general superintendent, Inland Steel Co., Indiana Harbor, Ind.

Mr. Gillies pointed out that the problem of handling the product of hot and cold strip mills is more complex than in the case of other types of finishing mills. The reasons are, first, that the methods of manufacture by means of individual processing units differ, and secondly, that the unusually great production capacity of the individual units requires rapid and constant movement of product to permit unhampered and economical operation.

Strip mills, of course, are only an advancement of the old hot rolling sheet units, but these old mills produced about 10 tons per mill per 8-hour turn, whereas in the case of the modern strip mill it sometimes is necessary to handle in excess of 100 tons of product per hour.

Mr. Gillies stated that the constant study of engineers to eliminate irksome and slow hand labor has brought about conveying equipment advances, but in the main "the overhead crane today does the bulk of the work."

The speaker referred to one instance where engineers encounter an exacting requirement of synchronization in the rolling line of a hot strip mill. "The roller table, on which strip is delivered from the finishing stand at the rate of about 1400 feet per minute, must be rapidly con-



VIEW of coil storage end of conveyor, showing crane with magnet placing coils of strip steel in vertical position. Coil up-ender is in the right foreground. Photo courtesy Mathews Conveyer Co.

trolled from full speed to stop. This has necessitated precise workmanship of balanced rollers with individual motor drives adjusted in speed so differentials that might cause scratching of under surface of the strip will be eliminated. Prior to transferring laterally to runout or prior to coiling, the strip must be brought to a complete stop in less than five seconds. This has necessitated a refined type of roller table construction which has been well met by the machinery manufacturing engineers."

Avoid Reverse Movement

Mr. Gillies declared that the units usually found in the finishing end of hot strip mills should be located so as to require a minimum of reverse crane movements. This would apply to the positioning of normalizing furnaces, pickling equipment, scrubbers and dryers, cold rolling units, roller levelers, slitters and squaring shears. "Material must progress from flying shears or the end of the flat strip runouts to the shipping dock, and certainly the arrangement of processing units in this path lend themselves to economical operation."

Discussing the functions of various types of handling equipment, he said:

"The use of overhead cranes serves mainly to the handling of this product because of the large tonnages to be handled per hour and then to the physical size of the pocket. Wherever possible, roller conveyors (gravity or power driven), of the Matthews type, are employed which in all cases eliminate hand labor. But in the main, the overhead crane of sufficient capacity and providing the processing units are so arranged as not to cause conflicting movement seems well able to handle the product.

"From the coilers we have the problem of transferring the hot coils to a storage building and this is done by upending the coil into a vertical position on a sturdy conveyor chain. High maintenance will definitely assert itself on this equipment if not built properly. A slow moving chain in direct contact with hot coils must not expect much in the way of proper lubrication and therefore must be built strongly enough for long resistance to severe treatment.

Handling Coil to Pickler

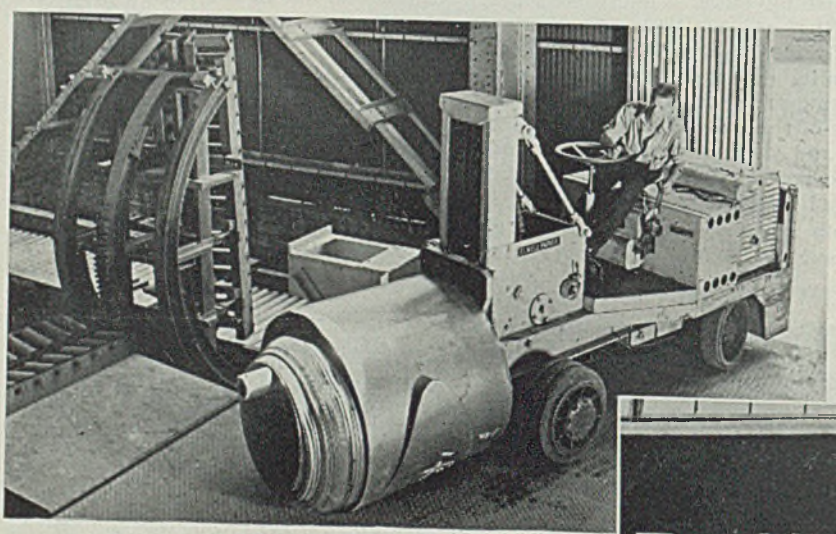
"This conveyor chain takes the hot coil from the level of the coilers to coil storage space usually located at the head end of the continuous pickling lines. At the point of removal of the coil from the transfer chain a magnet attached to the overhead crane is a satisfactory method of handling. Two coils can be handled easily at a time and tiered in such a way as to make the most of the space allowed. The magnet overhead crane is again employed to feed gravity roller conveyors to the feeding end of the continuous pickling units, but here it is necessary to take the coil from the vertical to the horizontal into the coil boxes feeding the pickling units. A number of coils are loaded on a brake-controlled gravity conveyor which can be controlled by the operator at the feed end of the pickling units and while one coil is feeding through the pickler, the operator may allow one coil at a time to roll down on an upender which in turn delivers the coil on an incline table just before the pickling line, where the coil is blocked until needed, and at that time allowed to roll down into the coil box.

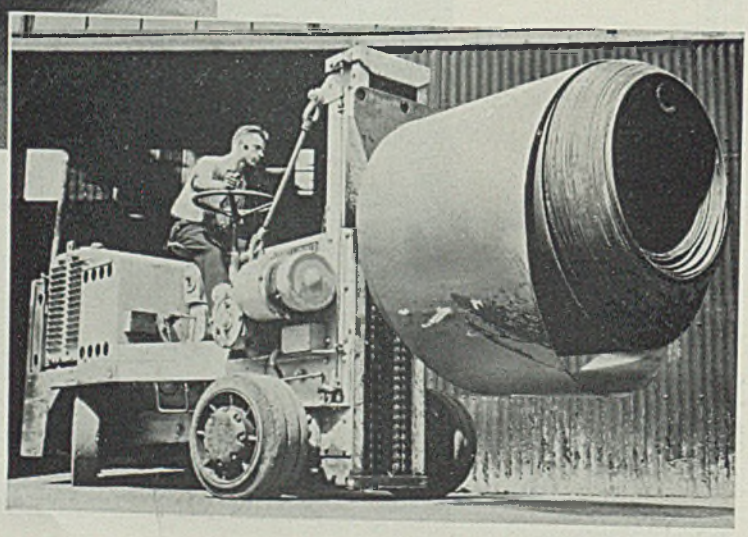
"At the delivery end of the pickling unit the recoiled strip is ejected again on a gravity conveyor, progresses over a scale in the line and is delivered into the space in front of the cold reducing units. A magnet crane which traverses the length of the space in front of the cold reducing units adapts itself well to the distribution of the coils, but it is also completely practical where the travel is not great, to employ a ram tractor from this point to the incline in front of the coil box of the tandem mill.

Tractors Are Kept Busy

"From the tension reel on through the processing that follows, tractor units adapt themselves particularly efficiently to the work, through the flying shear to the annealing, from the annealing to the skin passing units, to the resquaring or stretcher levelers or other processes, to the shipping department and to the gondola or box cars. Ram tractor, straddle type tractors, towing tractors and sheet loading tractors play an all important part in the handling of the product. The overhead crane best serves in this department in the product handling. It handles heavy loads where its movement is a minimum of travel and mainly vertical, serving the loading of annealing boxes and the loading of gondola cars and trucks best. The value of gravity conveyors for line transfer is great and wherever possible should be worked into service."

Mr. Gillies declared that there is ample opportunity for further development in material handling facilities. "It is fair to assume," he said, "that the marked progress made in the last 10 years, particularly in automotive conveying equipment, surely has not yet reached its ultimate. The great need for economic han-





TWO views of ram truck for handling coils in modern continuous strip mill practice. Units of this type are particularly well adapted to the cold rolled and processing departments of the mill. The illustration above shows how the services of conveyors, a coil up-ender and a ram truck are co-ordinated for economical handling. Photos courtesy Elwell-Parker Electric Co.

dling in this highly competitive industry will force further development."

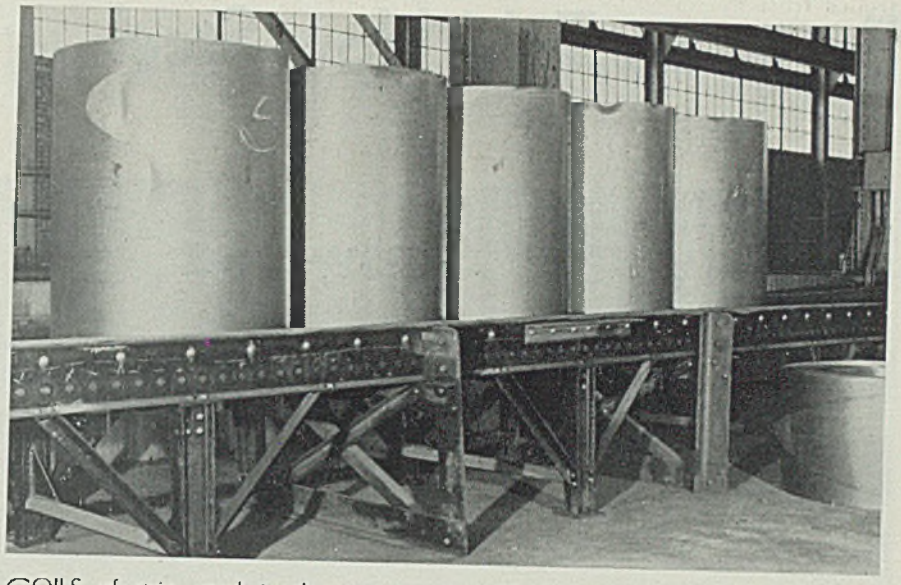
In the discussion following presentation of the paper, reference was made to the need of better floors in the parts of mill buildings where tractors and other floor equipment operate. The desirability of designing trucks and trailers with a higher factor of safety in order to compensate for overloading also was reviewed at length.

• • •

Stacker for Tin Plate

THE first to adopt skid and lift-truck handling of its products on a wide front was the paper industry. In its initial stages, the rapid acceptance of this system was impeded by the inability of the consuming trade to transport the heavier skid units into their plants. Being a rational step toward substantial savings for consumers as well as manufacturers, it eventually was adopted universally, and today there is scarcely a printing establishment of any size which is not equipped with special devices for skid movements.

Now, many of the successful methods used in the paper industry are being adopted, with variations to suit, by tin plate users. As in most instance, where mechanical handling is adopted, the size of the plant, the distances over which the plate has to be transported, the amount handled in any normal working period and other factors determine the particular types of equipment which are required.



COILS of strip steel in this instance average approximately 12,000 pounds each and are conveyed on a heavy gravity roller conveyor line. Photo courtesy Standard Conveyor Co.

In a plant in which tin plate is lithographed, a recently installed method of handling includes utilization of a tin plate stacker for the movement of the plate not only from the freight car, but also to the point of use — the lithograph presses. The stacker in this instance is taken into the freight car, where it is used to elevate the tin plate onto hand lift trucks, which transport the packages of tin plate into the plant. The stacker is used later for tiering the tin plate in the storage areas. Another operation is in lifting the tin plate to the lithographing machines at press feeding level.

In other lithographing plants, stackers are used alongside the presses to maintain the pile of plate within handy reach of the operator. As the pile of plate is being used, the top sheet is kept at desired level by raising the platform of the stacker with a few easy strokes of the handle.

• • •

Drop in Handling Accidents

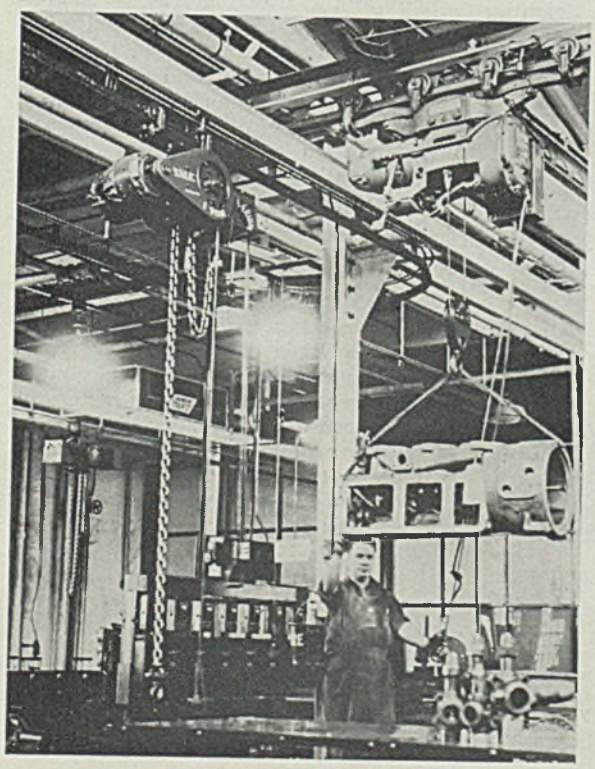
IN THE Sept. 14 issue of STEEL, attention was called to the high rate of industrial deaths caused by injuries sustained in handling. Reference was made to the fact that in New York State in a single month this year such accidents were held responsible for 22 deaths and of these 13 were attributed to strains from heavy handling.

During the past week word has been received by Industrial Commissioner Elmer F. Andrews, New York, that the August reports showed the smallest number of fatalities in industry since September, 1934. In the month covered, there were but 11 deaths due to handling accidents, of which 8 resulted from complications that followed severe strains received while handling heavy objects.

• • •

Three Horsepower Sufficient

IN ONE of the large body manufacturing plants, in which are installed over 6000 feet of overhead monorail conveyors and a larger footage of floor conveyers, there are 16 drive units with a combined total of 35 horsepower. None of the individual drives is rated at over 3 horsepower.



SPOT handling of heavy units with a plentiful supply of electric hoists speeds operations and effects economies in the plant of an air conditioning equipment manufacturer. Photo courtesy Westinghouse Electric & Mfg. Co.

Engineers Told How Steel Industry Has Answered Demands of Motor Plants

PROBLEMS of wide interest to automotive and other large consumers of steel were discussed from many angles at the thirty-second annual convention of the Association of Iron and Steel Engineers held at Hotel Statler, Detroit, Sept. 22-25. Over 35 technical papers dealing with many phases of production, processing and uses of flat-rolled steel were presented at the various sessions. Approximately 1500 members and guests were registered at the opening session.

The exposition at Convention hall comprising 150 displays of steel products and equipment used in the manufacture of steel ranked as the largest exhibition yet held under the auspices of the association. About 50,000 square feet of floor space was taken by various exhibitors for the display of more than $3,000,000 worth of equipment.

Chicago has been chosen for next year's annual convention, the hotel and date to be announced later.

THE personnel department was designated as the greatest asset of steel companies by W. H. Burr, electrical and mechanical superintendent, Lukens Steel Co., Coatesville, Pa., in speaking on "Steel Mill Developments" at the opening session.

Industry, while enjoying at present the best production rate in the past five years, faces the future with some uncertainty, he warned. If granted freedom from political control, industry will meet today's conditions and go forward, for it has modernized and rebuilt. He cautioned, however, that there has developed a shortage of skilled craftsmen in the steel industry.

The concentration of power on a continuous hot strip mill is tremendous, he pointed out. Several mills already in operation or under construction each require close to 40,000 horsepower in the main roll drives only. Mill operators, he explained, are continuing to give more and more importance to the maintenance of constant tension while rolling cold strip. The skin pass or tempering pass mills are now requiring a more elaborate electrical equipment than was considered necessary a year ago. In addition to the mill and tension reel motors, a skin pass mill now is often equipped with a so-called puller which is located between the mill and the tension reel.

Development has been concentrated largely on mechanical equipment for cold finishing departments in order to speed up and cut the cost of production along with the making of a better product.

Uniformity of gage of hot-rolled strip as delivered from the finishing train now is obtained by locating a differential cooling table between the roughing and finishing stands, he explained, the function of which is to cool the strip more in the front than in the back so that as each element enters the finishing train it is exactly the same temperature as every other element.

The development of the belt wrapper for tension reels speeds up production by the elimination of the time ordinarily necessary for the gripping of the strip in the reel, and eliminates the crimped end that so often makes stripping difficult.

Mr. Burr cited an entirely new principle in pickling strip in individual coil form. It is based on the central mast idea and a method of mechanically rotating the coil in the bath with the acid circulating at the same time, thus obtaining accelerated action and eliminating the usual spreaders in the coil itself.

George R. Fink

President, Great Lakes Steel Corp., Detroit, and official host to members and guests at the annual convention and exposition of the Association of Iron and Steel Engineers in Detroit last week. On Wednesday a large party inspected the new Great Lakes strip mill at Ecorse, Mich.

Progress in Mill Bearings

A new special process alloy iron roll has been developed primarily as a substitute for the hard grade of nickel iron roll. The ability of certain spherical roller bearings to take thrust in both directions and sustain this load under misalignment has been utilized in this type bearing as a thrust carrier for backup rolls in a number of 4-high hot and cold mills, the speaker declared. Pinion stands and gear drives for rolling mills constitute another group of equipment in which spherical roller bearings have proved their merit.

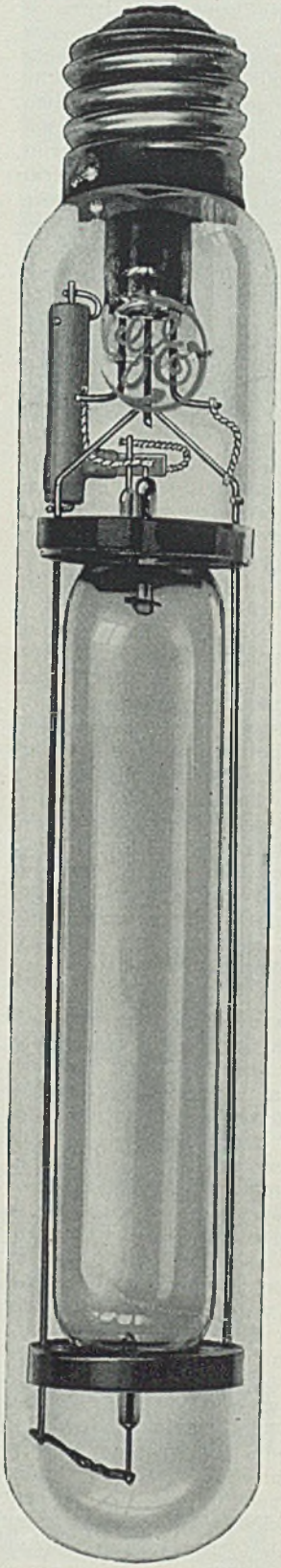
The last year has been encouraging from the control standpoint, Mr. Burr stated, as extensive new equipment has been installed for wide strip mills, including control for cranes, main and auxiliary drives, reels, coilers and runout tables. With the recent developments in hot and cold strip mills, a larger and much faster type ram truck has been marketed.

Automatic optical pyrometers and air-operated controls were cited as important developments in the steel industry. The year has seen the application of temperature control on a number of different installations heretofore considered impracticable.

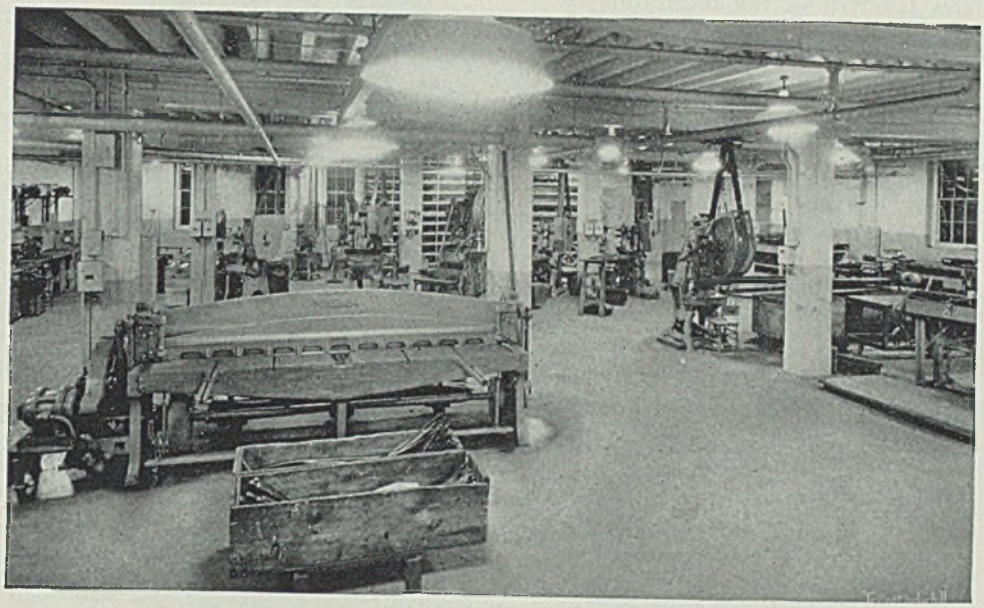
With the rapid increase of the use of alternating current for arc welding new lines of arc welding transformers and an improved and simplified direct-current welding generator have been developed. In conclusion, Mr. Burr pointed out that the most important contribution to the illumination of mills has been the use of the high-intensity mercury vapor lamp.

SUCH revolutionary changes in the fabrication of high-grade sheets as we see today would have been impossible had it not been for the development of the broad strip mill, declared T. P. Archer, vice president in

Double Your Productive Light



Order your auxiliary devices which were designed especially for this lamp from the General Electric Vapor Lamp Company.



Typical installation of General Electric Mercury Lamps in a well-known press shop. The high level of general illumination makes for accurate seeing.

The 400-watt General Electric Mercury Lamp provides industry with almost double the efficiency of any other comparable light source. Long-lived, unaffected by vibration, this General Electric Mercury Lamp and its companion 250-watt lamp yield less heat per foot-candle than any other industrial illuminant. This factor is of great importance where high lighting levels with minimum extraneous heat are desirable. Psychologically, too, the light from these General Electric Mercury Lamps is cool and comfortable.

Both the 400-watt and the 250-watt lamps are adapted for use on either 115- or 230-volt lines. They have a rated life of 2,000 hours. For complete details on these lamps address the General Electric Vapor Lamp Company, 885 Adams Street, Hoboken, New Jersey, or any of the Sales Divisions of the Incandescent Lamp Department of the General Electric Company.

GENERAL ELECTRIC

741 H

General Electric Vapor Lamp Co.
885 Adams Street, Hoboken, N. J.

Incandescent Lamp Department
Nela Park, Cleveland, Ohio

charge of operations, Fisher Body Corp., Detroit, in speaking on "Steel Sheets for Today's Motor Car." In giving his general impressions of fabricating methods he selected typical operations and discussed major problems involved in the fabrication of body sheets.

Progress in the design and production of automobiles from the standpoint of low cost of production and safety have been made possible only by the drastic change in the manufacture of sheets, he said. By reason of this development there came a new uniformity of gage, a better surface finish, sheets reasonably free from defects and a reduction in rejections from 30 per cent to between 3 and 4 per cent in a little over a decade.

He cited the fact that the automobile industry is the largest fabricator of steel sheets in the world and emphasized the importance of a close association between technical men in the steel industry and automobile manufacturers. We need ingenuity, patience and aggressiveness for attacking our problems, he stated.

Dies weighing 60 tons are used in the production of all-steel tops from blanks 72 inches wide. The speaker emphasized that five years ago one-piece tops would have been impossible without piecing the sheets together. Three operations are necessary—drawing, flanging and trimming. As a sidelight the speaker mentioned that the General Motors Corp. owns 35 huge presses for this type work which cost in excess of $5,000,000. Each requires four men to operate.

Mr. Archer pointed out that last year the auto industry used 2,030,000 tons of steel alone for top and body construction exclusive of the chassis. In conclusion he made a plea for steels lighter in weight for a given strength, with greater ductility and corrosion resistance.

AN AUTOMOBILE requires 1¼ tons of steel for its manufacture, stated C. E. Wilson, vice president, General Motors Corp., Detroit, in speaking on "Seasonal and Present Economic Trend of the Automobile Business." In discussing productive planning in the auto industry he cited the following important factors: Seasonal trend of sales, economic trend of business, strength of competitive position and important changes in the product for production facilities.

In speaking on the economic trend of business he pointed out that the recent change in the date of announcing new models gives improved business for November and December and allows auto producers to increase field stocks in January and February for spring sales. Employment also is leveled out more evenly. He cited the fact that since the low point in the depression in 1932 the auto industry has improved sales each month 2¾ per cent.

L. F. Coffin

Superintendent of the mechanical department, Bethlehem Steel Co., Sparrows Pt., Md., and first vice president of the Association of Iron and Steel Engineers

In his closing remarks the speaker pointed out that this country can use 35,000,000 automobiles before the saturation point is reached. However, he stated, this depends upon the taxation on auto owners, intelligent legislation covering the use and operation of cars and the building of scientific roads.

B. F. Fairless, president, Carnegie-Illinois Steel Corp., Pittsburgh, who was to have spoken on "The Steel and the Automotive Industries" at the Tuesday afternoon session, was unable to be present.

TWENTY-ONE continuous strip mills of the broad type now are in operation in this country and three more are under contemplation. This fact was brought out by Stephen Badlam, consulting engineer, Pittsburgh, in his paper on "Developments in the Flat Rolled Steel Industry During 1935-1936."

The new mill of the Granite City Steel Co., Granite City, Ill., will be ready for operation within two months, that of the Carnegie-Illinois Steel Corp., Homestead, Pa., about Jan. 1, and the 96-inch unit of the Jones & Laughlin Steel Corp., Pittsburgh, early in 1937, Mr. Badlam said.

Increased length of continuous picklers, modification of the mass-type pickler and the growing use of the radiant tube type annealing furnace were stressed as important improvements during the past year.

In speaking on the increased interest in the cold rolling of strip for tinning, Mr. Badlam cited the fact that since 1931 there has been produced 1,333,450 tons of cold reduction tin plate in this country and that production of this grade has doubled each year. Twelve companies now are engaged in the manufacture of cold rolled tin plate, 24 rolling units comprising 77 stands of rolls being involved.

It is impossible to produce strip steel without electrical power, according to L. A. Umansky, industrial engineering department, General Electric Co., Schenectady, N. Y., who spoke on "Electrical Strip Mill Equipment." Other steel products can be rolled economically by steam power, but a modern strip mill cannot be designed, built or operated without electric motors to drive it, he said.

The majority of strip mills built since 1931 have the roughing stands set apart and each driven by a constant speed motor, either of the induction or synchronous type. Finishing stands always are set on close quarters and are driven individually by direct-current adjustable speed motors. On some of the largest modern mills the total capacity of the finishing mill motors is about 40,000 horsepower. A motor room of one of these mills includes close to 100,000 horsepower of rotating machinery. Modern downdraft ventilation recirculating systems become imperative.

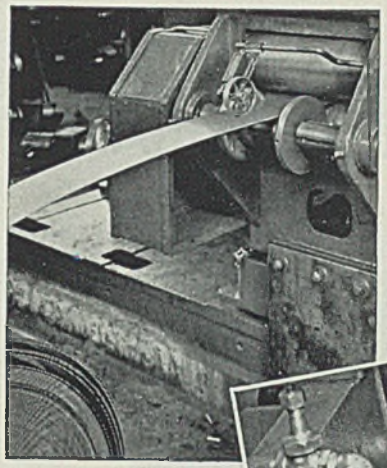
It is not enough merely to roll hot strip, Mr. Umansky said. It is equally important to handle it after its delivery from the finishing stand. Electric drive solves this problem as well. Runout tables and strip coilers with rollers individually driven by separate motors, continue to occupy the attention of designers of electrical and mill equipments.

STEEL manufacturers have the alternative of using a continuous normalizing process of less than 10 minutes or a bell annealing process of 48 to 120 hours to give steel the combination of softness and ductility most favorable for deep drawing, in the opinion of F. T. Hague, research laboratories, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. Under the best conditions of bell annealing, he declared, a variation of 20 points Olsen frequently is encountered on coils from a single ingot and a variation of 40 points can be expected with ingots from different open-hearth heats. Recent studies disclose that the total normalizing cycle time should be less than 10 minutes to keep the process within competitive range of present annealing practice, based upon using conventional forms of normalizing furnace structure.

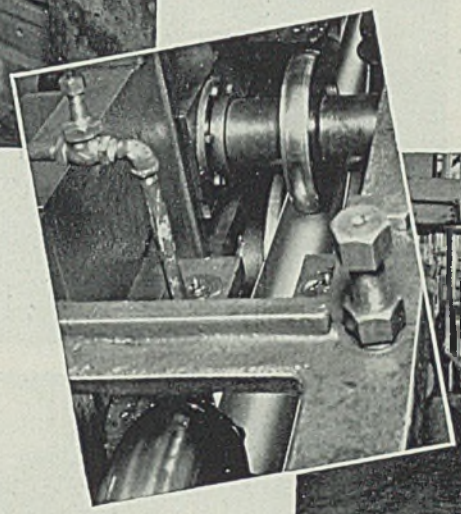
Results indicate that optimum results are obtained with top temperatures of 1725 to 1760 degrees Fahr., but it is important to reach a temperature of at least 1715 degrees.

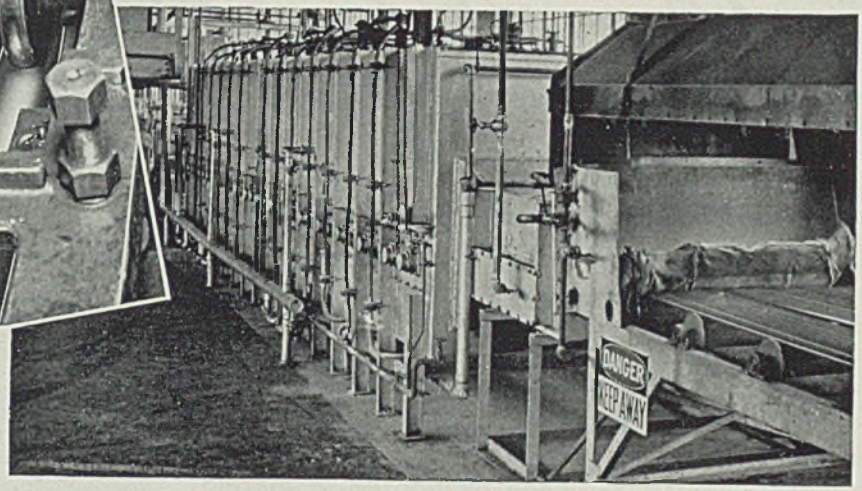
From the metallurgical standpoint, Mr. Hague said, there has been developed a 9-minute cycle for the continuous normalizing of low-carbon steel sheet. Distinguishing features

(*Please turn to Page 76*)



What *controlled* atmosphere annealing means . . .





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Corrosive Conditions in Sewage Plants Provide Test for Finishing Materials

By JAMES A. MEACHAM
Consulting Engineer, Sherwin Williams Co., Cleveland

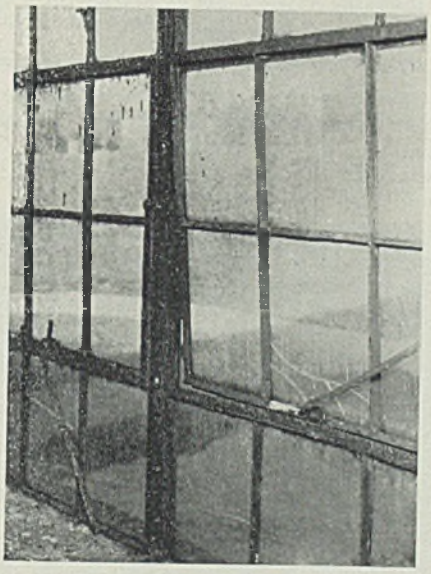
SEVERE corrosive action of fumes and liquids present in modern sewage disposal plants upon structural steel, metal windows and doors makes protective measures necessary. Extensive runs of exposed piping, valves, railings and other equipment likewise require the use of special protective treatment. Conditions affecting the corrosion of metals vary widely in different divisions of sewage plants and therefore require use of protective coatings designed to meet particular conditions found in each location.

Complete Study Made

This general field is one which has presented a serious problem to the engineer, both in design and maintenance. The investment is high and the savings possible through more effective protection of vital metal surfaces are considerable. The task of determining a definite, dependable painting procedure for each department of the sewage plant was made the subject of an extended study by the research staff of the company with which the writer is associated, under the direction of the writer. Purpose of this study was to determine the nature of the corrosion and ascertain best methods for its control. From these studies the following points were observed:

Raw sewage as delivered to the plant for treatment does not prove as violently corrosive to steel constantly submerged as might be expected. Structural steel remaining below the surface actually shows a scouring or brightening, due to grit contained in sewage liquid, which also tends to wear off any protective coating which might be applied to submerged surfaces. It is probable too, that because oxygen demand of sewage at this stage is high, the limited amount of free oxygen tends to minimize attack on metals.

Every test made, however, indicated that metal work located above the surface of raw sewage, or in the same room with it, is subject to severe corrosion due to fumes and condensation. This condition is typical of screen equipment, grit removing apparatus, and the superstructure housing this equipment. Their protection constitutes probably one of the most difficult problems of the entire plant. Usual structural metal primers with finishing coats of graphite and carbon type paints are quickly attacked. Rust pitting and scaling appear within a few weeks, soon breaking down the entire film.



Corrosion caused this steel sash to warp to such an extent that the glass was cracked. Note heavy incrustation of corrosion products on metal parts

In carrying out tests in actual sewage disposal plants it was found that satisfactory protection could be obtained by using a special type of bituminous enamel, applied in two coats, one as a primer and the other as a finishing coat. Parallel examples encountered in other investigations, particularly in the protection of pipelines from destructive corrosion as they pass through swamp lands where a condition of organic decomposition exists similar to sludge reactions, finally provided the key to the problem. It was this same type of bituminous enamel, specially formulated to resist soil stress, and pronounced acid and alkali reactions, that presented an unbroken, impermeable, and completely protective coating in sewage plant exposures after other materials had failed. It was also found from a number of test panels that where bituminous paint was used as a finishing coat over good grades of red lead and lead chromate primers, results were unsatisfactory. Best service resulted where two coats of bituminous paint were applied directly to the bare metal.

Test Panels Exposed

As a somewhat similar situation, reference may be made to the structural steel skimming and sludge scraping mechanism in settling tanks which are entirely in the open. In addition to being subjected to fumes and splashing from sewage, the structural steel is exposed to all conditions of weather—rain, snow, ice and heat from direct sunlight. More recent development of enclosed steel sludge digestion tanks with steel covers also introduces another severe exposure condition. In comparative tests under these conditions, the bituminous type of enamel was again found to remain intact after other finishes had failed. The method of testing was to coat channel irons with the various paint formulations under consideration and suspend them directly over the surface of the sludge. While other paint samples failed under these conditions, and galvanized chains used to suspend the panels became incrusted with corrosion products, the bituminous enamel, when applied over itself as a primer, remained intact and gave every indication of continued protection. There was no sign of a breaking down after the other

finishes had began to disintegrate, or had broken down completely.

Metal doors, structural steel roof framing, metal valve castings, pipes and the like, on the interiors of buildings subjected to fumes from sewage works, either close or in neighboring areas, all demand special treatment. As yet, tests have not been under way for sufficient time to yield the needed information along this line. It is entirely probable that some sort of fumeproof synthetic enamel will be required to provide the complete answer. Incidentally, aluminum paint is being tried out and thoroughly studied in this connection.

Miscellaneous items of metal work on the exterior of buildings, structural or accessory, also are subjected frequently to concentrated fumes from sewage treatment, and in certain cases to actual spray from the trickling filters and spray nozzles. Corrosive action in this case is found to be violent, and painting systems which afford ample protection to steel under ordinary exposures prove entirely inadequate. Here the use of black bituminous enamel becomes essential, limiting the color possibilities.

White Finish in Drying Room

Final disposition of the sludge in many plants involves a drying process in glass-enclosed structures. Here white is the desired color, or at least some light color. Inasmuch as a definite fume condition is present, tests made included panels of several fume-resisting white formulations. In this case exposure panels were suspended across ventilation openings at the side of the building. Here was the combined action of fumes, direct sunlight and moisture from both rain and drip from the building caused by condensation. Certain of these paints under observation gave promise of suitability, but have not yet reached their limit of usefulness.

It may be safely said that these tests, extending over a considerable period of time have revealed information which will be extremely valuable in working out new developments in the field of metal protection. Sufficient has been learned to indicate the value of these tests as a proving ground for new paint formulations wherever their intended use includes severe exposure to corrosive liquids and vapors in much the same manner as a standard exposure of finishes in Florida has become accepted as a standard measure of durability and ability to withstand action of weather and intense sunlight.

Recommendations Based on Tests

Based upon tests carried out under above conditions, it is now possible to make recommendations with regard to finishing systems to be used in all parts of sewage plant. These recommendations apply to many corrosive conditions which are met in industry as well. They are as follows:

1. *Metal submerged in sewage.*

There are two types of reaction which must be considered under this heading, the first being metal submerged in the raw sewage under the conditions of oxygen demand and grit content, outlined above, and second, further along in the plant, particularly the metal covers of sludge digestion tanks which are subject to serious corrosion action. For both these conditions a specially formulated bituminous enamel, having a carefully refined pitch base, is recommended. Two coats should be considered a minimum application and no priming coat is required.

2. *Metal not submerged but in rooms where sewage is present.*

Under this heading consideration must be given to a variety of surfaces, some of which cannot be appropriately finished with a purely utility type of material such as recommended above:

a. For screen cleaning equipment, grit disposal equipment, exposed piping, both cast metal and steel, valve cases and other miscellaneous work either not exposed to view or where attractive appearance is not required, the use of two coats of the same bituminous enamel mentioned above is recommended, applied directly to the bare metal or the manufacturer's priming coat. A better gloss and more uniform appearance may be obtained by following the two coats with one coat of a lighter bodied, full gloss bituminous enamel. Some engineers prefer to specify Gilsonite asphalt enamels for piping, hangers and the like in pipe galleries and valve chambers. This type of material gives a full, heavy coating of good durability.

b. For hand railings, metal stairs, valve controls, metal panels, crane girder runways and various mechanical equipment such as pumps, motors and the like, the improved appearance of a colored finish is frequently desired. For metal surfaces of this type throughout the sewage plant, but more especially where fumes and moisture conditions are severe, the following system is recommended:

First Coat: Red lead in synthetic type vehicle. This coat to be applied to the bare metal or over manufacturer's priming coat.
Second Coat: Fume resisting synthetic type enamel undercoat. Suitable materials are obtainable commercially.
Third Coat: Fume-resisting colored enamel, synthetic type. Follow recommendations of manufacturer. If an aluminum type of material is desired, it is recommended that a synthetic vehicle of the phenolic type be used.

3. *Exterior metal work not submerged in sewage.*

For the steel structures in connection with outside grit chambers, including the movable scrapers in the open type circular grit and sludge settling basins, it is recommended that two coats of the

Test panels were inspected at regular intervals by paint technologists. The panel undergoing inspection was exposed to incoming raw sewage

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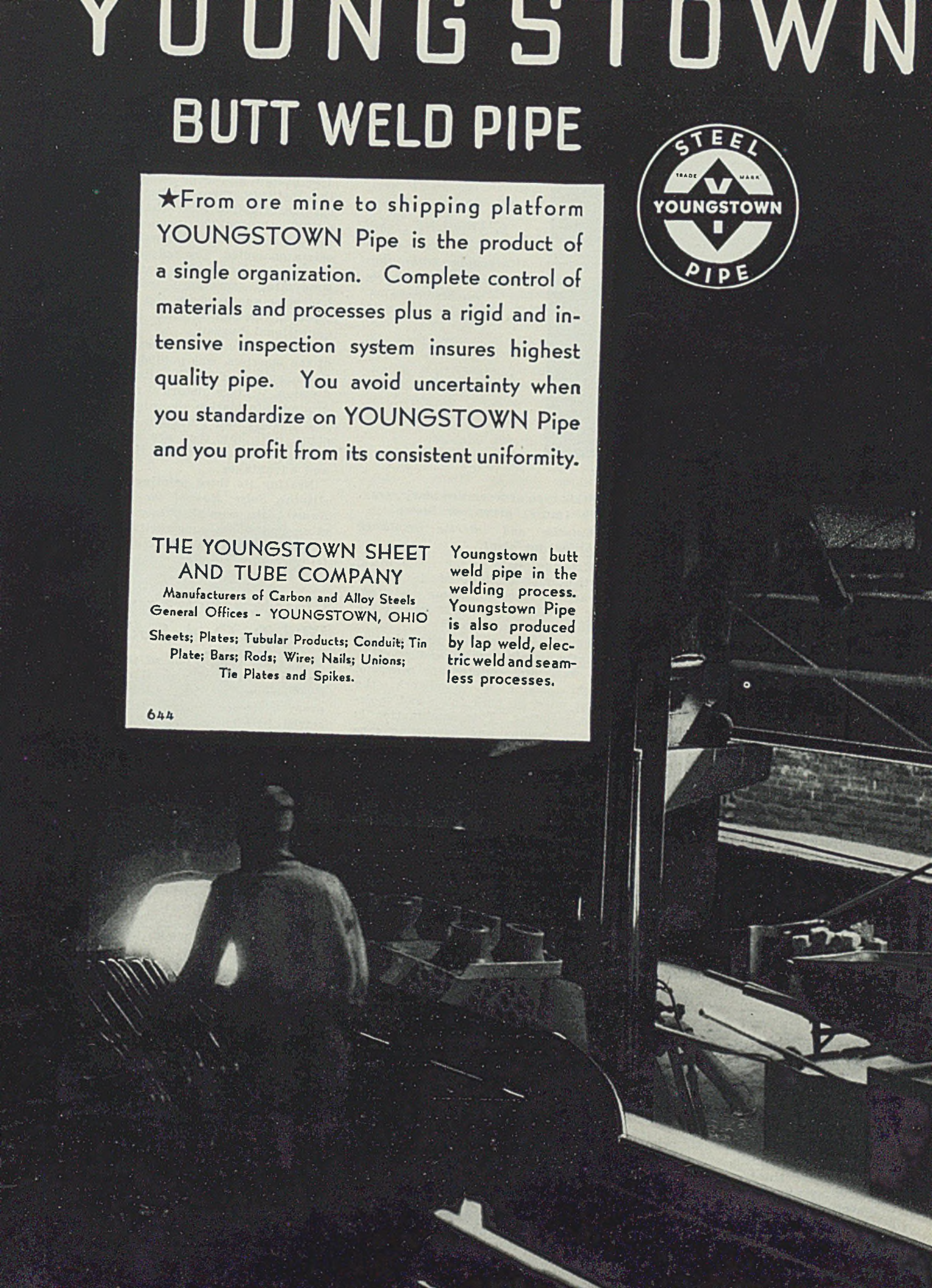
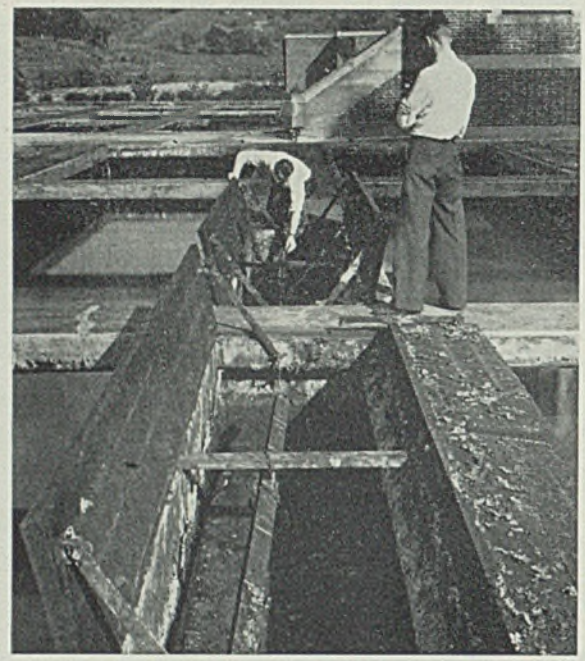




EXPOSURE conditions in the sludge digestion tanks illustrated here were unusually severe

bituminous material recommended for submerged work be used directly over the bare metal or the manufacturer's priming coat. This recommendation is especially suitable for metal work which is immediately above the surface of the sewage and up to a height of 6 to 8 feet, wherever it is subject to splash and direct fumes. For metal work at a greater distance above the surface of the sewage and for those cases where a more finished appearance is desired as, for example, walkways and their hand railings along revolving grit scrapers, it is recommended that a priming coat of lead chromate in a synthetic vehicle be used, followed by two coats of a synthetic type fume resisting enamel, preferably black which is the most durable form of this material.

The use of aluminum paints is not recommended for this type of exposure although some degree of success has been attained with two coats of aluminum in a phenolic-type vehicle applied over two coats of bituminous enamel. The bituminous coating must be thoroughly dried before the aluminum is applied since there is danger that the black undercoats will bleed and disfigure the aluminum finish.

4. *Miscellaneous Metal Parts.*

For metal sash, metal doors, hand railings and other miscellaneous metal work on the outside of the building, the following system is recommended:

First Coat: Lead chromate primer in synthetic vehicle.

Second and third coats: Synthetic fume-resisting enamels as recommended under 2 (a) above.

It should be borne in mind that in general the most durable colors for this type of work are black, gray, dark (moss) green, or brown.

5. *Exterior and interior woodwork throughout plant.*

Exterior paints for woodwork, particularly in light shades, must always be specified fume resisting. One definite requirement is that the materials be lead free.

The interior of the plant is frequently painted white and whether the walls and ceilings are concrete, brick, plaster or woodwork, the paint must be both fume and moisture resisting. This combination is always serious and particular care must be exercised to select a suitable material which will hold its original color and gloss and at the same time withstand the deteriorating effect of the condensed moisture which is present throughout the greater part of the year.

While specifications and recommendations in this article apply specifically to sewage disposal plants, it must be borne in mind that corrosive conditions which apply in these plants are such that materials which are satisfactory in them will be satisfactory under many other commercial conditions. Chemical companies and industries with extensive underground installations where considerable organic decomposition is taking place should benefit particularly from these investigations. Other applications will suggest themselves.

Porcelain Enamel Handbooks Announced by Institute

Education bureau of the Porcelain Enamel institute, Chicago, announces the publication of four sample copies of booklets, which may be obtained without charge by anyone interested in the use of porcelain enamel.

Two of the booklets, *Handbook on Design of Metal Parts for Porcelain Enameling — No. 1* and *Reflectance Test for Opaque White Porcelain Enamels*, are of a technical nature. The design handbook, according to the Institute, gives authentic, practical information as to the basic requirements for the proper designing of pressed steel shapes to be porcelain enameled. The reflectance test booklet is a tentative standard for conducting reflectance tests which has been approved by the technical research section of the Institute's educational bureau.

Porcelain Enameled Signs, another of the booklets, was published under the auspices of the Institute's sign division. It gives historical and background information regarding porcelain enamel and porcelain enameled signs, tells how they are made and contains a summary of their uses and advantages.

Nearing its third printing, the Institute's *Sales Manual for Porcelain Enamel*, discusses all phases of enameling and offers constructive selling points for the manufacturer, distributor and retailer.

Opacification of Enamels With Tin Oxide Studied

Stannic oxide is one of the oldest and most used of enamel opacifiers and because of its suitability for every class of enamel it has received little attention in the technical literature as compared with its substitutes since the conditions under which they are practicable have needed more careful investigation. In technical publication series A, number 42, of the International Tin Research and Development Council entitled *Opacifiers in Wet and Dry Enamels* is an account in English of investigations by Dr. Ludwig Stuckert which were read before the Society of German Enamel Technologists.

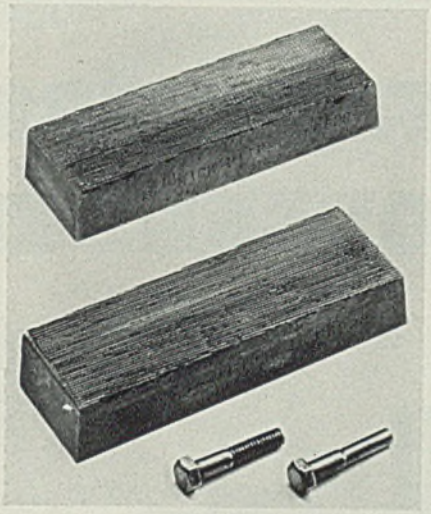
Effect of opacifiers on the enamel is not confined to optical differences but is productive of physical and chemical changes which have important influences on the properties of the enamels. The influence of opacifiers was investigated for both wet and dry enamels, with respect to the coating power of the enamel, its bending strength and heat resistance, its solubility on extraction with dilute acids and the opacity and lustre after normal burning and overburning.

Copies of the above publication may be obtained gratis from the International Tin Research and Development Council, L. J. Tavener, U. S. Representative, 149 Broadway, New York.

Nitrided Nickel Steel Thread Rolling Dies Stand Up in Severe Service Test

MANUFACTURERS of bolts and machine screws carrying rolled threads recognized in the development of nitrided steel possibilities of this material for thread rolling dies which would improve performance and reduce die cost. Tests proved disappointing, however, for the material showed excessive brittleness in the case and insufficient strength and hardness in the core to back up the extremely hard case properly.

To obtain the nondistortion, nonscaling properties and other collateral advantages of the relatively low temperature of the nitriding treatment this had to be the only heat treatment to which the dies were subjected after machining. Hence the



In the severe service of rolling threads on screws and bolts, these nickel nitriding steel dies gave exceptional performance

core hardness was limited by the machinability factor since no additional hardness is imparted during the nitriding cycle to the cores of articles made of ordinary nitriding steels.

The discovery of H. J. French and V. O. Homerberg (*Transactions*, American Society for Steel Treating, Vol. XX, No. 6, 1932) that the addition of nickel to the regular nitriding compositions not only strengthens and toughens the case without a severe loss in hardness but also induces an appreciable hardening of the core during the nitriding treatment suggested a re-examination of the possibilities of the nitrided die.

Thus, according to the June issue of *Nickel Steel Topics* published by the International Nickel Co. Inc., New York, samples of a nickel nitriding steel containing 0.20 per cent carbon, 3.50 per cent nickel, 1.50 per cent chromium, 0.25 per cent molybdenum and 1.00 per cent aluminum, were accordingly submitted to a well-known manufacturer of screw machine products for comparative tests with an air-hardening, high-alloy tool steel previously used for such dies. The nickel alloy steel blanks were first heat treated to maximum machinable hardness. After machining, the dies were nitrided for 48 hours at 975 degrees Fahr. and then lapped.

Results Tabulated

Results of these tests, carried out under strictly service conditions, showed definite advantages in favor of the nitrided nickel alloy steel as follows:

	First set (2 locations used on each die)	Second set (1 location used on each die)
Nickel nitriding steel, number of pieces produced	191,320	274,830
High-carbon, high-alloy tool steel, number of pieces produced	121,700	222,560

The dies of the first set, which were 1⅛ x 2 x 6 inches in size and are shown in the accompanying illustration, were used on an automatic roll threader rolling 5/16 x 18-inch threads on hexagon head cap screws, cold headed and extruded from S.A.E. 1035 steel of 95 Rockwell B hardness. Dies of the second set were 1¾ x 2 x 9 inches in size and were used on a hand feed roll threader to roll the same size threads on square head machine bolts, cold headed and annealed, made from S.A.E. 1010 steel with a Rockwell B hardness of 60.

Porcelain Enamel Institute Gives Meeting Program

A sales conference of the porcelain enameling industry will constitute one of the features of the program of the sixth annual meeting of the Porcelain Enamel institute to be held at Hotel Statler, Cleveland, Oct. 1-2. This conference, sponsored by the institute's educational bureau, will be held on the morning of Oct. 1 and will offer eight topics for consideration.

The afternoon program provides for group conferences of various divisions of the institute. To permit members and guests to inspect the Porcelain Enamel building and other points of interest at the Great Lakes exposition, no evening activities have been arranged.

Business affairs will be disposed of at the institute's annual meeting on the morning of Oct. 2. Economic problems of the industry will be discussed at the afternoon session.

Details of the meeting program are as follows:

Thursday, Oct. 1

MORNING

Breakfast meeting of executive committee.

Sales Conference of Porcelain Enameling Industry

"What Has the Educational Bureau Done?" by Emery L. Lasier, Titanium Alloy Mfg. Co., Niagara Falls, N. Y.

"The Industry's Barometer," by George S. Blome, Baltimore Enamel & Novelty Co., Baltimore.

"Controlling Production," by Herman L. Cook, Norge Corp., Detroit.

"Importance of Technical Research," by Richard H. Turk, Porcelain Enamel & Mfg. Co., Baltimore.

"Demonstrating for Greater Sales," by Earle S. Smith, Toledo, O.

"Why We Advertise," by H. D. Chase, Chicago Vitreous Enamel Product Co., Cicero, Ill.

"Spreading the Gospel of Porcelain Enamel," by George P. MacKnight, secretary, Porcelain Enamel institute, Chicago.

"What Do You Think of It?" by Emery L. Lasier, Titanium Alloy Mfg. Co., Niagara Falls, N. Y.

NOON

Luncheon meeting of Educational bureau executive committee.

AFTERNOON

Divisional group meetings of Frit division, Jobbing Shop division, Sign division, and Table Top division.

Friday, Oct. 2

MORNING

Annual Meeting

President's address, by R. G. Calton, Tennessee Enamel Mfg. Co., Nashville, Tenn.

Report of treasurer, by William Hogenson, Chicago Vitreous Enamel Product Co., Cicero, Ill.

Report of secretary, by George P. MacKnight, Chicago.

Election of board of trustees.

NOON

Luncheon meeting of board of trustees.

AFTERNOON

Report of board of trustees.

"What the Rest of the World Thinks About Porcelain Enamel," by George F. Taubeneck, editor, *Electric Refrigeration News*, Detroit.

"Practical Problems Under the Robinson-Patman Act," Rudolph W. Staud, Benjamin Electric Mfg. Co., Des Plaines, Ill., presiding.

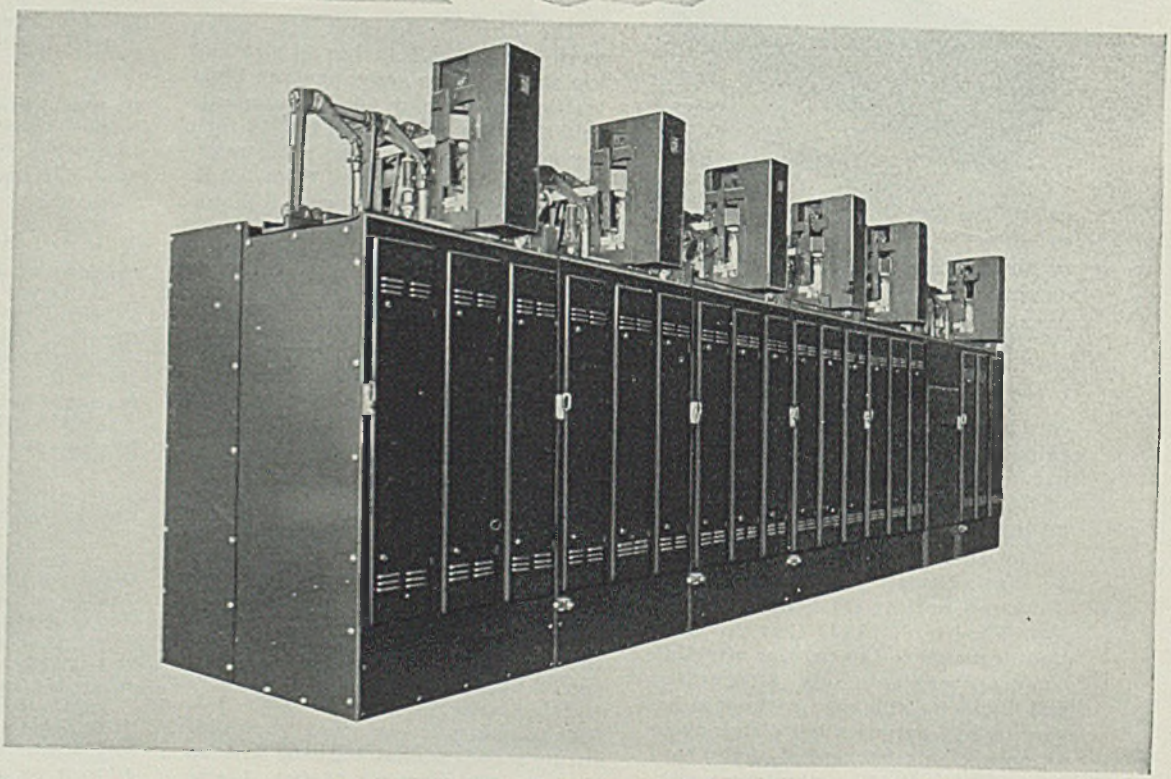
Address by Ernest A. Gross, assistant counsel, National Association of Manufacturers, Washington.

"Architectural Forum," Bennett Chapple, American Rolling Mill Co., Middletown, O., presiding.

"... But it's 'Thin red line of 'eroes'
when the drums begin to roll."
(Kipling)

HISTORY MAKERS —MODERN FH

G.E. BUILDS WITH STEEL



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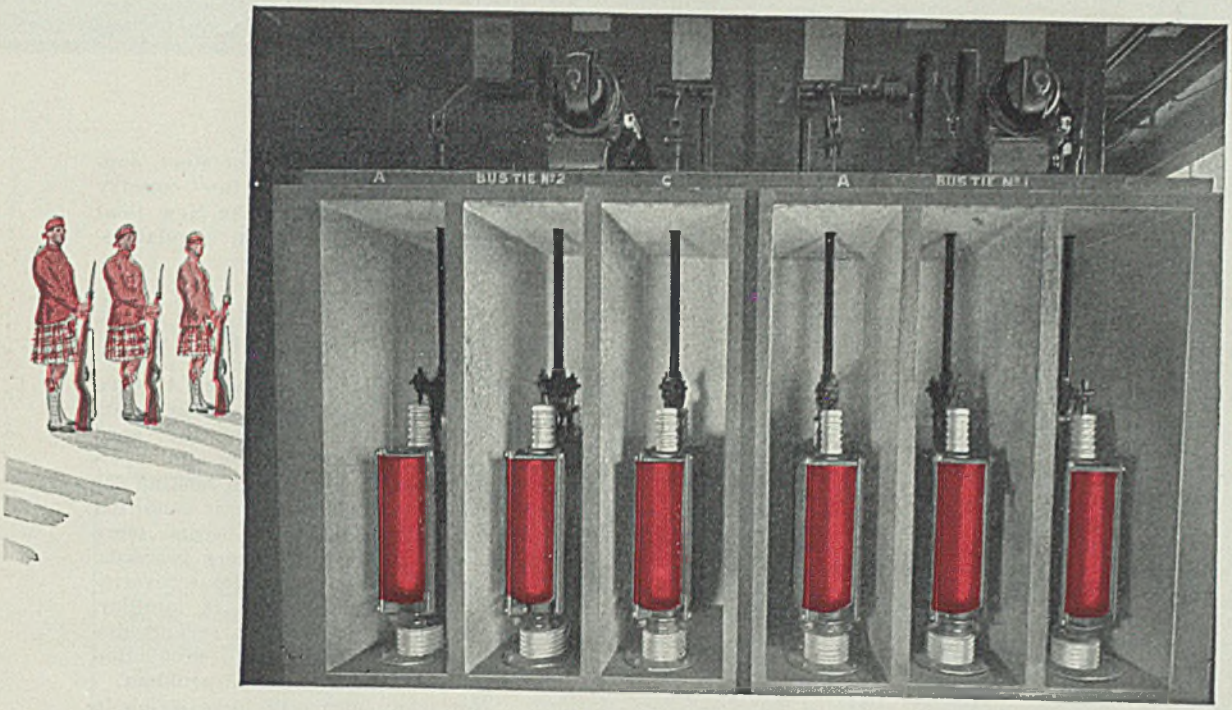

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ELECTRIC 890-6

WELDING, etc.—by Robert E. Kinkead

We Shall Have Cheap Power But How Shall We Use It?

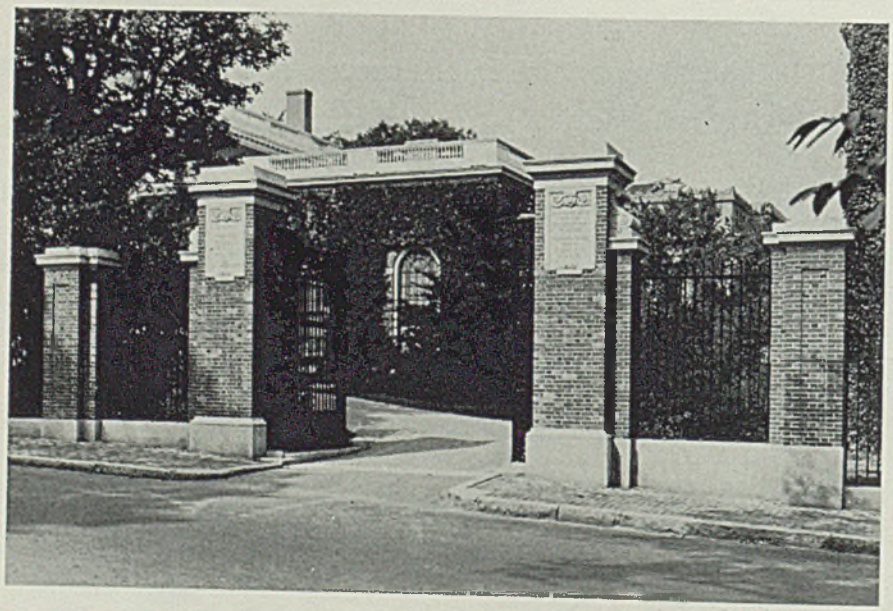
CREATION, by government expenditure of public tax money, of a vast surplus of electric power in areas not served by privately owned central stations is a challenge to engineering thought. The correct judgment probably will be delivered at about the same time we become certain why the last world war was fought, who won it, and whether the net result was good or bad. But one thing is certain—some earnest, well meaning politicians are driving ahead hell bent for election in the creation of surplus water power on a grand scale. Perhaps engineering opinion might more profitably be employed to find what the country is going to do with vast amounts of cheap power.

Representing the class of benighted technical experts who know more and more about less and less, we would like to find out some more things that can be done with powerful electric arcs that may be operated at low cost. After playing with welding arcs for more than 20 years, we have arrived at the point at which we believe that the usefulness of the phenomenon is little appreciated. With cheap power and plenty of money for experimental work, it seems that all of the marvels of the oil cracking process could be reproduced in the reduction of metal ores and the combining of different metals into alloys at arc temperatures. The handling and separation of metals in the vapor state is a subject about which so little is known that the degree of ignorance is pitiful. The metal producing industries of the world are in the dark ages of chemistry and physics as compared with the oil refiners.

If a way could be found to knock $20 a ton off the cost of steel, copper and aluminum, the country could pay the cost of the New Deal and be money ahead in a relatively few years.

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.

Wrought Iron Gates Enclose Harvard Yard



ORNAMENTAL wrought iron added the final touch recently to the enclosure of the famous "Yard" of Harvard university, Cambridge, Mass. When the heavy Eliot Memorial gates were formally dedicated Sept. 17, the yard was enclosed for the first time. High quality puddled wrought iron supplied by the Norfolk Iron Co., Quincy, Mass., was used by F. Krasser & Co., Roxbury, Mass., in the construction of the gates for which Cram & Ferguson, Boston, were architects. Pivots on which the gates swing are of hard bronze; ornamental leaf work and other thin ornamental sections are likewise of bronze

Better Earnings Sought

DISTINCTLY noticeable trend among the welding departments of the country is the fact that good welding operators, foremen and supervisors are stirring around looking for better jobs. This is a cyclic condition which will continue and become more pronounced as the recovery proceeds. It occurred on two previous recoveries with which this writer is familiar. Since the result is often serious disruption of costs and production schedules, there is a real problem.

Not many men will leave a job to take another one which pays less money. Paying more money for a job without getting more work means the management was niggardly in setting the original rate, or is paying the increased rate at a loss because it is intimidated. There are few welding jobs which cannot be made to yield higher returns for both management and men. The reason is that the art and science of welding is progressing at a rapid rate. The problem arises because management lacks information.

The need is for both management and men to earn more. Technical advances and improvements in the art of welding have anticipated the need and are waiting to be adopted.

Sparks and Flashes

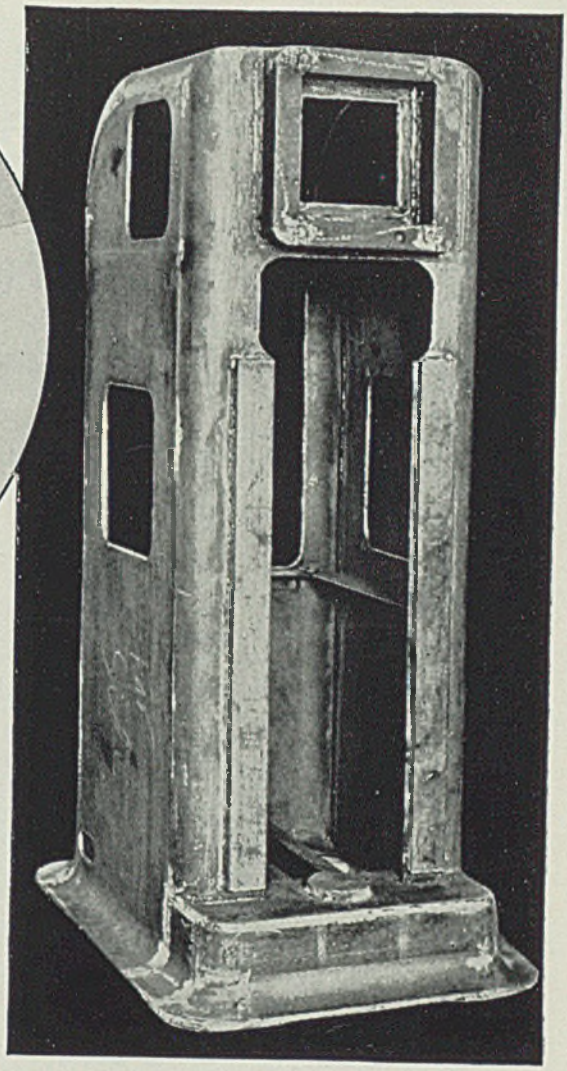
H. BERGSTROM, welding expert, has just returned from a trip around the world in the interest of Armco International. He reports vast opportunities for application of welding to the railroads in India. American, British and German steel men recognize the opportunities for expansion of welding in the Far East, but political and financial disturbances have heretofore prevented substantial progress.

♦ ♦ ♦

JACK CARBIS, able and active welding engineer for Williams & Co. recently received a two-year contract for welding wire by showing a foundry how to weld aluminum bronze; that is, he showed them how to do it *after* the contract was signed. Commerce is carried on by trading this for that, not by giving something away for nothing in return.

This was a GUILTY PART

Now it can be made in 40% LESS TIME



Taking standard steel plate, cutting and forming it into proper shapes and then *"Shield-Arc"* welding these sections together, the manufacturer of this spot welder frame took off 40% of the working hours and 50% of the pounds required for the old construction. Strength was increased 100%. Machining costs were cut 20%.

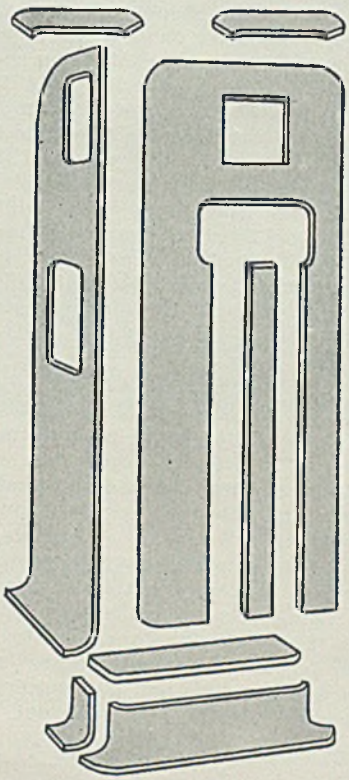
That's how another manufacturer has reformed a Guilty Part.

Four out of five parts in today's machines and equipment could be made stronger, lighter, more rigid—made quicker and at less cost—by *"Shield-Arc"* Welding. How sure are you that *your* product is free of these Guilty Parts?

Make sure! It will cost you nothing to have a Lincoln man help you investigate. May we be of service? You'll find the bulletin mentioned below of interest. THE LINCOLN ELECTRIC COMPANY, Dept. Y-302, Cleveland, Ohio. Largest Manufacturers of Arc Welding Equipment in the World.

Your product may seem complicated, but it is simply an assembly of PARTS. One or more of these parts can be made BETTER at LOWER COST by *"Shield-Arc"* welding.

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



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

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

LINCOLN

"SHIELD-ARC" WELDING

THE LINCOLN ELECTRIC CO.
Dept. Y-302, Cleveland, Ohio

Send me a free copy of the new booklet, "Lower-Cost Manufacturing by Shielded Arc Welding."

Firm .....

Name .....

Position .....

Address .....

City ..... State .....

Endless Rubber Belts Now Easily Constructed by Workers on the Job

ONE of the objections to rubber belts has been the difficulty of making a proper joint or splice where it is necessary to join the belt on the job. No type of fastener has been entirely satisfactory and all weakened the belt to some extent. Some types of fasteners, as commonly used on the larger belts, prohibited the use of an idler or reverse bend and necessitated adequate guarding because of the hazard to anyone who might accidentally contact the rapidly moving belt.

Until comparatively recently rubber belts were made endless at the factory or with difficulty on the job. Such endless belts were not always usable because they could not be installed without dismantling the machine or drive. Often this was impracticable.

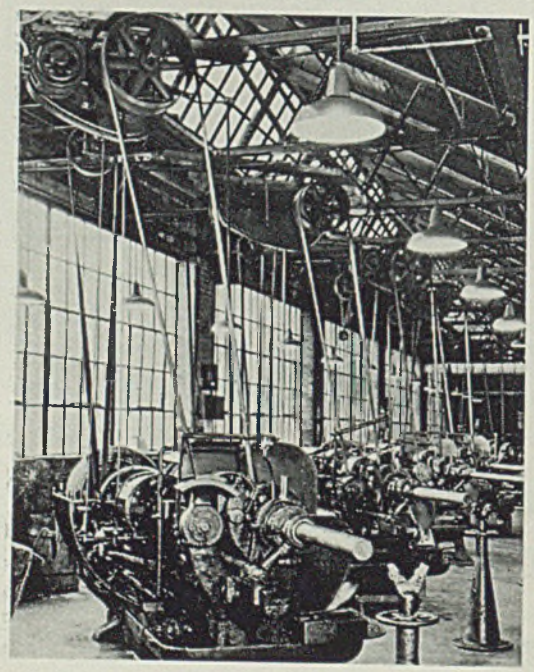
With recent developments of portable vulcanizing equipment by belt manufacturers rubber belts may now be made endless or shortened at the plant, or even on the drive when necessary. One manufacturer supplies a portable electric vulcanizer for this purpose, with which, it is stated, competent belt man with a few simple tools can make the splice and vulcanize the belt ready for use in from one-half hour on small belts to 2 or 3 hours for larger belts.

Another method of vulcanizing such belts by the use of the oxyacetylene torch was described in these columns in the July 27 issue of STEEL. By this method a mechanic could splice an 8-inch belt in about an hour. The use of cold cement ordinarily requires about 8 hours for drying before the belt can be put into service.

Since time out is generally an important consideration in connection with splicing belts, such developments have overcome the chief objections to rubber belts in that the splice is now quickly made and is practically as strong as the belt.

By making rubber belts endless their life is increased several times in addition to eliminating the frequent servicing on the fasteners. For example, on one particularly severe quarter-ton drive operating at high speed with rapid acceleration and frequent stops with a brake the belts lasted only 30 to 40 days and new fasteners had to be installed weekly. A belt electrically vulcanized endless on the drive operated under the same conditions 5 months without a take-up or any other servicing.

Individual Countershaft Drives



IN a battery of eight Cleveland Automatic screw machines each countershaft is individually driven at 350 revolutions per minute through Link-Belt short-center silent chain drives as shown. This permits setting the machines at an angle of 15 degrees but eliminates twisted drive belts. Three belts extend from countershaft to machine—one to drive the head, one to the turret operating mechanism, and the third to drive the pump for the cutting solution. These automatics operate irregularly and in no relation to each other so are individually driven. Link-Belt Co., Chicago, supplied the chain and cases

Matching Drive to Service

TYPE of drive is best determined by the use or requirements of the equipment. This is well illustrated by the different practices of one concern in its main plant and branches.

In the main plant the equipment is set up for long runs on standard products, sometimes without a stop or change for months except for occasional short stoppages for cleaning and adjustments. In this plant all machines are group driven from lineshafts to obtain full advantage of low first cost and operating expenses.

In the branches standard items are carried in stock and the machines used only on special runs of items made on local customer's specifications. These special runs last from a few hours to a week or more, often with considerable idle time between operation. As a result the branch factories all have individually driven machines. The higher costs and fixed charges are more easily absorbed in the special jobs than would be possible in the more highly competitive standard products.

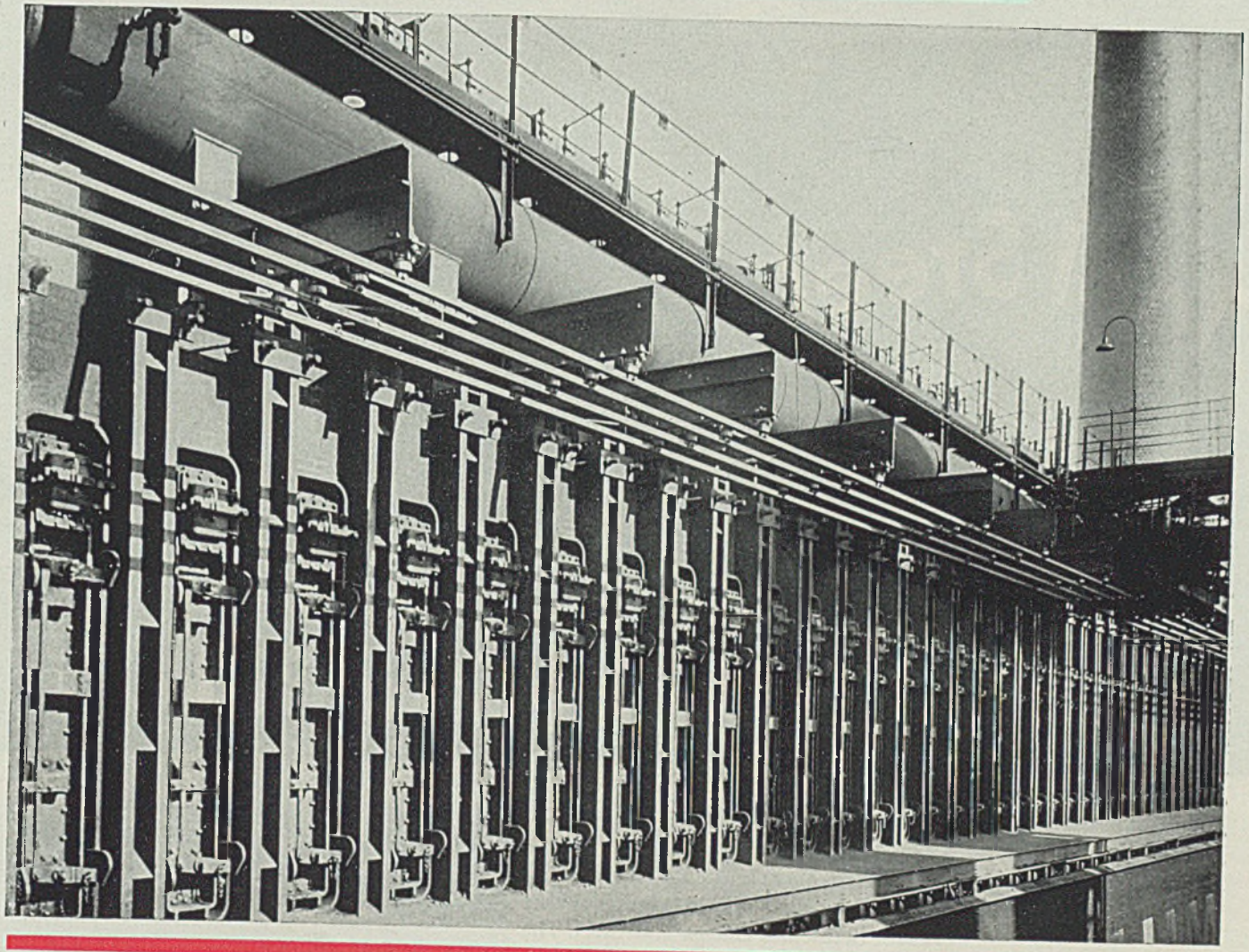
• • •

Trouble calls should clear through someone sufficiently acquainted with maintenance work to find out what is wrong and select the proper man to answer the call. As far as possible, he should indicate the type of servicing required so that the trouble shooter can take necessary tools and supplies with him. Having to return to the shop for a fuse or some other trifle is a waste of time and also needlessly increases the length of time out.

• • •

With the recent development of a pocket-size ammeter of sturdy construction there is little excuse for a maintenance force being without testing equipment. Even with a comparatively small number of motors, such equipment will pay for itself. Even knowing that everything is O. K. is worth something.

BECKER TYPE LOW DIFFERENTIAL BY-PRODUCT COKE OVENS



KOPPERS OFFERS:

BECKER OVEN PLANTS . . . GAS PRODUCERS . . . WATER GAS PLANTS . . . LIQUID PURIFICATION PLANTS . . . PHENOL REMOVAL PLANTS . . . MATERIAL HANDLING PLANTS . . . BY-PRODUCT EQUIPMENT . . . BENZOL PLANTS . . .

- The new BECKER OVENS, characterized by exceptionally low differential pressures represent an advance of prime importance in the economical production of steel. More precise control of coke and gas quality is characteristic of these ovens.
- The pioneer installation at Camden, New Jersey, placed in operation in October, 1935, has already demonstrated a distinct advance in the art of coking. The use of the Becker Type Ovens should be considered in every building and modernization program in the steel industry.

KOPPERS CONSTRUCTION COMPANY

PITTSBURGH, PA.

MANY shop, mill and mine tools have to resist frequent impacts—withstand relentless battering. That's the kind of job that calls for Bethlehem Omega Tool Steel. The extra toughness and strength needed for every kind of rough-and-tumble service are built into Omega—qualities that enable this Bethlehem product to stand up and take it under conditions that would quickly break down ordinary steels.

This super shock-resistance makes Omega a logical and dependable choice for use in pneumatic and hand chisels, beading and calking tools, rivet sets and busters, blacksmith tools and punches. Omega is highly efficient as a material for shear blades.

Just to give an idea of the stamina of Bethlehem Omega Tool Steel—it can be heat-treated to develop the unusually high tensile strength of 340,000 pounds per square inch and an unnotched-charpy value of 121 foot pounds (Rockwell Hardness C58) can be obtained. Drawing at a slightly higher temperature results in still greater toughness with only a slight reduction of tensile strength to 320,000 pounds per square inch.

Because Bethlehem Omega Tool Steel responds to a wider temperature range than carbon tool steel, it is as well suited to use in the field as it is in the shop. It forges readily between 1850 deg. F. and 1950 deg. F. Omega requires no expensive heat-treating equipment.

Other Bethlehem Tool Steels, produced to meet specific requirements, handle other tool steel tasks with the same degree of efficiency shown by Omega in its particular field.

BETHLEHEM
OMEGA
TOOL STEEL

BETHLEHEM STEEL

BETHLEHEM STEEL COMPANY

Tongs for Handling Molds, Ingots and Other Work Unlock Automatically

HAZARDS to employe and lost and wasted time at iron and steel plants are eliminated by the use of the newly developed Gellert type tongs. Rigging of slings or chains on the burden to be lifted are not required. Nor is it necessary for ground men to work close to hot ingots in order to apply chain loops.

Workmen need not climb to the top of material piles, with danger of falling or of being crushed by rolling shapes, to make hitches. Prying heavy blocks off the floor in order to place slings beneath is eliminated.

Craneman Controls Movement

The only manipulation required is to drop the tongs on the work. Once this is done the tongs go through the entire cycle automatically. Their control is in the hands of the craneman, thus obviating the difficulties that frequently result from misunderstood signals and premature lifts.

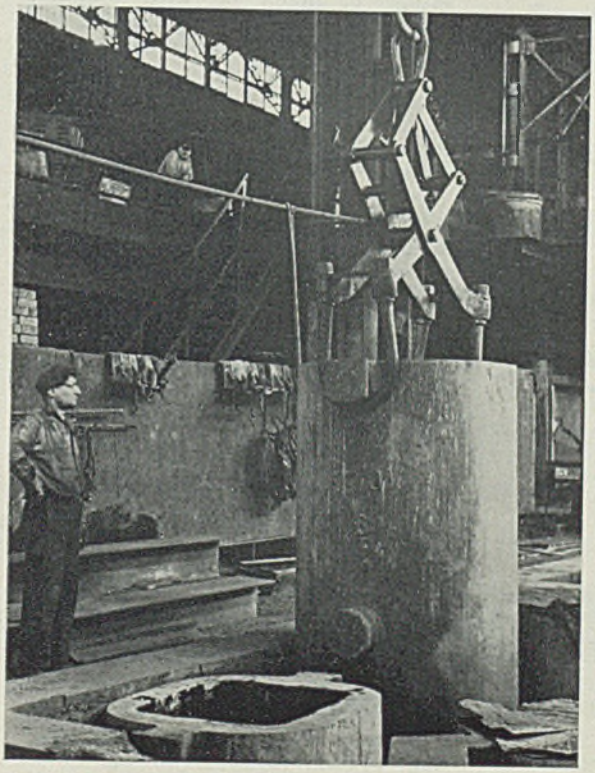
Tongs of this type now are handling white hot ingots at one steel plant weighing up to 120,000 pounds. They are made also for stripping molds from big-end-up ingots. The tongs unlock automatically when lowered on the mold. They engage with the mold ears and lift the work from the pit to the cooling bed. Slackening the cable locks the tongs in an open position.

Tongs for handling hot top ingot molds are made with the automatic mechanism at the side in order to afford clearance for the accomodation of the hot top. The tongs in an open position are lowered to the top of the mold and automatically lock on contact. They then engage with the lugs for the carry.

Ingot mold tongs for mold lifting and general handling are shown in the accompanying illustration. These have a range up to 68 inches measured across the mold lugs and a capacity for handling loads of 18,000 pounds. They afford the craneman an extra hand by permitting him to lift and carry without the aid of a ground man.

Another tong of this type equipped with gripping pins in the jaws facilitates the handling of die blocks and other shapes. The tongs, which automatically lock open after the previous lift, are lowered to the blocks to be hoisted. The craneman gives enough slack to permit the pantograph assembly to close. This unlocks the tongs ready for gripping the work. The moment the craneman starts the lift the unlocked jaws grip the work and the heavier the burden, the tighter the grip. When the work is deposited, the tongs lock open ready for the next lift.

These tongs, made by the Heppenstall Co., Pittsburgh, are available in 12 different types for a variety of applications in iron and steel plants.



INGOT mold being lifted by tongs having the automatic mechanism for locking the jaws open located centrally in the pantograph assembly. With tongs of this type workmen are not obliged to clamber over the tops of molds to attach and adjust chain slings. The entire cycle of operation is automatic and is controlled by the craneman

Coating Extends Service

Top flying shear blades that have been hard-faced are capable of shearing 50 heats of red-hot alloy steel billets before being changed, according to practice at a steel mill in the Chicago district. Plain steel knives afford only a 6-heat campaign.

Tapered Hot Tops Effective

Cast iron hot tops for ingot molds lined with firebrick or insulating firebrick and tapered now are being used rather widely by steelmakers in this country. The taper reduces the amount of steel in the top from 10 to 15 per cent, and being better insulators, these tops are more efficient in reducing piping inasmuch as they are better heat insulators and have lower heat capacity. The brick lining is coated with a special graphite base refractory slurry to prevent the penetration of steel and to facilitate the removal of the hot top from the ingot. This type hot top is performing satisfactorily both from the standpoint of steel quality and of costs, according to an Ohio refractories engineer.

Markets Acidproof Enamel

Steel subjected to strong acid fumes such as in pickling rooms at pipe, tin plate, sheet and strip mills or in galvanizing plants can be protected by the application of a recently marketed gray acidproof enamel. The coating is a cumar gum product which has an exceptional resistance to acids on interior exposures.

NEW EQUIPMENT

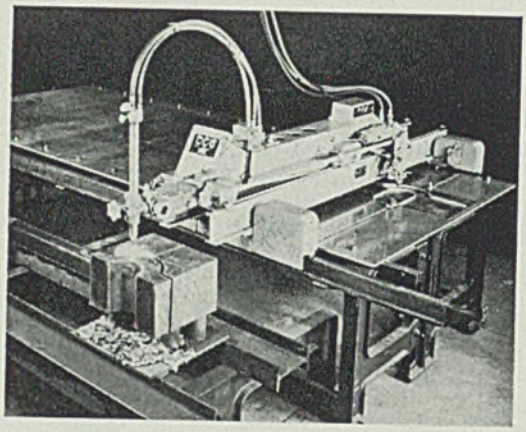
Circuit Breaker—

General Electric Co., Schenectady, N. Y., announces a new air circuit breaker adapted to industrial and station auxiliary service, or for any heavy duty work where many opening and closing operations are required. The breakers have a 20,000 ampere interrupting rating and are for operation on circuits of 250 volts direct current or 600 volts alternating current at 15 to 600 amperes. The standard arrangement is an enclosed breaker with pull box for mounting on a wall or behind a switchboard panel; without pull box for mounting on the front of the switchboard. Main contacts are silver to silver; arcing contacts are of special alloy. Double and triple pole units are available. Unit is completely enclosed with the base included within the case.

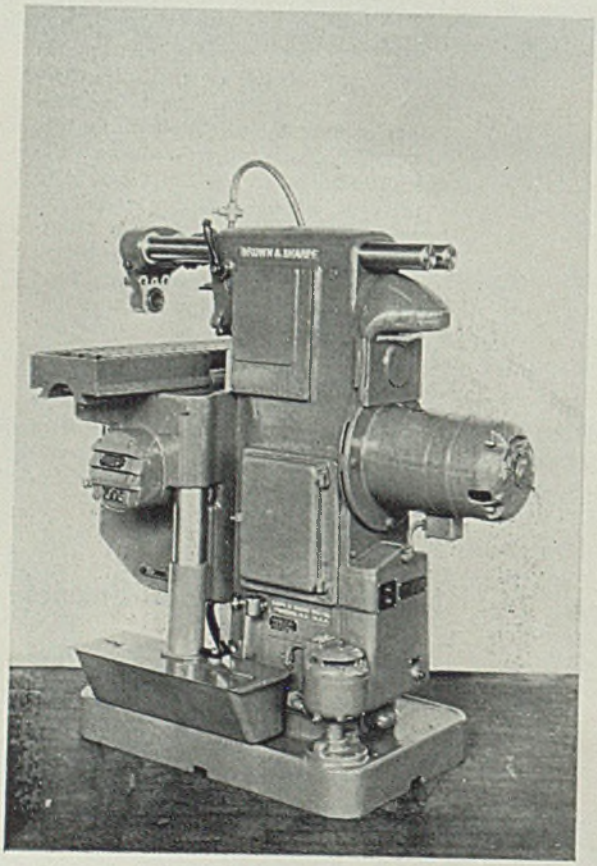
♦ ♦ ♦

Milling Machine—

Brown & Sharpe Mfg. Co., Providence, R. I., has recently announced its new No. 10 plain milling machine featuring full electrical control of all table and spindle power movements. The new unit is a knee type production unit designed specifically for the rapid manufacture of small parts on either long or short runs. A range of 16 spindle speeds from 55 to 1800 revolutions per minute makes possible the machining of materials ranging from the tough alloy steels to free cutting brass and aluminum. The one piece column and braced knee together with the set-back column face, which permits placing the cutters closer to the spindle nose, enables the new machine to take heavy cuts without chatter. This unit has a 12-inch table feed, 2-inch transverse adjustment of spindle and 11½-inch vertical knee adjustment. Hand adjustments in all three directions, together with all of the other principal adjustments and operating controls, are within easy reach of the front of the machine.



Linde Oxweld type CM 12 shape cutting machine which will cut thicknesses up to 12 inches



New No. 10 plain milling machine manufactured by Brown & Sharpe

♦ ♦ ♦

Shape Cutter—

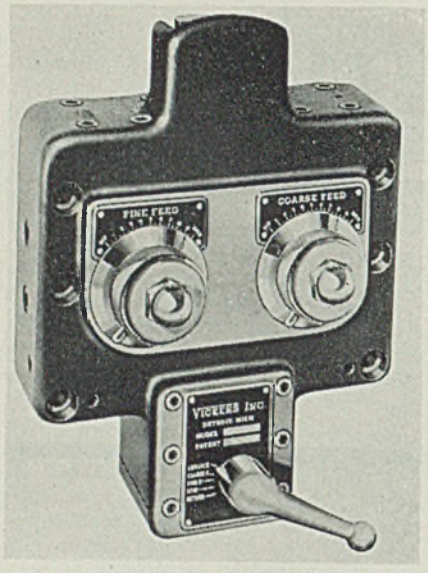
Linde Air Products Co., New York, has introduced the new Oxweld CM-12 shape cutting machine for cutting either by hand or with templet. Straight line cuts at any angle in the horizontal plane may be made up to 144 inches in length. A special circle cutting attachment is provided to enable the machine to cut circles automatically from 2 to 24 inches in radius. The apparatus is designed to carry from two to five blowpipes which can perform multiple cutting operations under all the conditions possible with a single blowpipe, it is claimed. Working parts are completely enclosed to insure correct lubrication and freedom from maintenance. Important controls have been duplicated so that operation is possible from either blowpipe or tracing position. Material up to 12 inches in thickness can be handled on the standard machine, with special blowpipes available for pieces of greater thickness.

♦ ♦ ♦

Feed Control Panel—

Vickers Inc., 1400 Oakman boulevard, Detroit, has recently placed on the market a new feed control panel applicable to drilling, reaming, milling, boring, turning and equivalent

machine tool cycles. The panel will provide any sequence made up of rapid advance, adjustable coarse feed, adjustable fine feed and rapid return motions. The main internal



Vickers hydraulic feed control panel for rapid traverse and feed cycles using remote electrical control

control valve is operated by three interconnected means: manually by a lever at the bottom of the panel, mechanically by trip cams operating the plunger at the top of the panel or electrically through a solenoid mounted at the back. Panels are small in overall dimensions and easily installed, pipe fittings being made to a supporting casting to which the panel is fastened with screws.

♦ ♦ ♦

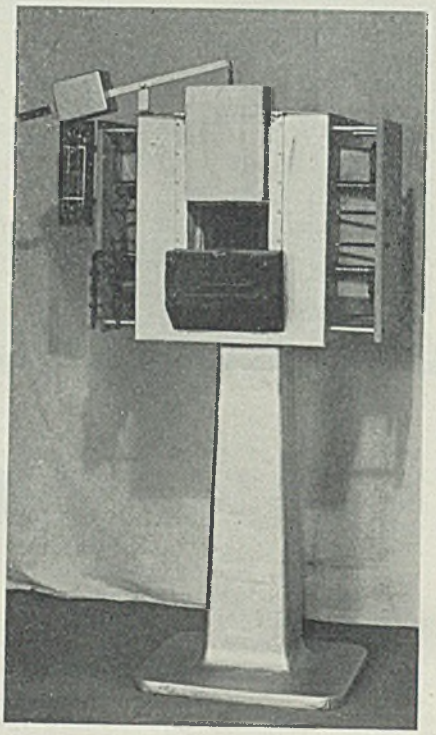
Belt Grinder—

Oliver Machinery Co., Grand Rapids, Mich., is offering a new machine known as the Variety belt grinder and polisher designed for rapid belt grinding and polishing of all kinds of small and medium sized metal pieces of convex, concave or irregular shapes. The machine will take belts up to 10 inches in width and 14 feet long. The main drive pulley is mounted on a countershaft located on the base with a frame swinging about the center line of the countershaft and carrying a support arm. On the arm are mounted two clamp brackets, one of which supports the main idler pulley and the other the table and backing plate. Edging table is of cast iron, size 10 x 12 inches, tilts any angle up or down to 30 degrees and can be adjusted in or out. The backing plate is also cast and adjustable and is 10 inches wide.

♦ ♦ ♦

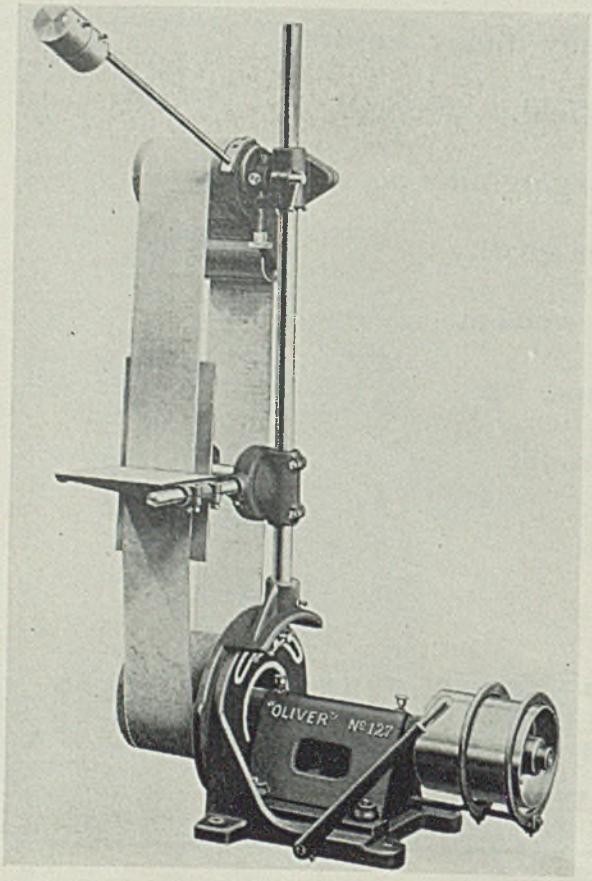
Hardening Furnace—

Sentry Co., Foxboro, Mass., is introducing a new furnace for hardening high speed steel. Known as size No. 2, model Y, the new unit is a muffle furnace with four heating elements, two above and two below the muffle. Air cooled terminals are employed, which are shielded, as are all electrical contacts. The furnace will heat from cold to 2350 degrees Fahr. in 70 minutes, and is adequately insulated. The muffle chamber is 4½ inches wide, 4 inches high and 11 inches deep, and was designed to accommodate the Diamond Block hard-



Sentry No. 2 Model Y electric furnace for high speed steel hardening

ening method produced by this company. The furnace can be supplied with any standard make of temperature control or connected to suitable control equipment. It can be supplied either with pedestal or for bench mounting and can also be equipped with a gas curtain.

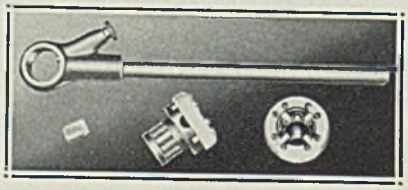


Variety belt grinder developed by Oliver Machinery Co. embodying great flexibility of design

♦ ♦ ♦

Ratchet Threader—

Beaver Pipe Tools, Warren, O., has added a new open ratchet threader to its line. The new tool has a ca-

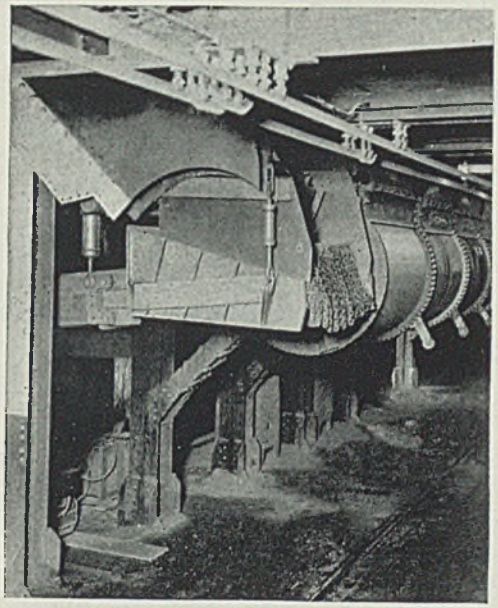


Beaver No. 2 ratchet pipe threading tool which embodies many interesting features

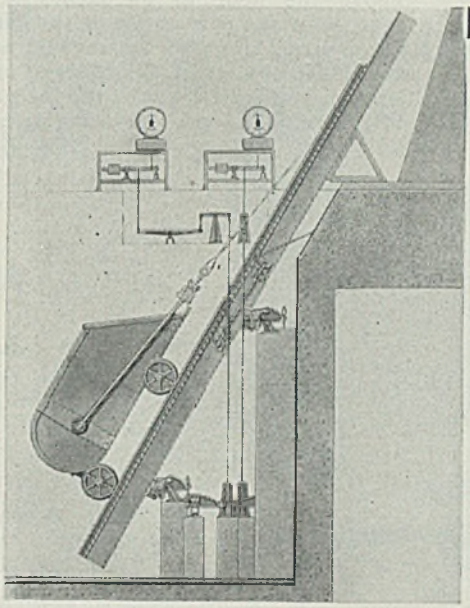
pacity ranging from ⅛ to ¾ inch pipe. Dieheads have oil holes and chip clearance and are available in

Charging Equipment

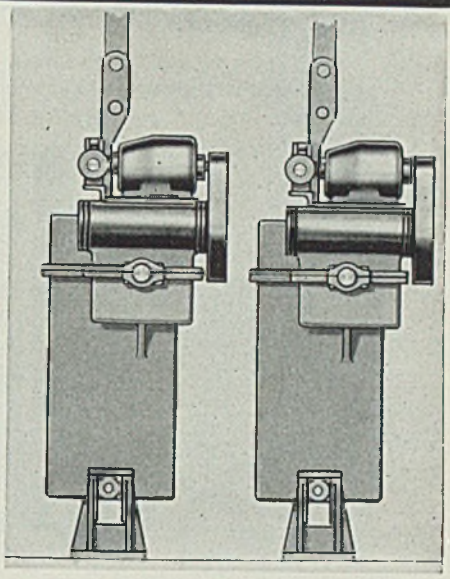
INCREASES THE ECONOMY OF THE MODERN BLAST FURNACE



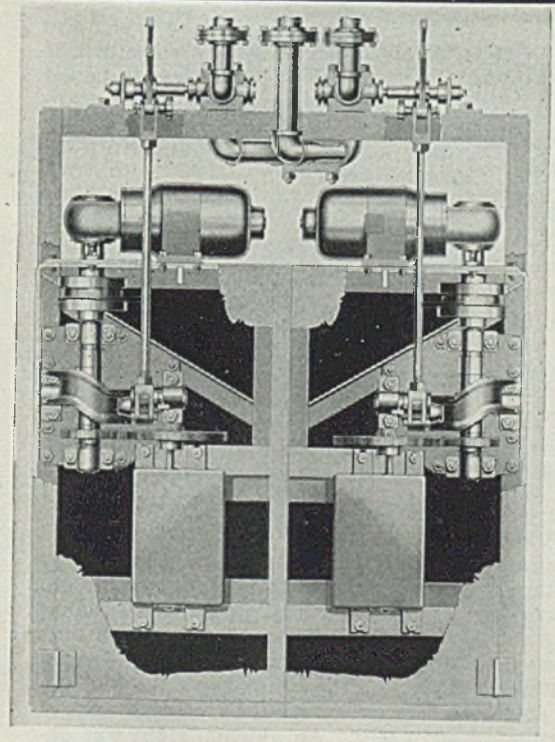
Expense of unnecessary labor and danger to employees is avoided, increased capacity and better metallurgical accuracy are secured by the use of the BRASSERT vibrating conveyor for ores and other blast furnace stock. No other feeder has equal capacity or is so slightly affected by water or frost.



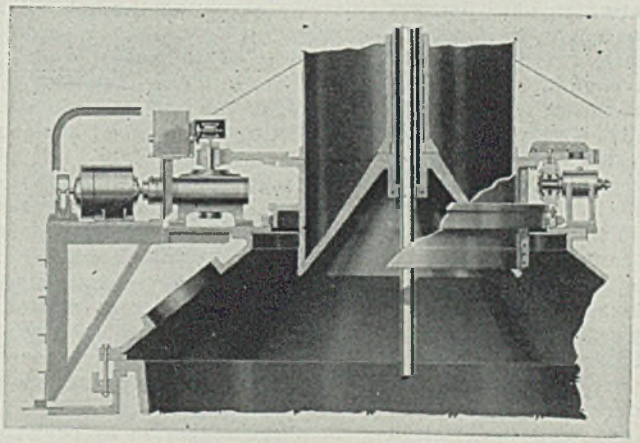
A check weight on coke, stone or ore in the skip car is obtainable by means of the "Skip Weigher," a development of H. A. Brassert & Company in conjunction with Fairbanks, Morse & Co.



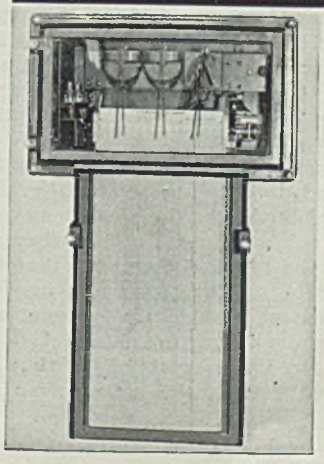
BRASSERT electric motor driven bell hoist, a machine for producing and controlling the movements of the furnace bells. It is convenient, sturdy and reliable.



BRASSERT automatic charging control. This is designed to check and control the sequence of all movements of stock from the scale car to the furnace, from the time the car is started on its way until the load is emptied into the furnace, including movements of skip car, revolving top, bells and stockline recorder. . . . . .



BRASSERT automatic revolving top. A sturdy roller bearing, self-cleaning selectively controlled revolving top for any desired number of stations.



BRASSERT stockline recorder. An automatic stockline recorder for one or two gauge rods. Indicates position of rods by lights as well as on recorder.

H. A. BRASSERT AND COMPANY

Engineers AND *Contractors*

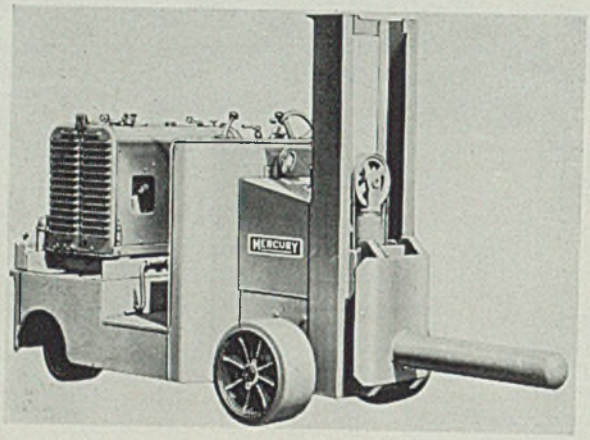
310 So. MICHIGAN AVE. CHICAGO

either right or left hand Briggs or Whitworth standard. Dies are of vanadium alloy steel while the ratchet and dieheads are made from unbreakable slow-annealed air furnace malleable iron. The tool is rustproofed and takes a standard pipe handle.

♦ ♦ ♦

Ram Truck—

Mercury Mfg. Co., 4140 South Halsted street, Chicago, has recently completed the design, construction and shipment of a fleet of ram trucks of the high lift type. Front wheels drive and rear wheels steer, and the capacity is a coil weighing 7000 pounds 36 inches in length. The ram elevates from a height 18 inches above the floor to 60 inches. A feature of the new design is the center control, affording an unusual accessibility of control, flexibility of operation and full vision of the load at all times. The ram elevation is accomplished by the Mercury hydraulic system. The truck is equipped with a gas-electric power source, but is available with storage space for battery operation.



Mercury heavy duty center control ram truck for handling coiled strip

♦ ♦ ♦

Pressure Controllers—

Bristol Co., Waterbury, Conn., announces a new series of low range recording gages and controllers to be known as Model D40M series. These instruments are equipped with enclosed bell type measuring instruments and are offered for draft or pressure in minimum ranges of 0 to 0.2 inches of water and maximum ranges of 0 to 2.0 inches of water. Because of the large operating area of the liquid-sealed bell, the measuring instrument is exceedingly accurate and has the power to respond instantaneously to scarcely perceptible pressure changes, it is claimed. The control instruments operate on the basic free vane principle of pneumatic control. They are equipped with the Ampliset sensitivity adjustment for synchronizing throttling range with process lag. Both wall and flush panel mountings are offered.

Iron and Steel Engineers' Meeting

(*Concluded from Page 56*)

are a quick heating to 1740 degrees Fahr., a fast cooling to an intermediate temperature range (1020 to 840 dgrees), a cooling at a slower controlled rate through the latter range, and finally, a relatively rapid cooling to about 280 degrees.

Olsen ductility values averaging substantially more than 0.400-inch were obtained in applying this cycle to a number of samples of steel from different ingots and from different producers. Rockwell hardnesses of 50 to 60 on the B scale were obtained, which, while higher than obtained by bell annealing, are low enough that normalized material can be substituted for bell annealed material in commercial processing, except for the deepest draws, the speaker stated in conclusion.

JOSEPH WINLOCK, chief metallurgist, Edward G. Budd Mfg. Co., Philadelphia, in speaking on "Sheet and Strip Steel for Deep Drawing," stressed the importance of hot rolling the steel. If the temperature at which this rolling is carried out is in excess of 1100 degrees Fahr., he pointed out, enough residual heat may remain in the steel after rolling to prevent the occurrence of distorted grains in the metal after it has reached room temperature.

When steel is hot rolled to lighter gages, he explained, the finishing temperatures on the hot mill are usually so low that a considerable amount of deformation is actually cold work. Low finishing temperatures on the hot mill often are necessary to obtain good surface qualities.

Mechanical deformation of iron and steel at low temperatures greatly affects the physical properties of metals, Mr. Winlock said. Evidences of reductions by cold rolling even as large as 15 per cent cannot be detected under the microscope, but the physical properties are nevertheless deeply affected by reductions even as low as 0.5 per cent.

If the reduction by cold rolling is small, say from 3 to 5 per cent, the grain size after a low-temperature anneal will be extremely large. A steel with a large grain size will produce an objectionably coarse surface on the stamping after the drawing operation and is more susceptible to Stead's brittleness. On the other hand large reductions by cold rolling tend to produce a small grain size which renders the steel so susceptible to the production of stretcher strains in the finished stamping that the removal of these presents one of the greatest difficulties encountered in the deep drawing of steel.

Mr. Winlock explained that an uneven flow of the metal gives rise to the formation of stretcher strains. Ordinary kinks on the surface of steel sheets, he said, are merely localized stretcher strains. To avoid this condition the mill gives the sheets a temper pass and when the steel is received by the consumer it is roller leveled. But unless the steel is formed between the dies within a period of 24 hours after it has been roller leveled, strains again will form on the surface.

BRIEF description of equipment employed for heat treating alloy bar stock in electric furnaces was presented by Dr. Marcus A. Grossmann, director of research, Carnegie-Illinois Steel Corp., Chicago. The speaker supplemented his remarks by motion pictures which showed the bar loading operation onto cars, placing of cars and loading the bell, removal of the cars and the quenching and normalizing operations.

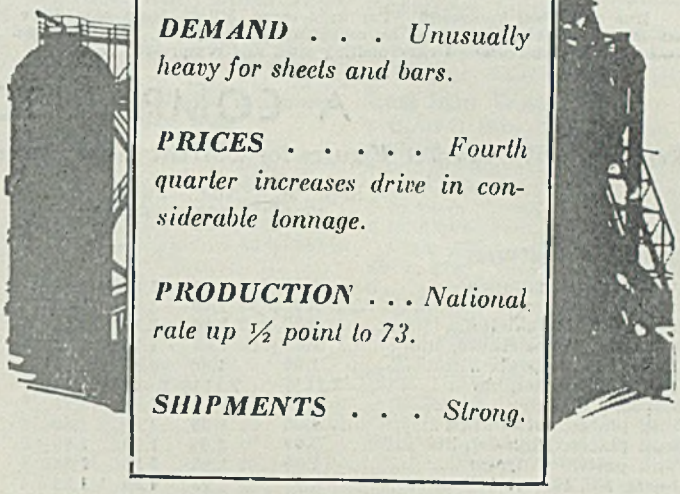
Wednesday afternoon more than 700 members and guests were taken by bus to the plant of Great Lakes Steel Corp., Ecorse, Mich., on a tour of inspection through the open-hearth shop, the merchant bar mills and the recently completed 96-inch broad strip mill. An unusual sight was observed in the motor room serving the new mill where commutation on all motors driving the various stands of rolls was spark free. Apparently the motors were built oversize inasmuch as black commutation was apparent on every unit.

Sheet Consumers Asked to Estimate Needs

Scrap Is Unchanged

At High Levels; Rate

Up to 73 Per Cent



MARKET IN TABLOID

DEMAND . . . *Unusually heavy for sheets and bars.*

PRICES . . . . . *Fourth quarter increases drive in considerable tonnage.*

PRODUCTION . . . *National rate up ½ point to 73.*

SHIPMENTS . . . *Strong.*

INDICATIVE of expanding requirements as the steel industry prepares to enter the final quarter, producers of some light finished materials, especially sheets, are asking large consumers to prepare estimates of their requirements for the remainder of the year, with a view to allocating shipments.

Sheet mills have been having difficulty in giving desired deliveries, and with automotive requirements expanding, the situation is not expected to become easier. One large producer needs ten weeks on hot-rolled annealed material. Automobile assemblies declined 17,935 units to 15,680 last week, but production this week should be bolstered by some plants which will start making 1937 models.

Other developments in iron and steel included the steadying of scrap prices at their high levels and an increase of ½-point in the steelworks operating rate which put the national figure at 73 per cent, a new high for the year.

Coke production is unabated at its unusually high rate. Pig iron shipments hold promise of showing a marked increase over third quarter deliveries.

The inability of many integrated steel producers in the Pittsburgh district to build up their own stocks of semifinished material is still prevalent.

After 12 consecutive weekly gains, STEEL'S scrap index held unchanged at $16.54. The temporary failure of these prices to increase is credited to the fact that the higher quotations have been bringing out larger quantities of material.

Because of steel price increases which become effective next Thursday, considerable tonnage was added to producers' books. Especially in bar specifications was this true, requirements the last week or two having been the heaviest in some time.

Wire producers generally are expected to announce fourth-quarter prices early this week.

Both railroad and shipbuilding work are comparatively quiet. There is considerable talk about additional freight car buying, but inquiries are still to be issued. The recent appointment of three of five members of the marine commission to administer the ship subsidy act is regarded as likely to facilitate ship contracts over the remainder of the year.

Bookings for pipelines have fallen off, although approximately 12,000 tons will be required for a 92-mile project from Pennsylvania to New York State which recently was approved.

Farm implement manufacturers look for an active fourth quarter, with production of spring tools on the increase.

Tin plate producers, who have been operating between 90 and 100 per cent for months, hold hopes that the windup of the packing season will not bring a pronounced falling off in orders. The expanding use of tin plate for beer and wine containers, oil cans and certain other lines may keep production this fall on a more level keel than customary.

The lack of large awards forced structural shape lettings for the week down 24,000 tons to 12,600. One large project on which bids are scheduled to be opened this week is the federal building at Los Angeles, involving 20,000 tons. Concrete awards increased about 3000 tons to 11,353.

Operations in the Pittsburgh district were up 2 points to 74 per cent; Chicago ½ to 73; eastern Pennsylvania ½ to 48½; Wheeling 3 to 95; Buffalo 5 to 81; New England 18 to 88 and Cincinnati 8 to 84. Cleveland was down 1½ points to 80½ and the other districts were unchanged.

In the same week last year the national operating rate was 51 per cent and in 1934 it was only 25 per cent.

STEEL'S composite of iron and steel prices is down 3 cents to $34.19. The finished index is unchanged at $53.

COMPOSITE MARKET AVERAGES

	Sept. 26	Sept. 19	Sept. 12	One Month Ago Aug., 1936	Three Months Ago June, 1936	One Year Ago Sept., 1935	Five Years Ago Sept., 1931
Iron and Steel	$34.19	$34.22	$34.10	$33.88	$32.79	$32.82	$30.61
Finished Steel	53.00	53.00	53.00	53.40	52.20	53.70	48.72
Steelworks Scrap	16.54	16.54	15.87	14.66	12.55	12.65	8.82

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

	Sept. 26, 1936	Aug., 1936	June, 1936	Sept., 1935
Steel bars, Pittsburgh	1.95c	1.95c	1.85c	1.85c
Steel bars, Chicago	2.00	2.00	1.90	1.85
Steel bars, Philadelphia	2.26	2.26	2.16	2.11
Iron bars, Terre Haute, Ind.	1.85	1.85	1.75	1.75
Shapes, Pittsburgh	1.90	1.90	1.80	1.80
Shapes, Philadelphia	2.11½	2.11½	2.01½	2.01½
Shapes, Chicago	1.95	1.95	1.85	1.85
Tank plates, Pittsburgh	1.90	1.90	1.80	1.80
Tank plates, Philadelphia	2.09	2.09	1.99	1.99
Tank plates, Chicago	1.95	1.95	1.85	1.85
Sheets, No. 10, hot rolled, Pitts.	1.95	1.95	1.85	1.85
Sheets, No. 24, hot ann., Pitts.	2.50	2.50	2.40	2.40
Sheets, No. 24, galv., Pitts.	3.20	3.20	3.10	3.10
Sheets, No. 10, hot rolled, Gary	2.05	2.05	1.95	1.95
Sheets, No. 24, hot anneal., Gary	2.60	2.60	2.50	2.50
Sheets, No. 24, galvan., Gary	3.30	3.30	3.20	3.20
Plain wire, Pittsburgh	2.40	2.40	2.40	2.30
Tin plate, per base box, Pitts.	5.25	5.25	5.25	5.25
Wire nails, Pittsburgh	1.90	2.10	2.10	2.40

Semifinished Material

Sheet bars, open-hearth, Youngs.	$30.00	30.00	28.00	28.00
Sheet bars, open-hearth, Pitts.	30.00	30.00	28.00	28.00
Billets, open-hearth, Pittsburgh	30.00	30.00	28.00	27.00
Wire rods, Pittsburgh	38.00	38.00	38.80	38.00

Pig Iron

	Sept. 26, 1936	Aug., 1936	June, 1936	Sept., 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	19.44	19.44	20.2007	19.38
No. 1 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	$18.25	16.00	13.80	13.45
Heavy melt. steel, No. 2, east. Pa.	13.75	12.80	10.81	11.25
Heavy melting steel, Chicago	16.25	15.45	12.75	12.55
Rail for rolling, Chicago	16.75	16.40	14.00	13.90
Railroad steel specialties, Chi.	18.25	16.65	14.40	13.75

Coke

Connellsville, furnace, ovens	$4.00	3.45	3.50	3.25
Connellsville, foundry, ovens	4.25	4.25	4.25	4.00
Chicago, by-product foundry, del.	9.75	9.75	9.75	9.25

Steel, Iron, Raw Material, Fuel and Metals Prices

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

Sheet Steel

Prices Subject to Quantity Extras and Deductions (Except Galvanized)

Hot Rolled No. 10, 24-48 in.

Pittsburgh	1.95c
Gary	2.05c
Chicago, delivered	2.08c
Detroit, del.	2.15c
New York, del.	2.30c
Philadelphia, del.	2.26c
Birmingham	2.10c
St. Louis, del.	2.28c
Pacific ports, f.o.b. cars, dock	2.50c

Hot Rolled Annealed No. 24

Note: Prices up $2 per ton, Oct. 1.

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

Galvanized No. 24

Pittsburgh	3.20c
Gary	3.30c
Chicago, delivered	3.33c
Philadelphia, del.	3.51c
New York, del.	3.55c
Birmingham	3.35c
St. Louis, del.	3.53½c
Pacific ports, f.o.b. cars, dock	3.80c

Tin Mill Black No. 28

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

Cold Rolled No. 10

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

Cold Rolled No. 20

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

Enameling Sheets

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

Tin and Terne Plate

Gary base, 10 cents higher.

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

Corrosion and Heat-Resistant Alloys

Pittsburgh base, cents per lb.

Chrome-Nickel

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

Straight Chromes

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

Steel Plate

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

Structural Shapes

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

Bars

Soft Steel

(Base, 3 to 25 tons)

Note: Prices up $2 per ton, Oct. 1.

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

Rail Steel

To Manufacturing Trade

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

Iron

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

Reinforcing

New billet, straight lengths, quoted by distributors.

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

Rail steel, straight lengths, quoted by distributors

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

Wire Products

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

Base Pitts.-Cleve. 100 lb. keg.

Standard wire nails	1.90c
Cement coated nails	1.90c
Galv. nails, 15 gage and finer	3.90c
do. finer than 15 ga...	4.40c

(Per pound)

Polished staples	2.60c
Galv. fence staples	2.85c
Barbed wire, galv.	2.40c
Annealed fence wire.....	2.65c
Galv. fence wire	3.00c
Woven wire fencing (base column, c. l.).....$57.00	

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

Note: Prices up $2 per ton, Oct. 1.

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

10,000 to 19,999 lbs.	2.25c
20,000 to 59,999 lbs.	2.20c
60,000 to 99,999 lbs.....	2.15c
100,000 lbs. and over.....2.12½c	

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

Alloy Steel Bars (Hot)

(*Base, 3 to 25 tons.*)

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

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

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

Piling

Pittsburgh	2.25c
Chicago, Buffalo	2.35c

Strip and Hoops

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

Hot strip to 23/4-in.

Pittsburgh	1.95c
Chicago or Gary	2.05c
Birmingham base	2.10c
Detroit, del.	2.15c
Philadelphia, del.	2.26c
New York, del.....	2.30c
Cooperage hoop, Pittsburgh	2.05c
Chicago	2.15c
Cold strip, 0.25 carbon and under, Pitts., Cleveland..	2.60c
Detroit, del.	2.81c
Worcester, Mass..	2.80c

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

Rails, Track Material

(Gross Tons)

Standard rails, mill	$36.37½
Relay rails, Pitts. 20—100 lbs.	25.50-28.00
Light rails, billet qual. Pitts., Chi....	$35.00
Do., reroll. qual....	34.00
Angle bars, billet, Gary, Ind., So. Chi.	2.55c
Do., axle steel.....	2.10c
Spikes, R. R. base..	2.75c
Track bolts, base....	3.75c
Tie plates, base.....	2.00c

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

Bolts and Nuts

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

Carriage and Machine

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

Plow Bolts

All sizes .....70-5 off	

Stove Bolts

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

Step bolts .....65 off	
Elevator bolts .....65 off	

Nuts

S. A. E. semifinished hex.: ½ to 7/8-inch.....60-20-15 off	
Do., ½ to 1-inch....60-20-15 off	
Do., over 1-inch....60-20-15 off	

Hexagon Cap Screws

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

Square Head Set Screws

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

Rivets, Wrought Washers

Struc., c. l., Pittsburgh, Cleveland	3.05c
Struc., c. l., Chicago	3.15c
1/8-in. and smaller, Pitts., Chi., Cleve.	70 and 5 off
Wrought washers, Pitts., Chi., Phila. to jobbers & large nut, bolt mfrs.....	$6.25 off

Cut Nails

*Cut nails, Pitts.; (10% discount on size extras)	$2.90
*Do. less carloads, 5 kegs or more, no discount on size extras	$3.20
*Do. under 5 kegs; no disc. on size extras.....	$3.35

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

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

Semifinished Steel

Note: Prices up $2 per ton, Oct. 1.

Billets and Blooms

4 x 4-inch base; gross ton

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

Forging Billets

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

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

Sheet Bars

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

Slabs

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

Wire Rods

Pitts., Cleve., No. 4 to 5	$33.00
Do., No. 5 to 11/32-inch	40.00
Do., over 11/32 to 7/16-inch	40.00

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.....	$3.75- 4.00
Connellsville, fdry..	4.25- 4.50
Connel. prem. fdry.	5.50
New River fdry.....	6.00
Wise county fdry....	4.45- 5.00
Wise county fur.....	4.00- 4.50

By-Product Foundry

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

Coke By-Products

Per gallon, producers' plants.

	Tank lots	Spot
Pure and 90% benzol.....	16.00c	
Toluol	30.00c	
Solvent naphtha	30.00c	
Industrial xylol	30.00c	

Per lb. f.o.b. Frankford,

Phenol (200 lb. drums)..	15.50c
Do. (450 lbs.)	14.50c

Eastern Plants, per lb.

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

Per 100 lbs. Atlantic seaboard

Sulphate of ammonia.....	$1.275

†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...	22.55	.....	.....	.....
Canton, O., from Cleveland	20.76	20.76	20.26	21.26
Chicago from Birmingham	†19.72	.....	19.60	.....
Cincinnati from Hamilton, O.	19.82	20.58	20.08	.....
Cincinnati from Birmingham	19.44	.....	18.44	.....
Cleveland from Birmingham	19.62	.....	19.12	.....
Indianapolis from Hamilton, O...	21.17	21.77	21.27	.....
Mansfield, O., from Toledo, O.	21.26	21.26	20.76	21.76
Milwaukee from Chicago	20.57	20.57	20.27	21.07
Muskegon, Mich., from Chicago Toledo or Detroit	22.60	22.60	22.10	23.10
Newark, N. J., from Birmingham	21.61	.....	.....	.....
Newark, N. J., from Bethlehem..	21.99	22.49	.....	.....
Philadelphia from Birmingham..	20.93	.....	20.81	.....
Philadelphia from Swedeland, Pa.	21.31	21.81	20.81	.....
Pittsburgh district from Neville Island	Neville base plus 67c, 81c and $1.21 switching charges			
Saginaw, Mich., from Detroit	21.75	21.75	21.25	21.25
St. Louis, northern	20.00	20.00	19.50	.....

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

†Over 0.70 phos.

Low Phos.

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

Gray Forge		Charcoal	
Valley furnace	19.00	Lake Superior fur.	$22.00
Pitts. dist. fur.	19.00	Do., del. Chicago	25.25
		Lylees, Tenn.	22.50

Silvery†

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

Bessemer Ferrosilicon†

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

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

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

Refractories

Per 1000 f.o.b. Works

Fire Clay Brick

Super Quality

Pa., Mo., Ky.	$55.00

First Quality

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

Second Quality

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

Ohio

First quality	$40.00
Intermediary	37.00
Second quality	28.00

Malleable Bung Brick

All bases	50.00

Silica Brick

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

Ladle Brick (Dry Press)

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

Magnesite

Imported dead-burned grains, net ton f.o.b. Chester, Pa., and Baltimore bases (bags)	$45.00
Domestic dead-burned grains, net ton f.o.b. Chester, Pa., and Baltimore bases (bags)	40.00
Domestic dead-burned gr. net ton f.o.b. Chewelah, Wash. (bulk)	22.00

Basic Brick

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

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

Fluorspar, 85-5

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

Ferroalloys

Dollars, except Ferrochrome

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

†Carloads. Quan. diff. apply.

Nonferrous

METAL PRICES OF THE WEEK

Spot unless otherwise specified. Cents per pound

	Copper, Electro, del. Conn.	Copper, Lake, del. Midwest	Copper, Casting, refinery	Straits Tin, New York Spot	Straits Tin, New York Futures	Lead, N. Y.	Lead, East St. L.	Zinc, St. L.	Aluminum 99%	Antimony, Chinese Spot, N. Y.	Nickel, Cathodes
Sept. 19	9.75	9.87½	9.40	46.00	45.60	4.60	4.45	4.85	*19.00	12.50	35.00
Sept. 21	9.75	9.87½	9.40	45.37½	45.10	4.60	4.45	4.85	*19.00	12.50	35.00
Sept. 22	9.75	9.87½	9.40	45.00	44.65	4.60	4.45	4.85	*19.00	12.50	35.00
Sept. 23	9.75	9.87½	9.40	44.75	44.37½	4.60	4.45	4.85	*19.00	12.50	35.00
Sept. 24	9.75	9.87½	9.40	45.12½	44.75	4.60	4.45	4.85	*19.00	12.50	35.00
Sept. 25	9.75	9.87½	9.40	45.12½	44.80	4.60	4.45	4.85	*19.00	12.50	35.00

*Nominal range 19.00 to 21.00c.

MILL PRODUCTS

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

Sheets

Yellow brass (high)	15.62½
Copper, hot rolled	17.50
Lead cut to jobbers	8.25
Zinc, 100-lb. base	9.50

Tubes

High yellow brass	17.87½
Seamless copper	18.00

Rods

High yellow brass	13.62½
Copper, hot rolled	14.25

Anodes

Copper, untrimmed	15.00

Wire

Yellow brass (high)	15.87½

OLD METALS

Deal. buying prices, cents lb.

No. 1 Composition Red Brass

New York	6.25- 6.50
Cleveland	6.40- 6.75
Chicago	6.12½-6.37½
St. Louis	6.00- 6.50

Heavy Copper and Wire

New York, No. 1	7.87½-8.00
Chicago, No. 1	7.50- 7.75
*Cleveland, No. 1	7.50- 8.00
St. Louis, No. 1	7.50- 7.75

Composition Brass Borings

New York	6.00- 6.12½

Light Copper

New York	6.62½- 6.75
Chicago	6.12½-6.37½
Cleveland	6.00- 6.25
St. Louis	6.00- 6.50

Light Brass

Chicago	3.62½-3.87½
Cleveland	3.40- 3.65
St. Louis	3.50- 4.00

Lead

New York	3.75- 4.00
Cleveland	3.75- 3.80
Chicago	3.25- 3.75
St. Louis	3.25- 3.75

Zinc

New York	2.50- 2.75
St. Louis	2.25- 2.75
Cleveland	2.25- 2.50

Aluminum

Borings, Cleveland	9.50-10.00
*Mixed,cast,Cleve.	13.00-13.37½
Mixed, cast, St. L.	13.00-13.50
Clips, soft, Cleve.	14.50-15.00

SECONDARY METALS

Brass ingot, 85-5-5-5	9.75
Stand. No. 12 alum.	16.75-17.25

Iron and Steel Scrap Prices

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

HEAVY MELTING STEEL

Birmingham†	11.00-12.50
Boc. d'ck, No. 1, exp.	†12.25-12.50
N. Eng. del. No. 1..	13.25
Buffalo, No. 1	15.00-16.00
Buffalo, No. 2	14.00-14.50
Chicago, No. 1	16.00-16.50
Cleveland, No. 1	15.50-16.00
Cleveland, No. 2	15.00-15.50
Detroit, No. 1	14.50-15.00
Eastern Pa., No. 1..	15.50-16.00
Eastern Pa., No. 2..	14.00-14.50
Federal, Ill.	13.00-13.50
Granite City, R. R.	14.50-15.00
Granite City, No. 2	12.75-13.25
New York, No. 2	†10.50-11.00
N. Y. d'ck, No. 1, exp.	†12.00
Pitts., No. 1 (R. R.)	19.00-19.50
Pitts., No. 1 (dlr.)..	18.00-18.50
Pittsburgh, No. 2	17.00-17.50
St. Louis, R. R.	14.50-15.00
St. Louis, No. 2	12.50-13.00
Toronto, dealers	7.50
Valleys, No. 1	16.75-17.25

COMPRESSED SHEETS

Buffalo, dealers	14.00-14.50
Chicago, factory	15.00-15.50
Chicago, dealer	14.00-14.25
Cleveland	15.00-15.50
Detroit	14.50-15.00
E. Pa., new mat.	15.00-15.50
E. Pa., old mat.	12.50-13.00
Pittsburgh	18.25-18.75
St. Louis	11.50-12.00
Valleys	16.50-16.75

BUNDLED SHEETS

Buffalo	12.00-12.50
Cincinnati, del.	9.50-10.00
Cleveland	12.50-13.00
Pittsburgh	17.00-17.50
St. Louis	10.00-10.50
Toronto, dealers	4.50

SHEET CLIPPINGS, LOOSE

Chicago	10.00-10.50
Cincinnati	8.50- 9.00
Detroit	11.00-11.50
St. Louis	8.00- 8.50

STEEL RAILS, SHORT

Birmingham	13.00-15.00
Buffalo	16.50-17.50
Chicago (3 ft.)	17.25-17.75
Chicago (2 ft.)	18.25-18.75
Cincinnati, del.	16.50-17.00
Detroit	16.50-17.00
Pitts., open-hearth. 3 ft. and less	20.00-20.50
St. Louis, 2 ft. & less	16.00-16.50

STEEL RAILS, SCRAP

Boston district	†11.50-11.75
Buffalo	15.00-16.00
Chicago	16.00-16.50
Pittsburgh	18.50-19.00
St. Louis	15.00-15.50
Toronto, dealers	8.50

STOVE PLATE

Birmingham	8.00- 9.00
Boston, district	†7.00- 7.75
Buffalo	10.00-11.00
Chicago	9.00- 9.50
Cincinnati, dealers..	9.50-10.00
Detroit, net	9.00- 9.50
Eastern Pa.	12.50-13.00
New York, fdry.	†8.75- 9.25
St. Louis	8.50- 9.00
Toronto, dealers, net	5.50

COUPLERS, SPRINGS

Buffalo	16.00-17.00
Chicago, springs	18.25-18.75
Eastern Pa.	19.00-19.50
Pittsburgh	20.50-21.00
St. Louis	15.50-16.00

ANGLE BARS—STEEL

Chicago	17.50-18.00
St. Louis	15.50-16.00
Buffalo	14.50-15.00

RAILROAD SPECIALTIES

Chicago	18.00-18.50

LOW PHOSPHORUS

Buffalo, billet and bloom crops	16.50-17.50
Cleveland, billet, bloom crops	19.00-19.50
Eastern Pa., crops..	17.50-18.00
Pittsburgh, billet, bloom crops	20.50-21.00
Pittsburgh, sheet bar crops	19.50-20.00

FROGS, SWITCHES

Chicago	15.50-16.00
St. Louis, cut	15.00-15.50

SHOVELING STEEL

Chicago	16.00-16.50
Federal, Ill.	13.00-13.50
Granite City, Ill.	12.75-13.25
Toronto, dealers	6.50

RAILROAD WROUGHT

Birmingham	8.00- 9.00
Boston district	†8.00- 8.25
Buffalo, No. 1	14.00-14.50
Buffalo, No. 2	15.00-16.00
Chicago, No. 1, net..	14.00-14.50
Chicago, No. 2	16.00-16.50
Cincinnati, No. 2....	14.00-14.50
Eastern Pa.	16.00
St. Louis, No. 1	13.00-13.50
St. Louis, No. 2	14.50-15.00
Toronto, No. 1 dlr.	7.00

SPECIFICATION PIPE

Eastern Pa.	14.00-14.50
New York	†10.00-10.50

BUSHELING

Buffalo, No. 1	14.00-14.50
Chicago, No. 1	14.75-15.25
Cincl., No. 1, deal....	11.00-11.50
Cincinnati, No. 2	6.50- 7.00
Cleveland, No. 2	10.50-11.00
Detroit, No. 1, new	14.00-14.50
Valleys, new, No. 1..	16.50-16.75
Toronto, dealers	6.00

MACHINE TURNINGS

Birmingham	6.00- 6.50
Buffalo	8.00- 8.50
Chicago	8.50- 9.00
Cincinnati, dealers..	7.50- 8.00
Cleveland	10.00-10.50
Detroit	9.00- 9.50
Eastern Pa.	9.50-10.00
New York	†6.75- 7.00
Pittsburgh	12.75-13.25
St. Louis	6.00- 6.50
Toronto, dealers	4.00
Valleys	10.75-11.25

BORINGS AND TURNINGS

For Blast Furnace Use

Boston district	†5.25- 5.50
Buffalo	9.25- 9.75
Cincinnati, dealers..	6.50- 7.00
Cleveland	10.50-11.00
Detroit	9.00- 9.50
Eastern Pa.	7.50- 8.00
New York	†4.75- 5.00
Pittsburgh	11.25-11.75
Toronto, dealers	4.00

CAST IRON BORINGS

Birmingham	6.00- 6.50
Boston dist. chem...	†6.25- 6.75
Boston dist. for mills	†6.25- 6.50
Buffalo	9.25- 9.75
Chicago, dealers	9.25- 9.75
Cincinnati, dealers..	6.50- 7.00
Cleveland	10.50-11.00
Detroit	9.00- 9.50
E. Pa., chemical	10.00-13.00
New York	†6.00- 6.50
St. Louis	5.50- 6.00
Toronto, dealers	5.00

PIPE AND FLUES

Cincinnati, dealers..	9.00- 9.50
Chicago, net	8.00- 8.50

RAILROAD GRATE BARS

Buffalo	11.00-11.50
Chicago, net	10.00-10.50
Cincinnati	9.00- 9.50
Eastern Pa.	12.50
New York	†8.00- 8.50
St. Louis	10.50-11.00

FORGE FLASHINGS

Boston disrict	†10.25-10.50
Buffalo	14.00-14.50
Cleveland	14.50-15.00
Detroit	13.00-13.50
Pittsburgh	17.00-17.50

FORGE SCRAP

Boston district	†6.50- 7.00
Chicago, heavy	18.00-18.50
Eastern Pa.	15.00-15.50

ARCH BARS, TRANSOMS

St. Louis	16.50-17.00

AXLE TURNINGS

Boston district	†7.25- 7.50
Buffalo	12.00-12.50
Chicago, elec. fur....	15.50-16.00
Eastern Pa.	13.00-14.00
St. Louis	10.50-11.00
Toronto	4.50

STEEL CAR AXLES

Birmingham	13.00-14.00
Boston district	†14.50-15.00
Buffalo	16.50-17.50
Chicago, net	18.00-18.50
Eastern Pa.	21.50
St. Louis	16.50-17.00
Toronto	8.50

SHAFTING

Boston district	†15.25-15.75
Eastern Pa.	21.00-21.50
New York	†15.50-16.00
St. Louis	15.00-15.50

CAR WHEELS

Birmingham	12.50-13.50
Boston dist. iron	†11.00-11.50
Buffalo, iron	15.00-15.50
Buffalo, steel	16.50-17.50
Chicago, iron	16.00-16.50
Chicago, rolled steel	18.00-18.50
Cincinnati, iron	13.00-13.50
Eastern Pa., iron	17.00
Eastern Pa., steel	19.00-19.50
Pittsburgh, iron	18.00-18.50
Pittsburgh, steel	20.50-21.00
St. Louis, iron	14.00-14.50
St. Louis, steel	16.00-16.50
Toronto, net	8.50

NO. 1 CAST SCRAP

Birmingham	11.50-12.50
Bos. dis. No. 1 mch.	†10.75-11.00
N. Eng., del. No. 2..	†9.00- 9.25
N. Eng., del. textile..	12.00-12.50
Buffalo, cupola	13.50-14.00
Buffalo, mach.	15.00-15.50
Chicago, agri. net..	12.00-12.50
Chicago, auto	12.50-13.00
Chicago, mach. net..	13.50-14.00
Chicago, railr'd net..	12.50-13.00
Cincl., mach. cup	13.50-14.00
Cleveland, mach.	16.25-16.75
Eastern Pa., cupola	16.50-17.00
E. Pa., mixed yard..	14.50
Pittsburgh, cupola..	17.00-17.50
San Francisco, del..	13.50-14.00
Seattle	10.00-11.00
St. Louis, No. 1	12.50-13.00
St. L. No. 1, mach.	13.00-13.50
Toronto, No. 1, mach., net	9.00

HEAVY CAST

Boston dist. break..	10.25-10.50
New England del.	11.00-11.50
Buffalo, break.	12.50-13.00
Cleveland, break.	13.00-13.50
Detroit, No. 1 mach. net	13.50-14.00
Detroit, break.	11.50-12.00
Detroit, auto net	13.50-14.00
Eastern Pa.	15.50-16.00
New York breakable	†11.25-11.75
Pittsburgh	15.00-15.50

MALLEABLE

Birmingham, R. R.	12.00-13.00
New England, del.	†16.25-17.50
Buffalo	15.50-16.50
Chicago, R. R.	18.00-18.50
Cincinnati, agri. del.	14.00-14.50
Cleveland, rail	17.50-18.00
Detroit, auto, net	14.50-15.00
Eastern Pa., R. R.	17.50
Pittsburgh, rail	17.50-18.00
St. Louis, R. R.	15.50-16.00
Toronto, net	7.00

RAILS FOR ROLLING

5 feet and over

Birmingham	13.00-14.00
Birmingham	†11.00-11.50
Buffalo	15.50-16.50
Chicago	16.50-17.00
Eastern Pa.	16.00
New York	†12.00-12.50
St. Louis	16.00-16.50

LOCOMOTIVE TIRES

Chicago (cut)	17.50-18.00
St. Louis, No. 1	13.50-14.00

LOW PHOS. PUNCHINGS

Buffalo	16.50-17.50
Chicago	18.00-18.50
Eastern Pa.	18.00-18.50
Pittsburgh (heavy)	19.50-20.00
Pittsburgh (light)	18.50-19.00

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.)	8.50- 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.	11.00
No. Afr. low phos.	11.00
Swedish basic, 65%	9.50
Swedish low phos.	10.50
Spanish No. Africa basic, 50 to 60%..	nom.
Tungsten, spot sh. ton unit, duty pd..	$15.85-16.00
N. F., fdy., 55%	7.00
Chrome ore, 48% gross ton, c.i.f.	19.50-19.75

Manganese Ore

(Nominal)

Prices not including duty. cents per unit cargo lots

Caucasian, 50-52%	26.00
So. African, 50-52%	27.00
Indian, 50-52%	26.00

Warehouse Iron and Steel Prices

Cents per pound for delivery within metropolitan districts of cities specified

STEEL BARS

Baltimore*	3.10c
Boston††	3.20c
Buffalo	3.10c
Chattanooga	3.46c
Chicago (j)	3.10c
Cincinnati	3.32c
Cleveland	3.00c
Detroit	3.19c
Houston	3.10c
Los Angeles	3.60c
Milwaukee	3.21c-3.36c
New Orleans	3.45c
New York‡ (d)	3.41c
Pitts. (h)	3.05c-3.20c
Philadelphia*	3.15c
Portland	3.60c
San Francisco	3.25c
Seattle	3.80c
St. Louis	3.35c
St. Paul	3.35c-3.50c
Tulsa	3.35c

IRON BARS

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

REINFORCING BARS

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

SHAPES

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

PLATES

Baltimore*	3.10c
Boston††	3.31c
Buffalo	3.47c
Chattanooga	3.66c
Chicago	3.30c
Cincinnati	3.52c
Cleveland, ¼-in. and over	3.41c
Detroit	3.52c
Detroit, ⅛-in.	3.85c
Houston	3.10c
Los Angeles	3.60c
Milwaukee	3.41c
New Orleans	3.65c
New York‡(d)	3.50c
Philadelphia*	3.10c
Phila. floor	4.95c
Pittsburgh (h)	3.25c
Portland	3.60c
San Francisco	3.25c
Seattle	3.65c
St. Louis	3.55c
St. Paul	3.55c
Tulsa	3.60c

NO. 10 BLUE

Baltimore*	3.10c
Boston (g)	3.40c
Buffalo	3.72c
Chattanooga	3.46c
Chicago	3.15c
Cincinnati	3.32c
Cleveland	3.21c
Det. 8-10 ga.	3.24c
Houston	3.45c
Los Angeles	3.70c
Milwaukee	3.26c
New Orleans	3.65c
New York‡(d)	3.41c
Portland	3.85c
Philadelphia*	3.20c
Pittsburgh (h)	3.05c
San Francisco	3.60c
Seattle	3.85c
St. Louis	3.40c
St. Paul	3.40c
Tulsa	3.80c

NO. 24 BLACK

Baltimore*†	3.70c
Boston (g)	4.05c
Buffalo	3.35c
Chattanooga*	3.41c
Chicago	3.95c
Cincinnati	4.12c
Cleveland	3.91c
Detroit	4.04c
Los Angeles	4.35c
Milwaukee	4.06c
New Orleans	4.50c
New York‡(d)	3.99c
Philadelphia*†	3.75c
Pitts.**(h)	3.55c-4.85c
Portland	4.20c
San Francisco	4.20c
Seattle	4.50c
St. Louis	4.20c
St. Paul	4.00c
Tulsa	4.85c

NO. 24 GALV. SHEETS

Baltimore*†	3.90c
Buffalo	4.10c
Boston (g)	4.00c
Chattanooga*	3.96c
Chicago (h)	4.65c
Cincinnati	4.82c
Cleveland	4.61c
Detroit	4.82c
Houston	4.50c
Los Angeles	4.40c
Milwaukee	4.76c
New Orleans	4.95c
N. Y.‡ (d)	4.30-4.50c
Philadelphia*†	4.50c
Pitts.**(h)	4.30c-5.55c
Portland	4.60c
San Francisco	5.00c
Seattle	5.10c
St. Louis	4.90c
St. Paul	4.60c
Tulsa	5.20c

BANDS

Baltimore*	3.30c
Boston††	3.40c
Buffalo	3.52c
Chattanooga	3.71c
Chicago	3.40c
Cincinnati	3.57c
Cleveland	3.46c
Detroit, ⅛-in. and lighter	3.49c
Houston	3.35c
Los Angeles	4.20c
Milwaukee	3.51c
New Orleans	4.05c
New York‡(d)	3.66c
Philadelphia*	3.30c
Pittsburgh (h)	3.30c
Portland	4.35c
San Francisco	4.20c
Seattle	4.35c
St. Louis	3.65c
St. Paul	3.65c
Tulsa	3.55c

HOOPS

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

COLD FIN. STEEL

Baltimore (c)	3.88c
Boston*	4.05c
Buffalo (h)	3.70c
Chattanooga*	4.28c
Chicago (h)	3.65c
Cincinnati	3.87c
Cleveland (h)	3.65c
Detroit	3.74c
Los Ang.(f) (d)	5.85c
Milwaukee	3.76c
New Orleans	4.45c
New York‡(d)	3.96c
Philadelphia*	3.91c
Pittsburgh	3.50c
Portland (f) (d)	6.30c
San Fran.(f) (d)	5.95c
Seattle (f) (d)	6.25c
St. Louis	3.90c
St. Paul	4.17c
Tulsa	4.80c

COLD ROLLED STRIP

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

TOOL STEELS

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

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

Uniform extras apply.

BOLTS AND NUTS

(100 pounds or over)

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

(a) Under 100 pounds, 60 off.

(b) Plus straightening, cutting and quantity differentials; (c) Plus mill, size and quantity extras; (d) Quantity base; (e) New mill classif. (f) Rounds only; (g) 50 bundles or over; (h) Outside delivery, 10c less; (i) Under 3 in.; (j) Shapes other than rounds, flats, fillet angles, 3.25c.

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

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

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, Sept. 24

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	$15.84 3 2 6*	$13.78	1 15 0
Basic bessemer	15.84 3 2 6*	11.42	1 9 0
Hematite, Phos. .03-.05	19.01 3 15 0	.....	.....
SEMIFINISHED STEEL			
Billets	$29.79 5 17 6	$18.51	2 7 0
Wire rods, No. 5 gage	45.38 8 19 0	35.46	4 10 0
FINISHED STEEL			
Standard rails	$41.83 8 5 0	$43.34	5 10 0
Merchant bars	1.92c 8 10 0	1.16c	3 5 0
Structural shapes	1.86c 8 5 0	1.10c	3 1 6
Plates, †¼ in. or 5 mm.	1.95c 8 12 6	1.52c	4 5 0
Sheets, black, 24 gage or 0.5 mm	2.26c 10 0 0	2.31c	6 10 0††
Sheets, gal., 24 gage, corr.	2.66c 11 15 0	2.49c	7 0 0
Bands and strips	2.09c 9 5 0	1.42c	4 0 0
Plain wire, base	2.20c 9 15 0	1.88c	5 5 0
Galvanized wire, base	2.60c 11 10 0	2.09c	5 17 6
Wire nails, base	2.71c 12 0 0	1.70c	4 15 0
Tin plate, box 108 lbs.	$ 4.75 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	$19.01	3 15 0(a) $19.11	290	$15.21	450	$25.36	63
Basic bessemer pig iron	19.01	3 15 0(a) 12.52	190	13.01	385	27.97 (b)	69.50
Furnace coke	5.45	1 1 6 6.85	104	4.63	137	7.65	19
Billets	31.05	6 2 6 30 12	457	19.60	580	38.84	96.50
Standard rails	1.86c	8 5 0 2.01c	671	1.73c	1,150	2.42c	132
Merchant bars	2.11c	9 7 0 1.89c	630	1.05c	700	2.01c	110
Structural shapes	2.12c	9 7 6 1.86c	620	1.05c	700	1.96c	107
Plates, †¼-in. or 5 mm.	2.19c	9 13 9 2.37c	790	1.28c	850	2.32c	127
Sheets, black	2.71c	12 0 0§ 2.40c	800‡	1.39c	925‡	2.64c	144‡
Sheets, galv., corr., 24 ga. or 0.5 mm	3.16c	14 0 0 3.90c	1,300	2.25c	1,500	6.77c	370
Plain wire	2.20c	9 15 0 3.30c	1,100	1.88c	1,250	3.17c	173
Bands and strips	2.28c	10 2 0 2.21c	735	1.28c	850	2.32c	127

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

**Gold pound sterling carries a premium of 61.79 per cent over paper sterling.

Bars

Bar Prices, Page 78

Pittsburgh—Consumers' buying of merchant steel bars as against the price increase that takes effect late this week has been heavy, large enough in volume to increase bar mill backlogs to the heaviest point since the last half of June of this year. Most mills are accepting business to be shipped at their convenience, although efforts will be made to clear up orders at the present 1.95c, f.o.b. Pittsburgh, base by the end of October. On Oct. 1 the $2 increase becomes operative.

Cleveland—Requirements for hot and cold-rolled bars have improved considerably, due to recent activity in the automotive industry. While demand from farm equipment manufacturers in the Middle West was handicapped because of the drought, no such condition prevails here. The alloy bar market continues strong in view of heavy requirements from machine tool builders and auto partsmakers. Because of the price increase on hot-rolled and cold finished bars Oct. 1, considerable tonnage has been forced in. Some mills last week discontinued taking bars at the current prices.

Chicago—Steel bar specifications are the heaviest in about two months, reflecting increased consumption as well as buying in anticipation of the Oct. 1 price advance. Automotive releases are increasing, while shipments to some farm implement plants also are heavier. Both of these industries are entering busier operating periods. A pickup in shipments of forging bars to a large extent results from expanding automotive schedules. Fourth quarter business is quoted 2.10c, base, for billet steel bars, 1.95c for rail steel and 1.95c, Terre Haute and 2.00c, Chicago, for bar iron.

New York—Business is well sustained with tonnage bolstered by late buying before the price advance.

Philadelphia—Bar buying is heavy as consumers approach the Oct. 1 deadline, when a $2 advance in commercial and cold drawn bars becomes effective. Alloy bars are unchanged in price and moving briskly.

Plates

Plate Prices, Page 78

Pittsburgh—Inquiry for new specific plate projects has shown a decline over the last week. Fabricators have been content with working down their backlogs which are still of some sizable proportion and are indicated by four, five, and even six-week delivery promises by the mills on plates. In the tank market West Virginia Water Service Co. is inquiring for a 300-ton standpipe at Charleston, W. Va., and there is some prospect that the Waverly Oil Co., Pittsburgh, may still replace tanks damaged by fire several months ago. A number of inquiries are still current for single barges. Apparently there is some likelihood that the Hatfield Campbell Creek Coal Co., Cincinnati, which purchased 29 standard steel coal barges last summer, may augment its fleet with an additional purchase.

Cleveland—While there has been some demand for heavier gages, the requirements for the lighter grades out of stock, from stamping machine and small press shops, predominate. Some plate fabricators still have difficulty in getting steel from the mills, which have been running close to capacity for some time now. Shipments this month compare favorably with August, in spite of the slackening in railroad buying. Prices remain unchanged.

Chicago—Plate bookings are made up almost entirely of small lots, but the total is fairly heavy as a result of better activity among a diversified group of plate users. Both tank and line pipe fabrication is productive of only small tonnages. Shipments to freight car builders and fabricators continue heavy.

New York—While there are important exceptions, most plate makers report tonnage so far this month behind August. Resumption of the upward trend is expected in the final quarter. The recent appointment by the President of three of five members to the marine commission to administer the ship subsidy act is regarded as likely to facilitate ship contracts over the remainder of the year. Export price on plates for shipment to all countries except Canada has been advanced another dollar to 1.775c, f.a.s.

Philadelphia — Plates appear to be moving more slowly than most other major lines in this district. Both railroad and shipbuilding requirements have tapered off and tank construction is less active than a month ago. The trade expects some delay with regard to the placing of the steamer for the United States Lines, on which the New York Shipbuilding Co., Camden, N. J., and the Federal Shipbuilding & Dry Dock Co., Kearny, N. J., were the only two bidders whose bids were not comparable as each company submitted proposals on two decidedly different types.

San Francisco — The water and power department, Los Angeles, has placed 1750 tons of plates for a 24 to 40-inch welded steel pipe line with Southwest Welding & Mfg. Co., and Emsco Derrick & Equipment Co. of that city. Bids will be opened on Oct. 21 for 6000 tons for a 30 to 42-inch welded steel line for Everett, Wash.; on Oct. 13 for 4800 tons for a 27 to 36-inch welded steel line for Salem, Ore., and on Sept. 30 for 500 tons for a 24-inch welded steel line for the Los Angeles water and power department. Spokane, Wash., is in the market for 256 tons for a 36-inch welded steel line. So far this year 104,350 tons have been placed, compared with only 36,130 tons for the same period a year ago.

Contracts Placed

850 tons, additional, 24 to 40-inch welded steel pipe, water and power department, Los Angeles; total of 1750 tons allocated to Southwest Welding & Manufacturing Co. and Emsco Derrick & Equipment Co., Los Angeles.

315 tons, tank, Sewaren, N. J., for Shell Eastern Petroleum Products Co., to Chicago Bridge & Iron Works, Chicago.

310 tons, three tanks, Rensselaer and Geneva, N. Y., for Shell Eastern Petroleum Products Co., to Buffalo Tank Co., Buffalo.

290 tons, tank, Baltimore, for Shell Eastern Petroleum Products Co., to Hammond Iron Works, Warren, Pa.

120 tons, 20 pieces dredge pipe, Chicago, for United States engineer, Kansas City, Mo., to Treadwell Construction Co., Midland, Pa.

Contracts Pending

6000 tons 30 to 42-inch welded steel pipe, Everett, Wash.; bids Oct. 21.

500 tons, 24-inch welded steel pipe, water and power department, Los Angeles, specification X-58; bids Sept. 30.

300 tons, standpipe, Charleston, W. Va., for West Virginia Water Service Co.

256 tons, 36-inch welded steel pipe, Spokane, Wash.; bids soon.

Sheets

Sheet Prices, Page 78

Pittsburgh—Early last week sheet producers began withdrawing from the market in accepting any more orders for shipment at the present price on No. 24 gage hot-rolled annealed sheets. This is the only sheet item which is affected by a price increase in the fourth quarter. The average of sheet mill operations tended higher last week, finding common black production at 70-75 per cent, closely followed by full finished and galvanized sheet output.

Cleveland—Demand for enameling sheets continues to predominate here, in view of the sustained activity of the stove, refrigerator and air conditioning unit manufacturers. The requirements for galvanized, electrical and stainless steel sheets, while in secondary positions, have shown steady improvement since the

first of the month. Mills continue to operate at capacity. Some have been out of the market for some time now on third quarter deliveries. This condition has caused many consumers to order well in advance, not because of the price increase on some grades but rather to obtain a preferred delivery position on the books.

Chicago—Sheet mills are experiencing difficulty in satisfying customers' shipping requests, and with automotive requirements expanding, deliveries are expected to increase further during coming weeks. Last week producers discontinued the acceptance of additional business in hot-rolled annealed sheets at current prices, and on new business are quoting the $2 a ton advance which becomes effective Oct. 1. Some mills have accumulated backlogs of as much as 10 weeks on certain descriptions of sheets.

New York—Anticipating that before the year is over they will be allocating tonnages, some leading sheet sellers now are asking customers to prepare estimates of their requirements for the final quarter. Notwithstanding the fact protective buying on hot-rolled annealed virtually is over, sheet demand continues strong. On cold finished some sellers are booked into November.

Philadelphia—While active, sheet specifications are not as heavy as a fortnight ago. This may be due in part to the fact that protective covering on hot-rolled annealed sheets is about over. Most leading producers are now out of the market on this grade at third quarter prices. Radio manufacturers are requiring somewhat less tonnage. The Art Metal Construction Co., Washington, D. C., is low on a large metal filing equipment and shelving job for the department of interior. The company's bid for all equipment erected in place was $339,771.

Buffalo—Demand for sheets is active with larger releases expected in the near future on automotive tonnage. Other consumers have been in the market actively and operations of hand and strip mills are on a scale which is close to their capacity.

Cincinnati—Sheet demand is active, resulting in building of backlogs for the next quarter. Delivery on cold-rolled has already been advanced to six weeks. The steelmaking level is at the peak for the year, with one interest employing all open hearths and lifting rolling schedules to practical capacity. Demand for the automobile trade is much heavier.

St. Louis — Producers and distributors of sheets report business holding up well, both in point of new ordering and specifications on prior contracts. Fourth-quarter needs are appearing in larger volume from week to week.

Pipe

Pipe Prices Page 79

Pittsburgh—Absence of line pipe orders in September proved a depressing effect on total tonnage in tubular products received by mills in this district, who booked in aggregate at least 22,000 tons in two line pipe jobs in August. Only the 9000-ton line for the Godfrey Cabot Co. still remains near the contract stage. Oil country goods appear to be in steady demand, as do mechanical tubing and standard pipe.

Cleveland — Standard wrought pipe continues in active demand for industrial expansion and repair work. Considerably more tonnage is now going into new homes than two or three months ago. Requirements for seamless tubing from automobile and furniture manufacturers have shown steady improvement. Jobbers' stocks are moving satisfactorily. No weakness in prices has been noted. The United States Pipe & Foundry Co., Burlington, N. J., was recently awarded a water main job at Painesville, O., involving 120 tons. A similar project requiring the same tonnage for Upper Sandusky, O., was awarded to James B. Clow & Son Co., Cleveland.

Chicago—Despite sustained shipments of cast pipe against old orders, producers still have moderate backlogs and anticipate continued active deliveries for at least the next 30 days. Seasonal factors will restrict pipe laying later in the year, but in the meantime a fair amount of orders and inquiries are in prospect. Prices continue steady.

New York—The cast pipe market was extremely quiet last week. No announcement was made on the two 160-ton projects still pending, nor were any inquiries for sizable tonnages made.

Youngstown, O. — Youngstown Sheet & Tube Co. is reported to have sold 12,500 tons of skelp for shipment to Canada before the end of the 1936 navigation season. Of this 10,000 tons will go to Page-Hershey Tubes Ltd., Welland, Ont., and 2500 tons to Montreal. The price paid was $1.30. Belgian makers have withdrawn former quotations of $1, and there will be considerable more business of this type placed.

San Francisco — Third largest cast iron pipe award of the year has just been placed. Los Angeles let 4068 tons as follows: 2043 tons of 16 to 24-inch to American Cast Iron Pipe Co., and 2025 tons of the same diameter to United States Pipe & Foundry Co. Vallejo, Calif., placed 129 tons of 2 to 10-inch with Pacific States Cast Iron Pipe Co. and United States Pipe & Foundry Co. Bids have been opened on 540 tons of 4 and 6-inch for Garland, Utah.

Philadelphia — Commercial pipe buying is the heaviest in months. In line pipe a new development is the approval of a 92-mile gas line of 14-inch pipe from Pennsylvania into Rochester, N. Y., for the Cabot Gas Corp. Approximately 12,000 tons will be required.

Cast Pipe Placed

4068 tons, 16 to 24-inch, Los Angeles, allocated as follows: American Cast Iron Pipe Co., Birmingham, Ala., 2043 tons, United States Pipe & Foundry Co., Burlington, N. J., 2025 tons.

129 tons, 2 to 10-inches, Vallejo, Calif., allocated as follows: 65 tons to United States Pipe & Foundry Co., Burlington, N. J., and 64 tons to Pacific States Cast Iron Pipe Co., Provo, Utah.

120 tons, 8-inch, for water main at Painesville, O., to United States Pipe & Foundry Co., Burlington, N. J.

120 tons, 8-inch, for water main at Upper Sandusky, O., to James B. Clow & Son Co., Cleveland.

Cast Pipe Pending

540 tons, 4 and 6-inch, Garland, Utah; bids opened.

100 tons, fittings, Chicago; Hansell-Elcock Co., Chicago, low.

Transportation

Track Material Prices, Page 79

Railroad equipment and track material markets remain quiet, but prospective business is heavy. Additional freight car buying now under consideration has yet to appear in the form of definite inquiries. Accessory buying probably will continue light for several weeks because of heavy coverage prior to the Sept. 1 price advance.

Bus orders booked were heavy this week, 67 more coaches being placed by the Eastern Massachusetts Street Railway Co., Boston, with American Car & Foundry, making a total of 240 buses. American Car & Foundry is also building 27 additional coaches for the Transit Co. of Harrisburg, Pa., for a total of 71 scheduled.

The relaying rail market at Pitts burgh presents a mixed picture by comparing it with the remelting scrap market. Inasmuch as new rails have not advanced in price this year and scrap rails have gone up around $4 to $5 a ton, relaying rail dealers have been caught in a tight market

situation. The market on relaying rails at Pittsburgh on a gross ton basis remains quoted unchanged at $28 for 20 to 45 pound sections; $25 for 45 to 50-pound sections; $26 on 50 to 60-pound rails, around $25.50 for 70 to 75-pound, and $26 for 80 to 90-pound.

Car Orders Placed

Cincinnati, New Orleans & Texas, 10 dump cars; bids asked.

Kansas City Southern, seven hundred fifty 50-ton box cars and one hundred to 200 70-ton hoppers; bids being taken.

Union Railroad Co., subsidiary of the United States Steel Corp., one hundred 70-ton gondolas, to the Ralston Steel Car Co., Columbus, O.

Rail Orders Pending

Santa Fe Railroad, 90,000 tons rails, distribution to be announced soon.

Buses Booked

American Car & Foundry Motors Co., New York: Six 28-passenger and two 36-passenger for Santa Fe Trails, Wichita, Kans.; eight 30-passenger for Brooklyn Bus Corp., Brooklyn, N. Y.; five 35-passenger for Boston Elevated Railway Co., Boston; ten 35-passenger for Baltimore Transit Co., Baltimore; one 30-passenger for Scranton Transit Co., Scranton, Pa.; one 36-passenger for Penn-Ohio Coach Lines, Akron, O.; sixty-seven 35-passenger for Eastern Mass. Street Railway Co., Boston; two 34-passenger for Blue Way Lines Inc., Springfield, Mass.; two 28-passenger for Missouri, Kansas, Oklahoma Coach Lines, Tulsa, Okla.; 27 coaches, powered with Hall-Scott horizontal engines, for Transit Co. of Harrisburg, Harrisburg, Pa.

Twin Coach Co., Kent, O.: One 23-passenger for Miami Transit Co., Miami, Fla.; five 37-passenger and seven 23-passenger for Kansas City Public Service Co., Kansas City, Mo.; fifteen 30-passenger for San Antonio Public Service Co., San Antonio, Tex.; fifteen 30-passenger for New Orleans Public Service Co., New Orleans; one 35-passenger for Railway Equipment & Realty Co., Oakland, Calif.; fifteen 31-passenger for Spokane United Railways, Spokane; seven 25-passenger for Gray Coach Lines, Toronto, Ont.; one 23-passenger for Burlington Rapid Transit Co., Burlington, Vt.; twelve 23-passenger for Tri-City Railway Co. of Iowa, Davenport, Ia.; twelve 23-passenger for Tri-City Railway Co. of Illinois, Davenport, Ia.; five 31-passenger for Birmingham Electric Co., Birmingham, Ala.

Cold Finished

Cold Finished Prices, Page 79

Pittsburgh — As the third quarter expires, buying of cold-finished carbon steel bars has been so heavy that producing mills' backlogs are the highest for any period of the year. Much of this tonnage cannot be shipped by Oct. 15 and in many cases by Nov. 1, but inasmuch as many orders were entered for ship-

ment at "mills' convenience," the likelihood that backlogs would be reduced within the next month to six weeks seems extremely strong. On all business not placed before Oct. 1 the advanced market of 2.25c, base, Pittsburgh, becomes operative.

Semifinished

Semifinished Prices, Page 79

The inability of many integrated steel producers in the Pittsburgh district to build up their own normal stocks of semifinished material is still prevalent and cases where certain finishing departments have been obliged to close for lack of semifinished steel have been reported, one tube mill in that district being forced to close down two days on this account last week. Where possible, some integrated producers are arranging with other sources for semifinished supplies, and in other cases, have been forced to withdraw from the open market on such items as billets, rods, sheet bars, and tube rounds. From a price standpoint the market is firm, with $30, f.o.b. Pittsburgh, per gross ton, being quoted on sheet bars, rerolling billets, and slabs, and $38 to $40 the respective wire rod bases. In sheet bars, billets and slabs a $2 a ton advance from the former level becomes effective Oct. 1.

Wire

Wire Prices, Page 79

Pittsburgh—A 15-cent per keg advance in all three quantity bases on cut nails has become effective, making the carload lot price now $2.90 per keg, f.o.b. Pittsburgh, with the market on less carloads (five kegs or more $3.20, Pittsburgh, and less than five kegs, $3.35, Pittsburgh. The advanced prices become effective on all shipments against lower-priced contracts on Oct. 1. In the case of carload purchases a 20-cent per keg allowance to the carload jobbers is permitted, with a 10 per cent discount on all extras, whereas less than carload quantities to carload jobbers take a 10-cent deduction to the carload jobber but with no discount on any extra. Cut nail extras continue unchanged at $1.60 per keg for electric galvanizing, $2 per keg for hot galvanizing or hot zinc coating, and $3.50 per keg for special hardening extra.

Cleveland — While no definite price policy on wire products has been announced for fourth quarter, some feel that an increase is in order, especially for nails. With the possible exception of some jobbers, very little speculative buying has been noted from miscellaneous consumers of merchant and manufacturing wire. Mills report normal delivery conditions on all grades. The resumption of automotive activity has stimulated demand considerably here, with the result that September should compare favorably with August.

New York—As the wire trade awaits announcement of fourth quarter prices, buying has increased actively on the possibility that there may be an advance over the present temporary schedule.

Strip

Strip Prices, Page 79

Pittsburgh—Certain adjustments in pickling and oiling extras on hot-rolled strip steel are expected to be announced shortly by sellers, likely involving changes on the widths from 12 1/16 to 23 15/16 inches of 12 gage and thicker, as well as 13, 14, 15 and 16 gages. In the main, changes would conform with the re-

ductions announced for effect Oct. 1 on No. 24 hot-rolled annealed sheets. As previously reported, the base price on hot-rolled strip steel continues unchanged at 1.95c, base, Pittsburgh, for fourth-quarter shipment, likewise does cold-rolled strip at 2.60c, f.o.b. Pittsburgh or Cleveland. There is more volume buying in evidence in today's market, with orders running to larger size individually and being more frequent.

Cleveland—Mills are operating at capacity in an effort to make some headway against steadily mounting backlogs. Narrow sheets have shown greatest activity here, but with the resumption of automotive requirements the contrast in demand between wide and narrow widths steadily has lessened. The rather recent advance in high carbon cold-rolled strip has had little effect in stimulating new business. The important factors in this connection are the tied-up delivery situation in most mills and the constantly improving general business conditions.

Chicago—Strip specifications are steady in most directions, with further improvement noted in automotive releases. Consumption of both hot and cold-rolled by miscellaneous users has shown little change the past several weeks, but fourth quarter is expected to develop gains. Backlogs are heaviest in cold-rolled material. Fairly prompt delivery can be effected by some producers on hot-rolled. Prices are steady.

Philadelphia—Narrow strip business still lags, although holding to the rate of the past several weeks. Prices are steady with no change for fourth quarter.

Tin Plate

Tin Plate Prices, Page 78

Pittsburgh—More tin plate orders with rush specifications attached have been appearing in the market over the past week, doubtless intended for packers' cans to accommodate the last tomato and fruit packs. Tin plate producers report the delivery situation as being less acute. The market at $5.25 per base box, f.o.b. Pittsburgh, is without change, and tin mill sizes of black sheets are quoted 2.75c for the 28 gage base, Pittsburgh. No early decline from an unchanged rate of 90 per cent operations is indicated.

Bolts, Nuts and Rivets

Bolt, Nut, Rivet Prices, Page 79

Specifications continue moderately heavier than a month ago. The comparison for the first half of September is expected to be better than for the month as a whole, since business turned upward during the latter part of August.

Various railroad and freight car builders continue among the leading users here, although tractor and farm implement manufacturers are busier following the summer letdown. Occasional gains in specifications from jobbers reflect a pick-up in miscellaneous consumption. Fourth quarter contracting is fairly active, with current prices being extended.

Shapes

Structural Shape Prices, Page 78

Pittsburgh—Bids are wanted Oct. 9 at Harrisburg, Pa., on the following fabricated structural steel for state bridges: 448 tons, Center-Clearfield counties; 339 tons, Indiana county; 194 tons, Cambria county, and 249 tons of steel sheet piling for Bradford county. Fort Pitt Bridge Works has taken a 400-ton state bridge at Washington, Pa., and Bethlehem Steel Co., a 240-ton overpass

in McKean county, Pennsylvania. Bethlehem Steel Co. has closed on 500 tons for a coal tipple at Holden, W. Va., for the Island Creek Coal Co.

Cleveland — Shape mills apparently have made some headway against backlogs, for some fabricators report receiving shipments sooner than expected. Total requirements for structural materials continue in good volume, but individual orders average well under 100 tons. Bids went in Sept. 24, for the new warehouse of Libbey Glass Co., Toledo, involving 855 tons. H. K. Ferguson Co., Cleveland contractor, awarded the storage warehouse job for the McCall Publishing Co. at Dayton, O., totaling 180 tons, to the Pittsburgh Bridge & Iron Co., Pittsburgh. Bids are now out for the second bidding on the Ashtabula and Ottawa county bridges, totaling a little over 1000 tons. These are due Sept. 29.

Chicago—Structural inquiries are headed by 4500 tons for two Detroit housing projects, while 1500 tons will be required for alterations and additions to a local industrial museum. Awards include 2000 tons of piling for the Saverton, Mo., dam.

Boston—Announcement of low bidders on bridge projects in Maine featured the market here last week. Boston Bridge Co., Boston, is low on two projects, one involving 170 tons for the Ballseye bridge, Bangor, and the other 200 tons at Limington-Standish. Harris Structural Steel Co., New York, is low on the New County road bridge at Biddeford involving 247 tons.

New York—A slackening in the number of inquiries for structural shapes and a sudden falling off of bookings were highlights of the market last week. All the jobs placed were of small tonnages. However, as compensation for this, several jobs involving sizable tonnages are nearing the closing stage. Oltmer Iron Works, Jersey City, N. J. is low bidder at $192,011 for 1600 tons of shapes for the armory at Teaneck, N. J.

Philadelphia — Structural activity still lags, with bridge work outstanding. This latter includes several fair size bridges for the states of Pennsylvania and New Jersey. The largest single project is a proposed 4600-ton toll bridge between Phillipsburg, N. J., and Easton, Pa., for which plans are expected out early next month.

San Francisco — Shape awards were the largest in over a month and aggregated 3534 tons, bringing the total for the year to 137,836 tons as compared with only 78,404 tons for the corresponding period in 1935. Bids on the federal building, Los Angeles, involving close to 20,000 tons, have been postponed from Sept. 15 to Sept. 29.

Shape Contracts Placed

2000 tons, piling, Mississippi river dam, Saverton, Mo., to Bethlehem Steel Co., Bethlehem, Pa.; Massman Construction Co., Kansas City, Mo., general contractor.

885 tons, embedded parts, TVA requirement 69307, Pickwick dam, Tennessee, to Lakeside Bridge & Steel Co., Milwaukee.

600 tons, warehouse addition for the federal printing department, Washington, awarded through Charles H.

Shape Awards Compared

	Tons
Week ended Sept. 28	12,626
*Week ended Sept. 18	36,937
Week ended Sept. 11	19,305
This week, 1935	28,550
Weekly average, 1935	17,081
Weekly average, 1936	22,859
Weekly average, August	28,225
Total to date, 1935	634,400
Total to date, 1936	891,534

*Revised.

Tompkins, that city, to an unnamed fabricator.

560 tons, bridge, Dexter county, Texas, to Virginia Bridge Co., Roanoke, Va.

525 tons, coal tipple, Harrisburg, Ill., to Pan-American Bridge Co., New Castle, Ind.

500 tons, bridge, Butler county, Kentucky, to Vincennes Steel Co., Vincennes, Ind.

500 tons, Keeshin motor terminal, Chicago, to American Bridge Co., Pittsburgh.

500 tons, buildings for Western district high school, Los Angeles, to Pacific Iron & Steel Co., Los Angeles.

500 tons, coal tipple, Holden, W. Va., for Island Creek Coal Co., to Bethlehem Steel Co., Bethlehem, Pa.

475 tons, New York state highway bridge, Hankins, N. Y., to American Bridge Co., Pittsburgh.

400 tons, Pennsylvania state highway bridge, Washington, Pa., to Fort Pitt Bridge Works, Pittsburgh.

400 tons, stockyard building, Pittsburgh, for Pittsburgh Stockyards, to Pittsburgh Bridge & Iron Co., Pittsburgh.

390 tons, two bridges near Globe, Ariz., to Kansas City Structural Steel Co. Kansas City, Mo.

350 tons, police court building, Washington, awarded through Consolidated Engineering Co., Baltimore, to Fort Pitt Bridge Works, Pittsburgh.

310 tons, building for Waldren Drug Co., Miami, Fla., to Ingalls Iron Works Co., Birmingham, Ala.; noted in Steel, Sept. 21, for unstated buyer.

290 tons, Pennsylvania state bridge, awarded through Hemp Bros., Camp Hill, Pa., to Bethlehem Steel Co., Bethlehem, Pa.

250 tons, state highway bridge, Harper, W. Va., to American Bridge Co., Pittsburgh.

240 tons, overpass, McKean county, Pennsylvania, for state highway department, to Bethlehem Steel Co., Bethlehem, Pa.

232 tons, Hayfield pumping building, metropolitan water district, Los Angeles, to Consolidated Steel Corp., Los Angeles.

200 tons, St. Barnabas hospital addition, Newark, N. J., to A. Smith & Sons, Irvington, N. J.

200 tons, postoffice, Gary, Ind., to American Bridge Co., Pittsburgh.

190 tons, service building, Chrysler Corp., Detroit, to R. C. Mahon Co., Detroit.

185 tons, Tennessee state highway bridge WPGM 37-D, Campbell county, to Nashville Bridge Co., Nashville, Tenn.

182 tons, invitation 816, Treasury department, San Bernardino, Calif., to Bethlehem Steel Co., Bethlehem, Pa.

180 tons, storage warehouse for the McCall Publishing Co., Dayton, O., to Pittsburgh Bridge & Iron Co., Pittsburgh.

170 tons, Celanese Corp. building, Amcelle, Md., to Lehigh Structural Steel Co., Allentown, Pa.

154 tons, sheet piling, bureau of reclamation, invitation A-42,074-A, Potholes, Calif., to Carnegie-Illinois Steel Co., Chicago.

150 tons, buildings for Washington, Berendo and State street schools, Los Angeles, to Kyle Steel Construction Co., Los Angeles.

145 tons, Pennsylvania state highway bridge, Armstrong county, to Fort Pitt Bridge Works, Pittsburgh

135 tons, D & RGW underpass, Helper, Utah, to American Bridge Co., Pittsburgh.

133 tons, crossing, Las Vegas, Nev., to Judson-Pacific Co., San Francisco.

125 tons, bridge R-276-C, Lawrence county, Mississippi, to Austin Bros. Bridge Co., Atlanta, Ga.

113 tons, crossing, Colorado Springs, Colo., to unnamed interest.

110 tons, New York state highway bridge RC-3816, Allegheny county, to Lackawanna Steel Construction Corp., Buffalo.

105 tons, bridge, Fort Peck, Mont., to Minneapolis-Moline Power Equipment Co., Minneapolis.

102 tons, state bridge, Guernsey county, Ohio, to Bethlehem Steel Corp., Pittsburgh.

100 tons, school, Montgomery, N. Y, to Joseph T. Ryerson & Son Inc., Chicago, through John W. Ryan Co., New York.

Shape Contracts Pending

20,000 tons, Federal building, Los Angeles; bids postponed from Sept. 15 to Sept. 29.

4500 tons, two housing projects, Detroit.

3000 tons, addition to tin plate plant, Yorkville, O., for Wheeling Steel Corp., Wheeling, W. Va.

1600 tons, armory, Teaneck, N. J.; Oltmer Iron Works, Jersey City, N. J.

1500 tons, alterations and addition, Museum of Science and Industry, Chicago; bids to Chicago park district board, Oct. 13.

800 tons, coal tipple, Stony Gap, Va., for General Coal Corp.
800 tons, buildings for Libby Glass Mfg. Co., Toledo, O.
646 tons, state highway bridge, Ottawa county, Ohio; bids Sept. 29.
500 tons, public school No. 162, Brooklyn, N. Y.; Lundin-Halwer Corp., New York, low on general contract.
448 tons, fabricated structural steel, through truss bridge, Center-Clearfield counties, Pennsylvania; bids to state highway department, Harrisburg, Pa., Oct. 9. Included, 52 tons of plain steel bars.
400 tons, state highway bridge, Ashtabula county, Ohio; bids Sept. 29.
339 tons, two pony truss bridges, Indiana county, Pennsylvania; Farris Engineering Co., Pittsburgh, low on Sept. 18 letting at $102,570.64. Included, 57 tons of plain steel bars.
320 tons, temporary bridge, Westchester avenue, Bronx, New York; Centaur Construction Co., New York, low.
300 tons, alterations to building on Thirty-fourth street, New York.
300 tons, United States government project, Laurel Homes, Cincinnati.
270 tons, school, Francis Assisi, Brooklyn, N. Y.
265 tons, passageway and canopy, contract No. 70, Triborough authority, New York; bids Oct. 1.
250 tons, stock house, German Brewing Co., Cumberland, Md.
249 tons, steel sheet piling, state highway work, Bradford county, Pennsylvania; bids to state highway department, Harrisburg, Pa., Oct. 9.
247 tons, New County bridge, Biddeford, Me.; Harris Structural Steel Co., New York, low.
234 tons, Middlebridge, Dresden, Me.; Pittsburgh-Desmoines Steel Co., Pittsburgh, low.
200 tons, bridge, Limington-Standish, Me.; Boston Bridge Co., Boston, low.
200 tons, piling, completion of Mississippi river dam, Alton, Ill.
198 tons, through truss bridge, Bedford county, Pennsylvania; Reed & Kuhn, Elysburg, Pa., low on Sept. 18 letting at $63,956.63. Included, 19 tons of plain steel bars.
194 tons, fabricated structural steel, pony truss bridge, Cambria county, Pennsylvania; bids to state highway department, Harrisburg, Pa., Oct. 9. Included, 33 tons of plain steel bars.
188 tons, bridge, Kittitas county, Washington; bids Oct. 6.
180 tons, naval militia armory, Camden, N. J.; bids rejected.
170 tons, Ballseye bridge, Bangor, Me.; Boston Bridge Co., Boston, low.
157 tons, through truss bridge, Bedford county, Pennsylvania; Westwood Construction Co., Pittsburgh, low on Sept. 18 letting at $49,024.58. Included, 26 tons of plain steel bars.
150 tons, Grammercy cinema, 127 East Twenty-third street, New York.
100 tons, apartment, Fort Washington, Long Island.
100 tons, warehouse and store building, for Woodrum Co., Charleston W. Va.; Walker, Tucker & Pattison, Charleston, W. Va., architects.
100 tons, building for Daily News, McKeesport, Pa.

Reinforcing

Reinforcing Bar Prices, Page 79

Pittsburgh—By inference of producers, the price of new billet steel bars for fourth quarter has been reaffirmed at the present level of 2.05c, f.o.b. Pittsburgh, as quoted by distributors for cut lengths in carload lots. Eastern producers and those at Birmingham, Ala., have preceded this announcement to the same effect. Pennsylvania state highway lettings continue weekly.

Cleveland—General run of miscellaneous tonnage for reinforcing billet bars continues to tax mills here. While there has not been enough heavy tonnage really to test prices, no sign of weakness has been noted. Jobbers' stocks remain normal. Very

Concrete Awards Compared

	Tons
Week ended Sept. 25	11,353
Week ended Sept. 18	8,834
Week ended Sept. 14	3,827
This week, 1935	6,493
Weekly average, 1935	6,862
Weekly average, 1936	6,791
Weekly average, August	7,011
Total to date, 1935	267,451
Total to date, 1936	264,844

little forward buying has been done. A negligible amount of mesh is going into road repair work, but this condition is expected to be reversed early this fall, in view of the proposed state work.

Chicago—Concrete bar awards are topped by 1050 tons for the completion of the outer drive link here. An industrial building calling for 350 tons and 200 tons for a Gary postoffice constitute other leading awards. Shipments against old orders remain heavy and mill deliveries still are deferred several weeks. While prices are being reaffirmed, some irregularity still persists.

New York—Lettings of concrete reinforcing bars were heavy last week, compared with the 200 tons placed the week previous. The largest award, 3000 tons, was booked by Concrete Steel Co., New York, for the Williamsburg slum clearance project known as Ten Eyck houses in Brooklyn, N. Y. Prices remained firm.

Philadelphia—Reinforcing bar demand continues sluggish. Included in the few outstanding inquiries is one for approximately 700 tons for a 6-story warehouse for the North American Warehousing Co., this city, on which general contractors bids will be opened Oct. 1. Among the few sizable orders are 1725 tons for a government warehouse in Washington, the business going to a district seller. Billet steel bar prices appear reasonably steady.

San Francisco—Reinforcing bar lettings were the highest since the middle of July and 8724 tons were booked, bringing the aggregate for the year to 192,934 tons, compared with 179,811 tons for the same period last year. Unnamed interests took 1200 tons for the Federal jail at San Pedro, Calif. Bids have just been opened on 1000 tons for the substructure of Pier No. 19, San Francisco. Pending business exceeds 17,000 tons.

Reinforcing Steel Awards

3000 tons, new billet steel bars, Williamsburg slum clearance (Ten Eyck houses) Brooklyn, N. Y., to Concrete Steel Co., Philadelphia; this is for substructures additional to 200-ton award to Concrete Steel Co., noted in STEEL, Sept. 21.

1725 tons, warehouse addition, federal printing department, Washington, awarded through Charles H. Tompkins, Washington, to the Rosslyn Iron & Steel Co., Rosslyn, Va.

1200 tons, Federal jail, San Pedro, Calif., to unnamed interest.

1050 tons, completion of outer drive link, Chicago, to Truscon Steel Co., Youngstown, O.; W. E. O'Neil Construction Co., Chicago, general contractor.

600 tons, bridge, Port Arthur, Tex., to Jones & Laughlin Steel Corp., Pittsburgh, through Taylor-Fichter Construction Co., New York; 400 tons pending.

500 tons, silos, Universal Atlas Cement Co., Independence, Kans., to Carnegie-Illinois Steel Corp., Chicago.

500 tons, buildings for Western district high school, Los Angeles, to Concrete Engineering Co., Los Angeles.

350 tons, building, General Mills Inc., Chicago, to Concrete Engineering Co., Chicago.

340 tons, Sixth avenue subway, route 101, section 8, New York, to Bethlehem Steel Co., Bethlehem, Pa., through Carlton Co. Inc., New York.

335 tons, Ross Island bridge, Multnomah county, Oregon, to unnamed interest.

320 tons, Berendo junior high school, Los Angeles, to Soule Steel Co., Los Angeles.

250 tons, warehouse for Union Pacific railroad, Los Angeles, to unnamed interest.

246 tons, bureau of reclamation, invitation 38,311-A, Odair, Wash., to Bethlehem Steel Co., Bethlehem, Pa.

201 tons, schedule 7473, Mare Island, Calif., to Soule Steel Co., San Francisco.

200 tons, postoffice, Gary, Ind., to Calumet Steel Co., Chicago.

176 tons, bureau of reclamation, invitation 44,100-A, Earp, Calif., to Republic Steel Corp., Cleveland.

150 tons, high school, Tujunga, Calif., to Concrete Engineering Co., Los Angeles.

110 tons, Sixty-sixth street school, Los Angeles, to Consolidated Steel Corp., Los Angeles.

100 tons, Rockland State hospital building, Orangeburg, N. Y., to Jones & Laughlin Steel Service Inc., New York, through Turner Construction Co., New York.

Reinforcing Steel Pending

3500 tons, two housing projects, Detroit.

1253 tons, bureau of reclamation, invitations A-42,097-A, A-42,088-A, A-42,087-A, A-42,091-A, A-42,089-A, A-42,085-A, A-42,084-A and A-42,086-A, Potholes, Calif.; bids opened.

700 tons, six story warehouse, flat slab construction, North American Warehousing Co., Philadelphia; general contractors bids to be opened Oct. 1.

387 tons, Riverside drive-Victory boulevard crossing for Los Angeles; bids Sept. 30.

288 tons, relining tunnel on Zion national park road, Utah; bids opened.

209 tons, seawall, Newport Beach, Calif.; bids rejected and new bids Oct. 5.

200 tons, alterations to Roosevelt high school, Los Angeles; bids opened.

196 tons, bureau of reclamation, invitation A-42,094-A, Laguna, Colo.; bids opened.

178 tons, bureau of reclamation, invitation A-42,090-A, Laguna, Colo.; bids opened.

156 tons, bridge, Ocean avenue at Santa Ana river, Orange county, California; bids opened.

100 tons or over, Woodrum Co. store, Charleston, W. Va.; bids received.

Pig Iron

Pig Iron Prices, Page 80

Pittsburgh—Largely due to the price increase in scrap, pig iron shipments during September will establish a new monthly high for 1936. Replacing a former 60 per cent scrap charge and 40 per cent pig iron has come a recent reversal with more than half of the requirements now being pig iron. Although integrated steel mills are using more of their own iron production, there has apparently been no relaxation on their part in catering to the merchant trade. Prices are steady.

Cleveland — Contracting for fourth quarter has exceeded expectations of the most optimistic merchant producers here. Both the marked scarcity of scrap and the feeling that pig iron prices will be advanced for the first quarter, have led even the smaller consumers to use more pig iron in their mix and to anticipate needs. While most merchant producers still have a considerable stock, some feel that material soon will be shipped as quickly as produced. Auto foundries are becoming more active and are expected to get into full swing around Oct. 1. Shipments during September will finish well ahead of August.

Chicago—Backlogs of pig iron producers continue to accumulate as foundries anticipate increased requirements during fourth quarter. Shipments have gained moderately during September, but new business points to a further increase during the coming three months. Automotive foundries continue to increase their melt, while production of castings for railroad equipment remains relatively high. Occasional gains are noted in schedules of farm implement and tractor plants, with fourth quarter activity of these groups scheduled for a better rate than that of the current period. Pig iron continues firm at $19.50, furnace, for No. 2 foundry and malleable.

New York—Some pig iron sellers declare they are experiencing the best tonnage since predepression days. While there is still considerable carlot business, the trend is decidedly toward heavier orders.

Philadelphia—Pig iron buying continues to expand, with individual orders not only more numerous but in many cases substantially heavier. Advancing prices in scrap are be-

lieved to be an important factor, with consumers using a greater proportion of pig iron in their mix than heretofore. The possibility that a general price advance in pig iron may be announced before the end of this year is another factor in the present expanding business.

Buffalo—Demand for pig iron is heavy. The great bulk of commitments for fourth quarter has now been made. Shipments this month will exceed those of August. It is predicted this season's canal movement will equal or exceed the all-time record established in 1929. Ten blast furnaces are in operation with two other being prepared for production.

Cincinnati—Shipments of pig iron continue at an even pace with the melt so far not much affected by seasonal influences. Foundry operations are broad. During the past week orders for fourth quarter took an upturn.

St. Louis—Pig iron shipments continue at the high rate which has characterized earlier weeks this month, virtually assuring the largest aggregate tonnage for any month this year to date. New buying is also on a large scale, melters generally being disposed to fill their requirements for balance of the year.

Birmingham, Ala.—Spot orders for pig iron still dominate the market, and prompt delivery is being made by furnace interests. Ten blast furnaces are active, and no recession in demand is expected.

Toronto, Ont.—Business continues steady in the merchant pig iron markets and sales are running slightly above the average for the last few months. Higher prices are in prospect, but so far producers have made no revision in lists. Current demand is for spot delivery with awards ranging from a car to 200 tons, although some inquiries have been received for last-quarter delivery. Awards last week were approximately 800 tons.

Scrap

Scrap Prices, Page 81

Pittsburgh—In spite of the fact that more scrap supplies have become evident over the last week, going prices continue to reflect all of their former strength, with consuming mills in this district evidencing a desire to repeat their last sale at around $18.50, delivered, on No. 1 steel. Currently, railroad specialties reflect a $20 to a $21 market, short shoveling turnings at around $14.25, mixed borings and turnings at $11.25 to $11.75, and railroad malleable at $17.50 to $18. Heavy supplies of No. 2 steel against mill purchase at $17.50 have forced mills to issue some shipping restrictions. The Pittsburgh Des Moines Steel Co., Pittsburgh, recently sold about 5000 tons of shearings. Pittsburgh & West Virginia railway has disposed of 200 old freight cars.

Cleveland—Strength continues to be the predominant feature of the iron and steel scrap markets throughout northern and eastern Ohio, although in the Cleveland market no change is noted in quotations in the last several days. The advanced prices of recent weeks still are resulting in a more liberal inflow of old materials. Shipments on old contracts also continue on an improved scale, considerable of the material being routed to outside consuming points, especially into the Youngstown and the Canton-Massillon districts. Steelmakers in the valley are restricting shipments.

Chicago—A local mill has purchased No. 1 heavy melting steel at $16.50, representing no change from the previous transaction. Dealers,

however, have found it necessary to raise their bids in picking up No. 1 melting steel, and little material is available at less than $16.50. Supplies generally are sufficient to accommodate mills' requirements, but a further increase in shipments to this district is lacking. Railroad lists the past week continue to attract premium bids.

New York — Sale of 2000 tons of rails scrapped from the Broadway surface lines and the scrapping of obsolete equipment and old buildings at the Bayonne, N. J., refinery of the Standard Oil Company of New Jersey are features of the scrap market this week. M. Samuel & Son, Brooklyn, N. J., submitted high bid of $13.17 per ton on the grounds for the rails. An undisclosed tonnage is involved in the Standard scrapping being carried on by Hudson Iron & Metal Co., Bayonne. It is indicated that scrapping at the Bayonne plant will continue for another year. No announcement has been made on the official award for scrapping nine government vessels. No new commitments on scrap for foreign shipment have been made recently. Strong domestic demand boosted No. 1 heavy melting 25 cents to $12.25, and No. 2 a dollar less. Grate bars have been advanced 50 cents to $8.50-$9.; and old steel shafting also is up 50 cents to $16-$16.50.

Boston—A $2.50 per ton advance on steel car axles for domestic consumption last week led 11 grades of scrap on another upward surge of prices. This commodity was being quoted at $14.50-$15. Prices on other grades were increased 25 to 50 cents a ton. No. 1 heavy melting steel brought $13.25 a ton delivered at New England consuming points. Heavy breakable cast was at $11-$11.50. Brokers' prices for No. 1 and No. 2 melting steel delivered on Boston docks for export have been stabilized at $12.50 and $11.50, respectively.

Philadelphia — Despite a slightly easier tone, with supplies coming out more freely, scrap continued to reflect much strength. The principal steel and cast grades are unchanged, but advances in price are noted in at least seven descriptions, including steel axles, No. 1 forge, couplers and knuckles, specification pipe, axle turnings, rolled steel wheels and No. 1 railroad wrought. No. 1 steel is steady at $15.50 to $16, delivered, consuming point, with some relatively small tonnage at $16 and with sellers offering $15.50 on lots of 200 and 300 tons and over in covering contracts.

Buffalo—Scrap purchasing has been checked by advanced prices asked by dealers. The latter, striving to cover old orders without loss, are indisposed to take new tonnage until they have material on hand. Higher offers are not bringing scrap here in tonnage and dealers as well as melters are disposed to stay out of the market until matters adjust themselves.

Detroit—Apparently, heavier automotive supplies of remelting material precluded further scrap price advances last week with the local market reverting to an unchanged level of $14.50 to $15 on both No. 1 steel and on hydraulic compressed sheet scrap. No. 2 steel holds at $13.50 to $14, machine turnings at $9 to $9.50, and blast furnace material at $9 to $9.50. Heavy consumer demand for scrap continues, but a leveling-off process, for the time being at least, has become evident.

Cincinnati—Dealer quotations on some grades of iron and steel scrap advanced 50 cents, with heavy melting steel rising to $14 to $14.50. However, the continued pressure on prices by mills has now created a hesitancy in the district market and the undertone is not so strong as heretofore.

St. Louis—Buying of scrap iron and steel by the industries has expanded. One mill purchased 5000

Behind the Scenes with STEEL

Show Slants

DETROIT hotels and bars did a rushing business last week with the arrival of iron and steel engineers for their thirty-second convention and nineteenth annual equipment show. Full details and pictures will be found on pages 26, 27, 54, 56 and 76 of this issue.

Despite the 45-cent cab fare from downtown and the inferior facilities of Detroit's Convention Hall for a show of this type, there were many on hand to inspect the glittering exhibits of steel mill and allied equipment. Noisiest booth was that of Great Lakes Steel where sound pictures of the Louis-Schmeling fight were being unreeled continuously.

STEEL conducted a straw vote on the Presidential election at its booth and practically everyone who entered the show took time out to mark a ballot. Results will be published as soon as they can be tabulated.

Incidentally, Gardner Displays of Pittsburgh did a swell job of designing the STEEL exhibit as a glance at the illustration below will reveal. Gentlemen cluttering up the exhibit are, from left to right, V. W. Volk, R. T. Mason, L. C. Pelott, S. H. Jasper and W. F. O'Dell, all of the STEEL business and circulation departments.

We finally got a ride on the MERCURY, coming back from Detroit, and are glad to report the train lives up to all advance reports. They even obliged us by demolishing a small truck outside of Monroe, Mich., thereby making the train so late that the engineer had to open her up to 93 miles an hour east of Toledo to arrive in Cleveland on time. Nobody hurt.

* * *

Competition

NOTE on political situation: The Democratic headquarters in Williamstown, W. Va., have erected a sign over the entrance which reads, "Williamstown Wants Roosevelt Again!" No sooner was this done than the Republican owner of the vacant lot next door got out his hammer and paint and set up a large billboard at one side of which a large painted hand points to the Democrats' sign, and at the center of which is the terse, caustic comment, "The Hell We Do."

* * *

Marathon Rubber

NOTE on something or other: Fred W. Langbein of Memphis, Tenn., has polished his 1909 model car for 3 hours every Sunday morning for 27 years, except for three days when he was ill, according to *Associated Press*. He bought the jaloppy for $895 and has worn out four speedometers in clocking about 600,000 miles. Doesn't say how many cans of polish or wiping cloths he has gone through.

Some enterprising automobile salesman ought to contact Mr. Langbein, who happens to be a tailor. He should be about ready to make a change in cars.

—SHRDLU

tons of heavy melting for delivery over the next 60 days, the price paid being the top figure of the quoted range and considerably above the last preceding buy. Smaller quantities have changed hands, and other mills are in the market for round tonnages.

Birmingham, Ala.—While present business is in small tonnages, market in this section is reported in good shape with dealers in position to meet demands promptly. Small quantity of heavy melting steel is moving. All quotations remain firm.

Warehouse

Warehouse Prices, Page 82

Pittsburgh—Jobbers continue to quote nails for resale at $2.35 per keg for in-town Pittsburgh shipment and $2.30 for country deliveries. Other prices are unchanged, although an advance in small spikes is about to be announced shortly, including $2 a ton on hot-rolled and cold-drawn bars.

Cleveland—Daily average sales of warehouse products have shown a marked increase over August. Some attribute this to the sold-up situation in most mills. While bars, sheets, and plates continue to move at the strong pace set two weeks ago, there has developed an unusual demand for beams and channels. Nothing definite has been decided on the price policy for the fourth quarter, but there is strong opinion that they will follow the advances made in mill prices.

Chicago — Sales hold slightly ahead of the August volume, with a more substantial pickup in prospect for the next six weeks. Price changes on those items on which mill quotations have been revised are deferred until Oct. 1.

New York—Following the advance in certain items at the mills, it was announced last week that prices on corresponding warehouse products will be increased Oct. 1. Sales of most products are at a satisfactory volume, although some weakness was noted in volume of cold rolled strip last week.

Philadelphia — Effective Oct. 1 warehouse prices on carbon and cold drawn bars and hot rolled annealed sheets will be advanced $2 a ton, in line with mill advances.

Detroit — Moderately heavy sales continue in warehouse circles with some anticipating on the part of consumers in view of the $2 a ton increase in soft steel bars, forging bars, billets, cold-drawn bars and 24 gage black sheets Oct. 1.

Cincinnati — Jobbers have withheld announcements of fourth quarter prices, although the trade expects revisions on sheets and bars as reflection of mill advances. Volume continues without any considerable gain over August, with a tendency toward decrease in building steel.

St. Louis—Distribution of iron and steel from out of stock continues in large volume. Railroads are buying freely, mainly shop materials for repairs and building of new cars. Building materials are moving in heavy volume. One interest reports sales of stainless steel during the third quarter the largest for any similar period on record. Some betterment is noted in wire fencing and accessories. Prices remain unchanged.

Coke By-Products

Coke By-Product Prices, Page 79

New York—Resumption of automobile production has caused an increased demand for industrial xylol. The price of 30 cents per pound remains unchanged. Other by-products continue to enjoy their usual steady demand at the stabilized prices.

Steel in Europe

Foreign Steel Prices, Page 82

London — (*By Cable*) — Production in Great Britain has been maintained near a record level, but demand is not fully satisfied.

Steelmakers have backlogs of structural orders, but will book three months ahead at current rates. Rerolling mills, employed to capacity, are seeking larger supplies of semi-finished material.

Stanton Iron Works is relighting two more stacks.

The continent reports that a lull in buying is not unexpected following the recent heavy spurt.

Metallurgical Coke

Coke Prices, Page 79

Virtually all the long unused beehive coke ovens in Southwestern Pennsylvania are now either in operation or being rapidly prepared for activity, because of the demands of resuming blast furnaces and the inability of by-product ovens to successfully care for all commitments. The H. C. Frick Coke Co. is repairing 200 beehive ovens near Youngstown, Pa. Blast furnaces in the Pittsburgh district that have or are immediately resuming with beehive coke as fuel include the Monessen No. 2 furnace of Pittsburgh Steel Co., the Sharpsville, Pa., stack of Pittsburgh Coke & Iron Co., the Sharpsville, Pa., furnace of Shenango Furnace Co., Wickwire Spencer Steel Co.'s stack at Tonawanda, N. Y., and Struthers Iron & Steel Co., Struthers, O. Apparently the market on standard furnace coke is ranging firmly at $3.75 to $4 a ton, on medium sulphur coke at $3.75, on standard foundry coke at $4.25, and on premium beehive coke, $5.50, all on the basis of f.o.b. Connellsville, Pa., ovens.

Iron Ore

Iron Ore Prices, Page 81

Cleveland—The number of American lake ore carriers in commission Sept. 15 was 262, compared with 245 Aug. 15 and 178 Sept. 15, 1935, according to figures compiled by M. A. Hanna Co., Cleveland. Fourteen fleets are now operating 100 per cent. The total number of American lake ore carriers is 315 making 83.17 per cent of the fleet active. The number of such carriers engaged in the ore trade is 247, compared with 228 in the preceding month and with 160 ships a year ago.

Considerably more ore is being brought down this month with the augmented fleet, than in August. Something like 8,000,000 tons is expected to be moved in September, against 7,444,444 tons in August.

Receipts of iron ore at lower lake ports for this season to Sept. 1, shipments to interior furnaces, and dock balances follow:

Port	Receipts	Shipments	Dock Bal. Sept. 1,'36
Buffalo	1,897,577	4,320	1,899
Erie	944,192	949,111	53,994
Conneaut	3,611,424	3,768,604	1,436,871
Ashtabula	2,475,088	2,524,749	1,623,978
Fairport	549,798	553,381	387,085
Cleveland	5,137,858	4,371,317	308,045
Lorain	1,503,952	796,244	16,479
Huron	505,765	537,256	303,399
Toledo	901,375	483,114	18,322
Total	17,527,029	13,988,096	4,150,072
Year ago	12,005,778	9,062,977	4,554,923

Stocks of iron ore at the lower lakes ports and furnaces Sept. 1, were approximately 3,300,000 tons less than on the comparable date last year, reflecting the increase in consumption. The Lake Superior Iron Ore association's report follows:

	Tons
Consumed in July	3,826,050
Consumed in August	3,968,845
Increase in August	142,795
Consumed in August, 1935	2,615,927
On hand at furnaces Sept. 1	24,007,622
On Lake Erie docks Sept. 1	4,150,072
Total on hand at furnaces and Lake Erie docks Sept. 1	28,157,694
Reserve total Sept. 1, 1935	31,490,714

Baltimore—Heavy shipments of ore continue to arrive here with iron ore arrivals outstanding. During the period of Sept. 3 to Sept. 21, inclusive iron ore totaled 67,235 tons. Manganese shipments, also substantial, amounted to 39,270 tons and chrome ore 20,627 tons. Iron ore arrivals comprised 11,000 tons, Daiquiri, Cuba, Sept. 6; 3000 tons, Whyalla, Australia, Sept. 9; 8730 tons, Abu Zenina, Sept. 11; 21,000 tons, Cruz Grande, Chile, Sept. 11; 11,500 tons, Felton, Cuba, and 4001 tons, Whyalla, Australia, Sept. 17; and 7540 tons, Lulea, Sept. 21.

Refractories

Refractories Prices, Page 80

Prices on refractory brick have been extended unchanged for the fourth quarter, according to the recent announcement of producers. This means a reaffirming of the present market of $55 per 1000, f.o.b. works, for super quality fire clay brick; $45 Pennsylvania works, for first quality, and $40 for second quality. Silica brick is reaffirmed at $45 per 1000; dry press ladle brick, $24; and malleable bung brick, $50, all

bases. Imported dead-burned magnesite has been extended at $45 per net ton, f.o.b. Chester, Pa., and chrome basic brick, $45, the same bases.

Nonferrous Metals

Nonferrous Metal Prices, Page 80

New York—Unsettled monetary exchange due to the crisis in the French franc was watched closely by all metal markets last week although it affected only tin pricewise. Present price structures of metals are on a sound basis due to continued active consumption and steady improvement in statistical positions.

Copper — Independents bought steadily indicating confidence in the 9.75-cent level for electrolytic. Two leaders in the industry expressed satisfaction with current prices so steadiness over the next few weeks is looked for despite relatively high prices abroad.

Lead—Demand was well sustained at an active rate with the undertone of the market strong at 4.45c, East St. Louis. Stocks declined during August to the lowest level since February, 1934, while shipments exceeded any previous monthly total since January, 1931. Sales last week were limited by restricted policies of sellers.

Zinc—Sales were light with no real pickup in fresh demand expected for some weeks ahead since consumers are well covered by the volume of unfilled orders on sellers' books. Prices held firm at 4.85c, East St. Louis, for prime western.

Tin—Quotas were held unchanged at 90 per cent of standard tonnages for the final quarter. Negotiations with Siam regarding renewal of the control plan continue. Straits tin prices were uncertain at the weekend due to the wide fluctuations in sterling exchange. Straits spot closed around 45.12½c.

Equipment

Chicago — Most machinery and equipment markets here retain their previous activity. Machine tool sales have experienced practically no letdown the past six to eight weeks in contrast to some recession reported in other districts. Inquiries have continued active and sellers expect sales to hold near their present level for the next several months. Little improvement in machine tool deliveries is in prospect in view of backlogs already on hand and business in sight. Manufacturers are advancing prices on some presses Oct. 1. Sheet forming equipment has been among the most active of metalworking machines in recent sales. Only occasional inquiry and orders are coming from railroad shops. Fairly substantial orders still are pending for tractor and farm implement builders.

Pittsburgh—Wheeling Steel Corp., Wheeling, W. Va., is completing plans for an addition to its tin mill at Yorkville, O., which will involve construction of a new mill building that will require about 3000 tons of structural shapes and the installation of a five-stand tandem mill, which will be furnished by Mesta Machine Co. The Yorkville works already has 24 hot tin mills and 12 cold-reducing units. Morgan Construction Co., Worcester, Mass., has recently closed on a contract for installation of a rod mill in Russia.

New York—Railroads, for several years out of the active market for machine tools, are resuming inquiries for heavy machinery. Some discussion exists concerning the possibility that prices, boosted 2½ to 10 per cent the first of August, may be advanced further before the first of next year. It is believed, however, that any further price increase this year will be centered on accessories for tools.

Construction and Enterprise

Ohio

ASHTABULA, O.—New York Central railroad, Grand Central terminal, New York, is moving its scrap department from Cleveland to Ashtabula, where a machine shop will be built on North Bend road.

BELLEVUE, O. — City council considering ordinance authorizing retention of Burns & McDonnell, consulting engineers, Kansas City, Mo., to make a survey of feasibility and cost of municipal electric generating plant with auxiliary equipment and distribution system. R. E. Woleslagel is mayor, City hall.

BLOOMVILLE, O. — Village plans construction of waterworks system costing $50,000. C. E. Petis, 3535 Watson avenue, Toledo, O., is engineer.

CINCINNATI — City plans installation of 500,000-gallon water storage tank in village of Mt. Washington. A. S. Hibbs is waterworks superintendent, City hall, Cincinnati.

CLEVELAND — City division of water and heat, 105 City hall, will ask bids soon for machine shop equipment, including three lathes and one milling machine.

CLEVELAND — City division of water and heat, 105 City hall, will ask bids soon for gasoline tank cars and various equipment, as provided in ordinance 104835.

CLEVELAND — Ohio Carbon Co., 12508 Berea road, is starting a $100,000 expansion program including one 2-story building and three 1-story buildings. Allen K. Moulton is president. Albert M. Higley Co., 2036 East Twenty-second street, is engineer.

DAYTON, O. — City Engineering Co., 35 South St. Clair avenue, will let contracts soon for construction of a machine shop costing about $40,000.

DAYTON, O. — Contracting officer, air corps, Wright field, will take bids until Oct. 8 for a combination shear, punch and coper machine, invitation 37-206.

DAYTON, O. — Contracting officer, materiel division, Wright field, will take bids until 10 a. m. Oct. 8 for a combination shear, punch and coper machine, with one-piece alloy steel casting frame; for a motor-driven power hammer with 275 strokes per minute, both items on circular 37-206; and for an automatic engine synchronizer, type A-1, in accordance with specification X-27779, circular 37-199.

EAST LIVERPOOL, O. — City rejected bids received Aug. 7 for two new over-feed stokers or two new under-feed stokers, and will ask bids again soon. Estimated cost is $7,000. E. B. Laughlin is service director.

GALION, O. — Central Ohio Steel Products Co. will let contracts soon for construction of a plant addition of 10,000 square feet, to cost $40,000 with equipment.

HEBRON, O. — Village is taking bids due noon Sept. 29 for construction of a water treatment plant. Engineer is Jennings-Lawrence Co., 538 Rowlands building, Columbus, O.

JUNCTION CITY, O. — Village is taking bids due noon Sept. 30 for two electrically driven deep well turbine pumps. E. D. Griggs is president of board of public affairs.

LOWELLVILLE, O.—Village plans construction of municipal electric light and power plant to cost about $50,000, and village council has passed resolution calling for drawing up of final plans and specifications. Bryan & Sigman Engineering Co., Box 111, Newton Falls, O., engineer.

MARYSVILLE, O. — Union Rural Electric Co-operative Inc., W. O. Ziegler president, 620 East Broad street, Columbus, O., plans erection of 280 miles of rural transmission lines at a cost of $336,000, with REA loaning part of cost.

MASSILLON, O. — City is taking bids due noon Oct. 1 for construction of sewage treatment works. City engineer is C. E. Rice, City hall.

MT. GILEAD, O. — Morrow County Rural Electric Co-operative, D. R. Stanfield manager, 620 East Broad street, Columbus, O., has completed final plans for erection of rural transmission lines in Bennington, Perry, Lincoln, South Bloomfield, Gilead and Congress townships. Cost will be $40,000.

NEWTON FALLS, O. — Village plans construction of electric power plant to cost $165,000, and a $100,000 bond issue will be submitted to voters at the November election. Diesel engine equipment will be installed. Dana M. Bailey Jr. is mayor, Bryan & Sigman Engineering Co., Box 111, Newton Falls, is engineer.

NEW LEBANON, O. — Village is taking bids due Oct. 2 for construction of waterworks plant costing $35,000. An elevated steel tank of 100,000-gallon capacity on a 100-foot tower is included in the plans. Collins Wight, Union Trust building, Dayton, O., is engineer.

PORTSMOUTH, O. — City is taking bids due Sept. 30 for eight electrically driven pumps and three gasoline pumps for installation in water pumping station. F. E. Sheehan is city manager, City hall.

SMITHVILLE, O. — Village plans construction of waterworks system and pumping station at a cost of $78,000, WPA to furnish $62,000. Voters will pass on village's portion of $16,000 at November election.

SOUTH CHARLESTON, O. — Village preparing plans for municipal light plant to cost $60,000, $30,000 to be supplied through municipal bond issue to be passed on by voters at November election, remainder to be raised by revenue bonds. C. D. Juvenal is mayor, Collins Wight, Union Trust building, Dayton, O., is engineer.

SUGAR GROVE, O. — Village plans construction of waterworks system costing $80,000. W. Graff, Lancaster, O., is engineer.

WAUSEON, O. — City plans construction of sewage disposal plant and has applied to PWA for financial aid. Herbert Demoline is mayor, George W. Champe & Associates, 1025 Nicholas building, Toledo, O., engineers.

WEST CITY, O. — Village will construct waterworks system. Engineers are George Champe & Associates, 1025 Nicholas building, Toledo, O.

YOUNGSTOWN, O. — Chamber of commerce is negotiating with officials of the Standard Steel Spring Co., Coraopolis, Pa., in an effort to have the company locate its plant here.

Michigan

ALGONAC, MICH. — Village will construct filtration plant and erect elevated steel storage tank, at total cost of $60,000.

ALMA, MICH. — Alma Motor Co. will build an addition to its plant.

CHELSEA, MICH. — Village plans

construction of sewage treatment plant to include pumping station. Cost is estimated at $60,000, aided by PWA grant of $27,000.

MANISTEE, MICH. — Great Lakes Chemical Corp. has been organized and will erect a liquid bromine plant here. Joseph Horner, Grand Rapids, Mich., is president.

Massachusetts

MELROSE, MASS. — New England Power association, 89 Broad street, Boston, is starting a $1,250,000 expansion program around Melrose and Tewksbury. Frank D. Comerford is chairman.

SPRINGFIELD, MASS. — Van Norman Machine Tool Co., 160 Wilbraham avenue, plans construction of 1-story, 50 x 128-foot machine shop addition to cost about $40,000. McClintock & Craig, 458 Bridge street, are engineers, and are taking bids now.

Rhode Island

NORTH SMITHFIELD, R. I. — Town plans to recondition waterworks system and erect a 500,000-gallon steel storage tank, at total cost of $45,000.

Vermont

WINDSOR, VT. — Goodyear Tire & Rubber Co., 1144 East Market street, Akron, O., plans altering former plant of National Acme Co. here, to be used for tire manufacturing. Cost is estimated at $40,000.

New York

BROOKLYN, N. Y. — Sprague Terminal Inc., 49 Ash street, is altering its boiler house at an estimated cost of $40,000. A. V. Bekay is engineer, care of owner.

FREWSBURG, N. Y. — Kling Factories Inc., Furniture Exposition building, Jamestown, N. Y., will ask bids about Oct. 1 for construction of a 3-story, 60 x 125-foot furniture plant addition costing $45,000. Beck & Tinkman, Bailey building, Jamestown, are architects.

LOCKPORT, N. Y. — Upson Co., Upson Point, Lockport, plans construction of a boiler plant costing $37,000.

LONG ISLAND CITY, N. Y. — C. E. Hires Co., 21 East Fortieth street, New York, plans altering and equipping bottling plant here at a cost of approximatly $37,000.

LONG ISLAND CITY, N. Y. — E. Mari, 21 East Forty-second street, New York, plans construction of a 2-story, 41 x 100-foot factory at Thirty-seventh street and Thirty-fourth avenue, to cost $37,000. G. Salerni, 202 West Fortieth street, New York, is engineer.

MOHAWK, N. Y. — Village plans construction of sewage disposal plant costing $30,000. PWA grant has been secured.

NEW YORK — Drymethosen Corp. has been incorporated to manufacture machinery. Correspondent is Charles Kaufman, 475 Fifth avenue.

NEW YORK — Rotary Valve Corp., care of M. L. de Zutter, 122 East Forty-second street, will purchase an old plant or construct a new one somewhere in New Jersey for manufacturing valves. About $40,000 will be spent.

SYRACUSE, N. Y. — Olympic Motor Car Co. Inc., care of B. Wiles, State Tower building, plans reconditioning former Franklin automobile plant, at a cost of over $40,000.

UNION SPRINGS, N. Y. — Voters have approved construction of waterworks system to cost $138,000. Either PWA or WPA financial aid will be sought, and bonds will be issued for the remainder of the cost.

WHITESBORO, N. Y. — Village will construct sewage disposal plant costing $23,000, and either PWA or WPA financial aid will be sought.

YORKVILLE, N. Y. — Utica Drop Forge & Tool Corp. has been organized to manufacture wrenches, pliers, and cutters. Correspondent is Miller, Hubbell & Evans, Mayro building, Utica, N. Y.

New Jersey

INTERLAKEN, N. J. — Borough plans installation of chlorination tank and construction of pumping station in connection with extension of sewerage system. Total cost will be $108,000, and WPA has granted $56,996. J. Wesley Seaman, Long Branch, N. J., is engineer.

KEARNEY, N. J.—Frederick Gumm Chemical Co., Union City, N. J., will remodel its recently purchased plant at 538 Forest street at a cost of over $37,000. Architect is C. Warren, care of the company.

LONG BRANCH, N. J. — Martin Rubber Co., W. L. Tepper president, 2727 Jackson avenue, Long Island City, N. Y., plans construction of a plant addition costing $40,000.

WESTWOOD, N. J. — Borough plans alteration and addition to sewage treatment works at a cost of $20,000, all funds coming from PWA.

Pennsylvania

ALTOONA, PA.—Pennsylvania railroad plans construction of addition to railroad machine shop here.

DUQUESNE, PA. — Martin Kovacs, Royal Mfg. Co., 19 North First street, is taking bids until Oct. 1 for construction of a three-story addition to cost $30,000.

ERIE, PA. — J. A. Zurn, 930 West Twelfth street, plans building a 1-story factory addition to cost $37,000.

PHILADELPHIA — Frankford arsenal will take bids until Oct. 1 for a wire forming machine, invitation 314-37-121, and until Oct. 5 for a measuring machine, invitation 314-37-123.

PHILADELPHIA — Delta Equipment Co., 148 North Third street, is in the market for an engine generator set, 75 to 85-kilowatt, two-phase, 60-cycle, 220 volts, for direct connection to automatic engine.

Alabama

MOBILE, ALA. — International Paper Co., 220 East Forty-second street, New York, is planning a new paper mill to be located at Mobile.

Maryland

CUMBERLAND, MD. — City will extend waterworks system at a cost of $37,300, with PWA granting $16,785.

CUMBERLAND, MD.—County com-

missioners of Allegany county plan construction of filtration plant costing $1,000,000.

HEBRON, MD. — G. A. Bounds & Co. plans construction of a woodworking plant costing $37,000.

OWINGS MILLS, MD.—Owings Mills Distilling Co. will let contracts soon for construction of a bottling plant costing $40,000. Kubitz & Koenig, Emerson Tower, Baltimore, are engineers.

District of Columbia

WASHINGTON — Veterans administration, procurement division, Arlington building, is taking bids until Sept. 30 for an air compressor, invitation 167-M.

WASHINGTON — Navy department, bureau of supplies and accounts, is taking bids until Oct. 2 for a single spindle, motor driven woodworking shaper, delivery San Pedro, Calif., schedule 8813; a motor driven combination shear, punch, coping and notching machine, for delivery San Pedro, Calif., schedule 8814; and for motor driven air compressors, schedule 8836, for delivery Brooklyn, N. Y. The bureau will take bids until Oct. 6 for miscellaneous steel castings for delivery Newport, R. I., schedule 8854, and for a motor driven woodworking machine, schedule 8851, for delivery Portsmouth, Va.

Florida

DADE CITY, FLA. — Pasco Packing association plans installation of electric power equipment and mechanical handling apparatus and other equipment in proposed one-story citrus fruit packing plant to cost $70,000. L. C. Edwards is president.

FORT LAUDERDALE, FLA. — City has voted issuance of $89,000 in revenue debentures, proceeds to be used for sewer disposal plant and extensions to sewer system.

JACKSONVILLE, FLA.—City commission plans to sell $100,000 waterworks bonds and $100,000 electric light plant bonds in December, to finance improvements to plants.

LAKE WORTH, FLA.—City will reconstruct electric power house at an estimated cost of $40,000, PWA having granted $18,000.

OCALA, FLA.—City is preparing plans for a proposed $94,000 sewage project for South Ocala. E. P. Clark is city manager, and A. J. McKay is district WPA engineer.

ORLANDO, FLA.—P. Phillips Inc., 70 West Robinson avenue, will erect a $100,000 citrus packing plant at Fairvilla, a local suburb, to replace factory recently burned. Carol Floyd is engineer.

ORLANDO, FLA. — Dr. P. Phillips Co., Box 151, is in market for steam generator, No. 110-125 steam pressure, 60-75 kilovolt-amperes, three-horsepower, 60 cycles, 220 volts, alternating current.

PENSACOLA, FLA. — City has appropriated funds for constructing Ninth avenue sludge disposal plant and DeVilliers street disposal plant, and work will start soon.

PORT ST. JOE, FLA. — Mead Corp., Chillicothe, O., plans construction of a $7,500,000 paper mill for the St. Joe Paper Co.

WEST PALM BEACH, FLA. — Atlantic & Gulf Canning Co. plant was recently damaged by fire.

Georgia

ATLANTA, GA. — R. M. Clayton Co. will construct sewage disposal plant costing $371,000. Wiedeman & Singleton Inc. is engineer, 1404 Candler building, Atlanta.

ATLANTA, GA. — Jones Machinery Corp., Citizens & Southern National Bank building, J. Hinkle, construction superintendent, plans construction of a 60 x 100-foot plant addition.

ATLANTA, GA. — City purchasing agent, City hall, will receive bids until Oct. 5 for construction of Utoy Creek sewage disposal plant, to cost $80,000. W. A. Hansell is assistant in charge of construction.

ATLANTA, GA. — William E. Dunn, 1117 Mortgage Guarantee building, is in the market for a steel tank and tower, and for a 110-125 pounds steam pressure generator set, 60 or 75 kilovolt amperes, 220 or 230 volts, on alternating current.

DALTON, GA.—Rural electrification administration will loan North Georgia Electric Membership Corp. $370,000 to finance erection of 357 miles of transmission lines to serve 2503 customers in Georgia and Tennessee.

ROME, GA. — Tubize Chatillon Corp. 2 Park avenue, New York, will ask bids about Sept. 25 for $2,500,000 addition to plant here. Work will include spinning building, filter plant, additional power plant equipment and shop buildings. Robert & Co. are engineers, Bona Allen building, Atlanta, Ga., and R. C. Jones is local plant manager.

SAVANNAH, GA.—Read Phosphate Co. has acquired the Savannah factory of G. Ober & Sons Co., 110 East Lombard street, Baltimore, and will repair and improve it. The Read Co. is a subsidiary of the Davison Chemical Corp., Baltimore Trust building, Baltimore.

WEST POINT, GA. — West Point Foundry & Machine Co., through parent company, Batson-Cook Co., Shawmut, Ala., has awarded a plant expansion contract. R. Kennon Perry, 1001-2 Mortgage building, Atlanta, Ga., is architect.

Kentucky

HENDERSON, KY. — City plans construction of complete waterworks system estimated to cost $367,273, including pumping plant, filter plant and elevated tank. New boilers will be installed in the boiler room. PWA has granted $165,273.

MIDDLESBORO, KY.—City will vote Nov. 3 on issuance of $175,000 bonds for financing construction of municipal power plant. J. S. Watkins, Lexington, Ky., is engineer.

UNIONTOWN, KY. — J. E. Wathen Distilling Co. plans construction of a new plant to cost $150,000, and contracts will be let soon.

VERSAILLES, KY.—City will construct a sewage disposal plant costing $41,250, with help of $18,562 PWA grant.

Louisiana

ABBEVILLE, LA. — City has voted issuance of $175,000 bonds for financing construction of sewerage system and disposal plant. J. B. McCrary Co., engineer, Atlanta, Ga.

RUSTON, LA. — City plans construction of sewage disposal plant costing $100,000, and bonds will be voted on. S. E. Huey, Ruston, is engineer.

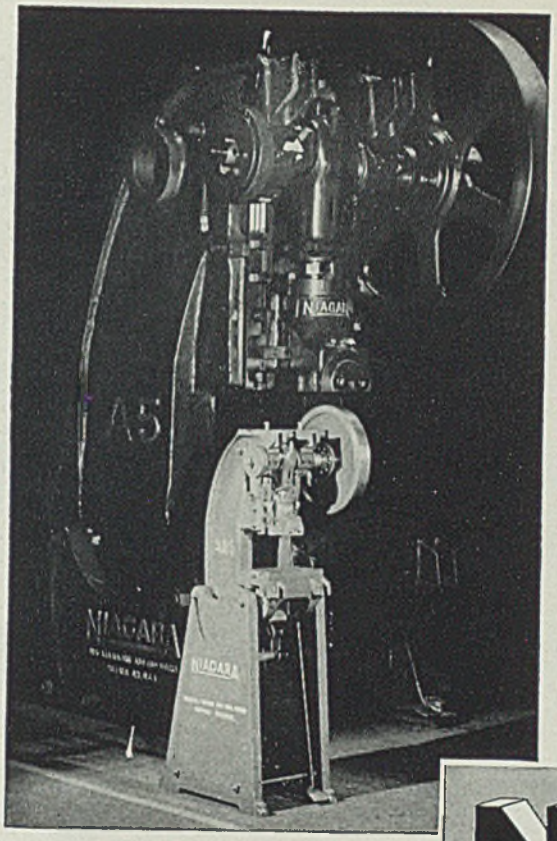
South Carolina

NORTH CHARLESTON, S. C. — West Virginia Pulp & Paper Co., 230 Park avenue, New York, plans to construct a new paper mill here.

Virginia

BERKLEY, VA. — Thomas Marine Railway Co. will repair and alter its plant

(*Please turn to Page* 102)



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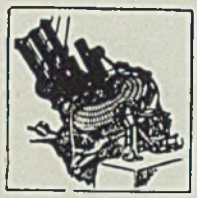

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(*Concluded from Page* 100)

and install new equipment, at a total cost of approximatey $37,000.

Arkansas

TYRONZA, ARK. — Tyronza Supply Co. plans altering and repairing cotton ginning plant at a cost of $40,000.

Oklahoma

OKLAHOMA CITY—Haggard Inc., 322 West California avenue, wholesale furniture manufacturer, plans rebuilding burned plant.

VINITA, OKLA. — City plans construction of sewage disposal plant and has applied to PWA for $43,637.

Texas

BAY CITY, TEX. — City plans erection of electric power station, with installation of three 500-horsepower diesel engines with generators, and will ask bids soon. Garrett Engineering Co., 308 Hughes street, Houston, Tex., is engineer. Cost is estimated at $225,000.

HOUSTON, TEX. — Maintenance Engineering Corp., E. E. Naylor, 1400 Conti street, has acquired plant of Finucane Boiler Works, Clinton drive near Bringhurst avenue, and will make improvements.

MEDINA, TEX. — Ina Oil & Refining Co., San Antonio, Tex., plans reconstruction of Golden West refinery, and will also dig several wells.

Wisconsin

FOND DU LAC, WIS. — City plans construction of municipal water softening plant costing $124,605, with PWA allotting $56,073.

MARINETTE, WIS. — Board of vocational education will construct a 2-story vocational school and shop, 132 x 207 feet, costing $114,000, on which bids will be asked soon. PWA has granted $51,136. Architect is Derrick Hubert, Menominee, Mich.

MILWAUKEE — Blatz Brewing Co., 1120 North Broadway, will take bids soon for construction of a 6-story building with storage tanks, estimated to cost between $175,000 and $200,000. George L. Lehle, 111 West Washington street, Chicago, is engineer.

MILWAUKEE — Milcor Steel Co., recently acquired by Inland Steel Co., Chicago, will spend $250,000 for new equipment and production facilities. The plant at Canton, O., will also be enlarged. It is reported further the idle Milwaukee plant of Inland Steel may be re-equipped into an operating plant to furnish raw materials shipped to Milwaukee by Inland for Milcor use. Louis Kuehn is president of Milcor Steel Co.

RICHLAND CENTER, WIS. — Vernon County Electric Co-operative will build 503 miles of rural transmission lines in Vernon and neighboring counties, at a cost of $480,000, allotted by REA. H. O. Melby, Westby, Wis., is president.

SOUTH MILWAUKEE, WIS.—City will construct sewage treatment plant costing $66,000, with PWA grant of $29,700.

Minnesota

ELLSWORTH, MINN. — City will construct waterworks system costing over $25,000. Druar & Milinowski, 830 Globe building, St. Paul, engineers.

GLENCOE, MINN. — Voters have approved issuance of $75,000 bonds for construction of municipal power plant. G. M. Orr & Co., 542 Baker building, Minneapolis, is engineer.

North Dakota

REGENT, N. DAK. — Village will build complete waterworks system, including pump house and elevated steel storage tank of 50,000 gallons. Cost is estimated at $36,364.

South Dakota

RAPID CITY, S. DAK. — City will make extensive improvements to waterworks system, at a cost of $125,454, with PWA granting $56,454.

Iowa

OELWEIN, IOWA — City plans extension of waterworks, including erection of elevated tank, at total cost of $47,000, with PWA grant of $21,150.

Nebraska

CAMPBELL, NEBR. — Village plans construction of waterworks system costing $15,000. Leslie Beirhaus, Campbell, is engineer.

CORTLAND, NEBR. — Village plans construction of waterworks system costing $14,000, and a special election will be held Oct. 2 to vote on issuance of bonds.

GERING, NEBR. — Gering Valley rural public power district plans erection of rural transmission lines in Scottsbluff county, at a cost of $40,000.

OMAHA, NEBR. — Nebraska Power Co., F. E. Smith chief engineer, Omaha, plans erection of rural transmission lines near Rogers, Nebr., at a cost of $15,000.

OMAHA, NEBR. — Metropolitan utilities district, T. A. Leisen chief engineer, Eighteenth and Harney streets, plans installing an electric pump in pumping station, at cost of $48,500.

OMAHA, NEBR.—Nebraska Power Co., Seventeenth and Harney streets, plans erection of rural transmission lines in vicinity of Herman, Elmwood, Washington, Papillion and Avoca, at a cost of approximately $35,000. F. E. Smith is chief engineer.

SARGENT, NEBR. — City plans construction of sewage disposal plant costing $50,000. Group Engineering Co., 609 Merchants National Bank building, Omaha, Nebr., engineer.

Colorado

DENVER — City plans waterworks improvements, including erection of four elevated steel storage tanks. Cost is estimated at $930,000, with PWA furnishing grant of $418,500.

GUNNISON, COLO. — City is planning to spend $60,000 for construction of municipal power plant. F. E. Keenan is city manager, City hall.

Idaho

NOTUS, IDAHO — Village will build waterworks plant costing $85,454, with PWA grant of $38,454 and loan of $47,000. An elevated tank will be erected, along with a booster pumping station and equipment.

Pacific Coast

HABOR CITY, CALIF. — Western Sulphur Co., President avenue, plans repairing and altering refining works at a cost of about $37,000.

LOS ANGELES — Glass Containers Inc. will build a 100 x 200-foot factory building at 3601 Santa Fe avenue, Vernon district, for manufacturing bottles.

LOS ANGELES — Wire & Metal Manufacturing Co. 530 Riverside drive, Glendale, Calif., will build a factory in the Vernon district, near Los Angeles, where light structural steel, sheet metal and stampings, and wire products will be fabricated.

EVERETT, WASH. — City plans extensive improvements to waterworks system at cost of $1,300,000, aided by a $585,000 PWA grant.

SEATTLE — City plans construction of additional power generating and transmission facilities, at a cost of $7,185,000, with PWA granting $3,000,000.

Canada

STEWART, B. C. — Consolidated Mining & Smelting Co. Ltd., S. G. Blaylock general manager, will construct a 500-ton daily capacity concentrating mill, with a 3000-horsepower power plant, for operating the Big Missouri mine near here. Total cost is estimated at $600,000.

BURLINGTON, ONT. — Niagara Brand Spray Co. Ltd. plans construction of a plant for manufacturing spray equipment, and will purchase new machinery. Total cost will be about $40,000.

CHIPPEWA, ONT. — Norton Co. of Canada Ltd., abrasives manufacturer, plans construction of a branch factory here, to cost $45,000.

EAST WINDSOR, ONT.—Long Mfg. Co. Ltd. will construct a factory here for manufacturing radiators, clutches, etc., on Drouillard road, at a cost of $40,000.

OWEN SOUND, ONT. — Dominion Linseed Oil Co. Ltd., Toronto, Ont., plans construction of addition to factory for manufacturing soy bean flour. Cost is estimated at $45,000. H. P. Livingston is engineer, care of owner.

PORT COLBORNE, ONT. — Arcan Furniture Co. Ltd., plans extensive enlargement of plant and purchase of new machinery, at total cost of $40,000.

TORONTO, ONT. — Industrial Compounds Ltd., care of Mathew C. C. Chisbohm, Toronto, plans construction of plant somewhere in Ontario or Quebec for processing, refining, and treating chemicals. Cost will be $50,000.

TORONTO, ONT. — Toronto Asphalt Roofing Co. Ltd., Oxford drive, will take bids soon for construction of 1-story, 110 x 125-foot addition to factory for manufacturing roofing. Harkness & Hertzberg, 57 Bloor street, are engineers.

WOODSTOCK, ONT. — Truck Engineering Co. of Canada Ltd., Young street, plans remodeling old buildings and purchasing additional equipment at a cost of $50,000.

LA POINTE DU LAC, QUE. — Fournier & Villemure plan construction of manufacturing plant costing $40,000, and additional machinery will be purchased.