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## As the Editor Views the News

N VIEW of the unusual situation in the United States, wherein important union labor leaders are in league with high officials of the government on a political basis, industrial employers will do well to study the alarming developments that have occurred in France in recent months. Conditions in the two republics are not parallel, yet there is sufficient similarity in trends, in the objectives of the leftists and in the threats to economic stability to cause every sober-minded American to question seriously some of the arms and acts of his present federal administration in Washington.

Vincent Delport, STEEL's European representative presents an excellent summary of the French crisis (p. 18), in which two extraordi-

## Could It

nary facts stand out: First, when it was apparent that socialists and their radical al-Happen Here? lies were gaining political

power, sudden strikes were called to force desired legislation. Secondly, the resultant situation is one in which employers, having lost much of their freedom, are subject to government dictation on labor relations, prices, etc. Are we in the United States in danger of a somewhat similar state of affairs where a minority force, acting through the instrument of fomented strikes, may inflict its will upon the majority?

If we escape the predicament of France, it will be because of the common sense of American employes. Our new deal administration

#### The Seed Has **Been Planted**

has done much to incite mass hatred against industry and to provoke hostility between employe and employer. In doing so, it has sown the kind of seed

which in France, grew into a bloodless revolution. But there are signs that such seed may not grow in American soil. Calmer heads in the Amalgamated association (p. 14) are not so sure that they want to team-up with the left-

ists of the CIO. William Green seems more emphatic in his effort to discipline the eight incorrigibles of A. F. of L. Steel company employes are announcing their desire to remain free from the yoke of professional unionism. Steel consumers (p. 29) will support fair play in the labor contest. Perhaps the seed of invoked hatred will not take root in this country!

When the American Iron and Steel institute published its annual statistical review for 1934, it revised its figures on the production of

Statistics on Steel Castings

ГТЕЕ

**PRODUCTION · PROCESSING · DISTRIBUTION · USE** 

steel castings to include only such castings as are produced by steelworks for their own use. This policy was followed in the statistics for 1935 and

undoubtedly will be continued. As a result of this change, persons who are interested in the record of the output of commercial steel castings must rely upon the figures of the department of commerce or the Steel Founders' Society of America. The latter's series of statistics, dating from 1934 (p. 56) fill the gap admirably. It will be even more valuable when the society fulfills its present intention to provide separate data for carbon and alloy steel castings.

In giving a partial answer to the question, "What's new in welding?", Robert E. Kinkead (p. 49) cites six new processes, each of which

#### Alert to New Welding Data

has unlimited possibilities for the advancement of welding practice. Nobody can predict the final fate of these six, or of the several other new develop-

ments which will be announced during the next few months. The pertinent point is that the present knowledge of welding is subject to change without notice. Manufacturers who employ welding apparently realize this fact, because they are alert to news of new developments in welding. STEEL has been besieged for additional copies of recent articles on new welding processes-particularly the Longoria process described in the issue of June 22. This is a gratifying evidence of progressiveness.



## Three-Way Split Appears in Steel Unionization Drive

HILE the Lewis and Green labor factions still were far apart last week reports from the rank and file of the Amalgamated Association of Iron, Steel & Tin Workers indicated the possibility of another serious split affecting plans to unionize the steel industry.

Conservatives in the Amalgamated, who from the first were opposed to the hookup with Lewis, are openly expressing resentment against the CIO leadership, branding certain members and organizers as communists.

If the CIO is to organize the industry it is apparent that it will have to do it without the active support of a large portion of the present Amalgamated membership. A strong influence against a strike is being built up in the mills.

Developments so far are paralleling those preceding the strike in 1919. Just as Samuel Gompers, the conservative, fought William Z. Foster, the radical, so is William Green fighting John L. Lewis. And, in answer to the Washington spokesmen who chide steelmakers for promising protection to employes and their families, there is another chapter in the history of that conflict. Steelworkers went to the mills on the morning Foster said they should strike. By afternoon so many had been called home by their families, terrorized by "organizers," that some mills had to close.

Anticipating similar tactics in the present drive, employe representatives in several steel centers last week petitioned local authorities to keep away the disturbers—Lewis' "martyrs," the organizers, whom Lewis in his radio talk said would be "brutally beaten."

#### Attendance at Rallies Is Small

Less than 5000 in all attended the much-publicized rallies staged by the CIO in Homestead, Pa., Chicago and Cleveland. At the Cleveland "convention" the 62 "delegates" claimed to represent 25,000.

At Portsmouth, O., only a refusal to take back five instigators of the strike, which tied up the Wheeling Steel Corp.'s plant five weeks and resulted in one death, stood in the way of 5000 workers' readiness to re-

#### turn on the same terms and conditions as existed before the walkout.

As it became clearer that the CIO is not seeking a showdown at this time, political aspects of the situation came more to the front.

Following a meeting of the A. F. L.'s executive council, Green said that there are two ways out of the dispute with the Lewis faction, one to let it go until the council's September meeting; the other to appoint a subcommittee to confer with the CIO in an effort to reach an agreement.

Although Lewis and Green assured President Roosevelt last week that there is no intention to call a steel strike immediately, adroit use of Lewis' previous strike threats was made by the national labor relations board in renewing hostilities against steel and other companies. In seeking a rehearing of the Jones & Laughlin case at New Orleans the board stated: "The need for remedial action such as this (Wagner) act is being illustrated by the threatened strife in the steel industry, which will by its nature directly burden interstate commerce."

Other gestures friendly to labor:

The offer to feed steel strikers at public expense, and "protection" for them, made by Lieut, Gov. Thomas Kennedy of Pennsylvania, who also is secretary-treasurer of the United Mine Workers of America.

Claim by Major George Berry, fed-



#### Lieut. Gov. Thomas Kennedy He pledged relief funds for steel strikers; also said the national guard will not be called out against them. Acme Photo.

eral co-ordinator for industrial cooperation, and former head of the International Typographical union, that 2,000,000 labor votes now are controlled by key organizations in Labor's Non-Partisan league, of

#### CIO's Rally at Homestead



THIS was the "throng" that tu ned out July 5 "to pay tribute to the strike victims of 1892." In a vacant lot, all the workers that the committee could assemble for the "memorial" heard Pennsylvania's lieutenant governor, who also is secretary-treasurer, United Mine Workers, berate "the steel barons." Acme Photo

which Berry is chief and the CIO an active supporter.

Senator Robert LaFollette's reported intention to reopen his investigation into the alleged use of spics by steel companies.

In the second issue of US Steel News, a magazine published for employes of the United States Steel Corp. and subsidiaries, who number more than 225,000, William A. Irvin, president, explained the corporation's policy concerning labor. He stated:

"About 90 per cent of the employes voted at the annual elections of representatives recently conducted. This is to me clear evidence that the plan is satisfactory to the employes. Yet it is this very plan that this group of organizers declare they will destroy.

"The plan itself provides that it may be discarded at any time by action of a majority of the employes at any plant voting in a referendum election. And that is the only way the plan can be abrogated—even the management cannot rescind it.

"The United States Steel Corp. has always stood for the open shop and will continue to do so."

Speaking for the Bethlehem Steel Co. in the Bethlehem Review, employes' paper, E. G. Grace, president, said:

"Employes in the industry have enjoyed a long era of industrial peace during times when other industries dominated by labor unions have been torn with strife.

"We will assist you to continue the present proven method of dealing with our mutual problems, and we will use our resources to the best of our ability to protect you and your families from interference, intimidation and coercion from any source."

## Strong Farm Steel Demand Persists Despite Drought

**B**LISTERING heat which has been withering farms in various sections of the country the past few weeks has caused some concern to the steel industry because of the importance of the agricultural markets for wire products as well as for other steel commodities in the form of implements and tractors.

At the moment the situation is less serious than is indicated by scattered reports from those areas most adversely affected—also by the avidity with which Washington is hastening to sprinkle the cooling water of federal cash relief over the arid acres.

So far there have been no reports of any marked recession in demand for implements, tractors or wire products. Furthermore, unless conditions should become considerably worse, it is unlikely that total farm income or purchasing power will be seriously affected. The psychological factor remains, however, in that farmers who recall the 1934 drought disaster may become cautious in spending the better returns they have received the past two years.

The next two weeks probably will



More Strikes Since 1932

WHILE industrial production, weekly earnings, cost of living advanced at a moderate rate, and trade union membership somewhat more rapidly, the number of persons on strike increased three and four-fold during 1933, 1934 and 1935, in comparison with preceding years. From 1927 through 1932 the average number on strike followed fairly closely the trend of economic factors. But, beginning in 1932, the National Industrial Conference board finds, "the number on strike shows complete independence of economic factors"

tell more of the story of how much damage will be done the farmer by the moisture scarcity. Rain the latter part of last week brought some relief to the parched Northwest as well as to southern Illinois, central Indiana and southwestern Ohio, but more is needed.

While to date there has been some shifting of farm income, changes in the total have been slight.

For example, wheat farmers in the central and eastern areas plant their crops earlier than in the Northwest, and the losses in the latter district partly are offset by the higher prices accruing to the earlier crops which have passed the drought damage state or which have not been subjected to moisture deficiency. Raisers of winter wheat have profited materially as a result of the sharp price rise which has accompanied the damage to the spring crop.

Wheat is a source of a relatively small part of total farm income. In recent years the aggregate of all grains ranked fifth among the various classes of the farmer's cash income producers. Meat animals generally stand first.

#### Meat Prices Lower

Effect of the drought on livestock prices already is noted. Hogs and cattle are being forced on the market because feed costs have risen, pastures have dried up and farmers have feared death losses in extremefat stock. This forced selling has resulted in lower prices.

Demand of agricultural equipment has been one of the important factors which have sustained steelwork operations at an average of 62.2 per cent during the past six months.

Last year, tractor manufacturers bought 718,504 tons of finished steel products and this seemed likely to increase to 900,000 tons this year. Tractors account for around 40 per cent of sales of all types of farm machinery.

Farm machinery makers looked for a 20 to 25 per cent gain this year over 1935, basing their expectations on the first six months' sales, which were at the best rate since 1929.

Farm cash income, based on 1929 as 100, was 41.2 in 1932, 48.8 in 1933, 60.9 in 1934, and 66.3 in 1935. This year's figure had been estimated at probably 76.5, despite curtailment in federal benefit payments. Cash income through April was \$2,079,000,000against \$1,970,000,000 in the same period of 1935. The total for last year was \$6,943,000,000.

#### "Materials Handling" To Be a Feature in STEEL

**R**ECENT observations by editors of STEEL reveal that in no phase of manufacturing in the steel and metalworking industries can greater savings and other advantages be obtained than through efficient, modern handling of materials and products. They reveal also that never before has the whole subject of materials handling been so important to manufacturers as under today's conditions.

Publication of news on all new developments in materials handling methods and equipment always has been a regular feature of STEEL's editorial policy. In view of present opportunitles and trends, this editorial attention now is being intensified.

"Materials Handling" is the title of a new feature section to be inaugurated in an early issue of STEEL and to appear regularly in each issue



John A. Cronin

thereafter. It will contain news, feature articles and photographs which will assist readers in solving their materials handling problems and keep them informed on all latest developments in materials handling equipment, methods and accessories.

In charge of the "Materials Handling" section will be John A. Cronin, now a member of STEEL's editorial staff. Mr. Cronin is well known in the materials handling field and since his graduation from Dartmouth college, Hanover, N. H., in 1912 has been engaged principally in editorial activities in this field.

For six years Mr. Cronin was editor of Mill Supplies and for more than five years he edited Materials Handling and Distribution. During this latter service Mr. Cronin served as secretary of the Materials Handling institute and as chairman of the papers and program committee of the materials handling division of the American Society of Mechanical Engineers. More recently he was editor of Ship ping Management. During the NRA period he served as secretarytreasurer of the Caster and Floor Truck Manufacturers and the Gas-Powered Industrial Truck Manufacturers associations.

### Financial

**N**EWTON STEEL CO. faced foreclosure proceedings last week after the filing of a suit in Warren, O., by the Central National bank of Cleveland as trustee for the company's 7 per cent first mortgage gold bonds, all of which are owned by Republic Steel Corp.

Newton has plants at Newton Falls, O., and Monroe, Mich. It has outstanding \$3.866,000 of the 7 per cent first mortgage bonds, all of which are said to be in default. As of last Dec. 31 it owed Republic \$1,799,822 on open account.

Republic owns the majority of Newton's common and preferred stock, which it acquired through acquisition of the Corrigan, McKinney Steel Co.

Republic officials announced last April that they were contemplating foreclosure proceedings.

#### ALGOMA STEEL SPLITS COMMON

Algoma Steel Corp. Ltd., Sault Ste. Marie, Ont., which reported operating profits of \$1,264,142 for the fiscal year ending April 30, has announced an increase of the common stock capitalization from 130,000, of which only 99,725 have been issued, to 1,000,000 no par shares, the exchange authorized at the rate of four to 1.

At the exchange rate the total common shares will be 398,000, leaving 601,100 common shares unissued, which may be used for corporate purposes. The convertible features of the preferred stock, heretofore 2,700,000 shares, of which 2,417,000 had been issued, is changed, making it convertible into four new common shares instead of one.

#### MACKINTOSH-HEMPHILL

Reorganization of Mackintosh-Hemphill Co., Pittsburgh, has been approved by federal court. It provides that for every \$1000 outstanding first mortgage bond there will be paid \$500 in cash, plus a new convertible first mortgage bond for \$500 and a \$50 note which will be due Jan. 1, 1937.

Merchandise creditors will be paid

in full in cash, and bank creditors will receive 80 per cent in principal, plus 4 per cent accrued interest for three years. Preferred and common stockholders' claims will be unaffected, and a royalties claim will receive 1620 shares of preferred stock.

#### NATIONAL STEEL DIVIDEND

National Steel Corp. last week declared the regular dividend of 37½ cents per share of capital stock for the second quarter, payable July 30 to record of July 20.

#### Youngstown, Republic Mills Set New Records in June

Rolling 62,000 tons of hot strip in June, Youngstown Sheet & Tube Co., Youngstown, O., established a new high mark for its wide continuous strip mill at Campbell, O. The rated capacity of the mill was 50,000 tons per month but addition of a third slab heating furnace early this year gave an increase.

Pipe mills of Republic Steel Corp., Cleveland, set new records for their shipments in June, and July promises to equal the June record. One shipment covered 100 miles of pipe line, and 75 miles for the same project is on July schedule.

#### Amalgamated and Bar Iron Mills Renew Agreement

The basic agreement between the Western Bar Iron association and the Amalgamated Association of Iron, Steel and Tin Workers was renewed for 12 months beginning July 1, as a result of a conference last week in Chicago. One or two members of the Bar Iron association were still to be heard from, but are expected to acquiesce. This follows the contract between the Western Association of Sheet and Tin Plate Manufacturers and the Amalgamated, giving the sheet and tin plate workers a 2 per cent increase in tonnage wage rates.

#### Taxes on Industry Are 34 Per Cent of Payroll

For every dollar that industry spends on payrolls it must spend another 34 cents in taxes. This is disclosed by a nation-wide survey of 694 companies in 25 industries, including iron and steel, by the National Association of Manufacturers. Last year the tax load was \$1.42 for each dollar paid in dividends.

The average tax load for the reporting industries is \$486 per employe, \$303 per common stockholder, \$2 per share of common stock, and equals 8 per cent of sales.

## Differentials For Wholesalers'Legal'

ATIONAL Wholesale Hardware association has advised its members that the Robinson-Patman act apparently does not outlaw differentials based on function in favor of wholesale distributors as against the retailer, and not based on lower cost of manufacturing or distribution.

George A. Fernley, secretary-treasurer of the association, after conferring with Attorney J. Wesley McWilliams, Philadelphia, informed members that "while only court decisions will estabish the limitations of the act, we wish to emphasize our belief that nothing in it will interfere with the granting and receiving of differentials usually allowed wholesalers to compensate them for the expense involved in distributing to the retail trade.

"As Mr. McWilliams points out, the act is intended to prevent discrimination which gives competitive advantage to chain stores and mail order houses. He does not believe that extensive revision or reversal of present policies which are not discriminatory, is necessary."

The attorney held that competition is not lessened because of a price differential favorable to the wholesaler. His replies to ten questions asked by Mr. Fernley included:

A seller is within the law in quoting a cut price to a buyer in order to meet competition, but he should have clear proof of the existence of the competitor's low price. Quantity discounts are permissable. The law provides the federal trade commission may establish quantity limits where it finds that the number of purchasers able to buy in exceptionally large quantities are so few that the differentials established unjustly discriminate in their favor or tend to promote monopoly.

Certain provisions of the act overlap, according to Mr. McWilliams, and it is difficult to determine their application in advance of court interpretations.

"Section 2 (a) declares price discrimination between different purchasers unlawful where its effect may be to substantially lessen competition, tend to create a monopoly or injure, destroy or prevent competition with the person who benefits from such discrimination or with his customers.

"Section 3, on the other hand, makes it unlawful for anyone to be a party to or assist in 'any transaction' which discriminates to his knowledge against competitors of the purchaser by granting any rebate, discount, allowance or advertising service charge to the purchaser over and above similar allowances 'available at the time of such transaction to competitors."

Mr. McWilliams said the courts probably would consider these sections together rather than separately, keeping in mind the purpose of congress in enacting the measure.

#### **Russian Pact Considered**

United States' trade agreement with Russia will be renewed for one year, dating July 13, according to reports from sources close to the state department. The agreement makes it possible for Russia to export manganese ore to this country at half the regular tariff because the rate was allowed in the agreement with Brazil, and Russia is granted favored nation terms.



Photo by McLaughlin Aerial Surveys VIEW of the Triboro bridge, looking down on it from Queens toward Manhattan and the Bronx. Hell Gate railway bridge is to the right. In the foreground is the principal suspension span leading into the Grand Central parkway and serving all of Long Island

## Triboro, 160,000 Tons, Dedicated

ARGEST structure of its kind in the New York metropolitan area, the \$63,000,000 Triboro bridge was formally opened last Saturday.

The bridge which links the boroughs of Manhattan, Bronx and Queens with 19 miles of roadway, of which 3½ miles are elevated, has been under construction for seven years.

Steel awards in this time have amounted to more than 160,000 tons, including 68,150 tons of structural shapes and 91,000 tons of reinforcing bars, and 3400 tons of cable. The George Washington bridge which spans the Hudson river required about 62,000 tons of structural shapes, and approximately 30,000 tons of cable.

#### **Many Steel Suppliers**

Bethlehem Steel Co. supplied the largest amount of structural shapes, about 41,450 tons, of which 32,700 was for the suspension spans and 8750 for the Bronx approach. Alco Products Inc., New York, fabricated 12,500 tons for towers and anchors and Jones & Laughlin Steel Corp. and Fort Pitt Bridge Works 7450 tons for the Harlem crossing, Taylor-Fichter Steel Construction Co., New York, erected these latter two tonnages. American Bridge Co., Pittsburgh, fabricated 5500 tons for the Manhattan approach, and the Harris Structural Steel Co., New York, 1000 tons for the Randall's island junction.

The reinforcing bar steel came through a larger number of contractors and sub-contractors. Incidentally, to date 73 direct contractors involving work and materials of various kinds have been let by the bridge authority. and many of these have been divided into sub-contracts literally running into the hundreds. As there are still some finishing touches, additional contracts probably will be placed; including several hundred tons of piling.

The 3400 tons of cable was fabricated by the American Steel & Wire Co. Miles of conduit and large quantities of iron and steel pipe for various purposes, also were among the major items.

The bridge is an all-American (steel) structure, having figured prominently in the news early this year when the steel industry forestalled placement of piling for it with a German mill.

Built largely with federal funds, the bridge's dedicatory ceremony was scheduled to include speeches by President Roosevelt, New York's Governor Lehman and Mayor LaGuardia of New York.

STEEL

## French Radicals Put Heavy Burden on Steel Industry

BY VINCENT DELPORT European Representative, STEEL

Combination of parties of the left in France has resulted in socialist domination of the chamber of deputies and radical changes in industrial conditions in response to demands of workers. This has placed heavy burdens on production which industry will find difficulty in bearing, if at all possible. Mr. Delport presents the case in the accompanying review with suggestions as to possible results of this movement in its effects on French domestic and export trade.

**R** ECENT events in France by their swiftness, by the radical changes they are bringing about in the economic structure of the country, and by the atmosphere that surrounded their occurrence, constitute little short of a revolution—without bloodshed.

The sequence of events can be summarized as follows:

Early in May general elections in France resulted in a decisive victory for the so-called popular front, formed by an alliance between the radical-socialists, socialists and communists. This group obtained in the chamber of deputies a substantial majority over the combined seats of all other parties, and it was returned on a platform calling for drastic modification in industrial and social legislation.

#### Strikes Spread Rapidly

Barely a week after these elections, and before the new chamber was inaugurated, a few strikes started in a number of specialized metallurgical works in the region of Paris. The situation during the month that elapsed between the elections and the constitution of a new government was uncertain and gave rise to increasing anxiety among employers of all classes. The outgoing government, which was still in power, could take no initiative and could only limit its action to maintaining law and order.

In the first days of June, the new government took office, with Leon Blum, leader of the socialist party, as prime minister. This new government is mainly composed of socialist ministers, with a small number of radicals; it is the first socialist government in the history of France, since the formation of the Republic. Almost concurrently with the formation of the government and its first appearance before the new chamber, the strike movement began to spread over diverse fields of industrial and trade activities and extended to the provinces.

One of the first steps taken by the

new government was to call together at the Hotel Matigon, the seat of the ministry of the interior, the representatives of the Employers' federation, the Confederation Generale de la Production Francaise, and of the Confederation Generale du Travail, the French federation of labor. In the night of Sunday, June 7, an agreement was signed between the representatives of the two bodies.

This agreement, now referred to as the Accords Matigon, was signed reluctantly by the employers' representatives, and under presure of the minister of the interior, who presid-

#### What French Labor Won Under Socialist Regime

Collective bargaining legally established,

Workers' wages increased 7 to 15 per cent.

Clerical staffs given salary increases. Forty-hour work week. Two weeks holiday with pay.

ed. The agreement, which embodies some of the principles of the socialist government's program, covers certain points of fundamental importance, namely: The legal establishment of collective bargaining; increases of workers' wages ranging from 7 to 15 per cent; a revision upwards of salaries of clerical staffs.

At the same time, the principle of a 40-hour week and of an annual twoweeks' holiday with pay was accepted, subject to necessary legislation being passed. This legislation was passed through rapidly, and at the same time the government was given authority to initiate certain fundamental changes in the constitution of the Bank of France, to which reference will be made later.

Before considering the probable consequences of these events on trade and industrial conditions in France, an attempt to explain why the sudden and, to some extent, unexpected swing to the left occurred at the recent general elections, is of interest.

It is now well over five years that France has been in the throes of economic depression. Among the main causes are: Reduction of buying power on the part of the large agricultural section, due to low agricultural price levels; increasing diffculties facing export trade, due principally to increasing restrictions put up by foreign nations; maintenance of the franc on gold parity when sterling went off gold; high production costs and heavy taxes; lack of confidence at home, due to uncertainties of the world position, and to fluctuating policies on the part of rapidlysucceeding governments in France itself.

Attempts to protect French industry against foreign competition did not ease the situation. Later the policy of deflation practiced by the Laval government failed to bring about the expected results: the cost of living remained high, and cuts in wages and salaries were not reflected in a decrease of production costs, and served only to disgruntle those who had to submit to such cuts.

Relations between labor and employers, particularly in the heavier industries, gradually became embittered, and it is claimed that advantage of the situation was taken by certain foreign influences to stir up trouble, not only among the wageearners, but also among clerks and salaried staffs, who were not organized to present collective claims to their employers and who found conditions increasingly difficult.

Thus, at the time of the general elections there existed an almost general feeling of discontent. It was felt that the numerous past governments, either radical or coalition, had failed to defend the interests, in many cases legitimate, of the salary and wage-earning classes. Concurrently, the powerful radical-socialist party, which in the past almost controlled the destinies of governments, had gradually lost its influence, and accepted to uphold a common program with the socialists, in which the non-negligible communist party joined: together they formed the "Popular Front".

#### Industrial Unrest Noticed

The more conservative parties, and the leagues supporting them, were disunited and had no common program. As a result, and following a clever and intensive campaign on the part of the supporters of the popular front, the socialists and communists gained over 50 seats. This, in itself, would not be sufficient to enable them to govern, but with the alliance of the radical-socialists the popular front now holds a strong majority. They will hold it as long as the radical-socialists maintain their pact with them, but there is always a possibility of the radicals taking fright should socialist action become too revolutionary. Then a swing to the right may be expected.

It is worthy of note that industrial unrest started as soon as it was evident that the socialists and their allies had won the elections. In a large number of cases strikes were declared with extraordinary suddenness, without the usual preliminary claims and negotiations. The strikes also took a novel form, the men simply stopping all work, but remaining in the works day and night, in some cases keeping in members of the managerial staff, until their claims had been granted. It has been asserted that these strikes were largely started at the instigation of certain foreign elements, and cases have been cited where the men hardly knew why they were striking.

At the time of writing, on the last day of June, the strike movement has not yet completely died down, although the Matigon agreement, re ferred to above, has been accepted by both parties, and corresponding legislation has actually been passed: this is due to difficulties of application of the new regulations in a number of individual cases, and sometimes to an unyielding attitude on the one side and exaggerated demands on the other.

#### Steel Wages Up 12 Per Cent

Reverting now to the effects of the recent events on industrial and trade conditions in France, one thing is almost certain: the concessions granted more or less willingly to labor have come to stay. Furthermore, it is generally recognized that the wage-earners had a strong case, and a number of leaders of industry are severely criticized, even by moderate sections of the community, for not having taken the initiative long ago in granting the more legitimate demands of their men.

Dealing more particularly with the

iron, steel and heavy industries, an average increase of at least 12 per cent in men's wages is actually enforced, and collective bargaining has been agreed upon. Application of the 40-hour week and paid holidays will come later. The effect of collective bargaining on production costs will only be of an indirect nature, inasmuch as it will enable the workers in the future more easily to enforce claims that may have a direct bearing on costs.

#### Factors Affecting Costs

Factors having the immediate effect of raising costs of production are: First, the loss involved in the recent strikes; in many cases the workers have succeeded in having their pay maintained during the days when they were on strike; in some cases damage was done during the strikes, although remarkable self-imposed discipline among the men staying in appears to have been the rule. Loss of trade and loss of perishable goods must also be accounted for.

Secondly, the wage increase will permanently affect costs, since it is mainly based on a higher minimum basic wage. As this measure is not limited to the heavy industries, but applies universally in France, there is bound to be a cumulative effect, from the stage of extractions of raw materials right down to the manufacture of finished products, and including transport charges and selling costs. The 40-hour week and paid holidays, when applied, will also have a cumulative effect. Already it has been calculated that the combined effect of these measures on the cost of production for iron and steel works

#### Eleven Carloads Equal One Crane for Bonneville Dam



F ABRICATED steel parts for one of the two huge cranes in the Bonneville dam power house required 11 railroad cars, some of them shown above as they were pulled out of Milwaukee recently for the trip to Oregon. Harnischfeger Corp., Milwaukee, is the builder. These cranes, with a 300-ton capacity each, will be used for handling the hydro-clectric generators which are intended to furnish power over a wide area in the northwest

will be a minimum increase of 30 per cent, rising in some cases to at least 40 per cent.

Immediately the question arises: How will industry bear this rise in production costs? The question is all the more difficult to answer because it has been implicitly agreed that, for a time at least, selling prices would not be raised. The official thesis of the government is that, thanks to the increase in the wageearning capacity of labor, the public will have more to spend, the demand for all classes of goods will expand, production will be intensified and enable works to be operated more efficiently, thus compensating the increased costs, and even increasing profits.

It is admitted, however, that during the period of transition, many trades and industries, especially as regards medium and small-sized concerns, will find it impossible to absorb the new charges without government assistance. The government has, therefore, promised that such assistance would be given, either by means of a moratorium or by relief of taxation, and more particularly by an expansion of credit.

#### **Changes Believed Permanent**

Summarizing the position in France, some radical changes have occurred in industrial and social legislation that must have the immediate effect of raising costs of production. The changes made so far are probably of a permanent nature. If the present parties remain in power, further changes in the same direction are possible. It is unlikely that prices will rise substantially for a period of weeks. Any attempt to devalue the currency is unlikely for some time to come. It is not expected that any major change in the situation will occur until the fall, when the chambers will meet again. In making such prognostications it must be borne in mind that the French people are now more than ever divided politically into two main camps, with many cross-currents, that tempers are raised to fever heat on both sides, and that under such conditions the situation is unstable.

The events related above overshadow in importance any other occurrence in Europe in regard to industrial and trade conditions, with the exception of Belgium, where a sequence of events, almost parallel to those which have happened in France, has taken place almost at the same time. General elections: swing to the left, but with the appearance of a new party with nationalist tendencies; demands on the part of labor similar to those put forward by the French, and also supported by strikes; new legislation at least partly satisfying these demands.

Men of Industry

EDWARD JOHNSON has been appointed as director of the newly organized department of training by the Carnegie-Illinois Steel Corp., Pittsburgh, intended to give employes and their sons an opportunity to receive practical and technical training, to qualify for better positions. The department will have jurisdiction over all apprentice and sales training schools in several plants, and will come under the general supervision of Ross L. Leffler, manager of industrial relations, Johnson is a graduate of the Carnegie Institute of Technology and has been associated with the engineering department of the Clairton steelworks since 1931.

Wallace W. Smith has been elected assistant vice president in charge of the sale of structural shapes, plates, floor plates and steel sheet piling of the Inland Steel Co., Chicago, and Maurice E. O'Brien has been made manager of sales, carbon steel bars and billets. Mr. O'Brien will also have charge of sales to manufacturers of agricultural implements.

Educated in engineering at Penn State university, Mr. Smith later taught engineering at the University of Iowa. For many years he was in the engineering and sales division of Riter-Conley Co., and later was works manager of the Chicago shops of the former McClintic-Marshall Corp. He has been associated with Inland since 1926, originally in connection with the works fabricating shop. In 1932 he was appointed manager of sales engineering, and during the past year he has been assistant to A. C. Roeth, who was in charge of the sale of shapes, plates and sheet piling.

Mr. O'Brien, a graduate of Northwestern university, became affiliated with the Illinois Steel Co. in 1920, in whose sales department he served until going to Inland in 1934.

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Blaine S. Smith, who has just resigned as president of the Pennsylvania-Dixie Cement Corp., New York, will become president of the Universal Atlas Cement Co. Sept. 1, subsidiary of the United States Steel Corp., succeeding B. F. Affleck, who has announced his retirement as president, under the Steel corporation's pension plan. Mr. Smith has been president of the Pennsylvania-Dixie Cement Corp. and subsidiaries for the past eight years, and for more than 20 years preceding was connected with the company he now



Wallace W. Smith



Maurice E. O'Brien



A. W. Schultz

heads. He is a member of the American Society for Testing Materials, American Concrete institute, Chamber of Commerce of the United States, National Association of Manufac-

turers, American Road Builders association, and the Merchants Association of New York. + +

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Charles F. Jarrard, has been appointed vice president in charge of sales of the Midland Structural Steel Co., Cicero, Ill.

Snowden Samuel, president, Frank Samuel & Co. Inc., Philadelphia, ore, pig iron and alloys, sailed from New York, July 11, for a six-weeks' trip abroad. He will visit England and the Continent.

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Robert C. Stuart has been elected president of the Barlow & Seelig Mfg. Corp., Ripon, Wis., maker of domestic washing and ironing machines, to fill the vacancy caused by the death of Marshall R. Scott.

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James E. Nyhan, 1710 Ravenwood avenue, Dayton, O., has been appointed sales representative by the LaSalle Steel Co., Chicago, to handle the sale of its products in the Ohio territory, exclusive of Toledo, Sandusky and Cleveland. He formerly was purchasing agent for the company.

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J. E. Fleming has been named Philadelphia manager for the National Tube Co., Pittsburgh, to succeed W. S. Bitting, who is retiring under the company's pension plan, after many years service. Mr. Fleming formerly was identified with the New York office of National Tube.

D. E. Hutchinson, also formerly of New York, has been appointed assistant manager, under Mr. Fleming. • . •

A. W. Schultz has been appointed district manager of sales, and Lloyd Beckwith has been made assistant district manager of sales of the Cleveland territory, for Bliss & Laughlin Inc., Harvey, Ill. These appointments became effective July 1.

Mr. Schultz, a graduate of Cleveland Technical college, served in the purchasing department of the Thew Shovel Co., Lorain, O., for a period of 12 years, followed by three years as purchasing agent for the Vicheck Tool Co., Cleveland. He became a member of the division of sales of Bliss & Laughlin in December, 1935, working out of the Cleveland office.

Mr. Beckwith, a long time resident of Cleveland, has practically devoted his entire business career to the sale and distribution of bar steels for industrial purposes.

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W. H. Buley, formerly sales supervisor in Milwaukee for Globe Steel Tubes Co., Milwaukee, has been placed in charge of the newly opened sales office at 1478 Starks building, Louisville, Ky.

C. J. Bickler, formerly sales engineer at Milwaukee for Globe Steel Tubes, has been transferred to Cleveland as manager of sales, with offices in the Terminal Tower.

C. D. Haven, formerly connected with the Chicago office, will be associated with Mr. Bickler.

William H. Phillips, recently with Harry Pratt Co., Chicago, has joined the Worthington Pump & Machinery Corp., Harrison, N. J., as power plant specialist, with headquarters at the corporation's Chicago office. Mr. Phillips was formerly for many years with the Worthington corporation. He will specialize on condensers, steam-air ejectors, feedwater heaters and boiler feed pumps.

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Arthur D. Morris, president, Bayonne Bolt Corp., Bayonne, N. J., has been elected president of the American Institute of Bolt, Nut & Rivet Manufacturers, Cleveland. Other of-



Arthur D. Morris

ficers elected are: Vice president, George S. Case, Lamson & Sessions Co., Cleveland; secretary-treasurer, James D. Eggers, Guardian building, Cleveland.

The 1935 executive committee has been re-elected with the addition of J. R. Whelan, Ohio Nut & Bolt Co., Berea, O., the retiring president.



CLAYTON MARK, 78, at his home in Lake Forest, Ill., July 7. Mr. Mark for a number of years was connected with the Chicago Malleable Iron Co., which was succeeded by the National Malleable Steel Castings Co. Mr. Mark left the latter in 1902 to form the Mark Mfg. Co., of which he was president until 1919, when it was merged into the Steel & Tube Co. of America. He remained as chairman of the board of the latter until 1923, when he again organized his own company, Clayton Mark & Co., Chicago, to manufacture wrought steel pipe and water well supplies. He was president at the time of his death. Mr. Mark recently was a director of the National Malleable Steel Castings Co, and the Interlake Iron Corp.

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George W. Barker, 57, salesman, Cleveland Cliffs Iron Co., Cleveland, in that city, July 6.

Harry Yeo, 55, president and treasurer, Indiana Metal Products Co., Muncie, Ind., in Muncie, July 5.

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T. W. Williams, 77, vice president, Bissel Carpet Sweeping Co., Grand Rapids, Mich., of heart attack at Sea Girt, N. J., July 7. . . •

Walter A. Stone, 73, president and treasurer of the Clinton Foundry Co., Lancaster, Mass., July 6 at his home, due to burns and suffocation.

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F. Coleman Boyd, 73, president and treasurer of Faraday Co., New Haven, Conn., manufacturer of electric appliances, in Wallingford, Conn., July 5.

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George Nash, formerly superintendent of the Braddock, Pa., works of the American Steel & Wire Co., July 8 at his home in Edgewood, a suburb of Pittsburgh.

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Wallace Zweiner, president of Hupp Motor Car Corp., Detroit, since May, and formerly an executive of other automobile companies, in Detroit, July 7.

George M. McGinnis, 66, auditor for American Sheet & Tin Plate Co. for many years prior to his retirement three years ago, July 1, at Mt. Clemens, Mich.

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Henry Mallinson, 71, chief engineer, Steel Co. of Canada Ltd., Montreal, from injuries sustained in a fall from a coal tower on the company's premises, June 22.

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Arthur E. Stanley, 53, automotive engineer and inventor, in Detroit, July 4. Mr. Stanley at one time had been connected with the Cadillac Motor Car Co., Fisher Body Corp., and the American Car & Foundry Co. .

Walter E. Wallace, 44, one of the founders of the Metal Auto Parts Co., Indianapolis, in that city, July 5. He served as vice president for many years, retiring recently because of ill health.

S. B. McNaught, 36, general counsel, Refrigerating Machinery association and the Air Conditioner Manufacturers association, and a member of the legal staff of the York Ice Machinery Corp., York, Pa., in York, June 27.

William J. Wark, 63, general manager of the Buffalo branch of the E. J. Woodison Co., and manager of the Woodison foundry in Buffalo since its establishment in 1917, July 7 at his summer home on the Canadian side of the Niagara river.

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Joseph Clifton Conn, 67, inventor of a machinery belt, an airplane stabilizer and other mechanical appliances, July 4 at his home in Boonton, N. J. He was a foreman in the Remington Bicycle factory at Ilion, N. Y., before moving to Boonton, about 35 years ago. He was a director of the Clipper Belt Lacer Co., Grand Rapids, Mich. . .

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Albert L. Nash, 65, New York, who retired in 1921, after many years in the pig iron business, recently in the New York hospital, that city. He was a member of Dalton, Nash & Co., from 1901 to 1907; of Nash, Isham & Co., from 1907 to 1912; and of Crocker Bros. from 1912 to 1921.

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William Murray, known among automobile makers as the inventor and builder of the Murray 8 automobile, of heart failure, July 8, in East Liberty, Pa. The automobile has not been produced for a number of years, his old manufacturing plant being on Bigelow boulevard, Pittsburgh, near the Bloomfield bridge.

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Joseph H. Wallace, 67, consulting engineer, Black-Clawson Co., paper mill machinery manufacturer, July 7, at Hamilton, O. He was a member of American Society of Civil Engineers, American Society of Mechanical Engineers, Engineering Institute of Canada and Technical Association of the Pulp and Paper Industry.

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Charles Lundberg, 61, associated for 25 years with the Iron Age, New York, at his home in Upper Darby, a suburb of Philadelphia, July 4. Mr. Lundberg was western editor of the Iron Age in Chicago for two years, after which he was transferred to New York as an associate editor. He went to Philadelphia in 1919 as an advertising executive of the periodical.

John J. Carroll, 75, president, Gartland & Carroll Foundry Co., Sandusky, O., in that city, June 26. At the age of 12 he entered the foundry of the National Malleable Co., Cleveland. In 1896 he was appointed superintendent of National Malleable foundry and retained that position until 1916 when he established the G. & C. Foundry Co. in Sandusky.

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James T. Kelley, 70, construction supervisor for the Ingersoll-Rand Co., New York, manufacturer of mining and other heavy machinery. of a heart ailment July 5, at his home in Dunnellen, N. J. He had been affiliated with the present organization for about 40 years, first entering the employ of the Rand Drill Co., Tarrytown, N. Y., which later became part of Ingersoll-Rand.



This blooming mill run-out table and kickover from shear to transfer table were built by **TREADWELL ENGINEERING COM-PANY, EASTON, PA.** Both are completely Hyatt-equipped for permanent freedom from bearing wear and care. For longer life, simplification of design, and freedom from constant maintenance, the manufacturers of better equipment "build-in" Hyatt Roller Bearings. Engineers select Hyatts for long, hard service wherever wear and attention are to be eliminated to the last possible degree. Therefore it pays to specify and get Hyatt Roller Bearings for all your operating equipment. Hyatt Roller Bearing Company, Newark, Detroit, Chicago, Pittsburgh, San Francisco.

**STEEL** 

#### DETROIT

ESPITE the approach of the time for the changeover of plant facilities from the production of 1936 model parts to those for successor models, the automotive industry still is concerned primarily with feeding a retail demand which is holding better than was anticipated a month or two ago.

This does not infer that plans for the 1937 products are being shunted aside. Programs for the fall and next year are well established. Final runs on parts for present models of some interests, including Packard and Pontiac, will occur before the end of this month. For the larger producers, however assemblies will be continued at an active rate through July, since it is indicated that the market can absorb the output.

There were some inferences last week that additional steel buying would be necessary for 1936 models. A short time ago it was understood that all of the material required for current series was on order. The volume involved is relatively substantial, moreover, and is thought likely to require no more additional than occasional small lots for fill-in purposes. Furthermore, it is indicated that July assemblies will be not far below the June total, possibly a decrease of 15 to 20 per cent.

#### Short Changeover Period

It is only natural that the industry should desire to extend production with its present plant setup as long as possible, since unit costs are lowered as output increases. At the moment, however, it is difficult to determine the probable volume of retail demand over the next 60 days. July sales ordinarily compare favorably with those of June, but in August and September interest in new car ownership has commenced to wane.

August is marked as the month for retooling, but in few cases have definite dates been set for assembly lines to swing over from present models to the new editions. The time is approaching when it will be desirous to try out new dies, but if production is extended long, there may be a delay in making presses available for this trial work.

It has been anticipated that the changeover period will be relatively brief. Revisions in radiators, hoods and fenders and, to a certain extent, in bodies will be more numerous this year than last, however, all of which may tend to retard the resumption of production.

Automotive sales departments would like to know what to expect of new passenger car registrations for July and August. The June total is estimated at 365,000 units, the best for the month since 386,398 in 1929. There are no figures to indicate what effect the veterans' bonus has had upon sales, but there is no question that this money was an important factor in swelling month-end registrations and probably will influence July purchases. Dealers also report a better movement of used cars as a result of the bonus distribution.

#### **Drought May Affect Sales**

The drought is commencing to inject some uncertainty in the outlook for automotive demand in the important agricultural market, though so far this is more of a threat than an accomplished deterrent to sales on any marked scale.

This is the time of the year when Ford's competitors usually start to worry about what the Dearborn manufacturer is planning for new models. A year ago Ford was riding high, having built just about onehalf the approximately 1,620,000 cars and trucks produced during the first six months of 1935 by the three leading interests in the low-price field. Chevrolet had accounted for 34 per cent and Plymouth 16 per cent.

This year the situation is reversed. Chevrolet has had a record-breaking first half, showing a big gain in output over last year in building 45 per cent of the three low-price makes. Ford's six-month output, however, was off more than 20 per cent and was only 38 per cent of the volume field. Plymouth improved its position slightly to account for 17 per cent.

The total for these three com-

panies this year, incidentally, was less than 2 per cent better than last year. For the entire industry the gain was not quite 10 per cent, indicative of the part played by the medium and high price cars in boosting general activity in the industry the past six months.

The fact that Ford has slipped this year leads to the supposition that something will be done to make up the arrearage next year. The cheaper, supplementary line of V-8 cars, apparently ready for introduction on several occasions in the past and now believed to be prepared for launching, is seen as Ford's chief bid for a larger market.

The industry is watching to see whether Ford is veering back to its former strong emphasis upon low cost in transportation. In the heyday of Model T, there was no intent to furnish much more than the cheapest form of automotive operation commensurate with dependability. There was a wide gap between the riding comfort, appearance and conveniences of the Ford compared with the more expensive cars. That gap has been narrowed, but partly at the expense of initial and operating costs.

#### Low Cost Car Market

Both Ford and Chevrolet, with their so-called standard models, have made some concessions to those drivers who want to buy transportation rather than gadgets, but there has been no effort by a major company to fill the void left by the demise of Model T. The success enjoyed by the makers of the cheaper cars reflects the vast improvements which have been made in designs the past ten years, but by the same token these betterments have drawn customers from former patrons of more expensive models.

Undoubtedly there is a market for a vehicle having a definitely lower price tag than the cheapest Fords, Chevrolets and Plymouths; Willys has done relatively well this year despite its impaired financial condition. How broad a market can be developed depends on how successfully a manufacturer can approach largecar appearance with an economy



## Best June Ingot Rate Since 1929

**P**RODUCTION of steel ingots during the first six months of 1936 totaled 21,326,335 gross tons, an increase of nearly 33 per cent over the 16,042,651 tons in the period in 1935, according to the American Iron and Steel institute. This is the largest first half-year production since 23,-578,619 tons in 1930.

Operations averaged 62.29 per cent, compared with 46.75 per cent in first half of 1935.

Output in June totaled 3.984,845 tons, a decline of 61,408 tons from 4.046,253 tons in May. The operating rate in June was 69.83 per cent, the highest in any June since 1929 when the industry was at 100 per cent. The rate in June, 1935, was 40.81 per cent.

## Production

**S** TEELWORKS operations snapped back last week to 69 ½ per cent, a gain of 3 ½ points, but fell a little short of the peak of 71 ½ per cent reached in the week prior to the holiday. Producers anticipate only small changes in operations this week. Further details follow:

Chicago — Continued at 71 per cent, marking the fourth consecutive week during which there has been practically no variation. Some steelworks are attempting to operate all

#### **District Steel Rates**

Percentage of Open-Hearth Ingot Capacity Engaged in Leading Districts

1	Veek		San	ne
(	ended		wee	ek –
Jı	uly 11	Change	1935	1934
Pittsburgh	64	+ 2	34	21
Chicago	71	None	4216	31
Eastern Pa	49	+ 3	2616	221:
Youngstown.	74	+10	43	30
Wheeling	69	+ 4	62	30
Cleveland	8.11%	+1312	44	41
Buffalo	86	+2	26	21
Birmingham.	52	- 614	30	20
New England	68	-12	-41	61
Detroit	100	+10	94	93
Cincinnati	80	+15	÷	†
	-			
Average	$69\frac{1}{2}$	+ 312	38	30
†Not reporte	ed.			

of their available furnaces in order to speed schedules.

Youngstown — Averaged 74 [er cent last week, an increase of 10 points. However, operations are expected to sag to 72 per cent at this week's start.

**Detroit** — Recovered 10 points to 100 per cent, following the holiday period. All of the district's openhearths again are active.

New England—Down 12 points to 68 per cent last week, with expectations of a gain of seven points to 75 per cent this week.

Wheeling — Rebounded last week to 69 per cent, a gain of 4 points. Twenty-three open hearths are active out of 37.

Cincinnati—Rebounded last week to 80 per cent. after a 65 per cent week, shortened by a holiday. The

#### Steel Ingot Production

Monthly Production-Complete for Bessemer ; Open Hearth, Cal- Calculated culated from Reports of Companies Making 98.03 per cent daily pro-Number -Open Hearthduction, all -Bassemer--Totalof Per cent of Per cent of Per cent of companies working Gross tons capacity Gross tons capacity Gross tons capacity (gross tons) days 1936 Jan. ..... 2,849,557 53.73 196,389 31.54 3.045,946 51 40 112,813 27 Feb. ..... 2,761,973 56.25 202.445 2,964,418 35.11 54.03 118 577 25 Mar. ..... 185,040 3,157,579 61.83 30.86 3.342,619 58.58 128,562 26 Apr. ...... 3.637,479 May ...... 3.744,161 June ...... 3.649,948 71.23 304,775 50.83 3.942.254 69.09 151,625 26  $73.32 \\ 71.47$ 302.092 50.38 4,046,253 70.91 155.625 26 334,897 55.85 3,984,845 69.83 153.26326 6 mo..... 19,800,697 64.62 1,525,638 42.41 21,326,335 62,29 136,707 156 1935 Jan. ..... 2.630.303 49.70 239.858 34 99 2,870,161 48,02 106,302 27 Feb. ..... 2,549,935 54.21 224,336 2,774.2712.865.29236.82 52.22 115,595 24 2,634,482 Mar. ..... 51.70 230,810 34.97 49.78 110,204 26 Apr. ..... 2,408,686 47.27 231.916 35.14 2,640,602 45.88 101,562 26 2,378,865 May ..... 44.95 254,796 37.17 2,633,661 44.06 27 97 543 June ..... 2,048,177 41.80 210,487 33,17 2,258,664 40.81 90,347 25 6 mo..... 14,650,448 48.22 1,392,203 35.38 16.042.651 46,75 103,501 155 July ..... 2,043,371 40.10 224,456 34.01 2,267,827 39,40 87.224 26 2,682,569 Aug. ..... 50.69 233,361 2,915,930 34.05 48.78 107,997 27 Sept. ..... 2,591,267 52.88 233,737 2,825,004 36.83 51.04 113.000 25 Oct. ..... 2,872,040 54.27 270,719 39.50 3.142.759 52.58 116,398 27 Nov. ..... 2.898.246 56.87 252,163 38.20 3.150,409 54.73 121.170 26 Dec. ..... 2,845,013 58.06 228,392 35.99 3,073,405 55.53 122,936 25 Total..... 30,582,954 50.17 2,835,031 35,91 33,417,985 48.54 107,453 311

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

rate brings 20 of 24 open hearths in production, equaling peaks of the second quarter. Backlogs will assure maintenance of similar output at least another week.

Pittsburgh — Recovering from its holiday level of 62 per cent, due to the holiday shutdown, operations here gained 2 points last week to 64 per cent. Plants of the United States Steel Corp. subsidiaries operated about 60 per cent, and the independents at about 67 per cent. Tin plate output resumed recent levels of 95 to 98 per cent, sheets averaged 57 per cent, while strip was at around 55 per cent. Out of 60 steelworks blast furnaces, 36 continue to blow.

Birmingham -- Off 6½ points to 52 per cent last week, with little change indicated for this week.

Cleveland—Rebounded 13½ points last week to 84½ per cent. Corrigan-McKinney scheduled 13 open hearths last week, with Otis Steel and National Tube at Lorain operating 8 and 12 furnaces, respectively.

Buffalo—Up 2 points to 86 per cent last week, with 32 open hearths in production. This is the peak ingot output for this area of all time.

Central eastern seaboard—Production was at 49 per cent last week, highest level since prior to the depression, and represents an advance of 3 points over the preceding week. Some leading trade predictions are that steel output for the district this month will be in excess of June, which was the best month in a long time.

#### STEEL CORP. SHIPMENTS OFF

Shipments of finished steel by the United States Steel Corp. in June

#### U. S. STEEL CORP. SHIPMENTS

(Inter-company shipments not included)

		(Tons)		
	1936	1935	1934	1933
Jan. Feb. March April May June	721,414 676,315 783,552 979,907 984,097 886,065	534,055 583,137 668,056 591,728 598,915 578,108	331.777 385,500 588.209 643.009 745.063 985,337	285,138 275,929 256,793 335,321 455,302 603,937
6 mo. 5	,031,350	3,553,999	3,679,345	2,212,420
July Aug. Sept. Oct. Nov. Dec. Yearly	adj.	547,794 624,497 614,933 686,741 681,820 661,515	369,938 378,023 370,306 343,962 366,119 418,630 19,907	701,322 668,155 575,161 572,897 430,358 600,639 44,283
Total		7.371,299	5,905,966	5,805,235

were \$86,065 tons, a decline of 98,-032 tons from the 984,097 tons shipped in May. For first half of 1936 shipments totaled 5,031,350 tons, compared with 3,553,999 tons during first half of 1935. WINDOWS

SHINGTON

#### WASHINGTON

CTIVITY on the labor front at the national capital last week included a blast against the steel industry on a nationwide radio hookup by John L. Lewis; the statement by President William Green of the A. F. of L. just before the executive council met dealing with the CIO, several statements by Major George L. Berry, ertswhile labor leader, and finally an effort of the national labor relations board to have the federal circuit court of appeals at New Orleans reverse its recent decision in connection with the Jones & Laughlin case.

In this latter connection the board's petition asserted that "the need for remedial legislation such as this act, is now being amply illustrated by the threatened strife in the steel industry which will, by its nature, directly burden \* \* \* interstate commerce."

#### Guffey Decision Discussed

Three weeks ago the labor board issued an order directing Jones & Laughlin to cease alleged interference with its employes' attempts to organize and directed that ten discharged employes be taken back at its Aliquippa, Pa., plant. The board asked the New Orleans court to enforce this order, but the court refused, declaring the steel laborers were engaged in manufacture, not interstate commerce, and that the Constitution gives the federal government no power to regulate labor relations in manufacturing. The court pointed to the Supreme Court's decision on the Guffey act.

In its appeal for rehearing last week the labor board argued that the Guffey act's type of regulation "is different from the employment of means to protect commerce itself provided for in the national labor relations act."

Unless "the threat of industrial warfare is alleviated," the petition stated further, "workers may directly and intentionally interrupt interstate commerce."

The petition said further that the "express purpose of congress to prevent such direct and intentional burdens to commerce itself, and to provide a means of settling disputes which lead thereto, distinguishes this statute" from the Guffey act. Congress, the board said, has power to protect commerce by removing the causes of strikes.

#### **Insists on Proper Pose**

Mr. Lewis in his radio talk made his usual remarks about the "lords of steel."

He appeared at the radio studio considerably tired out, with a soiled shirt and his tie awry. He took time to freshen up before allowing the newspaper photographers to snap him at the microphone. He insisted he would not pose while talking because the week before the photographers caught him with his mouth wide open, an attitude which did not suit him at all but which made the front cover page of one of the leading weekly magazines.

President Green in his statement scored the CIO for not letting the A. F. of L. go ahead with its plans to unionize the steel industry.

"As the plans of the organizing campaign launched by the CIO in the steel industry unfold," said Mr. Green, "the situation becomes so clarified that both friends and focs begin to understand the issues involved, the magnitude of the campaign and the difficulties which will be encountered."

Mr. Green said that "instead of making possible the concentration of all the material, moral and economic forces of the organized workers and all their friends behind an irresistible organizing campaign in the steel industry, its recognized spokesman denounced the A. F. of L., charged it with pursuing a 'dog in the manger' policy, and portrayed it as a barrier blocking the efforts of the steel workers to become organized."

He went on to say that "the sum total achieved by the CIO thus far is nothing whatever except division, discord and confusion within the ranks of organized labor."

In answer to the Green statement Mr. Lewis said that "the executive council of the A. F. of L. never had a plan to organize the steel industry. \* The executive council contented itself with heavy thinking on the subject, while in the meantime not a single organizer was sent into the steel industry. At the present moment there is nothing to stop the A. F. of L. from joining whole-heartedly with the CIO in the fight to establish the right to organize and the right of collective bargaining in the steel and other major industries. However, if the executive council, in its deliberations and judgment, elects to join with the corporations composing the American Iron and Steel institute in fighting the CIO, now engaged in this major effort, the shame of such a dishonorable action will lie on the heads of Mr. Green and his associates."

#### ATTORNEY GENERAL HAZY ON COLLUSIVE BIDDING REPORT

Attorney General Cummings at a press conference last week stated that his department is going right ahead gathering information and data in connection with the alleged collusive bidding steel report of the federal trade commission which was forwarded to him by President Roosevelt recently for "appropriate action."

It was obvious during the course of his discussion that the attorney general was hazy about the matter, but he stated he had sent a letter to the White House which he "assumed" had been sent to all of the government purchasing agents asking them to comb their files for data on collusive bidding.

Mr. Cummings promised a detailed statement soon, but he refused to

be pinned down to any specific time when he would make it.

The attorney general said he was "anxious to push ahead in this investigation as quickly as possible to make a speedy conclusion of the matter."

He refused to discuss his idea of the basing point as used in the steel industry or to indicate whether action, if any, would be taken against individual steel firms or against the steel institute.

#### EXPORTING LICENSES GIVEN 29 TIN PLATE SCRAP FIRMS

Allotments totaling 6889 long tons of tin plate scrap have been assigned to producers of this commodity, in accordance with the procedure to govern the issuance of licenses for the exportation of tin plate scrap between July 1 and next Dec. 31. Twenty-nine producers participated in the assignment of licenses.

The government officials granted all the requests that they received for these licenses. It is understood they were pleased because the total amount requested was so small. They had been anticipating trouble in the work of allocation.

The state department has announced that applications for licenses to export tin plate scrap between July 1 and Dec. 31 may be submitted by any producer who has been assigned an allotment or by any person authorized by him to export tin plate scrap under his allotment.

The control board refused to make public the names of the 29 firms or the quantities assigned to them.

#### BROAD EFFECTS OF PATMAN LAW FEARED

Considerable difference of opinion is developing among Washington representatives of steel interests and also among representatives of other industries in connection with the applicability of the Robinson-Patman law.

The genesis of this law was with the small retail merchants and it always was known as an anti-chain store bill. However, it was changed so much that now in some quarters the act is considered much broader than at first believed. Attorneys are divided on just what it means and how far-reaching it will be. At least one ambiguity has been discovered.

Administration of the measure is in the hands of the federal trade commission. Officials of the commission will not discuss the law at this time. They have asked for an opinion from their legal division and expect an answer before the middle of July.

During discussions of the bill in the house and senate no mention was made of its applicability to industry in general. Many persons now believe there is nothing to prevent its being applicable to any particular industry. However, there is a feeling among those who should be in a position to know that the act has little application to the steel industry.

The only possible exception to this belief in regard to the steel industry apparently is contained in the early part of the law in which reference is made to the fact that "it shall be unlawful for any person engaged in commerce, in the course of such commerce, either directly or indirectly to discriminate in price between different purchases of commodities of like grade and quality" and a further reference in the same section of the bill stating that "where the effect of such discrimination may be substantially to lessen competition or tend to create a monopoly in any line of commerce."

During the closing hours of the last congress Senator Borah, in answer to a direct question, stated that in his opinion the bill had nothing to do with the basing point system.

#### Amends Clayton Act

The Robinson-Patman law amends the Clayton act so as to suppress more effectually discriminations between customers of the same seller not supported by sound economic differences in their business positions or in the cost of serving them. According to the house judiciary committee, such discriminations are sometimes effected directly in prices, including terms of sales; and sometimes by separate allowances to favored customers for purported services or other considerations which are unjustly discriminatory in their result against other customers.

Differentials are not prevented which make only due allowance for differences in cost of manufacture, sale or delivery resulting from differing methods or quantities in which such commodities are sold or delivered to such customers. The federal trade commission may, after investigation and hearing, establish quantity limits.

The law probibits any person engaged in commerce knowingly from inducing or receiving a discrimination in price.

One section of the act also makes it unlawful for any person engaged in commerce to be a party to or assist in any transaction of sale which discriminates to his knowledge against competitors of the purchaser, in that, any discount, rebate, allowance, or advertising service charged is granted to the purchaser over and above any such available at the same time to a competitor, or to sell goods in any part of the United States for the purpose of destroying competition, or eliminating a competitor in such locality, or to sell goods at unreasonable low prices for the purpose of destroying competition or eliminating a competitor.

#### GREEN ESTIMATES 4,500,000 AFFECTED BY BREAKDOWN

At a conference at the White House last week with the President, Mr. Green said more than four and a half million workers were affected by the breakdown of labor standards between June, 1935, and March, 1936, as the result of the adverse court decisions. Mr. Green made a full report on this subject. He pointed out that the survey covers a representative portion of the entire industry, but does not reflect the situation in its entirety. He said that only by access to payroll data by government agencies could the full scope of such development be measured.

#### RAILROAD APPLICATIONS TO RFC NEGLIGIBLE NOW

Few applications for railroad equipment loans are being received by the reconstruction finance corporation, said Jesse H. Jones, chairman, at a press conference last week. The reason is, he said, that "the better roads are able to sell their equipment obligations in the market now at attractive rates."

Loans to business firms are still being made. During May the reconstruction finance corporation authorized a loan of \$35,000 to Ellwood Ivins' Steel Tube Works, Oak Lane, Pa.

During the same month the corporation also authorized a loan of \$75,000 to Saxon Mills Provo Foundry & Machine Co., Provo, Utah; Cleveland Electro Metals Co., Cleveland, \$35,000; Indiana Brass Co., Frankfort, Ind., \$40,000; and the Excel Metal Cabinet Co. Inc., Jamestown, N. Y., \$36,000.

#### FUNDS NEEDED FOR ENFORCING GOVERNMENT CONTRACT LAW

While actual administration of the Walsh-Healy government contract law is still some three months off, officials of the labor department, charged with the enforcement of this act, are in a stew about it.

In the first place, some kind of administrative organization has to be set up which will be directly under the secretary of labor. The authority for administration is contained in the act but no funds are provided. Departmental experts are wondering where this money is coming from and they are pretty much at sea as to what can and should be done under the law.

It is expected that inasmuch as this law came into existence through the A. F. of L., the money may come from WPA.

Legal experts of the department are now studying the act—doubtless with the help of the labor attorneys. When this matter is finally adjusted it is expected the department will make some official pronouncement on the subject.

## Editorial

## Consumers and Public Desire Fair Play in Labor Contest

A NYONE who knows anything about the fundamental issues involved in the present labor situation must realize that much of what appears in the newspapers regarding it is sheer emotional nonsense.

Thus far nothing has happened which would justify some of the exaggerated statements that have been made by newspaper editorial writers, syndicate columnists and spokesmen for the government. The initial statement issued through the American Iron and Steel institute and the subsequent advertising in newspapers were simple statements of principle and policy. They were not threats. The radio address by Mr. Lewis, while provocative in some respects, was not unduly drastic or inflammatory.

Yet many writers in the public prints seized upon these and other statements as a golden opportunity to incite the public to the expectation that a battle royal is imminent, that a bloody battle is to be waged, and that a titanic struggle involving strife and disorder is inevitable. In brief, some of the outbursts of the writers who are supposed to mold public opinion have been far more damaging than the acts of the active participants in the contest.

#### Chief Issue Is Whether Closed Shop or

#### Free Collective Bargaining Shall Prevail

Common sense should tell us that there is no need for dramatic emotionalism in this situation. There is no real necessity for violence and no justification for strikes of prolonged duration or of general character.

The fundamental principle at stake is the closed versus the open shop. Employers in all of the metalworking industries are unalterably opposed to the closed shop. It is contrary to the accepted doctrine of collective bargaining. On the other hand, the CIO is committed to the closed shop both in principle and in point of practical necessity for the success of the professional labor union movement.

In determining the outcome of this contest between advocates of the open shop and the closed shop there is only one vital and compelling issue. It is, "what is the free will of the majority of employes?"

If the majority of employes desires to become affiliated with A. F. of L. or the CIO group, it will do so regardless of anything the employers may do individually or co-operatively through the American Iron and Steel institute. We doubt whether there is an important employer anywhere in industry who would hold out against unionization if he knew positively that an overwhelming majority of his employes honestly desired to be identified with a professional union.

However the cold fact is that in the average plant in the metalworking industry the number of employes favorable to becoming members of a professional union runs from zero to about 15 per cent of the total number of employes.

#### Consumers and Public Will Not Stand for Strikes Instigated by Willful Minority

In view of this evidence, the employer can do nothing less than protect the interests of those among his employes who clearly do not want to join a professional union. And that, by the way, is all that is intimated in the recent institute statement and all that is embraced in the subsequent statements of individual companies to the public and to their employes.

Fortunately there are strong influences in our economic structure in this country who are determined that fair play shall prevail in this contest. Ultimately the public interest will demand that the employes shall have a right to make their choice "free from coercion from any source."

And who are these interests who will demand fair play? Judging from the letters we are receiving the consumers of iron, steel and other materials are going to support fair play. Typical is the communication from one buyer of steel who suggests that consumers pledge themselves not to buy from any producer who permits unionization in his plant as long as a majority of his employes prefer the open shop. This consumer, and many others possessing similar convictions, means business.

Again consider the attitude of department store owners, real estate men, doctors and dentists, etc., in an industrial community. Are they going to stand idle while the CIO supported by misguided new deal politicians help a mere minority of 5 to 10 per cent to pull a strike in a plant where 90 to 95 per cent of the workers do not want to belong to a professional union? They are not. Already these interests in dozens of industrial centers have organized effectively to resist unfair unionization efforts.

Opposition to minority rule and support of fair play is going to be much stronger than Mr. Lewis and his new deal camp followers have anticipated. It is up to employers to utilize this support effectively.

## THE BUSINESS TREND



STEEL'S index of activity in the iron, steel and metalworking industries declined 4.3 points to 97.6 in the week ending July 4:

Week ending 1936	1935	1934	1933
Apr. 25 103.6	84.9	87.5	59.5
May 2103.2	84.6	86.0	60.3
May 9103.0	79.3	84.4	62.5
May 16103.1	80.5	82.4	65.2
May 23100.4	\$2.8	81.9	66.1
May 30 98.6	71.9	75.7	65.3
June 6 98.8	79.3	82.3	69.9
June 13 99.4	80.0	83.6	72.1
June 20101.0	77.3	81.8	73.9
June 27101.9†	78.4	79.4	77.0
July 4 97.6*	64.1	52.3	71.4

†Revised. \*Preliminary.

The index charted above is based upon freight car loadings, electric power output, automobile assemblics (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 Pauses for Holiday, Then Resumes Brisk Pace

A S EXPECTED, the pace of industry slackened in the first week of the third quarter. Observance of Independence day cut into volume in certain lines of activity, but one noteworthy exception to this is found in the weekly record of automobile output.

Cram's estimate of assemblies in the week ending July 4 is 100,697. This represents a slight gain from 99,695 in the preceding week. It reflects the unusual, sustained demand for automobiles which already has been extended further into the model change-over period than had been anticipated—even by those who had made generous allowances for the effect of the bonus payments.

Consequently the valley of inactivity between

1936 and 1937 production plateaus may be reduced to the proportions of a narrow ravine. Before the end of the month, purchases of materials for the new models should be in full swing.

In lines other than automobile production, activity abated somewhat in the week ending July 4. The rate of steelworks operations was down from 71½ to 66 per cent. Since a rebound to 70 per cent or more is indicated for the week ending July 11, the recession is largely attributable to the holiday. This also is true of the reports on revenue freight car loadings and electric power output. Both showed moderate declines from the previous week, in which new high marks for 1936 had been registered.

At midyear, the short-term uncertainty is the labor situation. Opinion seems to be leaning toward the idea that no serious strike situation will develop soon—at least not before the election.

The long-term question is the extent to which the present activity is based upon spending resulting from or induced by government bounty.

		1936	1935	1934
July	4	66	31	22
June	27	71.5	37	46
June	20	70.5	35.5	59
June	13	68	39	62
June	6	67	41	62
May	30	66	42.5	60
May	23	66.5	44	57
May	16	68.5	45.5	59
May	9	68.5	44.5	62
May	2	69.5	44	60
April	25	69.5	46	57
April	18	70.5	46	55
April	11	66.5	45	51
April	4	63.5	44	48



STEEL

#### Daily Iron Output Shows Slight Gain in June

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



#### Freight Car Awards Decline In June; Above Year Ago

1936	1935	1934	1933
2,050	24	152	3
6,900	806	19,725	0
632	0	30	5
4.427	350	800	50
8,900	2	717	8
5,220	5,151	1,835	500
	500	19	306
	200	105	202
	875	7	23
	1,250	75	514
	100	254	533
	10,050	110	316
	1936 2,050 6,900 632 4,427 8,900 5,220	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$

#### May Industrial Production Continues Upward Trend

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

#### Steel Ingot Production Off Slightly in June

		-Gross Tons	
	1936	1935	1934
Jan	112,813	106,302	73,968
Feb.	118,577	115,595	92,164
March	128,576	110,204	103,646
April	151,625	101,562	117,443
May	155,625	97,543	125,907
June	153,263	90,347	117,672
July		87,224	59,578
Aug.		107,997	51,161
Sept		113,000	50,759
Oct		116,398	54,885
Nov		121,170	61,947
Dec		122,936	78,570





## Varied Welding Operations Assist Production of Motor Trucks

#### BY FRED B. JACOBS

ODERN welding practice, either gas or electric, is the result of many years' experience and research wherein practically all major applications have been the result of experimentation to see if welding could not be employed advantageously to take the place of a more costly method. Along with this development has come another cest saving method, that of designing parts so that welding can be employed to advantage. For example, a part bent to shape from heavy sheet metal and welded at the corners often can take the place of a more expensive casting. Even in plants where welding has been developed to

a point of high efficiency, no two employ exactly the same procedure and in this article is outlined and illustrated some of the everyday welding practice of the White Motor Co., Cleveland.

A number of butt welding operations are performed on regular production work. In Fig. 1 a butt welder is in use for welding a clevis to the end of a %-inch steel rod. The two parts to be welded are located in special copper jaws provided for the purpose. The finished weld is shown in the inset. If due care is exercised in the operation to make sure that the parts are located so that the holes through the clevis

Fig. 1—Welding a clevis to a %-inch steel rod. The finished job is shown in the inset



arms stand square with the shank the welded part is just as strong as an integral unit. Before welding was used on such parts many automobile manufacturers made them by screwing the shank into the clevis and holding it with a check nut. Such parts occasionally broke, through failure at the thread. With the part as shown, breakage is unlikely. Holes in the clevis are drilled and reamed before the welding operation. The shank is low carbon steel and the clevis a steel casting.

#### Shaft Welded to Tube

The arc welding operation shown in Fig. 4 is of more than usual intcrest. It involves welding both end units of a propeller shaft to a 3-inch steel tube. The work is located on rollers as shown in the illustration. the setup being on an engine lathe arranged for the purpose. The propeller shaft is rotated evenly by an automatic feed at a speed of one revolution per minute. The welding rod is 5/32-inch diameter and is fed automatically from a coil mounted overhead. After the contact is made and the arc established, the operation is practically automatic. When one end is welded the propeller shaft assembly is turned around and the other end welded.

Making this propeller shaft would be out of the question, owing to the weight involved and the manufacturing cost. Before the introduction of welding for this job the only other practical method was to force the parts together with a drive fit and to pin the end parts in place. However, there is no comparison between this method and the welding process, since welding makes joints of much greater strength.

A steering connection unit is fabricated by the same process and on the same machine as shown in Fig. 4. The end member has a shank which fits the tubing, being pinned in place, and then the joint is welded. The result is a steering connection that will not work loose and one that is in every way superior to the older method of threading such parts together.

Fig. 3 shows a welding operation on a fender. In this operation spot welding takes the place of riveting which is the more costly process. When rivets are used it is necessary to drill or punch holes, set the rivets in place and head them over. A spot weld which is just as strong can be made in a fraction of the time required in riveting.

Another interesting spot welding operation is shown at the right in Fig. 6-a reinforcement spot welded in place on the under side of a running board. At the left in Fig. 6 the two clips on the bottom of the running board are spot welded in place. The corner of this running board presents another interesting welding operation as the corner piece is held in place by oxyacetylene welding. It must be kept in mind that this running board is comparatively heavy sheet metal, and to form the rounded corner in drawing dies would not be practicable. The difficulty is overcome by making the corner a separate piece and welding it in place.

The type of welding to employ depends on the nature of the work and the material. In many instances gas welding is preferred to electric. The



Fig. 2-Torch cutting a 9-inch circle in an 11-inch square from 3/4-inch boiler plate

inch boiler plate with a 9-inch hole in an 11-inch square is shown in Fig. 2 where the operator is using a flame cutting machine which runs along a track provided for the purpose so



operation in Fig. 5 consists of gas welding a metal intersection on a fonder. This operation differs slightly from ordinary gas welding in that natural gas from the city mains is used in combination with acetylene.

While the foregoing instances give an idea of how welding operations are performed in a representative automobile manufacturing plant they do not tell the entire story by any means. At the White plant welding and cutting is used extensively in making jigs, fixtures and other special tools. Cutting a section of 34Fig. 3 (left)—A spot welding operation on a fender that a straight cut results. The circular section also was cut with this machine, using the radius device with which the machine is provided.

In the design of jibs and other special tools the tool designers take advantage of the welding and cutting processes as much as possible as they are the means of saving substantial sums in special tool manufacture, an expensive procedure at best. The operator at the cutting machine gets out the various sections as detailed on the drawings. Then the various parts to make a certain jig or fixture are welded together by an operator who specializes on this class of work. Such an

Fig. 4 (above)—Setup for welding both end units of a propeller shaft to a 3-inch tube Fig. 5 (right)—Natural gas used in welding a truck fender

various refractories under severe operating conditions.



operation is shown in Fig. 7 where the operator builds up the assembly from parts furnished him by the cutting machine operator.

#### Liquid Increases Density Of Concrete Mixtures

For construction and maintenance of concrete industrial floors, the Flexrock Co., 800 North Delaware avenue, Philadelphia, is marketing a material known as Concretdense, a concentrated combination of three chemicals for adding to concrete to produce high early strength, dense structure and long-wearing qualities.

The liquid material may be used in the preparation of a wash for bonding to old material, in patching mixtures, or in original floor material. It permits concrete floors to be placed in service 15 hours after installation. It also facilitates concrete installations during freezing weather, with reasonable precautions.

#### To Market Cutting Tools of Special "Crobalt" Alloy

Reports from Detroit that a new cutting metal is shortly to be introduced on a national scale, following successful production application for two years in one of the largest automobile plants, were partially confirmed this week when it was learned a prominent machine tool manufacturer has taken over national distribution of this new alloy.

While detailed information as to its characteristics and the name of the company which will sponsor this development have rot been revealed, it has been learned that the alloy, called "Crobalt," will be available not only directly in the form of cutting tools, but also in bulk for the use of other tool companies and machinery manufacturers under license.

The metal is said to reduce tool costs appreciably, since its cost is only a fraction of that of cemented tungsten carbides.

According to one report the cost

FIG. 6—A reinforcement spot welded under a fender, and at left a pair of clips and a rounded corner welded into place

#### Low-Power Mercury Vapor Lamp Has High Efficiency

A new 85-watt mercury lamp having a light output of 3,000 lumens and high unit brightness has been introduced commercially by the General Electric Vapor Lamp Co., Hoboken, N. J. The new lamp represents the latest step in broadening applications for bulb-type mercury lamps, which in the past two years have been used industrially in the 400-watt and 250-watt



Fig. 7-Building up special tools from pieces furnished by the flame cutter

is low enough to make feasible the manufacture of entire cutting tools from this metal, particularly in the small sizes, instead of brazing or cementing tips to tool steel shanks, as is customary.

#### Microscope Demonstrates Structure in Technical Film

Developed by the research laboratories of the Carborundum Co., Perth Amboy, N. J., and available through the refractory division of the company, a new technical motion picture film entitled "Super Refractories Through the Microscope" was recently released. The first part of the film shows the structure of various refractory materials as they are revolved on the stage of a polarizing microscope. The second part was made by means of the newly developed thermal microscope and gives a demonstration of the behavior of sizes. Its initial application will be in scientific and industrial uses where its small size and unusual brightness make it desirable.

The lamp is unique in construction and operating characteristics. The actual light source is a minute column of mercury vapor, less than an inch long, raised to a high brightness within a sealed quartz tube. This quartz tube is mounted within a bulb  $5\frac{1}{2}$  inches long and  $1\frac{1}{4}$  inches in diameter equipped with a standard screw base.

The small size and efficiency of the lamp, in comparison to its high light output, may result in the development of compact new fixtures and reflectors meeting unusual industrial and commercial needs.

The new bulb operates through a ballasting type of transformer on standard alternating-current circuits. A special line of compact transformers for use with the lamps has been developed concurrently by the company.



BY E. E. CALLINAN Timken Steel & Tube Co.



Tapping a heat of alloy steel from a 50-ton heroult-type electric furnace

MPORTANCE of factors affecting pouring and teeming conditions in alloy steel production has drawn attention to the refractories used in these operations. Much may be done to minimize the chances of ruining heats of steel by proper selection and use of pouring refractories.

Refractory inclusions, originating from the furnace, spout, ladle, or mold, will cause low cutter life and high tooling cost in the production of machined parts. Inclusions also will cause lines of weakness or stress in the product which may result in failure in service. As a result, steel producers are studying this problem, and with co-operation of refractories manufacturers have gone far in overcoming its worst phases.

Molten slag and metal attack the refractories exposed to them chemically (corrosion) and by mechanical action (erosion). The material so exposed must therefore have not only ample refractory value but also the



POURING aisle in the Timken Steel & Tube Co. Alloy steel producers are more concerned with quality of steel as affected by refractories than they are with refractory service life and cost per ton correct physical and chemical properties, to some extent at the expense of the refractory value.

Probably the greatest action occurs in the ladle, because of the violent impact at the start of tapping, the turbulent currents and splashing, and the sudden heat shock. Ladle design has a most definite effect on the life and utility of ladle refractories, and any change in design must be considered in the light of the effects it will have on the slag and steel and on general teeming conditions.

Thinning of a refractory is influenced by the chemical properties of the slag and steel, their temperatures, and the time the steel remains in the ladle. Much of this refractory material rises through the steel and enters the slag, but some may be trapped in the steel and poured into the molds. The greatest erosion and contamination by refractory material undoubtedly occurs at the ladle nozzle. Here there is a combination of high velocity, a high pressure generated by the ferrostatic head and a large contact area per volume of steel. Design plays an important part here since it helps to control velocity, temperature and pressure.

In teeming, the mold hot top and plug may be subjected to severe impact and sudden temperature change. Solidification of the metal occurs rather rapidly at the bottom and sides of the mold because of its high heat conductivity, thus giving included particles little time to rise out of the metal.

Alloy steel producers are more

July 13, 1936



I N THIS view a heat is being poured in molds equipped with hot tops. Requirements of a hot top include resistance to cracking, resistance to attack, proper size and design, good insulating value, freedom from gassing, and light weight

concerned with the quality of their steel as affected by refractories than they are with refractory service life and cost per ton.

Most present day ladle brick have a P. C. E. (pyrometric cone equivalent) value of cone 23 (2840 degrees Fahr.). Generally they are made of rather siliceous clays, a typical chemical analysis of a ladle brick showing 66 per cent  $SiO_2$ , 25 per cent  $Al_2O_3$ , 4.5 per cent iron and titanium oxides, and 0.4 per cent CaO, the remainder consisting mainly of magnesium, sodium and potassium oxides.

#### Firing Procedure

Maximum firing temperature is about cone 5 (2201 degrees Fahr.), firing treatment being closely controlled and progressing at an extremely slow rate, being of more than usual importance in producing satisfactory ware. The fired brick are quite hard and dense, having a water absorption of 7 to 9 per cent. However, the brick do not appear to be highly vitrified. These properties are essential in preventing penetration and fluxing action of slag and steel.

Theroetically, a 65 per cent silica fireclay brick is entirely unsuited for basic steel ladles. A basic brick would be better. However, magnesite brick and basic or neutral rammed-in linings have not been fully successful because on account of their higher heat conductivity they tend to form a skull in the ladle. They also spall, while no signs of spalling of a regular ladle brick which has been entirely covered with slag or steel have even been observed by the author. Fireclay ladle brick seems to slough off as a thin layer during each pour, the resulting surface being smooth and evenly eroded.

A regular, first-quality fire brick does not give as satisfactory service as does the more siliceous ladle brick. It seems to wear more rapidly, probably because of its higher porosity and lesser degree of vitrification, and tends to "peel off," the slag adhering to it and pulling off a thin layer of the uncontaminated brick. Breaks occur around the large grog grains.

This may be explained by the fact that frequently the grog used in the brick has been calcined to a temperature only sufficient to eliminate shrinkage at the firing temperature. Upon exceeding this temperature under actual service conditions, further shrinkage of the grog occurs and it pulls away from the clay. This produces a zone of weakness and allows the turbulent metal currents to carry away the grains, thus creating potential inclusions.

Good ladle lining practice calls for uniform sized brick, medium thin, tight joints and proper use of such shapes as wedges and arches. Some operators have noted that the use of high temperature cement in place of ordinary fireclay for laying the brick has resulted in as much as a 10 per

THE accompanying article constitutes a paper presented before the spring meeting of the Ohio Ceramic Industries association in Columbus, O., May 28. The author, E. E. Callinan, is refractories engineer, research department, Timken Steel & Tube Co., Canton, O. cent increase in ladle lining life. This has also been efficacious in reducing the amounts of fireclay-type inclusions in the steel.

P. C. E. values of clay nozzles may range from cone 18 (2714 degrees Fahr.) to cone 30 (3002 degrees Fahr), cone 18 nozzle having a softening point around 2400 degrees Fahr. Most nozzles appear to consist of clay and a rather small percentage of medium fine grog. They have a water absorption of about 7 per cent. Cursory microscopic examination does not show evidence of high vitrification but does disclose rather considerable amounts of free quartz well distributed in the clay substance. Hard-burned nozzles and sleeves are rejected by most steel plants since they show greater tendency to crack and spall in service. Care must be exercised during the drying and firing treatments that no warpage or deformation occurs, since an imperfectly shaped nozzle may directly affect the quality of the steel which passes through it.

The successful teeming of a heat of steel depends greatly on the nozzle which has two main functions: (1) To act as a seat for the stopper head in shutting off the flow of metal from the ladle; and (2) to be an outlet for and to control the character and velocity of the stream of metal.

#### **Nozzle Becomes Plastic**

If a clay-graphite stopper head is used, examination after teeming will show that it has closely retained its original shape, while the nozzle will disclose that the stopper head has been pushing into it and that some of it has been washed out by the steel The nozzle is in a pyroplastic condition and as long as it does not deform or flow too much as a result of the temperature or the fluxing action taking place, this plastic condition is desired in order to retain a good shut-off. A rather delicate balance must be maintained between temperature, fluxing action, stopper and nozzle. If the steel is either too hot or too cold, sticking may result. This would be especially true if the stopper head were clay. Best results are obtained when the two pieces do not have the same softening point.

Sometimes only a partial shut-off is obtained and the steel slowly dribbles through the nozzle. This may be caused by faulty design of nozzle, stopper, or nozzle well, cracking of the nozzle, excessive erosion, insufficient plastic deformation of the nozzle to allow the head to reform the seat, or formation of a skull in the nozzle well.

It is essential that there be good initial contact between the head and nozzle. Both pieces must be closely inspected before and after being set in the ladle. In some cases, faulty



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I NTERIOR of a ladle showing the stopper rod in the closed position. Good lining, practice calls for uniform brick, medium thin tight joints and proper use of shapes

nozzles may be ground by a specially-shaped cutting wheel so as to make a perfect seating area. If the interior is softer than the surface skin, the grinding may expose this softer interior and produce teeming difficulties, making it essential that the nozzle be fired correctly.

The nozzle must be so set in the ladle that the hole will be absolutely vertical. If not, the stream will hit the side of the mold before it reaches the bottom. The bottom surface of the nozzle tip must be exactly perpendicular to the nozzle hole, for otherwise the stream will be thrown to one side or may spray. Such conditions will decrease mold life and result in faulty ingot surface, for steel hitting or spraying on the mold sides and freezing before the metal in the mold can reach it will tend to produce scabs on the ingot surface, thereby increasing chipping costs and sometimes causing rolling difficulties. The original diameter of the nozzle hole and its variations in size as it is eroded by the steel is of considerable importance for the same reasons.

#### Sleeve Values Vary

Graphite nozzles with clay stopper heads and magnesite nozzles have not been used to any large extent. Magnesite, because of its higher heat conductivity, may develop a skull in the nozzle well. It also exhibits a tendency to build up and decrease the size of the opening.

P. C. E. values of sleeves will vary from cone 26 (2894 degrees Fahr.) to cone 29 (2975 degrees Fahr.). Usually they are more refractory than nozzles and have a higher water absorption value, from 9 to 12 per cent. This may be caused by the fact that they appear to contain a larger percentage of coarse grains.

The stopper rod upon which the

sleeves are fitted acts as an arm to control the stopper head and also as a heat conductor in removing heat from the stopper head, metal bolt, and pin assembly parts. Sleeve brick protect the rod from the slag and steel and insulate it sufficiently to allow heat to flow up through it from the stopper. An the sleeves become thinner, this cooling effect is decreased, hence it is desired to prevent them from fluxing, not only to help prevent the formation of inclusions but also to retain the maximum insulating effect.

#### Hot Top Requirements

Sleeves are jointed with a high fusion, low shrinkage, flint-base clay and must be handled carefully to avoid cracking at the joints. Often an air-setting chrome cement is used to bond the bottom sleeve to the stopper head and in some cases airsetting fireclay cement is used in the sleeve joints. If this is done, the cement must not contact the rod and bond the sleeve to it because the sleeves expand approximately 1/16 to  $\frac{1}{6}$ -inch per foot and adherence to the rod may cause the joints to break.

Required qualities of a hot top include: (1) Maximum resistance to cracking from heat shock; (2) resistance to attack by steel; (3) accurate size and proper design; (4) insulating value; (5) freedom from materials which will produce a gas when the hot top is heated by the metal; and (6) light weight for easy handling.

Hot tops are usually made by extruding horizontally from an auger machine or by the sewer pipe press method and fired to about 2000 degrees Fahr. After firing they usually have a water absorption value of 8 to 11 per cent and a P.C.E. value ranging from cone 18 (2714 degrees Fahr.) to cone 28 (2948 degrees Fahr.). As the bottom edge of the hot top is partially immersed in the steel the refractoriness, fluxing resistance, and surface condition are most important. It is desirable that this edge be smooth so that a dense, smooth, minimum surface area will be exposed to the steel.

A hot top for a 19-inch round mold will weigh approximately 110 pounds. Recently, light-weight tops, about 70 to 75 pounds, have been made by the introduction of coal, sawdust, or other materials which will be burned out during the firing operation. These reduce handling expenses and have a better effect on piping since they are better heat insulators and have lower heat capacity. Such tops will have a tendency to stick to the steel if open pores are present on the inner surface.

Tapered cast-iron tops lined with firebrick or insulating fire brick are now being rather widely used. The taper reduces the amount of steel in the top from 10 to 15 per cent, and being better insulators, they are more efficient in reducing piping. The brick lining is coated with a special graphite base refractory slurry to prevent steel penetration and to allow them to be removed from the ingot better. These tops are performing satisfactorily both from the standpoint of steel quality and of costs.

#### **Clay Plug Composition**

Clay plugs have a P.C.E. value ranging from cone 23 (2840 degrees Fahr.) to cone 28 (2948 degrees Fahr.), absorption varying from 7 to 10 per cent. They are made of a clay grog mixture and hard fired. However, they must not be too highly vitrified or a shell of material will break off when the metal stream strikes them, and inclusions may result. They must be accurately sized so as to make a good seal. Surfaces must be smooth with no rough edges, fins, or loose sand and the firing or forming treatment must not develop a skin or laminations which will spall off. When fireclay inclusions are found in steel, often they may be concentrated in the lower end of the ingot. Hence it is believed that faulty plugs are one of the chief sources of inclusions.

Various schemes have been tried to render plugs more serviccable. The upper edge has been rounded to reduce chipping. The top has been dished out to reduce the erosion by the metal stream. They also have been capped with sheet metal, either by forming the sheet over the plug or by simply placing a piece of sheet steel over the plug. The steel cap prevents a good tight seal, while the loose plate will be washed away as soon as the stream



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#### STEEL

hits it. Experiments have been made with plugs having a metal plate fastened to them, which eliminates the two undesirable features previously described. These seem to offer satisfactory results as the plate remains in place and the plug is not fluxed or spalled.

Much work still remains to be done in solving the problem of nonmetallic inclusions. This is going forward in the laboratories of steel plants and refractories manufacturers and important advances are being made. Steel producers constantly are seeking means of improving the quality of their product and particular attention is being centered on the broad subject of refractories, embracing furnace linings as well as pouring pit materials. The constant advance in the production or high-quality alloy steels and the rapidly increasing use of these steels brings new problems which must be solved.

## Automobile Service Pits Are of Copper-Bearing Steel for Long Life

HAT copper-bearing steel has a satisfactory life when buried in damp earth is the conclusion of the Marnall Steel Co. Inc., 501 Fifth avenue, New York, manufacturer of steel service pits for automobile garages and service stations. Investigations of such pits, submerged in earth over as long a period as 12 years, reveal that the steel has undergone no measurable deterioration. Some of the pits observed have been transferred to new locations as many as two and three times and still are regarded as being as good as new. A brushed-on coating of oxide of iron paint, of the type used to protect structural steel, is the only protection necessary.

#### Assembled on Site

The pits are rectangular box sections fabricated at the company's plant in Brooklyn, N. Y., and shipped in knocked-down form for assembly on the job. The assembling is done by means of bolts and nuts to make it easy for the service station or garage owner to relocate the pit if he desires. The upright walls are of steel plate sections flanged at each edge. These flanges are provided with bolt holes for assembly on the job. The walls are tied together at the bottom by means of cross angles. At the top they are tied together by I-beams which support flanged steel plate runways. Where the pits are to service heavier vehicles, such as trucks and buses, steel channels are used for the runways instead of flanged plates.

Each pit is provided with a steel stairway; the stringers are of steel channels and the steps of raised pattern, nonskid, steel floor plate. Each pit also has a steel swinging arm provided with funnel for receiving crankcase oil and conveying it to an underground tank from which it is removed by pumping and sold. Steel channel posts are placed at the corners of the pits and chains stretched between them to meet regulations of local city ordinances.

Pits for single cars are 18 feet long and 514 feet wide. Those for two cars are 18 feet long and 13 feet wide. Pits may be made of any size, for simultaneous servicing of any desired number of cars. Single car pits weigh 3600 pounds while the double car pits weigh 6600 pounds.

Marnall Steel Co. Inc. represents a merger of three companies which had been engaged in the production of steel service pits. It owns the patents covering design and construction of these pits. As a result of the consolidation, total sales of such service pits approximately have been tripled and the company now is selling at the rate of about 5000 annually. Approximately \$500 tons of steel is required for manufacture of this quantity. The company distributes throughout the United States. Officers are: President, R. W. Marshall; vice president, J. A. Forsythe; secretary, Herman A. Mugler; treasurer, Thomas A. Martin.

#### Stainless Wire Rope and Hardware Used on Boats

Originally developed for yacht rigging, stainless steel wire rope is being used widely by yachtsmen and boat owners everywhere. Installations made a few years ago on yachts in tropical waters are today as bright and serviceable as the day the rigging was installed, it is stated in *Electromet Review* published by the Electro Metallurgical Co., New York.

Stainless steel rigging is rapidly becoming standard equipment on "class" boats as well as on large cruisers of all types. Famous champions of the last few years, including the RAINNOW, America's cup defender in 1934, have been equipped with stainless.

Although moist salt air and salt water spray is most severe in its deteriorating action on ordinary metals, stainless steel does not tarnish or rust, even under the most adverse conditions. Thus it is impossible for corrosion to weaken high-strength, stainless steel cable. Stays and halyards of this material are extremely flexible and readily spliced, and their greater strength permits the use of smaller diameters, thus reducing weight.

Stainless steel also is used for innumerable deck fittings, such as ventilators, cleats, chocks, bitts, snaps, shackles and other marine hardware, because no polishing is necessary to retain the original bright appearance indefinitely. Stainless steel propellers also are finding a wide vogue among boat owners.



Pit for automobile service station, built of copper-bearing steel, protected only by ordinary iron oxide paint. Recent investigations of such pits submerged in damp soil for 12 years revealed no measurable deterioration



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- 19-Statler Hotel 20-Hanna Bidg. 21-Keith Bidg. NOT IN PHOTOGRAPH
- Winton Hotel
- 23—Masonic Bidg. Assn., Hall & Gymnasium 24—Citizens Savings & Trust & Union\_Commerce National
- Union Commerce National Bank Bidg. 25-Cleveland Electric Illuminating Co., 20th St., Heating Plant 26-Woolworth Bidg. 27-Cleveland Electric Illuminating Co., Bolivar Rd. Substation 28-Halle Bros. Bidg. 29-Cuyahoga Viaduct 30-Post Office Bidg. Substructure

In this Terminal Tower Group, these structures were done by American Bridge Company. This photograph does not show the recent post office building erected in the foreground, steel substructure for which was ABC fabricated.



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## Use of Cobalt-Nickel Solutions To Produce Bright Electrodeposits

BY LOUIS WEISBERG Weisberg & Greenwald Inc., New York

DVENT of chromium plating marked the beginning of a period during which there have been significant improvements in nickel plating. First, the need for undercoating satisfactory for a chromium and then the demand of the automotive industry for increased protection against corrosion provided a stimulus for the development of methods for producing nickel coatings of better quality. As a result, common practice today involves thicker deposits, better adherence, and better corrosion resistance than were usual ten or even five years ago. With all this, costs could not be allowed to increase in proportion.

#### Low pH Solutions Used

One of the most striking departures from the older practice is the widespread use of low pH solutions (high acid concentration). A few years ago it was generally considered that any deposit produced at a pH much under 5.3 would be too brittle to serve as a satisfactory undercoating for chromium. The successful commercial use of nickel plating solutions having pH values as low as 1.5 to 3 paved the way for more scientific study of the whole subject.

Recently has come the development which is known as bright nickel. The connection between low pH nickel and bright nickel may be seen from the fact that practically all of the newer bright nickel solutions are operated in the pH range once regarded as unfavorable to the production of good deposits.

The term bright nickel is used to describe deposits of nickel which do not require buffing or coloring after plating. Sometimes it is used rather loosely in connection with smooth, fine-grained deposits which still require some buffing, but not as much as ordinary nickel. In order to avoid confusion, it would be desirable to restrict the term bright nickel to those deposits which require no buffing at all, and refer to the others as semibright. To compare different deposits for brightness, it is obviously necessary to put them on similar surfaces, and preferably on surfaces free from marks or blemishes that will show up in the deposit. Otherwise the condition of the base metal on which the deposit is applied may be the controlling factor in the final result. Thus in practice the preparation of the base metal may be far from ideal and must be taken into account wherever bright nickel is to be used.

#### **Heavy Deposits Possible**

For many years platers have been producing thin deposits of nickel which do not require buffing. While such deposits may properly be described as bright, general usage seems to be restricting the term bright nickel to those deposits which meet present-day thickness specifications. Generally this implies a thickness ranging from about 0.0002-inch as a minimum up to 0.001-inch or 0.002inch. Sometimes deposits up to 0.010inch or more may be required and may be obtained from the best bright nickel solutions in use today.

The early efforts to produce bright nickel involved the use of gums and similar materials as brightening agents. The solutions were mostly made from double nickel salts and were, therefore, characterized by low metal content and correspondingly low plating rate. The deposits were extremely thin, even with a long plating time. In another type of solution, brightness was obtained by the addition of cadmium or other metals. Not only were these deposits thin, but they were often too brittle to be satisfactory.

A more recent development is a solution with higher metal content and a brightening agent consisting of a substance of the type that produces a lowering of the surface tension of the solution. Substances of this type are sometimes referred to as wetting agents, and consist for the most part of sulphonated derivatives of more or less complex organic compounds. There are numerous wetting agents, and so it is not surprising to find a number of different bright nickel solutions of this type. To be sure, not every wetting agent makes a satisfactory brightener, for of the many that have been tried, comparatively few have given promise of being useful. The majority of the bright nickel solutions on the market at the present time employ materials of the wetting agent type as brighteners.

#### Cobalt in Nickel Solution

The bright nickel solution which is described in this article and which was developed in the laboratory of Weisberg & Greenwald Inc. is of an entirely different type. Cne of its distinguishing features is that it contains a small amount of cobalt, a metal closely related to nickel. The deposit, of course, also contains cobalt, and this fact has an important bearing on the physical properties of the deposit. Special anodes containing sufficient cobalt to maintain the cobalt content of the solution are used.

The presence of cobalt by itself is not enough to give a satisfactory bright plating solution. Indeed, to obtain mirror-like deposits over a wide range of plating conditions, requires the use of several other ingredients. These fortunately are simple, inexpensive chemicals. Besides their action in brightening the deposit, these additions check pitting and prevent the pH value of the solution from changing too fast as it is operated. This buffer action is important since it has been shown that boric acid



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has practically no effect on solutions having a pH under 5.

A feature of this bright nickel solution is the manner in which it lends itself to chemical control. The amount of each of the ingredients in the solution can be determined easily and quickly. In fact, methods for carrying out the analysis have been made so simple that the plater can learn to use them, if he does not wish to depend on a chemist. Guesswork and rule-of-thumb methods may therefore be eliminated. The importance of chemical control of plating solutions in obtaining uniform and consistent results is too well recognized to require comment, and so it is scarcely necessary to point out how important it is that a bright nickel solution should be amenable to chemical control by methods that are at the same time simple and sure. Reagents, apparatus and simplified directions for analysis are available at chemical supply houses.

#### **Physical Properties Retained**

To produce deposits that are bright is not particularly difficult. But to produce deposits that are bright and at the same time have good physical properties is another matter. If the physical properties are not what they should be, brightness by itself is of no value. By taking this as a guiding principle, it has been found possible to obtain bright deposits having physical properties fully equal, if not actually superior, to the best dull nickel denosits.

Important requirements of nickel deposits are ductility, adherence and freedom from stress. In all these respects, deposits produced from the Weisberg & Greenwald solution meet all required tests. They can be stamped, formed, swaged, riveted, bent or twisted, and are being subjected to all such operations in practice as required. Pieces of steel plated with 0.001-inch of this bright nickel and then with chromium can be bent back and forth until the steel breaks apart, without any signs of the plate coming off. This holds true even for spring steel.

#### **Base Metal Faults Hidden**

The cobalt-nickel deposit itself, when separated from the underlying metal by suitable methods, proves to be remarkably ductile. A simple way of testing a piece of metal carrying a bright nickel deposit is to hold it near the ear and bend it. If the deposit is stressed, or if the adherence is not good, the sound of metal tearing apart can be heard. A good deposit will bend without any sound being heard.

The color of this bright nickel is whiter than that of ordinary nickel. This is because of the cobalt in the deposit, which gives it a bluish white cast. The color, however, is not as blue as that of chromium. The color

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THIS 675-kilowatt, semicontinuous enameling furnace, using 440-volt, 3-phase, 60-cycle alternating current will produce temperatures up to 1600 degrees Fahr. It has a capacity for burning porcelain enameled sheets up to 6 x 12 feet in one piece, either single or double faced. A novel feature is the preheating and precooling chambers which eliminate danger of warping the sheets during heating and cooling. Control instruments automatically regulate temperature, operation of doors, movement of conveyor chain and duration of burning period. The furnace is one of a battery of three operated by the Ingram-Richardson Mfg. Co.,

Beaver Falls, Pa. Photo courtesy American Rolling Mill Co., Middletown, O.

is attractive, but unfortunately it tarnishes like ordinary nickel.

It is a common saying among platers that an electro-deposit tends to reproduce faithfully every feature of the underlying surface. While this still holds true in general, it is noteworthy that as the bright nickel deposit builds up in thickness, it tends to obliterate any marks or roughness in the metal underneath. This characteristic sometimes makes it possible to obtain a satisfactory result with a thick deposit when a thinner deposit would not be satisfactory at all. This, of course, does not apply to a deep blemish or scratch, which stands out in contrast to the surrounding mirror-like surface.

If the base metal has a satin finish, the satin characteristic tends to disappear under a deposit of about 0.0005-inch. By the time the thickness of the deposit reaches 0.001inch, the brightening effect has become much more striking.

An interesting application of this characteristic is made in plating zincbase die castings. The castings are buffed, then plated with 0.0003-inch of copper, and then with 0.0007-inch of nickel without buffing the copper. The copper deposit is fine-grained and smooth, but not bright. The nickel put on in this way is bright enough for chromium plating without buffing. However, if an attempt is made to decrease the thickness of the nickel deposit, the grain of the copper is not completely covered over.

#### Wide Range of Current Densities

The solution is used warm, the current density generally being in the neighborhood of 40 to 60 amperes per square foot. There is a wide range, however, both above and below these current densities. The solution is being used for plating directly on steel, brass, copper and cast iron. Trouble in pitting is not encountered as long as the solution is kept within the prescribed limits of composition, the work properly cleaned and dirt kept out of the solution. The current efficiency under average conditions is approximately 97 per cent.

This process is covered by United States and foreign patents. In order to provide a service organization functioning throughout the country, Hanson-Van Winkle-Munning Co. has been designated sole representatives of Weisberg & Greenwald Inc. for the sale of this process in the United States. Licenses, however, are issued directly by Weisberg & Greenwald Inc. In Cauada this process is handled by Canadian Hanson & Van Winkle Co. Ltd., Toronto and in England by W. Canning & Co. Ltd., Birmingham.

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On cast iron, semi-steel and nonferrous materials, its performance is exceptional.

The new Vascoloy-Ramet catalogue price-list will be gladly sent upon request!

VANADIUM-ALLOYS STEEL CO. VASCOLOV-RAMET DIVISION, NORTH CHICAGO, ILL.



District Sales Offices: Pittsburgh . . . Pa. New York . . . N. Y. Springfield . . . Mass. Providence . . . R. I. Cleveland . . . Ohio Detroit . . . . Mich. Chicago . . . . Ill. St. Louis . . . . Mo. Buffalo . . . . N. Y. Newark . . . N. J. Knoxville . . . . Tenn. Los Angeles . . . Calif. San Francisco . . . Calif.
Welding, etc....



### What's New in Welding?

**S** INCE welding affects every phase of metal fabrication from children's toys to ocean liners, the question is frequently asked, "What is new in welding?"

There is much that is new but not ready for announcement. Some of the new ideas which have been made public are:

(1) The Union Melt process which deposits up to 180 pounds of weld metal per hour.

(2) The Scott process of applying studs to a metal surface which is a combination of arc and thermit welding.

(3) The Longoria process in which welds are made by "molecular hammer" at temperatures reported below 700 degrees Fahr.

(4) The shot welding process which is a modification of the spot welding method but involves accurate timing of the heat cycle.

(5) The Champion process which involves the melting of long welding electrodes by the self-consuming method.

(0) The pilot arc attachment for alternating-current arc welding machines for self starting of the arc.

In the next few months, more new methods will be disclosed. Thus, evolution of the art of welding takes place. The good old reliable outfit in the welding business may also be a good old reliable piece of obsolete junk because it costs too much to use.

### It Won't Be Long Now

**S** OME of the smartest welding men in the country have made up their minds they are going to weld large ocean liners from stem to stern and from crow's nest to keel. The particular outfit involved has a way of accomplishing what it sets out to do.

The experience of the Navy department will be about as useful in this undertaking as the experience of the kitchen ware industry in welding spouts on teakettles. A thousandby Robert E. Kinkead

N THIS column, the author, wellknown consulting engineer in welding, is given wide latitude in presenting his views. They do not necessarily coincide with those of the editors of STEEL.

fcot ship is a piece of heavy steel construction quite different from a destroyer or a treaty cruiser with  $\frac{1}{2}$ -inch to  $\frac{1}{4}$ -inch hull plating.

British and French interests would liked to have welded their recent luxury liners. Both nations are alive to the advantages of welded construction. They both lack the perfected methods and new welding processes we have in this country. The United States now has both the methods and the processes required to weld a large ship economically.

The only obstacles in the way of a large merchant ship building program using 100 per cent welded construction are mental obstacles. History will repeat itself. While 85 per cent of the shipbuilding industry is yelling from the housetops that "it can't be done," they will wake up some morning to find that someone is doing it successfully.

### New Welding Art

ELDING glass to metal is a new art announced by the Nela Park laboratory of the General Electric Co., Cleveland.

The idea of composite materials of construction as contrasted with uniform materials of construction is gathering momentum rapidly. Recent development in Cleveland of a method of providing a stainless steel surface on ordinary steel is in line with this general movement. Rubberized metal surfaces, as developed in Akron a few years ago, have found widespread use in the chemical industries. It is probable that the rubber surface applied to metal by the new process comes within the definition of the weld, since there is some degree of molecular cohesion between the two materials.

All of these developments are brought about by proper recognition of the fact that any machinery part or object made of metal has different service requirements at different points in its volume. By welding different materials together into a composite unit in which each part is of a composition best adapted to the service represents the ultimate in modern design and use of materials.

### Coach Framed in Welded Tubes



WELDED tubular steel of high strength, yet light in weight, forms the body framework of a new motor coach now being manufactured by Gar Wood Industries Inc., Detroit. Here the coaches are shown on their way in the assembly line. The coach is unique in that the motor is located at the rear instead of at the front or side. There is no separate chassis frame; the body unit resembling an airplane fuselage, serves both as body and chassis frame



Power Drives

# Bernar AD-O-MIL

### Roller Chain Rating

A S WITH all types of power drives the majority of driving leads on roller chains are of the ordinary type, doing an average day's work without being subjected to severe shock or rapid variations in load or speed. In all types of drives the best results are obtained by avoiding extreme conditions of shock, speed or load.

Power transmitting units, whether chain, gears or belts of any type, have listed ratings suitable for these average, ordinary conditions of service. When unusually severe conditions exist the transmitting unit must be given a lower horsepower rating by increasing its size for the extra work.

In all cases the maximum power load to be expected should be used as the working load. In many cases this maximum load is the starting load, especially when starting under load or with across-the-line starting.

#### **Continuous** Operation Overload

Another type of load, often not taken into account as an overload, is when the drive operates continuously. Also, such types of drive often operate under full to heavy loading. Such drives should have additional chain rating of at least 25 per cent above normal rating for the power load to be expected to compensate for continuous operation.

Where the drive is on machines with periodic load fluctuations through a single revolution, or shock loads, it is well to provide 40 to 100 per cent additional roller chain capacity above the normal power load.

Other factors which result in unusually severe service are speed-up drives where the driven shaft revolves at the higher speed and so carries the smaller sprocket; also, extremely high reduction ratios which require a sprocket smaller than the recommended minimum of 15 teeth. For example, with a sprocket of nine teeth, the practical minimum, fewer teeth are in contact with the chain and so each tooth carries an overload compared to using the preferable minimum sprocket of 15 teeth or larger. With the same size of chain and teeth it is obvious that small sprockets should not be loaded as heavily as large ones. Many drives with small sprockets operate satisfactorily but it is advisable to obtain the recommendations of the engineering department

### Variable Speed for Press Brake



LARGE pieces a: e handled more slowly through a press brake than light-gage and small pieces. To permit this press to be speeded accordingly. about 50 per cent of new installations are built with variable speed motor pulleys. These permit a variation of 13 to 39 strokes per minute against 30 strokes of the single-speed press on the heavy-duty series, or 17 to 50 strokes against 40 on the standard series. The special V-belt drives over the combination pulley and flywheel on the Dodge single plate friction clutch mounted on Dodge-Timken pillow blocks. This press brake is manufactured by Dreis & Krump Mfg. Co., Chicago; the clutch and bearings by Dodge Mig. Corp., Mishawaka, Ind.; the variablespeed drives by Reeves Pulley Co., Columbus, Ind. Note welded steel plate construction of press

of the chain manufacturer before installing.

Extra chain or sprocket capacity is desirable under all types of unusual conditions of load or service to insure long chain life and freedom from excessive maintenance. Power demanded and type of load in relation to the strength of the transmitting unit are the determining factors of long life of transmitting elements and satisfactory operation in any drive.

### Belt Static

**S** TATIC electricity from leather belts is objectionable where inflammable or explosive vapors or gases are in the room or around machines with women operators. Usually static is removed by a grounded comb riding over the belt. Even with such protection it is well to prevent the formation of the static as far as possible.

Static results from slippage or the air friction on dry belts. Both of these causes are preventable. Ample use of belt dressings, such as neatsfoot oil which keeps the leather soft and pliable, decrease the static hazard from dry belts.

Slippage may be prevented in a number of ways. Using a wider and lighter belt which grips the pulleys better results in less slippage. Increasing the diameters of both pulleys and the speed of the belt decreases the tension necessary for the load and so enables the same belt to drive without slipping. Pulley coverings or lagging, idlers, paper pulleys, and pivoted motor bases which maintain the necessary tension during fluctuating load periods are still other common methods of preventing slippage.

Preventing the creation of a hazard is usually as important as guarding against it. In hazardous surroundings both prevention and safeguards are advisable.

Even a slight misalignment results in excessive wear on chain drives and sprockets. Shafts must not only be parallel and level but the sprockets must also be aligned.



## Low-Alloy Steel Used Extensively in 26 Cars for Delaware Bridge Service

ITH increased strength in the structural members of approximately 25 per cent, the new multiple-unit type passenger cars of the Delaware River Bridge joint commission of New Jersey and Pennsylvania went into operation this month over the Delaware River high level bridge, between Philadelphia and Camden, N. J.

The 26 cars were built at the plant of J. G. Brill Co. in Philadelphia, with the formed sections of lowalloy high-tensile steel of the "70-90" type produced by Alan Wood Steel Co., Conshohocken, Pa.

In addition to strength, corrosion resistant properties also made the steel desirable because of the unusual moisture conditions which prevail over the route these cars are scheduled to travel. While designed to be interchangeable with subway equipment, the cars will operate over a route of 2.68 miles in length, of which 1.81 miles will be over the bridge.

#### Many Structural Parts Used

The more important structural parts made of this steel comprise the bolster web plates, center sill cover plates, needle beam web plates and gussets, end sills, side sill reinforcements, top rail reinforcements, pier posts, corner posts, end door posts and headers, carlines, and upper and lower roof sheets and splices.

The thicknesses required ranged from 14 gage to %-inch, specifications call for minimum yield point of 50,000 pound per square inch minimum tensile strength 65,000 pounds per square inch, and minimum elongation 25 per cent in 2 inches.

The steel has been produced on a commercial basis for about two years, following considerable previous experimentation. Its corrosion resisting qualities are indicated by tests by the American Society for Testing Materials on steel of similar composition, which after 75 months, it is said, showed a resistance in comparison to non-copper steel of approximately five to one (STEEL, Jan. 21, 1935, p. 27).

#### Special Equipment Unnecessary

For the cars the steel was readily workable, according to the builder. No special equipment had to be installed for fabrication, existing dies and other forming machinery being sufficient. A number of the forms NEW multiple-unit type car with main structural members of low alloy high-tensile steel which provides high strength for its weight, and added corrosion-resisting properties. Overall length is 67 feet 6 inches

were cold pressed, but where the forming was difficult and intricate the sections were hot pressed.

Needle beams, for instance, were hot pressed, due to length and depth of these sections and also to the fact that the flanges had to be kept continuous; and bolster web plates, too, for much the same reason. Considerable arc welding was done on the steel, with good performance obtained, it is said.

The accompanying illustrations show, respectively, one of the cars under construction and one fully completed. Incidentally, the side frame of each car was designed as a girder to transfer the loads to the



Construction view of car taken in builder's shop. Side frame is designed as a girder to transfer load to the bolsters of the underframe

STEEL

bolsters of the underframes and then to the trucks through the center plates. The roof, of monitor type, was arranged for natural ventilation as well as for six blow-type fans.

The cars are propelled by four

105-horsepower motors, two in series, mounted on each truck. The overall length of each car is 67 feet, 6 inches, the overall width, 10 feet and the height, from rail to roof, 12 feet, 4 inches.

## Collects Statistics on Capacity and Output of Commercial Steel Castings

### BY RAYMOND L. COLLIER Steel Founders' Society of America

**T** HOSE interested in statistical information pertaining to the steel casting industry doubtless are aware that for the past two years the American Iron and Steel institute has discontinued its practice of collecting data covering commercial steel castings. Figures of that organization now embrace only such castings as are produced by steel mills for their own exclusive use. These are castings for steel mill repairs or for use in assembled finished products manufactured by these mills.

This leaves the department of commerce and the Steel Founders' Society of America as the only remaining sources for authoritative statistical information covering strictly commercial steel castings sold to the trade in the open market. As the department of commerce receives over 90 per cent of their totals from Steel Founders' society, and as the capacity figures used by the government and the society have been reconciled, both sources are authoritative and in reasonably close agreement.

#### **Basis of Capacity Figures**

The monthly capacity of a steel foundry is taken as the average of the best six consecutive months' shipments during the preceding ten calendar years. When application of that formula results in a revised capacity for an individual foundry, the society changes its figures, reflecting the revision in the total capacity for the industry. Similarly, when all or any part of the capacity of individual foundries is eliminated permanently from the industry's productive facilities, the society drops that tonnage from its totals.

The department of commerce does not attempt to exercise so close an adjustment on the figures for available capacity. Hence it is believed the society's figures on capacity are probably more in keeping with up-to-the-minute conditions than those used by the government.

The commerce department does collect slightly larger totals for tonnage produced. Whether they include some tonnage that the society does not classify as falling within the scope of the steel casting industry is not known. In any circumstance the society's statistics do *not* include austenitic manganese steel castings or high alloy

### Capacity and Production of Commercial Steel Castings

#### NET TONS

	1936		1
			Production
		Produc-	as per
	Capacity	tion	cent of cap.
Jan	100,013	40,225	40.2
Feb,	98,072	43,008	43.9
March	97.387	45.822	47.1
April	99.594	57.146	57.4
May	99,222	58,079	58,5
	1935		
Jan.	109 794	26 737	94 J
Feb.	108 060	27.609	25.5
March	107.936	29,850	27.7
April	108 047	29 743	27.5
May	105,916	27 276	25.8
June	103 925	25 280	24.3
July	106 104	20,200	97.5
Aug	104 080	22 1 21	21.0
Sent	101 549	33 587	22.1
Oct	102 748	30 5 25	20.1
Nov	300 00	39 856	29.0
Dec.	98,103	34,136	34.8
-			
Total 1	1,256,168	368,851	
Mo. ave.	104,681	30,738	29.4
	1934		
Jan	110,907	22,757	20.5
Feb	110,381	24,001	21.7
March	109,524	32,928	30.1
April	110,663	41,078	37.1
May	111,712	49,733	44.5
June	110,026	41,850	38.0
July	109,021	37,306	34.2
Aug.	110,905	35,433	31.9
Sept.	109,133	25,589	23.4
Oct	108,886	24,003	22.0
Nov.	110,440	21,154	19.2
Dec	108,509	19,290	17.8
Total 1	320 107	375 199	
Mo. ave.	110 009	31 260	28.4
		01,000	A0.1

(heat-and corrosion-resisting) castings. Nor does it include tonnages produced for use by the foundries in their own finished products. The society's figures do include somewhere in the neighborhood of 95 per cent of all commercial steel castings, both open hearth, electric, converter and crucible, and embrace both miscellaneous castings and railroad specialties.

The society's statistical tables commencing with the year 1934, when the present series was begun, are set forth in the accompanying table. The righthand column indicates the industry's per cent of utilization of its productive facilities. It is interesting to note that the industry did more than twice as much business in May this year as in the same month last year.

The society proposes in the near future to undertake the collection of separate statistical data covering carbon and alloy steel castings.

### Announces New Illustrated Research Publication

To supply plant executives and operating men with detailed information of processes in which its products are involved, E. F. Houghton & Co., Philadelphia, has introduced a new type of publication called *Research Illustrated*.

The first issue was devoted to textile processing and the second issue, just published, deals with leather transmission belting and packings. Included in this later issue of 32 pages are articles on the processing of leather for belting, relation of motor torque to belt stress, effect of pulsating loads on belts, pitting of stainless steel by leather, and making belts last longer.

Other editions now being prepared will specialize on lubrication and metalworking. In each issue technical problems are discussed from a research viewpoint and profuse use is made of unusual photographs and micrographs.

Copies of the new publication may be obtained upon request to E. F. Houghton & Co., 240 West Somerset street, Philadelphia.

### Press Operation Is Made Safe by Simple Guard

Observed recently in the pressroom of a large automobile plant was a method for keeping the ram and crankshaft of a press from falling backward if the brake should fail to hold the ram in place. A disk was made to fit the end of the crankshaft and it was keyed in place on the same end as the brake drum. Several teeth were cut in the disk so that they would register with a pawl or latch which hangs on the brake shoe anchor bolt. A strap was placed over the bolt to reinforce it and keep the latch or pawl in register. When the press comes up, the teeth engage the latch and the ram cannot drop.



### Acid Sludge Is Eliminated

Light oils in the benzol washers at a by-product coke plant in the Great Lakes district will be treated by the Ufer process which utilizes cooling coils within the benzol washers to maintain the sulphuric acid, with which the oils are treated at definite temperatures. Acids used will be of a strength determined by test as best suited to the oil treatment. As a result of these two refinements in the washing process, formation of acid sludge will be precluded, and acid will come out of the washers at 35 degrees Beaume. This acid can be used in the saturators for precipitating ammonium sulphate from the gas, thus resulting in a further saving in acid cost.

### Slurry Stops Infiltration

Efficient results from the use of insulation on open-hearth furnaces are obtained permanently, according to a steelworks official, by employing a crew of maintenance men who constantly fill up expansion cracks using refractory cement guns and thus minimize air infiltration. A solution rated highly at one steelworks consists of eight wheelbarrow loads of silica sand, six sacks of portland cement and 1/2-sack of an organic binder known in trade circles as goulac. The components are mixed dry and then delivered through the hose to the nozzle of the cement gun where water is added to give the desired consistency. The slurry is employed for preventing air infiltration at slag pockets, fan tails, uptakes, furnace ends, and roofs of the checker chambers.

### Withstands Heavy Traffic

Industrial floor repairs can be made and put into service within 30 hours by the use of a resurfacer which provides equal results outside under severe weather conditions or inside under heavy traffic. Mixing proportions are varied to provide a feather edge, a soft feather edge or a heavy traffic finish. The mineral content and stone base make the material highly suitable for steel mill application including trucking

### Controls Tension of Strip

A DJUSTABLE voltage control of threading and running speeds are provide on the cold strip mills at the plant of the Ford Motor Co. Dearborn, Mich. Accurate indication and automatic control of tension between stands also are obtained. The control cabinet for the first stand and the General Electric tension-regulator device are shown in the accompanying illustration. Applied for the first time, the tenion regulator measures and controls the strip tension, thus helping to maintain accurate and uniform thickness of the finished strip. With this device, in which is incorporated an electric gage, the tension is measured on the strip itself instead of depending upon the power input to the driving motors.



aisles, gangways and ramps, stone and concrete steps, shipping platforms, walls and roadways.

### Requires Only One Sample

Ash and sulphur in coals are being determined simultaneously at a steelworks laboratory abroad. The procedure followed involves the ignition of a 0.25-gram sample in a porcelain boat and the absorption of the products in 3 per cent hydrogen peroxide with subsequent titration with 0.02-N sodium carbonate using methyl orange as an indicator. The ash then is weighed.

### Lubricant Affords Saving

A set of 36-inch cast-nickel alloy gears has had an average life of about a year using the ordinary gear shield type of lubricant. During this period about 450,000 tons of billets and sheet bars passed through the mill. By changing over to a lubricant having a resisting film the life of these gears has been extended to 1,842,000 tons and from present indications they are good for at least 2,000,000 tons, or four times any previous record. At a cost of \$4000 per pair for these gears, there is a saving of over \$12,000 for replacements.

### Affords Dual Protection

Soaking pit bottom makers frequently receive minor burns on their faces and in their eyes. Because of the intense heat entailed in performing their work, the men find goggles a hindrance. At one plant in an effort to find a satisfactory and comfortable solution for this problem, babbitting masks were supplied. Because of the dual protection afforded both for the face and eyes the bottom makers now seldom start a job until they have donned a mask.

# "Watch the Fords Go By" Over Goodrich Rolls in Goodrich Tanks



SEE it? ... there goes the steel for another Ford! It must reach the assembly line on time. A stoppage of steel, for pickling tank repair, would shoot up costs, cause serious delay to a nation demanding a new Ford every 3 minutes of every day.

There will be no stoppage for tank repairs. This tank is Goodrich-rubberlined.

In fact, every piece of acid-handling and ventilating equipment in this white - painted pickling room is Goodrich-lined. With the entire field to choose from, Ford selected Goodrich lining for its 3 distinctive features:

37

- 1. Goodrich Tanks do not leak-Goodrich Triflex lining of hard and soft rubber assures that.
- 2. Goodrich linings-because of their patented expansion joints -do not crack or break.
- 3. If accident should ever cut a Goodrich lining, the Vulcalock bond prevents acid creepage, so the leak will appear opposite the break and both can be repaired easily.

Ford - and every user of Goodrich Tanks - saves repair cost, prevents shut-downs for tank repairs, conserves

acid, reduces danger of accident, keeps acid off floors and away from foundations it can attack. When Goodrich Tanks go in, pickling cost goes down. Always! The B. F. Goodrich Company, Mechanical Rubber Goods Division, Akron, Ohio. (In Canada: Canadian Goodrich Co., Ltd., Kitchener, Ont.)

One of the two 78" Ford continuous strip pickle lines, at the Rouge plant, designed and installed by The Wean Engineering Co., Inc. Tanks and syphons, tank covers, rolls, condensers and traps, fume exhaust ducts and dampers, exhausters, stacks, acid sewer and drain piping are all lined by Goodrich.

STEEL

Rubber Lining ALL products oblems

RUBBER

## A. S. T. M. Revises Tentative

## **Specifications and Standards**

## At Thirty-Ninth Meeting

**C**ORROSION, effect of temperature, creep, methods of testing, fatigue of metals, spectrographic and chemical analysis, were among important subjects commanding attention at various sessions of the thirty-ninth annual meeting of the American Society for Testing Materials in Atlantic City, N. J., June 29-July 3.

Since the committee on corrosion of iron and steel was established 20 years ago, about \$100,000 has been spent on research and many vital principles of behavior of ferrous metals under longtime corrosion have been established, it was reported by F. F. Farnsworth, Bell Telephone Laboratories Inc., New York, committee chairman.

The committee proposed as a tentative method of test, the Preece test, which employs a solution of copper sulphate to determine the uniformity of zinc coating. A subcommittee under chairmanship of L. W. Hopkins, American Chain Co., Bridgeport, Conn., reported progress on methods for determining the weight and uniformity of zinc coatings on hardware.

A joint committee of the A. S. T. M., national bureau of standards, and the American Electro Platers' society, under chairmanship of William Blum of the bureau, has been organized to carry on exposure tests of plating on nonferrous metals.

Reporting for the committee on iron, chromium, nickel and related alloys, Chairman Jerome Straus, Vanadium Corp. of America, Bridgeville, Pa., announced the presentation of seven new tentative specifications approved by committee E-10 on standards.

Report of the joint research committee of A. S. T. M. and the American Society of Mechanical Engineers was presented by H. J. French, International Nickel Co., New York, who announced contributions of about \$11,000 for research now in progress at Battelle Memorial institute on the effect of temperature on properties of metals.

Robert Sergeson, Republic Steel Corp., Canton, O., reported results of

a study of low-temperature impact testing of 0.35 per cent carbon steel. Various types of tests under temperatures ranging as -50 degrees Fahr. and with various types of notched specimens were made for the purpose of establishing test procedure. A paper by Howard Cross, Battelle Memorial institute, Columbus, O., covering 18-8 chrome-nickel steel and 0.35 per cent carbon steel showed that long-time creep test data fail to support the assumption that the rate of creep may be extrapolated from that determined at the end of 1000 hours. The extent of strain-hardening temperature range must also be considered before design assumptions can be made.

H. F. Moore, University of Illinois, Urbana, Ill., presented results of slow bend and impact tests of notched bars at low temperatures. These studies were made jointly with H. B. Wishart and S. W. Lyon of the university. Tests were conducted from ordinary room temperature to 40 degrees below zero Fahr. A new type of direct-load creep test machine, involving use of a convection-type small heating furnace was explained by J. J. Curran, Walworth Co., Boston.

#### Long-Time Creep Tests Described

A paper by A. E. White and C. L. Clark, University of Michigan, Ann Arbor, Mich., and R. L. Wilson, Timken Steel & Tube Co., Canton, O., described long-time creep tests at 1000 degrees Fahr. on an electric furnace steel of carbon 0.15 and manganese 0.50 per cent. The investigation showed that carbon steel loses ductility after prolonged heating under stress and a metallurgical investigation gave a new theory on the action encountered. Under test, spheroidization began after about 4000 hours. After 13,950 hours not only spheroidization but migration of carbide particles was noted. The fracture of creep specimens was intercrystalline while that of short time tensions was transcrystalline.

Creep specimens showed no evidence

of strain hardening encountered in short time specimens and the percentage of reduction in area and elongation were markedly reduced. The difference in the latter with a standard test specimen was 42.5 per cent elongation in 2 inches in the short tensile test to fracture, while in a simpler specimen subjected to creep test load of 6000 pounds at 1000 degrees Fahr. for 13,950 hours, the elongation was 11.0 per cent.

Study of high-velocity impact testing, reviewed by H. C. Mann, Watertown arsenal, Watertown, Mass., was greeted by Prof. H. F. Moore, University of Illinois, Urbana, Ill., as true pioneering investigation into the littleknown field of kinematic stress and strength of materials. Dr. Mann presented data which show that highvelocity impact tests are necessary to show the true dynamic properties of materials.

He established a transition velocity within which the material reacts as normally expected. Above this velocity factor which is measurable and therefore useful in design, dynamic properties are encountered which show that previously used total energy values give no indication of serviceability. A material may show a high energy value, yet show a low transition velocity which would unfit it for service where dynamic loading is encountered. Behavior of metals under high velocity impact, important in the design of railway and automotive equipment may be studied more closely by this type of test.

#### **Builds Impact Test Machine**

A new impact testing machine, employing a specimen tested under tension impact and capable of producing velocities up to 1000 feet per second has been built by the arsenal. It consists of a pendulum for measuring the energy required to rupture the specimen and a rotatable wheel with retractable, horn-type, striking hammers. The pendulum which measures the energy is normally at rest, but when the test piece is struck, the blow is imparted to and measured by the pendulum swing.

Problems of chemical analysis, spectrographic determination of quantities of various substances viewed either by the arc or spark method, and various new developments in mechanical testing were presented in one session. G. E. F. Lundell, national bureau of standards, Washington, chairman of the committee on chemical analysis of metals, announced preparation of revised and improved chemical methods for analyzing steel, cast iron, openhearth and wrought iron which will include procedures for determining carbon, manganese, phosphorus, sulphur, silicon, copper, nickel, chromium, vanadium, molybdenum, titanium and tungsten. These will supersede present methods.

The report of H. V. Churchill,

## FLAT WIRE FOR UNIFORM QUALITY

Washburn flat wire quality begins in our own steel mill by keeping various heats separate. From this basic stock, which is inherently good and clean throughout, Washburn Flat Wire is handled by workers whose skill in wiremaking assures no variations in quality. • Uniform temper is held within very close limits. Uniform thickness is maintained within close decimals. Both in our hot mill and cold rolling mill great tensile strength is obtained by proper and accurate annealing, hardening and tempering processes. Washburn Flat Wire is highly flexible, will not fracture

when bent, straight as an arrow and made to rigid specifications. • Washburn Flat Wire is available in cold-rolled, high or low carbon steel, tempered or untempered, in various widths from  $\frac{1}{16}$  to 4", in thicknesses from .004 to .125, and many finishes including tinned, galvanized and bronzed. Write for samples or new Flat Wire folder.

WASHBURN WIRE CO., PHILLIPSDALE, R. I. WASHBURN WIRE CO., Inc., NEW YORK CITY

e nell cur cur

CLEAN, UNIFORM BILLETS-STRIP-RECTANGULAR, ROUND, FLAT RODS TEMPERED AND UNTEMPERED FLAT AND ROUND HIGH CARBON WIRES

July 13, 1936

Aluminum Co. of America, New Kensington, Pa., chairman of the committee on spectrographic analysis, and papers by R. W. Koch, U. S. army air corps, Dayton, O., and O. S. Duffenback, University of Michigan, Ann Arbor, Mich., indicated progress in the study of spectrographic photographs to indicate quantities of materials present either as metallic alloys or in solutions.

#### Temperature Effects To Be Studied

Report of the committee on methods of testing by W. H. Fulweiler, United Gas Improvement Co., Philadelphia, chairman, gave the first indication of the approaching study of temperature and humidity effects upon properties of materials. The consideration of a standard atmospheric condition is indicated. Slight changes in tentative specifications for verification of testing machines, Rock well hardness testing, elastic strength of materials and testing screens were approved.

The research committee on fatigue of metals is inquiring into X-ray diffraction as a means to detect incipient creep or plastic slip. Detection of small surface cracks by use of solutions, the application of ultraviolet light, and magnetic and audiophonic means all are being studied.

Committee reports were chief items of business in the iron and steel sesslon. Committee A-3 on cast iron, H. Bornstein, Deere & Co., Moline, Ill., chairman, recommended that proposed tentative specifications for light-weight and thin-section gray iron castings be accepted for publication as tentative; that tentative specifications for gray iron castings (A48-35T), with certain editorial changes, be referred to the society for adoption as standard; and that standard specifications for chilled cast-iron wheels (A 46-24) be withdrawn as standard since they have been superseded by existing tentative specifications for chilled tread cast iron wheels (A 46-30T).

H. A. Schwartz, National Malleable & Steel Castings Co., Cleveland, and new secretary of committee A-7 on malleable iron castings, reported that subcommittee III had prepared a tentative specification for cupola malleable iron which will be presented to committee E-10 for adoption and publication as tentative standard. At the Detroit meeting in 1935, the committee adopted the following definition for malleable: "Malleable cast iron, white as cast, which has been made malleable by heat treating sufficiently to convert substantially all of the combined carbon to temper carbon."

At the Pittsburgh meeting of the committee in March, 1936, the following definition for pearlitic malleable iron was recommended: "Any material which starts out as white cast iron free from any significant amount of primary graphite and subsequently

#### Magnifies Microscopic Mountains



MIRRORS, lamps and diamonds combine with precision machinery in this apparatus, known as a profilograph, which magnifies surface irregularities on polished steel and photographs them. The pencil points to one of the mirrors, below which is a diamond point which moves over the surface of the steel. Irregularities in the steel cause fluctuations in a light beam, which are then magnified 1700 times vertically and 64 times horizontally. The apparatus was designed by engineers at the University of Michigan, Ann Arbor, Mich., and is a part of the equipment in the new metallurgical laboratories of the Ford Motor Co., Detroit

graphitized through heat treatment, is called pearlitic malleable, if the graphitization be purposely terminated when sufficient combined carbon, irrespective of form, remains to significantly affect the properties of the product."

Report of committee A-2 on wrought iron, presented by James Aston, A. M. Byers Co., Pittsburgh, vice chairman, recommended that the proposed tentative standard for single and double refined wrought iron bars be accepted for publication as standard; that tentative specifications for wrought iron rivets and rivet rounds (A 152-35T) be revised as recommended by the subcommittee and that the specifications be continued as standard; that certain revisions be made immediately in standard specifications for refined wrought iron bars (A 41-30), staybolt engine bolt and other high-grade wrought iron bars (A 84-33) and hollow rolled staybolt iron (A 86-35).

It was also recommended that tentative specifications for uncovered wrought iron sheets (A-162-35T) and for zinc coated wrought iron sheets (A 163-35T) be referred to the society for adoption as standard, and that tentative revisions in the following standard proposed in 1935 as tentative be referred to the society for adoption as standards: Wrought iron rolled or forged blooms and forgings for locomotives and cars (A 73-30); lap welded and seamless steel and lap welded iron boiler tubes (A 83-34); staybolt, engine bolt and other high grade wrought iron bars (A 84-33); common iron bars (A 85-27); and hollow rolled staybolt iron (A 86-35).

Report of committee A-6 on magnetic properties, presented by Thomas Spencer, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., recommended that tentative definitions of terms, with units and symbols, relating to magnetic testing (A 127-35T) be referred to the society for adoption as standard to replace the present standard definitions (A 127-34). The committee also recommended that in the standard methods of test for magnetic properties of iron and steel (A 34-33), the induction for core loss tests be 15 kilogausses instead of the present 14 kilogausses.

#### **Extensive Steel Report**

A voluminous report of the work of committee A-1 on steel was presented by H. H. Morgan, Robert W. Hunt Co., Chicago, chairman. The committee recommended that the following proposed specifications be accepted for publication as tentative: High carbon steel joint bars; quenched carbon steel joint bars; structural nickel steel; fabricated bar or rod mats for concrete reinforcement; welded wire fabric for concrete reinforcement; one-wear and two-wear wrought steel wheels; seamless alloy steel (4 to 6 per cent chromium) still tubes for refinery service; and seamless cold drawn alloy steel (4 to 6 per cent chromium) heat exchanger and condenser tubes.

Revisions were proposed for the following two specifications, the specifications to continue as tentative standards: Heat treated carbon steel and alloy steel track bolts (A 183-35T) and carbon steel castings for miscellaneous industrial uses.

Withdrawal of the following nine standards was recommended: High carbon steel splice bars (A5-14); quenched high carbon steel splice bars (A 49-21); quenched carbon steel track bolts (A 51-33); quenched alloy steel track bolts (A-51-33); structural nickel steel (A 8-29); carbon steel castings (A 27-24); carbon tool steel (A 71-26); alloy tool steel (A 115-28); and high speed tool steel (A 92-26).

II. S. Rawdon, national bureau of standards, Washington, and chairman of the joint committee on the investigation of the effect of phosphorus and sulphur in steel presented a report of the work which has been accomplished by that committee since its organization some years ago. Because the committee feels that its work has been completed, and the sponsoring bodies are agreeable, the committee disbanded with the presentation of the report.

#### New Officers Announced

Committee A-7 on malleable iron castings announced election of the following new officers for 1936-37: Chairman, E. K. Smith, Electro Metallurgical Co., Detroit; vice chairman, H. W. Faus, New York Central lines, New York; secretary, H. A. Schwartz, National Malleable & Steel Castings Co., Cleveland. W. P. Putnam, Detroit Testing Laboratory, Detroit, and Enrique Touceda, Malleable Iron Research institute, Albany, N. Y., are members of the advisory committee.

Committee E-4 on metallography, in a report presented by C. H. Davis, American Brass Co., Waterbury, Conn., proposes a revision of standard rules governing the preparation of micrographs of metals and alloys, including recommended practice for photography as applied to metallography (E2-30) and the adoption of tentative recommended practice for metallographic testing of ferrous and nonferrous metals (E3-35T) as standard.

The report of committee B-7 on light metals and alloys, cast and wrought, presented by Sam Tour, Lucius Pitkin Inc., New York, carried a recommended proposed tentative specification for magnesium-base alloy bars, rods and shapes. Revisions in the following tentative standards also were proposed: Magnesium-base alloy castings (B80-34T); magnesium-base alloy sheet (B90-34T); magnesium-base alloy forgings (B91-34T); magnesium ingot and stick for remelting (B92-33T); and magnesium-base alloy ingot for remelting (B93-34T).

Activities of the various subcommittees of committee B-6 on die cast metals and alloys were also outlined.

## Symposium Deals with X-Rays In Materials Examination

MAJOR feature of the annual meeting of the American Society for Testing Materials was a four-session symposium on radiography and X-ray diffraction sponsored by subcommittee VI on X-ray methods of committee E-4 on metallography. This is said to be the first time an English-speaking country has conducted a symposium on the use of X-rays in the examination of materials.

The symposium was divided into two sections, the first dealing with radiography and the second with diffraction. Two sessions were devoted to each section. A report of the first radiography session was presented on page 66 of the July 6 issue of STEEL.

At the second session on this subject H. E. Seeman, Eastman Kodak Co., Rochester, N. Y., contributed a nontechnical discussion of radiography which involves the printing of negatives either with X-ray or radioactive material, such as radium. Fluoroscopy, applicable only to X-ray, permits viewing a shadow image on a chemical screen which gives off light. Radiography permits finer detail, and a permanent record of the image observed.

### Gamma and X-Rays Investigated

N. L. Mochel, Westinghouse Electric & Manufacturing Co., Philadelphia, discussed the varied fields of X-ray and gamma ray investigations, the latter covering the use of radioactive substances as a light source. The latter is not an alternative, but a supplementary procedure, employed where deeper penetration. where locations make X-ray impractical. or where field tests require portability. Technique of the gamma ray method was explained, the use of special film holders with a lead-backing material and special screens which intensify and decrease the time for recording the image upon films. The gamma ray method is slower and varies with the quantity of the substance, usually radium sulphate, which is employed in the testing.

The author listed available sources of radioactive salts and commented upon the decrease in price from \$180 a milligram in 1912 to \$70 in 1920 and the present price of \$55. Variable amounts of the material, encased in holders, protected in containers for handling to prevent the emanation of the rays so harmful to operators and other detailed information of value to users was presented. The material may be rented at \$10 per 100 milligrams for each 24-hour period.

To indicate time requirements, Mr. Mochel cited a complex valve body casting upon which multiple exposures required three weeks of 24-hour exposures to give necessary information. Penetration of X-rays was given as 4 ½ inches of steel at present, but electrical advances involving higher voltages promise to extend this effectiveness. Gamma ray investigations have been made through 6 inches of steel and even lead is penetrated by this ray.

#### **Proper Interpretation Unlikely**

In discussion, V. T. Malcolm, Chapman Valve Mfg. Co., Indian Orchard, Mass., questioned whether proper interpretation of negatives can be had. He stressed the unfortunate position of the manufacturer who is expected to meet radiographic tests when agreements upon disclosures of such tests has not been reached.

The same unstable condition was reflected in a study of the problems of radiographic specifications pre-sented by H. H. Lester, Watertown arsenal, Watertown, Mass. In response to extensive questionnaires sent to producers and consumers of cast and welded metal structures a wide divergence of opinion was developed. Such tests still are new, probably more familiar and easier of application to welds than to complete castings. The high cost, technical limitation, lack of facilities and the absence of data to tie in the effect of faults discerned through radiography with definite proof of service limitations cloud the possibility of early development of specifications.

According to Dr. Lester, the applications of such test methods cover castings or welds that must withstand high stress or temperature; structural units which may not be stressed highly, but where failure in service will cause damage far in excess of the value of the unit; and structural units of low stress, but in which machining costs that may disclose hidden defects indicate the value of nondestructive tests applied before machining.

Lack of uniformity in test methods, variance in interpretation and the apportionment of the cost of testing were mentioned. The speaker recommended use of radiography in development of casting technique wherever such castings are to be sub-

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jected to radiographic tests. He urged use of X-ray equipment by foundries while acknowledging that the cost of installation and operation of such equipment is prohibitive except in the case of a few establishments.

As for specifications for such tests, Mr. Lester recommended co-operation of producers and consumers in casting procedure, although admitting that such was a makeshift program. It was stated that the time is not yet at hand for writing a method for interpreting films and no agreement exists upon the kind or extent of defects shown which require rejection, except as by determination of the inspector.

The practice of making pilot castings to be tested at the consumers establishment, then referred back to the foundry with recommendations for altering production practice was described as clumsy, expensive, time consuming and not satisfactory.

Results which may be obtained through the application of diffraction methods were discussed in the two sessions devoted to X-ray diffraction. C. S. Barrett, Carnegie Institute of Technology, Pittsburgh, described installations at the research laboratory of the Aluminum Co. of America and the Massachusetts Institute of Technology, and discussed ways to reduce the cost of installations. He also described briefly various types of diffraction apparatus which may be purchased and discussed use of a new zinc-sulphide screen in diffraction work.

### X-Ray Used to Study Aging

Mr. Barrett stated that X-ray diffraction is useful in the study of age hardening of supersaturated alloys. Ordinarily the dimensions of the solvent lattice change during aging in a way that reveals definitely the amount of precipitation that has occurred at any stage of the aging process. In several cases, such as aluminum-rich aluminum-magnesium alloys, precipitation occurs locally and may be overlooked unless the X-ray diffraction method is used in conjunction with others.

In discussing the theory of the diffraction method, he stated that when a metal is cold worked the atomic planes become bent and are no longer capable of producing sharp diffraction spots. The amount of the blurring of the spots is a semiquantitive measure of the amount of cold work. Photograms taken after successive layers have been removed from the metal surface by etching serve to measure the depth to which the metal has been deformed by surface treatment. Application of Xray diffraction in fatigue of metals also is being investigated.

In a written discussion of the paper, L. Thomassen, University of Michigan, Ann Arbor, Mich., described a camera which has been used in diffraction testing with satisfactory results.

In a paper, "Constitution of Alloys," Kent R. Van Horn, Aluminum Co. of America, Cleveland, stated that X-ray diffraction effects are a definite test of crystalline entity and can identify positively intermediate alloy phases. Small solid or powder samples can be examined. Small specimens can be produced with a high degree of uniformity in composition, requiring relatively short periods of time for homogenization and may be quenched rapidly to retain the unstable high temperature phase. The X-ray method can be adapted easily for investigation of test specimens.

Dr. Van Horn stated that recently the X-ray method has detected and explained satisfactorily a type of atomic rearrangement occuring during slow cooling or annealing at low temperature of certain homogeneous phases. X-ray analysis has contributed valuable information regarding the nature of unstable phases and the transformations occuring in the solid state. X-ray evidence concerning the character of the transition constituents in hardened steel and age or precipitation hardening alloys is enlightening. The mechanism of precipitation is followed conveniently by the X-ray.

#### Diffraction Shows Structure

In an interesting discussion on "Chemical Analysis by X-ray Diffraction Methods," W. P. Davey, Pennsylvania State college, State College, Pa., stated that X-ray diffraction data, especially those obtained by the so-called power method or one of its simple variants, often are useful in identification of crystalline or semicrystalline materials. Specific advantages are: Quantity needed for test is small; analysis can be made without destruction of change of the material; the state of chemical combination can be determined and the course of a chemical reaction may be followed.

Mr. Davey discussed a number of applications including the identification of a material in terms of some standard of known chemical composition; identification of the components in a mixture; identification of phases of a chemically known homogeneous material, and determination of the course of a chemical reaction.

J. T. Norton, Massachusetts Inslitute of Technology, Cambridge, Mass., presented a paper on "Applications of X-ray Methods to Problems of Cold Work, Preferred Orientation and Recrystallization." The author stated that the fabrication of metal into useful articles depends to a large extent upon the processes of cold working and reheating. Effects of cold work on a polygrained ma-

terial may be divided into three classes, namely, elastic distortion, fragmentation of the grains and preferred orientation. These three conditions have characteristic X-ray effects which may be used to study the various phases of the process. Similarly, when the cold worked metal is reheated, the process of recovery and recrystallization are observed and they also are accompanied by characteristic X-ray diffusion phenomena. These X-ray effects are indications of fundamental changes taking place in the metal, and often are capable of more direct interpretation than the evidence obtained by the usual methods of metallography, according to Mr. Norton.

A paper by G. Harvey Cameron, Hamilton college, Clinton, N. Y., and A. L. Patterson, Massachusetts Institute of Technology, Cambridge, Mass., stated that although the X-ray method of measuring particle size still is in the process of development. It is of great importance to science and industry because it offers the only possibility at present of distinguishing between the ultimate crystals and the aggregates. The method is based on the powder diffrac tion method and is applicable to particles from approximately 0.001 centimeters in diameter down to the smallest which show evidence of crystal structure.

### New Research Treats Acid Corrosion of Mild Steels

Technical publication 36, series A. of the International Tin Research and Development council is entitled, "Factors Influencing the Rate of Attack of Mild Steels by Typical Weak Acid Media." It is the result of a study made by T. P. Hoar, M. A., Ph. D., and D. Havenhand, B. Sc. Main result established is that sulphur in steel has a pronounced accelerating effect, which is counteracted by the presence of twice as much copper as sulphur in the steel, and is decelerated by the presence of tin ions in the corroding media. Copies of the research are available from L. J. Tavener, American representative of the council, 149 Broadway, New York.

### Proved Selling Methods

Advertising and Selling Industrial Goods. by Vergil D. Reed; cloth. 287 pages 6 x 8½ inches; published by Ronald Press Co., New York: supplied by STEEL, Cleveland, for \$3.50, plus 15 cents for postage; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London.

A manual devoted to methods, plans, ideas for gaging the market, creating selling features and ideas, watching the budget; shows actual cases, with costs, budgets, examples of copy themes and advertising.

New Equipment



### Portable Compressor-

Chicago Pneumatic Tool Co., 6 East Forty-fourth street, New York,



Portable compressor by Chicago Pneumatic Tool Co. It may be mounted crosswise on a conventional truck body

announces a two-stage air-cooled gasoline engine driven compressor designed primarily for public utility needs. Distinguishing feature of the new unit is the fact that it can be mounted crosswise on a conventional truck body, leaving ample body room for other equipment. The compressor may be easily put on or off the truck, as there is no connection with the truck motor. Compressor is directconnected to the motor, which is of four-cylinder slow speed type. Standard equipment includes self-starting



Straitline cut-off saw for use in metalworking plants

motor, combination tubular deck and A.S.M.E. air receiver, lever operated cone type clutch, wire mesh guards for radiator and fan, air-cooled intercooler, lifting bale, and enclosing top and sides. Air capacity is 85 cubic feet per minute, discharge pressure is 100 pounds per square inch and the operating speed is 900 revolutions per minute.

#### • Cut-Off Saw-

Oliver Machinery Co., Grand Rapids, Mich., announces a new cut-off saw intended for general use in metalworking plants. It is furnished in two models, one for straight-line right angle cuts only, and the other with a swiveled column to make angular cuts up to 45 degrees right and 15 degrees left. Materials sawed by these machines include tubing, molding, strips of sheet metal and

buffing machine for cut-down or color buffing or satin finishing. Sheets ranging in size up to 16 inches wide and 7 feet long and up to 0.020 inches thick can be accommodated. The work is placed on a revolving drum and held there by vacuum or magnetic chucks. The drum brings the work in contact with the buffing wheel, and continuous production is made possible through the use of two drums, shifted by an air cylinder, enabling one to be in process while the other is being loaded. The wheel spindle accommodates a buff 18 inches wide and of 18-inch diameter. An oscillator for the buff is provided to eliminate streaks in the work. The roller bearing spindle is operated by a 20-horsepower motor, supplied with a variable speed V-belt drive which allows a 50-per cent variation in speed. An air cylinder is provided

Divine Bros. buffing machine for continuous production work



all alloys, as well as many compositions and wood. The units are self contained, and are individually motor driven by an enclosed fan-cooled motor mounted directly on the saw arbor. The column is a one-piece cored casting designed for operation against a wall or independently. The suspended link motion swings in antifriction bearings, and the natural balance of the motor head returns the motor to its original position and locks it, eliminating rebound of the saw. Wheels or saws from 10 to 18 inches in diameter may be used in the machines, and steel sections up to 41/2 inches in height may be cut when using an 18-inch saw. + +

#### **Buffing Machine**—

Divine Bros. Co., 102 Whitesboro street, Utica, N. Y., announces a new

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for quick lifting of the wheel from the work.

#### Welding Rods-

Hobart Bros., Troy, O., are now offering a specially coated electrode for arc welding light-gage sheet metal. These rods are available in 1/16, 3/32, and 1/8-inch sizes. The product has been used to weld successfully materials as light as 24 and 26-gage, according to the company. It is especially adapted to operations on auto bodies and fenders, ducts and cabinets for air conditioning units, and the like.

#### . Tin-Base Babbitt-

Bunting Brass & Bronze Co., Toledo. O., is announcing a new tin-base babbitt metal. Developed by company engineers, the new metal will with-

RUN-OUT TABLES, transfer, hot bed and shears used in connection with a MORGAN 46" 2-high universal plate millall designed and built by MORGAN Engineering for a mid-west steel company, are shown here. MORGAN mills have rolled billets, bars and plates for many years in most of the largest steel producers' plants and MORGAN electric traveling cranes, ingot strippers, charging machines, soaking pit cranes and hot metal cranes are in use throughout the steel industry. MORGAN Engineering can want no better reputation than that which it has for dependability.

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THE MORGAN ENGINEERING CO., Alliance, Ohio Pittsburgh, 1420 Oliver Bldg. New York, 11 W. 42nd Street Designers and Manufacturers of ELECTRIC TRAVELING CRANES ROLLING MILL MACHINERY . SPECIAL MACHINERY FOR STEEL MILLS

stand extreme temperatures, it is claimed. This product is intended for use in applications where high speeds, severe vibration, heavy shock and impact loads necessitate the use of metal with high load carrying capacity. It is furnished cast in 5-pound bars which are readily divisible, and is intended as an auxiliary product to leadbase babblts now on the market.

#### Pilots for Collapsible Taps-

Landis Machine Co., Waynesboro, Pa., has recently marketed a collapsi-

#### ble tap involving the use of pilots to insure concentricity of the thread being tapped with other parts of the casting. The accompanying illustration shows these pilots attached to a tap. The body of the tap has been made of special length to reach to the bottom of a deep hole in a tractor part. The pilot ahead of the chasers lines up the tap with the bore of the hole to be tapped. The rear pilot is made in the form of a collar fitting over the tap body. It fits a reamed hole near the top of the casting with which it is necessary to maintain concentricity. Both pilots are of steel,

hardened and ground, and fitted to revolve in the hole in order to prevent seizing in the work. Similar pilot arrangements suitable for the



Landis collapsible tap fitted with pilots to insure concentricity

requirements of practically any job can be furnished with all Landis collapsible taps from 1 % inches to 12 inches.

### Flexible Coupling-

Smith Power Transmission Co., 1213 West Third street, Cleveland, has recently put on the market a new series of flexible couplings, designed for use where the driver and driven



Smith double unit flexible coupling f o r heavy-duty work

units are not on the same base and where there is a possibility of considerable angular shaft misalignments, or where the drives are subjected to a great deal of vibration and shock. Extra flexibility is claimed for these new units by virtue of the fact that they incorporate two separate flexible units, each of which is flexible by itself. The center section is constructed of a steel disk with spacers pressed into it, providing a solid center driving section which is rigidly bolted to the driving flanges through the two flexible sections. This construction makes the coupling reversible and eliminates loose parts, so that it may operate in any position. It is completely balanced and lightweight, and it may be used for high or low speed transmission.

### Sand Preparation Unit-

Link-Belt Co., 307 North Michigan avenue, Chicago, has placed on the market a new foundry sand preparation unit, which is designed to



PERKINS MAN COOLER\* blows heat away. Because cold air is not introduced from the outside its invigorating breeze does not chill. It produces refreshing recirculation of air of the same temperature in which the men are working.

\*Trade Mark Reg. U. S. Pat. Off.

B. F. PERKINS & SON INC., Holyoke, Mass. ENGINEERS AND MANUFACTURERS aerate and mix the sand before delivery to the molder's hoppers and to separate from the sand foreign materials which have not been eliminated by screens or magnetic pulley. The operating principle is a power-driven paddle-type beater with sand and refuse collecting and discharging media, all enclosed within a steel housing fitted with an air release pipe and other suitable means for preventing any blast of air along the belt conveyor which carries the prepared sand.

#### Press Cutter-

Flexo Machines, 2226-2230 North Racine avenue, Chicago, is introducing a new press and cutter which has been designed to perform three different types of operations in the machine shop. The first is the cutting of production materials to uniform lengths up to 9 inches. Roll materials such as wire and light metals are successfully handled, it is claimed. The second operation is high speed production of light stamped parts such as clips, connectors, washers and the like. Simple, low-cost dies make this an economical operation, according to the com-



Flexopress designed for cutting production materials, stamping light parts, and continuous perforation

pany. The third operation is the high-speed continuous perforation of light materials such as light metal, cloth, foil, and paper. The machine is equipped with an automatic builtin feed, with a positive locking device to insure permanency of setting. A  $\frac{1}{4}$ -horsepower motor furnishes power for a range of cutting speeds from 6000 to 18,000 strokes per hour.

#### Speed Reducers-

Dominion Engineering Co. Ltd., Montreal, Que., has announced a standard line of gear speed reducers featuring the use of cone worm gears. Units range from 4inch to 18-inch center distances and are available in varying types, such as horizontal or vertical shafts, worm on bottom, worm on top, and combination helical worm gear units for high ratios of reduction. Distribution of Dominion Engineering products is confined to Canada, but it is expected that a similar line will soon be introduced by another company for distribution in the United States.

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high tonnage presses.

Action photo of two of many Niagara Master Serics "A" Inclinable Presses in the plant of one of the world's largest automotive manufactur rs. These A-1-Presses are shown with motor drives and feeds.

Write for Bulletin 58-F illustrating the latest developments in Inclinable Presses from 1% to 5% diameter shafts NIAGARA MACHINE & TOOL WORKS General Offices: 683 Northland Avenue, Buffalo, N. Y. Branches: 50 Church Street, New York: General Motors Bldg., Detroit



STEEL

New Trade Publications

Copies of any of the literature listed below may be obtained by writing directly to the companies involved, or by addressing STEEL, in care of Readers' Service Department, 1213 West Third Street, Cleveland.

Hand Tools—Bonney Forge & Tool Works, Allentown, Pa. Catalog No. 36, showing hand tools for automotive and industrial use, featuring many new lines added in the last year.

Resurfacing—Flexrock Co., 800 North Delaware avenue, Philadelphia. Folder No. RW632 describing the special free engineering service, mechanical details about rugged wear resurfacer.

Welding Electrodes — Stulz-Sickles Co., 134 Lafayette street, Newark, N. J. Pamphlet describing the applica-



Speed, speed and more speed is the demand in the great plant of the New York Daily News where more than a million and a half copies of The News are printed and distributed daily and nearly three million on Sunday. The letter reproduced above shows that YALE Trucks are meeting that demand. They provide, not speed alone, but the important added factors of efficiency, economy and safety.

A Materials Handling Survey of your plant by a YALE Expert is yours for the asking. No obligation.

THE YALE & TOWNE MFG. CO. Philadelphia Division, Philadelphia, Pa., U.S.A. tion of manganal applicator bars to worn down manganese and carbon steel surfaces with tite-kote electrodes.

Are Welding—Lincoln Electric Co., Cleveland. Folder No. 410, explaining how steel and shielded arc welding have simplified manufacturing and lowered costs; typical examples of shielded arc manufacturing savings.

**Controller**—Brown Instrument Co., Wayne & Roberts avenue, Philadelphia. Folder illustrating and describing features of Brown air operated controllers, recently developed; graduated dials make possible the high coordination and precision.

Centrifugal Pumps—Allis-Chalmers Mfg. Co., Milwaukee. Leaflet No. 2224, on single suction end inlet centrifugal pumps, mounted on substantial pedestals and used with direct connected or with texrope V-belt drives; shows a number of typical combination drives.

Electric Counters—Production Instrument Co., 35 East Wacker drive. Chicago. Bulletin No. 16, on precision-built high speed counters, actuated by electrical impulse; low energy consumption plus an accurate count at speeds of 25,000 per hour, is claimed.

Silver Solders—Handy & Harman Co., 82 Fulton street, New York. Bulletin No. 1, containing laboratory and actual production data, including detailed instructions and two pages of hints on soldering and brazing with silver alloys; recommended procedure followed in making lap. butt and shear joints is illustrated.

Vacuum Cleaning—Spencer Turbine Co., Hartford, Conn. Pamphlet No. 102, demonstrating simplicity in selection and use of the Spencer portable vacuum cleaning system for improving working conditions, safeguarding health of employes and saving of time and money on daily cleaning operations.

**Pyrometers**—Leeds & Northrup Co.. 4900 Stanton avenue, Philadelphia. Catalog No. N-33A, describing Micromax thermocouple pyrometers, to help the user to select the right pyrometer to meet his specific need; explains the potentiometer method of measurement, and operation of the mechanisms through which this balance method is made available.

**Speed Reducers**—The Falk Corp.. Milwaukee. Bulletin No. 1100, describing in detail parallel shaft speed reducers with both sleeve and roller bearings, rated according to the recommended practice of the American Gear Manufacturers' association: bulletin No. 2100, describes right angle speed reducers, both horizontal and vertical types; units cover a ratio range from 1.5 to 1 to 518 to 1 and ratings of 1 to 1200 horsepower at 100 revolutions per minute.

YAL F

## Heavy Materials Active; Steel Rate Snaps Back

## Large Freight Car, Pipe

and Structural Awards;

### Drought's Effect Light

DESPITE a decline in new specifications following the opening of the third quarter, steel consumption still is relatively heavy for this season and markets reflect a degree of strength somewhat better than expected a few weeks ago.

Operations returned almost to the level which preceded the July 4 holiday. The national rate was up  $3\frac{1}{2}$  points to  $69\frac{1}{2}$  per cent, compared to  $71\frac{1}{2}$  in the week before the holiday.

Although the possibility of a general steel strike this summer is becoming more remote, the labor situation has encouraged some moderate buying.

On new business a few producers who are booked ahead are encountering delivery problems. The urgency of demand has been noted particularly in sheets and steel bars.

Farm implement and tractor plants have reduced operations slightly because of the season, but no serious consequences from the drought are expected unless it becomes prolonged. At present the areas actually in distress are comparatively limited.

Wire producers have found their volume of business exceeding expectations for this time of year, demand having increased steadily through the last three months. Machine tool buying is holding up well, with a slight increase in bookings and inquiries. Tin plate mills are operating between 95 and 98 per cent of capacity.

A strong tone is apparent in the markets for plates, shapes and reinforcing bars, with the outlook favorable for brisk shipments. Awards last week included 3800 tons of plates for 17 coal barges, 5145 tons of shapes for a school in Philadelphia and 8800 tons of shapes for a bridge in Connecticut. Pending business includes 36,000 tons, mainly plates, for eight tankers and several projects each calling for around 3000 tons of plates or shapes.

Total shape awards for the week were down slightly to 41,952 tons.

The steel pipe market was featured by an award of 9000 tons of seamless for a 100-mile



line, and one of 8900 tons for a 178-mile line. Railroad freight car buildows amonia

Railroad freight car builders experienced a good week, with domestic awards totaling 2146, and 50 cars being ordered for export. Twentythousand tons of rails were placed by Norfolk & Western, while Denver & Rio Grande sought court permission to buy 25,409 tons.

Current demand for automobiles indicates July output may be only about 20 per cent below June. Last week assemblies were off 2864 units to 97,833. In some quarters it was believed additional orders for steel for 1936 cars may be placed soon by some of the manufacturers. Buying for 1937 models has been negligible so far.

Scrap is slightly stronger and STEEL's price composite is up 4 cents to \$12.79. The finished steel index and the iron and steel price composite are unchanged at \$53.40 and \$33.48 respectively.

Steel ingot production during the first six months of this year was the largest for any comparable period since 1930, totaling 21,326,335 gross tons, an increase of nearly 33 per cent over the 16,042,651 tons in the same period last year. Operations averaged 62.29 per cent, compared with 46.75 in the corresponding months of 1935. The June operating rate was 69.83 per cent, highest of any June since 1929. Output in June totaled 3,984,845 tons, about  $1\frac{1}{2}$  per cent less than in May.

Operations in the Pittsburgh district were up 2 points to 64 per cent; eastern Pennsylvania 3 to 49; Wheeling 4 to 69; Cleveland  $13\frac{1}{2}$  to  $84\frac{1}{2}$ ; Buffalo 2 to 86; Youngstown 10 to 74; Detroit 10 to 100, and Cincinnati 15 to 80. Birmingham was down  $6\frac{1}{2}$  to 52; New England 12 to 68. Others were unchanged.

### COMPOSITE MARKET AVERAGES

				One	Three	One	Five
				Month Ago	Months Ago	Year Ago	Years Ago
	July 11	July 3	June 27	June, 1936	April, 1936	July, 1935	July, 1931
Iron and Steel	\$33.48	\$33.48	\$32.79	\$32.79	\$33.10	\$32.44	\$30.78
Finished Steel	53.40	53.40	52.20	52.20	52.20	54.00	48.68
Steelworks Scrap	12.79	12.75	12.47	12.55	14.39	10.64	8.70

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

### A COMPARISON OF PRICES

**Pig** Iron

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

Jt	1936	1936	1936	1935	
Finished Material					
Steel bars, Pittsburgh	1.95c	1.85c	1.85c	1.80c	
Steel bars, Chicago	2.00	1.90	1.90	1.85	
Steel bars, Philadelphia	2.26	2.16	2.16	2.11	
Iron bars, Terre Haute, Ind,	1.85	1.75	1.75	1.75	
Shapes, Pittsburgh	1.90	1.80	1.80	1.80	
Shapes, Philadelphia	2.11 1/2	2.01 1/2	2.01 1/2	2.01 1/2	
Shapes, Chicago	1.95	1.85	1.85	1.85	
Tank plates, Pittsburgh	1.90	1.80	1.80	1,80	
Tank plates, Philadelphia	2.09	1.99	1.99	1.99	
Tank plates, Chicago	1,95	1.85	1.85	1.85	
Sheets, No. 10, hot rolled, Pitts	1.95	1.85	1.85	1.85	
Sheets, No. 24, hot ann., Pitts	2.50	2.40	2,40	2.40	
Sheets, No. 24, galv., Pitts	3.20	3.10	3.10	3.10	
Sheets, No. 10, hot rolled, Gary	2.05	1,95	1.95	1.95	
Sheets, No. 24, hot anneal., Gary	2.60	2.50	2.50	2.50	
Sheets, No. 24, galvan., Gary	3.30	3.20	3.20	3,20	
Plain wire, Pittsburgh	2.40	2,40	2.40	2,30	
Tin plate, per base box, Pitts	5.25	5.25	5,25	5.25	
Wire nails, Pitts,	2.10	2.10	2.10	2.60	
Semifinished Material					
Sheet bars, open-hearth, Youngs.	\$30.00	\$28.00	\$28.00	\$28.00	
Sheet bars, open-hearth, Pitts	30.00	28.00	28.00	28.00	
Billets, open-hearth, Pittsburgh	30.00	28.00	28.00	27.00	
Wire rods, Pittsburgh	38.00	38.80	40.00	38.00	

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 31 32	19.31	
No 2 fdy. Chicago	19.50	19.50	19 50	18.50	
Southern No. ? Birmingham	15 50	15.50	15.50	14.50	
Southern No. 2, Onthinghammati	20 2007	10.00	10.00	10.90	
No 9V contenn del Dhile	01 6000	20.2001	20.2007	19.38	
No. 2A eastern, dei, Finna,	21.0382	21.6882	21.6882	20.68	
Maneable, 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	19.6711	19.6741	19.6741	18.67	
C					
Scrap					
Heavy melting steel. Pittsburgh.	\$14.00	\$13.80 \$	15.75	\$12.30	
Heavy melt steel. No. 2 east Pa	11.50	10.90	12 70	9.75	
Heavy melting steel Chicago	13.25	12 75	14 35	10.95	
Rail for rolling Chicago	14.00	14.10	15 75	11 05	
Railroad steel specialties Chicago	14.75	11.00	15.15	11.20	
Rambau steer speciatties, Chicago	14.15	14.40	19.85	11.75	
Coke					
Connellsville, furnace, ovens	\$3.50	\$3.50	\$3.50	\$3.30.	
Connellsville, foundry ovens	4 25	4 25	4 25	4 25	
Chicago hy-product foundry del	9.75	9.75	9.75	0.95	
and a produce roundry, were	2410	0.10	0.10	0.40	

July 11, 1936

June April July 1936 1936 1935

## 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		Tin Mill Black No. 28	0.55.	Corrosion and Heat-	Structural Shapes
Prices Subject to Quantity F	Tras	Conv	2.750	Resistant Allovs	Pittsburgh 1.90c
and Deductions (Except Galva)	nized)	St Louis delivered	3.080	riconstant / into ys	Philadelphia, del 2.11½c
Hat Dallad No. 10. 24 49		St. Doula, delivered	0.000	Pittsburgh base, cents per lb.	New York, del 2.16½0
Ditteburgh	1.050	Cold Rolled No. 10		Chrome-Nickel	Boston, delivered 2.30½c
Gory	2.050	Pittsburgh	2.60c	No. 202 No. 20	Betnienem 2.00c
Chicago delivered	2.080	Gary	2.70c	Rars 23.00 24.0	Claveland del
Detroit del.	2.15c	Detroit, delivered	2.80c	Plates 26.00 28.0	Buffalo 2.100
New York, del.	2.30c	Philadelphia, del	2.91C	Sheets 33.00 35.0	Gulf Ports 2200
Philadelphia, del	2.26c	New York, del	2.95C	Hot strip 20.75 22.7	Birmingham 2.500
Birmingham	2.10c	Pacific ports, 1.0.D.	0.000	Cold strip 27.00 29.0	Pacific ports fob
St. Louis, del	2.28c	cars, dock	3.200	Straight Chromes	cars. dock 245c
Pacific ports, f.o.b.		Cold Rolled No. 20		Straight Ontolity	Ram
cars, dock	2.50c	Pittsburgh	3.05c	NO. NO. NO. NO	Dais
Hot Rolled Annealed No.	24	Gary	3.15c	410 430 442 44t	Soft Steel
Pittsburgh	2.50c	Detroit, delivered	3.25c	Dars11.00 18.50 21.00 26.0	(Base, 3 to 25 tons)
Gary	2.60c	Philadelphia, del	3,36c	Sheets 95.00 92.00 21.00 25.0	Chicago an Cana 1.950
Chicago, delivered	2.63c	New York, del	3.40c	Hot strip 15 75 16 75 21 75 26 7	Duluth 2.000
Detroit, delivered	2.70c	Enumeling Sheets		Cold stp 20.50 22.00 27.00 35.00	Birmingham 2.10c
New York, del	2.85c	Ditt 1 1 1 1 1 1 1	0.45	Cold Sept 20100 22100 21.00 00.01	Cleveland 2.100
Philadelphia, del	2.81c	Pittsburgh, No. 10	2,45C	Steel Plate	Buffalo 9050
Birmingham	2.65c	Pittsburgh, No. 20.	3.05C	Steel I late	Detroit delivered 210c
St. Louis, del	2.82c	Gary, No. 10	2.000	Pittsburgh 1.90	Pacific ports, f.o.b.
Pacific ports, f.o.b.		Gary, No. 20	9.19C	New York, del 2.190	cars. dock
cars, dock	3.15C	T. IT DI.		Philadelphia, del 2.090	Philadelphia, del, 2.26c
Galvanized No. 24		lin and lerne Plate		Boston, delivered 2.320	Boston, delivered 2,37c
Pittsburgh	3.20c			Buffalo, delivered 2.150	New York, del 2.30c
Gary	3.30c	Gary base, 10 cents high	er.	Chicago or Gary 1.956	Pitts., forg. qual 2.20c
Chicago, delivered.	3.33c	Tin plate, coke base		Cleveland, del 2.09 1/20	Rail Steel
Philadelphia, del	3.51c	(box) Pittsburgh	\$5.25	Birmingham 2.050	To Manufacturing Trade
New York, del	3.55C	Do., waste-waste	2.750	Coatesville, base 2,000	Pittsburgh 1.80c
St Louis del	3,350	Long tarmon No. 91	2.500	Sparrows Pt., base 2.000	Chicago or Gary 1.85c
Decific ports fob	2.830	Long ternes, No. 24	2 500	Pacific ports, f.o.b.	Moline, Ill 1.85c
cars dook	2 80.0	Do Corry	2.600	Cars, dock 2.450	Cleveland 1.85c
caro, uoch	1,0VC	Du, Gary	a.00C	St. Louis, denvered 2.180	Випаю 1.90с

.85c

.90c

16c

Terre Haute, Ind.	1.850
Chicago	1 000
Philadelphia	2 160
Pittsburgh rofined #7	5 7 50-
Reinforcing	5-1,500
New billet, straight ler	ngths.
quoted by distributo	rs.
Pittsburgh	2 05c
Chicago Game D at 1	

Chicago, Gary, Buffalo, Cleve., Birm., Young.... 2.10c Gulf ports ..... 2.45c

- quoted by distributors
- Pittsburgh ..... 1.90c Chicago, Buffalo, Cleve-land, Birm., Young...... 1.95c
- Gulf ports ..... 2.30c

### Wire Products

(Prices apply to straight or mixed carloads; less carloads \$4 higher; less carloads fencing \$5 over base column.) Base Pitts.-Cleve. 100 lb. keg. Stand, wire nails .... 2.10c Cement c't'd nails .... 2.10c Galv. nails, 15 gage and finer 4.10c de. finer than 15 ga. 4.60c (Per pound) Polished staples..... 2.800 Galv. fence staples 3.050 Barbed wire, galv ... 2.600 Annealed fence wire 2.650 Galv. fence wire ..... 3.00c Woven wire fencing (base column, c.l.) \$ To Manufacturing Trade \$58.00

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

### Cold-Finished Carbon Bars and Shafting

Base, Pitts., one size, shape, grade, shipment at one time to one destination 10,000 to 19,999 lbs. ..... 2.25c 20,000 to 59,999 lbs. ..... 2.20c

### Alloy Steel Bars (Hot)

(Base, 3 to	25 tons	)
Pittsburgh, Buff	falo. Chi	-
cago, Massille	on Can	
ton, Bethleher	n	9550
A 11 on		- 2.00C
SAE DIM	~	Alloy
SALE. DHI.	S.A.E.	Diff.
20000.25	3100	0.55
21000.55	3200	1.35
23001.50	3300	
2500	3400	3 20
4100 0.15 to 0.25 1	No.	0.50
4600 0.20 to 0.30 M	No 1 25-	
1.75 NI.	1.00-	1.05
5100 0.80-1.10 Cr		0.45
5100 Cr. spring	••••••	
6100 bare	•••••••••	base
6100 spring	• • • • • • • • • • • • • • • • • • • •	1.20
Cr Ni 37-	••••••	0.70
Comban Tr		1.50
Carbon Van.		0.95
9200 spring flats		base
9200 spring round	s,	
squares		0.25

#### Piling

			14	2
P	ìt	ts	b	ır

rgh ..... 2.250 

### -The Market Week-

### Strip and Hoops (Base, hot rolled, 25-1 ton) (Base, cold-rolled, 25-3 tons)

Hot strip to 2318-in. 5c

Pittsburgh		1 950
Chicago or	Gary	2.050
Birmingha	n haso	2.000
Detroit del	n base	2.00C
Dhiladalahi		2.150
Now West	a, del.	2.26c
New York,	del	2.30c
Cooperage h	loop,	
Pittsburgh		2.05c
Chicago		2 150
Cold strip, 0.2	5 car-	2.200
bon and	under	
Pitts, Clay	aland	0.40
Detroit dol	cianu,,	2.600
Worooster		2.81c
worcester,	Mass.	2.80c
01	Cleve-	Worces-
Carbon	Pitts_	ter, Mass.
0.26-0.50	2.60c	2.80c
0.51-0.75	3.45c	3.65c
0.76-1.00	4.95c	5.150
Over 1.00	6 500	6.700
	0,000	V. 1 1/1

### Rails, Track Material

(Gross Tons) Standard rails, mill \$36.37 1/2 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.	2 550
	Do., axle steel	2100
1	Spikes R. R. haso	2.100
	Track bolts bees	2.600
	The plates, pase	3.600
	rie plates, base	1.90c
	Base, light rails 25 to 40	the .
	50 to 60 lbs, inclusive up \$	2. 10
	and 20 lbs up sty to h	2, 10
	\$2: S and 10 11 12 10	s. up
	\$2, 8 and 10 lbs., up \$5.	Base
	railroad spikes 200 keg	s or
	more; base tie plates 20	tone
		LUIIS.

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chicago. Discounts 3.05c to legitimate trade as per Dec. Do., Chicago up \$1, Worc. \$2. 1, 1932. lists: Carriage and Machine

1/2 x 6 and smaller	0 ofi
Do. larger	5 off
Plow Bolts	0 off

AII	sizes			of
		Stove	Bolts	~1

- packages with nuts at-In tached 75 off; in packages with nuts separate 75-5 off; in bulk \$2½ off on 15,000 of 3-inch and shorter, or 5000 over 3-inch.
- Elevator bolts

Do., over 1-inch....60-20-15 off Hexagon Cap Screws

Milled ..... .....80-10-10 off 

Upset, 1-in., smaller.....75-10 off He :dless set screws . .....75 off Rivets, Wrought Washers Struc., c. l., Pitts-burgh, Cleveland 3.05c

Struc., c. l., Chicago 3.15c rs-in, and smaller, Pitts., Chi., Cleve, 70 and 5 off Wrought washers,

- Pitts., Chi., Phila, to jobbers & large
- nut, bolt mfrs ..... \$3.25 off Cut Nails

Cut nails, Pitts.: (10ch	
discount on size extras)	89 72
Do. less carloads 5 kegg	φ2,13
or more, no discount	
on size extras	20.07
	- X X U 9

### **STEEL**

#### Do., under 5 kegs; no disc. on size extras...... \$3.20

Pipe and Tubing Base \$200 net ton, except on standard commercial seamless boiler tubes under 2 inches and

cold drawn seamless tubing Welded Iron, Steel Pipe

Base discounts on steel pipe, Pitts. Lorain, O., to consumers in carloads. Gary, Ind., 2 points less. Chicago, del. 23/2 points less. Wrought pipe, Pittsburgh. Butt Weld

Steel		
In.	Blk.	Gal
1/4 and 3/8	60	441
19	641/2	55
1/4	67 1/2	59
1-3	691/2	611
Iron		
1/2	31 1/2	15
%i	361/2	204
1	391/2	25 1/2
2	411/2	26
Lap Weld		
Steel		
2	62	5314
21/2-3	65	5614
3 1/2 6	67	58 14
7 and 8	66	56%
9 and 10	651/2	56
Iron		
2	37	221/2
4 1/2 - 3 1/2	38	25
48	40	2814
Line Pipe		
Steel		
%, butt weld		56
1/ hutt %, butt weld.		Б9
72, Dutt weld		631/2
1 to 2 build		6616
2 los weld		681/2
2, lap weld		61
31/ to C lap weld		64
7 and 8 lan weld		66
and s, tap weld		65
Iron		

sizes, standard pipe lists, 8-12inch, no extra.

	10, 1.0.0. PILLS
Lap Weld	Charcoal
Steel	Trees
.91/ 00	Iron
~ 74	1 %
	2-21/ 1
	91/ 02/
	2 72 - 2 % 1
	31'
	31/-31/ 11
-5. 49	A 0 /2
A REAL PROPERTY AND A REAL	4

4 1/2 ..... In lots of a carload or more. above discounts subject to preferential of two 5% and one 71/2% discount on steel and 10% on charcoal iron.

Lapwelded steel: 200 to 9999 pounds, ten points under base, one 5% and one 74%. Under 2000 pounds 15 points under base, one 5% and one  $7\frac{16}{5}\%$ . Charcoal iron: 10,000 pounds to carloads, base less 5%; under 10,000 lbs., 2 points under base. Seamless Boller 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 1/4 to 6-inch outside diameter in 30 wall thicknesses, decimal equivalent from 0.025 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. Cast Iron Water Pipe

Class B Pipe-Per Net Ton 6-In. & over, Birm. \$39.00-40.00 4-in., Birmingham... 42.00-43.00 4-in., Chicago ....... 50.40-51.40 6 to 24-in. Chicago.. 47.40-48.40 6-in. & over, east. fdy. 43.00 Do., 4-in. 46.00 Class A pipe \$3 over Class B Stnd. fitgs., Birm. base..\$100.00 Semifinished Steel Billets and Blooms 4 x 4-inch base; gross ton Pitts., Chi., Cleve., Dunalo & Young. \$30.00 Philadelphia ..... 36.67 Duluth 32.00 Forging Billets 6 x 6 to 9 x 9-in., base Pitts., Chi,, Buff..... 37.00 Forging, Duluth 39.00 Sheet Bar Pitts., Cleve., Young., Chi., Buff., Canton, Sparrows Pt. 30.00 Slabs Pitts., Chi., Cleve., Young, Wire Rods 30.00 Pitts., Cleve., No. 4 

 Fitts., Cleve., No. 4
 \$38.00

 Do., No. 5
 to

 12-inch
 40.00

 -Do., over 11
 to

 \$34-inch
 42.00

 Chicago up \$1: Worcester up \$2

 Skein

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

### Coke

Price Per Net Ton Beehive Ovens Connellsville, fdry... \$3.50- 3.65 Connellsville, fdry... 4.25- 4.35 Connel, prem. fdry. 5.35- 5.50 New River fdry Wise county fdry.... 4.45- 5.00 6.00 Wise county fur..... 4.0 By-Product Foundry 4.00- 4.50 Newark, N. J., del. 9.70-10.15 Chi., ov., outside del 5.00 Chicago, del. ..... New England, del.... 9.75 11.50 St. Louis, del. ..... 10.00-10.50 Birmingham, ovens Indianapolis, del. .... 6.50 Cincinnati, del. ...... Cleveland, del. ..... 9.40 9.50 Buffalo, ovens Detroit, ov., out. del. Philadelphia, del. 9.75 7.50- 8.00

### Coke By-Products

Per gallon, producers' plants Tank lots Spo Pure and 90% benzol ..... 18 00c Toluol ..... Solvent naphtha ...... 30.000 30.00c Prer 10, 1.0.0. Pranktord, Phenol (200 lb. drums)., 15.50c Do. (450 lbs.) 14.50c Eastern Plants, per lb, Naphthalene flakes and

balls, in bbls. to jobbers 7.25c Per 100 lbs. Atlantic seaboard Sulphate of ammonia...... \$1.25 †Western prices, 1/2-cent up.

9.08

9.39

00 %
Iron
1/2
3/
1 11/
391/2
4116
Lap Weld
Steel
2
21/2-3
31/2-6
7 and 8
0 and 10
5 and 10 651/2
lron
2
21/2-31/2
48
Line Di
Line Pipe
Steel
%, butt weld
1/4 and 3/8, butt weld
1/2. butt weld
W hutt wold
Succ werd

 $\frac{1}{2}$  mch, black and galv. take 4 pts. over;  $2\frac{1}{2}$  for same 2 pts. over discounts for same

#### Boiler Tubes C. L. Discounts, f.o.h.

21/2

314

436

### 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 Pointes	No. 2	Malle-		Besse-
basing romus:	Fdry.	able	Basic	mer
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.	19,501	19.50	19.00	20.00
Provo, Utah	17.50	*****	17.00	
Sharpsville, Pa.	19,50	19.50	19.00	20.00
Sparrows Point, Md.	20.50	*******	20.00	
Swedeland, Pa.	20.50	21.00	20.00	21.50
Toledo, O	19.50	19.50	19.00	20.00
Youngstown, O.	19.50	19.50	19.00	20.00

#### **Delivered** from Basing Points:

Akron, O., from Cleveland	20.76	20.76	26.26	21.26
Baltimore from Birmingham	21.08		19.96	
Boston from Birmingham	20.62		20.50	********
Boston from Everett, Mass	21.00	21.50	20.50	22,00
Boston from Buffalo	21.00	21.50	20.50	22.00
Brooklyn, N. Y., from Bethlehem	22.93	23.43		
Brooklyn, N. Y., from Bmghm.	22.50			
Canton, O., from Cleveland	20.76	20.76	20.26	21,26
Chicago from Birmingham	19.72		19.60	
Cincinnati from Hamilton, O	20.58	20.58	20.08	
Cincinnati from Birmingham	20.20		19.20	
Cleveland from Birmingham	19.62		19.12	
Indianapolis from Hamilton, O	21,93	21,93	21,43	22.43
Mansfield, O., from Toledo, O	21.26	21.26	20.76	21.76
Milwaukee from Chicago	20.57	20.57	20.27	21.07
Muskegon, Mich., from Chicago				
Toledo or Detroit	22.60	22.60	22.10	23.10
Newark, N. J., from Birmingham	21.61			
Newark, N. J., from Bethlehem.	21.99	22.49		
Philadelphia from Birmingham.	20.93		20.81	
Philadelphia from Swedeland, Pa.	21.31	21.81	20.81	
Pittsburgh district from Neville]	Neville	base pl	us 67c, 8	1c and
Island	\$1.21	switch	ing char	ges
Saginaw, Mich., from Detroit	21.75	21.75	21.25	21.25
St. Louis northern	20.00	20,00	19.50	

#### No. 2 Malle-Besse-able Basic mer 19.50 21.94 22.44 St. Paul from Duluth ...... 21.94 ..... †Over 0.70 phos.

Low Phos.

Reging Doints: Rindshore and Steelton Pa

Basing Points: B N. Y., \$24.00, Phil	irdsboro and la. base, stan	l Steelton, Pa., and Sta dard and copper bearing,	andish. \$25.13
Grav Fo	orge	Charcoal	
Vailey furnace		Lake Superior fur	\$22.00
Pitts. dist. fur	19.00	Do., del. Chicago	25.25
		Lylees, Tenn.	22,50
	Silve	ery†	
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. B	uffalo \$1.25 l	higher.	
	Bessemer 1	errosilicon†	
Jackson county, O.,	, base: Price	es are the same as for sil	veries,
plus \$1 a ton.		to dealer Tealeren O	- 12.117
†The lower all-ra	al delivered	price from Jackson, O., o	r Dur-
falo is quoted with I	reight allow	yory iron and ferrosilico	n 2 to
Manganese diller	Ench unit of	ver 3% add \$1 per ton.	
3%, \$1 per ton aud.	Each unit c	Ner sys, and the per ten.	
D ( , .		timore bases (bags)	\$45.00
Ketractories		Domestic dead - burned	
Per 1000 f.o.b.	Works	grains, net ton f.o.b.	
Fire Clay Br	ick	Chester, Pa., and Bal-	
Super Qual	lity	timore bases (bags)	40.00
Pa., Mo., Ky	\$55.00	Domestic dead - burned	
First Qual	ity	gr. net ton f.o.b. Che-	99.00
Pa., Ill., Md., Mo., Ky	y. \$45.00	Weian, Wash. (buik) Basic Brick	22.00
Alabama, Georgia	\$38.00-45.00	Not ton tob Baltimor	e Plu-
Second Qua	1111	mouth Meeting Cheste	r. Pa
Caarrie Alabama	35.00	Chrome brick	\$45.00
Georgia, Alabama		Chem, bonded chrome	45.00
First quality	\$40.00	Magnesite brick	65.00
Intermediary	37.00	Chem. bonded magnesite	55.00
Second quality	28.00	Eluorspar 85-5	
Malleable Bung	Brick	Thurspar, 00-0	
All bases	50.00	Washed gravel, duty	200 F0
Silica Bric	k	Washed amul fab Ill	\$20,50
Pennsylvania	\$45.00	Washed gravel, 1.0.0. III.,	
Joliet, E. Chicago	54.00	all rail	\$18.00
Birmingham, Ala	48.00	Do., for barge	\$19.00
Ladle Brick (Dry	r Press)	C	
Pa., O., W. Va., Mo	\$24,00	remoalloys	
Do., wire cut		Dollars, except Ferroch	rome
Magnesite		Ferromanganese,	

Imported dead - burned grains, net ton f.o.b. Chester, Pa., and Bal-

### Nonferrous METAL PRICES OF THE WEEK

			Spot unle	ess othe	rucise spe	ecified.	Cents p	er pour	id		
	Electro,	-Copper-	Conting	Strait	s Tin	Lead	Lead East	Zinc	Alumi- num	Antimony Chinese Spot N Y	Nickel Cath-
	del.	uel.	casting,	Spot	Futuros	IN. I.	56 1.	N. 6. 774	5590	D. D. O. C. T. T.	0405
July 3 July 6 July 7 July 8	9.50 9.50 9.50 9.50	9.621/2 9.621/2 9.621/2 9.621/2 9.621/2	9.15 9.15 9.15 9.15 9.15 9.15	40.621/2 41.75 42.10 43.50 42.271/	39.50 40.62 <sup>1</sup> / <sub>2</sub> 40.87 <sup>1</sup> / <sub>2</sub> 42.15	4.60 4.60 4.60 4.60	4.45 4.45 4.45 4.45 4.45	4.85 4.85 4.75 4.75 4.75	*19.00 *19.00 *19.00 *19.00 *19.00	$13.00 \\ 13.0$	35.00 35.00 35.00 35.00 35.00
July 9 July 10 *N	9.50 9.50 ominal 1	9.62½ 9.62½ range 19.0	9,15 9,15 0 to 21.00	43.37 ½ 43.37 ½ )c.	42.00	4.60	4.45	4.75	*19.00	13.00	35.00

#### MILL PRODUCTS

F.o.b. mill b	ase, cents	s per lb.
except as	specified.	Copper
brass produc	ts based	on 9.50c
Con	n. copper	
	Sheets	
Yellow brass	(high)	15.12 1/2
Copper, hot	rolled	17.00
Lead cut to ;	jobbers	8.25
Zinc, 100-lb.	base	9.50
	Tubes	
High yellow	brass	17.37 1/2
Seamless con	oper	17.50
	Rods	
High yellow I	brass	13.12%
Copper, hot	rolled	13.75
4	Anodes	
Copper, untr	immed	14.50
	Wire	
Yellow brass	(high)	15.37 1/2

### Deal. buying prices, cents lb. No. 1 Composition Red Brass New York 6.00 6.25 Cleveland 6.25 6.50 Chicago 5.75 6.00 \*St. Louis 5.75 6.25 Heavy Copper and Wire New York. No. 1..... 7.50- 7.75 Chicago, No. 1 ......7.12½-7.37½

OLD METALS

Cleveland, No. 1	7.00-	7.50
St. Louis, No. 1	7.00-	7.50
Composition Brass I	Borings	
New York	5.75 -	6.00
Light Copper		
New York6.	121/2-	6.25
Chicago	5.75-	6.00
Cleveland	5.75-	6.00
St. Louis	5.50-	6.00

Light Brass		
Chicago	.50- 3	621/2
Cleveland	3.25-	3.50
St. Louis	3.25-	3.75
Lead		
New York	3.50-	3.75
Cleveland	3.50-	3.75
Chicago	3.25-	3.75
St. Louis	3.25-	3.75
Zinc		
New York	2.50-	2.75
Cleveland	2.25-	2.50
St. Louis	2.25-	2.75
Aluminum		
Borings Cleveland	8.00-	8 50
Mixed cast Cleve	11 75-1	2 00
Mixed cast St L	11 25-1	1 75
lins soft Cleve	13 75-1	4 00
SECONDARY MET	ALS	
Proge ingot \$5-5-5-5		9 50
Stand No 12 alum	16 95 1	7 00
stanu, 10, 12 alum.	10.20+1	1.00

1	00.00
welah, Wash. (bulk)	22.00
Basic Brick	-
Net ton, f.o.b. Baltimor	e, Ply-
mouth Meeting, Cheste	r, Pa.
Chrome brick	\$45.00
Chem, bonded chrome	45.00
Magnesite brick	65.00
Chem. bonded magnesite	55.00
rluorspar, 80-0	
Washed gravel duty	
naid tide net ton	\$20.50
Washed gravel fob Ill	\$10.00
Ky net ton carloade	
all roil	818 00
Do for bargo	\$10.00
Do., for barge	\$13.00
Ferroallovs	
Dollars amount Formach	
Donars, except rerroch	rome
rerromanganese,	
18-82% tidewater,	
duty paid	75.00
Do., Balti., base	75.00
Do., del. Pittsb'gh	80.13
Spiegeleisen, 19-	
20% dom. Palmer-	
ton, Pa., spott	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
Snot \$5 a ton higher	100.00
Silicoman 214 carb	
	85.00
20% carbon 90.00:10%	85.00
2% carbon, 90.00; 1%,	85.00 100.00
2% carbon, 90.00; 1%, Ferrochrome, 66-70	85.00 100.00
2% carbon, 90.00; 1%, Ferrochrome, 66-70 chromium, 4-6 car-	85.00 100.00
2% carbon, 90.00; 1%, Ferrochrome, 66-70 chromium, 4-6 car- bon, cts. lb, del	85.00 100.00 10.00
2% carbon, 90.00; 1%, Ferrochrome, 66-70 chromium, 4-6 car- bon, cts. lb, del Ferrotungsten,	85.00 100.00 10.00
2% carbon, 90.00; 1%, Ferrochrome, 66-70 chromium, 4-6 car- bon, cts. lb, del Ferrotungsten, stand., lb, con. del. 1.3	85.00 100.00 10.00 0- 1.40
2% carbon, 90.00; 1%, Ferrochrome, 66-70 chromium, 4-6 car- bon, cts. lb, del Ferrotungsten, stand., lb. con. del. 1.3 Ferrovanadium, 35	85.00 100.00 10.00 0- 1.40
2% carbon, 90.00; 1%, Ferrochrome, 66-70 chromium, 4-6 car- bon, cts. lb, del Ferrotungsten, stand., lb. con. del. 1.3 Ferrovanadium, 35 to 40% lb., cont 2.7	85.00 100.00 10.00 0- 1.40 0- 2.90
2% carbon, 90.00; 1%, Ferrochrome, 66-70 chromium, 4-6 car- bon, cts. lb, del Ferrotungsten, stand., lb. con. del. 1.3 Ferrovanadium, 35 to 40% lb., cont 2.7 Ferrotitanium, c. l.,	85.00 100.00 10.00 0- 1.40 0- 2.90
2% carbon, 90.00; 1%, Ferrochrome, 66-70 chromium, 4-6 car- bon, cts. lb, del Ferrotungsten, stand., lb. con. del. 1.3 Ferrovanadium, 35 to 40% lb., cont 2.7 Ferrotitanium, c. 1., prod. plant, frt.	85.00 100.00 10.00 0- 1.40 0- 2.90
2% carbon, 90.00; 1%, Ferrochrome, 66-70 chromium, 4-6 car- bon, cts. lb, del Ferrotungsten, stand., lb. con. del. 1.3 Ferrovanadium, 35 to 40% lb., cont 2.7 Ferrotitanium, c. l., prod. plant, frt. allow., net ton	85.00 100.00 10.00 0- 1.40 0- 2.90 137.50
2% carbon, 90.00; 1%, Ferrochrome, 66-70 chromium, 4-6 car- bon, cts. lb, del Ferrotungsten, stand., lb. con. del. 1.3 Ferrovanadium, 35 to 40% lb., cont 2.7 Ferrotitanium, c. l., prod. plant, frt. allow., net ton Spot, 1 ton, frt.	85.00 100.00 10.00 0- 1.40 0- 2.90 137.50
2% carbon, 90.00; 1%, Ferrochrome, 66-70 chromium, 4-6 car- bon, cts. lb, del Ferrotungsten, stand., lb. con. del. 1.3 Ferrovanadium, 35 to 40% lb., cont 2.7 Ferrotitanium, c. l., prod. plant, frt. allow., net ton Spot, 1 ton, frt. allow., lb	85.00 100.00 10.00 0- 1.40 0- 2.90 137.50 7.00
2% carbon, 90.00; 1%, Ferrochrome, 66-70 chromium, 4-6 car- bon, cts. lb, del Ferrotungsten, stand., lb, con. del. 1.3 Ferrovanadium, 35 to 40% lb, cont 2.7 Ferrotitanium, c. 1., prod. plant, frt. allow., net ton Spot, 1 ton, frt. allow., lb, Do, under 1 ton	85.00 100.00 10.00 0- 1.40 0- 2.90 137.50 7.00 7.50
2% carbon, 90.00; 1%, Ferrochrome, 66-70 chromium, 4-6 car- bon, cts. lb, del Ferrotungsten, stand., lb. con. del. 1.3 Ferrovanadium, 35 to 40% lb., cont 2.7 Ferrotitanium, c. 1., prod. plant, frt. allow., net ton Spot, 1 ton, frt. allow., lb Ferrophosphorus.	85.00 100.00 10.00 0- 1.40 0- 2.90 137.50 7.00 7.50
2% carbon, 90.00; 1%, Ferrochrome, 66-70 chromium, 4-6 car- bon, cts. lb, del Ferrotungsten, stand., lb. con. del. 1.3 Ferrovanadium, 35 to 40% lb., cont 2.7 Ferrotitanium, c. l., prod. plant, frt. allow., net ton Spot, 1 ton, frt. allow., lb, Do, under 1 ton Ferrophosphorus, per ton. c. l., 17-	85.00 100.00 10.00 0- 1.40 0- 2.90 137.50 7.00 7.50
2% carbon, 90.00; 1%, Ferrochrome, 66-70 chromium, 4-6 car- bon, cts. lb, del Ferrotungsten, stand., lb, con. del. 1.3 Ferrovanadium, 35 to 40% lb, cont 2.7 Ferrotitanium, c. l., prod. plant, frt. allow., net ton Spot, 1 ton, frt. allow., lb, Do., under 1 ton Ferrophosphorus, per ton, c. l., 17- 19% Rockdale.	85.00 100.00 10.00 0- 1.40 0- 2.90 137.50 7.00 7.50
2% carbon, 90.00; 1%, Ferrochrome, 66-70 chromium, 4-6 car- bon, cts. lb, del Ferrotungsten, stand., lb. con. del. 1.3 Ferrovanadium, 35 to 40% lb., cont 2.7 Ferrotitanium, c. 1., prod. plant, frt. allow., net ton Spot, 1 ton, frt. allow., lb, Do., under 1 ton Ferrophosphorus, per ton, c. 1., 17- 19% Rockdale, Tenn., basis, 18%	85.00 100.00 10.00 0- 1.40 0- 2.90 137.50 7.00 7.50
2% carbon, 90.00; 1%, Ferrochrome, 66-70 chromium, 4-6 car- bon, cts. lb, del Ferrotungsten, stand., lb. con. del, 1.3 Ferrovanadium, 35 to 40% lb, cont 2.7 Ferrotitanium, c. l., prod. plant, frt. allow., net ton Spot, 1 ton, frt. allow., lb, Do., under 1 ton Ferrophosphorus, per ton, c. l., 17- 19% Rockdale, Tenn., basis, 18%, \$\$ unitage	85.00 100.00 10.00 0- 1.40 0- 2.90 137.50 7.00 7.50
2% carbon, 90.00; 1%, Ferrochrome, 66-70 chromium, 4-6 car- bon, cts. lb, del Ferrotungsten, stand., lb, con. del. 1.3 Ferrovanadium, 35 to 40% lb, cont 2.7 Ferrotitanium, c. l., prod. plant, frt. allow., net ton Spot, 1 ton, frt. allow., lb, Do., under 1 ton Ferrophosphorus, per ton, c. l., 17- 19% Rockdale, Tenn., basis, 18%, \$3 unitage	85.00 100.00 10.00 0- 1.40 0- 2.90 137.50 7.00 7.50 58.50
2% carbon, 90.00; 1%, Ferrochrome, 66-70 chromium, 4-6 car- bon, cts. lb, del Ferrotungsten, stand., lb. con. del. 1.3 Ferrovanadium, 35 to 40% lb., cont 2.7 Ferrotitanium, c. 1., prod. plant, frt. allow., net ton Spot, 1 ton, frt. allow., lb, Do., under 1 ton Ferrophosphorus, per ton, c. 1., 17- 19% Rockdale, Tenn., basis, 18%, \$3 unitage Ferrophosphorus, electrolytic per	85.00 100.00 10.00 0- 1.40 0- 2.90 137.50 7.00 7.50 58.50
2% carbon, 90.00; 1%, Ferrochrome, 66-70 chromium, 4-6 car- bon, cts. lb, del Ferrotungsten, stand., lb. con. del. 1.3 Ferrovanadium, 35 to 40% lb., cont 2.7 Ferrotitanium, c. l., prod. plant, frt. allow., net ton Spot, 1 ton, frt. allow., lb Do., under 1 ton Ferrophosphorus, per ton, c. l., 17- 19% Rockdale, Tenn., basis, 18%, \$3 unitage Ferrophosphorus, electrolytic, per ton, c. l., 23,28%	85.00 100.00 10.00 0- 1.40 0- 2.90 137.50 7.00 7.50 58.50
2% carbon, 90.00; 1%, Ferrochrome, 66-70 chromium, 4-6 car- bon, cts. lb, del Ferrotungsten, stand., lb. con. del. 1.3 Ferrovanadium, 35 to 40% lb., cont 2.7 Ferrotitanium, c. l., prod. plant, frt. allow., net ton Spot, 1 ton, frt. allow., lb, Do., under 1 ton Ferrophosphorus, per ton, c. l., 17- 19% Rockdale, Tenn., basis, 18%, \$3 unitage Ferrophosphorus, electrolytic, per ton c. l., 23-26%	85.00 100.00 10.00 0- 1.40 0- 2.90 137.50 7.00 7.50 58.50
2% carbon, 90.00; 1%, Ferrochrome, 66-70 chromium, 4-6 car- bon, cts. lb, del Ferrotungsten, stand., lb. con. del. 1.3 Ferrovanadium, 35 to 40% lb., cont 2.7 Ferrotitanium, c. 1., prod. plant, frt. allow., net ton Spot, 1 ton, frt. allow., lb Do., under 1 ton Ferrophosphorus, per ton, c. 1., 17- 19% Rockdale, Tenn., basis, 18%, \$3 unitage Ferrophosphorus, electrolytic, per ton c. l., 23-26% f.o.b. Anniston,	85.00 100.00 10.00 0- 1.40 0- 2.90 137.50 7.00 7.50 58.50
2% carbon, 90.00; 1%, Ferrochrome, 66-70 chromium, 4-6 car- bon, cts. lb, del Ferrotungsten, stand., lb. con. del. 1.3 Ferrovanadium, 35 to 40% lb., cont 2.7 Ferrotitanium, c. 1., prod. plant, frt. allow., net ton Spot, 1 ton, frt. allow., lb Spot, 1 ton, frt. allow., lb Ferrophosphorus, per ton, c. 1., 17- 19% Rockdale, Tenn., basis, 18%, \$3 unitage Ferrophosphorus, electrolytic, per ton c. 1., 23-26% f.o.b. Anniston, Ala., 24% \$3 unitage	85.00 100.00 10.00 0- 1.40 0- 2.90 137.50 7.00 7.50 58.50
2% carbon, 90.00; 1%, Ferrochrome, 66-70 chromium, 4-6 car- bon, cts. lb, del Ferrotungsten, stand., lb. con. del, 1.3 Ferrovanadium, 35 to 40% lb., cont 2.7 Ferrotitanium, c. l., prod. plant, frt. allow., net ton Spot, 1 ton, frt. allow., lb, Do., under 1 ton Ferrophosphorus, per ton, c. l., 17- 19% Rockdale, Tenn., basis, 18%, \$3 unitage ferrophosphorus, electrolytic, per ton c. l., 23-26% f.o.b. Anniston, Ala., 24% \$3 unitage	85.00 100.00 10.00 0- 1.40 0- 2.90 137.50 7.00 7.50 58.50 75.00
2% carbon, 90.00; 1%, Ferrochrome, 66-70 chromium, 4-6 car- bon, cts. lb, del Ferrotungsten, stand., lb. con. del. 1.3 Ferrovanadium, 35 to 40% lb., cont 2.7 Ferrotitanium, c. 1., prod. plant, frt. allow., net ton Spot, 1 ton, frt. allow., lb, Do., under 1 ton Ferrophosphorus, per ton, c. 1., 17- 19% Rockdale, Tenn., basis, 18%, \$3 unitage Ferrophosphorus, electrolytic, per ton c. l., 23-26% f.o.b. Anniston, Ala., 24% \$3 unitage Ferromolybdenum,	85.00 100.00 10.00 0- 1.40 0- 2.90 137.50 7.00 7.50 58.50 75.00
2% carbon, 90.00; 1%, Ferrochrome, 66-70 chromium, 4-6 car- bon, cts. lb, del Ferrotungsten, stand., lb. con. del. 1.3 Ferrovanadium, 35 to 40% lb., cont 2.7 Ferrotitanium, c. 1., prod. plant, frt. allow., net ton Spot, 1 ton, frt. allow., lb, Do, under 1 ton Ferrophosphorus, per ton, c. 1., 17- 19% Rockdale, Tenn., basis, 18%, \$3 unitage Ferrophosphorus, electrolytic, per ton c. 1., 23-26% f.o.b. Anniston, Ala, 24% \$3 unitage Ferromolybdenum, stand, 55-65%, lb.	85.00 100.00 10.00 0- 1.40 0- 2.90 137.50 7.00 7.50 58.50 75.00 0.95
2% carbon, 90.00; 1%, Ferrochrome, 66-70 chromium, 4-6 car- bon, cts. lb, del Ferrotungsten, stand, lb. con. del. 1.3 Ferrovanadium, 35 to 40% lb. cont 2.7 Ferrotitanium, c. l., prod. plant, frt. allow., net ton Spot, 1 ton, frt. allow., lb Do. under 1 ton Ferrophosphorus, per ton, c. l., 17- 19% Rockdale, Tenn, basis, 18%, \$3 unitage Ferrophosphorus, electrolytic, per ton c. l., 23-26% f.o.b. Anniston, Ala., 24% \$3 unitage Ferromolybdenum, stand, 55-65%, lb.	85.00 100.00 10.00 0- 1.40 0- 2.90 137.50 7.50 58.50 75.00 0.95 0.80

July 13, 1936

### Iron and Steel Scrap Prices Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated; † indicates brokers prices

.50

.00

HEAVY MELTING	STEEL.	
Birmingham	9.00- 95	50
Bos. d'ck. No. 1. er	xp. +10.5	c
N. Eng. del. No.	1 10.0	C
Buffalo, No. 1	12.50-13.0	0
Buffalo, No. 2	11.50-12.0	0
Chicago, No. 1	13.00-13.5	0
Cleveland, No. 1	13.00-13.5	0
Cleveland, No. 2	12.00-12.5	0
Detroit, No. 1	10.25-10.7	5
Detroit, No. 2	8.75- 9.2	5
Eastern Pa., No.	1 12.00-12.5	0
Eastern Pa., No.	2 11.00-11.5	0
Federal, Ill.	10.00-10.5	0
Granite City, R. H	R 11.00-11.5	0
Granite City, No.	2 9.75-10.2	5
New York, No. 2	†7.75- 8.25	5
N. Y. O CK, NO. I, ex	p. 10.00-10.25	5
Ditta No. 1 (R. R	.) 14.25-14.75	2
Dittabument M.	) 13.75-14.25	
St Louis D D	12.75-13.25	
Toronto doplore	11.00-11.50	2
Valleys No 1	12 50 14 00	
· unoy 5, 140. 1	13.30-14.00	
COMPRESSED SHE	ETS	
Buffalo, dealers	11.50-12.00	
Chicago, factory	11.50-12.00	
Chicago, dealer	11.00-11.50	
Cleveland	12.75-13.25	
Detroit	10.75-11.25	
E. Pa., new mat	11.50-12.00	
Pittsburgh	13.75-14.25	
St. Louis	7.75- 8.25	
Valleys, No. 1	13.00-13.50	
BUNDLED SHEETS		
Buffalo	10.00-10.50	
Cincinnati del	7 75- 8 25	
Cleveland	9 00- 9 50	
Pittsburgh	12 75-13 25	
St. Louis	6 25- 6 75	
Toronto, dealers	4 50	
SHEET CLIPPINGS	LOOSE	1
Chicago	800 850	
Cincinnati	5 75 6 95	1
Detroit	7 50- 8 00	
St. Louis	550- 600	-
STEEL RAILS SHOT	>T	-
Rirmingham	10.00 10.70	-
Buffalo	12.00-12.50	1
Chicago (3 ft )	15.00 15 50	1
Chicago (2 ft)	16.00 10.50	(
Cincinnati del	11.00 14 50	(
Detroit	14.50 15.00	(
Pitts open-boarth	14.50-15.00	(
3 ft and loss	15 75 16 95	1
St. Louis ? ft & loss	15.10-10.20	١
STEEL PAUS COAL	10.00-10.00	1
Boston district	47 = 0 0 0 0	в.
Chicago	T1.50- 8.00	T
Pittshurgh	13.00-13.50	Ē
St. Louis	14.20-14.75	Ē
Buffalo	12.50-13.00	ĉ
Toronto dealers	12.30-13.00	č
STOVE DI ATT	8.50	č
Dispain al		r
Boston dist	7.00- 7.50	F
Buffalo	15.00- 5.25	N
Chicago	10.00-10.25	P
Cincinnati deala	1.50- 8.00	5
Detroit net	1.15- 8.50	r
Eastern Pa	3.00- 9.50	V
	10.50	

COUPLERS, SPRINGS Buffalo ..... .50 .00 Pittsburgh ..... 16.50-17.00 St. Louis ..... 12.75-13.25 .00 ANGLE BARS-STEEL Buffalo ..... 14.50-15.00 RAILROAD SPECIALTIES Chicago ..... 14.50-15.00 LOW PHOSPHORUS Buffalo, billet and bloom crops ...... 14.75-15.25 Cleveland, billet, bloom crops ....... 17.50-18.00 Eastern Pa., crops... 16.50 Pittsburgh, billet, bloom crops ...... 17.25-17.75 Pittsburgh, sheet bar crops ....... 15.50-16.00 FROGS. SWITCHES Chicago ..... 13.00-13.50 St. Louis, cut ..... 12.50-13.00 SHOVELING STEEL Chicago 13.00-13.50 Federal, Ill. 10.00-10.50 Granite City, Ill. 9.75-10.00 Toronto, dealers ..... 6,50 RAILROAD WROUGHT Birmingham ...... 7.50- 8.00 Boston district ...... †7.25- 7.50 
 Eastern Pa.
 13.50-14.00

 St. Louis, No. 1
 10.25-10.75

 St. Louis, No. 2
 11.00-11.50

 Toronto, No. 1, dir.
 7.00
 E SPECIFICATION PIPE F Eastern Pa. ..... 12.00-12.50 New York ..... †7.75- 8.25 S BUSHELING 
 BUSHELING

 Buffalo, No. 1

 Buffalo, No. 1

 11.50-12.00

 Chicago, No. 1

 11.50-12.00

 Cinci, No. 1, deal...

 8.50- 9.00

 Cincinnati, No. 2

 4.50- 5.00

 Cleveland, No. 2

 8.25- 8.75

 Detroit, No. 1, new.

 9.75-10.25

 Valleys, new, No. 1 12.75-13.00
 B B C Ē T S7 Toronto, dealers ..... 6.00 B MACHINE TURNINGS B Birmingham ...... 5.00- 6.00 Boston district ...... †3.25- 3.50 B CI E Chicago Cincinna Clevela Detroit Eastern New Yo Pittsbur St. Loui. Toronto Valleys New York, fdry...... †7.00- 7.25 BORINGS For 5.50 Boston d E t

147 Jan 1		0.00	
ili, dealers	5.75-	6.25	T
	7.50-	8.00	SF
	6.00-	6.50	Be
Pa	7.50-	8.00	E
К	13.50-	3.75	N
gn	9.50-1	0.00	St
	4.00-	4.50	~.
dealers		4.00	CA
	9.50-	9.75	Bi
AND TURN	INCS		Bo
Blast Furna	no Mas		Bu
istrict	- Use	2 0.0	Bu
	Ŧ	2.00	Ch
Astern Local (			
e unit dal	ne n		
and busic	c. Pa.		No
con (nom)	8 00	0.00	SW
low phos	0.00-	9.00	SH
piloa.	10.00 -	0 5 0	Sp
(nom)	2 1 1 1 1 2 5 1 1		· · · ·
(nom.) ; Foreign Ore	10.00-1	0.50	
(nom.) Foreign Ore 7 unit. f.a.e	Atlan	0.50	Tu
(nom.) Foreign Ore r unit, f.a.s. Orts (noming	. Atlan	ntic	Tu
(nom.); Foreign Ore r unit, f.a.s. orts (nomina manganif.	Atlan l)	tic	Tu N.
(nom.) Foreign Ore r unit, f.a.s. orts (nomina. manganif- ore, 45.55%	. Atlan l)	ıtic	Tu N. Ch
(nom.) Foreign Ore r unit, f.a.s. orts (nomina manganif- ore, 45.55%	Atlan )	ıtic	Tu N. Ch
(nom.) Foreign Ore r unit, f.a.s. orts (nomina manganif- ore, 45.55%	. Atlan )	ıtic	Tu N. Ch
(nom.) Foreign Ore r unit, f.a.s. orts (nomina manganif- ore, 45.55%	10.00-1 Atlan l)	tic	Tu N. Ch
(nom.); Foreign Ore r unit, f.a.s. prts (nomina manganif- pre, 45.55%	. Atlan l)	itic	Tu N. Ch
(nom.); Foreign Ore r unit, f.a.s. orts (nomina manganif- ore, 45.55%	. Atlan l)	itic	Tu N. Ch

Toronto, dealers	on St. Louis, iron
CAST IRON BORINGS	Toronto, net
Birmingham, plain, 400- 5	NO. 1 CAST SCRAP
Boston dist. chem †6.00- 6	.25 Bos. dist. No. 1 month
Buffalo	00 N. Eng., del. No. 2
Chicago, dealers 6 00- 6	25 N. Eng. del. textile., 1
Cincinnati, dealers. 5.00- 5.	50 Buffalo, cupola 1
Cleveland 8.25- 8.	75 Chicago agai
E Pa chemical 10.75-7.	25 Chicago, auto
New York	00 Chicago, mach. net 1
st. Louis 3.50- 4.	00 Chicago, railr'd net. 1
Toronto, dealers 5.	00 Cleveland cup 1
PIPE AND FLUES	Eastern Pa gunala 1
Cincinnati, dealers 7.75 g	E Pa., mixed yard 1
Chicago, net 7.50- 8.1	0 Pittsburgh, cupola 1
RAILROAD CRATE PADO	Seattle
Buffalo to Fo 11	St. Louis, No 1
Chicago, net	5 St. L., No. 1 mach. 1
Cincinnati 7.00- 7.5	Toronto, No. 1,
Eastern Pa 10.00-10.5	0 mach., net
New York †6.00- 6.2	5 HEAVY CAST
7.50- 8.0	0 Boston dist. break. +7
ORGE FLASHINGS	Buffalo, break
Buffalo	0 Cleveland, break 12
leveland	Detroit, No. 1 mach.
Detroit	Detroit break
ittsburgh 12.75-13.2	5 Detroit, auto net 11
ORGE SCRAP	Eastern Pa. 13
oston district †5.50- 6.00	Pitteburgh breakable †9.
hicago, heavy 14.00-14.5	MALTRIAN 12.
astern Pa 12.00-12.50	Birmingham
RCH BARS, TRANSOMS	New England del
L Louis 13.50-14.00	Buffalo
XLE TURNINGS	Chicago D D
opton distaint is as	Charles O, R. R 15.
oston district †5.75- 6.00	Cincinnati. agri. del. 12.
oston district †5.75- 6.00 uffalo 11.00-11.50 hicago, elec. fur 12.75-13.25	Cincinnati. agri del. 12. Cleveland, rail 15. Detroit, auto net 14.
oston district	Cincinnati, aeri del. 12. Cincinnati, aeri del. 12. Cleveland, rail 15. Detroit, auto, net. 14. Eastern Pa., R. R., 15.
oston district	Checinati, agri, del. 12. Cleveland, rail
oston district         #5.75- 6.00           uffalo         11.00-11.60           hicago, elec. fur         12.75-13.25           astern Pa.         11.00-12.00           t. Louis         9.50-10.00           pronto         4.50	Cheveland, rail
oston district         #5.75- 6.00           uffalo         11.00-11.50           bicago, elec. fur         12.75-13.25           astern Pa.         11.00-12.00           t. Louis         9.50-10.00           pronto         4.50           CEEL CAR AXLES         11.50-10.00	Cincinati, agri, del. 12. Cincinati, agri, del. 12. Cleveland, rail 15. Detroit, auto, net. 14. Fastern Pa., R. R. 15. Pittsburgh, rail
oston district         #5.75- 6.00           uffalo         11.00-11.50           hicago, elec. fur         12.75-13.25           astern Pa         11.00-12.00           bronto         9.50-10.00           pronto         4.50           rmingham         11.50-12.50           sston district         11.50-12.10	Chechnatt, agri, del. 12. Cleveland, rail
oston district         #5.75- 6.00           uffalo         11.00-11.50           hicago, elec. fur         12.75-13.25           astern Pa.         11.00-12.00           pronto         4.50           rrmingham         11.50-12.50           pston district         #11.00-12.00           pronto         4.50           ready and the strict         #11.00-11.25           pston district         #11.50-12.50           uffalo         15.50-16.00	Clincinati, agri del. 12. Clincinati, agri del. 12. Cleveland, rail
oston district         #5.75- 6.00           uffalo         11.00-11.50           hicago, elec. fur.         12.75-13.25           astern Pa         11.00-12.00           pronto         9.50-10.00           pronto         4.50           EEL CAR AXLES         11.50-12.50           rmingham         11.50-12.50           oston district         #11.00-11.25           uffalo         15.50-16.00           nicago, net         15.00-15.50	Clucinati, arri del. 12. Clucinati, arri del. 12. Cleveland, rail
oston district         #5.75- 6.00           uffalo         11.00-11.50           hicago, elec. fur.         12.75-13.25           astern Pa.         11.00-12.00           bronto         9.50-10.00           pronto         4.50           TEEL CAR AXLES         11.50-12.50           pston district         #11.00-11.25           pston district         #11.00-11.25           affalo         15.50-16.00           hicago, net         15.00-15.50           stern Pa.         17.00           Louis         14.50	Checkborn R. R. 15. Chechnatt, arri del. 12. Cleveland, rail 15. Detroit, auto, net. 14. Fastern Pa., R. R. 15. Pittsburgh, rail17. St, Louis, R. R. 13. Toronto. net
oston district         #5.75- 6.00           uffalo         11.00-11.50           hicago, elec. fur.         12.75-13.25           astern Pa.         11.00-12.00           bronto         9.50-10.00           pronto         4.50           TEEL CAR AXLES         11.50-12.50           poston district         #11.00-11.25           nfalo         15.50-16.00           nicago, net         15.00-15.50           stern Pa.         17.00           Louis         14.50-15.00	Checkgo, R. R. 15. Checknatt, arri del. 12. Cleveland, rail 15. Detroit, auto, net. 14. Fastern Pa., R. R. 15. Pittsburgh, rail17. St, Louis, R. R. 13. Toronto. net RAILS FOR ROLLING 5 feet and over Birmingham 11. Boston district 19. Buffalo 12.5 Chicago 13.7 Fastern Pa.
oston district         #5.75- 6.00           uffalo         11.00-11.50           hicago, elec. fur.         12.75-13.25           astern Pa.         11.00-12.00           bronto         9.50-10.00           poronto         4.50           TEEL CAR AXLES         11.50-12.50           poston district         #11.00-11.25           affalo         15.50-16.00           nicago, net         15.00-15.50           stern Pa.         17.00           Louis         14.50-15.00           Kapring         8.50	Chichago, R. R. 15. Chicinati, arri del. 12. Cleveland, rail 15. Detroit, auto, net. 14. Fastern Pa., R. R. 15. Pittsburgh, rail. 17. St, Louis, R. R. 13. Toronto. net RAILS FOR ROLLING 5 feet and over Birmingham 11. Boston district 19. Buffalo 12.5 Chicago 13.7 Eastern Pa. 15.0
oston district         #5.75- 6.00           uffalo         11.00-11.50           hicago, elec. fur.         12.75-13.25           astern Pa.         11.00-12.00           bronto         9.50-10.00           pronto         4.50           TEEL CAR AXLES         11.50-12.50           poston district         #11.00-11.25           affalo         15.50-16.00           nicago, net         15.00-15.50           stern Pa.         17.00           Louis         14.50-15.00           storn fast         8.50           AFTING         \$13.25-13.50	Checknow, R. R. 15. Checknow, R. R. 15. Cleveland, rail 15. Detroit, auto, net. 14. Eastern Pa., R. R. 15. Pittsburgh, rail. 17. St. Louis, R. R. 13. Toronto. net
oston district         #5.75-6.00           uffalo         11.00-11.50           hicago, elec. fur.         12.75-13.25           astern Pa         11.00-12.00           t. Louis         9.50-10.00           poronto         4.50           TEEL CAR AXLES         11.50-12.50           poston district         #11.00-11.25           affalo         15.50-16.00           nicago, net         15.00-15.50           astern Pa         17.00           Louis         14.50-15.00           storn Matrice         #13.25-13.50           storn district         #13.25-13.50           wronto         8.50	Chicago 13.7 Boston district 19. Chicago 13.7 Construct 15. Cleveland, rail 15. Detroit, auto, net. 14. Eastern Pa., R. R. 15. Pittsburgh, rail
oston district         #5.75- 6.00           uffalo         11.00-11.50           hicago, elec. fur.         12.75-13.25           astern Pa.         11.00-12.00           t. Louis         9.50-10.00           pronto         4.50           YEEL CAR AXLES         11.00-11.25           pringham         11.50-12.50           poston district         #11.00-11.25           affalo         15.50-16.00           nicago, net         15.00-15.50           ustern Pa.         17.00           Louis         14.50-15.00           stern Pa.         17.00           Ston district         #13.25-13.50           waren Pa.         18.50           ustern Pa.         18.50           waren Pa.         18.50           ustern Pa.         18.50           ustern Pa.         18.50           ustern Pa.         18.50	Chicago (cut) 14.5
oston district         #5.75-6.00           uffalo         11.00-11.50           hicago, elec. fur.         12.75-13.25           astern Pa.         11.00-12.00           pronto         4.50           CEEL CAR AXLES         11.00-11.250           irmingham         11.50-12.00           pronto         4.50           CEEL CAR AXLES         15.00-11.250           infalo         15.50-16.00           nicago, net         15.00-15.50           ustern Pa.         17.00           . Louis         14.50-15.00           oronto         8.50           AFTING         8500           ustern Pa.         13.25-13.50           istern Pa.         18.50           ustern Pa.         13.50-14.00           R WHEFUS         13.50-14.00	Cincinati, arri del. 12. Cincinati, arri del. 12. Cleveland, rail 15. Detroit, auto, net. 14. Pastern Pa., R. R. 15. Pittsburgh, rail 17. St. Louis, R. R. 13. Toronto. net RAILS FOR ROLLING 5 feet and over Birmingham 11. Boston district 49.0 Buffalo 12.5 Chicago 13.7 Eastern Pa. 15.0 New York 49.5 St. Louis 13.7 LOCOMOTIVE TIRES Chicago (cut) 14.5 St. Louis, No. 1 12.0
oston district         #5.75-6.00           uffalo         11.00-11.50           hicago, elec. fur.         12.75-13.25           astern Pa.         11.00-12.00           pronto         4.50           rent Pa.         11.00-11.250           pronto         4.50           rent Pa.         11.00-12.00           pronto         4.50           rent Pa.         11.00-12.00           pronto         4.50           rent Pa.         11.00-11.25           affalo         15.50-16.00           listern Pa.         17.00           stern Pa.         17.00           storn district         #13.25-13.50           reston district         #13.25-13.50           storn district         #13.25-13.50           stern Pa.         18.50           w York         #14.00-14.50           Louis         13.50-14.00           R WHEELS         11.00.11.50	Checkgo (L. R. 15) Checkgo (L. R. 16) Detroit, auto, net. 14, Eastern Pa., R. 15, Pittsburgh, rail
oston district         #5.75-6.00           uffalo         11.00-11.50           hicago, elec. fur.         12.75-13.25           astern Pa.         11.00-12.00           pronto         4.50           rmingham         11.50-12.50           iston district         #11.00-11.25           uffalo         15.50-16.00           pronto         4.50           reEL CAR AXLES         15.00-15.50           iffalo         15.50-16.00           nicago, net         15.00-15.50           astern Pa.         17.00           voronto         8.50           AFTING         8.50           waston district         #13.25-13.50           ustern Pa.         18.50           ustern Pa.         18.50           waston district         #14.00-14.50           ustern Pa.         13.50-14.00           R WHELS         11.00-15.50           ston dist. iron         17.75	Checkgo (n. R. 15.) Checkgo (n. R. 15.) Detroit, auto, net. 14.) Detroit, auto, net. 14.) Detroit, auto, net. 14.) Pittsburgh, rail17. St. Louis, R. R13., Toronto. net <b>RAILS FOR ROLLING</b> <b>BAILS FOR ROLLING</b> Birmingham 11.5 Boston district 19.0 Buffalo 12.5 Chicago 13.7 <b>LOCOMOTIVE TIRES</b> Chicago (cut) 14.5 St. Louis, No.1 12.0 <b>LOW PHOS. PUNCHINGS</b> Buffalo 14.7
oston district         #5.75-6.00           uffalo         11.00-11.50           hicago, elec. fur.         12.75-13.25           astern Pa.         11.00-12.00           oronto         4.50           t. Louis         9.50-10.00           pronto         4.50           reEL CAR AXLES         11.00-11.25           trmingham         11.50-12.50           oston district         #11.00-11.25           uffalo         15.50-16.00           nicago, net         15.00-15.50           astern Pa.         17.00           oronto         8.50           AFTING         14.50-15.00           storn district         #13.25-13.50           ustern Pa.         18.50           w York         #14.00-14.50           Louis         13.50-14.00           R WHEELS         mingham           ston dist. iron         #7.75- 8.00           ffalo. iron         13.50-14.00	Chicago (cut) 14.5 Chicago (cut) 14.5 Chicago (cut) 14.5 Detroit, auto, net. 14. Eastern Pa., R. R. 15. Pittsburgh, rail
oston district         #5.75- 6.00           uffalo         11.00-11.50           hicago, elec. fur.         12.75-13.25           astern Pa.         11.00-12.00           pronto         4.50           rrmingham         11.50-12.50           nitago, net         15.0-16.00           nitago, net         15.00-15.50           attern Pa.         17.00           uttal         14.50-15.00           stern Pa.         17.00           uttal         14.50-15.00           stern Pa.         17.00           stern Pa.         18.50           stern Pa.         18.50           w York         14.00-14.50           w York         11.00-11.50           w York         11.00-14.50           Louis         13.50-14.00           R WHEELS         13.50-14.00           ffalo, iron         13.50-14.00           ffalo, iron         15.50-16.00	Chicago (cut) 14.5 Chicago (cut) 14.5 Chicago (cut) 14.5 Detroit, auto, net. 14. Eastern Pa., R. R. 15. Pittsburgh, rail 17. St. Louis, R. R. 13. Toronto, net RAILS FOR ROLLING 5 feet and over Birmingham 11.5 Boston district 19.0 Buffalo 12.6 Chicago 13.7 LOCOMOTIVE TIRES Chicago (cut) 14.5 St. Louis, No. 1 12.0 LOW PHOS. PUNCHINGS Buffalo 14.7 Chicago 14.7 Chicago 14.7 Chicago 15.5 Eastern Pa. 15.0 Chicago 14.7 Chicago 14.7 Chicago 14.7 Chicago 14.7 Chicago 15.5 Eastern Pa. 15.0 Chicago 15.7 Chicago 15.7 Chicago 15.7 Chicago 17.7 Chicago 15.7 Chicago 17.7 Chicago 17.7 Chi
oston district         #5.75- 6.00           uffalo         11.00-11.50           hicago, elec. fur.         12.75-13.25           astern Pa.         11.00-12.00           pronto         4.50           rrmingham         11.50-12.50           oston district         #11.00-11.25           uffalo         15.50-16.00           pronto         4.50           rrmingham         11.50-12.50           uffalo         15.50-16.00           icago, net         15.00-15.50           ustern Pa.         17.00           oronto         8.50           Affalo         14.50-15.00           oronto         8.50           Astring         14.50-15.00           pronto         13.50           w York         14.00-14.50           Louis         13.50-14.00           R         WHEELS           rmingham         11.00-11.50           ston dist. iron         17.50-14.00           ffalo, iron         13.50-14.00           ffalo, iron         13.50-14.00           ffalo, iron         13.50-14.00           ffalo, iron         13.50-16.00           icago, iron         13.25-13.75     <	Chicago (cut) 14.5 Chicago (cut) 14.5 Chicago (cut) 14.5 Detroit, auto, net. 14. Pattsburgh, rail
oston district         #5.75- 6.00           uffalo         11.00-11.50           hicago, elec. fur.         12.75-13.25           astern Pa.         11.00-12.00           pronto         4.50           rrmingham         11.50-12.50           nitago, net         15.00-16.00           nitago, net         15.00-15.50           astern Pa.         17.00           ustern Pa.         17.00           ustern Pa.         17.00           stern Pa.         17.00           oronto         8.50           Astern Pa.         17.00           stern Pa.         17.00           stern Pa.         17.00           stern Pa.         18.50           stern Pa.         18.50           stern Pa.         18.50           w York         14.00-14.50           w York         11.00-11.50           stern Pa.         13.50-14.00           R WHEELS         13.50-14.00           ffalo, iron         13.50-14.00           ffalo, iron         13.25-13.75           ron, 6-10% man.         10.50	Chicago (cut) 14.5 Chicago (cut) 14.5 Detroit, auto, net. 14. Eastern Pa., R. R. 15. Pittsburgh, rail 17. St. Louis, R. R. 13. Toronto. net RAILS FOR ROLLING 5 feet and over Birmingham 11. Boston district 19.0 Buffalo 12.6 Chicago 13.7 LOCOMOTIVE TIRES Chicago (cut) 14.5 St. Louis, No.1 12.0 LOW PHOS. PUNCHINGS Buffalo 14.7 Chicago 15.5 Eastern Pa. 15.0 Pittsburgh (heavy) 17.0 Pittsburgh (light). 16.0
oston district         #5.75- 6.00           uffalo         11.00-11.50           hicago, elec. fur.         12.75-13.25           astern Pa.         11.00-12.00           pronto         4.50           rrmingham         11.50-12.50           mingham         11.50-12.50           affalo         15.50-16.00           poston district         #11.00-11.25           affalo         15.50-16.00           nicago, net         15.00-15.50           astern Pa.         17.00           storn district         #13.50-15.00           poronto         8.50           AFTING         850           ew York         14.00-14.50           hastern Pa.         13.50-14.00           R WHEELS         Tringham           rmingham         11.00-11.50           ston dist. iron         #7.75-8.00           ffalo, iron         13.50-14.00           R WHEELS         Traiso-14.00           ffalo, steel         15.50-16.00           icago, iron         13.25-13.75           ron, 6-10% man.         10.50           Afr. low phos.         10.50	Chicago (cut) 14.5 Chicinati, arri del. 12. Cleveland, rail 15. Detroit, auto, net. 14. Fastern Pa., R. R. 15. Pittsburgh, rail
oston district         #5.75- 6.00           uffalo         11.00-11.50           hicago, elec. fur.         12.75-13.25           astern Pa.         11.00-12.00           pronto         4.50           rrmingham         11.50-12.50           mfalo         15.50-12.50           offalo         15.50-12.50           offalo         15.50-15.00           ornoto         4.50           restern Pa.         17.00           ornoto         8.50           Affalo         15.50-15.00           ornoto         8.50           Astern Pa.         17.00           stern Pa.         17.00           stern Pa.         18.50           ornoto         8.50           AAFTING         8.50           way York         14.00-14.50           Louis         13.50-14.00           R WHEELS         77.75-8.00           ffalo, iron         13.50-14.00           ffalo, steel         15.50-16.00           icago, iron         13.25-13.75           ron, 6-10% man.         10.50           offalo, steel         15.50-16.00           icago, iron         13.25-13.75 <t< td=""><td>Cincinati, arri del. 12. Cincinati, arri del. 12. Cleveland, rail 15. Detroit, auto, net. 14. Fastern Pa., R. R. 15. Pittsburgh, rail. 17. St. Louis, R. R. 13. Toronto. net</td></t<>	Cincinati, arri del. 12. Cincinati, arri del. 12. Cleveland, rail 15. Detroit, auto, net. 14. Fastern Pa., R. R. 15. Pittsburgh, rail. 17. St. Louis, R. R. 13. Toronto. net
oston district         #5.75- 6.00           uffalo         11.00-11.50           hicago, elec. fur.         12.75-13.25           astern Pa.         11.00-12.00           pronto         9.50-10.00           pronto         4.50           reEL CAR AXLES         11.00-11.25           irmingham         11.50-12.50           oston district         #11.00-11.25           uffalo         15.50-16.00           nicago, net         15.00-15.50           astern Pa.         17.00           oronto         8.50           AFTING         8.50           AAFTING         13.50-14.00           R WHEELS         11.00-11.50           rmingham         11.00-14.50           ston district         #13.00-14.00           R WHEELS         Tromodist. iron           rmingham         11.00-11.50           ston dist. iron         13.50-14.00           ffalo, iron         13.50-14.00           R WHEELS         13.25-13.75           ron, 6-10% man.         10.50           . Afr. low phos.         10.50           . Afr. low phos.         10.50           . Afr. low phos.         10.50           ed	Cincinati, arri del. 12. Cincinati, arri del. 12. Cleveland, rail 15. Detroit, auto, net. 14. Fastern Pa., R. R. 15. Pittsburgh, rail. 17. St. Louis, R. R. 13. Toronto. net RAILS FOR ROLLING 5 feet and over Birmingham 11.5. Boston district 49.0 Buffalo 12.5 Chicago 13.7 Eastern Pa. 15.0 New York 49.5 St. Louis 13.7 LOCOMOTIVE TIRES Chicago (cut) 14.5 St. Louis, No. 1 12.0 LOW PHOS, PUNCHINGS Buffalo 14.7 Chicago 15.5 Eastern Pa. 15.0 Eastern Pa. 15.0 Pittsburgh (heavy) 17.0 Pittsburgh (light). 16.0 Manganese Ore (Nominal)
oston district         #5.75- 6.00           uffalo         11.00-11.50           hicago, elec. fur.         12.75-13.25           astern Pa.         11.00-12.00           pronto         9.50-10.00           pronto         4.50           EEL CAR AXLES         11.00-11.25           uffalo         11.50-12.50           pattern Pa.         11.00-11.25           uffalo         15.50-16.00           nicago, net         15.00-15.50           ustern Pa.         17.00           boronto         8.50           AFTING         8.50           AAFTING         13.50-14.00           R WHEELS         13.50-14.00           rmingham         11.00-11.50           ston district         #13.50-18.00           ww York         #14.00-14.50           Louis         13.50-14.00           ffalo, iron         13.50-18.00           icago, iron         13.50-18.00           icago, iron         13.50-13.75           ron, 6-10% man.         10.50           icago, iron         13.55-13.75           ron, 6-10% man.         10.50           icago, iron         13.55-13.75           ron, 6-10% man.<	Cincinati, arri del. 12. Cincinati, arri del. 12. Cleveland, rail 15. Detroit, auto, net. 14. Fastern Pa., R. R. 15. Pittsburgh, rail. 17. St. Louis, R. R. 13. Toronto. net RAILS FOR ROLLING 5 feet and over Birmingham 11.5. Boston district 19.0 Buffalo 12.5 Chicago 13.7 Eastern Pa. 15.0 New York 19.5 St. Louis 13.7 LOCOMOTIVE TIRES Chicago (cut) 14.5 St. Louis, No. 1 12.0 LOW PHOS. PUNCHINGS Buffalo 14.7 Chicago 15.5 Eastern Pa. 10.0 Pittsburgh (heavy) 17.0 Pittsburgh (light). 16.0 Manganese Ore (Nominal)
oston district         #5.75- 6.00           uffalo         11.00-11.50           hicago, elec. fur.         12.75-13.25           astern Pa.         11.00-12.00           pronto         4.50           CEEL CAR AXLES         11.00-11.25           irmingham         11.50-12.00           pronto         4.50           CEEL CAR AXLES         15.00-10.00           pronto         4.50           CEEL CAR AXLES         15.00-11.25           infalo         15.50-16.00           biston district         #11.00-11.25           infalo         15.50-16.00           bistern Pa.         17.00           . Louis         14.50-15.00           orronto         8.50           CAFTING         8500           ston district         #13.25-13.50           Louis         13.50-14.00           Louis         15.50-16.00           fralo, iron         13.50-14.00           fralo, iron         13.25-13.75           ron, 6-10% man.         10.50           redish basic, 65%         9.50           redish basic, 65%         9.50           redish low phos.         10.50           anish No. Africa <td>Chicago, R. R. 15. Chicinnati, agri, del. 12. Cleveland, rail 15. Detroit, auto, net. 14. Fastern Pa., R. 15. Pittsburgh, rail 17. St. Louis, R. R. 13. Toronto. net</td>	Chicago, R. R. 15. Chicinnati, agri, del. 12. Cleveland, rail 15. Detroit, auto, net. 14. Fastern Pa., R. 15. Pittsburgh, rail 17. St. Louis, R. R. 13. Toronto. net
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#### Cleveland 0.20- 0.10 Cleveland 8.25- 8.75 Detroit 6.50- 7.00 Eastern Pa. 5.75- 6.50 New York †2.25- 2.50 Eastern Pa., iron... Eastern Pa., steel.... 16.00-16.50 14.50 Pittsburgh, iron 14.50-15.00 Pittsburgh, steel 16.50-17.00 St. Louis, iron 11.50-12.00 St. Louis, steel 13.75-14.25 Toronto net ito, net ..... 8.50 CAST SCRAP lo, cupola ..... 11.50-12.00 lo, mach. ..... 13.00-13.50 go, agri. net.... 10.00-10.50 go, auto 11.00-11.50 go, mach. net. 12.00-12.50 go, railr'd net. 11.00-11.50 50, mach. cup... 10.75-11.25 and, mach..... 15.25-16.76 rn Fa., cupola 14.00-14.50 . mixed yard, 12.00-12.50 urgh, cupola. 10.00-10.60 rancisco, del. 13.50-14.00 10.00-11.00 nis, No. 1 ..... 10.75-11.25 No. 1 mach. 12.50-13.00 o, No. 1, 1., net ..... 9.00 CAST dist. break.. †7.50- 7.75 Cist. break. 1.00-1.00 Singland del... 9.50-10.00 break. .... 10.25-10.75 and, break .... 12.50-13.00 No. 1 mach. break. ...... 13.00-13.50 auto net.... 11.00-11.50 Pa. \_\_\_\_\_ 13.50-14.00 rk breakable †9.50-10.00

8.00- 8.25

rgh ..... 12.50-13.00 ABLE gham, R. R., 11.50-12.50 ngland del.... 15.00-16.00 R. R. ...... 15.50-16.00 atl. agri del. 12.50-13.00 adi, aziri, del. 12.00-13.00 nd, rail ...... 15.75-16.25 auto, net... 14.50-15.00 t Pa., R. R... 15.50-15.75 rgh, rail...... 17.00-17.50 is, R. R. .... 13.00-13.50 net ..... 7.00

#### OR ROLLING

5 feet and of	ver
Birmingham	11 50-12 50
Boston district	+0.00 0.00
Buffalo	10.00- 9.50
Chicago	12.50-13.00
Cincago	13.75-14.25
Eastern Pa.	15.00-15 50
New York	19 50-10 00
St. Louis	12 75 14 05
	15.15-14.25
LOCOMOTIVE TIRES	
Chicago (cut)	14 50 15 00
St Louis No 1	14.30-15.00
ber Bours, NO. 1	12.00-12.50
LOW PHOS. PUNCHIN	GS
Buffalo	14 75-15 95
Chicago	15 50 10.40
L'astarn Du	15.50-16.00
Tittel	10.00-16.50
Pittsburgh (heavy)	17.00-17.50
Pittsburgh (light), 1	6.00-16.50
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not including duty.

#### Iron Ore

July 13, 1936

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Lake Su	Founda			
Gross to	on, 511/676		56-639	
Lower L	ake Ports		Copfre	
ld range bess	emer	\$4.80		
igh phosphor	us	4.40	Cents p	
d range nonl	Pr	4.65	Foreign	
		1.03	erous	

Toronto, dealers. net

26.00

26.00

26.00

### Warehouse Iron and Steel Prices

Cents per pound for delivery within metropolitan districts of cities specified

STEEL BARS		Cincinnati	3.25c	Buffalo	3.47c
Baltimore*	3.10c	Houston	3.25c	Chattanooga	3.66c
Bostontt	3.20e	Los Angl., cl.,	2.45c	Chicago	3.30c
Buffalo	3 10e	New Orleans	3.50c	Cincinnati	3.52c
Chattanooga	3.46e	Pitts., plain (h)	3.05c	Cleveland, 1/4-	
Chicago (i)	3 10e	Pitts., twisted		in, and over	3.310
Cincinnati	3 390	squares (h)	3.175c	Detroit	3 520
Cleveland	3.000	San Francisco	2.450	Detroit -3-in	3.850
Detroit	3 190	Seattle	2.450	Houston	3 100
Houston	3 100	St. Louis	3.35c	Los Angeles	3 700
Los Angeles	2 700	Tules	3 250	Milwaukoo	3 410
Milwaukaa 2 21c.	-3.980	Young 230c	-2.60c	New Orleans	3.650
Now Orloand	2 150	Toungaine 2.000	-4.000	Now Yorkt(d)	2.500
New Yorkt (d)	2 210	SHAPES		Philadelphia#	3 100
Ditte (h) 2050	2 200	Daltimonat	2 100	Dhilo floor	1 050
Difficienties	9.150	Dartantt	2 200	Dittahungh (b)	2.000
Dantland	0,10C	Duffula	0.200	Doutland	2.150
Con Day palage	3.00C	Chetten serve	0.000	Con Emposicos	9.950
San Prancisco	5.50C	Chatunooga	3.00C	San Prancisco	0,000
Seattle	5.80C	Chicago	3.300	Seattle	0.000
St. Louis	3,350	Cincinnati	3.520	St. Louis	3.00C
St. Faul	-3,500	Cleveland	3.310	St. Paur	3.000
Tuisa	3.356	Detroit	3.520	Tulsa	3.600
IRON BARS		Houston	3.100	NO 10 BLUE	
Deutland		Los Angeles.	3.70e	Roltimore*	2 10 -
Portland	3.500	Milwaukee	3.41C	Dartimore	0.10C
Chattanooga .	3.46C	New Orleans	3.65C	Doston +	0.400
Baltimore*	3.100	New York‡(d)	3.47e	Obsettance a series	0.120
Unicago	2.850	Philadelphia*	3,10e	Chattanooga	3,100
Cincinnati	3.32e	Pittsburgh (h)	3,25C	Chicago	3.10C
New YorkI(d)	3.15C	Portland (i).	3,60e	Cincinnati	3.320
Philadelphia*	3.15e	San Francisco	3.350	Cleveland	3.11C
St. Louis	3.35e	Seattle (i)	3.800	Det, 8-10 ga.	3.24C
Tulsa	3.35e	St. Louis	3.45e	Houston	3.45c
REINFORCING BA	RS	St. Paul	3.55c	Los Angeles.	3.85c
Duffela	0.000	Tulsa	3,600	Milwaukee	3.26e
Chatten sens	3.6UC	PLATES		New Orleans.	3.65C
Chattanooga	3.360	A 1011 I 100		New York‡(d)	3.41c
Chicago 2.10e-	2.600	Baltimore*	3.10e	Portland	3.45c
Cleveland (c)	2.10C	Bostontt	3.31e	Philadelphia*	3.20c

### Current Iron and Steel Prices of Europe

#### Dollars at Rates of Exchange, July 9

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

	Brit	ish	Cont Channel or North Se	Continental Channel or North Sea ports, metric tons **Ounted in gold			
PIG IRON	Ð, K, <sub>P</sub>	orts 3 d	()uoted in dollars at current value	pounds sterling £ s d			
Foundry, 2.50-3.00 Silicon Basic bessemer Hematite, Phos0305	\$15.69 3 15.69 3 17.82 3	2 6* 2 6* 11 0	\$13.86 11.89	1 15 0 1 10 0			
SEMIFINISHED STEEL							
Billets Wire rods, No. 5 gage	\$29.49 5 44.93 8	17 6 19 0	\$18.61 35.65	2 7 0 4 10 0			
FINISHED STEEL							
Standard rails Merchant bars Structural shapes Plates, † lin. or 5 mm Sheeta black 24 ware or	\$41.42 1.74c 1.68c 1.81c 8	50 150 100 13	\$43.57 1,12c to 1,16c 1,11c 1,53c	$\begin{array}{c} 5 & 10 & 0 \\ 3 & 2 & 6 & to & 3 & 5 & 0 \\ & 3 & 1 & 6 \\ & 4 & 5 & 0 \end{array}$			
0.5 mm. 24 gage, corr. Sheets, gal., 24 gage, corr. Bands and strips Plain wire, base Wire nails, base Wire nails, base	2.18c 9 2.63c 11 1.96c 8 2.18c 9 2.58c 11 2.69c 12 \$ 4.71 0	15 0 15 0 15 0 15 0 10 0 0 0 18 9	2.08c 2.15c 1.43c 1.89c 2.10c 1.71c	$\begin{array}{c} 5 & 16 & 0 \\ 6 & 0 & 0 \\ 4 & 0 & 0 \\ 5 & 5 & 0 \\ 5 & 17 & 6 \\ 4 & 15 & 0 \\ \hline \end{array}$			

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

		£		d		French Francs		Belgis Franc	in 8	Reich Marks	
Fdy. pig iron, Si. 2.5	\$17.57	3	10	0(a)	\$17.16	260	\$13.87	+10	\$25.44	63	
Basic bessemer pig iron	18.20	3	12	6(a)	12.54	190	11.84	350	28.06(b	) 69.50	
Furnace coke	5.65	1	2	6	6.27	95	4.13	122	7.67	19	
Billets	29.49	- 5	17	6	28.38	430	18.77	555	38.97	96.50	
Standard rails	1.85c	- 8	5	0	2.30c	671	1.53c	1.000	2 420	152	
Merchant bars	2.03c	9	1	0	1.67c	560	99c	650	2.01c	110	
Structural shapes	1.96c	S	15	ō	1.64c	550	996	650	1.96c	107	
Plates, t 1/2-in. or 5 mm	2.03c	9	1	3	2 09c	700	1 720	800	2 320	127	
Sheets, black	2.58c	11	10	Õ\$	1.78c	600t	1 350	8751	2 640	111+	
Sheets, galy., corr., 24 ga.				~ 4		0004		0124	2.010	****	
or 0.5 mm.	3.02c	13	10	n	7 840	950	2 300	1.500	6 770	370	
Plain wire.	2 18c	9	15	ñ	2 840	950	1 760	1 150	3 170	173	
Bands and strips	2.20c	9	16	õ	1.98c	650	1.220	800	2 320	127	
*Reals + Datatab able at	C.				1 . 1 .	1		41 0			

\*Bagic, †British ship-plates. Continental, bridge plates. §24 ga. ‡1 to 3 mm. basic price. British quotations are for basic open-bearth steel. Continent usually for basic-bessemer steel. a del. Middlesbrough. b hematite. †fClose annealed. \*Gold pound sterling carries a premium of 62.75 per cent over paper sterling.

St. Louis ..... St. Paul ...... 3.40c Tulsa ..... 3.80c NO. 24 BLACK Baltimore\*† .... 3.70c Boston (g) .... 3.95c Buffalo 3.35c Chattanooga. 4.26c Chicago ..... 3.95c Cincinnati .... 4.12c Cleveland ..... 3.91c Detroit ... 4.04c Los Angeles. 4.450 Milwaukee .... 4.06c New Orleans 4.50c New York‡(d) 3.99c Philadelphia\*† 3 75c Pitts.\*\*(h) 3.55c-4.85c Portland .. 4.20c San Francisco 4.10c Seattle ...... St. Louis ..... St. Paul ..... 4.50c 4.20c 4.00c Tulsa ..... 4,85c NO. 24 GALV. SHEETS Baltimore\*† .... 3.90c Buffalo ..... Boston (g).... 4.10c 4.00c Chattanooga.. 4.96c Chicago (h) .. 4.65c Cincinnati .... 4.82c Cleveland ..... 4.61c Detroit ..... 4.82c Houston 4.50c Los Angeles.. 4.50c Milwaukee . 4.76c New Orleans New York‡(d) 4.950 4.40c Philadelphia\*† 4.50c Pitts.\*\*(h) 4.30c-5.55c Portland 4.60c San Francisco 4.60c Seattle 5.10c St. Louis..... 4.65c St. Paul ..... 4.60c Tulsa ..... 5.20c BANDS Baltimore\*.... 3.30c Boston†† ..... 3.40c Buffalo . 3.52c Chattanooga. 3.71c Chicago .... 3.40c 3.57c Cincinnati .... Cleveland ..... 3.36c Detroit. 17a-in. and lighter 3.49c Houston 3.35e Los Angeles. 4.20c Milwaukee 3.51c New Orleans.. New Yorkt(d) 4.05c 3.660 Philadelphia 3.30c Pittsburgh(h) 3.30c Portland 4.35c San Francisco 4.20c Seattle ..... 4.35c St. Louis ..... 4.90c St. Paul ..... 3.65c Tulsa ..... 3.55c HOOPS Baltimore ..... 2.30c Boston†† ..... Buffalo ..... 4.40c 3,52c Chicago 3.40c Cincinnati 3.57c Det., No. 14 and lighter 3.49c Los Angeles.. 5.95c Milwaukee . 3.51c New York1(d) 3 66c

Philadelphia<sup>4</sup>

Portland ..

Pittsburgh(h)

San Francisco

Seattle .....

3.55c

3.80c

5.70c

6.25c

5.70c

Pittsburgh (h)

San Francisco

Seattle .....

3.05c

3.45c

3.80c

3.55c

St. Louis..... 3.55c St. Paul ..... 3.65c COLD FIN. STEEL Baltimore (c) 3.88c Boston ..... Buffalo (h).... Chattanooga\* 4.05c 3.70c 4.28c Chicago (h) .. 3.65c Cincinnati 3.87c Cleveland (h) 3.50c Detroit .... 3.79c Los Ang.(f) (d) 6.00c Milwaukee .... 3.76c New Orleans. 4.45c New York‡(d) 4.11c Philadelphia\* 3.91c Pittsburgh 3.50c Portland (f) (d) 6.30c San Fran.(f) (d) 6.10c Seattle (f) (d) 6.30c St. Louis ..... St. Paul ..... 3.90c 4.17c Tulsa 4.80c COLD ROLLED STRIP Boston, 0.100in., 500 lb. lots 3.395c Buffalo ...... 3.39c Chicago 3.27c Cincinnati (b) 3.22c Cleveland (b) 3.00c Detroit 3.18c New York‡(d) 3.36c St. Louis ...... TOOL STEELS 3.90c (Applying on or east of Mississippi river; west of Mississippi 1c up) Base High speed .... .....57c High carbon, high Special tool ......20c Extra tool ......17c Regular tool ......14c Uniform extras apply. BOLTS AND NUTS (100 pounds or over) Discount Chicago (a) ......65 Cleveland ......70 Detroit .....70 Milwaukee ......70 Pittsburgh ......65-5 (a) Under 100 pounds, 60 off. (b) Plus straightening, cutting and quantity differentials; (c) Plus mill, size and quantity extras; (d) Quantity base; (e) New mill classif. (f) Rounds only; (g) 50 bundles or over; (h) Outside delivery, 10c less; (i) Under 3 in.; (j) Shapes other than rounds, flats, fillet an-gles, 3.25c ‡Domestic steel; \*Plus quan. extras; \*\*Under 25 bundles; \*50 or more bundles; \*New extras apply; ††Base 40.000 lbs., extras on less. Prices on heavier lines are subject to new quantity differentials: 399 lbs. and less, up 50 399 lbs. and less, up 50 cts.; 400 to 3999 lbs., base; 4000 to 7999 lbs., 15 cts., under; 3000 to 14.999 lbs., 25 cts. under; 15,000 to 39,999 lbs., 35 cts. under; 40,-000 lbs. and over, 50 cts. under how

cts. under base.

## Bars

#### Bar Prices, Page 72

**Pittsburgh**—Steel bar requirements for the first time in some months show signs of slowing, owing to automotive needs not being urged. Miscellaneous consumers, implement makers and cold finishers are keeping bar mill operations steady. Possibly the uneasy labor situation also is adding to a fair amount of new buying, with no apparent resistance to third-quarter price advance.

Cleveland—Since the recent price advance little new business of important tonnage has been placed, this giving many mills opportunity to cut down their extensive backlogs, that are in immediate demand. Nut and bolt makers and roadmaking equipment concerns are reported to be at present the heaviest consumers. No apparent change has been noticed in the alloy bar market. Stock condition of both jobbers and cold bar finishers remain approximately the same.

Chicago—Some new business in soft steel bars is being received at the new 2.00c price. While fresh commitments are restricted by the heavy coverage during June, the volume is fair. Shipments continue heavy and bar mills will be well engaged through July. Some seasonal slackening is evident in tractors and farm implements although so far little retarding influence upon sales has resulted from unfavorable weather conditions in farm districts. Automotive consumption is holding well, with only a small decrease in production anticipated this month.

New York—Bar consumers are pressing for deliveries, with many sellers booked solidly to the end of July. Sellers of hot alloy bars are booked well into August.

Philadelphia—Extended deliveries on bars have resulted in fairly good bookings, consumers appearing anxious to get on mill schedules at as early a date as possible. This appears to be due not only to continued good consumption but to a desire for protection in the event of possible labor troubles. Commercial steel bar deliveries average around three to four weeks; hot alloy bar deliveries extend further. Cold-drawn bar deliveries also are well extended, with machine tool and equipment manufacturers making heavy demands.

Seattle — Mill orders have declined following heavy placements last month by jobbers in anticipation of the \$2 mill advance for the third quarter. Stocks have been generally replenished and little new business is anticipated during the next three months except for emergency requirements. <u>Complexion</u> of cost sheets, too, is improved by CORRECT LUBRICATION

> Among the many special petroleum products made by Standard (Ind.) are white oils used in drugs and cosmetics; also by food industries where tasteless, harmless oils eliminate danger of product contamination. Designers of specialized machines find consultation with Standard lubrication engineers of real value.

"WE'RE getting pretty good lubrication results now," say many plant managers. And they frequently are! But—the difference between "pretty good results" and total savings possible through Correct Lubrication\* often amounts to thousands of dollars —over a year's period.

Ask those who have Correct Lubrication how it reduces costs —eliminates waste. Take the experience of one mid-western paper mill, as an example: Lubrication costs were gradually reduced in this mill from \$260 per month to \$114. This was brought about during the first year in which Standard Oil products and engineering service were adopted by this mill. Correct Lubrication worthwhile?

★ Correct Lubrication means Standard Oil (Indiana) Products, Standard Oil Service—and the practical suggestions embodied in Standard Oil Monographs.



STEEL

## Plates

#### Plate Prices, Page 72

Philadelphia—While off from late last month, plate buying is in excess of earlier expectations, for in addition to tonnages being let against identified projects on which a 30-day protection is allowed, there has been buying at the new prices for consumptive requirements and for stock.

Ship and car work is outstanding. Sun Shipbuilding Co., Chester, Pa.,



Placing of further cars this past week holds promise of added tonnage



WHAT a jolt to your production cost when a crane failure occurs! Materials stop moving—men and machines waste precious time —up goes your cost curve and down come your profits.

Because P&H engineers know the importance of dependable service, P&H cranes are built with the extra strength—the liberal safety factors that keep them on the job year after year. That's one reason P&H has maintained constant leadership for 50 years as America's largest builder

of overhead cranes. Through larger volume and more modern manufacturing facilities, P&H cranes give you reliable service with many advanced features at no higher cost. Ask for Bulletin 450.

> Electric welding of end trucks, gears, etc., gives P&H cranes the extra strength to resist stresses and wear in the heaviest service.



 HARNISCHFEGER CORPORATION

 4411 West National Avenue

 Milwaukee, Wisconsin



for eastern mills. The new plate prices are being firmly maintained.

Chicago—While new plate buying has been moderate so far this month, mills have fairly substantial orders on books and additional tonnages are to be placed for various forms of fabricated work now in prospect. The latter includes structural and freight car construction. Tank builders continue busily engaged, though new inquiries are light.

New York—Car and ship work furnish most activity in the steel plate market. Volume of miscellaneous buying is fairly brisk in spite of heavy buying last month to anticipate the price advance.

Birmingham, Ala. - Fabricators are requiring considerable plate tonnage and these mills are active and delivering steadily. Chicago Bridge & Iron Co. and Ingalls Iron Works Co. have been awarded contract for 883,000 lineal feet of 60-inch diameter steel pipe, insulated outside and inside, to be used on the Birmingham industrial water project. Chicago, Ingalls & Nashville Bridge Co. is now fabricating 12,000 tons of 42 to 60-inch pipe for the water system. Other contracts in hands of fabricators call for considerable plate, including barges and scows.

San Francisco—Interest in the plate market now centers around opening of bids July 30 for a 10foot, 3 inch welded steel pipe line for the metropolitan water district. Los Angeles, requiring 3500 tons. Alternate bids will be taken on precast reinforced concrete pipe.

Seattle — While no important projects are up for immediate figures, several tonnages are in prospect. Expansion and replacements in the pulp and paper industry promise increased demand for plates for water mains, digesters and other tanks.

### **Contracts** Placed

- 3800 tons, 17 coal barges for American Barge Line, to American Bridge Co., Pittsburgh.
- 670 tons, three molasses tanks, Long Island City, N. Y., to Graver Tank & Mfg. Corp., East Chicago, Ind., through Barney Ahlers Construction Co., New York.
- 420 tons, three tanks, Tide Water Oil Co., Burlington, Vt., to Bethlehem Steel Co., Bethlehem, Pa.
- 300 tons, 80,000-barrel tank, Hartford Electric Light Co., Hartford, Conn., to Chicago Bridge & Iron Works, Chicago.
- 125 tons, radial gates, specification 792-D for spillway at Cle Elum dam, Yakima project, Washington, to unnamed interest.
- 120 tons, steel bins and tank, Titanium Pigment Co., Sayreville, N. J., to Treadwell Construction Co., Midland, Pa.

### **Contracts** Pending

36.000 tons, principally plates, eight tankers for Standard Vacuum Transportation Co., New York, four of which will be built by Federal Ship-building Co., Kearney, N. J., two by Bethlehem Steel Co., Bethlehem, Pa., and two by the Sun Shipbuilding Co.,

- Chester, Pa. 3500 tons, 10-foot 3-inch welded steel pipe, metropolitan water district, Los
- Angeles; bids July 30; alternate on precast reinforced concrete pipe. 200 tons, 36-inch welded pipe line, Mani-towoc, Wis.; McMullen & Pitz Contowoc, Wis.; McMullen & Pitz Con-struction Co., Manitowoc, general
- 100 tons, water tank, tower and welded steel pipe, Salem, Oreg., municipal water plant; bids July 17.

## **I**ransportation

#### Track Material Prices, Page 73

Placing of 2196 freight cars and 20,000 tons of steel rails the past week makes a fair tonnage of business from railroads and adds to backlogs of carbuilders and railroad shops, though not approaching the heavy totals of some recent weeks. This total includes 25 cabooses and 50 narrow-gage cars for export to Ecuador.

Norfolk & Western has distributed 20,000 tons of rails for which it inquired recently, 15,000 tons going to Carnegie-Illinois Steel Corp. and 5000 tons to Bethlehem Steel Co. Denver & Rio Grande Western is asking court permission to buy 25,409 tons of rails, about half for delivery this year and the remainder in 1937. New York Central will buy a small tonnage for last half delivery,

Norfolk & Western recently distributed orders for 663,000 tie plates of special design, 11.000 kegs of spikes and 2300 kegs of track bolts.

While no word has been received from railmakers several railroads regard an advance in rail prices as probable and indicate they will buy as soon as a definite advance seems probable.

Chicago Great Western is asking court permission for the purchase of three snow plows. Manufacturers of frogs and crossings in the Chicago district have placed several thousand tons of rails in the past few weeks.

### Cars Orders Placed

- American Refrigerator Transit Co., 510 refrigerators, to General American
- Tank Car Corp., Chicago. American Refrigerator Transit Co., 511 steel underframe refrigerator cars to American Car & Foundry Co., New York York.
- Cambria & Indiana, 300 fifty-ton coal cars, to American Car & Foundry Co., New York, for probable construction at
- Berwick, Pa. Buryick, Pa. Guayaquil & Quito, Ecuador, 50 narrow gage box cars of 22½ tons capacity each to the American Car & Foundry

Co., New York. Lehigh & New England. 250 ffty-ton hoppers, to Bethlehem Steel Co., Bethlehem, Pa., for probable construction at Johnstown, Pa.

Minneapolis, St. Paul & Sault Ste. Marie, 500 box cars, to Pullman-Standard Car

#### -The Market Week-

Mfg. Co., Chicago. St. Louis-Southwestern, 50 automobile cars, to General American Car Corn. Chicago.

Western Maryland, 25 caboose cars, parts furnished by car builders for assembly in the railroad company's own shops.

### Rail Orders Placed

Norfolk & Western, 20,000 tons, rails, 15,000 tons to Carnegie-Illinois Steel Corp., Pittsburgh, 5000 tons to Beth-lehem Steel Co., Bethlchem, Pa.

### **Kail Orders Pending**

Denver & Rio Grande Western is seek-

ing court permission to buy 25,409 tons. 11,809 for immediate delivery, 13,600 tons for delivery in 1937.

## Sheets

#### Sheet Prices, Page 72

Pittsburgh-Some tapering in demand for better grades of sheets appears but common grades are under pressure for deliveries. Drought conditions have not yet affected demand. Heat in sheet mills is having some



Shock load, bending stress, surface wear and metal fatigue.

The steel, as well as the gear, must be properly designed to meet all possible service hazards. Play safe by cutting all your important gears from B & L Cold Drawn Steel—which is developed to the proper chemical and physical standards for insuring long wear life and low maintenance in the gear mechanism of your equipment.

If you have some special problem involving the use of Cold Drawn Steel for gear applications or other uses, B & L engineers will be pleased to serve you.



**JTEEL** 

-effect on production. Mills have sufficient bookings to occupy them through July and into August. Consumers make no objection to the new price schedule.

Chicago—While sheet mills are engaged at capacity, some producers have been forced to turn down new business because of inability to give desired shipment. In some cases deliveries extend into August and the active rate of consumption indicates that mill operations will be well sustained for at least four to six weeks. Some new business is being received,

#### though the tonnage is relatively small, reflecting June coverage at old prices.

Cleveland — Demand for immediate consumption at advanced prices has proven better than anticipated. The increase in residential building construction has been a big factor in stimulating the sale of sheets for household utilities. Large orders have been noticeably lacking. Most tonnage has been well diversified. Heavy operating schedules are anticipated for July.

New York-Demand for steel



**G**REATER speed with more uniform quality—this has long been the demand of light gauge metal producers. And this year, for the first time, means of obtaining greater production and improved quality are within the reach of progressive sheet and strip manufacturers.

Newly designed equipment has shown the industry new standards of production, and Even Trim Refillable Spiral Wound brushes are an essential part of this new and modern machinery. Brushes for specific purposes, designed to accomplish specified results, have been developed in close association with the designers and builders of this new equipment. Economy in production as well as low initial cost make Even Trim Spiral Wound brushes the logical choice of modern designers, engineers and producers.

If you are not acquainted with the various types of Even Trim Spiral Wound brushes (wire, horsehair or tampico) and the many ways in which they are demonstrating their effectiveness and economy in light gauge metal production, we will gladly send a representative to explain their many practical uses and economies. Our representatives are technically trained and can discuss your specific questions in terms of experience along related lines. There is no obligation whatever. Write or telephone today.

STEEL

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sheets, while feeling a decline from last month, is active. Some leading mills are booked solidly on practically all grades until the midde of August, thus causing customers to do considerable shopping as many are in need. Three weeks appears the minimum on most grades of hot-rolled sheets and four to five weeks on coldfinished.

Philadelphia—Sufficient new business is coming out to test the new prices, which have been held firmly. Sellers remark particularly the urgency of demand, which may be accounted for by both continued good consumption and by disposition to get on schedules as early as possible, in the event of possible labor trouble later. Deliveries on hot-rolled sheets average about three weeks and on cold-finished three to five weeks.

Buffalo—Production of sheets is holding around 80 per cent of capacity while the output of material from Bethlehem's new continuous mill is increasing steadily. Demand is coming from all classes of consumers and so far has failed to show the usual sharp mid-summer slump.

Cincinnati — Backlogs of sheet mills are helping support rolling schedules near capacity, deliveries to be completed in two weeks on second quarter contracts. Considerable business is being taken at the \$2 a ton advance and may hold production above 60 per cent through this month. Despite some speculative buying on announcement of the increase, consumer stocks are not considered heavy.

St. Louis—Demand for steel sheets continues active and well diversified, both with reference to classes of material and customers. The advance in price has had little influence on buyers, this factor having been more than offset by a fairly general disposition to lay up at least moderate reserve stocks against possible labor troubles.

Wire

#### Wire Prices, Page 73

Cleveland—Market conditions on wire show little change, continuing at the high pace of the last few weeks. The expected slackening of agricultural and automobile demands has not materialized. Prices remain firm. Merchant wire has kept up with the steady pace set by manufacturing wire products.

Chicago—Sustained activity in demand for wire and wire products continues to surprise producers. Business lately has been equal to or in excess of the June rate, which in turn compared favorably with that of May. Consumption of manufacturers' wire is steady in most directions and this factor, rather than anticipation of labor trouble, is taken as the principal influence behind -current activity. While producers of merchant products are watching the drought situation in farm states, no serious recession in steel demand for this reason has been observed so far. Prices of wire and wire products are steady on new business.

## Pipe

### Pipe Prices, Page 73

Pittsburgh—Fair increase in demand for wrought pipe for building construction, flood reconstruction, etc., is noted. Jobbers appear to have taken renewed interest and are adding to stocks, apparently anticipating possible mill stoppages due to labor threats. Oil country goods continue in steady demand. Sun Oil Co., Philadelphia, has awarded 100 miles of 8-inch seamless pipe to Jones & Laughlin Steel Corp., involving 9000 tons, to be installed in the East.

Chicago—Cast pipe shipments lately have been slightly smaller, but a fairly good movement is in prospect for the next four to six weeks. New orders recently have been confined principally to small lots. A fair amount of additional business is scheduled to be placed in the near future, while WPA inquiries have been more active, following a lapse in such activity a short time ago.

New York—The largest public award of cast pipe in this territory last week involved 180 tons. The list of public projects pending here does not exceed 700 tons. Private buying is only fair. Prices are unchanged.

Whiteagle division of Socony-Vacuum Oil Co., New York, has awarded 178 miles of 6-inch gasoline line pipe to Williams Bros., Tulsa, Okla. This represents 8900 tons of pipe, which has been awarded to National Tube Co., Pittsburgh. Welding of the line by Lindeweld process will be started July 20. The line will run between Augusta, Kans., and Kansas City.

Philadelphia—Sun Oil Co., this city, has closed on a 100-mile line of seamless pipe to Jones & Laughlin Steel Corp., Pittsburgh.

San Francisco—Cast pipe awards were confined to lots of less than 100 tons. Demand has again fallen off and pending business does not exceed 2500 tons. An award is expected to be made within the next few days on 1130 tons for Oakland and 409 tons for Glendale, Calif. The Home Oil Refining Co., Great Falls, Mont.,

#### -The Market Week-

has completed plans for a 100-mile pipeline between Great Falls and the Pondera and Cut Bank oil fields at an estimated cost of \$675,000.

### Cast Pipe Placed

180 tons, 30-inch, procurement division, treasury department. New York, for Freeport, N. Y., to United States Pipe & Foundry Co. Burlington N. J.

### Steel Pipe Placed

8900 tons, 178 miles 6-inch. to National Tube Co., Pittsburgh; Williams Bros., Tulsa, Okla., general contractors. Cast Pipe Pending

125 tons, state hospital. Marcy, N. Y.: general contract to O'Connell Electric Co., Rochester, N. Y.

### Strip Steel

Strip Prices, Page 73

Pittsburgh—While automobile demand is somewhat less some partsmakers are taking material for stampings for new models. Production is well balanced between hot and cold-



STEEL

rolled strip. New prices appear satisfactory.

Chicago—Demand for cold-rolled strip is holding unusually well, and the recession in business which commonly occurs at this time generally has been absent. Producers attribute the steady rate of buying to sustained consumption among miscellaneous industries, as well as by larger consumers. New business in hot-rolled strip is less active as a result of coverage by consumers during June at old prices. Quotations are steady on both hot and cold-rolled material.

Cleveland-New business on hot-

rolled strip has declined considerably since the recent spurt in orders placed just before the price increase went into effect. In a few instances this condition is welcome, at least until the heavy backlogs can be cleared up. Demand from auto partsmakers for cold-rolled is better than anticipated. There now appears a fair possibility of many concerns not being able to prepare their dies for 1937 models as early as had been expected.

New York—Demand from manufacturers of electrical equipment continues a feature of the narrow strip



market, the volume exceeding trade expectations.

Philadelphia—Narrow strip tonnage has fallen off, following the substantial buying before the \$2 advance in hot strip at the end of last quarter. On such tonnage as is now being offered the \$2 increase appears to be holding.

### Tin Plate

Tin Plate Prices, Page 72

Pittsburgh—Tin mills are continuing their high operating rates because of canmaking companies' anticipation of large vegetable and fruit pack. Mills are operating at practically capacity, between 95 and 98 per cent.

New York—American Can Co. has received a contract from the Jacob Ruppert brewery, New York, to supply its beer can requirements. As a result of this contract, the American Can Co. is increasing its beer can production, currently estimated at above 15,000,000 weekly, against 10,000,000 in the spring.

### Bolts, Nuts and Rivets

Bolt, Nut Rivet Prices, Page 73

While new prices for bolts, nuts and rivets have yet to be tested thoroughly, fair contracting for third quarter has been done. Business is fairly steady, though showing little improvement over June volume.

Requirements of railroad shops and car builders are expected to be well sustained during the next 60 days, though farm implement manufacturers are curtailing schedules. Movement from jobbers' stocks is holding fairly well, though restricted somewhat by the season. Rivet consumption by structural fabricators continues to show a fair gain over a year ago.

### Quicksilver

New York—Quicksilver prices are barely steady in a quiet market, small lots of 15 to 25 virgin flasks ranging \$74 to \$74.50 a flask and round lots of 100 flasks quotably \$73.50. Light business in 25-flask lots has been done this week at \$74, and should demand increase materially, prices might well advance, it is pointed out. On the other hand, if dullness continues, easiness would not be surprising.

Jones & Laughlin Steel Corp., Pittsburgh, dispatched 12 barges loaded with steel products for Memphis, Tenn., and southern delivery on June 30 in charge of the towboat VESTA.

## Shapes

Structural Shape Prices, Page 72

York-Awards aggregated New about 3000 tons in the eastern district. At the same time action was hastened on numerous pending tonnages, indicating that much additional work will be placed with fabricators before the expiration of protections on the basis of the 1.90c base, Bethlehem, Pa., price on plain material, which was quoted up to the end of June with the understanding it would have to be placed under contract by the end of July to have the benefit of the old price. Current market on plain material continues at 2.00c base, Bethlehem. While a large amount of tonnage is under negotiation, the pending list was not materially increased.

United States engineers' office has opened bids on approximately 750 tons of piling for Manasquan, N. J. Approximately 500 tons of pipe piling for the west side roadway over New York Central railroad tracks in New York is to be placed shortly through P. T. Cox and the McArthur Contracting Co., both of this city.

Cleveland-Little or no new business at the advanced prices has been reported. Construction, grade crossings and bridge contracts have been scarce in the immediate vicinity of Cleveland. However, heavy tonnage placed at the old prices on identified jobs is expected to appear soon. One in particular is a hockey rink, involving approximately 1000 tons, which may be specified next week.

Chicago-Bridges, locks and dams continue to furnish most of the tonnage in both orders and inquiries. Awards still are light, considering the substantial tonnages involved in pending work, and an increase in bookings is in prospect for several weeks. Orders are being placed for the first of the various Mississippi river locks and dams, while tentative dates have been set in the fourth quarter for bids on additional units to be built under the supervision of

### Shape Awards Compared

Tons Week ended July 10..... 41,952 Week ended July 3 ..... 46,249 Week ended June 26 ...... 38.450 This week, 1935 ..... 18,913 Weekly average, 1985 ..... 17,081 Weekly average, 1936...... 22,274 Weekly average, June ...... 25,036 Total to date, 1935 ..... 427,086 Total to date, 1936..... 623,660

the Rock Island, Ill., office of the federal engineers.

Philadelphia-Placing of 5145 tons for the vocational school at Lehigh and Twenty-second street by McCloskey & Co., local general contractor, is outstanding. This business went to Bethlehem Steel Co., Bethlehem. Pa., which also booked 1800 tons for the Keebler Whyle Baking Co. Several other smaller awards are noted. Shapes are 2.00c, Bethlehem, Pa., or 2.115c, Philadelphia.

Birmingham, Ala .--- Schedules of operations at fabricating shops are unchanged, some overtime work still

being noted. New business is coming in consistently. Ingalls Iron Works Co. booked two or three grade elimination steel requirements in California, involving 1000 tons of steel. Steady delivery is noted and backlogs are changed to only a small degree.

San Francisco - The structural shape market was active last week and 8255 tons were booked, bringing the total for the year to 111,963 tons, compared with only 51,703 tons for the corresponding period in 1935. Judson-Pacific Co. secured the largest letting, 1500 tons for two



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hangars for Yerba Buena shoals, San Francisco.

Seattle -Although no orders in excess of 100 tons were reported placed last week, considerable new business has developed and pending tonnages have increased. Both Oregon and Washington have awarded contracts involving considerable quantities of shapes.

### Shape Contracts Placed

8800 tons, highway bridge, for state of Connecticut at Middletown, Conn., to Bethlehem Steel Co., Bethlehem, Pa.

5145 tons, vocational school, Lehigh and

Twenty-second, Philadelphia, awarded through McCloskey & Co., Philadel-phia, general contractor, to Bethlehem

- phia, general contractor, to Bethlehem Steel Co., Bethlehem, Pa.
  1800 tons, building, Keebler Whyle Bak-ing Co., Philadelphia, to Bethlehem Steel Co., Bethlehem, Pa.
  1500 tons, two hangars, Yerba Buena shoals, San Francisco, to Judson-Pacific Co., San Francisco.
- 1450 tons, bridges for Chicago, Milwau-kee, St. Paul & Pacific railroad; 950 tons to Bethlehem Steel Co., Bethlehem, Pa., 500 tons to American Bridge Co., Pittsburgh.
- 1300 tons, transmission towers, for TVA at Calhoun. Tenn., to American Bridge Co., Pittsburgh.

tons, highway bridge for Lake Champlain bridge commission, Rouse's



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Nichrome Castings are suitable for operation at temperatures up to 2000 °F. They resist oxidation-show marked resistance to corrosion and retain their strength at elevated temperatures. They do not absorb carbon when exposed to carburizing conditions nor nitrogen when exposed to nitriding.

Applications: Retorts, Carburizing containers, Annealing containers, Nitriding containers, Furnace parts such as trays, pushers, rails, hangers, bearings, Pyrometer protection tubes, Lead and salt pots, Dipping baskets, Enameling racks, Glass rolls, Conveyors, Parts for cement kilns, Burner tubes, Diesel engine valves, Oil burner parts, etc.

#### **DRIVER-HARRIS COMPANY** HARRISON, N. J.



Point, N. Y., to Bethlehem Steel Co., Bethlehem, Pa.

- 800 tons, Chesapeake & Ohio railroad, pier No 9, Newport News, Va., to American Bridge Co., Pittsburgh.
- 750 tons, plant addition and altera-tion, General Motors Truck Corp., Pontiac, Mich., to Jones & Laughlin Steel Corp., Pittsburgh.
- 730 tons, manufacturing building for E. 1. du Pont de Nemours & Co. Inc., Philadelphia, to Bethlehem Steel Co., Bethlehem, Pa.
- 725 tons, bridge, Woods county, Ok-lahoma, to J. B. Klein Iron Foundry Co., Oklahoma City, Okla.
- 715 tons, projects WPGM 118-B and 249 in New Mexico to Missouri Val-ley Bridge Co., Leavenworth, Kans.
- 707 tons, six crossings near Niles, Alameda county, California, to Ingalls. Iron Works Co., Birmingham, Ala.
- 675 tons, bridge, Republic county, Kansas, to St. Joseph Structural Steel Co., St. Joseph, Mo.
- 640 tons, bridge for New York, New Haven & Hartford railroad, Turner's Falls, Mass., to Phoenix Bridge Co., Phoenixville, Pa.
- 620 tons, Grand river avenue bridge, Detroit, to R. C. Mahon Co., Detroit.
- 600 tons, bridge for Boston & Maine railroad, White River Junction, Vt., to Phoenix Bridge Co., Phoenixville, Pa.
- 600 tons, addition to Soundview Pulp-Co. plant, Everett, Wash., to Isaac-son Iron Works, Seattle.
- 570 tons, bridge, St. Louis, to Missis-sippi Valley Structural Steel Co., Decatur, 111.
- 530 tons, medical building for Syracuse university, Syracuse, N. Y., to Beth-lehem Steel Co., Bethlehem, Pa.
- 500 tons, bridge, Lake Forest, 111., to American Bridge Co., Pittsburgh.
- 500 tons, grade crossing elimination over New York Central tracks, Syracuse, N. Y., to American Bridge Co., Pittsburgh.
- 465 tons, viaduct over Chicago, Mil-waukee & St. Paul railroad, Mo-ravia, Iowa, to American Bridge Co., Pittsburgh.
- 445 tons, manufacturing extension, Aluminum Co. of America, Massena, N. Y., to Lackawanna Steel Con-struction Corp., Buffalo.
- 440 tons, packing plant, Wilson & Co. Inc., Albert Lea, Minn. to Iowa Steel & Iron Works, Cedar Rapids, Iowa; previously reported to Joseph T. Ryerson & Son Inc., Chicago.
- 435 tons, bridge, Vernon and Newton counties, Texas, to Virginia Bridge Co., Roanoke, Va.
- 350 tons, lock No. 24, Clarksville, Mo., to American Bridge Co., Pittsburgh; Central Engineering Co., Davenport,
- Iowa, general contractor. 350 tons, building for American Brass Co., Ansonia, Conn., to American 350 tons, building
  Co., Ansonia, Conn., to Amer.
  Bridge Co., Pittsburgh.
  350 tons, overpass, Crawford county.
  350 tons, overpass, Crawford county.
  Arkansas Foundry
- 350 tons, overplan, Arkansas, Founary Arkansas, to Arkansas, Founary Co., Little Rock, Ark.
  325 tons, bridge, Baxter county, Ar-kansas, to Vincennes Bridge Co.,
- 325 tons, Erie railroad bridge, Little Ferry, N. J., to American Bridge Co., Pittsburgh.
- 310 tons, wall armor for TVA, Gunters-ville, Ala., to American Bridge Co., Pittsburgh.
- 5 tons, manufacturing building. Westinghouse Electric & Mfg. Co., Homewood, Pa., to American 275 Homewood, Pa., to Bridge Co., Pittsburgh. American
- 0 tons, plant extension, Fisher Body Corp., Pontiac, Mich., to Jones. & Laughlin Steel Corp., Pittsburgh. 270

- 270 tons, factory building for Mine Safety
- 270 tons, factory building for Mine Safety Appliance Co., Pittsburgh, to Ameri-can Bridge Co., Pittsburgh.
  270 tons, bridge for Atchison, Topeka & Santa Fe railroad, Colorado, to Ameri-can Bridge Co., Pittsburgh.
  265 tons, bridge, Lauderdale, Miss., to Vincennes Bridge Co., Vincennes,

- Vincennes Bridge Co., Vincennes, Ind.
  250 tons, crane runway for C. F. Braun Co., Alhambra, Calif., to Pa-clife Iron & Steel Co., Los Angeles.
  245 tons, three buildings, Titanium Pigment Co., Sayreville, N. J., to Savary & Glaeser, Dunnellen, N. J.
  240 tons, four-story building for Protec-tive Home Circle at Sharon, O., to Fort Pitt Bridge Works, Pittsburgh.
  240 tons, highway bridge for state of Colorado, at LaSalle, Colo., to Ameri-can Bridge Co., Pittsburgh.
  230 tons, high school, Manitowoc, Wis., to Mississippi Valley Struc-tural Steel Co., Decatur, Ill.
  225 tons, state highway grade cross-ing climination, Goodmans, N. J., to American Bridge Co., Pittsburgh.
  216 tons, building, West Penn Power Co., Springdale, Pa., to Fort Pitt Bridge Works, Pittsburgh.
  215 tons, manufacturing extension, American Forging & Socket Co., Pontiac, Mich., to Taylor & Gaskin Co., Detroit.
  210 tons, auditorium, San Bernando
- Co., Detroit.
  210 tons, auditorium, San Bernando Valley high school, San Bernardino county, California, to Western Iron & Metal Co., Los Angeles.
  200 tons, highway bridge for state of Michiran, at Ishpeming, Mich., to Fort Pitt Bridge Works, Pittsburgh.
  200 tons, state highway bridge, Stark county, Ohlo to Berger Iron Works, Canton, O.
  200 tons, bridge, Gary, Ind. to Ameri

- Canton, O.
  200 tons, bridge, Gary, Ind., to American Bridge Co., Pittsburgh.
  200 tons, highway bridge for state of Illinois, at Gary, Ill., to American Bridge Co., Pittsburgh.
  195 tons, junior high school. New burgh, N. Y., to Belmont Iron Works, Eddystone, Pa.
  195 tons, 18 towers in Maryland for United States department of agriculture, to International Derrick & Equipment Co. division of Interna-
- Equipment Co. division of Interna-Equipment Co. division of Interna-tional-Stacey Corp., Columbus, O. 195 tons, United States court house. Orange, Tex., to Orange Car & Steel Co., Orange.
- 190 tons. Norfolk & Western railroad bridge, Grundy, Va., to Virginia Bridge Co., Roanoke, Va. Virginia
- Ault Paper Co., York, Pa., to William Christenson, York, Pa.
- 170 tons, overpass, Caddo Parish, La., to Mosher Steel & Machinery Co., Dallas, Tex.
- 165 tons, bridge, Clay county, Mis-souri, to Builders Steel Co., North Kansas City, Mo.
- 165 tons, underpass, Portland, Oreg., to Northwestern Equipment Co., Chicago.
- 160 tons, bridge, Clay county Mis-souri, to Missouri Bridge & Iron Co., Leavenworth, Kan.
- 150 tons, four bridges, project 2-B. New Mexico, to Midwest Steel & Iron Works Co., Denver.
- 145 tons, bridge, Platte county, Mis-souri, to St. Joseph Structural Steel Co., St. Joseph, Mo.
- 140 tons, garage extension, New York, to American Bridge Co., Pittsburgh, through procurement division, Treasury department, New York.
- 140 tons, bridge, Gary, Ind., to Duffin Iron Co., Chicago.

130 tons, railroad bridge, for Chicago, Burlington & Quincy railroad, Ottum-wa, Iowa, to American Bridge Co., Pittsburgh.

- 130 tons, highway bridge for New York state, at Greenwich, Conn., to Ameri-can Bridge Co., Pittsburgh.
- 5 tons, veterans' administration building, Canandaigua, N. Y., to Bethlehem Contracting Co., Bethle-125 hem, Pa.
- 125 tons, bridge, Nox county, Ne-braska, to Paxton & Vierling Iron Works Co., Omaha, Nebr.
  120 tons, 139-foot digging ladder, Dredge, Calif., to Moore Dry Dock Co., San Francisco.
- 120 tons. warehouse, Joliet, Ill., to Mississippi Valley Structural Steel Co., Decatur, Ill.
- 120 tons, boiler supports, Combustion Engineering Co., New York, to American Bridge Co., Pittsburgh.
   115 tons, bridge, Lebanon county,

Pennsylvania, to Reading Steeb Products Inc., Reading, Pa. 105 tons, state highway bridge, Erie county, Pennsylvania, to Erie Con-crete & Steel Supply Co., Erie, Pa.

### Shape Contracts Pending

- 3900 tons, including 2300 tons of piling-river dam, Lynxville, Wis.; United Construction Co., Winona, Minn. low on general contract.
- 2000 tons, distillery racks for the Ameri-can Distilling Co., Pekin, Ill. 1000 tons, lock and dam on Illinois river,

Beardstown, Ill. 1000 tons, Brooklyn state hospital, Brooklyn, N. Y.; bids postponed to July 14.

900 tons, penitentiary units at Jefferson



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City, Mo.; Boyle-Pryor Construction Co., Kansas City, Mo., low on all proj-ects; Kellermann Construction Co., St. Louis, and S. Patti Construction Co., Kansas City, low by combining bids.
850 tons, power plant for Appalachian Electric Power Co., Logan, W. Va.
625 tons, state bridges, North Dakota.
625 tons, bridge, Glendale, Calif.

- 625 tons, bridge, Glendale, Calif.

625 tons, bridge, Glendale, Calif.
625 tons, bridge, Los Angeles.
625 tons, bridge, Culver City, Calif.
620 tons, two railroad bridges for Chi-cago & Northwestern railroad at Wis-cona, Wis. 600 tons, Arkansas state highway proj-

ects.

- 600 tons, highway bridge for state of Virginia, at Clifton Forge, Va.
- 600 tons, river lock, Peoria, Ill.; Independent Bridge Co., Pittsburgh, low for

general contract.

- 2 tons, state bridge, Nisqually river, Washington; bids at Olympia, Wash. 522 July 21.
- July 21.
  450 tons, state highway bridge, Oleans county, New York; bids July 14.
  365 tons, including reinforcing and liner plates, Black canyon, Boise project, Idaho; bids to bureau of reclamation, Ontario. Oreg., July 27.
  300 tons, bridge No. 219, Rusk county, Wisconsin; L. G. Arnold, Inc., Eau Claire, Wis., general contractor.
  300 tons, warehouse on pier No. 7 for Canton Co. of Baltimore. at Baltimore.
- Canton Co. of Baltimore, at Baltimore. 300 tons, stadium for St. Vincent's col-
- lege, Latrobe, Pa. 296 tons, piling, specification 684, bureau

STEEL

of reclamation, Denver, for All-American canal system, California; of



bids July 23.

- 80 tons, state bridge, Pasco, Wash.; MacRea Bros., Seattle, general con-280 tractors.
- 217 tons, Washington boulevard bridge Los Angeles, for United States engi-neer office; Bethlehem Steel Co.,
- heer office; Betnienem Steel Co., Bethlehem, Pa., low. 212 tons, Adams boulevard bridge, Los Angeles, for United States engineer office; Bethlehem Steel Co., Bethlehem, Pa., low.
- 200 tons, hydro plant for Kanawha Val-
- 200 tons, hydro plant for Kanawha Valley Power Co., at Winfield, W. Va.
  197 tons, Concord street bridge, Los Angeles, for United States engineer office; Bethlehem Steel Co., Bethlehem, Pa., low.
  175 tons, warehouse, Heck Co., Baltimore; Consolidated Engineering Co., Baltimore, awarded general contract.
- Baltimore, awarded general contract. 160 tons, store for Lerner Stores Corp., Washington.
- 154 tons, Kenilworth avenue bridge, Los Angeles, for United States engineer office; Consolidated Steel Corp. Los Angeles, low.
- 140 tons, state bridge, Lynnfield, Mass.
- 7 tons, state orage, Lynnneid, Mass. 7 tons, crossing, Converse county, Wyoming; bids opened. 8 tons, state crossing, Centralia, Wash.; H. F. Steffensen, Seattle, gen-113 eral contractor.
- 108 tons, state bridge, Peabody, Mass Unstated, Ross Island bridge, Portland, Oreg.; Parker-Schram Co., Portland, low
- Unstated, Milwaukee avenue under-crossing, Portland, Oreg.; Hoffman Construction Co., Portland, low,
- Unstated tonnage, Mississippi river dams, No. 14, Le Claire, Iowa, No. 13, Clin-ton, Iowa, Nov. 17, New Boston, Ill. Bids to United States engineers, Rock Island, Ill., October and November.

## Reinforcing

#### **Reinforcing Bar Prices**, Page 73

New York-While a number of large awards featured the market. firmer tone brought about by the open price method of quoting which was adopted June 23 by certain leading mills received a bad jolt. On some public work the 2.05c base, Pittsburgh, price was shaded as much as \$7 to \$8 a ton.

Pittsburgh - The largest single pending job involves 250 tons for the Panama canal, for which bids will be opened at its Washington office, July 21. A large aggregate tonnage of many small lots of bars for private work, such as flood repairs in New

### Concrete Awards Compared

	Tons
Week ended July 10	6.107
Week ended July 3	22.414
Week ended July 26	.1.9.15
This week, 1935	0.185
Weekly average, 1935	0,400
Weekly average 1020	0,802
Weekly avorage Tune	0,400
Total to data 100"	3,303
Total to date 1989	128,298
rotar to date, 1936	180,900

England, is about to be placed, with considerable work also destined for repairing Pittsburgh flood damage.

Cleveland-Mills are operating at capacity in an effort to meet deliveries sought by consumers. Considerable tonnage is looked for soon. Little demand for rail steel is being felt in this district. By far the greater portion of orders placed is for new billet steel, to be used in structural jobs. Backlogs remain heavy even without the assistance of a price advance.

Chicago - Shipments continue heavy and although producers are reducing backlogs, substantial business in prospect points to a heavy movement through this quarter. Several large tonnages on which bids have been taken are due to be placed soon. Awards include 500 tons for a malting plant here and 225 tons for Cook county street paving.

Philadelphia — Except for 1200 tons of rail steel for a vocational school here, orders have been confined to numerous small tonnages. Pending inquiry includes three federal housing projects on which new bids will be asked late this month. The largest of these is the local Hill Creek project, involving 900 tons of bars. The other two projects are at Wayne, Pa., and Camden, N. J. The Camden requirements have not been fully figured but it is believed they will bring a fair tonnage. Foundations for these projects are in. Prices on billet steel reinforcing bars are holding only moderately at the new levels.

Birmingham, Ala. -- Numerous small tonnages are being received by producers and fabricators here. A sizable tonnage is moving and this condition is expected to be unchanged for two months or longer.

San Francisco-Awards, involving over thirteen projects of 100 tons or more, aggregated 2623 tons and brought the total for the year to 138.435 tons, compared with 69,552. tons for the corresponding period in 1935. Truscon Steel Co. booked the largest letting, 432 tons for six crossings near Niles, Alameda county, California. Interest is centered around the opening of bids on July 30 for 13.319 feet of 9-foot, 8-inch precast reinforced concrete pipe for the metropolitan water district, Los Angeles, requiring 3570 tons. Alternate bids are being taken on welded steel pipe for a portion of the line.

Seattle-Mill prices are unchanged for third quarter. New business is developing and tonnages pending are larger than for several weeks.

### Reinforcing Steel Awards

1200 tons, rail steel, vocational school, Lehigh and Twenty-second, Philadel-phia, awarded through McCloskey &

Philadelphia, to Sweet Steel Co., Co. Williamsport, Pa. 1000 tons, west side elevated highway

- extension, Eighty-second to Ninety-fourth streets, New York, to Jones & Laughlin Steel Service Inc., Long Laughlin Steel Service Inc., Long Island City, N. Y., through Poirier & McLane Corp., New York.
- York, to Truscon Steel Co., Youngs-town, O., through Cauldwell-Wingate Co., New York.
- 500 tons, plant, Fleischmann Malting Co., Chicago, to Joseph T. Ryerson & Son Inc., Chicago.
- 500 tons, Erie railroad grade crossing elimination, Port Jervis, N. Y., to Capi-tal Steel Co., Brooklyn, N. Y., through C. B. Moon, Cleveland.
- 432 tons, six crossing near Niles, Ala-meda county, California, to Truscon Steel Co., San Francisco.
  250 tons, reservoir, 3,000,000-gallons, Fontana, Calif., to unnamed interest.
  250 tons, projection building, Century-Fox Film Corp., Los Angeles, to un-named interest.
- named interest.

225 tons, street paving, Cook county, Il-linois, to Calumet Steel Co., Chicago. 200 tons, office building, 1641 North Ivar street, Los Angeles, to unnamed interast

- interest.
- 150 tons, addition to Mountain View Fruit association plant, Upland, Calif., to unnamed interest.
- 150 tons, building for San Fernando Heights Lemon Co., Van Nuys, Calif., to unnamed interest.

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JTEEL

- 150 tons, church, 550 Shatto place, Los Angeles, to unnamed interest.
- 125 tons, Montana state highway building, Helena, Mon Steel Co., Seattle. Mont., to Bethlehem
- 100 tons, building, 1705 Twentieth street, Bakersfield, Calif., to unnamed interest.
- 100 tons, addition to bank. Third and East streets, Bakersfield, Calif., to unnamed interest.
- 100 tons, addition to Lindbergh junior high school, Los Angeles, to unnamed interest.
- 100 tons, Y. M. C. A., Fresno, Calif., to unnamed interest.
- 100 tons, to Capital Steel Co., Brooklyn, N. Y., through procurement division, treasury department, New York.

### Reinforcing Steel Pending

- 1365 tons, warehouse for the Heck Co., Baltimore; Consolidated Engi-neering Co., Baltimore, general contractor; approximately 175 tons of shapes also will be required.
- 1170 to 3570 tons, precast reinforced concrete pipe, specification 154 met-ropolitan water district, Los Angeles: bids July 30.
- 1016 tons, place, wash overchutes, All-American canal system, California; bids opened.
- 1000 tons municipal sewer develop-ment, Buffalo; Henry Horst Co., Philadelphia, low on general contract.

900 tons, superstructure, Hill Creek



#### Voice of the Arctic

WITH people dropping right and left like flies from heat prostration, with asphalt pavements taking on the consistency of mud, with thermometers hitting the top and then flying to pieces, about the only relief comes in the form of the White Metal News Letter for July, clipsheet distributed by the International Nickel Co. Inc. (sponsors of that "most fundamental of all alloying elements"—carbon; ex-cuse it, we mean nickel).

Anyway, this little bulletin tells at length how nickel steels are the answer when it comes to metals for service when it comes to metals for service at sub-zero temperatures. And in an adjoining column are given details on how to keep chromium plating on auto-mobiles bright and shiny when it has been spattered with chemicals used to keep streets clear from SNOW and ICE.

All we would like to know now is what form of nickel to use as an aid to curing frostbite.

INQUISITIVE CAMERA DEPT .--- IX



W L. "BILL" HAMMERQUIST. W L. "BILL" HAMMERQUIST, re-cent newcomer to STEL's staff, now directing the Surface Treatment and Finishing section. Bill has done almost everything from testing finishes in a large eastern laboratory to run-ning CCC camps in the northwoods of Minnesta his home territory. Minnesota, his home territory.

#### . . .

#### Look Out Below!

**P** UBLICITY people for the Port of New York Authority are pretty proud of the police force which patrols the George Washington bridge over the Hudson river. It seems that during the 4½ years of the bridge's existence. these John Laws have prevented 33 suicides and 8 stunt jumps. No in-

formation is given on how many they did not prevent, but there must have been several. Somebody's always itching to leap off the railing and make the 250-foot drop to the river, either as a stunt or to end it all.

Never having been inclined toward bridge-jumping-off, we believe they bridge-jumping-off, we believe they ought to let 'em jump. Maybe if the jumpers knew no one would try to stop them, they would change their minds and go away and have a beer or some-thing. thing.

#### . . .

#### Long Live the King

**F** ROM a British friend comes a re-quest for copies of the series of articles on Selection. Application and Use of Finishes for Metals, which ap-peared in STEEL from March 16 to July 22. Becurrent for March 16 to July 22. Requests for reprints of this series are pouring in, but the unusual thing about the above missive was that both letter and envelope were conspicuously bordered in black ink.

bordered in black ink. Humming to ourselves that old re-frain, "The Letter Edged in Black," it took us at least 47 seconds to awake to the fact that loyal British subjects are still in mourning for their late king. Right there is a striking con-trast between the British and the Ameddicans. If it had been a Presi-dent of the United States instead of the King of England who had passed on, we would be receiving little paper-cov-ered booklets titled, "What I Know About the Private Life of the Late President," etc.

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#### Sheets for Lizzies

N EWS dispatches report that last week Bethlehem Steel shipped 1800 tons of sheets to Russia, the steel to be fubricated into auto bodies for 1929-model Fords, for which the U.S.S.R. is reported to have the manufacturing rights. Date of the model suggests that manufacture is under the "seven wear" plan. The sheets are shipped in 1-ton bundles, metal wrapped and rein-forced all around with heavy angle irons. No pink ribbons.

If you have any old manufacturing rights reposing in the office safe, why not dig them out and sell them to the Soviet. No use letting the dust col-lect on them around here.

-SHRDLU

federal housing development, Philadelphia; new bids asked; two other

housing projects at Wayne, Pa., and Camden, N. J., also are up for fig-ures near the end of the month, 650 tons, warehouse, Stewart com-pany, Baltimore; bids recently opened.

30 tons, bridge over Ohio river at Cairo III.; 430 tons for substructure. Missouri Valley Bridge & Iron Co. Leavenworth, Kans., low bidder; 200 tons for upper structure, Central En-630 gineering Co., Davenport, Iowa, low bidder.

510 tons, procurement division, treas-

- ury department, New York; bids July 20.
  350 tons, New Jersey state highway. route 23, section 10; bids July 27.
  250 tons, grade crossing elimination, Secure Mass
- 250 tons, grade crossing eminiation, Sagus, Mass.
  250 tons, for Panama canal; bids open July 21 at Washington.
  245 tons, Cowen Park bridge, Seattle; A. W. Quist, Seattle, general con-tractor.
- 228 tons, state bridge, Pasco, Wash.: MacRae Bros., Seattle, general contractor.
- 155 tons, grade crossing project at Reading, Pa.; Whittaker & Diehl Co., Harrisburg, Pa., low on bids to state highway department, Harrisburg, July 3.
- 136 tons, Squalicium creek bridge, Bel-lingham, Wash.; bids at Olympia, Wash., July 21.
- 125 tons, reservoir, Arlington, Mass.
- 124 tons, Nisqually river bridge, Pierce county, Washington; bids July 21,

## Pig Iron

### Pig Iron Prices, Page 74

Pittsburgh-Pig iron demand continues quiet, the market lacking outstanding contracts from the standpoint of size. Shipments are steady, and prices are firm.

Cleveland-Auto foundries' consumption of pig iron is holding well above normal for this time of year. Farm equipment demands are mild except for that required by tractor manufacturers. Most tonnage ordered is for immediate consumption, there being no price increase to stimulate buying for stock. In view of extensive railroad car buying last month, requirements of foundries making railroad castings are heavy and are expected to continue so through July.

Chicago-Pig iron shipments show a slight decrease from the June rate. but compare favorably with the movement during the corresponding period of the past several years. Sellers have fairly substantial backlogs which assure relatively heavy deliveries this quarter. A moderate recession has developed in implement and tractor requirements, though activity of these groups still is good for this period. New business is quiet, with \$19.50, furnace, for No. 2 foundry and malleable steady.

New York-While volume has declined somewhat, furnaces at Buffalo