### STEEL

PRODUCTION . PROCESSING . DISTRIBUTION . USE

For forty-eight years-IRON TRADE REVIEW

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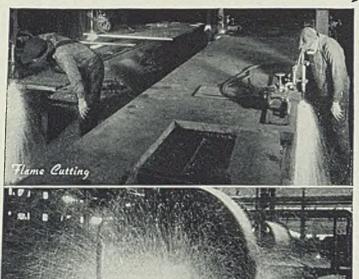
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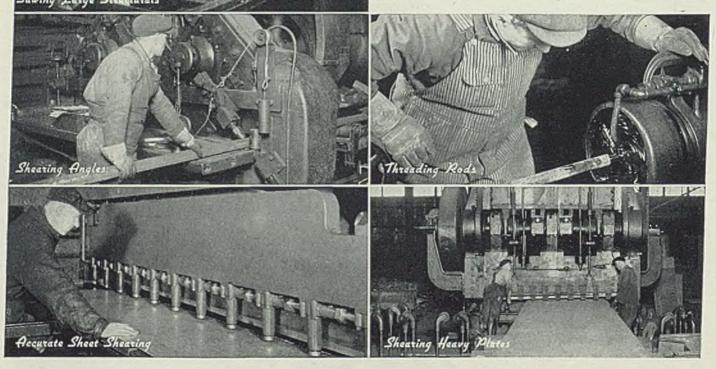
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### As the Editor Views the News

E MAY be unduly optimistic, but we believe the reaction to successive Supreme Court decisions indicates a trend toward restored confidence in the efficacy of the system of checks and balances in our democratic form of government. When the Court outlawed NRA, administration spokesmen referred derisively to the "horse and buggy days" and threatened to change the constitution. When AAA was declared invalid they squawked vociferously, but talked less positively of amendments. Last week, when the Court ruled against the Guffey act, new dealers were respectful in their comments and within 48 hours had produced a bill conforming to the Court's ideas.

This last act on the part of congress and the administration is not only good sense, but it is tacit recognition of the fact that the framers

Labor Fears Kick Back

of the constitution were wise when they set up a system of government in which the administrative, legislative and judicial branches were em-

powered to check one another. Even William Green, whose A. F. of L. was the principal loser (p. 39) in the decision on the Guffey act, was prompt to declare that organized labor "does not want to establish the autocratic power of congress to fix wages, establish hours, and nullify the right of collective bargaining."

We interpret this to mean that Mr. Green does not want organized labor to force congress to work so zealously in its behalf on

Door Open for

wages and hours that it invokes the displeasure of the Supreme Court to the extent Marketing Act of killing off the collective bargaining clauses in new

deal legislation. While this is a frank statement of organized labor's selfish interest, it likewise is an admission that labor does not willingly share the administration's past propensity for enacting legislation that is patently unconstitutional. In this respect the union leaders show more intelligence than the legal brain trust of the new dealers. The real significance of the Guffey case decision (p. 22) is that labor's pet acts were dealt a stunning blow, while the door was left open for marketing control acts which are unencumbered by wage, hour and collective bargaining clauses.

That a marked difference exists between the demands for flat-rolled steel in the United States and in Great Britain is clearly indicated

Thumbs Down on Wide Strip

by the attitude of British steelmakers on the subject of large strip-sheet capacity. Discussion at the annual meeting of the British Iron and Steel

institute (p. 58) showed that our cousins overseas have no intention of following the American policy of installing continuous, wide strip mills. British authorities point out that the demand there is for strip not over 20 inches wide. This would seem to indicate that the need for wide material in the United States for automobile, refrigerator and other uses represents a market that is distinctly American, having no counterpart in other industrial nations.

Announcement of higher prices on certain finished steel products for third quarter (p. 87) will not occasion surprise among manufactur-

Higher Costs, Higher Prices ers who have been watching the rise of production costs in recent months. The tax on payrolls imposed by the social security program, the heavier

corporation taxes which are almost certain to be enacted in the pending federal tax bill, the upward tendency in wages and the adoption of the policy of granting vacations with pay constitute an increased burden against which no appreciable offsets can be found except through increased efficiency. A large part of this added cost of production is directly or indirectly traceable to the financial, political and social policies pursued by the federal administration.

E. P. Phanes

# Guffey Decision Blocks "Little NRA" for Steel

steel industry through any sort of "little NRA" appeared more remote than ever last week when the Supreme Court declared the Guffey coal act unconstitutional, clearing away some of the uncertainties which had hovered over steelmakers for months.

It was this law — which the President urged congressmen to pass even though they had "reasonable doubts" as to its constitutionality — on which the administration pinned its hopes for extending federal control over other industries.

The decision, denouncing compulsory features of the bituminous coal control measure and holding that its labor provisions were not a matter for federal regulation, also foreshadowed the demise of the Wagner labor law.

"Working conditions are obviously local conditions," said the majority opinion, after asserting that "the effect of the labor provisions of the act, including those in respect of minimum wages, wage agreements, collective bargaining and the labor board and its powers, primarily falls upon production and not upon commerce; and confirms the further resulting conclusion that production is a purely local activity."

#### Price Fixing Interwoven

The court held that price-fixing provisions of the measure were so tied up with wages, hours of labor and working conditions that "the fall of the former carries down with it the latter."

For steel and blast furnace companies the Guffey law held numerous other problems, including those related to so-called captive mines and those having to do with the effect on customers.

In at least one recent instance, bidders on a contract for welded-plate pipe faced the provision that they agree to buy no bituminous coal for the manufacture of the order except from a member of the bituminous coal code.

The coal mines of iron and steel producers were to have been taxed a flat 1½ per cent because their product did not flow into the open

market. The rated capacity of captive coal mines of the largest steel companies amounts to about 77,000,000 net tons, or 11 per cent of the total rated capacity of all bituminous mines in the nation.

The adverse decision, following on the NRA and AAA invalidations, left the national administration few alternates.

A substitute bill, providing for government price fixing of coal in interstate commerce and eliminating the unconstitutional labor provisions, was introduced in both the senate and house. Whether action on it at this session of congress might be completed was uncertain. Under its terms the national bituminous coal commission would consist of seven members instead of five.

Coal producers were faced with the alternative of falling back upon such voluntary plans as Appalachian Coals Inc., or returning to status quo. Labor problems for them were not considered likely to arise for another year because present contracts do not expire until next April.

A possible future trend toward increased mechanization of mines, due to intensified competition, was predicted in some quarters. The output

#### Sixth Major Defeat of New Deal Legislation

THE Guffey act was the sixth measure important to business outlawed by the United States Supreme Court in less than two years.

Previous decisions included: NRA, ruled out by a 9-0 vote; AAA, 6-3; Frazier-Lemke mortgage act, 9 to 0; railway retirement, 5 to 4, and the hot oil legislation, 8 to 1.

Through its decisions the Supreme Court has held that these economic controls proposed by the administration are not built on constitutional grounds.

Two decisions upheld the administration. The gold clause was declared constitutional by a 5 to 4 vote, and TVA by 8 to 1.

The court has agreed to review PWA's right to finance with loans or grants the construction of private power plants, and this is scheduled for next autumn.

of cutting machines, mechanical loaders and other mine machinery has been steady recently in response to fair demand.

If producers decided to cut their costs through this method their purchases would, of course, benefit steel-makers supplying machinery manufacturers.

Attorney General Homer S. Cummings found hope in the fact that the court declined to declare the price-fixing part of the act unconstitutional.

The constitutionality of the Guffey act had been questioned by industrial leaders almost from the day of its origin. Its enactment, however, was credited with helping avert a threatened strike of 500,000 miners.

#### Provisions of the Act

Under the act, a national bituminous coal commission was created, binding every bituminous producer in the nation. It set up an excise tax of 15 per cent on the sale of coal at the mine, but provided for a return of 90 per cent to companies complying with the code.

Twenty-three district coal boards were provided and empowered to establish minimum prices "so as to yield a return per net ton . . . equal as nearly as may be possible to the weighted average of total costs," which were to include labor.

Simultaneously with the decision on the Guffey act, the court of appeals of the District of Columbia ruled that the \$4,800,000,000 work relief act of 1935 was unconstitutional. The court held that the act went beyond federal powers and delegated too much authority to the president. The case appeared headed for the Supreme Court.

Numerous suits are pending against the Wagner act, which provides for encouraging "the practice and procedure of collective bargaining and protecting the exercise of workers of full freedom of association, self-organization and designation of representatives of their own choosing, for the purpose of negotiating the terms and conditions of their employment or other mutual aid or protection."

#### Asks Data on Tin Plate Scrap For Munitions Control Board

Secretary of State Hull has sent a letter to all American producers of tin plate scrap requesting information for his department by June 1 concerning production and sales. The statistical data is wanted, he said, for use of the national munitions control board

Thirteen questions are propounded. "If your company produces tin

plate scrap," said the secretary in his letter, "it would be appreciated if you could find it possible to forward the information outlined so that it will reach the department not later than June 1. The response to this request should be signed and sworn to by a responsible officer of your company.

"If you are not a producer of tin plate scrap but do purchase such scrap from producers, it would be greatly appreciated if you would transmit this request to the producers from whom you make your purchases, in order that they may furnish the desired information. All information furnished in response to this request will be treated as confidential."

### Emergency Rates On Ore Attacked

RAL arguments were started last week in the action of the Lake Superior Iron Ore association against upper lake railroads, involving emergency freight rates, before the interstate commerce commission in Washington.

Last week, also, independent iron and steel companies with blast furnaces on Lake Michigan and Lake Erie filed a separate complaint against the railroads, alleging discrimination. These include Bethlehem Steel Co., Inland Steel Co., Interlake Iron Corp., Otis Steel Co., Pittsburgh Steel Corp., and Youngstown Sheet & Tube Co.

Emergency rates amounting to 10 cents a net ton, or 11.2 cents a gross ton, went into effect Jan. 1, 1935, and resulted in an additional freight cost of \$3,000,000 last year, when the total movement of iron ore from the upper lake ports amounted to 28,500,000 tons. The emergency rates on ore were part of many which were applied to raw materials, finished steel, and other products.

The individual companies stated that by reason of the charges on ore and coal the cost of material for one ton of steel to them was advanced 65 to 75 cents a ton.

No emergency freight rates were applied to ore from lower lake ports to interior furnaces, and the complainants represented that the cost of manufacturing steel in the Pittsburgh-Wheeling district was advanced only 10 cents a ton. Pittsburgh-Wheeling district plants receive coal by river barges and do not have to pay the maximum charges on either ore or coal.

In the event that the commission refuses to remove the emergency rates in the iron ore producing districts, then lake front consumers want them split up between the northern hauls and those from lower lake ports to inland furnaces.

## Tin Plate Makers Deny Collusion

Last week received answers from 15 tin plate manufacturers to its complaint issued in March, (Steel, March 23, page 25), charging that they had entered into an agreement under which they refused to sell "stock plate" to jobbers of tin plate and small manufacturers of tin cans and other metal containers. The commission alleged they arbitrarily and unduly enhanced prices which jobbers and manufacturers must pay for a higher grade of plate sold by the same companies.

In general, the answers include a denial of any unlawful practices. Typical is that of the American Sheet & Tin Plate Co. which "denies that on or about Oct. 15, 1934, it entered into an understanding, agreement, combination or conspiracy with other respondents to restrict, restrain, suppress and eliminate competition in the sale and distribution of stock plate as alleged in the complaint."

It also denies that "it has been since Jan. 1, 1935, and now is producing stock plate in substantial quantities. It denies that any stock plate is now accumulated by respondent in the course of its manufacture or production of plate and denies that any stock plate is now or has been since Jan. 1, 1935, cut

by respondent into such shape that it cannot be used by jobbers of tin plate or small can manufacturers or other manufacturers of metal containers, and denies that what was formerly stock plate is now being classified as waste-waste."

It states the federal trade commission has no jurisdiction in respect to acts alleged in the amended complaint issued March 26, 1936, and that said amended complaint fails to state facts sufficient to constitute a violation of section 5 of the act of Congress approved Sept. 26, 1934, commonly knows as the federal trade commission act."

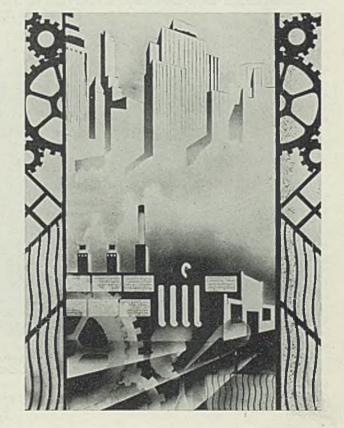
Canton Tin Plate Corp., Canton, O., says that "in putting into effect the improved and corrected factory practices, and in discontinuing the classification of tin plate as 'stock plate' it has only exercised its lawful right to correct, improve and change its practices and methods of manufacturing and marketing of its tin plate products in order to effect wise economies and avoid losses."

#### GERMANY CONSERVES TIN

Germany is increasing efforts to reduce dependence on foreign sources for tin, according to a report from the American consulate-general to the department of commerce. Efforts include consumption of tin by substituting other metals and by recovery through detinning operations on tin plate scrap and used containers.

#### Prize Mural in Enamel on Ingot Iron

THIS colorful mural by J. Harrison Hessler, of Nappanee, Ind., sprayed and stenciled on ingot iron, recently won first prize in competition sponsored by a group promoting general acceptance of the art. Titled "Comes the Porcelain Age," it symbolizes in blues, yellows and reds the production of porcelain enamel ware in a huge plant. The ingot iron was manufactured by the American Rolling Mill Co., Middletown, O. Nine firings in the continuous furnace were required to fuse the various colors



### May Eliminate Basing Point Section from Patman Bill

N AGREEMENT has been signed by 15 members of the house committee on the judiciary that if a special rule is obtained for consideration of the Patman price discrimination bill, the basing point section of the bill will be eliminated.

This was done, it is said, because it was a foregone conclusion that there would be so much objection to the basing point section that the bill probably would not pass the house. There is every indication at this time that the house will grant a special rule for the bill so that it can be taken up in the week of May 25.

The basing point provision in the Patman bill was taken bodily from the Utterback bill, companion measure to the Wheeler anti-basing point bill in the senate,

#### Bloc Seeks Action

Almost identical with the Patman bill, with the important exception that it did not carry the basing point provisions, was the Robinson price discrimination bill which passed the senate.

Definition of price in the bill was "the amount received by the vendor after deducting actual freight or cost

of other transportation, if any, allowed or deducted by the vendor." This was considered a flank attack on the basing point system.

Members of the house had made determined efforts to attain action on this anti-chain store bill, but it was considered extremely unlikely that the Patman bill could pass the senate with its basing point provisions.

#### Five Weeks of Hearings

Wheeler, in his bill, planned to amend antitrust laws to make it "unlawful to make any charge for freight other than actual costs of delivery." The bill further provided that "no contract can be made in which the price shall be computed on any freight charge other than that actually paid," and that "a delivered price may not be quoted without specifying what portion is represented by actual freight and without giving the buyer the option of accepting delivery f.o.b. the producing plant."

Hearings were held over a fiveweeks' period. Many of the nation's most prominent steel leaders appeared and testified that abolition of the present system would be damaging.

The basing point system was greatly broadened when the NRA steel

code went into effect in August, 1933. A few months later the consumers' advisory board of the NRA proposed the elimination of basing points and the adoption of the universal milk system. In March, 1934, the federal trade commission reported to the senate that the steel code, while increasing the number of basing points, still permitted monopolistic practices.

### Steel Men Address Purchasing Agents

A number of purchasing agents associated with steel production and fabrication were scheduled to speak at the twenty-first convention of the National Association of Purchasing Agents this week in New Orleans.

Sessions started Monday, May 25, after a pre-convention rally Sunday, with Fred J. Lucas, Toronto, Ont., national president, presiding. Speakers Monday included Frederick J. Heaslip, purchasing agent of Fairbanks, Morse & Co., Chicago.

Other speakers on the four-day program include Donald G. Clark, comptroller, Brown & Sharpe Mfg. Co., Providence, R. I.; Harry T. Bussman, vice president and sales manager, Bussman Mfg. Co., St. Louis; Albion Bindley, purchasing agent, Pittsburgh Steel Co., Pittsburgh; Julian G. Davies, treasurer, N. Slater Co., Ltd., Hamilton, Ont., and H. C. Green, purchasing agent, Gulf States Steel Corp., Birmingham, Ala.

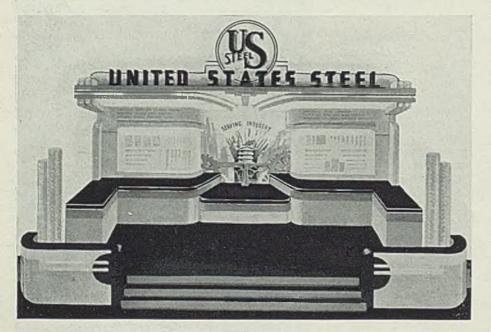
The iron and steel committee was scheduled to meet Tuesday afternoon. Many products were on display at an "inform-a-show" in connection with the convention. The national association has a membership of 4500 purchasing agents from industrial, utility, institutional and governmental organizations.

#### Tells Reasons Why Steel Is Best Building Material

Fourteen reasons why steel is better than other materials for building purposes, formulated by the American Institute of Steel Construction, New York, (Steel, Oct. 7, 1935, page 24), have been given expression in a booklet just issued by the institute, with appropriate illustrations. The text amplifies the reasons and presents the argument for steel.

Briefly, the reasons for steel's leadership are as follows: Strength, security, speed in erection, compactness, proof against fire, endurance, elasticity, adaptability, uniformity, economy, salvage value, responsibility, foolproofness, resistance to weather and climate.

#### Illuminated Belt Displays Products to Purchasing Agents



An illuminated revolving belt on which are displayed products typical of the ten subsidiary companies of the United States Steel Corp. features the exhibits at the National Association of Purchasing Agents' convention, New Orleans, May 25-28. Stainless steel in various forms is one of the predominating features

### Consolidation Date Set for June 1

EXECUTIVES of the United States Steel Corp. last week made a routine inspection trip of plants in the Chicago and Pittsburgh districts.

Following a visit to the new continuous strip mill of the Carnegie-Illinois Steel Corp. at McDonald, Pa., Myron C. Taylor, chairman of the board, on Thursday declared that prices have not kept pace with production costs. "We are glad to give our workers paid vacations but it increases costs," he said. He also stated that the burden of social security on the corporation's payrolls

### Congress May Not Adjourn Before Convention Time

FIRST INTIMATION that congress will be unable to get away by June 6 came Friday when President Roosevelt announced at his press conference that if congress does not adjourn on that day three-day recesses will be taken during the time the Republican convention is in session in Cleveland. In the past when such recesses have been in progress the leaders of both parties have entered into a gentlemen's agreement that no important legislation be transacted.

is a large item and that other taxes have contributed to higher costs. Mr. Taylor intimated that higher prices for third quarter shipments are likely

Following the visit of the party to plants in the Chicago district, the statement was made that the actual merger of American Sheet & Tin Plate Co. with Carnegie-Illinois Steel Corp. will be accomplished officially on June 1. While the party was in Pittsburgh Benjamin F. Fairless, president of the Carnegie-Illinois corporation, stated that plans for the consolidation will be announced in the middle of the week of May 25.

In Pittsburgh the inspection party included, in addition to Mr. Taylor, W. A. Irvin, president of the United States Steel Corp.; C. W. Bennett, president, American Sheet & Tin Plate Co. and several directors of the corporation.

#### Announce Nonaging Steel

Full commercial production of Armco "stabilized steel" in cold rolled sheets and strip has been announced by the American Rolling Mill Co., Middletown, O. This steel is offered as a uniform, deep-drawing and nonaging cold rolled steel with all stretcher strain permanently eliminated in the tempered condition. The steel is processed to retain indefinitely all of the properties of temperrolled steel, making prefabrication treatments unnecessary, regardless of the length of time the metal has been in stock.

### Lewis Urges Haste in Unionizing Steel Industry

John L. Lewis on Friday notified the officials of the Amalgamated Association of Iron, Steel and Tin Workers that his group, which is committed to the industrial union method of organization, now is prepared to go ahead with the \$500,000 contribution for a drive to unionize the steel industry in accordance with the resolution passed at the Amalgamated association convention in Canonsburg. Mr. Lewis advised the association that its resolution appears to him to be in accord with his suggestion to organize the steel industry and he appealed for quick action on the part of the Amalgamated board in launching the campaign. He attacked the American Federation of Labor on the ground that it is making little progress in connection with its proposed drive.

The head of the United Mine Workers also called attention to the necessity of full industrial jurisdiction for the Amalgamated association if its proposed campaign is to succeed.

#### Extends Follansbee Deadline

Filing of reorganization plans for Follansbee Bros. Co. has been extended to Aug. 15, according to a court ruling by Federal Judge R. M. Gibson at Pittsburgh. To date the only reorganization plan submitted is that of the unsecured creditors' protective committee, filed in August, 1935. Meanwhile, court set the Aug. 15 date on a petition of the company's present management, which made known it would have suggestions to offer soon.

#### STEEL SETS CANAL RECORD

Largest shipment of steel for manufacturing purposes to pass through the Hennepin canal in Illinois recently was delivered to the Rock Island. Ill., dock of the International Harvester Co. The movement, 243 tons of steel, was shipped from Chicago. Ordinarily such movements are made via the Ilinois waterways and Mississippi river, but the canal route slices 475 miles from the longer travel.

#### Labor

MALGAMATED Association of A Iron, Steel and Tin Workers' seven-man executive committee met at Pittsburgh, May 18, for the purpose of considering detail problems arising from the sixty-first annual convention, which had closed at Canonsburg, Pa., May 13. The amalgamated's committee agreed to transmit formal notice of the plans adopted at its convention, approving a plan of unionization in the steel industry, to all international unions affiliated with the American Federation of Labor. Copies of the resolution only were distributed, but no official interpretation accompanied. The resolution calls for a campaign on industrial lines, taking in all steelworkers, regardless of craft, and requests waivers of any claims to rights in the steel industry by engineers', electricians', machinists' unions. It is on this latter point that other unions have indicated they will not agree to waiver.

#### THREE WEEK STRIKE SETTLED

Labor difficulties which had kept employes of the Universal Steel Co., Bridgeville, Pa., out of work for three weeks have been settled and full operations were resumed Monday, May 18.

In the agreement which resulted in the settlement, the company reiterated its position that it would deal with any representatives of any of its employes at any time. It did not sign a contract. It refused to consider a closed shop agreement and it refused to adopt the check-off system. The settlement provides for an 8-hour day and a 48-hour week with time and a half pay for time over the 48-hour per week limit. The time and a half feature does not apply to tonnage workers.

The company granted a wage advance of 6 cents per hour to all wage and tonnage men. This represents an increase ranging from 5 to 13 per cent.

#### INSURANCE LEADS COMPANY PROTECTION FOR EMPLOYES

To determine the extent of company plans for the economic security of employes, the National Industrial Conference board, New York, has surveyed 2452 companies in representative lines. It found group life insurance policies protect 61 per cent of the 4,500,000 employes in these companies, loans for emergencies are available to 58 per cent, mutual benefit associations for benefits to those incapacitated are maintained for 54 per cent, formal pension plans cover 44 per cent, and dismissal compensation, group health and accident insurance and relief funds protect about one third of all employes. A guaranty of employment was reported by 39 companies.

#### G. E. PENSIONS TO 3290 TOTAL \$2,589,053 in 1935

Pension payments to retired employes of the General Electric Co. for 1935 totaled \$2,589,053, according to the annual report of the company's pension board. Total number of individuals receiving pensions Dec. 31 was 3290, one less than for 1934.

Average pension age for the year was 67.6, and the average continuous service was 29.5 years. The average amount of the annual pension was \$771. Since establishment of the pension plan in 1912 a total of \$15,-630,719 has been disbursed to retired employes.

#### MORE PAID VACATIONS

More steel companies have drawn up plans for paid vacations for their employes, following the first announcements, Stem, May 18, page 16. Effective July 1 the Weirton Steel Co., with plants in Weirton and Clarksburg, W. Va., and Steubenville, O., will give its tonnage, hourly and piece work workers the option of taking time off with pay or collecting the vacation pay while still working.

#### ADVERTISE FOR WORKERS

Due to a scarcity of skilled workers in various trades, the Illinois state employment service for the first time since the beginning of the depression has found it necessary to purchase want-ad space in Chicago newspapers. Principal shortages are among machinists, tool and die makers, lathe operators, molders, automobile repair men and body and fender repair men. Skilled welders, as during the past several months, continue in light supply. A seasonal shortage also has developed among painters and decorators, roofers and furniture upholsterers and finishers.

#### COST OF LIVING RISES

Cost of living of wage earners in April advanced 0.2 per cent, according to the National Industrial Conference board, New York. Living costs in April were 1.3 per cent higher than a year ago, and the purchasing value of the dollar was 118.6 cents in April, compared with 118.9 cents in March, and 120.2 cents in April, 1935, on the basis of 1923 equaling 100.

#### EMPLOYMENT INCREASES

Metalworking employment increased during April for the tenth consecutive month to the highest level since October, 1930, according to the National Metal Trades association, Chicago. Last month's index was 82.7 compared with 81.4 in March and 70.7 in April, 1935. This compares with 46.1 in April, 1933,

the low point of the depression. Further gains were shown during April at automotive centers.

### Activities of Steel Users and Makers

FFECTIVE May 15, the Fried. Krupp Works of Essen, Germany, discontinued importation of Widia cutting tool material into the United States, resulting in the discontinuation of sales of this material in this country by Thomas Prosser & Son, New York, distributors for the Krupp Works. Thomas Prosser & Son will continue their other business, as well as their activities as representatives of the Krupp Works, merely discontinuing their efforts with respect to Widia cemented carbide tools.

In order that Prosser's cemented carbide customers may continue to be served, Prosser has made arrangements with Carboloy Co. Inc., Detroit, manufacturer of carboloy cemented carbide tools, and dies, whereby Carboloy has taken over the carbide tool business of the former, including the inventory of Widia metal and the greater part of the Prosser sales organization handling the Widia line.

Timken Roller Bearing Co., Canton, O., has booked an order from the Norfolk & Western Railroad Co. for bearings and boxes for all axles, including driving axles, of five class 2-8-8-2 articulated steam locomotives, which it is building at its Roanoke, Va., shops.

Cameron & Barkley Co., Miami and Jacksonville, Fla., has been appointed by Republic Steel Corp., Cleveland, to distribute a complete line of its tubular products, including lap, butt and electrical weld steel and copper bearing pipe and Toncan copper molybdenum electric weld pipe.

Taylor-Winfield Corp., Warren, O., manufacturer of electric welders, has bought the equipment of the Advance Weld Fabricators Inc., Detroit, and has leased its plant facilities from the Ford Motor Co. It will be operated as the fabricating division of the Taylor-Winfield Corp. Additions and improvements have been made, including complete machine shop facilities, particularly on heavy work. Stock of bars, angles, flats and rounds and of plates 100 x 240 inches, from 3/16 to 8 inches, is carried. In addition to fabricating requirements of the Warren, O., and Detroit plants a general fabricating business is conducted with special emphasis on redesigning cast iron and steel structures to rolled plate construction. This places the company in the position of having under direct control complete construction of welding machinery from raw materials to finished product.

Allis-Chalmers Mfg. Co., Milwaukee, has booked an order from the Commonwealth Edison Co., Chicago, for a 30,000-kilowatt steam turbine costing about \$750,000, as part of a \$3,000,000 development at its Fisk street generating plant. The turbine will require a year's time to build and will be the largest since Allis-Chalmers manufactured an 80,000-kilowatt unit for the Port Washington, Wis., plant of the Milwaukee Electric Railway & Light Co. several years ago.

#### Steel Co. of Canada Marks Twenty-Fifth Anniversary

The Steel Co. of Canada Ltd., Hamilton, Ont., and Montreal, Que., has issued a brochure commemorating its twenty-fifth anniversary.

The company was organized in June, 1910, upon the consolidation of the Hamilton Steel & Iron Co., the Montreal Rolling Mill Co., the Canada Screw Co. Ltd., the Dominion Wire Mfg. Co. Ltd., and the Canada Bolt & Nut Co. Ltd., each having to its credit many years of industrial existence and development.

At present the total annual capacity of the Steel company's ten works, scattered throughout Canada, is 397,300 tons of coke, 340,000 tons of pig iron, 550,000 tons of ingots, and 441,800 tons of finished hot rolled products.

Officers of the company are, Chairman, C. S. Wilcox; president, Ross H. McMaster; vice president and treasurer, H. H. Champ; vice president, H. T. Diplock; secretary, H. S. Alexander; comptroller, S. E. Le Brocq; general sales manager, George Spence; purchasing agents, B. C. Ball and W. G. Henderson.

#### Starts New Strip Mill

Bethlehem Steel Co., Bethlehem, Pa., has placed in operation its new continuous cold-strip mill for the manufacture of tin and black plate at its Maryland plant, Sparrows Point, Md.

The product of this new mill will be known as Bethcolite. It meets the rapidly developing need of consuming industries for cold-rolled tin and black plate possessing excellent deep-drawing qualities, close gage tolerance and exceptionally smooth surface.

The mill, which supplements Bethlehem's existing facilities for the manufacture of tin and black plate, has an annual capacity of 96,000 tons.

### Makes First Scrap Revision in 8 Years

K EEPING step with progress in the steel industry and accepting the inevitable in the form of scrap containing alloy steel, the scrap industry has amended its classification for the first time since its adoption in 1928.

When simplified practice recommendation R58-28 was adopted and put in effect Jan. 1, 1928, by agreement of the industry and the bureau of standards, the alloy steel era was well started and provision was made to exclude alloy scrap from more than a dozen classifications. It was feared presence of small quantities of alloying elements would be detrimental to steel made from mixed scrap, but in the decade during which this provision has been in effect it has been invoked with decreasing frequency.

One reason is that scrap from alloy steel usually is segregated by the producer or dealer and sold at a higher price because of its alloy content.

Accordingly, the bureau of standards has obtained sufficient acceptances from producers, dealers and users to make the change suggested by the standing committee of the industry, for effect June 15, 1936. It provides for elimination of the provision, "alloy steel scrap may be excluded from these specifications by mutual agreement between buyer and seller."

A more important revision, in some respects, is insertion in the specification for No. 2 heavy melting steel, a provision excluding brass, copper, lead, zinc, tin and terne plate. Necessity for this exclusion has come about from the use of much automotive scrap in this grade and with it goes copper bushings and other nonferrous parts difficult to separate without too great cost.

#### 27,000,000 Tons of Steel In Use on Manhattan Island

Approximately 27,000,000 tons of steel are in service today in the buildings and transportation facilities of the Borough of Manhattan, New York City, according to a recent estimate by the American Iron and Steel institute.

Steel enables more than 1,650,000 people to live on an island only 22 square miles in area, and steel has largely built the facilities for the transportation and employment of many millions more.

About 348,000 tons of steel are in use in the bridges over the three rivers surrounding Manhattan Island. Subway and elevated lines are built of 675,000 tons, which includes the steel in elevated structures and subway tubes, rails and rolling stock.

Pipe lines for carrying the water, steam and gas consumed in Manhattan require 214,000 tons of steel and iron. Railroads entering the island use an estimated 1,200,000 tons for tracks, terminal facilities and terminal rolling stock.

An estimated 1,360,000 tons of steel are in the passenger automobiles, trucks and busses on Manhattan

The docks and buildings on Manhattan are built of 23,000,000 tons, said the institute's estimate.

#### Canada's Steel Imports from United States Hold Steady

Steel and steel products imported into Canada during March had a total value of \$11,695,000, a slight increase over the March, 1935, total of \$11,626,000. Imports from the United States, with a value of \$10,-234,000, compared with \$10,242,000 for March, 1935. The principal item, automobile parts, had a value of \$2,407,000, and machinery totaled \$2,225,000.

Other imports from the United States included farm implements, \$1,105,000; engines and boilers, \$849,000; plates and sheets, \$615,-000; automobiles, \$614,000; rolling mill products (miscellaneous), \$394,-000; castings and forgings, \$174,-000; hardware and cutlery, \$134,-000; stamped and coated products, \$112,000; tubes and pipes, \$111,000; tools, \$107,000. Exports for the month showed little change from last year, amounting to \$5,966,000, compared with \$5,955,000. The value of exports to the United States rose from \$267,000 to \$471,000.

#### Westinghouse Will Share Profits With Employes

Westinghouse Electric & Mfg. Co.. East Pittsburgh, Pa., has instituted a profit-sharing plan among its employes, which will affect approximately 50,000 men and women.

Although the percentage of the increase in employes' pay was not disclosed, the company stated that whenever annual profits of the company exceeded \$7,200,000 employes will be given an increase in wages. Normal base salaries and wages will continue unchanged.

In 1935 profits of Westinghouse Electric & Mfg. Co. were \$11,983,-381.

#### Meetings

B. F. FAIRLESS, president, Carnegie-Illinois Steel Corp.; Walter S. Tower, executive secretary, American Iron and Steel institute; and Charles M. White, vice president, Republic Steel Corp., will address members of the American Steel Warehouse Association Inc., at their twenty-seventh annual convention, June 10, 11, and 12, Edgewater Beach hotel, Chicago.

Speakers from the warehouse industry include Lester Brion, president, Peter A. Frasse & Co. Inc., New York. As president of the association Mr. Brion will discuss the broad aspects of association service to its membership and will suggest a basic program for future activities.

E. L. Parker, president, Edgar T. Ward's Sons Co., Pittsburgh, will outline the advantages of co-operation between the steel warehouse group and other groups representing important supply sources. The work done by the association during the past year will be reviewed by Walter S. Doxsey, executive secretary.

#### RATIFY FOUNDRYMEN OFFICERS

At a meeting of the northeastern Ohio chapter of the American Foundrymen's association in Cleveland May 21, members confirmed the choice of the nominating committee for officers, including the selection of Frank G. Steinebach, managing editor of The Foundry, as chairman, Fred G. Walls, International Nickel Co., New York, told the group that with improved technique developed in recent years, the cupola would play an increasingly important part as a melting medium for gray iron.

#### World Markets Must Be Regained, Says Farrell

Restoration of foreign markets is a necessary factor in complete economic recovery of this country, in the opinion of James A. Farrell, former president of the United States Steel Corp. and chairman of the National Foreign Trade council, speaking at the World Trade luncheon at the Hotel Astor, New York. In re-establishing our foreign trade on a firm basis, said Mr. Farrell, numerous factors must be considered. Uncertainty created by "our present chaotic condition in many parts of the world" is the chief handicap to business, he said.

#### INDIA NEEDS MACHINERY

Rapid industrialization of India is increasing its importance as a potential outlet for American machinery, states a report to the department of commerce.

### Men of Industry

G. CARRUTHERS has been appointed assistant general manager of western sales of Bethlehem Steel Co., and will assist W. B. Topping, general manager of western sales, in the supervision of the Cleveland, Detroit, Buffalo, Chicago, Pittsburgh, Cincinnati, St. Louis and Houston, Tex., districts.

John C. Chandler will be assigned to special duties. R. W. Kempsmith has been appointed manager of sales, Cleveland district, and F. M. Huffman, manager of sales, St. Louis district

Mr. Carruthers, formerly vice president and general sales manager for the Otis Steel Co., Cleveland, went with Bethlehem last fall as special representative, with headquarters in the general office.

Mr. Chandler joined the Bethlehem organization with the absorption by Bethlehem of the Lackawanna Steel Co., Buffalo, in 1922, and was in charge of Bethlehem's Cleveland office for many years.

Mr. Kempsmith, before going into the Cleveland sales offices in 1920, was with the Pittsburgh and New York sales offices of the company. Mr. Huffman previously had been in the Chicago district sales offices of Bethlehem.

These changes are effective June 1.

Stanley Mann, comptroller of the American Chain Co., Bridgeport, Conn., has been elected a director of the company, succeeding J. A. Bower.

Harry S. Peck has joined the sales staff of the Baker Industrial Truck Co., with offices at 407 South Dearborn street, Chicago.

William J. Sullivan, formerly secretary to the president of United States Steel Corp., New York, has be-



F. M. Huffman

come identified with Harvester Metal Inc., Empire State building, New York.

Homer Butts, assistant to the president of Sharon Steel Corp., Sharon, Pa., has been named president of Niles Rolling Mill Co., Niles, O., an affiliate of the Sharon Steel Corp.

A. H. Schaffert, formerly works manager, has been named chief mechanical engineer of Truscon Steel Co., Youngstown, O., subsidiary of the Republic Steel Corp., Cleveland. Mr. Schaffert is succeeded by William M. Kelley, formerly general master mechanic for Republic in the Youngs-



J. G. Carruthers

town district. Paul Arens will continue as Truscon general superintendent. R. R. Rees, cashier for Truscon for 20 years, has been named assistant treasurer.

Ezra Frick, president, Frick Co. Inc., Waynesboro, Pa., was elected an honorary member by the Refrigerating Machinery association at its spring meeting in Hot Springs, Va., May 14-16.

Mr. Frick was a charter member of the American Society of Refrigerating Engineers and served as that society's president. He is also a former chairman of the Refrigerating Machinery association.

A. G. Storie has been elected president of Fittings Ltd., Oshawa, Ont., succeeding his father, the late James D. Storie. He is a past director of the American Foundrymen's association.

Fred T. Storie has been elected vice president of Fittings Ltd.; E. J. Storie, secretary and treasurer; W. G. Bowden, director and sales

manager; and Douglas Storie, superintendent of the malleable and gray iron foundries.

Mayer Godchaux, 510 Audubon building, New Orleans, has been appointed representative for southern Louisiana by the American District Steam Co., North Tonawanda, N. Y., manufacturer of ADSCO products for steam distribution.

George O. O'Hara has joined the sales department of the Detroit Electric Furnace Co., Detroit. Since 1930 he has been with the electrode division of Republic Carbon Co. and its successor, the National Carbon Co. Before that he was with Oil Well Supply Co., and Standard Steel Works Co., in the electric steel and open-hearth departments.

Joseph Becker, president, Koppers Construction Co., Pittsburgh, was awarded the Walton Clark medal by Franklin institute, Philadelphia, on May 20 for his achievements in the gas industry, particularly in the adaptions of the use of producer gas and blast furnace gas in the heating of Becker by-product coke ovens.

Henry Vogt, president, Henry Vogt Machine Co., Louisville, Ky., was elected an honorary member of the Refrigerating Machinery association at its spring meeting in Hot Springs, Va., May 15. Active in the affairs of the association for more than 40 years, Mr. Vogt and the company he founded have made valuable contributions to the progress of the refrigerating machinery industry.

J. F. G. Miller, B. F. Sturtevant Co., Boston, was elected president of the Air Conditioning Manufacturers' association at its annual meeting in Hot Springs, Va., May 16. J. A. Harlan, Kelvinator Corp., Detroit, was named vice president, and P. A. McKittrick, Parks-Cramer Co., Fitchburg, Mass., treasurer.

Directors elected for the year 1936-1937 are: Chairman, S. E.



R. W. Kempsmith

Lauer, York Ice Machinery Corp., York. Pa.; W. F. Armstrong, Delco-Frigidaire Conditioning Corp., Dayton, O.; P. Y. Danley, Westinghouse Electric & Mfg. Co., Mansfield, O.; J. J. Donovan, General Electric Co., Bloomfield, N. J.; William H. Price Jr., Carrier Engineering Corp., Newark, N. J., and Messrs. Miller, Harlan and McKittrick.

F. J. Koegler, formerly vice president and treasurer, was elected president of the Doehler Die Casting Co., Toledo, O., at a meeting of directors in New York, May 19. H. H. Doehler, formerly president, was appointed chairman of the board, and will make his headquarters in New York. L. H. Pillion was named executive vice president; R. Bernhard, treasurer, and F. Knoebel, secretary. + . .

Frank Piatt has been elected president for the 1936-1937 term of the American Refractories institute, Pittsburgh.

A. P. Green, president, A. P. Green Fire Brick Co., Mexico, Mo., has been named vice president, and A. P. Taylor, president, Charles Taylor Sons Co., Cincinnati, has also been named a vice president of the institute.

C. C. Edmunds, president, McLain Fire Brick Co., Pittsburgh, has been named treasurer of the institute, and Dorothy A. Textor, secretary.

William W. Knight Jr. has been appointed sales engineer in the Pittsburgh district for the Morgan Construction Co., Worcester, Mass. He will be located at 1602 Koppers building, Pittsburgh.

After studying mechanical engineering at Cornell university, followed by a course in business administration at Northwestern university, Mr. Knight became plant engineer for the Roth Rubber Co., Cicero, Ill., in 1928. In 1929 he entered the engineering department of the Timken Roller Bearing Co., Canton, O., and two years later was made sales engineer for the New England district, with headquarters in Boston. He held this position until March, 1936.

H. H. Wood will remain in charge of the Morgan company's Pittsburgh offices, which will soon be moved to 2028 Koppers building.

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Wallace Zwiener has been elected president of the Hupp Motor Car Corp., Detroit, as the first step by the board of directors in re-opening the corporation's \$8,000,000 manufacturing plant. Mr. Zwiener served as treasurer of the firm for some time, and will continue in that capacity while also serving as chief executive.

Edgar C. Bain, assistant to the vice-



Edgar C. Bain

president in charge of metallurgy and research, United States Steel Corp., New York, has been nominated for national president of the American Society for Metals, to succeed Robert S. Archer, metallurgist, Chicago district, Republic Steel Corp.

George B. Waterhouse, professor of metallurgy, Massachusetts Institute of Technology, Cambridge, Mass., is the nominee for the office of vice president. William H. Eisenman, 7016 Euclid avenue, Cleveland, was nominated to succeed himself as secretary for two years.

Nominees for the office of trustee for two years are Ralph L. Wilson, metallurgical engineer, Timken Steel Tube Co., Canton, O., and O. W. Ellis, director of metallurgical research. Ontario Research Foundation, Toronto, Ont.

Nomination to these offices virtually



George H. Halpin

New president, American Supply and Machinery Manufacturers' association, Pittsburgh, as noted in Steel May 18. Mr. Halpin is general manager of the Minnesota Mining & Mfg. Co., St. Paul. assures election at the National Metal congress in Cleveland, Oct. 19-23. . . .

Floyd L. Greene was made executive vice president of the General Refractories Co., Philadelphia, at the recent organization meeting of the (Concluded on Page 36)

#### Died:

S A. INGERSOLL, 78, former president of the Ingersoll Steel Disc Co., Chicago, in Galesburg, Ill., May 15. The company which he started at Sandoval, Ill., in 1884, was moved to Galesburg in 1904 and sold to Borg-Warner Corp. in 1928, after which the plant was moved to Chi-

Raymond Harvey Wulf, 45, treasurer, American Pipe Bending Co., New Haven, Conn., in New Haven, May 14. He was a graduate of the Worcester Polytechnic institute, Worcester, Mass.

Arthur T. Morey, 60, for many years general manager of the Commonwealth Steel Corp., St. Louis, in that city, May 15.

George H. S. Boyne, former official of the Copperweld Steel Co., New York, in Belton, Tex., May 15.

. . T. G. Searle, 52, general sales manager of Continental Can Co., New York, in Bronxville, N. Y., May 18. Mr. Searle also was vice president of the Canning Machine Supplies association, Chicago.

Clement U. Lamboley, 49, vice president and superintendent, Brass Foundry Co., Peoria, Ill., in Sturgis, Mich., recently. Mr. Lamboley was taken ill while returning from the Detroit convention of the American Foundrymen's association. He was associated with the Brass company for 32 years.

#### World Production Lower

World industrial production declined moderately during March, according to the monthly report of the National Industrial Conference board, New York. Output in the United Kingdoni and Australia showed a gain and France showed somewhat better production in spite of disturbing political and financial conditions. In the United States, Germany, Netherlands and Scandinavian countries production remained at about the same level. Some recessions in activity were shown in Canada, Japan, Belgium, Italy, Spain and most of the Central and South American countries.

#### Production

STEELMAKING dipped 2 points last week to 66½ per cent, reflecting lighter finishing mill schedules in the Pittsburgh, Chicago, eastern Pennsylvania, Cleveland, New England, Detroit and Colorado districts. Buffalo was the only district to report a gain last week, reaching a new 5-year peak of 78 per cent, while other districts were stationary. Further details follow:

Chicago—Declined ½-point to 70½ per cent, only slightly below the year's peak. Some mills are attempting to operate all of their open hearths, but this has been possible for only limited periods. Ingot production is expected to hold up after finishing mill schedules start to recede, in order to build up depleted stocks of semifinished material. Blast furnace operations are steady, 24 of 41 stacks being active.

Pittsburgh—Off 2 points to 61 per cent last week, due to the slight operating curtailment of the leading interest, which closed the week at 60 per cent. The leading independent is operating at 62 per cent and rates of smaller producers are close to the district's average. A continued moderate decline in specifications may force the rate below 60 per cent before June 1, but according to mill backlogs, declines will be orderly and gradual.

Operations of finishing mills continue to be led by tin plate at slightly better than 95 per cent, with sheets at 65 per cent, strip, 55 per cent, wire products, 60 per cent and pipe mills at 50-55 per cent.

Thirty-five blast furnace stacks continue active. Carnegie-Illinois is operating 16 out of 32; Jones & Laughlin, 8 of 11; Bethlehem, 5 of 7 at Johnstown, Pa.; National Tube, 3 out of 4 at McKeesport, Pa., and 1 of 2 each for American Steel & Wire, Pittsburgh Crucible, and Pittsburgh Steel.

Detroit—Off 6 points to 88 per cent last week. In the two district plants, 15 out of 17 open-hearth furnaces were producing.

Wheeling—Unchanged at 89 per cent, with 33 out of 37 open-hearth furnaces active.

Central eastern seaboard—Off 1½ points to 43 per cent, with an easing up in output at three mills. With finished steel buying slightly less active, indications point to a further drop in steelmaking as the quarter advances.

New England—Down 2 points to 75 per cent, with indications that the rate will go back to 77 per cent this week.

Birmingham—Steady at 69 per cent last week, with 15 open hearths

#### Steelmaking Operations

Percentage of Open-Hearth Ingot Capacity Engaged in Leading Districts

V	Veek		San	1e
e	nded		wee	ek
M	ay 23	Change	1935	1934
Pittsburgh	61	- 2	38	51
Chicago	701/2	- 1/2	44	62
Eastern Pa	43	- 11/2	29 1/2	45
Youngstown	76	None	50	61
Wheeling	89	None	68	7.4
Cleveland	7.1	- 11/2	54	78
Buffalo	78	+ 3	37	50
Birmingham	69	None	541/2	55
New England	75	- 2	60	84
Detroit	88	- 6	94 1	100
Cincinnati	80	None	†	Ť
Colorado	63	12	Ť	Ť
	-		-	-
Average	661/2	- 2	44	57

†Not reported.

melting. Tennessee Coal, Iron & Railroad Co. has been operating four open hearths at its Ensley works on Sundays the past month, providing soft steel for wire mills.

Youngstown—Unchanged at 76 per cent last week, losses late in the week offsetting a gain at the start. Operations are expected to hold at this rate at this week's opening. Indications point to a drop of four or five points in the next seven days.

Buffalo—Up 3 points last week to 78 per cent. Twenty-nine open hearths are now producing steel, by rail. Minor slackening of the demand for automotive steel has been offset by improved buying in other lines.

Cincinnati—Held at 80 per cent last week, 19 of the 24 open hearths being in production. Backlogs for light rolled material will prevent an abrupt drop, but seasonal curtailments in demand may soon be reflected in output.

Colorado—Off 12 points to 63 per cent last week, as Colorado Fuel & Iron Co. took off two furnaces to operate ten.

Cleveland—Dropped 1½ points last week to 74 per cent. Corrigan, McKinney works of Republic Steel Corp. took off one open hearth, leaving nine active, while Otis Steel is unchanged at eight, and Lorain works of the National Tube also unchanged at 12.

#### SHEET OUTPUT GAINS IN APRIL

Daily average of sheet sales in April was below that of March, but production and shipments were larger, according to the National Association of Flat Rolled Steel Manufacturers, Pittsburgh. Sales averaged 6342 net tons, compared with 8123 tons in March; production 7266 tons, March, 6704 tons; shipments 8415 tons, March 6763 tons. Totals for

April: Sales, 190,269 tons; production, 217,975 tons; shipments, 252,441 tons. Total sheet capacity for the United States in April was approximately 500,000 tons and capacity on which the association's figures are based was 304,000 tons.

#### Merger Meetings Delayed

The special stockholders' meetings of both Allegheny Steel Co. and West Leechburg Steel Co., May 20, which were called for the purpose of approving the merger of the two concerns, were immediately adjourned that day until late in July.

Due to certain provisions of the 1933 Pennsylvania law, inasmuch as the merger as contemplated will involve a technical increase in the capital stock of Allegheny Steel Co., such an increase requires 60 days' notice to the stockholders of each company. Previously counsel had believed that ten days' notice would be sufficient.

Both companies claim to have substantially more than 90 per cent of stock pledged agreeably to the merger. It is expected that the plan will be consummated as heretofore arranged, but for effect Aug. 1 rather than June 1.

#### Financial

TRUSCON STEEL CO., Cleveland, showed a net loss of \$66,198 for the first quarter of 1936 after all charges, including depreciation. This compares with a net loss of \$158,077 in the similar quarter of 1935. Control of Truscon is held by Republic Steel Corp., and the company is operated under Republic management.

Because so many of Truscon's products go to the building industry, operations of the company normally show a seasonal decline during the winter months. With the growing activity in the building field, which has materialized this year, operations now are considerably higher, and the sales outlook substantially better than a year ago.

#### MESTA DECLARES DIVIDEND

Mesta Machine Co., Pittsburgh, has declared a quarterly dividend of 75 cents on common, payable July 2 to record June 16. Previously 50 cents had been paid.

#### OTIS STEEL PAYS LOAN

E. J. Kulas, president, Otis Steel Co., Cleveland has announced that the company has paid its bank obligations in full in the amount of \$1,-300,000, which was the balance due on its three year loan of \$2,475,000 negotiated on Jan. 29, 1935.

#### Will Review Metallurgical Developments at Steel Institute



Dr. Albert Sauveur

FOUR experts on metallurgy will speak at the technical session of the American Iron and Steel institute's spring meeting, Waldorf-Astoria hotel, New York, May 28.

Dr. Albert Sauveur will informally discuss the important metallurgical developments which have taken place during the period of nearly 50 years which he has devoted to metallurgy. In many of these developments Dr. Sauveur had an important part. Frank R. Palmer will speak on "Electric Furnaces and Their Part in Metallurgical Progress." L. F. Reinartz will read a paper on "Recent Advances in Open-Hearth Furnace Design and Operation," and Clyde E. Will'ams will read a paper,



L. F. Reinartz

"The New Technical and Economic Importance of Iron and Steel Scrap."

Dr. Sauveur, who is the Gordon McKay professor of metallurgy at Harvard university, is known as the dean of metallurgists. Louvain, Belgium, in 1863, he received his early education there and was graduated from Massachusetts Institute of Technology in 1889. He served as chemist and metallurgist for various steel companies from 1889 to 1897, including the Pennsylvania Steel Co. and the South Chlcago works of the Illinois Steel Co. Later he organized a metallographical department, the first of its kind to be established in the United States.

While at Chicago he began his pioneer work in metallographic research in connection with heat treating experiments. In 1899 he was appointed instructor at Harvard university and was assistant professor in metallurgy and metallography from 1900 to 1905, and since then has held the professorship in metallurgy at that institution. He is an honorary member of the American Society for Steel Treating, Societe of Engineers, Liege, School of Mines, Belgium, American Institute of Mining and Metallurgical Engineers, American Iron and Steel institute, and the Iron and Steel Institute of Great Britain, and has contributed many valuable papers to these organizations.

Mr. Palmer, who is now assistant to the president, Carpenter Steel Co., Reading, Pa., was graduated in chemical engineering from the University of Pennsylvania in 1915. After spending one year in the open-hearth department of the Midvale Steel Co., he went with the Carpenter company, first as a foreman in the electric melting furnace department, and then as a member of the metallurgical staff. He was transferred to his present position about eight years ago.

Mr. Reinartz, works manager, Middletown division, American Rolling Mill Co., was graduated from Carnegie Institute of Technology in 1909 as a metallurgical engineer. He started to work as chemist in the plant of the American Rolling Mill Co., advancing to open-hearth superintendent, assistant general superintendent in charge of the steel plant, and in 1930 was appointed works manager of the Middletown division. He is a member of the Iron and Steel Institute of Great Britain.

Mr. Williams, director of Battelle Memorial institute, Columbus, O., has been with the institute since 1929. After graduation from the University

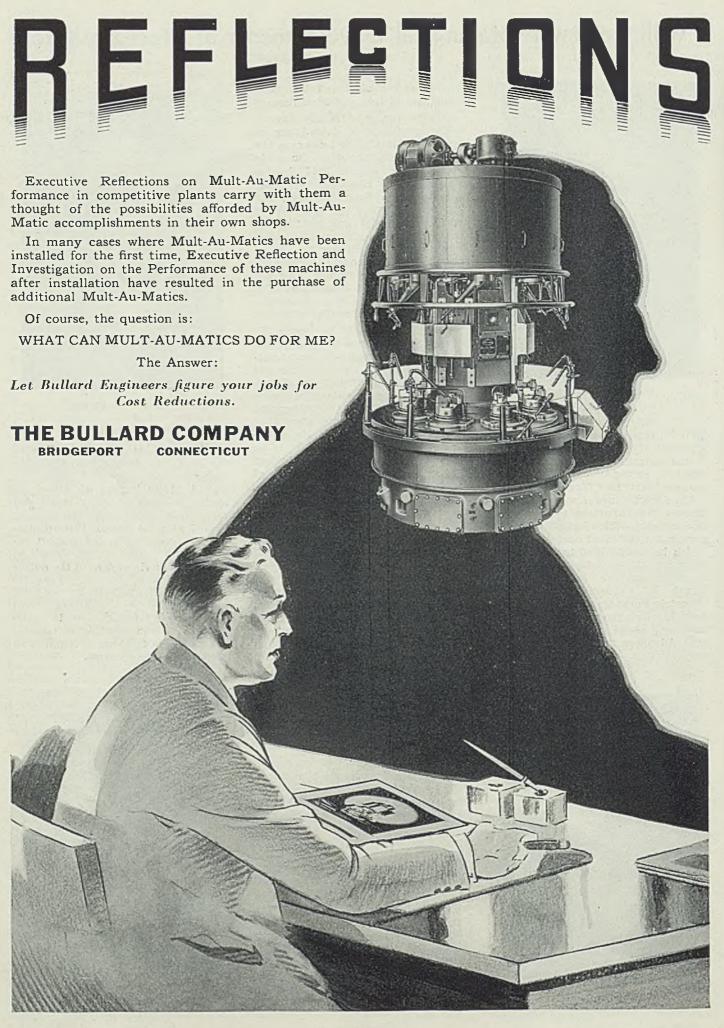


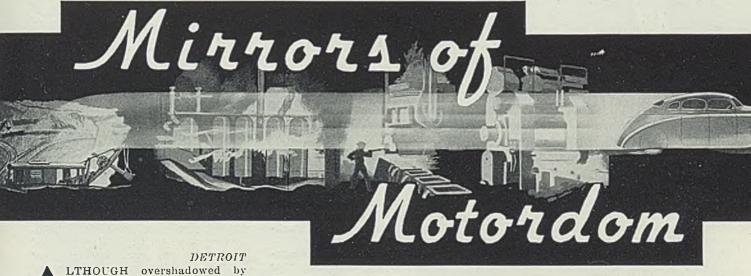
Clyde E. Williams

of Utah, he became connected with the lead and copper industry. then became associated with the United States bureau of mines, assisting in work on alloy steels and ferroalloys. Following the war he served with the Hooker Electrochemical Co., New York, for a short period, and returned to the bureau of mines as superintendent of the northwest station at Seattle. Prior to joining Battelle in 1929, he was chief metallurgist for Columbia Steel Corp., San Francisco. He is chairman of the iron and steel division of the American Institute of Mining and Metallurgical Engineers.



Frank R. Palmer





A LTHOUGH overshadowed by their flashier running mates, the passenger cars, trucks are making production history in motordom this year.

Too apt are commentators to interpret the industry in terms of passenger cars, considering it concerned mainly with production of a so-called luxury item. Commercial cars have been overlooked in this general sense largely by their own lack of eye appeal. But their heavy unit contribution to total motorcar activity this year has resulted in an attention entirely merited.

For, if the first quarter just past means anything, 1936 as a year will account for more than 850,000 commercials. This will better the 756,913 units of 1935 and even top 1929's sum.

By comparison with passenger cars, the truck story is all the more impressive. Judging by opinion in Detroit today, the number of passenger cars to be turned out in 1936 will not come up to the 1929 total of 4,850,000.

#### Truck Trend Defined

Over these intervening six years the price and model trends in trucks have been clearly defined. The average selling price appears to have dropped about 25 per cent from 1929 and the average model seems now definitely entrenched in the two light-weight classes of %-ton and less, and the 1½ to 2-ton bracket.

To analyze the first point, economy dictated by the depression lowered average truck wholesale prices from \$720 six years ago to \$518 in 1935. This trend was all the more accentuated by the evident economy of frequent hauling of light loads, contrasted to infrequent heavy unit transportation. The railroads have had the same problem.

Lowering costs of manufacture also contributed to the downward curve in truck sales prices, which is tributary to the second point, that buyers have come to prefer the small truck. Furthermore, some have stressed the point of a replaceable

commercial motor, against the more expensive overhauling of power plants in heavier trucks.

As to the preference of truck owners for light units, the 756,913 made in 1935 were divided up so that 37 per cent were of %-ton or less capacity and 56 per cent of 1½ to 2-ton. Thus, 93 per cent of all commercials currently being made fall into two size brackets.

In 1929 some 63 per cent of all trucks made were of 1½ to 2-ton size and 17 per cent came under the ¾-ton and less group. Over the intervening years it is evident the trend to lighter trucks has taken place owing partly to the lag in construction and other capital goods industries.

Now, the cheerful attitude the truck industry takes concerning the rest of 1936 seems based on a likelihood of heavier rural demand, requirements of public works, highway rehabilitation largely from severe winter damages, and a gain in exports. Underlying, the truck people estimate there is a deferred replacement market of 1,200,000 trucks today in this country.

Ford so far in 1936 still is firmly entrenched in first place in the production and sale of trucks and this month has turned out the three millionth commercial car of its history. This is one-third of all the trucks that have ever been built.

#### Standings in Truck Race

But, as in passenger cars, the Chevrolet-Ford rivalry is a keen one. Closely following the V-8 is Chevrolet; then a Chrysler unit, the Dodge, is established in third position. Thus far in 1936, Ford, Chevrolet and Dodge have been following fairly closely their proportions of the truck market that were established in 1935. Registrations then were 36, 32 and 12 per cent, respectively.

International, which is fourth largest truck producer, seems to have re-evaluated the 1936 market and at present is working hard for a strong increase in its production. The parts people have been giving International a lot of attention recently and one large contract to be placed soon with outside suppliers is for steel chassis frames enough for 5000 to 6000 1½-ton trucks a month. Several Detroit body and press shops have been following this inquiry closely.

Reo apparently is devoting more of its energies to commercials, although the passenger car division is still maintained. Olds for awhile was considering seriously bringing out a 1½-ton commercial, but apparently has abandoned the idea.

#### 1936 Models to Stop in June

Last week a cross-section of the situation in passenger car production showed a gentle leveling-off process taking place. As earlier appraised, May's output will be some less than April's and June from all appearances will be near the windup on 1936 models.

From the advanced state of preparations for 1937 models, June will be near the windup of 1936 jobs, but the motor people have a habit at the last minute of perpetuating a model beyond their original plans, providing demand is sustained. This summer the veterans' bonus money will be out, and much of it will go into automobiles. Detroit can only guess whether new or used cars will be favored predominately in this spending wave, but certainly either would prove beneficial to the industry.

Since July 1—and from present signs, the beginning of the change-over period to 1937 models—is only six weeks away, the assembly lines are working with some degree of caution. Granted that retail demand for new cars is still surprisingly strong, the used car problem still is acute.

For this reason there have been cases where the plants here have been purposely withholding deliveries on new cars to certain dealers until the latter's used cars move at

### Mirrors of Motordom

least on a one-for-one basis. This withholding largely explains the real reason for a by-word in motordom today: "Our dealers are still pressing for deliveries."

Chevrolet last week made some 32,000 cars and was still on a full six-day week basis. Some of key parts plants have stepped up, such as the Toledo, O., transmission plant which last week went from a four to a five-day week, first time since last October.

At Dearborn through last week Ford slipped slightly in assemblies and totaled 27,000. The full effects of a more generous dealer commission on Fords doubtless will not begin to be felt for a week or so.

A weekly aggregate of 14,000 cars seems to hold steadily as the Plymouth figure, and Dodge last week hovered around 9000 jobs, including 2500 commercials. Chrysler made about 1600 models and DeSoto accounted for 1400, made up more of Airstreams than Airflows.

#### General Motors Figures

With Olds leading at 5900 models for the week's output, the balance of the General Motors middle-price jobs numbered Buick with 4300 and Pontiac at 5100. Cadillac-LaSalle totaled 550 jobs for the week. Incidentally, an ambitious program to make more Cadillac 16's is planned for 1937.

Lincoln output fell off last week and at about 300 models was down from 425 the week preceding. Graham, at 700 assemblies for the week, was unchanged, as far as current production was concerned, but is devoting considerable time to a new line for 1937 that with a V-type windshield and a different treatment of the front panel work will be distinctive from the present models.

Hudson made 2800 jobs last week, which was off from 3200 models the week before. Hupp continues closed, though under a new president, Wallace Zweiner, will make some effort to get working capital for recommencing assemblies. The Packard assembly rate last week was still about 1700.

Because for some months it has been beyond the rumor stage, because it will be one of the first of the 1937 crop of models to appear along in August, and because it is one of the few entirely new lines for next year, Packard's small six is a matter of foremost discussion in automotive circles.

Purely from a policy point of view, Packard has something of a problem on its hands on how to designate, or name the small six. There's a problem if it uses the word Packard, also a problem if it changes the name entirely.

It will be recalled that the original name of Packard was associated with such words as chauffeur and livery. Then a year ago broadening of the line to include the 120 apparently was a boon to the company, yet it antagonized a certain class of Packard owners.

Now, Detroit is beginning to wonder if a further encroachment under one title in the form of this coming six will make much of a difference institutionally to Packard. In other words, the Packard 120 went over as such, but the presence of two low-price models may come to overbalance the scales.

But the management has "cast the die" for the low to medium-price motor field. Furthermore, with its coming six it has hardly a chance in the so-called "companion-car" nomenclature.

Doubtless the manner in which Packard will tag the new line of sixes is to strike a medium. Detroit so far has called the six the "115" for want of something better, simply because it is on a 115-inch wheelbase.

Perhaps Packard will decide thusly, just as it chose the name "Packard 120." Then again, it could go to hyphenating such as Ford did by tacking on the word "Zephyr" to the small Lincoln.

Ford has just started a two-year program to air-condition the administrative offices of its principal

#### istrative offices of its prin

Automobile Production

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

	1934	1935	1936
Jan	155,666	292,785	367,252
Feb	230,256	335,667	290,964
Mar	338.434	429.793	424,571
Apr	352,975	477,691	*505,000
4 mo 1	,077,331	1,535,936	1,587,787
May	330,455	364,662	
June	306,477	361,248	,
July	264,933	336,985	***********
Aug	234.811	239,994	
Sept	170,007	89,804	***********
Oct	131.991	275,024	*******
Nov	83.482	398.039	,
Dec	153,624	407,804	
-			
Year	2,753,111	4,009,496	
*Estimat	ed.		

#### Estimated by Cram's Reports

	ended.	
May	2	118,764
May	9	118,786
May	16	117,156
May	23	109,821

branches, and units at Edgewater. N. J., Somerville, Mass., Chester, Pa., Chicago, Kansas City, and Dallas, Tex., will be so equipped before summer. Ford has had air-conditioned main offices, foundry, machine shop, foundry molding rooms, drafting rooms and engineering and metallurgical laboratories, among other Dearborn units since spring of 1935 . . . . Several automobile manufacturers are now receiving bidders' estimates on car heaters for 1937 . . . . Murray Body will make the Lincoln-Zephyr front fender along the design experimented with for some time. It will involve a sheet draw to take in the headlamp in one piece with the fender, compared with a cut-out and inset type now . . . . Chevrolet will soon start its soap-box derby, planning on winding up with the finals along about late August.

#### Shots from the Shops

A prominent diemaker in Detroit is working out a plan to eliminate much of the time necessary to make wood models. The method employs a number of plaster of paris preliminary models . . . . Aluminum Industries Inc., Cincinnati, reports it has received a sizable Ford order for pistons . . . . DeSoto has just finished a survey on what the American public chooses in the way of automobile body colors and finds that black has dropped from first to third place. now preceded by grays and tans . . . . Pontiac Service Craftsmen, recently formed to take in shop foremen and service managers in the field, now has more than 3000 members . . . . Hudson says the spring steel it uses today is one-third as stiff as ten years ago. In 1925 it took 370 pounds to deflect a Hudson front spring 1 inch; today, 120 pounds . . . . Lakey Foundry & Machine Co. is making blocks and many miscellaneous castings for Caterpillar Tractor Co. . . . Chrysler Corp. on May 19 made known a wage increase averaging about 5 per cent for shop employes to go into effect June 1. Estimates say it will mean a \$5,000,000 to \$6,000,000 higher labor bill annually . . . . Hudson Motor estimates it uses 10,000,-000 cubic feet of gas monthly . . . . Department of commerce has approved a baby plane with a 90-mile per hour cruising speed being made by Arrow Aircraft & Motors Corp., Lincoln, Nebr. A standard Ford V-8 motor is the power plant . . . . On May 23 General Motors dedicates its new West Coast assembly plant at Los Angeles and about June 1 assemblies will start.

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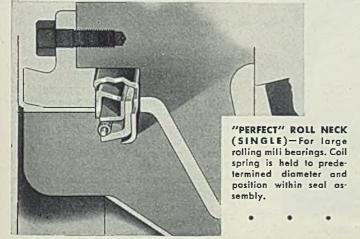


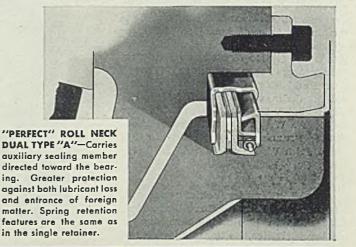
"PERFECT" DOUBLE
FLANGE—For slow speed
bearings (maximum 200

Manager Commen

R.P.M.) subject to certain dust and moisture conditions. Higher speeds permissible if auxiliary sealing member receives normal oil supply.

"PERFECT" COMBINATION
FELT & LEATHER—The felt washer
is used as an auxiliary dust barrier
for specific operating conditions.





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CINCINNATI

BOSTON

#### Men of Industry

(Concluded from Page 29)

board of directors. Mr. Greene had been a vice president for some time.

Louis Jostes, Beck & Corbitt Co., has been elected president of the St. Louis chapter of the American Steel Warehouse Association Inc., Cleveland, and Milner Donovan, Donovan Iron & Supply Co., has been elected secretary. Mr. Jostes will also act as national director.

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Col. William E. R. Covell, formerly engineer of maintenance in the Panama Canal zone for the war department, has replaced Maj. W. D. Styer as United States engineer resident of Pittsburgh, and will have charge of considerable purchasing of material requirements for lock, dam, barge and other federal river work in the Pittsburgh district.

Thomas Robins Jr. has been elected president of the Hewitt Rubber Co., Buffalo, manufacturer of conveyor belt and other mine and mill machinery and supplies, succeeding Thomas Matchett, who has been made vice chairman of the board. Thomas Robins Sr. continues as chairman of the board.

Earl K. Twombly has been elected vice president and treasurer; Frank E. Miller and Frank G. Cooban, vice presidents, and Joseph H. Hayden, secretary.

Philadelphia chapter of the American Society for Metals, 1317 Spruce street, has elected the following officers for its fiscal year beginning June 1, 1936: Chairman, T. Holland Nelson, consulting metallurgist; vice chairman, Charles H. Stoeckle, Crucible Steel Co. of America; secretarytreasurer, Adolph O. Schaefer, Midvale Co. It also elected the following directors: Joseph Winlock, Edward G. Budd Mfg. Co.; Richard C. Jordan, Chicago Flexible Shaft Co.; George W. Keller, George W. Keller Co.; A. W. Grosvenor, Drexel institute; Francis B. Foley, Midvale Co., and John W. Harsch, Leeds & Northrup Co.

R. W. Chandler, chief engineer, Graton & Knight Co., Worcester, Mass., is in England where, among other activities, he is assisting in the organization of an association to function in England along the lines of the Power Transmission council in the United States.

Edward J. Hanley, formerly assistant superintendent of the wire



Edward J. Hanley

and cable department of the Schenectady works of General Electric Co., has been appointed secretary of the Allegheny Steel Co., Brackenridge, Pa. Mr. Hanley entered the employ of General Electric in 1927 as a member of the factory training course, and the following year was transferred to the staff of the Schenectady works accountant. In 1931 he became assistant to the auditor of works accounts, and in 1934 was appointed to his position in the wire and cable department.

W. G. Marshall, vice president, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., and J. D. A. Morrow, president, Pittsburgh Coal Co., Pittsburgh, have been elected new directors of the Pittsburgh chamber of commerce.

Directors re-elected for threeyear terms are: M. C. Angloch, vice



L. L. Caskey

Newly appointed district manager at Philadelphia for Republic Steel Corp., Cleveland, as reported in Steel Feb. 3. Mr. Caskey has been with Republic since 1929, and from 1930 until his recent appointment was assistant district manager at Philadelphia. Prior to his affiliation with Republic he was district sales manager at Cincinnati for the Erie Malleable Iron Co.

president, Jones & Laughlin Steel Corp.; Frank F. Brooks, president, First National bank, Pittsburgh; B. J. Cassady, secretary, commercial department, Pittsburgh Plate Glass Co.; F. J. Chesterman, vice president and general manager, Bell Telephone Co. of Pennsylvania; George S. Davison, chairman of the board, Davison Coke & Iron Co.; H. A. Gidney, vice president and comptroller, Gulf Oil Corp.; Gerald P. O'Neill, general manager, William Penn and Fort Pitt hotels; John M. Phillips, president, Phillips Mine & Mill Supply Co.; Walter B. Spellmire, manager, General Electric Co., and Joseph C. Trees, vice president, Benedum-Trees Oil Co.

T. D. Jolly, director of purchases, Aluminum Co. of America, Pittsburgh, will assume office July 1 as president of the Purchasing Agents' Association of Pittsburgh. He replaces Albion Bindley, purchasing agent of Pittsburgh Steel Co., who has been named a national director for the coming fiscal year.

K. F. Westermann, purchasing agent of Columbia Steel & Shafting Co., Carnegie, Pa., will assume the position of vice president of the association, and in this capacity succeeds Mr. Jolly.

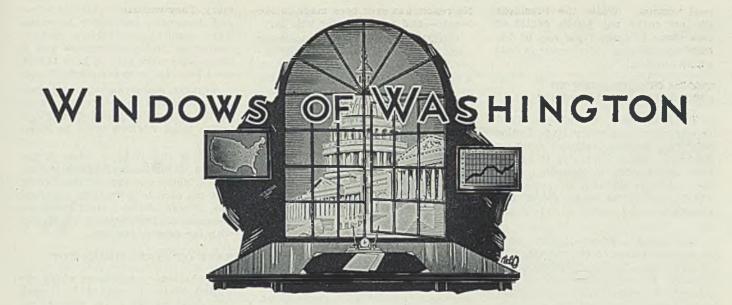
E. C. Buerkle, purchasing agent of National Bearing Metals Co., Pittsburgh, will continue as treasurer of the association, as will C. H. Rindfuss, purchasing agent of Pittsburgh Screw & Bolt Corp., Pittsburgh, in the office of secretary.

The following local directors have been named for a two-year term: W. E. Bittner, Diamond Alkali Co.; I. E. Walton, Heppenstall Co.; R. D. King, Koppers Co.; N. W. Hayson, West Leechburg Steel Co., and J. H. Lammert, Oliver Iron & Steel Corp.

L. E. Kennedy, manager of the Deere estate, and D. S. McDannell Jr., director of purchases for Deere & Co., Moline, Ill., have been elected members of the board of directors of the company.

Mr. Kennedy became associated with the company in 1912 as a clerk in the laboratory, and later worked in the superintendent's office at the plow works. Following service in the army during the World war, Mr. Kennedy became secretary to William Butterworth, chairman of the board.

Mr. McDannell started with the John Deere plow works in 1902 as office boy for Mr. Butterworth and H. G. Copp of the purchasing department. He has been in this department constantly since going with Deere & Co. In 1915 he was made assistant purchasing agent; in 1918 was promoted to purchasing agent, and in 1932 succeeded to the position of director of purchases.



WASHINGTON

VERSHADOWING everything in interest to the steel industry in Washington the past week, even taxes, was the body blow given the New Dealers by the United States Supreme Court in declaring the Guffey coal law unconstitutional. Of course the question being asked here now is, "where do we go from here?" As this is written there is no answer to that question. Even the President at his press conference following the decision was very guarded in answering questions propounded by newsmen.

After pointing out just why the law was passed the President did state that the objectives of the law would have to be arrived at in some other way, but he was silent when the correspondents tried to find out just what that other way was.

He declined to answer when asked if anything could be done at this session of congress for a bill dealing with those parts of the act which the court did not declare unconstitutional.

#### Says Structural Bill Legal

During the same conference Mr. Roosevelt stated again that there are only two "must" bills on the roll before adjournment—mentioning the tax and relief bills, both of which are still pending in the senate.

Of course if the court had upheld the constitutionality of the Guffey act, there would have been other bills rushed through congress declaring "little NRA's" for various industries, such as the Wood bill regulating the structural steel industry, already discussed at length in these columns. Representative Wood made the remark when he introduced the bill that regardless of any action of the court he felt that his bill was differently drawn and would not come un-

der the court ruling. However, others strongly disagree with his opinion.

The President in trying to explain away the court decision—as he did in his famous "horse and buggy" press conference—called attention to the difficult situation which has existed in the coal industry and stated that the bill was originally introduced on agreement between operators and miners. The coal people, in answer to this, point out that the operators were not a unit in asking for this legislation. The purpose of the act, said the President, was to carry some of the objectives of the bill into effect.

#### Sees Campaign Material

Mr. Roosevelt intimated, without stating so outright, that he would be able to use this court decision in the forthcoming campaign. He pointed out that the decision would be of interest to everyone. He stated that, among other things, the decision showed the division of current interpretation of the constitution in the judiciary.

The reaction among the coal men in Washington to the court decision was varied. Some predicted that the coal board might seek a voluntary agreement among producers. However, it is too early now to state what will be done. Counsel for the coal men said there was nothing in the Guffey decision to prevent the coal board from going along on its merry way.

One of the things of interest in connection with the court's decision was the fact that when the bill was in its course of progress in the house, the Supreme Court rendered the AAA decision and there was considerable thought given to whether congress should proceed with its work on the Guffey bill. The President wrote the

house leaders to go ahead, regardless of the AAA court decision. At that time there was considerable publicity given to the fact that the President was flying in the face of the court.

Some interesting reactions have come from government leaders following the decision. They are thinking that the President will have to do one of three things. He will either have to cease trying to effect social changes through congressional action or attempt to have the constitution amended or wait until some of the grand old men of the court resign or die.

It is fairly certain, for political reasons, that Mr. Roosevelt will not try to have the constitution amended during the course of the forthcoming campaign. It is generally believed that the people of the country would not stand for this. It is practically futile to try to enact legislation to reach the ends he has in view and it is equally impossible for him to remove the justices from their seats.

The tax question is still vexing the senate finance committee and in no uncertain way. The committee is split.

#### Still Talk of Excise Tax

Discussion in the committee even went so far as to suggest that an excise tax be placed on steel. It may be recalled that this was done with coal a few years back but has never worked out successfully from the standpoint of revenue. Of course, the talk of a steel excise tax is just so much bunk.

Leaders on both sides are still predicting June 6 as the date for adjournment but unless something is done soon on taxes this will be impossible.

There was a story in circulation last week that because of the shortness of time the President would be willing to let the tax bill ride over until the next session. While the President did not make any public denial of this story it came from one of his chief spokesmen. The rumor is definitely quieted.

#### TRADE GROUPS SEEK TO SPUR BUILDING CAMPAIGN

The American Institute of Steel Construction and other trade bodies belonging to the National Housing Advisory ouncil are trying to arouse their membership in connection with the activities of this organization, which has as its main object the stimulation of building in this country.

"Every business will profit," says an announcement to the membership of these trade bodies, "directly or indirectly, in helping to achieve the council's immediate objective to stimulate the building of 250,000 new homes in 1936. Indeed, it is hoped that figure can be exceeded, as there is an immediate need for nine times that number of home units—and the deficiency grows greater each year."

In a statement which is being sent out by the various member organizations to their individual membership, the Steel Construction institute and others, call attention to the fact that "your association is convinced that this country cannot temporize with the problem of obtaining adequate shelter for our citizens. Conditions are fast becoming intolerable. Relief can only come through the united effort of those business groups which realize that nothing will relieve unemployment, increase purchasing power, and release capital funds faster than a successful home building program of national scope. England has proved it; a large part of her recovery is due to this single factor."

#### SILICOMANGANESE DRAWBACK

Drawback allowance has been granted by the treasury department on silicomanganese manufactured by the Pittsburgh Metallurgical Co. Inc., Niagara Falls, N. Y., with the use of imported manganese ore.

A former decision granted draw-back allowance on fabricated copper and copper alloy products manufactured by the American Brass Co. at its factories at Waterbury, Torrington and Ansonia, Conn., Buffalo, and Detroit, has now been extended to include the plant of the company of Kenosha, Wis.

#### TARIFF BOARD DROPS CAST PIPE INVESTIGATION

Announcement has been made by the tariff commission that it has dismissed its investigation of cast iron pipe made under section 336 of the tariff act of 1930—and thereby hangs a tale.

This investigation was asked for by a senate resolution passed in 1932.

No report has ever been made to the senate—and now it never will be.

Questions at the commission now elicit the information that this investigation was given up-along with a number of others, because congress provided in the trade agreement act that the commission shall not make any investigation of any commodity contained in any trade agreement with any country or of any commodity mentioned in any proposed trade agreement. This is really something, because it should let the commission out from under almost any investigation. However, in spite of this provision in the act the senate has asked for any number of investigations by the commission, apparently forgetting either because they wanted to or knew no better.

The commission states that in dismissing certain of the investigations, of which the cast iron pipe inquiry is one, the usefulness of the material already collected will not be impaired as it will be used in the current work of the commission in the preparation of surveys or included in summaries of tariff information.

#### SPEEDS REPORT ON COLLUSIVE BIDDING CHARGE

Col. Charles H. March, chairman of the federal trade commission, has ordered his experts to have their report before the commission within the next week on alleged collusive bidding on public works by certain steel companies.

It will be recalled that Secretary Ickes complained to the President that steel bids were identical on certain government projects. The President asked the commission to investigate the matter some months ago, but no report has ever been made. There is no telling just how long the experts' report will be before the commission before it is sent to the President but it is evidently on its way. Unless the report is made public by the President, of course, it will never see the light of day. The commission would not make public a report to the Chief Executive without his order.

#### AMATEUR CENSUS TAKERS BRING HEADACHES

The use of relief workers by one of the government departments has come very near causing havoc, according to whisperings going around.

Some months ago the department of commerce decided upon a new business census and money for this work was obtained from WPA, with the understanding that WPA workers would be used by the bureau of the census in taking up this work.

WPA workers were duly taken on instead of the regular census enumerators. These relief workers were given several months' training and then set to work, according to the

story. They went into business offices and demanded immediate attention. They pointed out certain penalty clauses on the questionnaire and in some cases were said to have threatened business men for slight delays.

So much embarrassment and trouble was caused that Director Austin of the census said if he ever had to use relief workers again he would resign.

One of the division chiefs of the bureau of foreign and domestic commerce, going out around the circuit, sent his card to a business man and was almost kicked out of the place because of the latter's experience with the census people.

#### RATE ON STEEL DESKS CUT

In the trade agreement which the United States concluded last week with Finland the latter country reduced the duty on steel desks and chairs. Also the present comparatively low rates are bound in regard to automobiles, office machines and refrigerating machinery. The rate of duty on steel desks and chairs was reduced by 33 1/3 per cent.

The state department says that the Finnish market for steel desks and chairs is not yet very extensive, but the reduction in duty of about 3 cents a pound "should assist American exporters to develop a market in Finland."

#### SAYS LONG AND SHORT HAUL CLAUSE PROMOTES MONOPOLY

Competition between manufacturers and other shippers, as well as competition between transportation agencies, is prevented and suppressed by the long and short haul clause of the interstate commerce act, the senate committee on interstate commerce was told by James P. Haynes, appearing as chairman of the special fourth section committee of the National Industrial Traffic league.

"It thus tends to promote monopoly," he said.

Statements along these same lines were filed with the committee on behalf of Ward Wire of the Colorado Fuel & Iron Co.; W. J. Hammond, of the Inland Steel Co.; H. B. Tooker of the Utah Copper Co., and others.

Mr. Haynes announced his disagreement with the views of Co-ordinator Eastman, as expressed by Senator Wheeler, that repeal of the long and short haul clause would permit the railroads to destroy the water carriers.

"It seems to me," he said, "that this view entirely disregards the fact that the interstate commerce commission now has power, independent of the long and short haul clause, to fix maximum and minimum rail rates and to suspend the rates initiated by the rail carriers which it did not have prior to 1910."

### Editorial

### Guffey Decision Is Safeguard

### Against Labor Tyranny

HILE industrial executives may hold divergent views as to the immediate effects of the Supreme Court's action in the Guffey coal control act, many will agree that in the long run the decision will serve a useful purpose in clarifying certain principles involved in industry-government relations.

The majority opinion is particularly specific in ruling upon the application of the commerce clause. After going into great detail to assert that coal mining is not subject to the regulations of interstate commerce, the justices presented a clear-cut statement of the distinction between intrastate and interstate activities in industry. Their words are explicit:

"One who produces or manufactures a commodity, subsequently sold and shipped by him in interstate commerce, whether such sale and shipment were originally intended or not, has engaged in two distinct and separate activities.

"So far as he produces or manufactures a commodity, his business is purely local. So far as he sells and ships, or contracts to sell and ship, the commodity to customers in another state, he engages in interstate commerce.

"In respect of the former, he is subject only to regulation by the state; in respect of the latter, to regulation only by the federal government."

#### Decision Erects Barrier Against Excessive Domination by Government in Labor Affairs

While the foregoing is simply a reiteration or restatement of a point cited previously in the Schecter (NRA) and many other cases, its significance in connection with the Guffey act is enhanced by its close association with the Court's ruling on the labor provisions:

"Much stress is put upon the evils which come from the struggle between employers and employes over the matter of wages, working conditions, the right of collective bargaining, etc., and the resulting strikes, curtailment and irregularity of production and effect on prices; and it is insisted that interstate commerce is greatly affected thereby.

".... The conclusive answer is that the evils are all local evils over which the federal government has no legislative control. The relation of employer and employe is a local relation. At common law, it is one of the domestic relations ...."

It requires little imagination to perceive that this opinion, if sustained consistently in other cases which inevitably will be submitted to the Court for consideration, seriously threatens most of the new deal legislation dictated by the American Federation of Labor and the so-called organized labor bloc. It is small wonder that Chairman Madden of the National Labor Relations board is reported to be considering the advisability on dropping punitive action in labor cases until the legal aspects of his board's position are defined more clearly. Equally understandable are the defiant attitudes of William Green and John Lewis, who in the first flush of seeming defeat at the hands of the Court, declared impulsively that organized labor "must rely upon its economic power to strike and fight."

We believe that a careful study of all three opinions justifies the conclusion that the decision is a potential victory for industry, with possibly more far-reaching implications than were embodied in the unanimous decisions in the NRA and AAA cases.

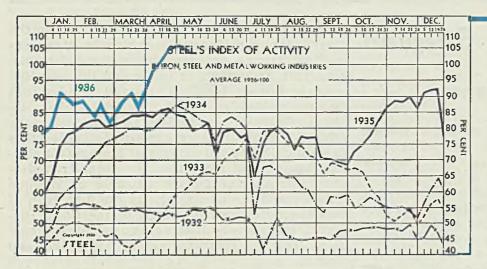
#### Voting on Issues Separately, Court Probably Would Uphold Price, Ban Labor Items

This view is based upon the fact that the Court's attitude is decidedly more critical against the federal control of labor conditions than it is against government regulation of competition. Six justices declared against the legality of federal fixing of hours and wages, and three did not voice opinions. Therefore if the Court were to rule on this question alone, its vote presumably would be anywhere from 6-to-3 to 9-to-0 against the proposition.

Four justices ruled that the government's attempt to fix prices in the coal industry is constitutional; six refrained from committing themselves on this point. The action of Chief Justice Hughes in declaring that the price control and labor clauses are separable, coupled with the attitude of the five majority justices in other cases, gives rise to the belief in many quarters that a clear-cut marketing or competition control act, unencumbered by labor provisions, would be upheld by the Court, probably by unanimous vote and certainly by a convincing majority.

As the major import of the Guffey act decision becomes more apparent, it will be found that a majority of the "nine old men" again has erected a barrier against class coercion. This time the Court's action will make it harder for a few union leaders with their four million alleged followers to impose their will upon forty million independent wage earners and forty thousand employers.

### THE BUSINESS TREND



Steel's index of activity in the iron, steel and metal-working industries declined 0.1 points to 102.9 in the week ending May 16:

Week	ending	1936	1935	1934	1933
Mar.	7	87.7	82.0	78.6	43.4
Mar.	14	89.7	84.0	79.9	42.7
Mar.	21	86.0	84.0	79.7	44.6
Mar.	28	91.2	84.3	79.3	45.2
Apr.	4	. 96.8	83.4	79.6	49.1
Apr.	11	99.6	85.4	82.2	52.6
Apr.	18	103.1	86.3	85.0	55.8
Apr.	25	103.6	84.9	87.5	59.5
May	2	103.2	84.6	86.0	60.3
May	9	103.0†	79.3	84.4	62.5
May	16	102.9*	80.5	82.4	65.2

†Revised. \*Preliminary.

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

### Activity To Date in 1936 ls 12.7 Per Cent Ahead of 1935

ITH more than half of the second quarter in the background and with no indications in sight for an early, marked recession in activity, it is almost a foregone conclusion that the current three-month period will establish an impressive post-depression record.

According to STEEL's index, activity in the iron, steel and metalworking industries thus far in the second quarter has been averaging about 18 per cent better than in the first quarter of 1936. This gain is particularly gratifying in that the high rate of activity has been holding

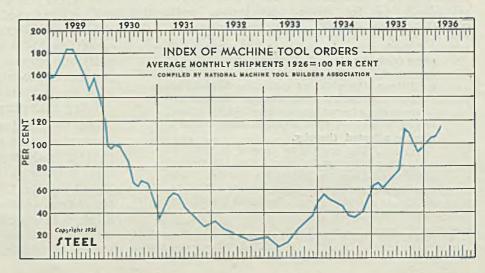
steady throughout most of the current period.

The spurt since early in April has helped considerably to bolster the reputations of business prognosticators who, at the close of the year 1935, predicted that the volume of business in 1936 would run about 10 per cent ahead of that of the previous year. As a matter of fact, the gain during the first quarter was short of the estimate. Again using STEEL'S index of activity, the average during the first three months of the current year showed only a 7.6 per cent advance over comparable 1935 figures. However, the average for the first seven weeks in the second quarter of 1936 ran 21.8 per cent ahead of that for the same period of 1935.

Thanks to the recent gains, the average for the year to date (20 weeks) is 12.7 per cent higher than that for the corresponding period of last year. Thus the predictors have a slight margin to work on during the remainder of

	1936	1935	1934	1933
Jan	102.6	61.3	56.5	18,3
Feb	107.1	61.5	58.2	15.2
March	109.4	60.3	50.9	11.1
April	114.4	60.3	48.5	8.3
May		67.1	46.8	10.6
June		76.7	42.6	15.5
July		. 94.7	38.6	22.4
Aug	********	112.2	37.1	27.9
Sept		108.5	37.4	30.9
Oct		102.9	40.5	33.3
Nov		93.8	44.2	38.0
Dec		99.9	54.1	51.0

40



1936 if their estimate of a 10 per cent gain is to be substantiated.

That this cushion may be more than ample is indicated by a glance at the trend of activity in 1935. From now until November, the rate of activity this year will be competing against a relatively low rate in 1935. Even allowing for a substantial slackening of the pace during the summer months, the volume through the remainder of the current quarter and in the en-

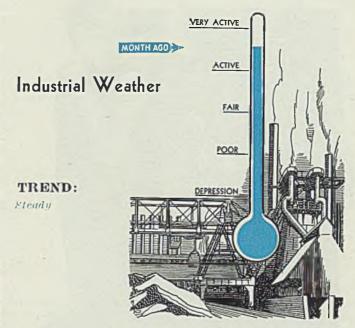
#### Where Business Stands

Monthly Averages, 1935=100

	April, 1936	March, 1936	April, 1935
Steel Ingot Output		119.1	94.5
Pig Iron Output		114.4	96.6
Freight Movement		99.8	95.0
Building Construction		149.3	95.3
Automobile Output		126.9	143.9
Wholesale Prices	*******	98.6	97.9

tire third quarter is reasonably sure to run ahead of the 1935 showing by at least 10 per cent. In other words, the predicted betterment of 10 per cent for the year still looks like a good guess—and possibly a conservative one.

The record of business for the latest week is reassuring. Each of the four factors in STEEL'S



index continues to reflect strong resistance to the expected seasonal decline. Steelworks operations are holding well, freight traffic is up slightly, electric power output has not yet responded to the downward seasonal pull and automobile output has slackened only fractionally. The net result is a slight drop in STEEL's index from 103.0 to 102.9 for the week ending May 16.

#### The Barometer of Business

#### Industrial Indicators

	April, 1936	March, 1936	April, 1935
Pig iron output (daily av-			
erage, tons)	80,403	66,004	55,719
Machine tool index	114.4	109.4	60.3
Finished steel shipments	979,917	783,552	591,728
Ingot output (daily aver-			
age, tons)	151,625	128,711	101,562
Dodge building awards in			
37 states (sq. ft.)	***************************************	31,308,100	19,981,100
Automobile output	*520,000	442,545	501,814
Coal output, tons	30,350,000	31,233,000	21,970,000
Business failures; number	830	946	1,115
Business failures; liabilities	\$14,543,000	\$16,271,000	\$18,063,823
Cement production, Bbls	*************	5,263,000	6,136,000
Cotton consumption, bales	***************************************	549,000	462.841
Car loadings (weekly av.)	636,211	604,746	575,776
*Estimate.			

#### Financial Indicators

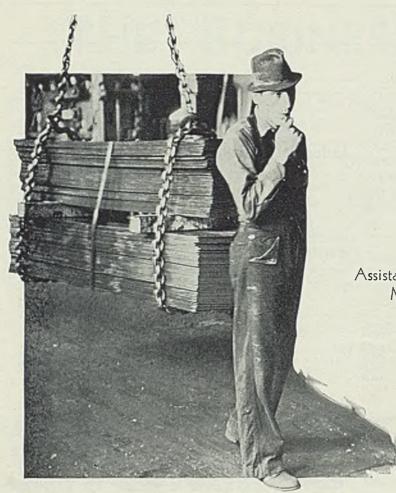
	April, 1936	March, 1936	April, 1935
25 Industrial stocks	\$201.98	\$202,99	\$149.73
25 Rail stocks	\$36.41	\$38.50	\$24.01
40 Bonds	\$86.59	\$87.88	\$80.63
Bank clearings (000			
omitted)		\$26,610,000	\$20,892,889
Commercial paper rate			
(New York, per cent)	3/4	3/4	1
*Comercial loans (000			
omitted)	\$8,343,000	\$8,204,000	\$7,830,000
Federal Reserve ratio, per			
cent	78.3	78.2	76.9
†Railroad earnings	\$35,205,513	\$33,594,718	\$38,129,871
Stock sales, New York			
stock exchange		51,025,148	
Bond sales, par value		\$285,429,900	
*Leading member banks	Federal Re	serve Systen	n.
†March, February and M	larch, respec	ctively.	

#### Foreign Trade

		March, 1936	
Exports	***************************************	\$195,336,000	\$164,350,000
Imports		\$200,295,000	\$170,567,000
Gold exports	***********		\$62,000
Gold imports		\$7,795,000	\$148,670,000

#### Commodity Prices

	April, 1936	March, 1936	April, 1935
STEEL's composite average of 25 iron and steel prices Bradstreet's index	\$33.10 \$1.12 81c \$1.08	\$33.20 \$9.85 \$1.14 80c \$1.08	\$32.29 \$9.79 \$1.13 \$1.04 98c



### Importance of

BY EDWARD C. JACOBS

Assistant District Engineering Manager, American Mutual Liability Insurance Co., Boston

INSTEAD of being conveyed over the heads of workmen, properly bound bundles of sheet steel here are being carried through the main aisle of the shop to presses, with a whistle man preceding the load

REVIEW of records covering one year of 11,260 plants employing from 1 to 150 indicates dangers were present that produced many injuries, and these are listed in the following injury cause groups:

rer	cent
Material handling	3.4
Machinery, including point of	
operation	23
Falls	14
Stepping on and striking objects	6
Falling objects	5
Flying objects	4
Hand tools	-1
Miscellaneous (such as burns, ve-	
hicles, poisonous substances and	
the like)	10

Any discussion of danger control programs in industry must necessarily include some reference to the policies of many larger plants because of their interest and success. Experience shows, however, that all plants allocated to this larger size group have not yet embraced this policy of danger control as a matter of company policy and consequently do not operate well from a danger control standpoint. It is also true that many small plants have been most co-operative with insurance company engineers and others regarding danger control, and have accepted guidance and direction that

From a paper presented before the Massachusetts Safety council at Boston, April 23.

has helped them reach and maintain relatively as satisfactory a level of efficiency in the prevention of needless accidents as their larger industrial brothers.

A machine shop, foundry, textile mill, tannery, or metalworking shop may be small in square footage and have few employes on the payroll, but relatively may be expected to include every inherent danger that exists in what would be called the large shop.

When does the small plant "grow up?" Does it become more dangerous by adding more employes to the payroll? Is space the deciding factor? Can dangers be present in a plant 30 x 50 feet, or is this true only when the plant premises cover several acres? Obviously dangers are related to industry, but are dangers present only in the large plants? The records show the reverse.

#### Small Plant Has Dangers

It is obvious that the unguarded saw can bite in the small plant as well as in the large plant. The belt and machine in the large plant should be protected from accidental contact; if they are dangerous in the large plant it goes without saying that they must also be dangerous in the small plant.

Many common arguments are raised by executives of the small

plants, such as, "We are too small to do safety work," or "We lack the organization necessary for danger control." Yet these dangers are as prevalent in their plants as in any branch of the industry of which they are a part. The difficulty that exists with regard to small plants as opposed to large units is that the small plant at the beginning cannot operate as well on the basis of accident occurrence. The large plant can do this. It has a multiplicity of accidents from which to gage needs and progress.

The small plant, in a sense, is like a single department in a large plant. On its own basis its yearly record does not tell enough. The fact remains, however, that because the small plant insists on approaching the accident prevention problem almost entirely upon its own record, it loses that principle which actuates the large plant, and does not tackle with the same energy and efficiency the problem which on a record basis becomes obvious to the large plant. It is on just such a record that so many small plants show a relatively higher accident frequency and severity than do organized large and small plants.

First and foremost it is essential that the house be put in order at the top. What is needed in every organization is a definitely expressed policy

### Safety Programs in the Small Plant

-Illustrations courtesy Murray Corp. of America, Detroit

by the head of the company, passed down with a responsibility to his representatives on the executive staff; they in turn holding the supervisional force for carrying out their orders. Where danger control is not an operating policy, it is always at least a partial failure, and inefficiency is found.

Every plant, small or large, can and should have effective accident prevention plans and programs. Executives of small plants should not use large industrial organizations, which have long-term programs and policies, as ideals that must be reached in order to control danger successfully. Many of these large plants include fully equipped hospitals with nurse and doctor in attendance. As far as practicable, one

should take advantage of established efficiencies aimed at danger control.

Apart from the humanitarian aspect a mishap that pinches the fingers and toes in any plant does the same to the pocketbook of any plant. Failure of executive recognition of this needless waste is the weakest link in the whole chain of danger control as respects the small plant group.

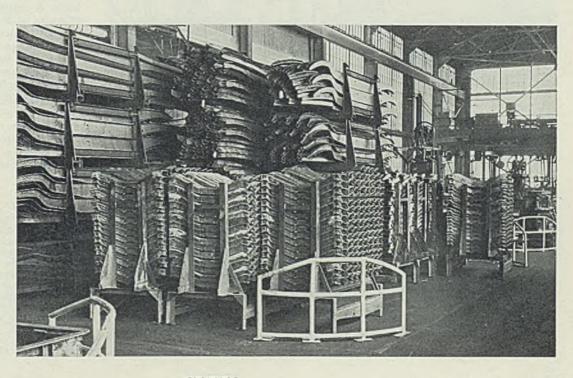
Accidents in small plants are wasteful. Their cost in lost time, in money, in interruptions of business activities, in unnecessary spoilage of materials, in uncompensated overhead is not confined to the large plant. This needless waste is a challenge to every executive in the large plant as well as in the small plant.

The soundness of one's judgment would be questioned if he recom-

mended the installation of a hospital or dispensary with nurse and welfare system to serve a relatively small number of employes. On the other hand, would not the employer be negligent if he failed to provide the necessary materials for administering first aid to meet his needs? This same principle should be applied in dealing with all dangers in the small plant group.

Under the common law it is the duty of all employers to provide for their workers a reasonably safe place in which to work, to furnish them with reasonably safe tools, to furnish them with reasonably safe fellow workmen; but of far more real importance than any of these is the moral obligation of the employer to acquaint his employes with the

SAFETY was kept in mind in storing these automobile frames. Side rails and cross members are stacked in orderly racks, the cross members being in smaller racks which can be moved quickly by truck. Pipe railings assist in establishing permanent corners and open aisles to permit elear truck roadways



known dangers of their employment.

Danger control is just good plain common sense; but that common sense includes the necessary mechanical sense to design physical safeguards designed to prevent accidental contacts with existing danger, sufficient executive ability, and managerial ability to lead men to do what is necessary. The job is to find means and methods of reducing dangers by working with the material and personnel that exists. Whether there are one foreman or 20 foremen, highly skilled workmen or common laborers, the basic need in danger control is employe training and supervision. This is the spark which largely controls the question in its entirety, both mechanically and nonmechanically.

#### Accident Cause Important

Utilizing injury cause information instead of accident cause should be stopped. The cause of an accident is more important than the cause of an injury. Even in the small plant it takes real hammering to put safety across. For years the value of supervision, inspection, maintenance and education as aids for danger control has been stressed. Regardless of the size of the plant and personnel, these principles can be applied as definite procedures with the production program.

Good leadership and good supervision applied to danger control, inspired by the knowledge that most industrial accidents are man failures and as such cost the company in lowered efficiency, can do much to solve the problem in the small plant.

Fully 80 per cent of the program for accident control does not require

DY CONCERTED action, D Murray Corp. of America is showing an impressive safety record; for instance the accident severity rate for January of this year was 0.006, nearly 100 per cent improvement over January of 1935. The safety engineer of the company, R. A. Shaw, is assisted by efficient safety organizations in each division, their recommendations being published in book form each month. The accompanying article suggests how smaller plants may apply intelligently the safety principles developed by the larger plants.

the expenditure of money. Is there a good reason why a workman in one plant should be required to search through a pile of miscellaneous steel stock for a section, thus exposing himself to cuts and other dangers and wasting time when in another plant a suitable rack would be provided because safety and efficiency demand it? Many have yet to learn that a dirty, disorderly plant is a breeding place for danger, and good house-keeping plus adequate aisle and

working space increase efficiency and promote safety.

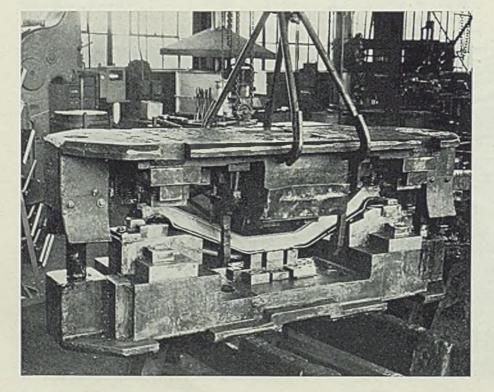
Defective hand tools, poor supervision, poor lighting, poor flooring, unguarded floor openings, slippery floor conditions, poor housekeeping, faulty maintenance, stairways and platforms without hand rails, horseplay, running, improper posture when lifting, inadequate first aid rules, lack of physical safeguards, lack of man training—each contributes its share to the unsavory total of accidents. This enumeration has a direct relationship to the injury causes listed at the beginning of this discussion.

#### Large-Plant Principles Apply

A diagnosis of these danger ills in small plants suggest, as a remedy for control, the application of the same principles so well established and effective in well-ordered large plants. The small plant must take the same medicine consistently and in adequate doses to meet the needs.

As respects danger control, any plant may stagnate as literally as water may stagnate, but just as motion and direction are the remedies in one case, so are more definite purpose, knowledge, activity and efficiency the remedies in the other. Danger control methods cannot boil up from the bottom; they must percolate down from the top.

Even in many small industrial plants a good job is being done, and success has come primarily because the president or owner has personally seen to it that dangers are controlled through frequent contact with his few employes and through maintenance of the danger control principles. Furthermore, the small plant has advantages in the direct application of principles of danger control, as may be illustrated in the following: A policy is developed in the office of a large plant. It is passed on to the vice president, to the general manager, to four superintendents; then to 50 foremen and finally to the workers. The "line loss" frequently resulting in this method in contrast to the short coupled small



OBSERVING precautions in setting up a large die for operation in the toolroom. Leathers are shown over the guide pins which are open when in the press. Also, this cross member is thrown out by an automatic trip which eliminates danger of helper placing his hands between the dies. Each die has a chain slot in the top and bottom sections to avoid slippage of the crane chain

plant shows the latter's advantage. Small plants have the advantage of cost incentive to a greater degree because it is paid out of the pocket direct and the owner or executive is kept more definitely informed of his cause and needs.

In small plants, equipment should be maintained in safe working order, practical safeguards should be provided and used, knowledge of dangers should replace ignorance, accidents should be followed up, scientific danger control including inspection and supervision should replace guesswork. Foresight should replace haphazard treatment. Interest and activity should replace indifference, inertia, laziness.

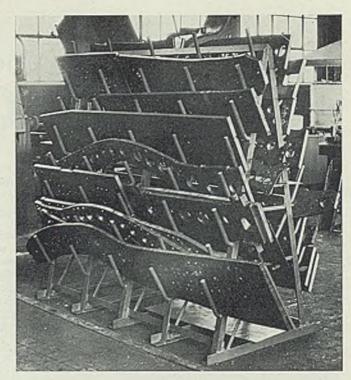
#### Learning by Inference

Operations cannot be carried on without acceptance of that which has taught the large plants the reason for their safety organizations. Small plants have no such basis upon which they can work. Therefore, obviously they must take the question on faith and not on occurrence. They must, as a consequence, be prepared to study men, equipment, materials, processes, and, in advance of the occurrence of an unfortunate circumstance, lay the lines to withdraw those conditions which would make the circumstances possible. That can be developed largely on an analysis basis. They can assume injury in advance, analyze the circumstances to discover the answer and take steps to meet the needs.

If effective danger control is possible and profitable for a large plant, it is possible and profitable for a small plant. Large plants are not safe if not made safe. They are merely aggregates of small departments or units knit into a large organization. From their aggregate and therefore larger exposure basis they learn the need for safer operation, and by scientific operation of safety principles they spread their desire for a good accident record into each department or unit until it has absorbed their entire or aggregate organization plan. The rules and acumen which govern all of these departments or units are the rules and acumen which should govern if any one of these departments should be separated by location from the

#### Industrial Safety To Be Reviewed at Ohio Congress

Two sessions dealing with safety in the metalworking industry are included in the program for the seventh annual All-Ohio Safety congress and exhibit to be held at the Deshler-Wallick hotel, Columbus, O., June 2-4. One session will be de-



GOOD housekeeping is furthered by this special holder for templets and other such material in the machine room

voted to metals and the other to foundries. The congress is sponsored by the Industrial Commission of Ohio.

The tentative program for the two sessions are as follows:

#### Tuesday, June 2

AFTERNOON

#### Metals

"Machine Operators—Employment and Supervision," by Frank M. Small, management's representative, Truscon Steel Co., Youngstown, O.

"Punch Press Guarding," by Jim Wilson, superintendent metal division, Fisher Body Co., Cleveland.

"Local Safety Exhibit as an Aid to Plant Safety," by W. T. Filmer, supervisor

#### Incentive For Operators



OPERATORS who can see the cash value inscribed on the machines they operate are given added incentive to careful work, states W. E. Whipp, president of the Monarch Machine Tool Co., Sidney, Ohio. The plate shown was devised with a space for the cost installed figure to take advantage of that fact

of safety, Youngstown Sheet & Tube Co., Youngstown, O.

### Wednesday, June 3 MORNING Foundries

"The Foundry and the Compensation Law," by J. W. Beall, commissioner, Industrial Commission of Ohio, Columbus. O.

lumbus, O.
"The Dust Problem in the Foundry Industries," by E. O. Jones, director safety and hygiene section, American Foundrymen's association, Chicago.

#### Industrial Fuels Reviewed In A. S. T. M. Publication

Symposium on Industrial Fucls, recently published by the American Society for Testing Materials, comprises four extensive technical papers as follows: "Coal and Coke: Occurrence, Testing and Utilization," by A. C. Fieldner, chief engineer, experiment stations division, bureau of mines, and W. A. Selvig, supervising chemist, miscellaneous analysis section, Pittsburgh experiment station, bureau of mines; "Industrial Fuel Oils," by H. V. Hume, combustion engineer, Atlantic Refining Co.; "Manufactured Gas," by P. T. Dashiell, vice president, and F. H. Trembly Jr., assistant sales manager, Philadelphia Gas Works Co.; and "Liquified Petroleum Gas," by W. H. Bateman, president, Solgas Inc.

The papers are arranged to cover the following general subject matter: Historical background, magnitude of the industry, future availability of raw materials, possibility of new processes, tests which are applied to the materials, significance of tests, utilization of materials, general economic aspects and utilization.

### Gas-Fired Radiant-Tube Annealing Cover for Treating Coiled Bolt Stock

TARTING with the proposition that they wanted the proper type of furnace to produce a structure equal to or better than that obtained by previous heat treating methods, officials of a large bolt manufacturing company had photomicrographs made of samples taken from stock to determine the percentage of spheroidization, and made a complete and careful study of heat treating furnaces and their own needs which resulted in the recent installation of a gas-fired bell-type annealing cover, with radiant heating elements.

This manufacturer produces bolts from steel wire rod by cold heading. The wire rod used is S.A.E. 1035 steel, varying in diameter from a minimum of 17/64-inch to a maximum of %-inch. Sizes most frequently used are 13/32, 31/64 and 37/64 inches.

The wire rod is received from the mill in coils, usually weighing 730 pounds each, regardless of rod thickness. These coils have an inside diameter of approximately 26 inches, an outside diameter of approximately 44 to 54 inches and are approximately 8 inches high. Heat treating is necessary to assure constant and uniform quality of structure. The furnace installed was especially designed by the manufacturer to meet the requirements of the customer.

In brief the installation includes a gas-fired bell-type annealing furnace or cover, three bases, a special cooling cover and two inner covers, together with heat control valves and temperature control instruments.

The heating operation is rather simple. The coils of wire rod are stacked on a spindle on the alloy base plate to a maximum height of 64 inches above the plate. Eight coils, weighing 730 pounds each or a total of 5830 pounds, constitute a charge. Over this charge is placed or lowered an inner cover, then the annealing cover is lowered into position, the cover resting in an alloy sand seal trough, completely sealing the furnace.

The charge is then heated to temperature and soaked for 30 minutes. The annealing cover is removed by an overhead crane, and the special cooling cover lined with high-temperature insulating block, which is designed to control the cooling down to 1000 degrees Fahr. is lowered in place. The bottom of this cooling cover also engages in an alloy sand seal.

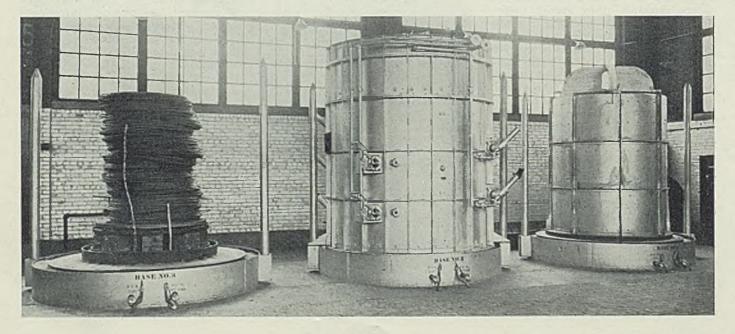
During the heating interval a second base has been charged and, as soon as the annealing cover has been

ON BASE at left are coils of wire rod ready for annealing cover, the latter being shown in position on the center base. At the right is the cooling cover which controls cooling down to 1000 degrees Fahr. lifted from the first charge, it is lowered over the next. While the first charge is cooling and the second is being brought to temperature, the third base is being loaded ready for heating. Later, as the third charge is being heated, the second is cooling, and the first is being removed from the base, and that base is reloaded. Thus a cycle is completed and a new one started.

Data on a typical heat is as follows:

Among the factors to be considered in the design of this installation was the existing crane equipment which had a maximum capacity of 24,000 pounds, replacement of which was an expense to be avoided. The annealing cover as installed weighs approximately 19,750 pounds. Overhead clearance of 18 feet 7 inches is necessary to permit lifting the cover 7 feet 2 inches above its height of 11 feet 5 inches.

The furnace was designed and built by Surface Combustion Corp., Toledo, O. The radiant tube heating elements can be controlled individually and independently.

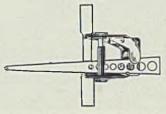


# 70% Greater

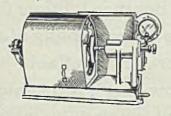
### PRODUCTION

#### In RESEARCH PRODUCTION FABRICATION

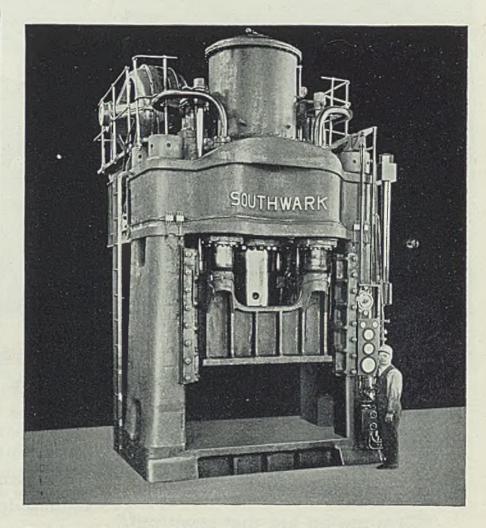
Southwark Serves the Metal Industry



Accurate determination of the deep-drawing characteristics of sheet metal. Southwark offers the means in the Kenyon Extensometer which has been used to define many properties of materials such as yield point, uniform elongation and other values of the plastic range—as well as to determine the relation of yield point elongation to the severity of stretcher strain.



Studying the effects of shock on materials stressed in torsion—such as shafts and axles. Southwark offers the new Carpenter Torsion Impact Testing Machine with 50,000 ft. lbs. of energy at 1,000 r.p.m.—sufficient energy to test any known steel under usual testing conditions in specimen diameters up to 1" and even as high as 138" diameter in many steels. This machine is also extensively used in studying the toughness of tool steels in the various conditions of quenching and drawing.



It's true. Southwark Hyspeed Hydraulic Presses, in some cases, actually have exceeded the production of mechanical presses of the same size and producing the same piece by as much as 70%.

But that is only half the story. A perfectly set product with no "spring back"—lower die development costs—easier and safer die-setting—greatly increased die-life—fewer

rejects and returns for repressing—are the conclusive features which have influenced volume producers of the largest and most difficult stampings ever attempted to select Southwark Hyspeed presses for the job. Ask for Bulletin No. 127.

#### BALDWIN-SOUTHWARK CORP.

SOUTHWARK DIVISION . PHILADELPHIA

Pacific Coast Representative:
PELTON WATER WHEEL CO., SAN FRANCISCO





WELDERS, trying to work with a wild, jumping arc, feel much like a tight-rope walker, putting on his show with a bad case of "jitters" — they are carrying on under severe difficulties.

"Give me an arc that stays put," says the master welder, "and I'll give you good, strong, dependable welds any place you want 'em."

The deep penetration and perfect fusion that proves a good weld is a direct result of arc stability—an arc that is smooth, uninterrupted in action, and with the ability to deliver a constant heat.

Experienced welders choose the P & H-Hansen because it offers the highest degree of arc stability of all welding generators available to-day. They know that it is this high development of arc stability which assures deep, uniform penetration, constant heat and smooth, even metal deposit. Only P&H-Hansen offers so high a degree of arc stability.

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To achieve a perfectly stabilized arc—an arc that "holds" and stays put an arc that "holds" and stays put under all conditions - P&H-Hansen welders embody patented stabilizing coils. These coils are completely imbedded in the main pole flanges—they serve a dual function, as stabilizing and interpole winding. By this unique and exclusive arrangement of the commutating pole windings, P & H-Hansen welders assure the highest degree of arc stability.

The main pole assembly includes a P & H-Hansen patented magnetic bridge which further aids arc recovery and stability and improves welding range. In keeping with its superior electrical design, P & H-Hansen engineers have eliminated power consuming external stabilizers and congenerated is delivered directly to the arc -

thus assuring a quicker, more efficient arc extremely easy to control.

Arc stability is one of many basic P & H-Hansen features, such as uniform current -single current control-elimination of external regulators and accessories. We know that it will be to your interest to investigate and test a P&H-Hansen Welder.

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MILWAUKEE, WISCONSIN

### Surface Treatment and Finishing



# Selection, Application and Use of Finishes for Metals

IV-Surface Conversion Finishes

PREVIOUS installments of this short primer on metal finishing appeared in the March 16, March 30, April 13, April 27 and May 11 issues of Steel

THE surface conversion finishes are produced on the surfaces of metals by chemical action on the base metals to produce oxides, phosphates and other salts of the base metal. Such surface treatments are becoming increasingly important because of their use as preparation methods for organic finishes.

Some of the surface treatments, such as the Bower-Barff and anodized aluminum, are used alone but the majority of them are employed not only to assure a clean surface for the application of organic coatings but also to improve adherence and to provide additional corrosion resistance. The development field covering such coatings is active at present, no less than seven commercial processes of considerable value having been made available for use within the past three years.

As has been mentioned before, the durability of an organic finish depends perhaps just as much on the cleanliness and condition of the surface to which it is applied as on the finishing materials used. Practically all the surface conversion treatments assure a clean surface since the chemical reactions necessary to produce the finish are either self-cleaning or else will not produce the protective film unless the parts are clean before processing.

For iron or steel parts the most popular treatments are phosphating, chromate treatments and oxidizing processes. For other metals, there are the anodic oxidation of aluminum and the dichromate treatment and phosphate treatment of zinc.

#### Phosphating

PHOSPHATE coatings are produced on ferrous surfaces essentially by the attack of phosphoric acid on iron. The coatings produced are crystalline in nature and are firmly bonded to the base metal. The bond is sufficient to prevent effectively the spread of pinhole corrosion under organic coatings. These coatings have the effect of roughening smooth steel surfaces and thus promote the adhesion of subsequently applied organic coatings.

The phosphate coatings are somewhat absorptive which also facilitates the adhesion of organic coatings. The crystalline coatings are brittle, however, and will crumble if the base metal is bent. As the process is essentially one of acid attack, the uniformity of coating does not vary appreciably over irregularly shaped parts if sufficient bath agitation is provided. Barrel methods are used for small parts or sturdy larger parts which will not nest or tangle.

Phosphating processes are usually known commercially by trade names. There are a number of such processes available, all of which produce the same basic type of coating but which differ in method and time of processing (STEEL, Dec. 30, 1935, p. 26).

What might be called normal phosphating involves immersing the parts to be processed in a hot phosphoric acid solution for a period of time which depends on the load and character of the work being finished but is usually from 30 to 45 minutes. It is necessary to remove oily resi-

dues, rust and scale from parts to be processed. Although this type of phosphate finish can be produced on parts which have received a simple alkali cleaning, the most effective cleaning method is steel grit blasting.

There are indications that the rustproofing characteristics of the phosphate coatings are to a large extent dependent on the cleaning method Phosphated parts by themselves do not have good resistance to corrosion due to the somewhat porous and absorbent character of the coating and are therefore usually immersed in oil, wax, lacquer or varnish to seal the coatings. Such parts have a pleasingly dark gray matte appearance after processing, which can easily be made jet black by dyeing before sealing. Even without sealing, the phosphate coating will provide enough corrosion resistance to protect parts during a prolonged indoor stocking period. This is of some importance on items which are to be finished to order in various colors, since the prepared articles can be stocked ready for painting at short notice.

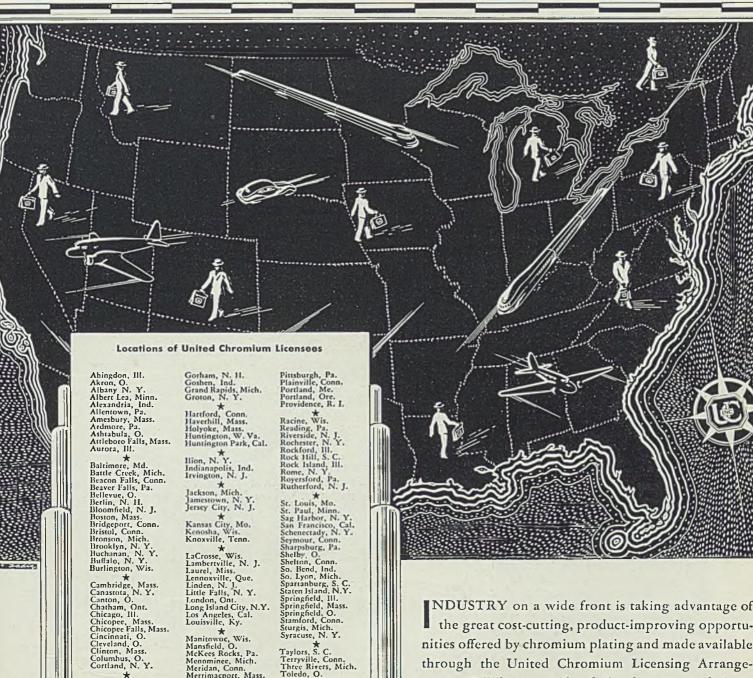
#### Normal Phosphate Process Best

The normal phosphate process produces the most effective coatings of the various phosphating processes used on steel. The reaction between the acid and base metal is practically carried to completion, or until the ferrous surface is so completely coated with iron phosphate that the acid will no longer react with the base metal. Due to the relatively long processing time involved, a number of modifications have been developed which, although they do not produce quite as continuous coatings, are perhaps even better as a base for painting due to their greater absorption of subsequently applied organic coat-

A fast dip method is available which requires only two to five minutes of processing time and which can therefore be economically conveyorized. A further modification of the original process is to spray the solutions on the parts after cleaning (STEEL, March 2, p. 57). This spray phosphating is widely used for pre-

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York, Pa. Youngwood, Pa. paring automobile bodies and fenders for painting. Spray phosphating involves about the same processing time as the fast dip process but does not require the dip tanks which in the case of large assemblies are a respectable item of installation and maintenance cost.

Still another modification of the phosphate process involves the part being finished being used as an electrode in an alternating current bath (STEEL, March 9, p. 42). Electrophosphating of this type involves an extremely short processing time and produces coatings comparable to the quick dip or spray process.

A relatively new oxidizing coating process for steel recently has been made available commercially. This process produces a black protective oxide film which also has value as a preliminary treatment for painting. By means of a five-minute simple immersion in a hot alkaline solution a black oxide coating is produced on ferrous parts. The luster of the coating depends on the condition of the surface treated, anything from a jet black matte surface to a glossy black finish being possible. An inexpensive finish such as this is interesting in the possibilities it affords for the economical decoration of hand tools, razor blades and other similar items.

#### Other Treatments

THE Bower-Barff finish is a coating of magnetic oxide of iron formed on the surface of ferrous parts by heating to dull red heat in the presence of steam. This coating is extremely hard and somewhat brittle and offers unusual service life on articles which are not bent or flexed in service. The coating, by virtue of the process used to produce it, is of course highly resistant to heat. The Bower-Barff coatings usually are dyed and treated with oil or wax to improve their moisture resistance. A large number of steel telephone deskstands were finished by this process with satisfactory results.

The Bower-Barff finish is not used widely at present, probably due to its cost and the expensive manufacturing equipment required. The natural appearance before sealing is a light bluish slate color which is easily darkened by the oil or wax coatings usually applied to prevent finger-printing.

There are two types of chromate treatments for steel as a priming base for painting. One is a simple immersion in a hot solution while the other involves an electrolytic treatment in a chromate bath. Neither one of these treatments is suitable for use as a complete finish but is intended to improve the adherence and durability of subsequently applied organic coatings.

Another type of protective coating

for steel of a temporary character results from the use of a special patented acid-pickling process in which thin coatings of either lead or tin are deposited on the cleaned steel to prevent further etching those surface areas which have already been cleaned (STEEL, March 2, p. 54). The nature of the bath used is such that the metallic coatings do not build up in thickness any further than is necessary to prevent further acid attack of the cleaned area. Such coatings are useful in reducing or eliminating corrosion during storage and stocking but are not suitable for use as complete finishes.

Surface conversion treatments are not limited to steel but are widely used on aluminum and zinc either as complete finishes or as preliminary treatments for painting.

Aluminum and aluminum alloys can be anodically oxidized in any of several acid baths to produce useful coatings of aluminum oxide. These coatings can be converted to the hydrated oxide by various simple sealing treatments which effectively improve the moisture resistance of the coatings. The unhydrated coatings can be dyed in a wide range of colors from jet black to light yellow and can be sealed after dyeing. The sealing treatments used involve boiling the parts in water or aqueous solutions of various chemicals. Although the sealing improves the moisture resistance, it decreases the wear resistance and hardness of the coat-

The inherent hardness of aluminum oxide insures unusual abrasion resistance and the adherence of the coating is good. This type of oxide coating is rather brittle and will crack readily if the coated parts are bent. The adhesion is of such a high order, however, that even the cracked coatings adhere perfectly. Corro-

sion tests indicate that the sealed coatings are sufficiently protective for use as a complete finish for most indoor purposes and that when used as a preparation for painting, the anodic oxidation greatly improves the suitability of aluminum for outdoor and marine use.

Zinc and zinc alloys are treated by a patented dichromate immersion process to improve resistance to corrosion and also to improve adherence and durability of subsequently applied organic coatings. A phosphate treatment for zinc is also available which is of interest in connection with the adhesion and durability of paint coatings. This process consists of a one-minute immersion in a special phosphate solution. A modification of the immersion phosphating for zinc is to apply the solution by brush which is of interest for field application to zinc or galvanized structures prior to painting (STEEL, Feb. 24, p. 43).

#### Summaru

N GENERAL, only a few of the currently available surface conversion treatments are suitable for use as complete finishes but all are of interest in connection with their effect on the corrosion resistance and physical properties of organic finishing systems. The use of a surface conversion treatment not only insures a clean surface for painting, lacquering or enameling but also usually improves the moisture resistance of the complete finish system as well as retarding the spread of pinhole corrosion.

Based on the activity in this field of endeavor and the output during the last decade, it is to be anticipated that many more surface conversion treatments will be made available which will make possible better finishes at lower cost.

# Electroplaters Announce Program for Cleveland Convention and Exhibit

WIDE variety of metal finishing subjects will be discussed at the twenty-fourth annual convention of the American Electro-Platers' society to be held in Cleveland, June 1-4, under sponsorship of the Cleveland branch. This organization last met in Cleveland in 1916. Convention headquarters will be at Hotel Carter.

Twenty-four papers prepared by recognized authorities will be presented and discussed at the five technical sessions. In addition to these sessions, the program calls for two general sessions, one constituting the opening meeting and the other the annual business meeting. Social features of the four-day convention will include an entertainment and dance, an outing at a country club and the annual banquet and dance to ring down the curtain.

One morning and one afternoon will be devoted to plant visitations. Inspection trips will be made to the following plants: Fisher Body division of General Motors Corp., National Carbon Co., and Nela Park division of General Electric Co. in



Wickwire Spencer manufactures High and Low Carbon Wires—in various tempers, grades and finishes—for your specific purpose. Hard-Drawn, soft or annealed Basic or Bessemer Wires—Hard-Drawn annealed, or oil-tempered Spring Wire, Chrome Vanadium Spring Wire—Valve Spring—Music—Clip—Pin—Hairpin—Hook and Eye—Broom—Stapling—Bookbinding—Machinery Spring Wire—Reed Wire—Clock—Pinion—Needle-Bar—Screw Stock—Armature Binding—Brush—Card—Florist—Mattress—Shaped—Rope—Welding. Flat Wire and Strip Steel, High or Low Carbon—Hard, annealed or tempered—Clock Spring Steel—Corrosion and Heat Resisting Wires. Consult the Wissco technical man on your wire problems, however large or small.

WINCO VIRE by Wickwire Spencer Cleveland; and Goodyear Tire & Rubber Co., Akron, O.

During the convention an exhibit of equipment, instruments, chemicals and solutions used in the metal finishing industry will be held at Hotel Carter. More than 45 manufacturers of these products will be represented.

William D. Scott, superintendent of plating department, F. Hohlfelder Co., Cleveland, is president of the Cleveland branch of the society, and William E. O'Berg, president, Empire Plating Co., Cleveland, is secretary. E. Steen Thompson, 905 West Tenth street, Erie, Pa., is national secretary.

Details of the convention program have been announced as follows:

#### Monday, June 1

#### MORNING

Welcome by William D. Scott, president, Cleveland branch.

Welcome to Cleveland by Hon, Harold H. Burton, mayor of Cleveland. Presidential address by Thomas F. Slat-

terv.

Business session.

#### AFTERNOON

"Summary of Researches on Electro-deposition at National Bureau of Standards," by Dr. William Blum, national bureau of standards, Washington.

"Experience in Plating Nonferrous Met-als for Exposure Tests," by P. W. C. Strausser, American Electro-Platers

society associate, national bureau of standards, Washington.

"Rapid Electrodeposition of Iron," by Dr. C. Kaspar, national bureau of standards, Washington.
"Commercial and Practical Aspects of

Throwing Power as a Factor in the Character of Deposits," by Donald

Wood, president, Boston branch.
"Metal Rectifiers," by Dr. R. M. Wick,
United States navy yard, Washington. EVENING

Entertainment and dance of International Fellowship club.

#### Tuesday June 2 MORNING

Plant visitations.

AFTERNOON Outing at Lake Shore Country club.

EVENING

"Orientive Effects of the Geometric and Crystalline Structure of the Basis Cathode on the Crystal Structure of Electrodeposits," by Walter R. Meyer, electro-chemist, General Electric Co., Schenectady, N. Y.
"Present Status of the Electrodeposition

of Tungsten from Aqueous Plating Solutions," by M. L. Holt, instructor of chemistry, University of Wisconsin, Madison, Wis.

"Polishing Grain and Its Application," by Roy Lincoln, chemical engineer, Carborundum Co., Niagara Falls, N. Y.

"Films and Their Relation to Cleaning Before Electroplating," by C. Johnson, technical director, Oakite Products Inc., New York.

#### Wednesday, June 3

"Results of the Electroplating Research

at Indiana University, Including Plating of Tin, Aluminum, Bismuth, Antimony, Tellurium, Silver, Gold, Lead and Nickel," by Dr. F. C. Math-ers, University of Indiana, Bloomington. Ind.

"Calcium Chloride Corrosion of Plated Automotive Parts Can and Should Be Reduced," by Dr. E. M. Baker and Howard R. Wilson, University of Michigan, Ann Arbor, Mich.

"Some Factors Covering the Ductility of Nickel Electrodeposits," by E. A. Anderson, chief metal section, research division, New Jersey Zinc Co., Palm-

erton, Pa. "Brass Plating for Rubber Adhesion," by Dr. Harry P. Coats, Firestone Steel Products Co., Akron, O.

"Effect of Nickel Chloride in Nickel Plating Solutions," by M. Waite, director of research, McGean Chemical Co., Cleveland.

AFTERNOON

Plant visitations.

#### EVENING

"Properties of Fused Alumina Grain for Polishing," by A. A. Klein, Norton Co., Worcester, Mass. "Stability of Plating Solutions," by Gus-

taf Soderberg, Udylite Co., Detroit, "Aluminum Reflectors," by Dr. H.

Work, Aluminum Co. of America, New Kensington, Pa.

"Effect of Polishing on Corrosion Resistance," by William M. Phillips, chairman, research committee.

#### Thursday June 4

MORNING

"Electrodeposition of Zinc and Its Pro-tective Value," by George B. Hoga-boom, Hanson-Van Winkle-Munning

Co., Matawan, N. J.

"Electrodeposition of Nickel on Zinc,"
by J. M. Cosgrove, chief chemist,
Noblitt-Sparks Industries Inc., Columbus, O.

"Buffer Action of Certain Chemicals in Relation to pH Control of Nickel Solutions," by Dr. D. A. Cotton, director of research, Delco-Remy Corp., An-

derson, Ind.
"Effect of Composition and Structure on Corrosion of Nickel Anodes," by A. G. Spencer, metallurgist, Chevrolet Motor Co., Detroit.
"Process Control and Finishing Costs,"

by H. L. Farber, chief chemist, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

"Comparative Valuation of Modern Fin-ishes," by W. Roon, technical direc-tor, Roxalin Flexible Lacquer Co., Elizabeth, N. J.

AFTERNOON

Business meeting. Election of officers.

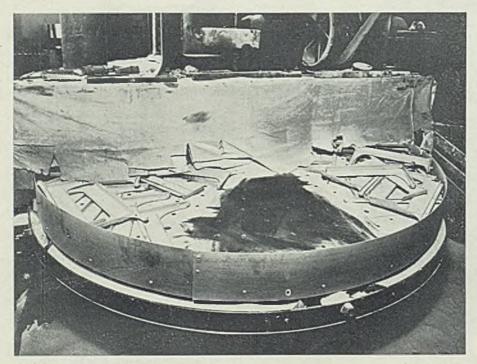
EVENING

Banquet and dance,

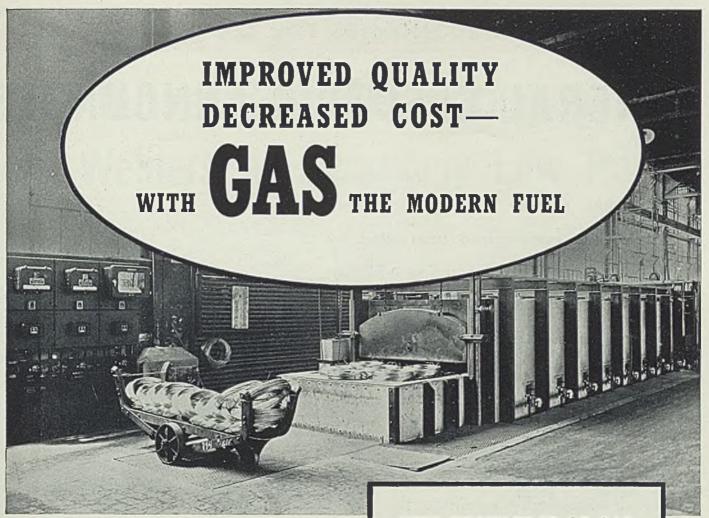
#### Nonmetallic Backing Widens Prefinished Metal Field

Producers of buttons, buckles, advertising specialties and the like will be interested in the cost savings and new products which are made possible by a new development in prefinished metal. Metal volume and weight have been reduced by adhering thin sheets of prefinished metal to cardboard or other nonmetallic material. The adhering cement will remain flexible. Varying thicknesses of metal and backing are available.

#### Rubber Withstands Sandstorm



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Dimensions

Weight Max electrode size Electrode recommended Current adjust30 volts 220/440 volts 60 cycles, singlephase 26 in. by 11 in. by 18 in. 180 pounds 3 in.

G-E heavily coat-

150 amp, NEMA

By taps

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## British Not Interested in Large Strip-Sheet Capacity

ECAUSE economic conditions in the iron and steel industry of Great Britain vary markedly from those in the United States, it seems unlikely that British steelmakers will follow the American lead in building large and numerous plants for the production of stripsheet. This point was clearly emphasized at the annual meeting of the British Iron and Steel institute held in London, May 7-8. General opinion prevailed that smaller productive units are desirable in England because commercial demand is for material not over 20 inches wide and for coils lighter than 150 pounds.

An extensive and unusually fine group of technical papers featured the institute meeting. Subjects ranged from gray iron castings to finished rolled products. Among events of interest were award of the Bessemer and Carnegie gold medals and election of officers.

Sir Harold Carpenter, president of the institute, presented the Bessemer medal to Fred Clements, director and general manager, Park Gate Iron & Steel Co. Ltd., Rotherham, Yorkshire, and stated that the award was made in recognition of the considerable service rendered by Mr. Clements to the iron and steel industry by his investigations and researches on the operation and behavior of blast furnaces. Mr. Clements' book "Blast Furnace Practice" now is regarded as a classical work on the subject.

#### Carnegie Medal Awarded

The Carnegie medal was given to Dr. D. F. Marshall, Sheffield, for his blast furnace research work carried out with the aid of the Carnegie research fund. The results of this work were given in the paper, "Further Determinations of the External Heat Loss of Blast Furnaces," pubpublished in the *Journal* of the institute in 1935.

The following were re-elected vice presidents of the institute: Alfred Hutchinson, London; John Craig, Glasgow; and H. Spence Thomas, Thomas Bros. Ltd., London. Members of the council were re-elected as follows: Right Hon. Earl of Dudley's Round Oak Works Ltd., Dudley, Worcestershire; Capt. R. S. Hilton. Sheffield; I. F. L. Elliot, London; E. F. Law, London; and Dr. T. Swinden, director of research, United Steel Companies Ltd., Sheffield.

Opening the technical sessions, G.

A. V. Russell, Imperial Chemical Industries Ltd., Metal Group Companies, Birmingham, read the thought-provoking paper on plant facilities for strip-sheet production under British conditions. He advanced the view that smaller productive units are desirable in England—in comparison with large units in America—provided that capital costs can be reduced proportionately, and that substantially the same direct costs are attainable.

W. R. Barclay, president, Institute of Metals, London, pointed out that too often misleading comparisons are made between British and American plants, in view of the fact that prevailing conditions are different. British plants often are unjustly criticized. Mr. Barclay emphasized the importance of reheating facilities in the manufacture of strip-sheet, and expressed the view that there is room for a further paper on the layout of furnaces.

A. Allison, Sheffield, stated that the author's scheme tended to bring large American production methods

A CCOMPANYING report of activities at the recent annual meeting of the British Iron and Steel institute was prepared by Vincent Delport, European manager of STEEL.

into British plants of smaller size, Referring to the maximum width of strip mentioned, he said usual commercial demand in Great Britain would hardly be more than 20 inches. Demand is mostly for coils lighter than the 150-pound coils mentioned. He believed more in giving the customer what he desires than in putting down big plant and imposing sizes and other conditions on him. Mills with outputs from 1000 to 2000 tons a week would be better for Great Britain than mills with a 3200-ton output as suggested, and he feared the author's schemes would mean high cost of maintenance, owing to such items as special roller bearings, etc.

Admittedly, said Benjamin Talbot, past-president of the institute, there is a revolution in sheet manufacture, but makers in Great Britain should not follow blindly what is being done in America, in view of the difference in conditions. Another speaker thought that the author's schemes would render difficult the control of

the conditions of the metal, especially in view of the large variety of products required in the country. He pointed out that in the automobile industry strip was required in widths up to 80 and 90 inches.

One paper considered the influence of varying degrees of cold-rolling and annealing temperatures on properties of mild steel sheets. Part I on the influence of cold rolling and subsequent annealing on the Erichsen values and crystal structure was written by Principal C. A. Edwards, University College, Swansea, D. L. Philips and W. H. E. Gullick, of Swansea; Part II on the effects of cold-rolling and annealing on properties of automobile body sheets was prepared by Messrs. Edwards, Phillips and C. R. Pipe, Swansea.

Part I showed that with heavy degrees of cold rolling, complete recrystallization occurs on annealing at temperatures as low as 750 degrees Cent., irrespective of initial crystal size. Under conditions of heavy coldrolling and low-temperature annealing, better Erichsen values are obtained than by present-day commercial methods, for example, when the sheets are almost completely hot rolled to thickness and annealed in batches at temperatures below 900 degrees Cent. Similar results can be obtained by subjecting hot-rolled unannealed sheets to about 10-15 per cent extension by cold-rolling, followed by low-temperature annealing.

Part II seemed to indicate that when complete recrystallization occurs with low-temperature annealing after heavy cold rolling, tensile properties are such as to lead to the view that the drawing qualities of the material should be about the same as those obtained after complete annealing at 950 degrees Cent. It has not been possible to demonstrate whether this is the case, and before this can be done it will be necessary to devise a more reliable method than the Erichsen cupping test to determine drawing quality of sheet material. An attempt is now being made to devise such a test.

#### **Embrittlement Investigated**

Embrittlement of high-tensile alloy steels at elevated temperatures was the subject of a paper by W. E. Goodrich, English Steel Corp. Ltd., Sheffield, in which was recorded results of an investigation conducted on 27 high-tensile alloy steels to ascertain some of the factors influencing embrittlement of these steels when subjected to a temperature of 450 degrees Cent. As a result of the evidence obtained, it was considered that a mildly alloyed chromium-molybdenum steel was the most resistant to embrittlement.

Dr. W. H. Hatfield, Sheffield, in discussion stated that more weight should have been given to factors

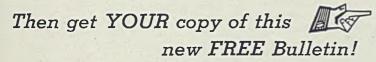
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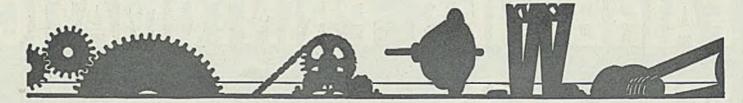
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## Power Drives



#### Troublesome Bearings

SPEED, steady load, and dirt, especially if combined with a high belt tension to give a strong side pull, produce severe operating conditions on fan and blower bearings. Some years ago in an investigation to see what type of equipment had the most bearing trouble an antifriction bearing organization discovered that comparatively few fans and blowers operated trouble-free with ordinary bearings.

In many operations, such as exhaust and heating processes, continuous operation of the fan or blower is essential. Failure may shut down the entire process or group of equipment served until the bearing is replaced. Often fans and blowers are located in places difficult of access to the oiler or dangerous when in operation and so such important bearings may be neglected at times.

Since care and proper servicing are the only means of preventing trouble, neglect is often fatal. The only safe method of preventing interruptions with ordinary bearings has been to replace at the first signs of heating or trouble instead of waiting for possible failure during operation. This policy results in high maintenance expense in addition to the excessive quantities of oil used (such bearings were usually flooded), extra cost of servicing, and greater power consumption.

#### Other Bearing Trouble

Trouble with bearings in polishing and grinding equipment ran a close second in importance to fan and blowers even though the number of failures was greater. This was because the effect of the interruption was restricted to the single machine. Woodworking equipment was third on the list.

The solution offered by the antifriction bearing manufacturer was to provide his bearings in boxes which would replace the existing bearings in the more common types of such equipment, in most cases without alteration. Such bearings are available for a wide variety of machines. Today new equipment of these types generally is provided with

antifriction bearings by the manufacturer.

An interesting part of this study was that users were more interested in trouble-free operation and reduced maintenance than in the economy of reduced lubrication expense and power saving, probably because the first two items were much more obvious than the latter two. Such economies are real, nevertheless, and lasting during the life of the equipment.

#### Wasted Power

T HAS been stated by reliable authorities that it is not unusual in poorly designed and operated industrial plants for 50 per cent or more of the power to be wasted between generation or the incoming transformers and the point of work. Much of this waste may be reduced by knowing where it takes place. Friction is industrial Enemy No. 1. The principal causes of friction and power losses and the points at which these losses can be reduced are:

- 1. Misalignment, the remedy for which is obvious. Misalignment may occur in many places; gears, flexible couplings, chains, pinions or belt pulleys may be power wasters, the same as lineshafts, if out of alignment.
- 2. Poor bearings call for replacement by others with less friction.
- 3. Improper lubricants and servicing are unnecessary and easily remedied.
- 4. Excessive bearing pressures resulting from high belt tension and side pull may be decreased by using belts and pulleys with higher coefficient of friction, wider belts, or pulleys of greater diameter to obtain higher belt speed thus requiring less tension to transmit the same load. Pivoted motor bases also transmit with less initial tension on main drives. V-belts and silent chains are other means of decreasing the initial tension or side pull.
- 5. Gear reductions unless properly designed and fitted are power wasters. Modern speed reducers of

the type most suitable for the work have a much higher efficiency than old type units.

- 6. Clutches and cut-off couplings, if worn, poorly adjusted, or of the wrong type for modern high speeds and service are power wasters. This is not so likely to happen with the better types of clutches of more recent design.
- 7. Slippage losses may be reduced by using belts with higher coefficient of friction, special tannages, belts pliable enough for the small pulley diameters, wider belts, or larger pulleys to give higher belt speeds.
- 8. Electrical losses are mainly in the distribution system through poor connections, feeder lines of improper size, inefficiency of underloaded motors, and power factor penalty. The latter is more an expense than a loss but it accompanies an efficiency loss due to underloaded drives.

Knowing where and how these losses occur will suggest obvious methods of reducing them.

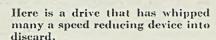
#### Pertinent Pointers

Better steels and improvements in heat treatment now throw the responsibility for antifriction bearing life upon the lubricant and the treatment of the bearing in service where the proper bearing is used for the operation requirements. It has been estimated that improvements in metallurgy and heat treatment have increased the probable life of antifriction bearings five times.

To obtain the most satisfactory belt for any type of drive, study the operating conditions and requirements. Then select a belt which will transmit power most efficiently under those conditions.

When you change to summer oil in the automobile don't forget that exposed speed reducers and some other bearings may also require a change from winter to summer lubricants.





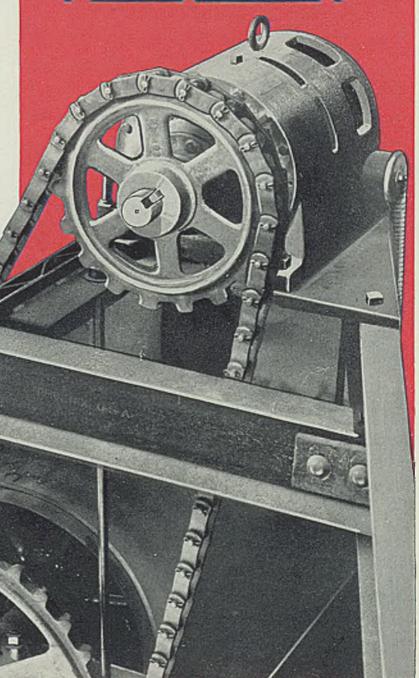
On several ore conveyors in the same plant, this harmless-looking hook-up (except for the large overhung sprocket) pulls a severe load under high torque, frequent heavy shocks and continuous service.

The Philadelphia MotoReduceR has met these requirements successfully. Expensive production delays are a thing of the past. The once troublesome drive is now forgotten.

You, too, will find a solution to that tough drive problem in the Philadelphia MotoReduceR. There is a size and type to suit any industrial operating condition. Send for the MotoReduceR catalog and look over the many interesting features.

## Philadelphia

## MOTOREDUCER

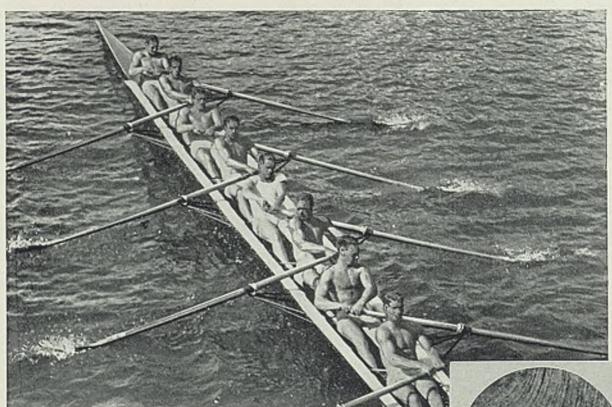


## HILADELPHIA GEAR WORKS

Ann Other and Plant Industrial George and Speed Reducer

Branch Sales and Eng. (2004) Plant York and Problems.

## In FORGINGS ... structural **UNIFORMITY** is an ACTUALITY!



#### EMBODIED IN MILLIONS OF FIBERS-

fibers formed and compacted by rolling and hammering (directional working) the steel which unvaryingly responds to every operation of the forging process.

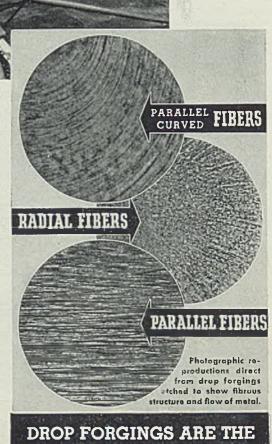
In forgings a practical combination of structural and dimensional uniformity is obtained. Unvarying duplication of such attributes as strength, stamina, and flexibility is achieved by the forging process. Kneaded fibers of steel, an exclusive characteristic of



forgings, embody sound qualities which survive the shocks and strains of gruelling service. Forgings of a like size and shape possess these qualities in precisely the same degree. Avoid risks arising from structural variations in the parts you use. Specify forgings . . . Write for booklet.

SYMBOLIC EMBLEM OF THE DROP FORGING ASSOCIATION This identifies members of the Association

**Drop Forging Association** 605 Hanna Building . Cleveland, Ohio



SINEWS OF COUNTLESS

**USEFUL THINGS** \* \*

## Methods and Materials



## Portable Third-Step Cofferdam Fabricated from Structural Steel

THE spillway dam of the Bonneville power-navigation project, Bonneville, Oreg., is rapidly nearing completion. One of the aids to rapid construction is the type of third-step cofferdam used. The accompanying illustration shows the cofferdam, in the course of construction, between the second and third piers. This steel structure, later to be faced with cofferdam slabs, is designed so as to be movable across the face of the spillway. Two of the cofferdam slabs are shown in the foreground.

By means of this cofferdam and a similar one at the rear, the section between two piers may be shut off to permit placing the concrete of the apron between any pair of piers to its ultimate height regardless of the stage of the water. The height and contour of this apron are shown by the curved line on the side of the second pier from the left.

The steelwork for the third-step cofferdam is fabricated in sections capable of being carried to the site by cableway. These sections are then riveted together and the webs of the larger members buttwelded. The slab sections which will finally be fastened to the steel work, to seal the cofferdam, are built with faces slightly curved to fit the curve of the steel exactly. This curve, however, is not readily observed in the illustration.

S S S

#### Stainless Racks Are Used In Aging Choice Beef

Choice beef is now aged by a scientific process which keeps the meat from three to five weeks at a temperature of 34 degrees Fahr. The result is a mellowed product which has exceptional flavor and tenderness. An interesting feature of the aging process is a new method of supporting the meat during ripening.

Some substitute had to be found for the time-honored method of hanging the meat on a hook because the hole made by the hook meant the loss of two valuable steaks out of every loin. Racks finally were decided upon, but the construction of these racks presented a problem since they had to be strong enough to support 100 carcasses and yet sufficiently open in structure so as not to interfere with perfect air circulation.

Stainless steel was selected for this job because it combined both high strength and corrosion resistance.

s s s

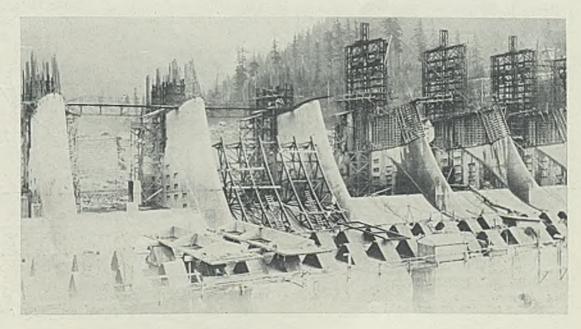
#### Annealing Malleable Iron

One manufacturer uses the following approximate annealing cycle for malleable iron and a pearlitic malleable iron; 36 hours to soaking temperature—1600 degrees Fahr.; 40 hours at 1600 degrees; 14 hours to 1500 degrees; 14 hours to 1400 degrees; 22 hours to 1300 degrees; and 14 hours to 1220 degrees.

\$ \$ \$

#### Electric Eye for Safety

Phototubes have been increasingly applied to safety work in recent years. One large research laboratory "fences off" dangerous equipment by means of light beams. When an unwary person unwittingly approaches this equipment, the light beam is interrupted and the phototube, through relays, shuts off the power.



THIRD-STEP cofferdam in course of crection is seen between the second and third piers from the left

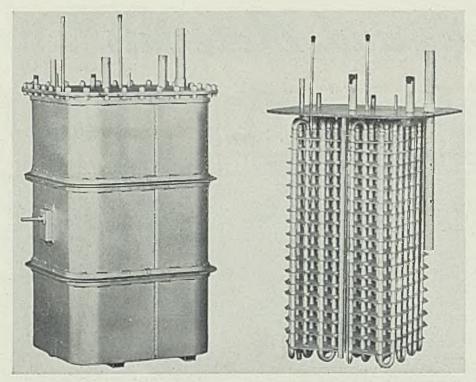


Fig. 1—Tank and coil for heat exchanger used in so-called brine holdover system of mechanical refrigeration for railroad air conditioning

## Special Fabricating Methods Employed In Making Heat Exchanger Tank

BY F. M. YOUNG President, Young Radiator Co., Racine, Wis.

N INTERESTING fabricating job now in production at the plant of the Young Radiator Co., Racine, Wis., is a tank for a heat exchanger. It is for use as a unit in the so-called brine holdover system of mechanical refrigeration for railroad air conditioning. A steel tank and its accompanying coil are shown in Fig. 1. The unit is used with a 50 per cent mixture of antifreeze solution and water so that it is essential that the tank have welded joints which are free from any de-

The tank is made in two pieces of 1/8-inch steel plate, one 42 1/4 x 42 1/4 and the other 42 1/4 x 47 1/4 inches. For this assembly a design, shown at the left of Fig. 2 has been arranged; the edges are turned in and welded together, forming horizontal guides which support the coil in the tank. The coil is equipped with two horizontal angles, one on either side, which slide over the guides in the tank. The side of the coil equipped with such an angle also is shown in Fig. 1.

The two tank plates are welded to-

making the operation almost con-

gether in two fixtures, one for one joint and one for the other. The welder lays a bead in one jig, shown in Fig. 3, and steps over to the other, not shown, where he lays another bead. He is assisted by a helper who loads and unloads the two jigs, thus

tinuous. At first considerable difficulty was had with the welding of these seams due to warpage. Out of this experience, however, the company has developed a special welding technique by which this warpage has been eliminated; The bottom of the tank is made

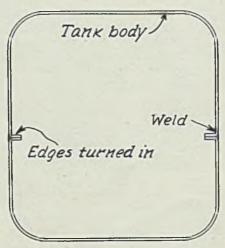
from a 1/4-inch steel plate which is placed inside the tank and 4-inch from the bottom. A bead is electrically welded around the inside of the tank against the outer surface of the bottom plate as shown at the right of Fig. 2. The original design called for the location of this bottom plate on the outside of the tank. Subsequently it was found that the construction was much more rigid when the bottom plate is inserted within the walls of the tank.

#### Sight Glass Built In

One of the details is a sight glass by which it is possible to see whether dirt or other foreign matter has accumulated in the tank. This sight glass is a specially mounted piece of shatterproof glass. A steel ring is grooved out of a flat piece of %-inch boiler plate and is provided with a shelf. On this shelf is placed a cloth backed rubber gasket; then the glass is placed in position, after which a second cloth backed rubber gasket is placed against the outer surface of the glass. Over the gaskets and the glass is placed a cast brass ring which is fastened to the boiler plate ring by means of cap screws. This construction which employs a separate machined steel ring as a support for the sight glass has practically eliminated breakage in assembly.

When filled with solution and subjected to the motion of a railway car in transit, there is a tendency for the bottom of the tank to bulge. To correct this tendency and also to act as a guard for the sight glass two U-section channels have been welded to the bottom of the tank.

A formed angle iron band is weld-



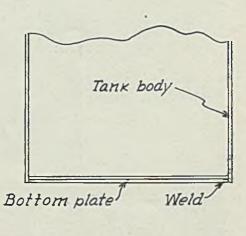
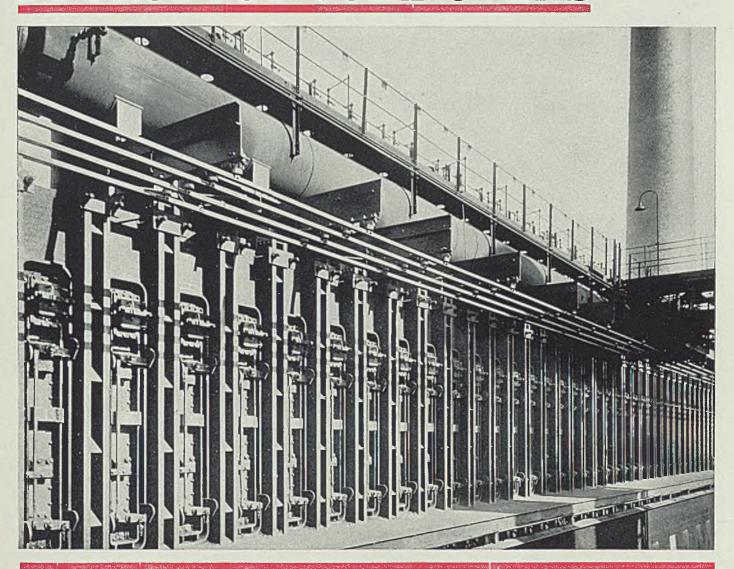


Fig. 2—Tank design with turned-in edges is shown at left. Sketch at right shows method of inserting and welding the bottom plate

#### BECKER TYPE

## LOW DIFFERENTIAL

### BY-PRODUCT COKE OVENS



#### KOPPERS OFFERS:

BECKER OVEN PLANTS...GAS
PRODUCERS...WATER GAS
PLANTS...LIQUID PURIFICATION PLANTS...PHENOL REMOVAL PLANTS...MATERIAL
HANDLING PLANTS...BYPRODUCT EQUIPMENT...BENZOL PLANTS...

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

## KOPPERS CONSTRUCTION COMPANY

PITTSBURGH, PA.

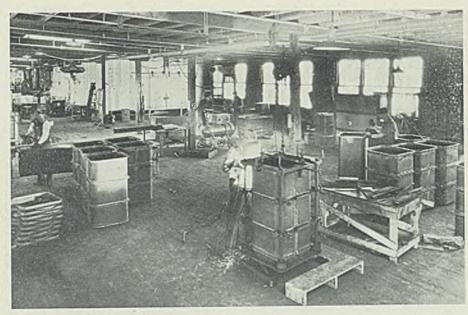


Fig. 3—Tanks are welded electrically in two jigs, one for one joint and one for the other. A helper loads and unloads the jigs, making the welding operation practically continuous

ed around the open end of the tank to reinforce the tank and also to provide a flange to which the coil assembly may be bolted. Two T-section iron bands are welded around the center portion of the tank for further reinforcement. These are held in place by a series of welds approximately 2 inches long.

Both angle and the T-section bands described above are shaped by dies in a power press. These dies are so constructed that the two angles placed back to back can be formed by one operation of the press. This same die is also used for forming the T-section band.

The vent housing covers a 3/16-inch vent hole drilled through the tank wall. The housing in turn is vented to the outside through a 3-inch section of 5%-inch tubing.

The two halves of the tank body are formed by the use of special dies in a large power brake. In order to prevent slippage of the stock in the die, locating holes are punched through the stock before it is placed in the power brake. These holes fit over the pins in the die thus holding the stock firmly in place during the forming operation. After completion of the tank it is sent to the pickling room where it is cleaned and hot dipped in a mixture of tin and lead.

The coil then is lifted by an overhead traveling crane and assembled into the tank with a composition rubber and cloth gasket between the coil header plate and the bottom of the tank. The coil then is bolted in place by means of %-inch cadmium plated bolts. The coil, as shown in Fig. 1, is complete with two inlets and two outlets. The long, small diameter tubes with the black caps are the inlets, while the large diam-

eter tubes with the black caps are the outlets. Shown also on the coil header plate are a supply tube, a suction tube and two thermometer wells

#### Newly Perfected Acidproof Cement Is Quick Setting

Self hardening and quick setting, a new sodium silicate cement, known as No. 31, has been introduced by the Sauer-Eisen Cements Co., Sharpsburg, Pittsburgh. It is claimed to be especially adaptable to bricklaying in connection with linings for pickling

tanks, towers, fillers, vats, pipe and receivers.

Initial set occurs within one hour after mixing and the final set within 36 hours, it is reported. Chemical action of the cement causes the set, rather than drying. The material is shipped in combination form of powder and liquid binder. Tests have shown tensile strength of 365 pounds per square inch, increased to 400 pounds per square inch by addition of 50 per cent silica sand.

The cement is said to be resistant to all acids (except hydrofluoric), oil, fire, water and solvents.

#### Test Carbon-Manganese Steel Bridge Columns

Confirmation of the suitability of carbon-manganese steel for the fabrication of large riveted columns has been obtained as the result of a study recently completed at the national bureau of standards, Washington, in cooperation with the bridge department of the Port of New York Authority.

High-strength steel is being used more and more for large structures such as bridges and buildings. Because of its increased strength, less weight of material is required than when ordinary low-carbon structural steel is used.

Columns are an important part of any steel structure, yet comparatively few tests have been made on large columns fabricated from high-strength steel. When the bridge department of the Port of New York Authority needed information on the strength and behavior under load of large H-shaped columns fabricated from carbon-manganese steel plates and angles, it turned to the bureau of stand-

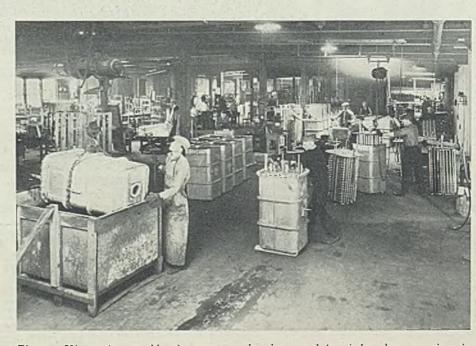
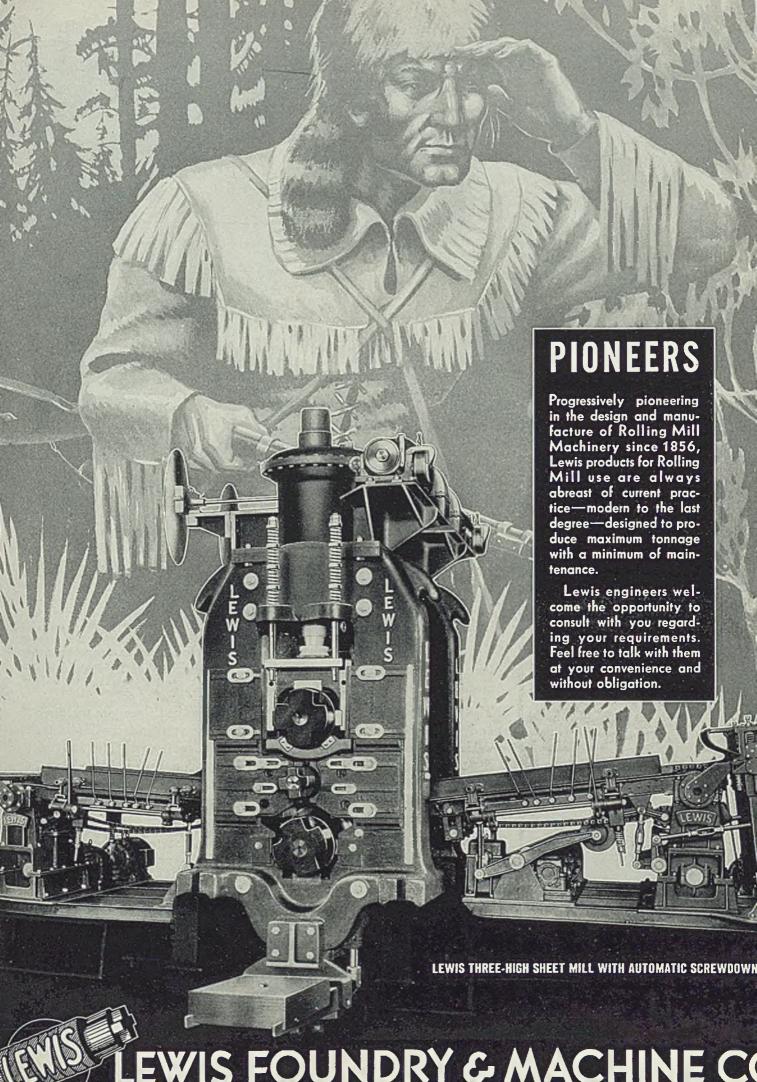
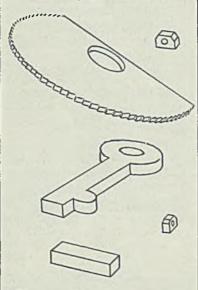


Fig. 4—View of assembly department showing, at left, sight glass opening in bottom of a completed heat exchanger unit





construction and thus reduce your costs and improve your product. Simply take standard mill shapes and cut them to proper size, like this-



Then assemble and fuse these shapes into a single unit by "Shield-Arc" welding, like this-



The Lincoln man nearby can show you how. He is at your service without obligation.

Photo courtesy of Wallace Supplies Mfg. Co.,

## ITS COST IS 25% TOO HIGH

The operating mechanism of this bar-bending machine can be made from standard steel plate and bar stock by "Shield-Arc" welding. Of this construction, it would be 35% lighter; it would be more rigid, unbreakable and its cost would be 25% less.

Until this part is changed to "Shield-Arc" welded construction, it is guilty of wasting money every time it is produced!

The odds are five to one that there is a base, frame, gear, lever, cover, container-or at least ONE PART in your product that can be improved or made at lower cost by "Shield-Arc" welding.

The Lincoln man nearby can point out those parts and show you the easiest and most economical way to change them one at a time to "Shield-Arc" welded construction. His services are yours without obligation. THE LINCOLN ELECTRIC COMPANY, Dept. Y-265, Cleveland, Ohio. Largest Manufacturers of Arc Welding Equipment in the World.

P. S .- The above part has been changed to "Shield-Arc" welded construction. It is now 35% lighter, more rigid, unbreakable. And users report greatly simplified operation as compared to the old design. An improved product, built for 25% less money!

"SHIELD-ARC" WELDING

#### THE LINCOLN ELECTRIC CO. Dept. Y-265, Cleveland, Ohio

Show me some Guilty Parts in our product. Show me how to make them stronger, lighter, at less cost by "Shield-Arc" Welding.

Firm		•••
Name		
Position		
Address		
~	Contract	

ards, which has in its engineering mechanics section a testing machine with a capacity of 10,000,000 pounds in compression.

Eight columns were tested and the properties of the material determined by tensile tests of coupons. The strength of seven of these columns exceeded the capacity of the testing machine, while all the columns deflected in a direction perpendicular to the web.

#### Future Progress Depends Upon Research Program

The only hope for future progress in this country lies along the path of research—improving present products and services, establishing others altogether new, and finding economic uses for waste materials or for raw materials now regarded as worthless, declared Fred W. Sargent, president, Chicago & Northwestern railroad, Chicago, in addressing the recent fourth annual mineral industries conference of Illinois held at Urbana, Ill.

"Out of the fields of pure research," he said, "are coming new sources of food, clothing, machinery, power, and transportation. If not stymied by man-made political laws, pure research, working in co-operation with honest business, will soon move us off this dead-center of depression into an era of unprecedented prosperity."

The conference was sponsored by the Illinois state geological survey, engineering experiment station of the University of Illinois, and the Illinois mineral industries committee; to acquaint industry with the nature of recent and current researches in its behalf and to give it a voice in planning needed researches for the future. The meeting was attended by approximately 200 people representing the executive and technical departments of coal, clay, clay products, petroleum, rock and rock products industries throughout the state.

## Forum To Discuss Problems Of Porcelain Enamelers

Ferro Enamel Corp., Cleveland, announces its tenth annual forum for porcelain enamelers to be held at its plant July 23-25. This three-day course will be devoted to instructions and discussions on general shop practice. A special forum for kitchenware enamelers will be conducted July 17-18.

Classes will be instructed by J. E. Hansen, service director, with the assistance of associates in the company and well-known men in the porcelain enameling industry.

## Welding, etc....



#### by Robert E. Kinkead

#### Machine Designers at Work

ACHINE designers who are beginning to think of their 1937 and 1938 models would do well to spend about a week at River Rouge, Detroit. Something is happening up there that has an important bearing on all machinery.

Ford hires the best men he can obtain and pays them well. The machinery manufacturer is expected to furnish machinery that such men can operate with two or three days' experience. It may give the machinery manufacturer cold chills to see a green man take hold of the controls of a line of machinery which cost half a million dollars and experiment with it to see if he can make it work. If the machinery does not have protective limit switches and interlocking controls, it is just too bad for everyone concerned. The brains are expected to be built into the machinery so that the operator does not have to be highly experienced to get results.

There is more long-term significance in this requirement for machinery in the matter of preventing unemployment than in anything Mr. Roosevelt has suggested up to the present time. Carried to its logical conclusion, any operator could operate any machine to make anything people want. It is the answer of manufacturing industry to the problem of technological unemployment.

Such machinery represents sociological and economic progress.

#### Applied Mechanics

PREDICTION of stresses and strains in welded structures is difficult in all cases and impossible for many service conditions. Application of the formulas of applied mechanics is based always on a known and smooth contour and upon the presumption of no discontinuities in the metal. Such theoretical conditions are seldom encountered in actual practice. Strain, or deformation, is always a function of stresses

IN THIS column, the author, well-known consulting engineer in welding, is given wide latitude in presenting his views. They do not necessarily coincide with those of the editors of Steel.

in three dimensions and often the element of time is a factor. The problem in actual engineering becomes, in many cases, too complicated to attempt a solution.

Qualitatively, applied mechanics offers valuable information on which the stresses and deformations in a given structure might be estimated. Quantitatively, the solution obtained by applied mechanics may miss the mark by a mile.

Except for the high safety factor which comes from the plastic range of deformation which may be relied on in steel, engineering calculations of stresses and strains might be dangerous.

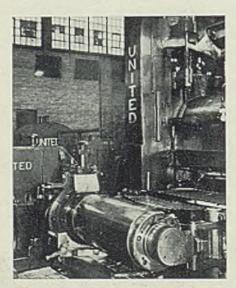
No engineer can know too much about applied mechanics, but the necessity for the use of discretion is ever present.

MICKEY, AN IRISH TERRIER, has just joined the family. Things being as they are, he really ought to have a welded steel house. There seem to be practically no dog-house architects who know how to design a welded steel house. Manufacturing equipment is not readily available which may be used to form and weld the steel into a creditable job. It would require about two weeks' hard work arranging details to get Mickey a welded steel house, so he probably will have a wood house. It seems possible that the same troubles account for the fact that practically all new houses being built these days are of materials other than welded steel. The steel mills would like to have the vast tonnage that would come from steel homes, but until they do something more than just want the tonnage, Mickey and the rest of us will have wood houses.

## New Device Indicates Rolling Mill Pressures

NE of the most important factors in the development of the rolling mill process is the necessary consideration of the variables effecting the magnitude of the rolling pressure. In early mill designs, where only two rolls were employed, it soon was recognized that if the material to be rolled became wider, and larger diameter rolls were required for maintenance of gage uniformity, a point was soon reached where no increased reduction could be taken effectively. A study of rolling pressures showed that the larger rolls required greater pressures for a given reduction than the smaller rolls, and thus the efficacy of the 4high mill became established.

With the requirements for wide strip, however, has come the problem of bearings with sufficient capacity, and as the desirability for lighter gages in wide strip developed, certain difficulties in rolling technique became significant. These problems have arisen owing to the unavoidable flexibility of the most rigid rolling mill structures. When rolling steel involving millions of pounds, the composite internal flexibility of the mill parts may exceed the gage of the strip being rolled. Many early disastrous experiences were had when operators, wishing to increase their



Typical installation on an existing 4high mill. Gage equipment is shown mounted on outside of housing post

reductions, operated their screwdowns to bring their rolls tighter together, not having any means of knowing what the load between rolls might be.

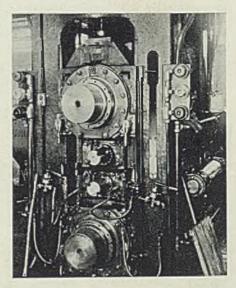
Another rolling problem, emphasized in wide mills, has been the proper crowning of the rolls to get a flat product. However, once the proper crown has been established for a given class of rolling, it is important to realize that this is true only for one proper rolling pressure, everything else being held constant.

#### Why Loads Should Be Known

There are at least three major reasons why rolling mill loads constantly should be known to the operator: (1) avoidance of roll neck and screwdown bearing overloads and resultant breakage or premature fatigue; (2) prevention, in the thin gages particularly, of excessive rolling pressures resulting in roll spalling and fracture; (3) maintenance of a desirable constant load for accuracy in flat rolling-this last is of particular importance in skin pass rolling. In addition, the only proper way to set the screwdowns for a mill is to have the pressure on both screws the same, provided the steel coming into the mill is uniform. This easily can be done by having both screw pressures constantly indicated to the operator. With such equipment, he immediately would detect whether the material coming to the mill was heavier on one side than on the other and could take steps to correct the difference. In hot mills nonuniformity of roll cooling and consequent loss of gage accuracy immediately are indicated by such apparatus. For tandem mills, hot or cold, a proper division of load between stands, and hence the most economical operation of the mills, is permitted with load indicating instruments on roll stands. As an informational source as to what the proper rolling pressures are for various materials, such as new alloy steels, etc., and to determine whether the steel is being punished by excessive rolling, roll pressure equipment is desirable.

Many wide strip mills in this country have been equipped with a device known as a pressuremeter and built by the United Engineering & Found-

ry Co., Pittsburgh. This instrument indicates at as many points as is advantageous (for instance at both control benches on reversing cold reducing mill) and records at still another location, say in the mill superintendent's office. It utilizes the stretch of the housing as the means of actuating the electromagnetic instru-ments—the stretch of the housing being an accurate measure of the rolling loads. This stretch over a properly chosen gage length is utilized to change the air gap of an induction micrometer, which is an instrument that consists essentially of two relatively movable armatures, one of which carries coils forming two legs of an A.C. bridge, the other two legs being formed by a potentiometer located at the convenience of the operator. By the proper proportioning of the mechanical and electrical parts, housing elongations of 0.00001-inch can be observed. For the usual housing proportions where, for reasons of rigidity, the maximum tension stress in the housing posts due to the rolling loads varies from 1000 to 2000 pounds per square inch, this means load variations of 0.5 per cent can be detected. As indicators, specially designed watt-meter type instruments are used, the electrical readings being linearly proportional



Entire gage equipment on new mills is contained in slot in housing post.

Cover is flush with housing post

## KOROLAC PLATING RACKS REDUCED CURRENT COSTS 40%

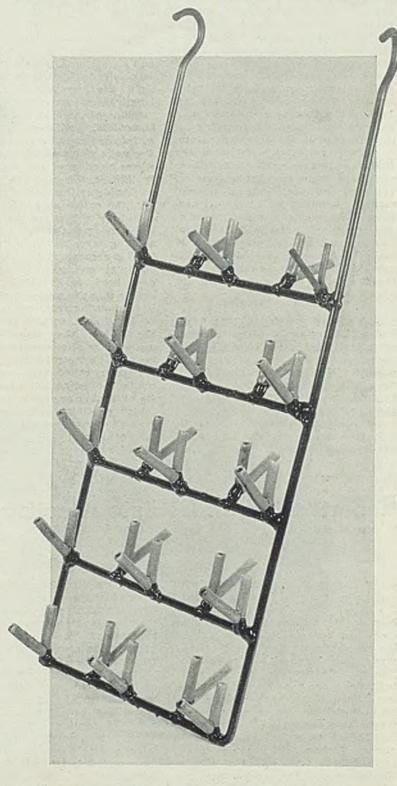


KOROLAC—new Goodrich discovery for coating plating racks—already has remarkable savings to its credit. For example, in the plant of a large automotive accessory maker, Korolac racks were tried in nickel and chrome-plating. Electric current consumption was reduced 40% and production so increased that a requisition for a generator (needed for increasing volume) was cancelled.

Plating racks covered with Korolac have stood daily use for six months in chrome-plating baths which had ruined rubber and lacquer coverings in one day.

Korolac is a new synthetic rubber-like material—tough, resistant to practically all corrosives and plating baths, and with high dialectric strength. Korolac will not contaminate solutions. It can be applied to racks by a simple dipping process in your own plant or at points conveniently located near you.

Korolac is already revolutionizing plating costs. Learn how great these savings can be for you. Write The B. F. Goodrich Company, Mechanical Rubber Goods Division, Akron, Ohio.



## Goodrich ALL products problems

to the rolling loads. The voltage applied to the bridge is kept constant, for which purpose either a voltage regulator or a motor-generator set is used.

In order that the meters be made to read the screw or bearing load directly in pounds, or rather hundreds of thousands of pounds, a calibration of the mill is made after the equipment is installed. This is performed preferably by placing a hydraulic jack between the backup rolls (with the work rolls removed) of sufficient capacity to strain the mill in the neighborhood of its normal load. This jack is a specially designed piece of apparatus, checked at the bureau of standards, and accurate to within 1 per cent. In this manner, the high-pressure gage readings are associated with the electrical meter readings and the electrical meters marked accordingly. Saddles are placed between the jack and the rolls and made to fit the roll diameters exactly; during this procedure the highest stresses in the rolls are no greater than the same stresses during the actual rolling operation.

#### Calibration Is Accurate

The proper location of the gage bar, which serves to concentrate the stretch of the housing over a length corresponding to that of the bar down to the induction micrometer proper, is along the neutral axis. In this manner, it can be demonstrated that a calibration made with or without the bearing chocks in the mill will be accurate for the mill with any type of chocks in position and

under any rolling loads, provided that both work rolls are being driven.

Instrument mountings of two types are used, depending upon whether the equipment is to be adapted to a new mill or a mill already installedas shown in the accompanying photographs. For new mills, provisions are made whereby the housing posts are slotted to receive the entire gage equipment, a flush surface being obtained by use of a heavy inset cover and a neat, unobtrusive construction is obtained. The cover is made oil tight, the gage bar over its entire length being surrounded with a light machine oil so that the bar and its immediately adjacent housing are maintained at the same temperature. For mills already built and installed, where slotting of the housing posts is difficult, the gage bar is attached preferably on the outside of the housing, the entire apparatus being enclosed by a heavy cover welded to the housing and carrying a thick insulating layer and an oil bath within. For accurate and easy adjustment of the air gap, a mechanical micrometer head is provided, built together with the gage equipment within the housing post, For further ease of adjustment, such as zero shift, or the like, the potentiometer is mounted at the operator's convenience on the control bench.

Equipment of this type can be easily applied to all types of mills for either hot or cold rolling, 2-high, 3-high or 4-high construction. During roll changes no interference with the equipment whatsoever is involved.

### Report of British Institute Meeting

(Continued from Page 58)

actual composition. than Among other points, he mentioned the time during which the steel had been heated; whether the heat treatment had been rapid or slow; also, the process by which the steels were made should have been indicated. The paper seemed to indicate that high nickel content in nickel-chromium-molybdenum steels disqualifies such steels for use at superheated steam temperatures. The speaker said he had made special steels in the electric furnace which stood those temperatures well, and this shows the influence of the process of manufacturing steel on properties. He further stated that the only test for such steels is under service conditions and over a period of years.

T. H. Turner, Doncaster, said that engineers are greatly worried by the different kinds of brittleness or cracking that appear in steel, and now the author of the paper brings to light another form of brittleness, due to high temperatures. The question is, which of the metals used in the alloy is mainly the cause of such brittleness? The paper seems to point to the great influence of heat-treatment.

Dr. T. Swinden, director of research, United Steel Companies Ltd, Sheffield, stated that in past research nickel had been found to have the effect of causing embrittlement, so a chromium-molybdenum steel was tried, and this was found to be free from embrittlement at elevated temperatures.

H. J. Tapsell, Dr. M. L. Becker and C. G. Conway, National Physical Laboratory, Teddington, presented a paper on the behavior of five cast irons in relation to creep and growth at elevated temperatures. Results of the investigation showed that the rates of creep and growth of ordinary gray cast iron and nickel-chromium

cast iron may be reduced considerably by preliminary heat treatment below the critical temperature for a suitable period, and, for that reason, these irons in the heat treated condition may have additional useful application.

J. G. Pearce, director, British Cast Iron Research association, stated that in his opinion this was the most comprehensive paper on creep in cast iron as yet published in any country.

W. T. Griffiths, Mond Nickel Co. Ltd., London, expressed regret that the irons investigated in the paper had been termed "typical" irons, as certain results showed that they do not behave as "typical" irons-such as are used for heat-resisting purposes. Referring to the method of counteracting the effect of chromium by raising the silicon content, the speaker stated that there are other ways of arriving at the same result. He said that with austenitic irons it seems that if you increase the silicon content, other modifications should be made to other components to counteract the effects of the increased silicon.

Dr. A. L. Norbury, British Cast Iron Research association, laid stress on the importance of the atmosphere in which the experiments were made, and also pointed out that the results are affected by the compositions of the particular irons chosen.

#### Light Effects on Corrosion

A paper on the influence of light on the electrode potential and corrosion phenomena of mild steel, by Prof. C. O. Bannister and Dr. R. Rigby, Liverpool university, gave a review of previous work on the effect of light on the corrosion of iron and steel. In the investigation it was found that in the absence of oxygen only slight differences of potential between illuminated and nonilluminated specimens were recorded, but on aerating the electrode to be illuminated, a marked response to illumination was shown.

Dr. U. R. Evans, Cambridge, explained that if one considers light as a form of radiation, such radiation, when absorbed either by the vessel or the liquid containing the test piece, or by the test piece, develops heat; if this heat is absorbed by the liquid and the vessel, certain convection currents take place and, as a result, there is an electrical effect; if the heat caused by the radiation is absorbed by the metal, the convection currents are inverted and a different electrical effect is the result. The photochemical action also has to be considered, and, taking the problem as a whole, there are a number of effects, some of which tend to counteract the others. It would be necessary, therefore, to find a method enabling these various effects to be separated. There are means of get-

(Please turn to Page 82)



that Sterling is among the foremost manufacturers of grinding wheels for the Foundry industry?

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#### Annual Bulletins Issued by Kaiser Wilhelm Institute

The Kaiser-Wilhelm Institute for Iron and Steel Research, Dwsseldorf, Germany, reports extensive work in 1935, despite a general breaking up of housekeeping and moving to a new location. As will be seen from the following titles, the chemical side of metallurgy as well as the mechanical side has been treated:

271. Valuation of iron ores.

272. Vibratory strength and damping properties of carbon steels as a

function of chemical composition and heat treatment.

273. A focusing chamber for X-ray reflection photography.

274. The effect of carbon as a reducing agent upon the reactions in steel making with acid slag.

275. The influence of the roll diameter in cold rolling of strip steel.

276. On the shape of stress-strain curves of steel in the temperature range of blue brittleness.

277. Effect of age on the properties of newly rolled steel rails (of basic converter steel).

278. Influence of die, lubricant, and velocity of draw upon die re-

sistance (power consumption) in the drawing of thin steel wires.

279. The equilibrium between iron and nickel and their saturated silicates

280. Tests on the sequence of metallurgical events in the making of a basic open-hearth steel heat.

a basic open-hearth steel heat. 281. On the mechanism of the alpha-gamma transformation of iron.

282. X-ray analysis of the distribution of stress and of excess stresses in steel.

283. On quenching strains.

284. On the quenching power of various liquids.

285. On the rearrangement of molecules in iron between 160 and 1300 degrees Fahr.

286. The use of potentiometric analysis for the determination of cobalt and manganese in steel.

287. Changes of crystal shape in electrolytic iron.

288. A new vacuum furnace and its use for determining oxygen in steel.

289. Experiences with the roll pressure tester "Pasopos."

290. Cold rolling of strip steel. Influence of roll material, linear speed, width of strip, and previous cold deformation.

291. The reactions of chromium with acid slags.

292. Influence of stretching and aging on the behavior of steel under vibratory stress.

293. Mechanical properties of drawn steel wire as affected by the linear speed in lead patenting.

The bulletins are in German, of course, and can be obtained in one volume or separately. They are published by the Verlag Stahleisen, Dusseldorf, Germany. Further details may be obtained from Prof. W. Trinks, Carnegie Institute of Technology, Pittsburgh.

## Map Shows Location of Plants Making Ceramics

Map of Ceramic Plants of the United States; available in two sizes, 22 x 17 inches and 44 x 34 inches; paper, cloth back, panel board back or roll type; published by J. H. H. Muirhead, New York; supplied by STEEL, Cleveland, at prices ranging from \$1 to \$8.50; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London.

This 1936 map, printed in black and white, is based on the Ceramic Trade Directory and shows the location of all cities, towns and villages having ceramic plants. Exact location and extent of the industry may be seen at a glance. So many plants are located in Ohio, Pennsylvania and New Jersey that large-scale maps have been inserted. On the face of the map there is a list of companies operating in each place.

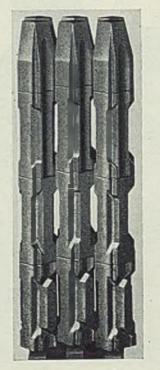
Nine classifications of product are given as follows: (1) Artware; (2) chinaware, vitrified; (3) earthenware, semiporcelain; (4) electrical porcelain; (5) floor and wall tile; (6) whiteware; (7) sanitary ware; (8) stoneware, and (9) terra cotta.



### THE AMERICAN OPEN JOINT STOVE CHECKER for BLAST FURNACE STOVES

Its Efficiency is due to the following points:

- 1. All bricks designed to give greatest structural strength and weight.
- 2. Each brick interlocked with four adjoining brick; also interlocked horizontally at each course—so they cannot twist, shift and obstruct flues.
- 3. Maximum weight in top section of stove where maximum temperature exists.
- 4. 92" of brick surfaces open to gases as heating surface.
- 5. Open joint produces complete cross circulation of gases, with no horizontal surfaces.
- Chanelling and dead flues eliminated.
- 7. Maximum Heating Surface consistent with sufficient weight in each section of stove.
- 8. Minimum cost per sq. ft. of Heating Surface.



### WILLIAM M. BAILEY COMPANY

Engineers

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## Progress in Steelmaking



## New Blower Reduces Hazard Involved in Cleaning Out Open-Hearth Taphole

QUIPMENT necessary to insure a good tap from an open-hearth furnace taphole well cleaned out by safe means consists simply of a length of ½-inch pipe bent about 5 feet from one end and connected at the other end by a hose to a supply of compressed air. To the end of the 5-foot bend is attached a newly developed device known as a taphole blower. This is a conical shaped steel casting weighing 3 pounds and is drilled so that a single blast of air is emitted through a hole in the nose and eight blasts through apertures provided at the rear.

After the mud plug is removed from the taphole, the blower is inserted, the air turned on and the second helper feeds the blower up to the hole as the dolomite is removed ahead of it. An occasional retraction of the blower clears out any dolomite which has fallen short of removal. This is accomplished by the compressed air coming from the eight jets at the rear of the blower. If desirable, the dolomite may be recovered from the spout. Any dust emitted from the taphole may be carried away from the operator by a small jet of air from over the taphole casting. In some open-hearth shops this jet of air comes from a 1/4-inch line controlled by the same valve that admits air to the blower.

#### Affords Straight Tapholes

The advantage to be derived from the use of this blower is that the second helper can stand 5 or 6 feet away from the spout and clean out the hole clear up to the shell of the furnace just as large as it was when closed up and without fear of a breakout, in about one-third the time required for old-style digging. This results in straighter, cleaner tapholes and therefore 1-rod taps and good drainage of the furnace.

The superintendent of one large open-hearth shop has found the blower highly successful particularly on single burned dolomite. He reports an attrac-

tive saving in oxygen and good taps. The blower, shown in the accompanying illustration, is manufactured by W. C. Hogg, 703 Gulf building, Pittsburgh.

#### No Blowtorch Is Required

Removal of old and peeling paint in various departments of iron and steel plants now can be accomplished quickly and easily by the application of a recently developed paste, thus obviating the use of the blowtorch. The paste is applied by brush and permits stripping of the old paint down to the wood or steel as the case may be. The surface then is ready for fresh paint without requiring sanding.

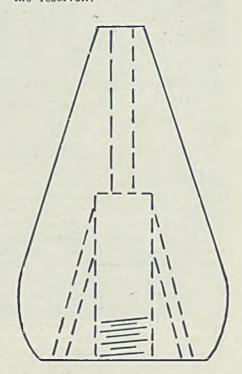
#### Metal Carries Heavy Loads

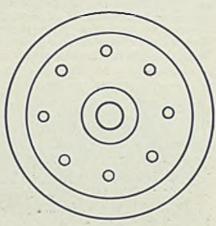
Bearing metal capable of carrying heavy loads at slow to medium speeds has been developed. The new alloy has a yield point in compression between 24,000 and 25,000 pounds per square inch which indicates a safe bearing pressure of 4000 pounds per square inch with a factor of safety of five. The metal is intended particularly for housing nuts, slippers, slides and other rolling mill parts.

#### Oil Cup Protects Bearings

Reliable and economical bearing protection is afforded by a recently devised thermatic oil cup which requires no other attention than filling. The device operates simply by the expansion of air due to the normal increase in temperature of a running bearing. Expansion of air forces the oil from the bottom of the

air chamber, and that supply is replaced from the cup reservoir by gravitational action. Sufficient air to maintain pressure on the oil is admitted through an inlet in the base of the cup. Whatever foreign particles may be in the oil when put into the cup are removed by an 80-mesh filter screen at the bottom of the reservoir.





Conical-shaped cast-steel blower for open-hearth tapholes designed to deliver compressed air through nozzle and eight rear jets simultaneously

## New Equipment

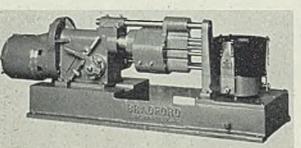


#### Drilling Machine-

Bradford Machine Tool Co., 657-671 Evans street, Cincinnati, has recently developed a semiautomatic bench-type drilling machine for drilling holes in a Textolite bucket. The operation reA spindle with three-point support is mounted in a heavy-duty headstock. Counterweights to compensate for offbalance weights of fixture and crank are mounted on both the head and tailstock spindles. Spindle and shafts are

strokes per minute respectively. Air consumption of these instruments is 5 and 6 cubic feet per minute. The smaller unit weighs 2 pounds and the larger 4 pounds.

Harold E. Trent Co., 618-640 North



Bradford semiautomatic drilling machine

quires 45 seconds and consists of nine groups of five holes each, which must be drilled cleanly without burrs or rough edges. The buckets are placed in three spring fingers which rotate it into the nine required positions. The drill is then automatically shut off until it is reloaded. These buckets are used in rayon spinning and the holes must be uniform.

. .

#### Crankshaft Lathe-

R. K. LeBlond Machine Tool Co., Cincinnati, has developed a heavy-duty universal crankshaft lathe for turning diesel and other heavy-duty crankshafts. It is adjustable to any throw up to 31/2 inches, for a 7-inch motor stroke. It can be indexed to any division for two, three, four, six or twelve positions. A change of tooling adapts the lathe to any crank within its range.

mounted on antifriction bearings, providing smooth drive for the work. The variable-speed motor gives a gradation of speeds for the most productive output within the range of the lathe. The drive from the motor is from V-type belts through a multiple-disk clutch. A disk brake built into the same unit stops the spindle when the clutch is released. Both head and tailstocks are power driven, avoiding possibility of springing the shaft out of line.

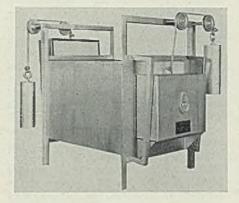
#### Pneumatic Chisel—

Dallett Co., 165-189 West Clearfield street, Philadelphia, announces a new tool for the pattern shop or welder. It is a pneumatic chisel for use in cleaning or chipping welds, or in making patterns. The tool is made in two sizes for light or heavy work, delivering 7000 and 7250

## Fifty-fourth street, Philadelphia, has

Electric Furnace-

built a variation of the Trent ML-type furnace. The new unit is intended for operation at 2000 degrees Fahr, and it is equipped with a door at each end so that in the special brazing work for which it is designed the operators can work at both ends. Inside dimensions of the furnace are 7½ inches wide, 5½

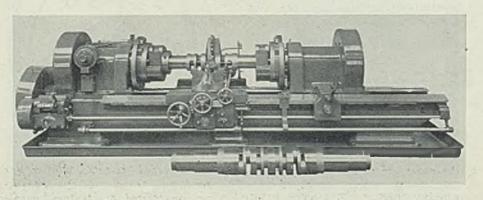


Trent electric brazing furnace

inches high, and 14 inches deep. The connected load is 5 kilowatts at 220 volts, and temperature is maintained with pyrometer control.

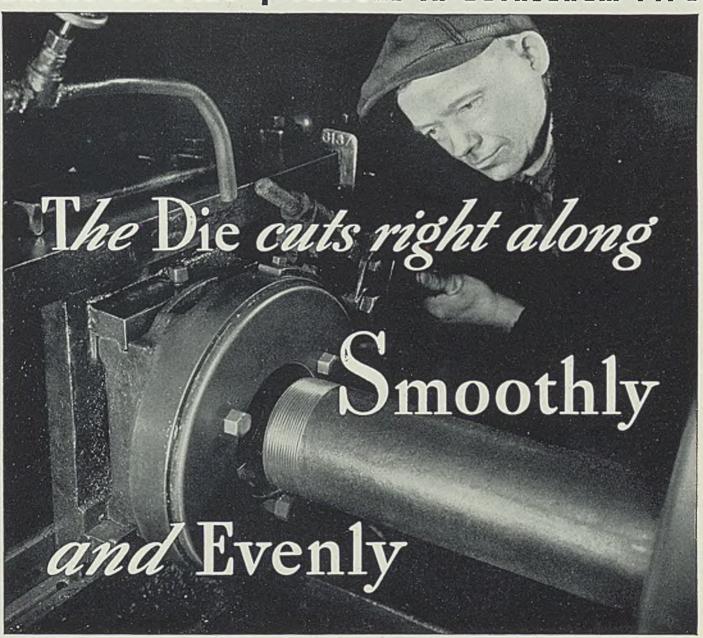
#### Thread Grinder—

Reed-Prentice Corp., Worcester, Mass., is introducing the Newall automatic universal thread grinder illustrated here. This machine is designed to grind taps, gages, dies, chasers, bolts and all precision threaded work with speed and accuracy. Pitch accuracy is controllable within 0.001-inch. The method used by the machine is to take a series of light cuts at a high speed, a singleribbed wheel being used for the work. By this means strains are released and errors corrected, and the temper is not drawn. Provision is made by means of a cam for grind-



LeBlond heavy-duty universal crankshaft lathe

#### AMONG THE PLUS + FACTORS IN BETHLEHEM PIPE



Fast assembling, low installation costs, go hand in hand with the true, sharp threads which Bethlehem Pipe so readily takes. It's the clean, uniform metallic structure of Bethlehem Pipe that makes it thread so easily and accurately. Whether threaded by machine or on the job, once the die gets a bite it cuts right along, smoothly and evenly. The resulting true, freerunning threads simplify coupling, form tight, leak-proof joints.

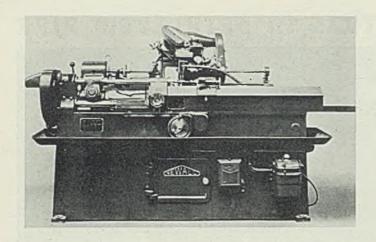
This highly uniform structure of Bethlehem Pipe, its freedom from hard or burned spots or slag inclusions, also makes it exceptionally strong, ductile pipe. It bends and flanges excellently and has tight, strong welds. Another advantage in any application is its freedom from mill scale, inside and out. It is straight, uniformly round and true to size.

Bethlehem Pipe is pipe with an abundance of plus factors that all pull for lower labor costs, better workmanship, in a wide range of applications.

BETHLEHEM STEEL COMPANY, General Offices: Bethlehem, Pa. District Offices at Albany, Atlanta, Baltimore, Boston, Bridgeport, Buffalo, Chicago, Cincinnati, Cleveland, Dallas, Detroit, Honolulu, Houston, Indianapolis, Kansas City, Los Angeles, Milwaukee, New York, Philadelphia, Pittsburgh, Portland, Ore., Salt Lake City, San Antonio, San Francisco, St. Louis, St. Paul, Seattle, Syracuse, Washington, Wilkes-Barre, York. Export Distributor: Bethlehem Steel Export Corp., New York.



BETHLEHEM STEEL COMPANY



Reed-Prentice automatic thread grinder

ing the reliefs on taps and for relieving straight and spiral flutes of any number. One of the main features of the machine is the diamond truing device with direct and positive control by an enlarged thread form operating on the pantagraph principle.

Radial Drill-

Morris Machine Tool Co., Cincinnati, is offering a 9-inch column radial drill, illustrated herewith. It is driven by a constant-speed reversing motor, the reversing switch being built into the head at the lower right hand corner. The machine is started by bringing the lever down and reversed by raising the lever. A magnetic reversing switch is mounted in the rear of the arm, which protects the motor from overloading and undervoltage. The head contains all the speed and feed change mechanism with all parts automatically lubricated. The lubricating pump is driven at a constant speed to insure the proper amount of oil at all times. The flow of oil is indicated by a sight gage at the top of the head. Another gage is provided at the bottom to indicate correct oil level. The coolant system is a motor driven pump mounted on the base, giving volume of lubricant without pressure.

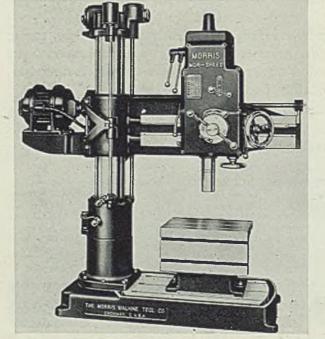
#### Manifold Air Control Valve-

Hannifin Mfg. Co., 621-630 South Kolmar Ave., Chicago, announces an improved type of "packless" manifold air control valve, of compact construction and arranged for simple and convenient piping installation. All types are available to control any number of air cylinders. The base is of one piece with inlet and exhaust ports at the ends and cylinder ports at the bottom. The bronze disk controlling the air flow is ground and lapped to fit the seat, eliminating packing. Manifold valves are available in 3-way and 4-way types.

#### Briquetting Machine-

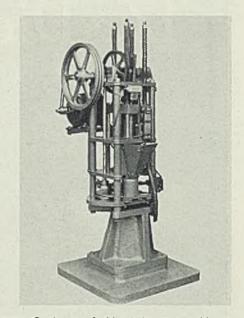
Grob Bros., West Allis, Wis., have developed a metal-chip briquetting ma-

Left—Morris radial drill
with 9-inch column



Right — Hannifin stationary hydraulic riveter

chine. One of its principal features is the absence of pressure in all working parts of the machine while the briquet is formed. The machine consists of a constant speed revolving main driveshaft and a crank which is connected to a ram revolving on the same axle as the driveshaft but independent of it. On the shaft is a dog carrying the crank to its upper position. From this point gravity and spring action accelerate the ram and the crank travels ahead of the dog. The lower part of the ram carries a plunger which enters a bushing filled with metal chips. These bushings are located on a turntable and pass through

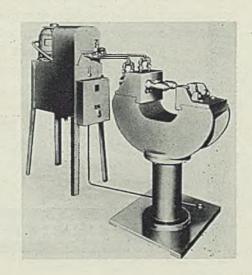


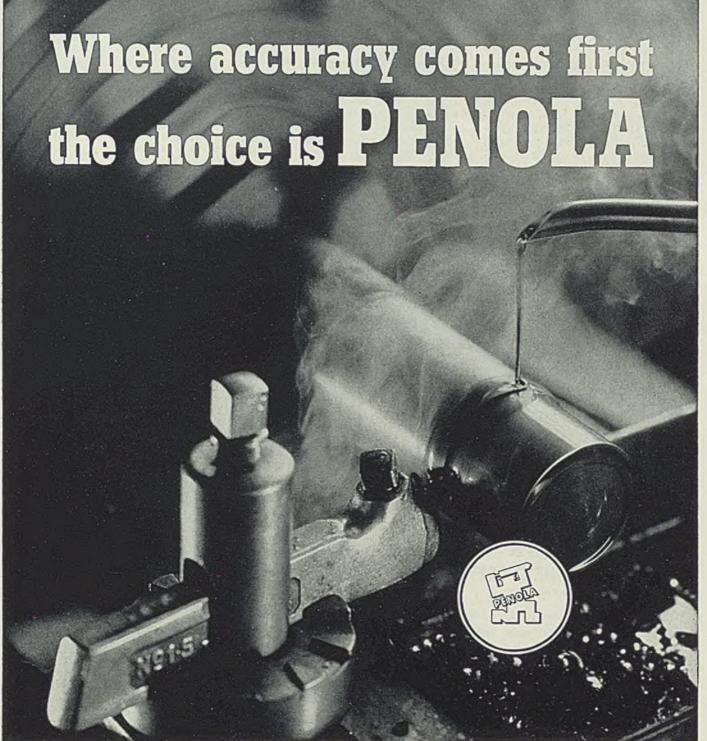
Grob metal-chip briquet machine

three stations, where they are filled, the briquets formed, and then ejected. A number of safety devices prevent the ram from dropping on large pieces or on empty bushings.

#### Hydraulic Riveter-

Hannifin Mfg. Co., 621 South Kolmar avenue, Chicago, has designed a new Hy-Power stationary





EWING GALLOWAY PHOTO

ACCURACY increased 1000%! That's what machine tool builders have done in ten years. Where .001 inch was formerly a common working limit, today it is .0001 inch. One gear grinder produces spur, helical and hypoid gears accurate to .0002 inch!

Matching this progress at every step, Penola has developed cutting oils and coolants that enable these amazing new machines to work at top speed and maximum efficiency. Penola cutting oils and coolants give a bright, smooth finish to the work and extend the life of the tool.

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and Drawing Compounds for every purpose. Penola engineers have been so successful in fitting these products to the needs of industry that today Penola is the largest maker of cutting oils, coolants and drawing compounds in the country.

For greater accuracy and economy in machine tool operation—call for Penola!

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hydraulic riveter. It was designed specifically for an assembly operation on axle housings and will head in excess of 1800 rivets an hour. It has duplex hydraulic rams actuated from a hydraulic pressure generator unit equipped with automatically operated electric control valves. The riveter ram develops 35,000 pounds pressure which is ample to head 3/8inch cold rivets. The hydraulic pressure generator unit, with automatic valves and control, is driven by a 2horsepower motor. The machine illustrated is one of several developed for individual requirements, and its principal features are its automatic

high-speed operation and pushbutton control.

#### Wire Cutter-

M. & M. Wire Clamp Co., 983 Seventeenth avenue, Minneapolis, is offering a wire cutter for use in cutting concrete form wires. The cutter is designed to accommodate wire or mild steel rods up to ¼-inch sizes. The cutter is stationary in form, requiring only one hand to operate it. The heavier parts are malleable castings and the blades, which are readily removable for sharpening, are of high grade tool steel. The lower blade is



M & M concrete form wire cutter

adjustable as to height, insuring even cutting surface.

#### Checkless Lift Truck-

Barrett-Cravens Co., 3255 West Thirtieth street, Chicago, has recently developed a new type lift truck. It is available in 6, 7, 9, and 11-inch heights in either 18 or 24-inch widths. Lengths vary from 24 to 72 inches, and the lift is 2 inches. The



Barrett-Cravens checkless truck

truck in the accompanying illustration is designed to carry 2000 pounds. There is no foot treadle to engage, as lifting is accomplished by pulling down the handle; and, to drop the load, the release lever is thrown and the load is then controlled by the trucker raising the handle. The trucks are of fourwheel construction, equipped with roller bearings.

#### Welded Gears for Cranes-

Harnischfeger Corp., Milwaukee, is making use of welded rolled steel for crane gears. Lighter weight with greater resistance to wear and strain is claimed. Illustrated on p. 81 are two types of gears with helical and spur cut teeth showing how these gears are built up with arms or webs of rolled steel reinforced with gear bands welded integrally. The entire unit is normalized to provide the greatest strength possible. Construction of this nature makes it possible to select special steels for



Single Hook Grab Bucket

## BROSIUS SINGLE HOOK GRAB BUCKETS

Patented)

These buckets operate in minimum headroom and make EVERY crane a bucket crane. Simply throw the hook block of the bucket over the hook of the crane and go to work.

They trip by hand line from operator's

cage or ground and open without shock to crane or bucket.

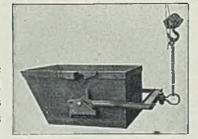
Their construction is extremely simple, the latching mechanism consisting of a single guide lever, a latch, and a trip lever.

## BROSIUS AUTOMATIC DUMP BUCKETS

(Forsythe Patent)

These buckets have removed the source of many accidents around steel mills and industrial plants where the old type of contractor's bucket had been used.

They eliminate the necessity of having a man located at the dumping



Automatic Dump Bucket

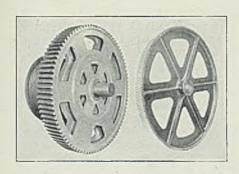
point, as the buckets are handled entirely by the crane-man. They can be dumped from most any uneven surface or slope and cannot be unlatched in mid-air.

#### EDGAR E. BROSIUS, INC.

Sharpsburg Branch PITTSBURGH, PA.

OTHER PRODUCTS: Steam, Hydro-Electric, and Electric-Mechanical Clay Guns, Motor and Hand Operated Goggle Valves, Hot Blast Valves, Stock Line Indicators, Motor Driven Cinder Notch Stoppers, Flue Dust Conditioners, Blast Furnace Slag Granulating Machines, Coke Testing Tumbling Barrels, Automatic Single Hoist Grab Buckets, Overhead and Auto Floor Charging Machines for serving Heating and Melting Furnaces, Auto Floor Manipulators for serving Steam Hammers, Presses, Etc.

Distributor for Continental Europe: Dango & Dienenthal, Siegen, Westphalia, Germany.

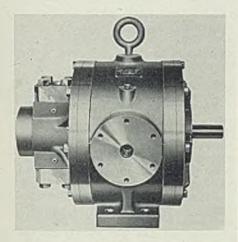


Harnischfeger welded steel crane gears

members which are subject to high stresses, and replacements are greatly facilitated.

#### Radial Pump-

Hydraulic Press Mfg. Co., Mt. Gilead, O., announces a new radial pump to be known as model 4R. Advantages are claimed for this model as a result of a new design which involves a mechanical relationship between the



Hydraulic Press radial pump

valve pintle and the cylinder rotor which revolves around it. In earlier designs of radial pumps, an unbroken film of oil was relied upon to prevent metal to metal contact between these two members, but a definite positioning of these parts has been incorporated in the new design and the close clearance necessary to maintain pressure is assured, without danger of friction.

#### Adjustable Blade Cutter-

Ingersoll Milling Machine Co., Rockford, Ill., has developed the Tri-Lock Triple Serrated Blade Cutter, for use in narrow keyway or slotting operations. Of the inserted blade type, this cutter embodies three sets of serrations on the blade and lock, permitting minute horizontal and

vertical adjustments while insuring a solid grip on the blade. Because of

Ingersoll tri-lock adjustable - blade cutter



this design the cutters are available in widths down to  $1^3$ -inch. Blades

are replaceable in case of fracture or wear. They are made from special high speed steel and are fitted into a body of forged and heat treated alloy steel.

#### Correction-

Address of Skilsaw Inc., manufacturer of three new types of electric drills, as noted in this department for May 11, page 85, was given incorrectly. The company should be addressed at 3345 Elston avenue, Chicago.



#### Report of Annual British Institute Meeting

(Concluded from Page 72)

ting rid of the heat effects, and as regards the photochemical effect, the speaker suggested it might be possible to separate them by selecting certain specific wave bands.

Dr. T. P. Hoar, Cambridge, and D. Havenhand, Sheffield, in a paper, "Factors Influencing the Rate of Attack of Mild Steels by Typical Weak Acid Media", discussed several important factors influencing the rate of corrosion of steel in citric acid and citrate buffers. It was suggested that steel for use under conditions of acid corrosion, such as the steel base of tinplate, should preferably be rimming steel having a copper content not less than twice the sulphur content.

D. J. Macnaughtan, London, drew attention to the importance of the subject in regard to the manufacture of tinplate for preserved food containers. He referred to fundamental research work which had already been effected in Great Britain, and

stated that the author's paper clears up many contradictory results that had been arrived at in the past, and gives a definite line of approach for further investigation.

Principal C. A. Edwards, University college, Swansea, gave a warning with reference to the conclusions arrived at. He said the conclusions were important, but not convincing, because of the nature of the materials used for the samples. He also stated that there are many factors influencing the attack of steel by weak acids other than those studied by the authors, and that such corrosion is not only the result of possible high contents of sulphur or of a large amount of massive cementite.

He pointed out that ingots from which the sheets are made are heterogeneous and thereby subject to corrosion in relation to the extent of the surface exposed, and that an ingot rolled down to a sheet presents the largest possible surface in relation to its weight. He said that phosphorus must have a considerable influence on the tendency to corrosion by weak acids. In past research it had been found that sulphur has no considerable influence when the steel had been annealed, but it has a great influence when the steel had been cold rolled, but then, tinplate for canning purposes is not used in the cold rolled state.

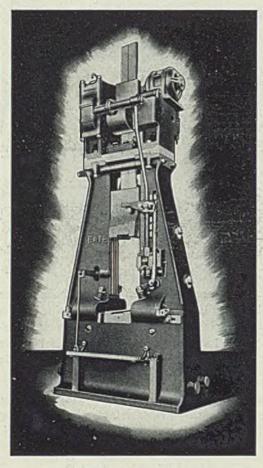
#### Copper Ineffectual

Referring to the author's statement that copper additions reduce the bad influence of sulphur, Mr. Edwards said it has been found that copper has no effect at ordinary temperatures, although it did have an effect at relatively high temperatures—but there again, tin containers for preserved food are used at ordinary temperatures. He pointed out that the authors had not mentioned the effect of oxygen, which is important.

Dr. W. H. Hatfield also expressed doubts about the samples used for the investigation, and pointed out that steel is a corrodible material and that the tin coating is used to protect the steel. He suggested, therefore, that the process by which the tin is applied is of greater importance than the steel base.

In reply, Dr. Hoar stated that as regards the massive cementite factor, the distribution of the cementite is an important point; in some cases it is close to the surface, and then the unfavorable effect is more pronounced, and in other cases the cementite is disseminated in the center of the sheet and the effect is not so marked. Samples used for the investigation were taken from stock for the canning industry, from South Wales' tinplate manufacturers, and, in some cases, from actual cans. These samples, therefore, represented actual material used in the indus-

## THE IDEA CLICKS.



82

Customer acceptance of a new design is really endorsement by a Jury of Critical Experts. A search of the records shows that no hammer has ever "caught on" as quickly as the ERIE Type M. It was the design that the forge shops were waiting for to put production on a modern basis of efficiency and economy.

Is your shop on the way out or are you keeping your equipment in a position to compete?

## ERIE FOUNDRY COMPANY ERIE, PENNA., U. S. A.



# EVERDUR

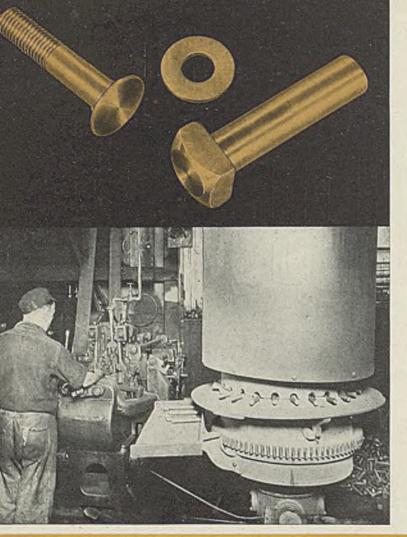
(COPPER with the Strength of Steel)

## The Modern Metal of Many Uses

Everdur Metal has established itself in many fields of engineering and manufacture, with applications so diversified as to make a complete listing impracticable. • Everdur is a high strength, non-magnetic, non-sparking alloy of the solid solution type composed of copper, silicon and other controlled elements. It possesses corrosion resistance equal, or superior, to copper. In addition, it is non-rusting and combines many qualities usually not found in metals of this character. • This versatile alloy is unusually resistant to corrosive gases and saline fogs. It is not subject to selective pitting, nor to season or corrosion cracking under stress. It has excellent machining and working characteristics and can be fabricated into a wide variety of forms and shapes. Everdur Metal can be cast, drawn, rolled, spun, stamped, forged and pressed either hot or cold by essentially the same methods and equipment used with steel. It can be readily welded by all the usual gas and electric methods. • Everdur is moderate in price. Considering its strength, ease of fabrication and long years of trouble-free service, it is a most economical metal for countless applications. • Everdur is furnished in the form of sheets, strips, plates, wire, rods, shafts, tubes, shells, pipe, hot pressed parts, rivets, and casting ingots, and in the four compositions described in the following pages.

#### THE AMERICAN BRASS COMPANY





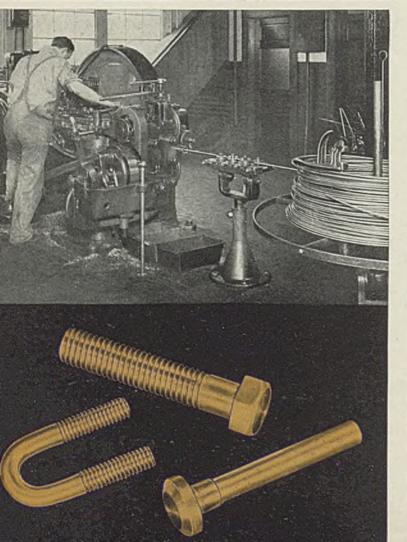
### Everdur 1010

Everdur 1010 is the basic Everdur Alloy and is supplied in all commercial forms. As hot rolled and annealed plates, it is extensively used for welded tanks and pressure vessels. In rod form, Everdur 1010 is widely employed for hot forging, hot upsetting and machining.

On the machine illustrated at the left, in the shops of the William H. Haskell Manufacturing Company, Pawtucket, R. I., Everdur 1010 rod stock is hot forged into  $\frac{7}{8}$ " bolt blanks with  $\frac{11}{4}$ " square heads at the rate of 200 per hour. These bolts have a tensile strength of approximately 70,000 lb. per sq. in., and offer unusual resistance to shock and freedom from season or corrosion cracking under stress.

Minimum strength values for Everdur 1010 rod up to 1" diameter in hard temper are as follows: tensile strength, 90,000 lb. per sq. in.; yield point, 60,000 lb. per sq. in.; elongation, 8% in 2 inches.

The durability of this metal is attested by the records of Everdur equipment such as marine fittings, smoke washers and blowers, sewage equipment, air conditioning ducts, drainage fittings in battery and plating rooms, and process piping and vessels in many chemical plants which have operated successfully for long periods under unusually corrosive conditions.



### Everdur 1015

This modification of the basic Everdur Alloy was developed for operations requiring severe cold working. In rod form, Everdur 1015 is extensively used for cold headed and roll threaded bolts.

In the photograph at the left, also taken in the shops of the Haskell Company, the ½ x 6" Waterbury-Farrel cold heading machine is turning out 3% x 2½" bolt blanks from .328" diameter Everdur 1015 rod stock at the rate of 85 per minute. Cold worked bolts of this Everdur Alloy have high physical qualities and are entirely free from brittleness.

Minimum strength values for Everdur 1015 rod in hard temper for cold heading, and in sizes up to .443" diameter, are as follows: tensile strength, 85,000 lb. per sq. in.; yield point, 60,000 lb. per sq. in.; elongation, 8% in 2 inches.

Millions of Everdur bolts have been in use for years in unfavorable locations, resisting exposure to corrosive gases, vapors and liquids. In the electrical field particularly, Everdur bolts, screws, and pole line hardware have reduced service interruptions, replacements and failures of structural members to a marked degree.

Everdur 1015 is also furnished in cold drawn seamless tubes for use as electrical metallic tubing and rigid conduit.

### Everdur 1012

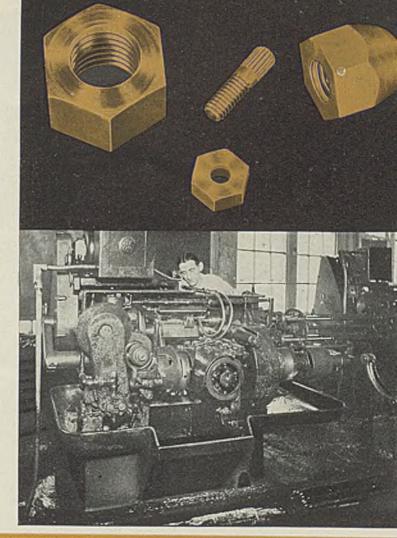
Everdur 1012 is furnished in rod form and is similar to the basic alloy with the exception that a small amount of lead has been added to improve its machining characteristics. This free cutting alloy was developed for the production of screw machine parts requiring high strength, toughness, and corrosion resistance. It is furnished in standard mill lengths and in the conventional shapes for screw machine use.

In the screw machine department of the Haskell Company, Everdur 1012 rod stock, in sizes from 3/8" to 15/8", is used for a wide range of nut and bolt products, and is machined at a speed closely approaching that obtained on free cutting brass.

On the 78'' Model G Gridly Automatic pictured at the right, 56'' American Standard heavy nut blanks are turned out of 1932'' Everdur 1012 hexagon rod at the rate of 800 per hour. The screw machine is running at top spindle speed, but is set up for single cut-off.

This manufacturer reports that when using Everdur 1012, tool life on cut-off tools, drills, reamers, etc., averages five times that obtained on Bessemer steel screw stock. On form tools and chasers, an average increase of four times the tool life is obtained.

Strength values for Everdur 1012 Rod are the same as those for Everdur 1010.



### Everdur 1000

Everdur Ingot Metal, with its superior strength, good machining qualities and ease of handling in the foundry, is supplied in small notched ingots weighing approximately 25 pounds each. The ingots are ready for use, and can be melted and cast with regular brass and bronze foundry equipment. Dense, close grained, homogeneous castings of several ounces to several tons each can be produced without the use of deoxidizing agents or hardening elements.

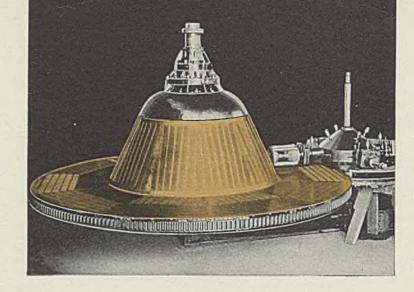
Everdur castings can be given an anneal to further toughen the metal, improve its machining qualities, increase resistance to pressure, and remove casting strains from certain types of castings. Cast Everdur is readily welded with Everdur Welding Rods by the acetylene or electric methods.

The Everdur pump casting at the right weighs 12,000 lbs., and was cast by American Manganese Bronze Company, Philadelphia. Shown, also, are methods of gating small Everdur castings.

Melting point of Everdur 1000 is 1000° C.-1832° F. Standard test coupons cast in green sand have a minimum tensile strength of 45,000 lbs. per sq. in., and an elongation of 15% in 2 inches. Casting shrinkage is <sup>3</sup>16" per foot. Anaconda Publication B-17 includes detailed foundry practice and procedure.







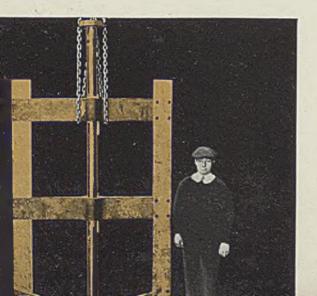
Upper Left—Welding-in Head of 10,000 Gallon Everdur Tank Made by Whitlock Coil Pipe Co., Hartford, Conn. Everdur is in service as gasoline tanks, process vessels, brew kettles, vacuum tanks, domestic hot water storage tanks, range boilers, etc., in capacities ranging from 1 to 20,000 gallons. Its high strength, corrosion resistance, ease of fabrication, and ready weldability have led to its adoption by the majority of domestic water heater manufacturers as the standard tank material for rust-proof models.

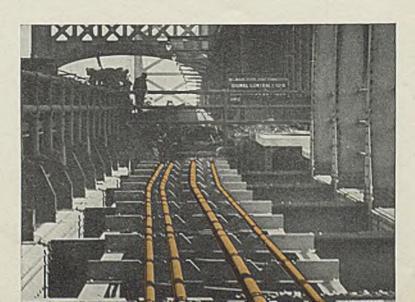
Upper Right—Shop View of a 12-Foot Sewage Disc Screen Built for the Stafford Springs, Conn., Sewage Treatment Works. Fabricated of 3/6" Everdur plates and assembled with Everdur screws, lockwashers and nuts. 43,000 tapered slots 1/2" by 2 1/2" were milled in the plates. Since 1927 Everdur has been found the ideal metal for sewage treatment works. It is being used successfully for gates, weir and baffle plates, screens, and many similar applications.

Lower Left—1300-Pound Chemical Sludge Agitator Built by American Manganese Bronze Company, Philadelphia. Shaft is 3½6" cold rolled Everdur with integral hot forged flange 9½" diameter. Cross members are Everdur castings. Vertical members are ½ x 7" hot rolled Everdur plate, fastened with Everdur bolts. This built-up construction saved considerable weight and many hours of pattern-making, moulding and machining time required for a single casting.

Lower Right—On the Delaware River Bridge Between Philadelphia and Camden, N. J., 214,000 pounds of Everdur Metal were used for conduit and fittings for the electrification of a high speed rail transit line. Everdur Electrical Conduit is available in standard sizes and in two wall thicknesses, (Rigid and E.M. T.) and is listed and labeled by Underwriters' Laboratories. Publication E-12 gives detailed information on this new, non-rust conduit.

"Everdur" is a registered trade-mark identifying products of The American Brass Company made from alloys of copper, silicon and other elements.





### Steel Prices Advanced for Third Quarter

Beginning Made With

Semifinished, Heavy

Material; Rate  $66\frac{1}{2}\%$ 

PRICES of rerolling and forging billets, sheet bars, shapes and plates have been advanced \$2 a ton, effective July 1 for third quarter. Some announcement on bars and strip will be made, presumably a comparable increase, early this week, and it is expected additional products, including rails, will be raised.

Carnegie-Illinois Steel Corp. took the initiative in announcing the changes. Other producers are expected to take similar action shortly.

Orders will be booked at current prices for shipment in the remainder of this quarter, giving consumers the opportunity to acquire stocks. Delivered prices will be quoted in the Pittsburgh and Chicago districts; elsewhere, base prices.

Large orders for railroad cars, car material and tin plate, with tin plate mills now operating at capacity, featured the markets last week.

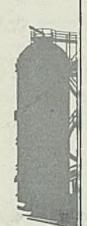
The heavy equipment industries, farm tools and tractors, as well as the machine tool and allied equipment manufacturers gave evidence of sustained demand.

Automotive requirements were down slightly, reflecting the reduction of 8300 units to 109,-800 in automobile assemblies, and lowering sheet mill operations.

The net result was a reduction of 2 points to  $66\frac{1}{2}$  per cent in the steelworks rate.

In the week 6900 freight cars were awarded, This brought the total number for the month to 9750, largest since 10,500 last December, and requiring 107,250 tons of rolled steel, and 39,000 tons of wheels and axles. Chesapeake & Ohio ordered 5400; Norfolk & Western 1000; Pere Marquette 500. Southern Pacific is inquiring for 2800. St. Louis, Southwestern is in the market for 50 freight cars, five coaches and five locomotives.

Railroads consider their surplus of freight cars, numbering 179,000, as too narow a margin under today's conditions; in some instances there have been delays in handling steel, as



#### MARKET IN TABLOID

**DEMAND** . . . Railroad car material, tin plate strong; automotive lighter.

PRICES . . . Billets, sheet bars, shapes, plates up 82 a ton, Other increases imminent.

PRODUCTION . . . Steel ingot rate down 2 points to 66½ per cent.

SHIPMENTS . . . Slightly slower.

well as other products. Fresh rail commitments have been lacking for some weeks though a secondary buying movement is anticipated this fall.

After a temporary bulge in the preceding week, awards of structural shapes dropped again to 13,205 tons, near the average for the year. Inquiry came out for 35,000 tons for a floating dock for the navy at Pearl Harbor, T. H., and 12,000 tons for a building in Radio City, New York. A survey of the oil industry indicates that \$1,000,000,000 will be spent this year with other industries for material, including large tonnages of steel, principally structures.

Scrap prices show further reductions, lowering Steel's scrap composite 25 cents to \$13.13, but steadying tendencies are more in evidence. From the peak in March scrap prices generally have dropped \$2 a ton.

Though scrap has offered severe competition to pig iron, prices of the latter are expected to be reaffirmed for third quarter. Pig iron shipments, nevertheless, remain at a higher average than last month. Supplies of castings for automobiles are experiencing lighter operations, but this is offset in a measure by better demand for railroad equipment parts, machine tools and sanitary ware.

Pittsburgh district steelworks operations last week declined 2 points to 61 per cent; Chicago  $\frac{1}{2}$  to  $70\frac{1}{2}$ ; eastern Pennsylvania  $1\frac{1}{2}$  to 43; Detroit 6 to 88; New England 2 to 75; Cleveland  $1\frac{1}{2}$  to 74. Buffalo was up 3 to 78, and others unchanged.

STEEL's iron and steel composite is down 7 cents to \$32.87, due to the recession in scrap, while the finished steel index holds at \$52.20.

#### COMPOSITE MARKET AVERAGES

	May 23	May 16	May 9	One Month Ago April, 1936	Three Months Ago Feb., 1936	One Year Ago May, 1935	Five Years Ago May, 1931
Iron and Steel Finished Steel	52.20	\$32.94 52.20	\$32.96 52.20	\$33.10 52.20	\$33.48 53.70	\$32.35 54.00	\$31.07 49.02
Steelworks Scrap	13.13	13.38	13.54	14.39	13.83	10.27	9.31

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

#### A COMPARISON OF PRICES

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

Finished Material  Steel bars, Pittsburgh 1.85 Steel bars, Chicago 1.90 Steel bars, Philadelphia 2.16 Iron bars, Terre Haute, Ind. 1.75 Shapes, Pittsburgh 1.80 Shapes, Philadelphia 2.01½	1936 193 c 1.85c 1.8 1.90 1.9 2.11 2.1 1.75 1.7 1.80 1.8	5c 1.80c 0 1.85 6 2.11 5 1.75	May 23, 1936  Pig Iron  Bessemer, del. Pittsburgh	19.00 20.8132 20.3132 19.50 15.50	1936 20.8132 19.00 20.8132 20.3132 19.50 15.50	18.00 19.81 19.30 18.50 14.50
Shapes, Chicago       1,85         Tank plates, Pittsburgh       1,80         Tank plates, Philadelphia       2.00         Tank plates, Chicago       1,85         Sheets, No. 10, hot rolled, Pitts       1,85         Sheets, No. 24, hot ann., Pitts       2,40         Sheets, No. 24, galv., Pitts       3,10         Sheets, No. 10, hot rolled, Gary       1,95         Sheets, No. 24, hot anneal., Gary       2,50	1.85 1.8 1.80 1.99 1.99 1.85 1.8 1.85 1.8 2.40 2.4 3.10 3.1 1.95 1.99 2.50 2.50	5 1.85 0 1.80 9 1.99 5 1.85 5 1.85 0 2.40 0 3.10 5 1.95 0 2.50	Southern No. 2, del. Cincinnati       20.2007         No. 2X eastern, del. Phila       21.6882         Malleable, Valley       19.50         Malleable, Chicago       19.50         Lake Sup., charcoal, del. Chicago       25.2528         Ferromanganese, del. Pitts.       80.13         Gray forge, del. Pittsburgh.       19.6741	21.6882 19.50 19.50 25.2528 80.13	19.50 19.50 25.2528	20.68 18.50 18.50 24.25 90.13
Sheets, No. 24, galvan., Gary	3.20 3.20 2.40 2.30 5.25 5.20 2.10 2.40	0 2.30 5 5.25	Heavy melting steel, Pittsburgh. \$14.50 Heavy melt, steel, No. 2, east. Pa. 11,25 Heavy melting steel, Chicago	12.70 14.35 15.75	12.00 14.30 15.50	12.00 9.25 10.20 11.05 11.40
Sheet bars, open-hearth, Youngs. \$28.0 Sheet bars, open-hearth, Pitts 28.0 Billets, open-hearth, Pittsburgh 28.0 Wire rods, Pittsburgh	0 28.00 30.00 0 28.00 29.00	0 28.00 0 27.00	Coke Connellsville, furnace, ovens \$3.50 Connellsville, foundry, ovens 4.25 Chicago, by-product foundry, del. 9.75	3.50 4.25 9.75	3.50 4.20 9.75	3.60 4.60 9.25

### Steel, Iron, Raw Material, Fuel and Metals Prices

Except when otherwise	designated, prices are ba	se, f.o.b. cars. Asterisk denotes	price change this week.	
Sheet Steel	Tln Mill Black No. 28	Corrosion and Heat-	Structural Shapes	
Prices Subject to Quantity Extras	Gary 2.	75c 85c Resistant Alloys	Philadelphia, del	1.80 2.01½
and Deductions (Except Galvanized)  Hot Rolled No. 10, 24-48 in.	St. Louis, delivered 3.  Cold Rolled No. 10	08c Pittsburgh base, cents per Ib. Chrome-Nickel	boston, delivered	2.067
Gary 1.95c		50c No. 302 No. 30	Bethlehem 04 Chicago 00 Cleveland, del	1.90 1.85 2.00
Chicago, delivered 1.98c		ma- Data	00 Buffalo	1.90

Hot Rolled No. 10, 24-48	in.			Philisburgh base, cen	ra bet in
		Cold Rolled No. 10		Chrome-Nickel	1
Pittsburgh	1.85c	Pittsburgh	2.50c	No 2	02 No. 30
Gary	1.95c	Gary	2.60c		
Chicago, delivered	1.98c	Detroit, delivered	2.70c		-
Detroit, del	2,05c	Philadelphia, del	2.81c	Plates 26.0	
New York, del	2.20c	New York, del	2.85c	Sheets 33.0	
Philadelphia, del	2.16c		2.000	Hot strip 20,7	
Birmingham	2.00c	Pacific ports, f.o.b.	0.10-	Cold strip 27.0	0 29.0
St. Louis, del	2.18c	cars, dock	3.10c		
	2.100	Cold Rolled No. 20		Straight Chrom	
Pacific ports, f.o.b.	2.40c		0.05	No. No.	No. No.
cars, dock		Pittsburgh	2.95c	410 430	442 44
Hot Rolled Annealed No.	Z4	Gary	3.05c	Bars17.00 18.50 2	21.00 26.0
Pittsburgh	2.40c	Detroit, delivered	3.15c	Plates20.00 21.50 2	24.00 29.0
Gary	2.50c	Philadelphia, del	3.26c	Sheets25.00 28.00 3	31.00 35.0
Chicago, delivered	2.53c	New York, del	3.30c	Hot strip 15.75 16.75 2	
Detroit, delivered	2.60c	Enameling Sheets		Cold stp 20.50 22.00 2	
New York, del	2.75c		0.25-	COM 34 P 20.00 22.00 2	
Philadelphia, del	2.71c	Pittsburgh, No. 10	2.35c		
	2.55c	Pittsburgh, No. 20	2.95C	Steel Plates	
Birmingham		Gary, No. 10		otter i lates	
St. Louis, del	2.72c	Gary, No. 20	3.05e	Pittsburgh	1.80
Pacific ports, f.o.b.				N'ana Wanta dal	0.00

2.110	I Ittobulgii, 140. 20	2.95c	Steel Plates		Detroit, delivered	2.00c
2.55c	Gary, No. 10				Pacific ports, f.o.b.	
2.72c	Gary, No. 20	3.05c	Pittsburgh	1.80c	cars, dock	2.40c
3.05c			New York, del	2.09c	Philadelphia, del	2.16c
5.05C	Tin and Terne Plate		Philadelphia, del	1.99c	Boston, delivered	2.27c
	Tin and Terne Flate		Roston, delivered	2.22c	New York, del	2.20c
3.10c			Buffalo, delivered	2.05c	Pitts, forg. qual	2,10c
3.20c	Gary base, 10 cents hig	her.	Chicago or Gary	1.85c		
3-23c	Tin plate, coke base		Cleveland, del	1.99 1/2 c	Rail Steel	
3.41c	(box) Pittsburgh	\$5,25	Birmingham	1.95c	To Manufacturing T	rade
3.45c	Do., waste-waste	2.75c	Coatesville, base	1.90c	Pittsburgh	1.70с
3.25c	Do., strips	2.50c	Sparrows Pt., base	1.90c	Chicago or Gary	1.75с
3.43c	Long ternes, No. 24		Pacific ports, f.o.b.		Moline, Ill	1.75с
	unassorted, Pitts.	3.40c	cars, dock	2.35c	Cleveland	1.75е
3 70c	Do., Gary	3.50c	St. Louis, delivered	2.08c	Buffalo	1.80c

Bethlehem	1.90c
Chicago	1.85c
Cleveland, del	2.00c
Buffalo	1.90c
Gulf Ports	2.20c
Birmingham	1.95c
Pacific ports, f.o.b.	1.300
racine ports, 1.0.0.	2.35c
cars, dock	2.350
Bars	
Soft Steel	
(Base, 3 to 25 tons)	
Pittsburgh	1.85c
Chicago or Gary	1.90c
Duluth	2,00c
Birmingham	2.00c
Cleveland	1.90c
Buffalo	1.95e
Detroit, delivered	2.00c
	2.000
Pacific ports, f.o.b.	0.40-
cars, dock	2.40c
Philadelphia, del	2.16c
Boston, delivered	2.27c
New York, del	2.20c
Pitts, forg. qual	2.10c
D H G. 1	
Rail Steel	
To Manufacturing Tra	de

cars, dock .....

Pittsburgh .....

Chicago, delivered.. Philadelphia, del. ....

New York, del. .....

Birmingham .....

Galvanized No. 24

		The Man	net ween—	
	Iron	Strip and Hoops	Do., under 5 kegs; no	revised as of July 1, 1935, card.
	Troy, N. Y	(Base, hot rolled, 25-1 ton)	disc. on size extras \$3.20	Hot-finished carbon steel boil- er tube prices also under date
	Chicago 1.80c	(Base, cold-rolled, 25-3 tons) Hot strip to 23 12-in.	Pipe and Tubing	of May 15 range from 1 through
	Philadelphia	Pittsburgh 1.85c	Base \$200 net ton, except on	7 inches outside diameter, in- clusive, and embrace 47 size
	Reinforcing	Chicago or Gary 1.95c Birmingham base 2.00c	standard commercial seamless	classifications in 22 decimal
	New billet, straight lengths,	Detroit, del 2.05c	boiler tubes under 2 inches and cold drawn seamless tubing.	wall thicknesses ranging from 0.109 to 1.000, prices also being
	quoted by distributors, Pittsburgh 1.95c-2.05c	Philadelphia, del 2.16c New York, del 2.20c	The state of the s	on a lb. and 100 ft. basis.
	Chicago, Gary, Buffalo, Cleve., Birm., Young 2.10c	Cooperage hoop,	Welded Iron, Steel Pipe	Seamless Tubing
	Gulf ports 2.45c	Pittsburgh	Base discounts on steel pipe, Pitts., Lorain, O., to consumers	Cold drawn; f.o.b. mill disc. 100 ft. or 150 lbs 32%
	Pacific coast ports f.o.b. car docks 2.45c	Cold strip, 0,25 car-	in carloads. Gary, Ind., 2 points	15.000 ft. or 22,500 lbs 70%
	Philadelphia, del 2.26c-2.36c	bon and under, Pitts., Cleveland 2.60c	less. Chicago, del. 2½ points less. Wrought pipe, Pittsburgh.	Cast Iron Water Pipe
	Rail steel, straight lengths. quoted by distributors	Detroit, del 2.81c	Butt Weld	Class B Pipe-Per Net Ton
	Pittsburgh 1.90c	Worcester, Mass 2.80c	Steel	6-in. & over, Birm., \$39.00-40.00 4-in., Birmingham., 42.00-43.00
	Chicago, Buffalo, Cleve- land, Birm., Young 1.95c	Rails, Track Material	In. Blk. Galv. 44 ½ and % 60 44 ½	4-in., Chicago 50.40-51.40
	Gulf ports 2.30c	(Gross Tons) Standard rails, mill \$36.37½	½	6 to 24-in. Chicago 47.40-48.40 6-in. & over, east. fdy. 43.00
	Wire Products	Relay rails, Pitts.	1—3	Do., 4 in
٠,		20-45 lbs	Iron	Class A pipe \$3 over Class B Stnd. fitgs., Birm. base\$100.00
	(Prices apply to straight or mixed carloads; less carloads	50-60 lbs \$26.00	½	Semifinished Steel
	\$4 higher; less carloads fenc-	70-75 lbs	1-11/4 391/2 251/2	Billets and Blooms
	ing \$5 over buse column.) Base PittsCleve. 100 lb. keg.	100 lbs \$27.00	2 41½ 26 Lap Weld	4 x 4-inch base; gross ton Pitts., Chi., Cleve.,
	Stand. wire nails 2.10c Cement c't'd nails 2.10c	Light rails, billet qual. Pitts., Chi \$35.00	Steel	Buffalo & Youngs-
	Galv. nails, 15 gage	Do., reroll, qual 34.00	2	town
	and finer	Angle bars, billet, Gary, Ind., So. Chi. 2.55c	3½—6 67 58½	Duluth 30.00
	(Per pound)	Do., axle steel 2.10c Spikes, R. R. base 2.60c	7 and 8 66 56½ 9 and 10 65½ 56	Forging Billets 6 x 6 to 9 x 9-in., base
	Polished staples 2.80c Galv. fence staples 3.05c	Track bolts, base 3.60c	2 37 22½	Pitts., Chi., Buff 35.00
	Barbed wire, galv 2.60c	Tie plates, base 1.90c Base, light rails 25 to 40 lbs.;	2½—3½ 38 25	Forging, Duluth 37.00 Sheet Bars
	Annealed fence wire 2.65c Galv. fence wire 3.00c	50 to 60 lbs. inclusive up \$2; 16	4—8	Pitts., Cleve., Young., Chi., Buff., Can-
	Woven wire fencing	and 20 lbs., up \$1; 12 lbs. up \$2; 8 and 10 lbs., up \$5. Base	Steel	ton, Sparrows Pt. 28.00
	(base column, c.l.) \$58.00 To Manufacturing Trade	railroad spikes 200 kegs or	%, butt weld 56 % and %, butt weld 59	Pitts., Chi., Cleve.,
	Plain wire, 6-9 ga 2.40c	more; base tie plates 20 tons.	16, butt weld 631/2	Young 28.00
	Anderson, Ind. (merchant products only) and Chicago up	Bolts and Nuts	%, butt weld	Wire Rods Pitts., Cleve., No. 4
	\$1; Duluth up \$2; Birmingham	Pittsburgh, Cleveland, Bir- mingham, Chicago. Discounts	2, lap weld 61	to 5 \$38.00
	up \$3. Spring wire, Pitts.	to legitimate trade as per Dec.	2½ to 3, lap weld	Do., No. 5 to 15/32-inch 40.00
	or Cleveland 3.05c Do., Chicago up \$1, Worc. \$2.	1, 1932 lists: Carriage and Machine	7 and 8, lap weld 65	Do., over 15/32 to
		1/2 x 6 and smaller70-10-5 off	Iron %-1% inch, black and galv.	Chicago up \$1; Worcester up \$2
	Cold-Finished Carbon Bars	Do. larger70-10 off Tire bolts55 off	take 4 pts. over; 2½-6 inch	Skelp Pitts., Chi., Young.,
	and Shafting	Plow Bolts	2 pts. over discounts for same sizes, standard pipe lists, 8—12-	Buff., Coatesville,
	Base, Pitts., one size, shape, grade, shipment at one time	All sizes70-10 off Stove Bolts	inch, no extra.	Sparrows Point 1.80c
	to one destination	In packages with nuts at- tached 72½-10-10 off; in	Boiler Tubes  O. L. Discounts, f.o.b. Pitts.	Price Per Net Ton
	10,000 to 19,999 lbs 2.10c	packages with nuts separate	Lap Weld Charcoal	Beehive Ovens
	20,000 to 59,999 lbs	72½-10-10-5 off; in bulk 82½ off on 15,000 of 3-inch	Steel   Iron   2—2½	Connellsville, fur \$3.50- 3.66 Connellsville, fdry 4.25- 4.35
	100,000 lbs. and over1.97½c Gary, Ind., Cleve., Chi., up 5c	and shorter, or 5000 over 3-	21/2-21/413	Connel. prem. fdry. 5.35- 5.50
	Buffalo, up 10c; Detroit, up	inch. Step bolts65-5 off	3	New River fdry 6.00 Wise county fdry 4.45- 5.00
	20c: eastern Michigan, up 25c	Elevator bolts65-5 off	452 3¼—3½18 4½—542 420	Wise county fur 4.00- 4.50 By-Product Foundry
	Alloy Steel Bars (Hot)	S. A. E. semifinished hex.;	4 1/2	Newark, N. J., del. 9.70-10.15
	(Base, 3 to 25 tons.)	1/2 to 1/6-inch60-20-15 off	In lots of a carload or more,	Chi., ov., outside del. 9.00 Chicago, del. 9.75
	Pittsburgh, Buffalo, Chi- cago, Massilon, Can-	Do., ½ to 1-inch 60-20-15 off Do., over 1-inch 60-20-15 off	above discounts subject to preferential of two 5% and one	New England, del 11.50
	ton, Bethlehem 2.45c	Hexagon Cap Screws Milled80-10-10 off	71/2% discount on steel and	St. Louis, del 10.00-10.50 Birmingham, ovens 6.50
	Alloy Alloy	Upset, 1-in., smaller85 off	10% on charcoal iron. Lapwelded steel: 200 to 9999	Indianapolis, del 9.40
	S.A.E. Diff. S.A.E. Diff. 20000.25 31000.55	Square Head Set Screws Upset, 1-in., smaller75-10 off	pounds, ten points under base,	Cleveland, del 9.75
	21000.55 32001.35	Headless set screws 75 off	one 5% and one 7½%. Under 2000 pounds 15 points under	Buffalo, ovens 7.50- 8.00 Detroit, ov., out. del 9.00
	25002.25 34003.20	Rivets, Wrought Washers	base, one 5% and one 7½%. Charcoal iron: 10,000 pounds to	Philadelphia. del 9.38
	4100 0.15 to 0.25 Mo	Struc., c. I., Pitts-	carloads, base less 5%; under	Coke By-Products
	1.75 Ni1.05	burgh, Cleveland 2.90c Struc., c. l., Chicago 3.00c	10.000 lbs., 2 points under base.	Per gallon, producers' plants.
	6100 0.80-1.10 Cr0.45 6100 Cr. springbase	78-in. and smaller,	Seamless Boiler Tubes Under date of May 15 in lots	Pure and 90% benzol 18.00c
	6100 bars1.20	Pitts., Chi., Cleve. 70 and 5 off Wrought washers,	of 40,000 pounds or more for cold-drawn boiler tubes and in	Toluoi 30.00c Solvent naphtha 30.00c
	6100 spring0.70 Cr., Ni., Van1.50	Pitts., Chi., Phila.	lots of 40,000 pounds or feet or	Industrial xylol 30.00c
	Carbon Van	to jobbers & large nut, bolt mfrs \$6.25 off	more for hot-finished boiler tubes, revised prices are quoted	Per lb. f.o.b. New York. Phenol (200 lb. drums) 16.30c
	9200 spring rounds,	Cut Nails	for 55 cold-drawn boiler tube	Do. (100 lbs.) 17.30e
	squares 0.25	Cut nails, Pitts.; (10%	sizes ranging from ¼ to 6-inch outside diameter in 30 wall	Eastern Plants, per lb. Naphthalene flakes and
	Piling	discount on size extras) \$2.75	thicknesses, decimal equivalent	balls, in bbls to jobbers 7.25c
	Pittsburgh 2.15c	Do. less carloads, 5 kegs or more, no discount	from 0.035 to 1.000, on a dollars and cents basis per 100 feet	Per 100 lb. Atlantic seaboard Sulphate of ammonia \$1.20
	Chicago. Buffalo 2 25c	on size extras \$3.05	and per pound. Less-carloads	†Western prices, ½-cent up.

	Aite II	idinet " een –	
Delivered prices include sw	Iron itching charges only as noted. 25c diff. for each 0.25 sil, above	Delivered from Basing Points St. Louis, northern St. Louis from Birmingham St. Paul from Duluth	20.00 20.00 19.50 †19.68 19.50
2.25; 50c diff. for each 0.25 k	pelow 1.75. Gross tons.	†Over 0.70 phos.	
Basing Points:  Bethlehem, Pa	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Basing Points: Birdsboro an N. Y., \$24.00, Phila. base, stan Gray Forge  Valley furnace	; 8-8.50—\$24.75; 8.51-9—\$25.25; 25 higher. Ferrosilicon† es are the same as for silveries, price from Jackson, O., or Buf- owed. livery iron and ferrosilicon, 2 to
Sparrows Point, Md Swedeland, Pa	20.50 20.00		timore bases (bags) 40.00
Toledo, O Youngstown, O	19.50 19.50 19.00 20.00	Refractories  Per 1000 f.o.b. Works  Fire Clay Brick	Domestic dead-burned gr. net ton f.o.b. Che- welah, Wash. (bulk) 22.00 Basic Brick
Delivered from Basing Points Akron, O., from Cleveland		Super Quality Pa., Mo., Ky	Net ton, f.o.b. Baltimore, Ply- mouth Meeting, Chester, Pa.
Baltimore from Birmingham Boston from Birmingham	1 21.08 19.96	First Quality Pa., Ill., Md., Mo., Ky. \$45.00 Alabama, Ga.,\$38.00-45.00	Chrome brick \$45.00 Chemically bonded
Boston from Everett, Mass Boston from Buffalo	21.00 21.50 20.50 22.00 21.00 21.50 20.50 22.00	Second Quality Pa., Ill., Ky., Md., Mo. 40.00	Chrome brick
Brooklyn, N. Y., from Bethleh Brooklyn, N. Y., from Bmgl	hm. 22.50	Ga., Ala	nesite brick 55.00
Canton, O., from Cleveland Chicago from Birmingham Cincinnati from Hamilton, O.	†19.72 19.60	First quality	Fluorspar, 85-5
Cincinnati from Birmingham Cleveland from Birmingham	19.62 19.12	Malleable Bung Brick All bases	Washed gravel, duty paid, tide, net ton\$20.50
Indianapolis from Hamilton, Mansfield, O., from Toledo, O. Milwaukee from Chicago	D 21.26 21.26 20.76 21.76	Silica Brick Pennsylvania	Washed gravel, f.o.b. Ill., Ky., net
Muskegon, Mich., from Chica Toledo or Detroit	ngo	Birmingham, Ala 48.00	ton, carloads, all-rail
Newark, N. J., from Birmingh Newark, N. J., from Bethleh	am 21.61 em., 21.99 22.49	Imported dead-burned grains, net ton f.o.b.	Do., for barge \$19.00
Philadelphia from Birmingha Philadelphia from Swedeland,	Pa. 21.31 21.81 20.81	Chester, Pa., and Bal- timore bases (bags) \$45.00 Domestic dead-burned	Ferroalloys
ville Island		grains, net ton f.o.b. Chester, Pa., and Bal-	Dollars, except Ferrochrome Ferromanganese.
		4	78-82% tidewater, duty paid
	Nonferrous		Do., Balti., base 75.00 Do., del. Pittsb'gh 80.13 Spiegeleisen, 19-
	LETAL PRICES OF THE WEE		20% dom. Palmer- ton, Pa., spot† 26.00
Copper	less otherwise specified. Cents p		Do., New Orleans 26.00 Ferrosilicon, 50%
del. del. Casting		Alumi- Antimony Nickel Zinc num Chinese Cath- St. L. 99% Spot, N. Y. odes	freight all., cl 69.50 Do., less carload 77.00 Do., 75 per cent 126-130.00
May 16 9.50 9.62½ 9.12½ May 18 9.50 9.62½ 9.12½	46.871/2 45.121/2 4.60 4.45	4.90 *19.00 13.50 35.00 4.90 *19.00 13.50 35.00	Spot, \$5 a ton higher. Silicoman., 2½ carb. 85.00
May 19 9.50 9.62½ 9.12½ May 20 9.50 9.62½ 9.12½	45.90 44.45 4.60 4.45	4.90 *19.00 13.50 35.00 4.90 *19.00 13.50 35.00	2% carbon, 90.00; 1%, 100.00 Ferrochrome, 66-70
May 21 9.50 9.62½ 9.12½ May 22 9.50 9.62½ 9.12½		4.90 *19.00 13.50 35.00 4.90 *19.00 13.50 35.00	chromium, 4-6 car- bon, cts. lb. del 10.00 Ferrotungsten,
*Nominal range 19.00 to 21.		Viela Perso	stand., lb. con. del. 1.30- 1.49 Ferrovanadium, 35
MILL PRODUCTS  F.o.b. mill base, cents per lb.	OLD METALS  Deal. buying prices, cents lb.	*Chicago	to 40% lb., cont 2.70- 2.90 Ferrotitanium, c. l.,
except as specified. Copper brass products based on 9.00c	No. 1 Composition Red Brass *New York 6.00- 6.25	St. Louis 3.50- 4,00 Lead	prod. plant, frt. allow, net ton 137.50 Spot, 1 ton, frt.
Conn. copper. Sheets	*Cleveland 6.25- 6.50 *Chicago6.00- 6.12½	New York	allow., lb
Yellow brass (high) 15.12½ Copper, hot rolled 17.00 Lead out to johers 2.25	St. Louis 6.00- 6.50  Heavy Copper and Wire	*Chicago	Ferrophosphorus, per ton, c. l., 17- 19% Rockdale,
Lead cut to jobers 8.25 Zinc, 100-lb. base 9.50 Tubes	*New York, No. 1 7.50- 7.75 *Chicago, No. 17.00- 7.37½	New York 3.00-3.12½ Cleveland 2.25- 2.50	Tenn., basis, 18%, \$3 unitage
High yellow brass 17.37½ Seamless copper 17.50	Cleveland	*St. Louis 2.50- 2.75  Aluminum	Ferrophosphorus, electrolytic, per
Rods High yellow brass 13.12½ Copper, hot rolled 13.75	*New York 5.75- 6.00 Light Copper	*Borings, Cleveland 8.50- 8.75  *Mixed, cast, Cleve. 12.00-12.25  *Mixed, cast, St. L. 11.50-12.00	ton c. l., 23-26% f.o.b. Anniston, Ala., 24% \$3
Anodes Copper, untrimmed 14.50	*New York6.12½- 6.25 *Chicago5.50- 5.87½	*Clips, soft, Cleve. 14.00-14.25 SECONDARY METALS	unitage
Wire Yellow brass (high) 15.37½	Cleveland	Brass ingot, 85-5-5-5 9.50 Stand. No. 12 alum. 16.50-17.00	Molybdate, lb. cont. 0.80 †Carloads, Quan. diff. apply.

# Iron and Steel Scrap Prices

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

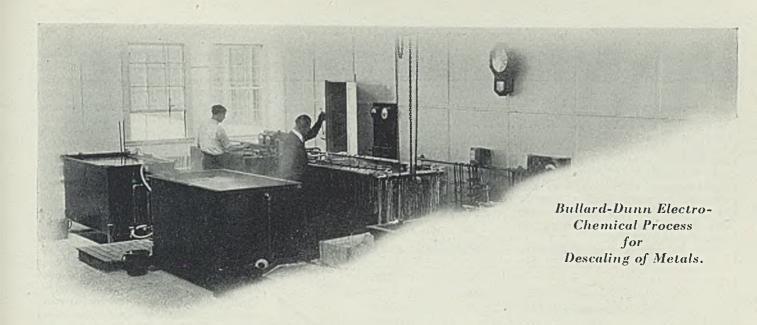
	001100100 10 1	riady mynte. Gross tons desteored	to consumers, except where c	ther wise stated
HEAVY MELT	ING STEEL	COUPLERS, SPRINGS	Buffalo 8.50- 9.00	Chicago, iron 13.25-13.75
*	9.50-10.00		Cincinnati, dealers 5.25- 5.75	Chicago, rolled steel 14.00-14.50
Boston, dock,			Cleveland 8.25- 8.75	Cincinnati, iron 10.50-11.00
	stic 9.50-10.25			
	13.00-13.50			Eastern Pa., iron 14.00-14.50
			Eastern Pa 6.50- 7.00	Eastern Pa., steel 16.00-16.50
	12.00-12.50		New York, brokers 3.25- 3.75	Pittsburgh, iron 14.25-14.75
	12.50-13.00		Pittsburgh 8.75- 9.25	Pittsburgh, steel 17.00-17.50
	1 13.00-13.50	CILIA 14 00 14 FO	Toronto, dealers 4.00	St. Louis, iron 11.50-12.00
	. 2 12.00-12.50		CLOT IDON DODING	St. Louis, steel 13.00-13.50
Detroit, No. 1	10.25-10.75	St. Louis 12.75-13.25	CAST IRON BORINGS	Toronto, net 8.58
Detroit, No. 2	9.00- 9.50	Buffalo 14.50-15.00	Birmingham, plain., 4.50- 5.50	
Eastern Pa	No. 1 12.00-12.50	DATEDOAD CDECTALEURC	Boston, chemical 6.00- 6.25	NO. 1 CAST SCRAP
	No. 2., 11.00-11.50	KAILKOAD SEECIALIIES	Boston, dealers 3.50- 4.00	Birmingham 10.50-11.50
	10.50-11.00		Випаю 8.00- 8.00	Boston, No. 1 mach. 9.25- 9.76
	R. R 11.75-12.25		Chicago 6.00- 6.50	Boston, No. 2 9.50-10.00
			Cincinnati, dealers 5.25- 5.75	Boston, tex. con 11.50-12.00
	No. 2., 10.00-10.50	Duitale, Siliet all		Buffalo, cupola 12.00-12.50
	No. 2 7.25 - 7.75		Cleveland 8.25- 8.75	Buffalo, mach 13.00-13.50
N. Y., brokers,		Cleveland, billet,	Detroit 6.50- 7.00	Chicago, agri. net 10.00-10.50
(No. 1 for e		Diodit Grope initial zites active	E. Pa., chemical 11,00-13.00	Chicago, auto 11,50-12,00
	R. R.) 15.00-15.50		New York, brokers. 4.00- 4.25	Chicago, mach. net 12.00-12.50
Pitts., No. 1	(dlr.) 14.25-14.75		St. Louis 4.00- 4.50	Chicago, railr'd net 11.00-11.50
Pittsburgh, N	o. 2 13.00-13.25	bloom crops 17.00-17.50	Toronto, dealers 5.09	Cinci mach and 10.55 11.05
St. Louis	11.00-11.50	Pittsburgh, sheet	DIDE AND BLUE	Cinci., mach. cup 10.75-11.25
Toronto, deale	rs 7.50	bar crops 16.50-17.00	PIPE AND FLUES	Cleveland, mach 16.00-16.50
Valleys, No. 1	14.00-14.50		Cincinnati, dealers., 7.75-8.25	Eastern Pa., cupola 14.00
COMPRESSED		TROUB, BITTA CIABO	Chicago, net 7.50- 8.00	E. Pa., mixed yard 12.00
		Chicago 12.50-13.00		Pittsburgh, cupola. 15.00-15.50
	rs 12.00-12.50		RAILROAD GRATE BARS	San Francisco, del. 13.50-14.00
	ry, 12.00-12.50		Buffalo 10.50-11.00	Seattle 10.00-11.00
Unicago, deale	r 11.50-12.00		Chicago, net 8.50- 9.00	St. Louis, No. 1 11.00-11.50
	12.75-13.25		Cincinnati	St. L., No. 1 mach. 11.50-12.00
	10.50-11.00		Eastern Pa	Toronto, No. 1,
E. Pa., new m	at, 12.50-13.00	Granite City, Ill 10.00-10.50		mach., net 9.00
Pittsburgh	14.00-14.50	Toronto, dealers 6.50	New York, brokers 6.00- 6.50	HEAVY CAST
St. Louis	7.75- 8.25	RAILROAD WROUGHT	St. Louis 7.50- 8.00	Boston, del 7.75- 8.00
	13.75-14.00		FORGE FLASHINGS	Duffula brook 11.00 11.70
BUNDLED SH		Boston, dealers 7.25- 7.50		Buffalo, break 11.00-11.50
			Boston, dealers 6.50- 6.75	Cleveland, break 12.50-13.00
	10.50-11.00	Buffalo, No. 2 13.00-13.50	Buffalo 12.00-12.50	Detroit, No. 1 mach.
	1 7.75- 8.25	Chicago, No. 1, net 11.50-12.00	Cleveland 13.00-13.50	net 13.00-13.50
	9.00- 9.50		Detroit 9.00- 9.50	Detroit, break 11.00-11.50
Pittsburgh	13.00-13.50	Cincinnati, No. 2 10.50-11.00	Pittsburgh 13.50-14.00	Detroit, auto net 11.00-11.50
St. Louis	6.25- 6.75	77 4 77- 12.00-12.50		Eastern Pa 13.00
	rs 4.50	Eastern Pa 13.00-13.50	FORGE SCRAP	
Toronto, deale		~ T 1	1 Olida Bollill	New York, break.
Toronto, deale	NGS, LOOSE	St. Louis, No. 1 10.25-10.75		brokers 8.50- 8.75
SHEET CLIPPI		St. Louis, No. 1 10.25-10.75 St. Louis, No. 2 11.75-12.25	Boston, dealers 5.50- 6.00	brokers 8.50- 8.75
SHEET CLIPPI Chicago	8.00- 8.50	St. Louis, No. 1 10.25-10.75 St. Louis, No. 2 11.75-12.25 Toronto, No. 1. dlr. 7.00	Boston, dealers 5.50- 6.00 Chicago, heavy 14.00-14.50	brokers
SHEET CLIPPI Chicago Cincinnati	8.00- 8.50 6,00- 6.50	St. Louis, No. 1 10.25-10.75 St. Louis, No. 2 11.75-12.25 Toronto, No. 1. dlr. 7.00	Boston, dealers 5.50- 6.00	brokers
Chicago	8.00- 8.50 6.00- 6.50 8.00- 8.50	St. Louis, No. 1 10.25-10.75 St. Louis, No. 2 11.75-12.25 Toronto, No. 1. dlr. 7.00 SPECIFICATION PIPE	Boston, dealers 5.50- 6.00 Chicago, heavy 14.00-14.50 Eastern Pa 12.50-13.00	brokers
SHEET CLIPPI Chicago Cincinnati Detroit St. Louis	8.00- 8.50 6.00- 6.50 8.00- 8.50 5.50- 6.00	St. Louis, No. 1 10.25-10.75 St. Louis, No. 2 11.75-12.25 Toronto, No. 1. dlr. 7.00 SPECIFICATION PIPE Eastern Pa	Boston, dealers 5.50- 6.00 Chicago, heavy 14.00-14.50 Eastern Pa 12.50-13.00 ARCH BARS, TRANSOMS	brokers
SHEET CLIPPI Chicago Cincinnati Detroit St. Louis STEEL RAILS,	8.00- 8.50 6.00- 6.50 8.00- 8.50 5.50- 6.00 SHORT	St. Louis, No. 1 10.25-10.75 St. Louis, No. 2 11.75-12.25 Toronto, No. 1. dlr. 7.00 SPECIFICATION PIPE	Boston, dealers 5.50- 6.00 Chicago, heavy 14.00-14.50 Eastern Pa 12.50-13.00	brokers 8.50- 8.75 Pittsburgh 13.50-14.00  MALLEABLE Birmingham, R. R 11.50-12.50 Boston, consum. 15.00-16.00 Buffalo 16.00-16.50
SHEET CLIPPI Chicago Cincinnati Detroit St. Louis STEEL RAILS,	8.00- 8.50 6.00- 6.50 8.00- 8.50 5.50- 6.00	St. Louis, No. 1 10.25-10.75 St. Louis, No. 2 11.75-12.25 Toronto, No. 1. dlr. 7.00 SPECIFICATION PIPE Eastern Pa	Boston, dealers 5.50- 6.00 Chicago, heavy 14.00-14.50 Eastern Pa 12.50-13.00 ARCH BARS, TRANSOMS St. Louis 13.50-14.00	brokers
SHEET CLIPPI Chicago Cincinnati Detroit St. Louis STEEL RAILS, Birmingham	8.00- 8.50 6.00- 6.50 8.00- 8.50 5.50- 6.00 SHORT	St. Louis, No. 1	Boston, dealers 5.50- 6.00 Chicago, heavy 14.00-14.50 Eastern Pa 12.50-13.00 ARCH BARS, TRANSOMS St. Louis 13.50-14.00 AXLE TURNINGS	brokers 8.50- 8.75 Pittsburgh 13.50-14.00  MALLEABLE Birmingham, R. R 11.50-12.50 Boston, consum. 15.00-16.00 Buffalo 16.00-16.50
SHEET CLIPPI Chicago Cincinnati Detroit St. Louis STEEL RAILS, Birmingham Buffalo	8.00- 8.50 6.00- 6.50 8.00- 8.50 5.50- 6.00 SHORT 12.00-12.50	St. Louis, No. 1	Boston, dealers 5.50- 6.00 Chicago, heavy 14.00-14.50 Eastern Pa 12.50-13.00 ARCH BARS, TRANSOMS St. Louis 13.50-14.00 AXLE TURNINGS Boston, dealers 5.75- 6.00	brokers 8.50- 8.75 Pittsburgh 13.50-14.00  MALLEABLE Birmingham, R. R 11.50-12.50 Boston, consum. 15.00-16.00 Buffalo 16.00-16.50 Chicago, R. R 16.00-16.50
SHEET CLIPPI Chicago Cincinnati Detroit St. Louis STEEL RAILS, Birmingham Buffalo Chicago (3 ft.	8,00- 8,50 6,00- 6,50 8,00- 8,50 5,50- 6,00 SHORT 12,00-12,50 15,50-16,00 15,00-15,50	St. Louis, No. 1	Boston, dealers 5.50- 6.00 Chicago, heavy 14.00-14.50 Eastern Pa 12.50-13.00  ARCH BARS, TRANSOMS St. Louis 13.50-14.00  AXLE TURNINGS Boston, dealers 5.75- 6.00 Buffalo 11.00-11.50	brokers 8.50- 8.75 Pittsburgh 13.50-14.00  MALLEABLE Birmingham, R. R. 11.50-12.50 Boston, consum 15.00-16.00 Buffalo 16.00-16.50 Chicago, R. R. 16.00-16.50 Cincinnati, agri. del 12.50-13.00 Cleveland, rail 17.00-17.50
Chicago	8.00- 8.50 6.00- 6.50 8.00- 8.50 5.50- 6.00  SHORT 12.00-12.50 15.50-16.00 15.00-15.50	St. Louis, No. 1	Boston, dealers 5.50 - 6.00 Chicago, heavy 14.00-14.50 Eastern Pa	brokers 8.50- 8.75 Pittsburgh 13.50-14.00  MALLEABLE Birmingham, R. R. 11.50-12.50 Boston, consum. 15.00-16.00 Buffalo 16.00-16.50 Chicago, R. R. 16.00-16.50 Cincinnati, agri. del. 12.50-13.00 Cleveland, rail 17.00-17.50 Detroit, auto, net. 14.50-15.00
Chicago STEEL RAILS, Birmingham Buffalo Chicago (3 ft. Chicago (2 ft. Cincinnati, de	8.00- 8.50 6.00- 6.50 8.00- 8.50 5.50- 6.00  SHORT 12.00-12.50 15.50-16.00 15.00-15.50 15.00-15.50 14.00-14.50	St. Louis, No. 1	Boston, dealers 5.50- 6.00 Chicago, heavy 14.00-14.50 Eastern Pa 12.50-13.00 ARCH BARS, TRANSOMS St. Louis 13.50-14.00 AXLE TURNINGS Boston, dealers 5.75- 6.00 Buffalo 11.00-11.50 Chicago, elec. fur 12.75-13.25 Eastern Pa 12.00-12.50	brokers 8.50- 8.75 Pittsburgh 13.50-14.00  MALLEABLE Birmingham, R. R 11.50-12.50 Boston, consum. 15.00-16.00 Buffalo 16.00-16.50 Chicago, R. R 16.00-16.50 Cincinnati, agri. del. 12.50-13.00 Cleveland, rail 17.00-17.50 Detroit, auto, net. 14.50-15.00 Eastern Pa., R. R. 16.00-16.50
SHEET CLIPPI Chicago Cincinnati Detroit St. Louis STEEL RAILS, Birmingham Buffalo Chicago (3 ft. Chicago (2 ft. Cincinnati, de Detroit	8.00- 8.50 6.00- 6.50 8.00- 8.50 5.50- 6.00  SHORT 12.00-12.50 15.50-16.00 15.50-16.00 14.00-14.50 15.00-15.50	St. Louis, No. 1	Boston, dealers 5.50 - 6.00 Chicago, heavy 14.00-14.50 Eastern Pa 12.50-13.00 ARCH BARS, TRANSOMS St. Louis 13.50-14.00 AXLE TURNINGS Boston, dealers 5.75 - 6.00 Buffalo 11.00-11.50 Chicago, elec. fur 12.75-13.25 Eastern Pa 12.00-12.50 St. Louis 9.00 - 9.50	brokers 8.50- 8.75 Pittsburgh 13.50-14.00  MALLEABLE Birmingham, R. R. 11.50-12.50 Boston, consum 15.00-16.00 Buffalo 16.00-16.50 Chicago, R. R. 16.00-16.50 Cincinnati, agri. del 12.50-13.00 Cleveland, rail 17.00-17.50 Detroit, auto, net. 14.50-15.00 Eastern Pa., R. R. 16.00-16.50 Pittsburgh, rail 17.50-18.00
Chicago	8.00- 8.50 6.00- 6.50 8.00- 8.50 5.50- 6.00  SHORT 12.00-12.50 15.50-16.00 15.00-15.50 14.00-14.50 15.00-15.50 earth,	St. Louis, No. 1	Boston, dealers 5.50- 6.00 Chicago, heavy 14.00-14.50 Eastern Pa 12.50-13.00 ARCH BARS, TRANSOMS St. Louis 13.50-14.00 AXLE TURNINGS Boston, dealers 5.75- 6.00 Buffalo 11.00-11.50 Chicago, elec. fur 12.75-13.25 Eastern Pa 12.00-12.50	brokers 8.50- 8.75 Pittsburgh 13.50-14.00  MALLEABLE Birmingham, R. R. 11.50-12.50 Boston, consum. 15.00-16.00 Buffalo 16.00-16.50 Chicago, R. R. 16.00-16.50 Cincinnati, agri. del. 12.50-13.00 Cleveland, rail 17.00-17.50 Detroit, auto, net. 14.50-15.00 Eastern Pa., R. R. 16.00-16.50 Pittsburgh, rail 17.50-18.00 St. Louis, R. R. 13.50-14.00
Chicago	8.00- 8.50 6.00- 6.50 8.00- 8.50 5.50- 6.00  SHORT 12.00-12.50 15.50-16.00 15.50-16.00 15.00-15.50 15.50-15.50 15.00-15.50 15.00-15.50 15.00-16.50	St. Louis, No. 1	Boston, dealers	brokers 8.50- 8.75 Pittsburgh 13.50-14.00  MALLEABLE Birmingham, R. R. 11.50-12.50 Boston, consum. 15.00-16.00 Buffalo 16.00-16.50 Chicago, R. R. 16.00-18.50 Cincinnati, agri. del 12.50-13.00 Cleveland, rail 17.00-17.50 Detroit, auto, net. 14.50-15.00 Eastern Pa., R. R. 16.00-16.50 Pittsburgh, rail 17.50-18.00 St. Louis, R. R. 13.50-14.00 Toronto, net 7.00
Chicago	8.00- 8.50 6.00- 6.50 8.00- 8.50 5.50- 6.00  SHORT 12.00-12.50 15.50-16.00 15.00-15.50 1	St. Louis, No. 1	Boston, dealers 5.50 - 6.00 Chicago, heavy 14.00-14.50 Eastern Pa 12.50-13.00 ARCH BARS, TRANSOMS St. Louis 13.50-14.00 AXLE TURNINGS Boston, dealers 5.75 - 6.00 Buffalo 11.00-11.50 Chicago, elec. fur 12.75-13.25 Eastern Pa 12.00-12.50 St. Louis	brokers 8.50- 8.75 Pittsburgh 13.50-14.00  MALLEABLE Birmingham, R. R. 11.50-12.50 Boston, consum. 15.00-16.00 Buffalo 16.00-16.50 Chicago, R. R. 16.00-16.50 Cincinnati, agri. del. 12.50-13.00 Cleveland, rail 17.00-17.50 Detroit, auto, net. 14.50-16.00 Eastern Pa., R. R. 16.00-16.50 Pittsburgh, rail 17.50-18.00 St. Louis, R. R. 13.50-14.00 Toronto, net 7.00  RAILS FOR ROLLING
Chicago	8.00- 8.50 6.00- 6.50 8.00- 8.50 5.50- 6.00  SHORT 12.00-12.50 15.50-16.00 15.00-15.50 14.00-14.50 15.00-15.50 earth, ss 16.00-16.50 & less 14.00-14.50 SCRAP	St. Louis, No. 1	Boston, dealers	brokers 8.50- 8.75 Pittsburgh 13.50-14.00  MALLEABLE Birmingham, R. R 11.50-12.50 Boston, consum. 15.00-16.00 Buffalo 16.00-16.50 Chicago, R. R 16.00-16.50 Cincinnati, agri. del. 12.50-13.00 Cleveland, rail 17.00-17.50 Detroit, auto, net. 14.50-15.00 Eastern Pa., R. 16.00-16.50 Pittsburgh, rail. 17.50-18.00 St. Louis, R. R 13.50-14.00 Toronto, net 7.00  RAILS FOR ROLLING 5 feet and over
SHEET CLIPPI Chicago Cincinnati Detroit St. Louis STEEL RAILS, Birmingham Buffalo Chicago (3 ft. Chicago (2 ft., Cincinnati, de Detroit Pitts., open-h 3 ft. and le St. Louis, 2 ft. STEEL RAILS, Boston	8.00- 8.50 6.00- 6.50 8.00- 8.50 5.50- 6.00  SHORT 12.00-12.50 15.50-16.00 15.50-16.00 14.00-14.50 15.00-15.50 earth, ss 16.00-16.50 & less 14.00-14.50 SCRAP 9.00- 9.50	St. Louis, No. 1	Boston, dealers	brokers 8.50- 8.75 Pittsburgh 13.50-14.00  MALLEABLE Birmingham, R. R 11.50-12.50 Boston, consum. 15.00-16.00 Buffalo 16.00-16.50 Chicago, R. R 16.00-16.50 Cincinnati, agri. del. 12.50-13.00 Cleveland, rail 17.00-17.50 Detroit, auto, net. 14.50-15.00 Eastern Pa., R. R. 16.00-16.50 Pittsburgh, rail 17.50-18.00 St. Louis, R. R. 13.50-14.00 Toronto, net 7.00  RAILS FOR ROLLING 5 feet and over Birmingham 11.50-12.50
Chicago	8.00- 8.50 6.00- 6.50 8.00- 8.50 5.50- 6.00  SHORT 12.00-12.50 15.50-16.00 15.50-16.00 1	St. Louis, No. 1	Boston, dealers	brokers 8.50- 8.75 Pittsburgh 13.50-14.00  MALLEABLE Birmingham, R. R. 11.50-12.50 Boston, consum. 15.00-16.00 Buffalo 16.00-16.50 Chicago, R. R. 16.00-16.50 Cincinnati, agri. del. 12.50-13.00 Cleveland, rail 17.00-17.50 Detroit, auto, net. 14.50-15.00 Eastern Pa., R. R. 16.00-16.50 Pittsburgh, rail 17.50-18.00 St. Louis, R. R. 13.50-14.00 Toronto, net 7.00  RAILS FOR ROLLING 5 feet and over Birmingham 11.50-12.50 Boston, dealers 9.00- 9.50
Chicago	8.00- 8.50 6.00- 6.50 8.00- 8.50 5.50- 6.00  SHORT 12.00-12.50 15.50-16.00 15.00-15.50 1	St. Louis, No. 1	Boston, dealers	brokers 8.50- 8.75 Pittsburgh 13.50-14.00  MALLEABLE Birmingham, R. R. 11.50-12.50 Boston, consum. 15.00-16.00 Buffalo 16.00-16.50 Chicago, R. R. 16.00-16.50 Cincinnati, agri. del. 12.50-13.00 Cleveland, rail 17.00-17.50 Detroit, auto, net. 14.50-15.00 Eastern Pa., R. R. 16.00-16.50 Pittsburgh, rail. 17.50-18.00 St. Louis, R. R. 13.50-14.00 Toronto, net 7.00  RAILS FOR ROLLING 5 feet and over Birmingham 11.50-12.50 Boston, dealers 9.00- 9.50 Buffalo 13.00-14.00
Chicago	8.00- 8.50 6.00- 6.50 8.00- 8.50 5.50- 6.00  SHORT 12.00-12.50 15.50-16.00 15.00-15.50 1	St. Louis, No. 1	Boston, dealers	brokers 8.50- 8.75 Pittsburgh 13.50-14.00  MALLEABLE Birmingham, R. R. 11.50-12.50 Boston, consum. 15.00-16.00 Buffalo 16.00-16.50 Chicago, R. R. 16.00-18.50 Cincinnati, agri. del. 12.50-13.00 Cleveland, rail 17.00-17.50 Detroit, auto, net. 14.50-16.00 Eastern Pa., R. R. 16.00-16.50 Pittsburgh, rail. 17.50-18.00 St. Louis, R. R. 13.50-14.00 Toronto, net 7.00  RAILS FOR ROLLING 5 feet and over Birmingham 11.50-12.50 Boston, dealers 9.00- 9.50 Buffalo 13.00-14.00 Chicago 14.25-14.75
SHEET CLIPPI Chicago Cincinnati Detroit St. Louis STEEL RAILS, Birmingham Buffalo Chicago (3 ft. Chicago (2 ft. Cincinnati, de Detroit Pitts., open-h 3 ft. and le St. Louis, 2 ft. STEEL RAILS, Boston Chicago Pittsburgh St. Louis Buffalo	8.00- 8.50 6.00- 6.50 8.00- 8.50 5.50- 6.00  SHORT 12.00-12.50 15.50-16.00 15.00-15.50 15.00-15.50 15.00-15.50 16.00-14.50 20-14.50 20-14.50 20-14.50 20-14.50 20-14.50 20-14.50 20-14.50 20-14.50 20-14.50 20-14.50 20-14.50	St. Louis, No. 1	Boston, dealers	brokers 8.50- 8.75 Pittsburgh 13,50-14.00  MALLEABLE Birmingham, R. R. 11,50-12,50 Boston, consum. 15,00-16,00 Buffalo 16,00-16,50 Chicago, R. R. 16,00-16,50 Cincinnati, agri. del. 12,50-13,00 Cleveland, rail 17,00-17,50 Detroit, auto, net. 14,50-16,00 Eastern Pa., R. R. 16,00-16,50 Pittsburgh, rail. 17,50-18,00 St. Louis, R. R. 13,50-14,00 Toronto, net 7,00  RAILS FOR ROLLING 5 feet and over Birmingham 11,50-12,50 Boston, dealers 9,00- 9,50 Buffalo 13,00-14,00 Chicago 14,25-14,75 Eastern Pa. 15,00-15,50
Chicago Cincinnati Detroit St. Louis STEEL RAILS, Birmingham Buffalo Chicago (2 ft. Cincinnati, de Detroit 3 ft. and le St. Louis, 2 ft. STEEL RAILS, Boston Chicago Pittsburgh St. Louis Buffalo Toronto, deale	8.00- 8.50 6.00- 6.50 8.00- 8.50 5.50- 6.00  SHORT 12.00-12.50 15.50-16.00 15.00-15.50 15.00-15.50 15.00-15.50 16.00-14.50 20-14.50 20-14.50 20-14.50 20-14.50 20-14.50 20-14.50 20-14.50 20-14.50 20-14.50 20-14.50 20-14.50	St. Louis, No. 1	Boston, dealers	brokers 8.50- 8.75 Pittsburgh 13.50-14.00  MALLEABLE Birmingham, R. R. 11.50-12.50 Boston, consum. 15.00-16.00 Buffalo 16.00-16.50 Chicago, R. R. 16.00-16.50 Cincinnati, agri. del. 12.50-13.00 Cleveland, rail 17.00-17.50 Detroit, auto, net. 14.50-15.00 Eastern Pa., R. R. 16.00-16.50 Pittsburgh, rail 77.50-18.00 St. Louis, R. R. 13.50-14.00 Toronto, net 7.00  RAILS FOR ROLLING 5 feet and over Birmingham 11.50-12.50 Boston, dealers 9.00- 9.50 Buffalo 13.00-14.00 Chicago 14.25-14.75 Eastern Pa. 15.00-15.50 New York, brokers. 10.25-10.50
SHEET CLIPPI Chicago Cincinnati Detroit St. Louis STEEL RAILS, Birmingham Buffalo Chicago (3 ft. Chicago (2 ft. Cincinnati, de Detroit Pitts., open-h 3 ft. and le St. Louis, 2 ft. STEEL RAILS, Boston Chicago Pittsburgh St. Louis Buffalo	8.00- 8.50 6.00- 6.50 8.00- 8.50 5.50- 6.00  SHORT 12.00-12.50 15.50-16.00 15.00-15.50 15.00-15.50 15.00-15.50 16.00-14.50 20-14.50 20-14.50 20-14.50 20-14.50 20-14.50 20-14.50 20-14.50 20-14.50 20-14.50 20-14.50 20-14.50	St. Louis, No. 1	Boston, dealers	brokers 8.50- 8.75 Pittsburgh 13,50-14.00  MALLEABLE Birmingham, R. R. 11,50-12,50 Boston, consum. 15,00-16,00 Buffalo 16,00-16,50 Chicago, R. R. 16,00-16,50 Cincinnati, agri. del. 12,50-13,00 Cleveland, rail 17,00-17,50 Detroit, auto, net. 14,50-16,00 Eastern Pa., R. R. 16,00-16,50 Pittsburgh, rail. 17,50-18,00 St. Louis, R. R. 13,50-14,00 Toronto, net 7,00  RAILS FOR ROLLING 5 feet and over Birmingham 11,50-12,50 Boston, dealers 9,00- 9,50 Buffalo 13,00-14,00 Chicago 14,25-14,75 Eastern Pa. 15,00-15,50
Chicago Cincinnati Detroit St. Louis STEEL RAILS, Birmingham Buffalo Chicago (3 ft. Chicago (2 ft. Cincinnati, de Detroit 3 ft. and le St. Louis, 2 ft. STEEL RAILS, Boston Chicago Pittsburgh St. Louis Buffalo Toronto, deale STOVE PLATE	8.00- 8.50 6.00- 6.50 8.00- 8.50 5.50- 6.00  SHORT 12.00-12.50 15.50-16.00 15.00-15.50 15.00-15.50 16.00-16.50 8 earth, 8 16.00-16.50 & less 14.00-14.50 SCRAP 9.00- 9.50 12.50-13.00 14.75-15.25 12.50-13.00	St. Louis, No. 1	Boston, dealers	brokers 8.50- 8.75 Pittsburgh 13.50-14.00  MALLEABLE Birmingham, R. R. 11.50-12.50 Boston, consum. 15.00-16.00 Buffalo 16.00-16.50 Chicago, R. R. 16.00-16.50 Cincinnati, agri. del. 12.50-13.00 Cleveland, rail 17.00-17.50 Detroit, auto, net. 14.50-15.00 Eastern Pa., R. R. 16.00-16.50 Pittsburgh, rail 17.50-18.00 St. Louis, R. R. 13.50-14.00 Toronto, net 7.00  RAILS FOR ROLLING  5 feet and over Birmingham 11.50-12.50 Boston, dealers 9.00- 9.50 Buffalo 13.00-14.00 Chicago 14.25-14.75 Eastern Pa. 15.00-15.50 New York, brokers. 10.25-10.50 St. Louis 13.75-14.25
SHEET CLIPPI Chicago	8.00- 8.50 6.00- 6.50 8.00- 8.50 5.50- 6.00  SHORT 12.00-12.50 15.50-16.00 15.00-15.50 1.14.00-14.50 15.00-15.50 28.11.00-16.50 28.11.00-14.50 20.11.00-14.50	St. Louis, No. 1       10.25-10.75         St. Louis, No. 2       11.75-12.25         Toronto, No. 1. dlr.       7.00         SPECIFICATION PIPE       12.00         Eastern Pa.       7.75-8.00         BUSHELING       12.00-12.50         Chicago, No. 1       11.50-12.00         Cincin, No. 1, deal       8.50-9.00         Cincin, No. 1, deal       8.50-5.00         Cleveland, No. 2       4.50-5.00         Cleveland, No. 1       13.00-13.50         Toronto, dealers       6.00         MACHINE TURNINGS         Birmingham       5.50-6.50         Buffalo       7.00-7.25         Chicago       6.00-6.50         Cincinnati, dealers       6.00-6.50         Cincinnati, dealers       6.00-6.50         Cleveland       7.50-8.00         Detroit       5.75-6.25         Eastern Pa       8.50	Boston, dealers	brokers 8.50- 8.75 Pittsburgh 13.50-14.00  MALLEABLE Birmingham, R. R. 11.50-12.50 Boston, consum. 15.00-16.00 Buffalo 16.00-16.50 Chicago, R. R. 16.00-16.50 Cincinnati, agri. del. 12.50-13.00 Cleveland, rail 17.00-17.50 Detroit, auto, net. 14.50-15.00 Eastern Pa., R. R. 16.00-16.50 Pittsburgh, rail. 17.50-18.00 St. Louis, R. R. 13.50-14.00 Toronto, net 7.00  RAILS FOR ROLLING 5 feet and over Birmingham 11.50-12.50 Boston, dealers 9.00- 9.50 Buffalo 13.00-14.00 Chicago 14.25-14.75 Eastern Pa. 15.00-15.50 New York, brokers. 10.25-10.50 St. Louis 13.75-14.25
Chicago	8.00- 8.50 6.00- 6.50 8.00- 8.50 5.50- 6.00  SHORT 12.00-12.50 15.50-16.00 15.00-15.50 1	St. Louis, No. 1         10.25-10.75           St. Louis, No. 2         11.75-12.25           Toronto, No. 1. dlr.         7.00           SPECIFICATION PIPE         Eastern Pa.         12.00           New York, dealers.         7.75-8.00           BUSHELING         Buffalo, No. 1         12.00-12.50           Chicago, No. 1         11.50-12.00           Cinci., No. 1, deal.         8.50-9.00           Cincin, No. 2         4.50-5.00           Cleveland, No. 2         8.25-8.75           Detroit No. 1, new.         9.50-10.00           Valleys, new, No. 1         13.00-13.50           Toronto, dealers         6.00           MACHINE TURNINGS         Birmingham         5.50-6.50           Boston, dealers         3.25-3.50           Buffalo         7.00-7.25           Chicago         6.00-6.50           Cincinnati, dealers         6.00-6.50           Cleveland         7.50-8.00           Detroit         5.75-6.25           Eastern Pa         8.50           New York, brokers         3.50-3.75	Boston, dealers	brokers 8.50- 8.75 Pittsburgh 13.50-14.00  MALLEABLE Birmingham, R. R. 11.50-12.50 Boston, consum. 15.00-16.00 Buffalo 16.00-16.50 Chicago, R. R. 16.00-16.50 Cincinnati, agri. del. 12.50-13.00 Cleveland, rail 17.00-17.50 Detroit, auto, net. 14.50-15.00 Eastern Pa., R. R. 16.00-16.50 Pittsburgh, rail. 17.50-18.00 St. Louis, R. R. 13.50-14.00 Toronto, net 7.00  RAILS FOR ROLLING 5 feet and over Birmingham 11.50-12.50 Boston, dealers 9.00- 9.50 Buffalo 13.00-14.00 Chicago 14.25-14.75 Eastern Pa. 15.00-15.60 New York, brokers. 10.25-10.50 St. Louis 13.75-14.25  LOCOMOTIVE TIRES Chicago (cut) 14.00-14.50
Chicago Cincinnati Detroit St. Louis STEEL RAILS, Birmingham Buffalo Chicago (3 ft. Chicago (2 ft. Cincinnati, de Detroit 3 ft. and le St. Louis, 2 ft. STEEL RAILS, Boston Chicago Pittsburgh St. Louis Buffalo Toronto, deale STOVE PLATE Birmingham Boston, dealer Buffalo	8.00- 8.50 6.00- 6.50 8.00- 8.50 8.00- 8.50 5.50- 6.00  SHORT 12.00-12.50 15.50-16.00 15.00-15.50 15.00-15.50 16.00-14.50 15.00-15.50 8crap 9.00- 9.50 12.50-13.00 14.75-15.25 12.50-13.00 13.00-14.00 rs	St. Louis, No. 1         10.25-10.75           St. Louis, No. 2         11.75-12.25           Toronto, No. 1. dlr.         7.00           SPECIFICATION PIPE         Eastern Pa.         12.00           New York, dealers.         7.75- 8.00           BUSHELING         Buffalo, No. 1         12.00-12.50           Chicago, No. 1         11.50-12.00           Cinci., No. 1, deal.         8.50- 9.00           Cincinnati, No. 2         4.50- 5.00           Cleveland, No. 2         8.25- 8.75           Detroit No. 1, new.         9.50-10.00           Valleys, new, No. 1         13.00-13.50           Toronto, dealers         6.00           MACHINE TURNINGS           Birmingham         5.50- 6.50           Boston, dealers         3.25- 3.50           Buffalo         7.00- 7.25           Chicago         6.00- 6.50           Cincinnati, dealers.         6.00- 6.50           Cleveland         7.50- 8.00           Detroit         5.75- 6.25           Eastern Pa.         8.50           New York, brokers.         3.50- 3.75           Pittsburgh         3.50- 3.75           Pittsburgh         9.50-10.00	Boston, dealers	brokers 8.50- 8.75 Pittsburgh 13.50-14.00  MALLEABLE Birmingham, R. R. 11.50-12.50 Boston, consum. 15.00-16.00 Buffalo 16.00-16.50 Chicago, R. R. 16.00-16.50 Cincinnati, agri. del. 12.50-13.00 Cleveland, rail 17.00-17.50 Detroit, auto, net. 14.50-15.00 Eastern Pa., R. R. 16.00-16.50 Pittsburgh, rail. 17.50-18.00 St. Louis, R. R. 13.50-14.00 Toronto, net 7.00  RAILS FOR ROLLING 5 feet and over Birmingham 11.50-12.50 Boston, dealers 9.00- 9.50 Buffalo 13.00-14.00 Chicago 14.25-14.75 Eastern Pa. 15.00-15.50 New York, brokers. 10.25-10.50 St. Louis 13.75-14.25
Chicago Cincinnati Detroit St. Louis STEEL RAILS, Birmingham Buffalo Chicago (3 ft. Chicago (2 ft. Cincinnati, de Detroit 3 ft. and le St. Louis, 2 ft. STEEL RAILS, Boston Chicago Pittsburgh St. Louis Buffalo Toronto, deale STOVE PLATE Birmingham Boston, dealer Buffalo Chicago Chicago	8.00- 8.50 6.00- 6.50 8.00- 8.50 5.50- 6.00  SHORT 12.00-12.50 15.50-16.00 15.00-15.50 1	St. Louis, No. 1	Boston, dealers	brokers 8.50- 8.75 Pittsburgh 13.50-14.00  MALLEABLE Birmingham, R. R. 11.50-12.50 Boston, consum. 15.00-16.00 Buffalo 16.00-16.50 Chicago, R. R. 16.00-16.50 Cincinnati, agri. del. 12.50-13.00 Cleveland, rail 17.00-17.50 Detroit, auto, net. 14.50-15.00 Eastern Pa., R. R. 16.00-16.50 Pittsburgh, rail. 17.50-18.00 St. Louis, R. R. 13.50-14.00 Toronto, net 7.00  RAILS FOR ROLLING 5 feet and over Birmingham 11.50-12.50 Boston, dealers 9.00- 9.50 Buffalo 13.00-14.00 Chicago 14.25-14.75 Eastern Pa. 15.00-15.60 New York, brokers. 10.25-10.50 St. Louis 13.75-14.25  LOCOMOTIVE TIRES Chicago (cut) 14.00-14.50
SHEET CLIPPI Chicago	8.00- 8.50 6.00- 6.50 8.00- 8.50 5.50- 6.00  SHORT 12.00-12.50 15.50-16.00 15.00-15.50 1	St. Louis, No. 1         10.25-10.75           St. Louis, No. 2         11.75-12.25           Toronto, No. 1. dlr.         7.00           SPECIFICATION PIPE         Eastern Pa.         12.00           New York, dealers.         7.75- 8.00           BUSHELING         12.00-12.50           Chicago, No. 1         11.50-12.00           Cincia, No. 1, deal.         8.50- 9.00           Cincin, No. 1, deal.         8.50- 5.00           Cleveland, No. 2         4.50- 5.00           Cleveland, No. 1         13.00-13.50           Toronto, dealers         6.00           MACHINE TURNINGS         Birmingham         5.50- 6.50           Buffalo         7.00- 7.25           Chicago         6.00- 6.50           Cleveland         7.00- 7.25           Chicago         6.00- 6.50           Cleveland         7.50- 8.00           Detroit         5.75- 6.25           Eastern Pa.         8.50           New York, brokers         3.50- 3.75           Pittsburgh         9.50-10.00           St. Louis         4.00- 4.50           Toronto, dealers         4.00	Boston, dealers	brokers 8.50- 8.75 Pittsburgh 13.50-14.00  MALLEABLE Birmingham, R. R. 11.50-12.50 Boston, consum. 15.00-16.00 Buffalo 16.00-16.50 Chicago, R. R. 16.00-18.50 Cincinnati, agri. del. 12.50-13.00 Cleveland, rail 17.00-17.50 Detroit, auto, net. 14.50-15.00 Eastern Pa., R. R. 16.00-16.50 Pittsburgh, rail. 17.50-18.00 St. Louis, R. R. 13.50-14.00 Toronto, net 7.00  RAILS FOR ROLLING 5 feet and over Birmingham 11.50-12.50 Boston, dealers 9.00- 9.50 Buffalo 13.00-14.00 Chicago 14.25-14.75 Eastern Pa. 15.00-15.60 New York, brokers. 10.25-10.50 St. Louis 13.75-14.25  LOCOMOTIVE TIRES Chicago (cut) 14.00-12.50 LOW PHOS. PUNCHINGS
SHEET CLIPPI Chicago	8.00- 8.50 6.00- 6.50 8.00- 8.50 5.50- 6.00  SHORT 12.00-12.50 15.50-16.00 15.00-15.50 1	St. Louis, No. 1	Boston, dealers	brokers 8.50- 8.75 Pittsburgh 13.50-14.00  MALLEABLE Birmingham, R. R. 11.50-12.50 Boston, consum. 15.00-16.00 Buffalo 16.00-16.50 Chicago, R. R. 16.00-16.50 Cincinnati, agri. del. 12.50-13.00 Cleveland, rail 17.00-17.50 Detroit, auto, net. 14.50-15.00 Eastern Pa., R. R. 16.00-16.50 Pittsburgh, rail. 17.50-18.00 St. Louis, R. R. 13.50-14.00 Toronto, net 7.00  RAILS FOR ROLLING 5 feet and over Birmingham 11.50-12.50 Boston, dealers 9.00- 9.50 Buffalo 13.00-14.00 Chicago 14.25-14.75 Eastern Pa. 15.00-15.60 New York, brokers. 10.25-10.50 St. Louis 13.75-14.25  LOCOMOTIVE TIRES Chicago (cut) 14.00-14.50 St. Louis, No. 1 12.00-12.50
Chicago Cincinnati Chicago Cincinnati Chicago Cincinnati St. Louis STEEL RAILS, Birmingham Buffalo Chicago (2 ft. Cincinnati, de Detroit Bits. open-h 3 ft. and le St. Louis, 2 ft. STEEL RAILS, Boston Chicago Pittsburgh St. Louis Buffalo Toronto, deale STOVE PLATE Birmingham Boston, dealer Buffalo Chicago Cincinnati, de Detroit, net. Eastern Pa.	8.00- 8.50 6.00- 6.50 8.00- 8.50 5.50- 6.00  SHORT 12.00-12.50 15.50-16.00 15.50-16.00 15.00-15.50 15.00-15.50 15.00-15.50 15.00-15.50 15.00-15.50 15.00-15.50 15.00-15.50 15.00-15.50 15.00-15.50 15.00-16.50 16.00-14.50 17.50-13.00 17.50-13.00 17.50-13.00 17.50-13.00 17.50-13.00 17.50-13.00 17.50-13.00 17.50-13.00 17.50-13.00 17.50-13.00 17.50-13.00 17.50-13.00 17.50-13.00 17.50-13.00 17.50-13.00 17.50-13.00 17.50-13.00 17.50-13.00	St. Louis, No. 1         10.25-10.75           St. Louis, No. 2         11.75-12.25           Toronto, No. 1. dlr.         7.00           SPECIFICATION PIPE         Eastern Pa.         12.00           New York, dealers.         7.75- 8.00           BUSHELING         Buffalo, No. 1         12.00-12.50           Chicago, No. 1         11.50-12.00           Cincia, No. 1, deal         8.50- 9.00           Cincin, No. 1, deal         8.50- 5.00           Cleveland, No. 2         4.50- 5.00           Cleveland, No. 1         13.00-13.50           Toronto, dealers         6.00           MACHINE TURNINGS           Birmingham         5.50- 6.50           Buffalo         7.00- 7.25           Chicago         6.00- 6.50           Cleveland         7.00- 7.25           Chicago         6.00- 6.50           Cleveland         7.50- 8.00           Detroit         5.75- 6.25           Eastern Pa.         8.50           New York, brokers         3.50- 3.75           Pittsburgh         9.50-10.00           St. Louis         4.00- 4.50           Toronto, dealers         4.00           Valleys         9.75-10.25 <td>Boston, dealers</td> <td>brokers 8.50- 8.75 Pittsburgh 13.50-14.00  MALLEABLE Birmingham, R. R. 11.50-12.50 Boston, consum. 15.00-16.00 Buffalo 16.00-16.50 Chicago, R. R. 16.00-16.50 Cincinnati, agri. del. 12.50-13.00 Cleveland, rail 17.00-17.50 Detroit, auto, net. 14.50-15.00 Eastern Pa., R. R. 16.00-16.50 Pittsburgh, rail. 17.50-18.00 St. Louis, R. R. 13.50-14.00 Toronto, net 7.00  RAILS FOR ROLLING 5 feet and over Birmingham 11.50-12.50 Buffalo 13.00-14.00 Chicago 14.25-14.75 Eastern Pa. 15.00-15.50 New York, brokers. 10.25-10.50 St. Louis 13.75-14.25  LOCOMOTIVE TIRES Chicago (cut) 14.00-14.50 St. Louis, No. 1 12.00-12.50 LOW PHOS. PUNCHINGS Buffalo 14.75-15.25 Chicago 15.00-15.50 Chicago 15.00-15.50</td>	Boston, dealers	brokers 8.50- 8.75 Pittsburgh 13.50-14.00  MALLEABLE Birmingham, R. R. 11.50-12.50 Boston, consum. 15.00-16.00 Buffalo 16.00-16.50 Chicago, R. R. 16.00-16.50 Cincinnati, agri. del. 12.50-13.00 Cleveland, rail 17.00-17.50 Detroit, auto, net. 14.50-15.00 Eastern Pa., R. R. 16.00-16.50 Pittsburgh, rail. 17.50-18.00 St. Louis, R. R. 13.50-14.00 Toronto, net 7.00  RAILS FOR ROLLING 5 feet and over Birmingham 11.50-12.50 Buffalo 13.00-14.00 Chicago 14.25-14.75 Eastern Pa. 15.00-15.50 New York, brokers. 10.25-10.50 St. Louis 13.75-14.25  LOCOMOTIVE TIRES Chicago (cut) 14.00-14.50 St. Louis, No. 1 12.00-12.50 LOW PHOS. PUNCHINGS Buffalo 14.75-15.25 Chicago 15.00-15.50 Chicago 15.00-15.50
SHEET CLIPPI Chicago	8.00- 8.50 6.00- 6.50 8.00- 8.50 5.50- 6.00  SHORT 12.00-12.50 15.50-16.00 15.00-15.50 1	St. Louis, No. 1         10.25-10.75           St. Louis, No. 2         11.75-12.25           Toronto, No. 1. dlr.         7.00           SPECIFICATION PIPE         Eastern Pa.         12.00           New York, dealers.         7.75-8.00           BUSHELING         Buffalo, No. 1         12.00-12.50           Chicago, No. 1         11.50-12.00           Cinci., No. 1, deal.         8.50-9.00           Cincinnati, No. 2         4.50-5.00           Cleveland, No. 2         8.25-8.75           Detroit No. 1, new.         9.50-10.00           Valleys, new, No. 1         13.00-13.50           Toronto, dealers         6.00           MACHINE TURNINGS         Birmingham         5.50-6.50           Buffalo         7.00-7.25           Chicago         6.00-6.50           Cincinnati, dealers         6.00-6.50           Cleveland         7.50-8.00           Detroit         5.75-6.25           Eastern Pa.         8.50           New York, brokers         3.50-3.75           Pittsburgh         9.50-10.00           St. Louis         4.00-4.50           Toronto, dealers         4.00           4.00         9.75-10.25	Boston, dealers	brokers 8.50- 8.75 Pittsburgh 13.50-14.00  MALLEABLE Birmingham, R. R. 11.50-12.50 Boston, consum. 15.00-16.00 Buffalo 16.00-16.50 Chicago, R. R. 16.00-16.50 Cincinnati, agri. del. 12.50-13.00 Cleveland, rail 17.00-17.50 Detroit, auto, net. 14.50-15.00 Eastern Pa., R. R. 16.00-16.50 Pittsburgh, rail 17.50-18.00 St. Louis, R. R. 13.50-14.00 Toronto, net 7.00  RAILS FOR ROLLING 5 feet and over Birmingham 11.50-12.50 Boston, dealers 9.00- 9.50 Buffalo 13.00-14.00 Chicago 14.25-14.75 Eastern Pa. 15.00-15.50 St. Louis 13.75-14.25  LOCOMOTIVE TIRES Chicago (cut) 14.00-14.50 St. Louis, No. 1 12.00-12.50 LOW PHOS. PUNCHINGS Buffalo 14.75-15.25 Chicago 15.00-15.50 Eastern Pa. 16.00-16.50
SHEET CLIPPI Chicago	8.00- 8.50 6.00- 6.50 8.00- 8.50 5.50- 6.00  SHORT 12.00-12.50 15.50-16.00 15.00-15.50 1	St. Louis, No. 1	Boston, dealers	brokers
SHEET CLIPPI Chicago	8.00- 8.50 6.00- 6.50 8.00- 8.50 5.50- 6.00  SHORT 12.00-12.50 15.50-16.00 15.00-15.50 1	St. Louis, No. 1         10.25-10.75           St. Louis, No. 2         11.75-12.25           Toronto, No. 1. dlr.         7.00           SPECIFICATION PIPE         Eastern Pa.         12.00           New York, dealers.         7.75-8.00           BUSHELING         Buffalo, No. 1         12.00-12.50           Chicago, No. 1         11.50-12.00           Cinci., No. 1, deal.         8.50-9.00           Cincinnati, No. 2         4.50-5.00           Cleveland, No. 2         8.25-8.75           Detroit No. 1, new.         9.50-10.00           Valleys, new, No. 1         13.00-13.50           Toronto, dealers         6.00           MACHINE TURNINGS         Birmingham         5.50-6.50           Buffalo         7.00-7.25           Chicago         6.00-6.50           Cincinnati, dealers         6.00-6.50           Cleveland         7.50-8.00           Detroit         5.75-6.25           Eastern Pa.         8.50           New York, brokers         3.50-3.75           Pittsburgh         9.50-10.00           St. Louis         4.00-4.50           Toronto, dealers         4.00           4.00         9.75-10.25	Boston, dealers	brokers 8.50- 8.75 Pittsburgh 13.50-14.00  MALLEABLE Birmingham, R. R. 11.50-12.50 Boston, consum. 15.00-16.00 Buffalo 16.00-16.50 Chicago, R. R. 16.00-16.50 Cincinnati, agri. del. 12.50-13.00 Cleveland, rail 17.00-17.50 Detroit, auto, net. 14.50-15.00 Eastern Pa., R. R. 16.00-16.50 Pittsburgh, rail 17.50-18.00 St. Louis, R. R. 13.50-14.00 Toronto, net 7.00  RAILS FOR ROLLING 5 feet and over Birmingham 11.50-12.50 Boston, dealers 9.00- 9.50 Buffalo 13.00-14.00 Chicago 14.25-14.75 Eastern Pa. 15.00-15.50 New York, brokers. 10.25-10.50 St. Louis 13.75-14.25  LOCOMOTIVE TIRES Chicago (cut) 14.00-14.50 St. Louis, No. 1 12.00-12.60 LOW PHOS. PUNCHINGS Buffalo 14.75-15.25 Chicago 15.00-15.50 Eastern Pa. 16.00-16.50
Chicago Cincinnati Chicago Cincinnati Chicago Cincinnati St. Louis STEEL RAILS, Birmingham Buffalo Chicago (3 ft. Chicago (2 ft. Cincinnati, de Detroit Bits., open-h 3 ft. and le St. Louis, 2 ft. STEEL RAILS, Boston Chicago Pittsburgh St. Louis Buffalo Toronto, deale STOVE PLATE Birmingham Boston, dealer Buffalo Chicago Cincinnati, de Detroit, net Eastern Pa N. Y., brokers St. Louis Toronto, dealer	8.00- 8.50 6.00- 6.50 8.00- 8.50 5.50- 6.00  SHORT 12.00-12.50 15.50-16.00 15.00-15.50 1	St. Louis, No. 1	Boston, dealers	brokers 8.50- 8.75 Pittsburgh 13.50-14.00  MALLEABLE Birmingham, R. R. 11.50-12.50 Boston, consum. 15.00-16.00 Buffalo 16.00-16.50 Chicago, R. R. 16.00-16.50 Cincinnati, agri. del 12.50-13.00 Cleveland, rail 17.00-17.50 Detroit, auto, net. 14.50-15.00 Eastern Pa., R. R. 16.00-16.50 Pittsburgh, rail 17.50-18.00 St. Louis, R. R. 13.50-14.00 Toronto, net 7.00  RAILS FOR ROLLING S feet and over Birmingham 11.50-12.50 Boston, dealers 9.00- 9.50 Buffalo 13.00-14.00 Chicago 14.25-14.75 Eastern Pa. 15.00-15.50 New York, brokers. 10.25-10.50 St. Louis 13.75-14.25  LOCOMOTIVE TIRES Chicago (cut) 14.00-14.50 St. Louis, No. 1 12.00-12.50 LOW PHOS. PUNCHINGS Buffalo 14.75-15.25 Chicago 15.00-15.50 Eastern Pa. 16.00-16.50 Pittsburgh (heavy) 17.00-17.50 Pittsburgh (light) 16.00-16.50
Chicago Cincinnati Chicago Cincinnati Chicago Cincinnati St. Louis STEEL RAILS, Birmingham Buffalo Chicago (3 ft. Chicago (2 ft. Cincinnati, de Detroit Bits., open-h 3 ft. and le St. Louis, 2 ft. STEEL RAILS, Boston Chicago Pittsburgh St. Louis Buffalo Toronto, deale STOVE PLATE Birmingham Boston, dealer Buffalo Chicago Cincinnati, de Detroit, net Eastern Pa N. Y., brokers St. Louis Toronto, dealer	8.00- 8.50 6.00- 6.50 8.00- 8.50 5.50- 6.00  SHORT 12.00-12.50 15.50-16.00 15.00-15.50 1	St. Louis, No. 1	Boston, dealers	brokers 8.50- 8.75 Pittsburgh 13.50-14.00  MALLEABLE Birmingham, R. R. 11.50-12.50 Boston, consum. 15.00-16.00 Buffalo 16.00-16.50 Chicago, R. R. 16.00-16.50 Cincinnati, agri. del 12.50-13.00 Cleveland, rail 17.00-17.50 Detroit, auto, net. 14.50-15.00 Eastern Pa., R. R. 16.00-16.50 Pittsburgh, rail 17.50-18.00 St. Louis, R. R. 13.50-14.00 Toronto, net 7.00  RAILS FOR ROLLING S feet and over Birmingham 11.50-12.50 Boston, dealers 9.00- 9.50 Buffalo 13.00-14.00 Chicago 14.25-14.75 Eastern Pa. 15.00-15.50 New York, brokers. 10.25-10.50 St. Louis 13.75-14.25  LOCOMOTIVE TIRES Chicago (cut) 14.00-14.50 St. Louis, No. 1 12.00-12.50 LOW PHOS. PUNCHINGS Buffalo 14.75-15.25 Chicago 15.00-15.50 Eastern Pa. 16.00-16.50 Pittsburgh (heavy) 17.00-17.50 Pittsburgh (light) 16.00-16.50
Chicago Cincinnati Detroit St. Louis STEEL RAILS, Birmingham Buffalo Chicago (2 ft. Cincinnati, de Detroit St. Louis, 2 ft. STEEL RAILS, Birmingham Buffalo Chicago (2 ft. Cincinnati, de Detroit St. Louis, 2 ft. STEEL RAILS, Boston Chicago Pittsburgh St. Louis Buffalo Toronto, deale STOVE PLATE Birmingham Boston, dealer Buffalo Chicago Cincinnati, de Detroit, net. Eastern Pa. N. Y., brokers, St. Louis Toronto, dealer Toronto, dealer Chicago Cincinnati, de Detroit, net. Eastern Pa. N. Y., brokers, St. Louis Toronto, dealer Toronto, dealer Toronto, dealer Toronto, dealer	8.00- 8.50 6.00- 6.50 8.00- 8.50 5.50- 6.00  SHORT 12.00-12.50 15.50-16.00 15.00-15.50 1	St. Louis, No. 1	Boston, dealers	brokers
Chicago Cincinnati Detroit St. Louis STEEL RAILS, Birmingham Buffalo Chicago (2 ft. Cincinnati, de Detroit St. Louis, 2 ft. STEEL RAILS, Birmingham Buffalo Chicago (2 ft. Cincinnati, de Detroit St. Louis, 2 ft. STEEL RAILS, Boston Chicago Pittsburgh St. Louis Buffalo Toronto, deale STOVE PLATE Birmingham Boston, dealer Buffalo Chicago Cincinnati, de Detroit, net. Eastern Pa. N. Y., brokers, St. Louis Toronto, dealer Toronto, dealer Chicago Cincinnati, de Detroit, net. Eastern Pa. N. Y., brokers, St. Louis Toronto, dealer Toronto, dealer Toronto, dealer Toronto, dealer	8.00- 8.50 6.00- 6.50 8.00- 8.50 5.50- 6.00  SHORT 12.00-12.50 15.50-16.00 15.00-15.50 1	St. Louis, No. 1	Boston, dealers	brokers
Chicago Cincinnati Detroit St. Louis STEEL RAILS, Birmingham Buffalo Chicago (2 ft. Cincinnati, de Detroit St. Louis, 2 ft. STEEL RAILS, Birmingham Buffalo Chicago (2 ft. Cincinnati, de Detroit St. Louis, 2 ft. STEEL RAILS, Boston Chicago Pittsburgh St. Louis Buffalo Toronto, deale STOVE PLATE Birmingham Boston, dealer Buffalo Chicago Cincinnati, de Detroit, net. Eastern Pa. N. Y., brokers, St. Louis Toronto, dealer Toronto, dealer Chicago Cincinnati, de Detroit, net. Eastern Pa. N. Y., brokers, St. Louis Toronto, dealer Toronto, dealer Toronto, dealer Toronto, dealer	8.00- 8.50 6.00- 6.50 8.00- 8.50 5.50- 6.00  SHORT 12.00-12.50 15.50-16.00 15.00-15.50 1	St. Louis, No. 1	Boston, dealers	brokers 8.50- 8.75 Pittsburgh 13.50-14.00  MALLEABLE Birmingham, R. R. 11.50-12.50 Boston, consum. 15.00-16.00 Buffalo 16.00-16.50 Chicago, R. R. 16.00-16.50 Cincinnati, agri. del 12.50-13.00 Cleveland, rail 17.00-17.50 Detroit, auto, net. 14.50-15.00 Eastern Pa., R. R. 16.00-16.50 Pittsburgh, rail 17.50-18.00 St. Louis, R. R. 13.50-14.00 Toronto, net 7.00  RAILS FOR ROLLING  Boston, dealers 9.00- 9.50 Buffalo 13.00-14.00 Chicago 14.25-14.75 Eastern Pa. 15.00-14.50 New York, brokers 10.25-10.50 St. Louis 13.75-14.25  LOCOMOTIVE TIRES Chicago (cut) 14.00-14.50 St. Louis, No. 1 12.00-12.50 LOW PHOS. PUNCHINGS Buffalo 14.75-15.25 Chicago 15.00-15.50 Eastern Pa. 16.00-16.50 Pittsburgh (heavy) 17.00-17.50 Pittsburgh (light) 16.00-16.50
Chicago Cincinnati Detroit St. Louis STEEL RAILS, Birmingham Buffalo Chicago (2 ft. Cincinnati, de Detroit St. Louis, 2 ft. STEEL RAILS, Birmingham Buffalo Chicago (2 ft. Cincinnati, de Detroit St. Louis, 2 ft. STEEL RAILS, Boston Chicago Pittsburgh St. Louis Buffalo Toronto, deale STOVE PLATE Birmingham Boston, dealer Buffalo Chicago Cincinnati, de Detroit, net Eastern Pa. N. Y., brokers, St. Louis Toronto, dealer Toronto, dealer Lake St. Gross t	8.00- 8.50 6.00- 6.50 8.00- 8.50 5.50- 6.00  SHORT 12.00-12.50 15.50-16.00 15.00-15.50 1	St. Louis, No. 1	Boston, dealers	brokers
Chicago Cincinnati Detroit St. Louis STEEL RAILS, Birmingham Buffalo Chicago (2 ft. Cincinnati, de Detroit St. Louis, 2 ft. STEEL RAILS, Birmingham Pitts., open-h 3 ft. and le St. Louis, 2 ft. STEEL RAILS, Boston Chicago Pittsburgh St. Louis Buffalo Toronto, deale STOVE PLATE Birmingham Boston, dealer Buffalo Chicago Cincinnati, de Detroit, net Eastern Pa. N. Y., brokers St. Louis Toronto, dealer Toronto, dealer Lake St. Gross t Lower I	8.00- 8.50 6.00- 6.50 8.00- 8.50 5.50- 6.00  SHORT 12.00-12.50 15.50-16.00 15.00-15.50 1	St. Louis, No. 1	Boston, dealers	brokers
Chicago Cincinnati Chicago Cincinnati Chicago Cincinnati St. Louis STEEL RAILS, Birmingham Buffalo Chicago (3 ft. Chicago (2 ft. Cincinnati, de Detroit St. Louis, 2 ft. STEEL RAILS, Boston Chicago Pittsburgh St. Louis Buffalo Toronto, deale STOVE PLATE Birmingham Boston, dealer Buffalo Chicago Cincinnati, de Detroit, net Eastern Pa N. Y., brokers, St. Louis Toronto, dealer Cincinnati, de Detroit, net Eastern Pa N. Y., brokers, St. Louis Toronto, dealer Lake Su Gross t Lower 1 Old range bess	8.00- 8.50 6.00- 6.50 8.00- 8.50 8.00- 8.50 5.50- 6.00  SHORT 12.00-12.50 15.50-15.50 15.00-15.50 15.00-15.50 15.00-15.50 15.00-15.50 15.00-15.50 15.00-15.50 15.00-15.50 15.00-15.50 15.00-15.50 15.00-15.50 16.00-16.50 17.50-13.00 17.5	St. Louis, No. 1	Boston, dealers	brokers
Chicago Cincinnati Chicago Cincinnati Detroit St. Louis STEEL RAILS, Birmingham Buffalo Chicago (2 ft. Cincinnati, de Detroit St. Louis, 2 ft. STEEL RAILS, Pitts., open-h 3 ft. and le St. Louis, 2 ft. STEEL RAILS, Boston Chicago Pittsburgh St. Louis Buffalo Toronto, deale STOVE PLATE Birmingham Boston, dealer Birmingham Chicago Cincinnati, de Detroit, net. Eastern Pa. N. Y., brokers St. Louis Toronto, dealer Toronto, dealer Chicago Cincinnati, de Detroit, net. Eastern Pa. N. Y., brokers St. Louis Toronto, dealer Toronto, dealer Chicago Cincinnati, de Detroit, net. Chicago Cincinnati, de Detroit net. Chicago Cincinnati, de De	8.00- 8.50 6.00- 6.50 8.00- 8.50 5.50- 6.00  SHORT 12.00-12.50 15.50-16.00 15.00-15.50 1.14.00-14.50 15.00-15.60 earth, SS	St. Louis, No. 1	Boston, dealers	brokers
Cincinnati	8.00- 8.50 6.00- 6.50 8.00- 8.50 5.50- 6.00  SHORT 12.00-12.50 15.50-16.00 15.00-15.50 1	St. Louis, No. 1	Boston, dealers	brokers
Chicago	8.00- 8.50 6.00- 6.50 8.00- 8.50 5.50- 6.00  SHORT 12.00-12.50 15.50-16.00 15.00-15.50 1	St. Louis, No. 1	Boston, dealers	brokers
Cincinnati	8.00- 8.50 6.00- 6.50 8.00- 8.50 5.50- 6.00  SHORT 12.00-12.50 15.50-16.00 15.00-15.50 1	St. Louis, No. 1	Boston, dealers	brokers

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# Warehouse Iron and Steel Prices

	Cents per pound				districts of cities s	necified	
STEEL BARS	Cincinnati	3.25c	Buffalo	3.37c	Pittsburgh(h)	2.95c	Seattle 5.60c
Baltimore* 3.00c	Houston	3.25c	Chattanooga	3.56c	San Fracisco	3.35c	St. Louis 3.55c
Boston++ 3.10c	Los Ang., cl New Orleans	2.45c 3.50c	Chicago	3.20c 3.42c	Seattle St. Louis	3.70c 3.45c	St. Paul 3.56c
Buffalo 3.00c Chattanooga 3.36c	Pitts., plain (h)	3.05c	Cincinnati Cleveland, ¼-	0.120	St. Paul	3.30c	COLD FIN. STEEL
Chicago (j) 3.00c	Pitts., twisted		in, and over	3.31c	Tulsa	3.70c	Baltimore (c) 3.73c Boston 3.90c
Cincinnati 3.22c	squares (h) San Francisco	3.175c 2.45c	Detroit Detroit, 18-ln.	3.42c 3.65c	NO. 24 BLACK		Buffalo (h) 3.55c
Cleveland 3.00c Detroit 3.09c	Seattle	2.45c	Houston	3.00c	Baltimore*†	3.60c	Chattanooga* 4.13c
Houston 3.00c	St. Louis	3.25c	Los Angeles	3.60c 3.31c	Boston (g)	3.95c	Chicago (h) 3.50c Cincinnati 3.72c
Los Angeles 3.60c Milwaukee3.11c-3.26c	Tulsa Young2.30	3.25c c-2.60c	Milwaukee New Orleans	3.55c	Buffalo Chattanooga	3.25c 4.16c	Cleveland (h) 3.50c
New Orleans 3.35c	SHAPES		New York‡(d)	3.40c	Chicago	3.85c	Detroit 3.79c Los Ang. (f) (d) 5.85c
New York‡ (d) 3.31c	Baltimore*	3-00c	Philadelphia* Phila. floor	2.98c 4.95c	Cincinnati	4.02c	Milwaukee 3.61c
Pitts. (h)2.95c-3.10c Philadelphia 3.03c	Boston††	3.19c	Pittsburgh(h)	3.15c	Cleveland Detroit	3.91c 3.94c	New Orleans 4.30c
Portland 3.50c	Buffalo	3.25c	Portland	3,35c 3,25c	Los Angeles	4.35c	New York‡(d) 3.81c Philadelphia 3.76c
San Francisco 3.25c Seattle 3.70c	Chattanooga Chicago	3.56c 3.20c	San Francisco Seattle	3.55c	Milwaukee New Orleans	3.96c 4.50c	Pittsburgh 3.50e
St. Louis 3.25c	Cincinnati	3.42c	St. Louis	3.45c	New York‡(d)	3.89c	Portland (f) (d) 6.15c San Fran. (f) (d) 5.95c
St. Paul3.25c-3.40c	Cleveland Detroit	3.31c 3.42c	St. Paul Tulsa	3.45c 3.50c	Philadelphia*†	3.60c	Seattle (f) (d) 6.15c
Tulsa 3.25c	Houston	3.00c		mist.	Pitts.** (h) Portland	3.55c 4.10c	St. Louis 3.75c
IRON BARS	Los Angeles	3.60c	NO. 10 BLUE	0.10-	San Francisco	4.00c	St. Paul 4.02c Tulsa 4.65c
Portland 3.40c Chattanooga. 3.36c	Milwaukee New Orleans	3.31c 3.55c	Baltimore* Boston††	3.10c 3.30c	Seattle St. Louis	4.40c 4.10c	COLD ROLLED STRIP
Baltimore* 3.05c	New York‡(d)	3.37c	Buffalo	3.62c	St. Paul	3.90c	Boston, 0.100-
Chicago 2.75c Cincinnati 3.22c	Philadelphia* Pittsburgh (h)	2,98c 3.15c	Chattanooga	3.36c 3.05c	Tulsa	4.75c	in., 500 lb.
New York‡(d) 3.36c	Portland (i)	3.50c	Chicago Cincinnati	3.22c	NO. 24 GALV. SI	HEETS	lots
Philadelphia 2.93c St. Louis 3.25c	San Francisco	3.25c	Cieveland	3.11c	Baltimore*†	4.30c	Chicago 3.27c
Tulsa 3.25c	Seattle (1) St. Louis	3.70c 3.45c	Det., 8-10 ga. Houston	3.14c 3.35c	Buffalo	4.00c	Cincinnati (b) 3.22c Cleveland (b) 2.85c
REINFORCING BARS	St. Paul	3.45c	Los Angeles.	3.75c	Boston (g) Chattanooga	4.65c 4.86c	Detroit 3.18c
Buffalo 2.60c	Tulsa	3.50c	Milwaukee New Orleans	3.16c 3.55c	Chicago (h)	4.55c	New York‡(d) 3.36c St. Louis 3.45c
Chattanooga. 3.36c	PLATES		New York‡(d)	3.31c	Cincinnati Cleveland	4.72c 4.61c	TOOL STEELS
Chicago2.10c-2.60c	Baltimore* Boston††	3.00c	Portland	3.35c	Detroit	4.72c	(Applying on or east of
Cleveland (c) 2.10c	BOSTORI +	3.21c	Philadelphia*	3.08c	Houston	4.40c	Mississippi river; west
Current Iron	and Steel	Prices	of Furan	•	Los Angeles Milwaukee	4,40c 4.66c	of Mississippi 1c up)  Base
					New Orleans	4.95c	High speed57c
Dollar	s at Rates of Exc	change, M	lay 21		New York‡(d)	4.30c 4.40c	High carbon, high
					Phikadelphia**		
Export Prices f. o. b. S	Ship at Port of	Dispatch	-(By Cable or	Radio)	Philadelphia*† Pitts.**(h)4.1	5-4.45c	Oll hardening22c
	Ship at Port of	Dispatch		Radio)			Oll hardening22c Special tool20c
Export Prices f. o. b. S	British C		Continental orth Sea ports, metric	tons	Pitts.**(h)4.1 Portland San Francisco Seattle	5-4.45c 4.50c 4.50c 5.00c	Oll hardening22c Special tool20c Extra tool17c Regular tool14c
Export Prices f. o. b. S	British C gross tons J. K. ports Qu	Channel or No	Continental orth Sea ports, metric **Quoted i rs pounds sto	tons n gold erling	Pitts.**(h)4.1 Portland San Francisco Seattle St. Louis	5-4.45c 4.50c 4.50c 5.00c 4.65c	Oll hardening22c Special tool20c Extra tool17c Regular tool14c Uniform extras apply.
Export Prices f. o. b. S	British C gross tons J. K. ports Qu £ s d at	Channel or No oted in dollar current value	Continental orth Sea ports, metric **Quoted i rs pounds atc c £ s	tone n gold erling d	Pitts.**(h)4.1 Portland San Francisco Seattle	5-4.45c 4.50c 4.50c 5.00c	Oll hardening22c Special tool27c Extra tool
Export Prices f. o. b. S  PIG IRON Foundry, 2.50-3.00 Silicon 815. Basic bessemer. 15.	British Consistency Consistenc	Channel or No oted in dollar current value \$14.14 12.11	Continental orth Sea ports, metric **Quoted i rs pounds st c £ s 1 15 1 10	tons n gold erling d	Pitts. **(h)4.1 Portland San Francisco Seattle St. Louis St. Paul Tulsa	5-4.45c 4.50c 4.50c 5.00c 4.65c 4.50c	Oll hardening22c Special tool20c Extra tool17c Regular tool14c Uniform extras apply.
PIG IRON Foundry, 2.50-3.00 Silicon \$15. Basic bessemer	British Consistence Consistenc	Channel or No oted in dollar current value \$14,14	Continental orth Sea ports, metric **Quoted i rs pounds at c £ s	tons n gold erling d	Pitts. •• (h)4.1 Portland San Francisco Seattle St. Louis St. Paul Tulsa BANDS	5-4.45c 4.50c 4.50c 5.00c 4.65c 4.50c 5.10c	Oll hardening22c Special tool20c Extra tool17c Regular tool14c Uniform extras apply. BOLTS AND NUTS (100 pounds or over) Discount Chicago (a)70
Export Prices f. o. b. S  PIG IRON Foundry, 2.50-3.00 Silicon 815. Basic bessemer. 15.	British Consistency Consistenc	Channel or No oted in dollar current value \$14.14 12.11	Continental orth Sea ports, metric **Quoted i rs pounds st c £ s 1 15 1 10	tons n gold erling d	Pitts.**(h)4.1 Portland San Francisco Seattle St. Louis St. Paul Tulsa BANDS Baltimore* Boston††	5-4.45c 4.50c 4.50c 5.00c 4.65c 4.50c 5.10c 3.20c 3.30c	Oll hardening
PIG IRON Foundry, 2.50-3.00 Silicon Basic bessemer	British Corross tons . K. ports Qu at 5. 3. 2.6* 64. 3.11.0	Channel or No oted in dollar current value \$14.14 12.11	Continental orth Sea ports, metric **Quoted i rs pounds atc c £ s 1 15 1 10	tons n gold crling d 0	Pitts.**(h)4.1 Portland San Francisco Seattle St. Louis St. Paul Tulsa  BANDS Baltimore* Boston†† Buffalo	5-4.45c 4.50c 4.50c 5.00c 4.65c 4.50c 5.10c 3.20c 3.30c 3.42c	Oll hardening
PIG IRON Foundry, 2.50-3.00 Silicon Basic bessemer	British Corross tons . K. ports Qu at 5. 3. 2.6* 64. 3.11.0	Channel or No oted in dollar current value \$14.14 12.11	Continental orth Sea ports, metric **Quoted i rs pounds ste e £ s 1 15 1 10	tons n gold crling d 0	Pitts.**(h)4.1 Portland San Francisco Seattle St. Louis St. Paul Tulsa  BANDS Baltimore* Boston†† Buffalo Chattanooga Chicago	5-4.45c 4.50c 4.50c 5.00c 4.65c 4.50c 5.10c 3.20c 3.30c	Oll hardening
PIG IRON Foundry, 2.50-3.00 Silicon \$15. Basic bessemer 15. Hematite, Phos0305 17.  SEMIFINISHED STEEL Billets \$29. Wire rods, No. 5 gage 44. FINISHED STEEL	British Construction Cons	Channel or No oted in dollar current value \$14.14 12.11  \$18.99 36.37	Continental orth Sea ports, metric **Quoted i pounds atc £ s 1 15 1 10	tons n gold erfold d () 0	Pitts.**(h)4.1 Portland San Francisco Seattle St. Louis St. Paul Tulsa  BANDS Baltimore* Boston†† Buffalo Chattanooga Chicago Cincinnati	5-4.45c 4.50c 4.50c 5.00c 4.65c 4.50c 5.10c 3.20c 3.30c 3.42c 3.61c 3.30c 3.47c	Oll hardening
PIG IRON Foundry, 2.50-3.00 Silicon Basic bessemer	British Consecutive Consecutiv	Channel or No oted in dollar current value \$14.14 12.11  \$18.99 36.37 \$44.25 14c to 1.19c	Continental orth Sea ports, metric **Quoted i rs pounds ste e £ s 1 15 1 10 2 7 4 10 3 2 6 to 3	tons n gold erfing d 0 0 0 0 0 0 0 0 5 0	Pitts.**(h)4.1 Portland San Francisco Seattle St. Louis St. Paul Tulsa  BANDS Baltimore* Boston†† Buffalo Chattanooga Chicago Cleveland Detroit, fs-in.	5-4.45c 4.50c 4.50c 5.00c 4.65c 4.50c 5.10c 3.20c 3.30c 3.42c 3.61c 3.30c	Oll hardening
PIG IRON Foundry, 2.50-3.00 Silicon Foundry, 2.50-3.00 Silicon Foundry, 2.50-3.00 Silicon Foundry, 2.50-3.00 Silicon SIS Hematite, Phos0305 . 17.  SEMIFINISHED STEEL Billets	British Constructions L. K. ports Qu at 51 3 2 6* 51 3 2 6* 64 3 11 0	Channel or No oted in dollar current value \$14.14 12.11  \$18.99 36.37	Continental orth Sea ports, metric **Quoted i rs pounds st c £ s 1 15 1 10 2 7 4 10	tons n gold criting d 0 0 0 0 0 5 0 6	Pitts.**(h)4.1 Portland San Francisco Seattle St. Louis St. Paul Tulsa  BANDS Baltimore* Boston†† Boston†† Chattanooga Chicago Cincinnati Cleveland Detroit, &-in and lighter	5-4.45c 4.50c 4.50c 5.00c 4.65c 4.50c 5.10c 3.20c 3.30c 3.42c 3.61c 3.30c 3.47c 3.36c 3.39c	Oll hardening
PIG IRON Foundry, 2.50-3.00 Silicon Basic bessemer	British CO Rose tons 1. K. ports Qu & at 51 3 2 6* 64 3 11 0    17 5 17 6 48 8 19 0    100 8 5 0 735 7 15 0 675 7 10 0 806 8 1 3	State 25 1-12 c 1.12c 1.55c	Continental orth Sea ports, metric **Quoted i pounds ste £ s 1 15 1 10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	tons n gold erring d 0 0 0 0 0 5 0 6 0	Pitts.**(h)4.1 Portland San Francisco Seattle St. Louis St. Paul Tulsa  BANDS Baltimore* Boston†† Buffalo Chattanooga Chicago Cleveland Detroit, fs-in.	5-4.45c 4.50c 4.50c 5.00c 4.65c 4.50c 5.10c 3.20c 3.30c 3.42c 3.61c 3.30c 3.47c 3.36c	Oll hardening
PIG IRON Foundry, 2.50-3.00 Silicon Basic bessemer. 15. Hematite, Phos. 0305 17.  SEMIFINISHED STEEL Billets. \$29. Wire rods, No. 5 gage 44.  FINISHED STEEL Standard rails \$41. Merchant bars 1. Structural shapes 1. Plates, 14 in. or 5 mm. 1. Sheets, black, 24 gage or 0.5 mm. 2. Sheets, gal., 24 gage, corr. 2.	British Correst One L. K. ports Qu at 51 3 2 6* 51 3 2 6* 64 3 11 0    17 5 17 6 48 8 19 0    100 8 5 0 73c 7 15 0 1. 67c 7 10 0 80c 8 1 3 16c 9 15 0 61c 11 15 0	State 25 14c to 1.19c 1.12c 1.15c 2.12c 2.40c	Continental orth Sea ports, metric **Quoted i pounds ste £  1 15 1 10 2 7 4 10 3 2 6 to 3 3 1 4 5 5 16 6 10 6	tons n gold creling d 0 0 0 0 5 0 6 0 0 0 0 0 0 0 0 0 0 0 0 0	Pitts.**(h)4.1 Portland San Francisco Seattle St. Louis St. Paul Tulsa  BANDS Baltimore* Boston†† Buffalo Chattanooga Chicago Cleveland Detroit, fg-in and lighter Houston Los Angeles Milwaukee	5-4.45c 4.50c 4.50c 5.00c 4.65c 4.50c 5.10c 3.20c 3.30c 3.42c 3.47c 3.36c 3.39c 3.47c 3.36c 3.39c 3.47c 3.36c	Oll hardening
PIG IRON Foundry, 2.50-3.00 Silicon Foundry, 2.50-3.00 Silicon Foundry, 2.50-3.00 Silicon Foundry, 2.50-3.00 Silicon SIS Hematite, Phos0305 . 17.  SEMIFINISHED STEEL Billets	British Cons.  J. K. ports Qu at 51 3 2 6* 51 3 2 6* 64 3 11 0  17 5 17 6 64 8 19 0  100 8 5 0 715 0 67 7 15 0 67 7 10 0 80 8 1 3  16c 9 15 0 61c 11 15 0 95c 8 15 0 16c 9 15 0	Standard No. Channel or No. Coted in dollar current value \$14.14	Continental orth Sea ports, metric **Quoted i pounds ste £ s 1 15 1 10  2 7 4 10  3 2 6 to 3 3 1 4 5 5 16 6 10 4 0 5 5	tons n gold refling d 0 0 0 0 5 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Pitts.**(h)4.1 Portland San Francisco Seattle St. Louis St. Paul Tulsa  BANDS Baltimore* Boston†† Boston†† Chattanooga Chicago Cincinnati Cleveland Detroit, &-in and lighter Houston Los Angeles Milwaukee New Orleans	5-4.45c 4.50c 4.50c 5.00c 4.65c 4.50c 5.10c 3.20c 3.30c 3.42c 3.61c 3.30c 3.47c 3.36c 3.39c 3.25c 4.10c 3.41c 3.95c	Oll hardening
PIG IRON Foundry, 2.50-3.00 Silicon Foundry, 2.5	British Corross tons 1. K. ports Qu £ s d at 51 3 2 6* 64 3 11 0 17 6 48 8 19 0 17 67 7 15 0 1. 67 7 10 0 80c 8 1 3 16c 9 15 0 61c 11 15 0 95c 8 15 0 16c 9 15 0 66c 11 10 0 67c 7 10 0 66c 11 10 0 67c 12 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Standard Sta	Continental orth Sea ports, metric **Quoted i rs pounds str c £ s 1 15 1 10  2 7 4 10  3 2 6 to 3 3 1 4 5 6 6 10 4 0 6	tons n gold cerling d 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Pitts.**(h)4.1 Portland San Francisco Seattle St. Louis St. Paul Tulsa  BANDS Baltimore* Boston†† Chattanooga Chicago Chicago Cincinnati Cleveland Detroit, fi-in and lighter Houston Los Angeles Milwaukee New Orleans New Yorkţ(d) Philadelphia	5-4.45c 4.50c 5.00c 4.65c 4.50c 5.10c 3.20c 3.30c 3.42c 3.361c 3.30c 3.47c 3.36c 3.39c 3.25c 4.10c 3.95c 3.56c 3.56c 3.18c	Oll hardening
PIG IRON Foundry, 2.50-3.00 Silicon Basic bessemer	British Cons. L. K. ports Qu at 51 3 2 6* 51 3 2 6* 64 3 11 0  17 5 17 6 48 8 19 0  100 8 5 0 7 15 0 67 7 10 0 80 8 1 3  16c 9 15 0 61c 11 15 0 956 8 15 0 66 9 15 0 66 12 0 0 67 12 0 0 67 12 0 0 67 12 0 0 67 12 0 0 67 12 0 0 67 12 0 0 67 12 0 0 67 12 0 0 67 12 0 0 67 18 9	Standard No. 12	Continental orth Sea ports, metric **Quoted i pounds ste £ a 1 15 1 10 4 5 10 3 2 6 to 3 3 1 4 5 5 16 6 10 6 4 0 0 5 5 17 4 15 10 10 10 10 10 10 10 10 10 10 10 10 10	tons n gold criling d () () () () () () () () () () () () ()	Pitts.**(h)4.1 Portland San Francisco Seattle St. Louis St. Paul Tulsa BANDS Baltimore* Boston†† Boston†† Chattanooga Chicago Cincinnati Cleveland Detroit, is-in and lighter Houston Los Angeles Milwaukee New Orleans New York‡(d)	5-4.45c 4.50c 5.00c 4.65c 4.50c 5.10c 3.20c 3.30c 3.42c 3.61c 3.30c 3.47c 3.36c 3.39c 3.47c 3.36c 3.39c 3.25c 4.10c 3.95c 3.56c	Oll hardening
PIG IRON Foundry, 2.50-3.00 Silicon Foundry, 2.5	British Cons. L. K. ports Qu at 51 3 2 6* 51 3 2 6* 64 3 11 0  17 5 17 6 48 8 19 0  100 8 5 0 7 15 0 67 7 10 0 80 8 1 3  16c 9 15 0 61c 11 15 0 956 8 15 0 66 9 15 0 66 12 0 0 67 12 0 0 67 12 0 0 67 12 0 0 67 12 0 0 67 12 0 0 67 12 0 0 67 12 0 0 67 12 0 0 67 12 0 0 67 18 9	Standard No. 12	Continental orth Sea ports, metric **Quoted i pounds ste £ a 1 15 1 10 4 5 10 3 2 6 to 3 3 1 4 5 5 16 6 10 6 4 0 0 5 5 17 4 15 10 10 10 10 10 10 10 10 10 10 10 10 10	tons n gold criling d () () () () () () () () () () () () ()	Pitts.**(h)4.1 Portland San Francisco Seattle St. Louis St. Paul Tulsa BANDS Baltimore* Boston†† Buffalo Chattanooga Chicago Cincinnati Cleveland Detroit, fg-in. and lighter Houston Los Angeles Milwaukee New Orleans New York‡(d) Philadelphia. Pittsburgh (h) Portland San Francisco	5-4.45c 4.50c 5.00c 4.65c 4.50c 5.10c 3.20c 3.30c 3.42c 3.61c 3.30c 3.47c 3.36c 3.39c 3.47c 3.36c 3.39c 4.25c 4.10c 3.95c 4.25c 4.10c	Oll hardening
PIG IRON Foundry, 2.50-3.00 Silicon Basic bessemer	British Corosa Constitution    Bross tons    K. ports  Qu    £ s d    51 3 2 6*    51 3 2 6*    64 3 11 0     17 5 17 6    48 8 19 0     100 8 5 0    73c 7 15 0     67c 7 10 0    80c 8 1 3    16c 9 15 0    61c 11 15 0    16c 9 15 0    66c 11 10 0    67c 12 0 0    66c 13 10 0    66c 14 10 0    67c 12 0 0    66c 0 18 9    elivered Atlantic seabord	\$18.99 36.37 \$44.25 14c to 1.19c 1.12c 1.55c 2.12c 2.40c 1.42c 1.55c 2.15c 1.74c 2.15c	Continental orth Sea ports, metric **Quoted i pounds ste £ s 1 15 1 10 1 10 1 1 1 1 1 1 1 1 1 1 1 1	tons n gold criling d () () () () () () () () () () () () ()	Pitts.**(h)4.1 Portland San Francisco Seattle St. Louis St. Paul Tulsa  BANDS Baltimore* Boston†† Buffalo Chattanooga Chicago Cincinnati Cleveland Detroit, fg-in and lighter Houston Los Angeles Milwaukee New Orleans New York‡(d) Philadelphia Pittsburgh (h) Portland San Francisco Seattle	5-4.45c 4.50c 4.50c 5.00c 4.65c 4.50c 5.10c 3.20c 3.30c 3.42c 3.61c 3.30c 3.47c 3.36c 3.25c 4.10c 3.47c 3.56c 3.18c 3.25c 4.25c 4.25c	Oll hardening
PIG IRON Foundry, 2.50-3.00 Silicon Basic bessemer. 15. Hematite, Phos. 0305 17.  SEMIFINISIED STEEL Billets. \$29. Wire rods, No. 5 gage. 44.  FINISHED STEEL Standard rails. \$41. Merchant bars. 1. Structural shapes. 1. Plates, † ¼ in. or 5 mm. 1. Sheets, black, 24 gage or 0.5 mm. 2. Sheets, black, 24 gage, corr. 2. Bands and strips. 1. Blain wire, base. 2. Galvanized wire, base. 2. Wire nails, base. 2. Wire nails, base. 2. Tin plate, box 108 lbs. \$4.6. British ferromanganese \$75 de	British Corosa Constitution    Bross tons    K. ports  Qu    £ s d    51 3 2 6*    51 3 2 6*    64 3 11 0     17 5 17 6    48 8 19 0     100 8 5 0    73c 7 15 0     67c 7 10 0    80c 8 1 3    16c 9 15 0    61c 11 15 0    16c 9 15 0    66c 11 10 0    67c 12 0 0    66c 13 10 0    66c 14 10 0    67c 12 0 0    66c 0 18 9    elivered Atlantic seabord	Standard No. oted in dollar current value \$14.14	Continental orth Sea ports, metric **Quoted i pounds stre £ s 1 15 1 10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	tons n gold criling d 00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Pitts.**(h)4.1 Portland San Francisco Seattle St. Louis St. Paul Tulsa BANDS Baltimore* Boston†† Boston†† Chattanooga Chicago Cincinnati Cleveland Detroit, †s-in and lighter Houston Los Angeles Milwaukee New Orleans New York‡(d) Philadelphia. Pittsburgh (h) Portland San Francisco Seattle St. Louis St. Paul	5-4.45c 4.50c 5.00c 4.65c 4.50c 5.10c 3.20c 3.30c 3.42c 3.61c 3.30c 3.47c 3.36c 3.25c 4.10c 3.95c 3.18c 3.95c 3.18c 3.20c 4.25c 4.10c 4.25c 4.55c 3.55c 3.55c	Oll hardening
PIG IRON Foundry, 2.50-3.00 Silicon Basic bessemer	British Corross tons 1. K. ports Qu £ s d at 51 3 2 6* 51 3 2 6* 64 3 11 0    17 5 17 6 648 8 19 0    100 8 5 0 1. 672 7 15 0 1. 672 7 10 0 80c 8 1 3 16c 9 15 0 61c 11 15 0 95c 8 15 0 16c 9 15 0 66c 11 10 0 67c 12 0 0 66c 11 10 0 67c 12 0 0 66c 0 18 9 elivered Atlantic seabord	\$18.99 36.37 \$44.25 14c to 1.19c 1.12c 1.55c 2.12c 2.40c 1.42c 1.55c 2.15c 1.74c 2.15c	Continental orth Sea ports, metric **Quoted i pounds ste £ s 1 15 1 10 1 10 1 1 1 1 1 1 1 1 1 1 1 1	tons n gold criling d () () () () () () () () () () () () ()	Pitts.**(h)4.1 Portland San Francisco Seattle	5-4.45c 4.50c 4.50c 5.00c 4.65c 4.50c 5.10c 3.20c 3.30c 3.42c 3.361c 3.36c 3.37c 3.36c 3.25c 4.10c 3.41c 3.95c 3.18c 3.20c 4.25c 4.25c 4.25c 4.25c 4.55c	Oll hardening
PIG IRON Foundry, 2.50-3.00 Silicon Basic bessemer. 15. Hematite, Phos0305 17.  SEMIFINISIED STEEL Billets. \$29. Wire rods, No. 5 gage. 44.  FINISHED STEEL Standard rails. \$41. Merebant bars. 1. Structural shapes. 1. Plates, †4, in. or 5 mm. 1. Sheets, black, 24 gage or 0.5 mm. 2. Sheets, black, 24 gage, corr. 2. Bands and strip. 1. Plain wire, base. 2. Wire nails, base. 2. Wire nails, base. 2. Tin plate, box 108 lbs. \$4.6 British ferromanganese \$75 dc 29 0s 0d \$(43.74) f.o.b.  Domestic Prices at We	British Corross tons	Standard No. oted in dollar current value \$14.14 12.11	Continental orth Sea ports, metric **Quoted is pounds stree £ s 1 15 1 10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	tons n gold criting d 00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Pitts.**(h)4.1 Portland San Francisco Seattle	5-4.45c 4.50c 4.50c 5.00c 4.65c 4.50c 5.10c 3.20c 3.30c 3.42c 3.36c 3.39c 3.47c 3.36c 3.25c 4.10c 3.95c 3.18c 3.20c 4.25c 3.55c 3.55c 3.45c	Oll hardening
PIG IRON Foundry, 2.50-3.00 Silicon Basic bessemer. 15. Hematite, Phos. 0305 17.  SEMIFINISHED STEEL Billets. \$29. Wire rods, No. 5 gage 44.  FINISHED STEEL Standard rails \$41. Merchant bars 1. Structural shapes 1. Plates, 14/ in. or 5 mm. 1. Sheets, black, 24 gage or 0.5 mm. 2. Sheets, black, 24 gage or 0.5 mm. 2. Galvanized wire, base 2. Wire nails, base 2. Wire nails, base 2. Wire nails, base 3. British ferromanganese \$75 de \$9 0s 0d \$(43.74) f.o.b.  Domestic Prices at Wo	British Correspond to the corresponding to the corr	\$18.99 \$36.37  \$14. 14 12.11 \$18.99 \$36.37  \$44. 25 14c to 1.19c 1.12c 1.55c 2.12c 2.40c 1.42c 1.92c 2.15c 1.74c pard, duty-p:	Continental orth Sea ports, metric **Quoted i pounds ste £ s 1 15 1 10 4 10 6 10 6 10 6 10 6 10 6 10 6 10	tons n gold certing d 00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Pitts.**(h)4.1 Portland San Francisco Seattle St. Louis St. Paul Tulsa BANDS Baltimore* Boston†† Boston†† Chattanooga Chicago Cincinnati Cleveland Detroit, †s-in and lighter Houston Los Angeles. Milwaukee New Orleans New York‡(d) Philadelphia. Pittsburgh (h) Portland San Francisco Seattle St. Louis St. Paul Tulsa  HOOPS Baltimore	5-4.45c 4.50c 5.00c 4.65c 4.50c 5.10c 3.20c 3.30c 3.42c 3.61c 3.30c 3.47c 3.36c 3.25c 4.10c 3.95c 3.18c 3.95c 3.18c 3.95c 3.55c 3.55c 3.55c 3.45c 2.30c	Oll hardening
PIG IRON Foundry, 2.50-3.00 Silicon Basic bessemer. 15. Hematite, Phos. 0305 17.  SEMIFINISHED STEEL Billets. \$29. Wire rods, No. 5 gage 44.  FINISHED STEEL Standard rails. \$41. Merchant bars 1. Structural shapes 1. Structural shapes 1. Sheets, black, 24 gage or 0.5 mm. 1. Sheets, black, 24 gage or 0.5 mm. 1. Sheets, gal. 24 gage, corr. 2. Bands and strips 1. Plain wire, base 2. Wire nails, base 2. Wire nails, base 3. Galvanized wire, base 2. Wire nails, base 3. Fin plate, box 108 lbs. \$4.6 British ferromanganese \$75 dc 29 0s 0d \$(43.74) f.o.b.  Domestic Prices at Wo	British Correst tons L. K. ports Qu £ s d at 51 3 2 6* 51 3 2 6* 64 3 11 0    17 5 17 6 48 8 19 0    100 8 5 0 1 . 67 7 10 0 80 8 1 3    16c 9 15 0 61c 11 15 0 0 65 8 1 3    16c 9 15 0 65 1 10 0 65 0 15 0 65 1 10 0 65 0 18 9 9 65 0 18 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	\$18.99 \$36.37  \$44.25 14c to 1.19c 1.12c 1.55c 2.12c 2.40c 1.42c 1.92c 2.15c 1.74c pard, duty-part of duty-part of the frames 200 \$13 190 11 95 430 18	Continental orth Sea ports, metric **Quoted i pounds stree £ s 1 15 1 10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	tons n gold criting d 00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Pitts.**(h)4.1 Portland San Francisco Seattle	5-4.45c 4.50c 4.50c 5.00c 4.65c 4.50c 5.10c 3.20c 3.30c 3.42c 3.36c 3.39c 3.47c 3.36c 3.25c 4.10c 3.95c 3.18c 3.20c 4.25c 3.55c 3.55c 3.45c	Oll hardening
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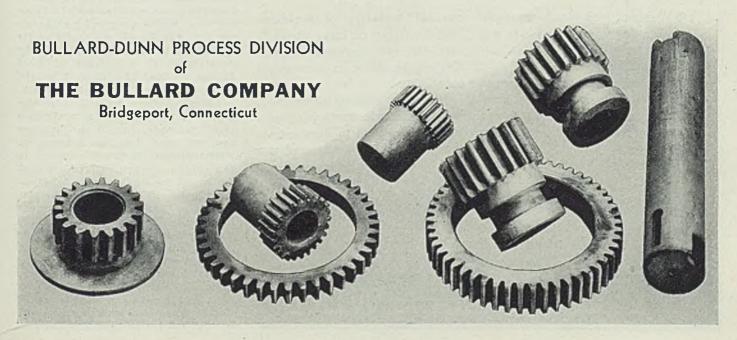
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# $\mathcal{A}_{t the}$

American Electro-Platers Society Exposition—Carter Hotel—Cleveland, Ohio—Booths 40 and 41—June 1st, 2nd, 3rd, and 4th, Bullard-Dunn Process will be in actual working demonstration. In addition, there will be samples on display which will show the possibilities of this Descaling Method on a variety of applications.

Make it a point to visit the show and see this Process Descale without etching.



#### Prices Advanced for Third Quarter

ARNEGIE-Illinois Steel Corp. announced late last week an advance of \$2 a ton on rerolling and forging billets, sheet bars, shapes and plates for third quarter.

At the same time it was said that an announcement respecting bars and strip will be made Monday, May 25. From all indications these products also will be advanced, though the amount is not definite.

Business will be booked for ship-

ment the remainder of this quarter at current prices. The advances will become effective July 1. Delivered prices will be quoted in the Pittsburgh and Chicago district; elsewhere base prices.

# Bars

Bar Prices, Page 88

Pittsburgh-Following a slight

contraction in demand two weeks ago, merchant bar bookings improved to a moderate degree through last week. However, many automobile parts manufacturers are now issuing their last specifications for bars to work up into parts for 1936 models and new bar sizes for 1937 models should be prominent among inquiries within the next three to four weeks. Chicago—Bar demand is fairly

Chicago—Bar demand is fairly steady despite some signs of slackening in automotive requirements. Specifications from farm implement and tractor manufacturers and miscellaneous users are steady and shipments continue to engage bar mills at a high rate. Automotive purchases for June delivery indicate a moderate letdown from the recent rate, though most of the slackening is not looked for until the latter part of the month.

Cleveland—Requirements of steel bar consumers continue steady, with tonnage needs of automotive builders only a little in advance of implement makers, builders of road-making equipment and steel forging concerns.

Philadelphia—Commercial bar tonnage is fairly steady, considering increasing uncertainty as to the trend of prices for third quarter. The majority of the trade still believes there will be no increase; however, there appears no definite assurance at the moment one way or the other.

# Plates

(Note—An advance of \$2 a ton in the price of plates was announced late last week by Carnegie-Illinois Steel Corp. effective July 1.)

Plate Prices, Page 88

Pittsburgh—A large tonnage of plates and structural shapes will be involved in the construction of a landing boat which Greene Line Steamers Inc., Cincinnati, will build at its Cincinnati wharf and which will be constructed of a number of steel barges so that the finished length will be 360 feet by 50-foot width.

Chicago—Plate demand is receiving the best support in several years from railroads, freight car builders and tank and line pipe fabricators. Miscellaneous business remains in fair volume, though such orders generally call for lighter gages. Indications point to increasing shipments of plates for railroad equipment building during coming months, while structural fabricators also have fair schedules in prospect for the summer.

New York—Sellers of steel plates are focusing attention on car work, although relatively little of the tonnage is expected to go to eastern producers. About 400 tons of plates will be required for 10 passenger locomo-



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• Welds of high tensile strength, of high ductility, are made in any position with Hi-Tensile "C" Shielded Arc Electrodes.

Elongation and tensile strength tests—rigid inspections by competent authorities—all prove the quality of this quiet, fast, steady electrode.

Hi-Tensile "C" does not require

special training of welders. Nothing tricky or fussy about it. Fits any shop requirements. Carried in stock in convenient locations.

Write for complete information. The Page distributor in your territory will be glad to demonstrate the practical advantages of this and other Page electrodes.

PAGE STEEL & WIRE DIVISION OF THE AMERICAN CHAIN COMPANY, Inc.
Monessen, Pennsylvania

In Business for Your Safety

District Offices: New York, Pittsburgh, Atlanta, Chicago, San Francisco

# PAGE Welding WIRE

tives placed by the New Haven with Baldwin. Locomotive Corp., Eddystone, Pa. Advance in price for third

quarter seems more likely.

Philadelphia—Apparently bidders in this district on the two Matson line boats are out of the picture, for it is understood that the Moore Dry Dock Co., Oakland, Calif., is low and Newport News Shipbuilding & Dry Dock Co., Newport News, Va., second. Meanwhile, platemakers are focusing attention on pending action of the Sun Shipbuilding Co., Chester, Pa., in the distribution of possibly 8000 or 9000 tons of tank work, on which it was awarded the construction some time ago and on 1000 tons of hull steel for the sea-going dredge, Gor-THALS, on which the war department will open bids June 1. Car work also is a feature. Miscellaneous plate demand is dull, pending opening of books for third quarter. Uncertainty as to the price outlook for that period is increasing. Meanwhile the market is 1.90c, Coatesville, Pa., or 1.99 1/2 c, Philadelphia.

San Francisco-Of more than special interest is the call for bids to be opened May 25 for 82,590 feet of 36inch welded steel pipe from 3/8 to 9/16-inch thick for the first unit of the Stone Canyon pipe line for the metropolitan water district, Los Angeles, involving close to 8000 tons. The second unit, scheduled to come up for figures soon, will require an additional 7000 or 8000 tons.

Scattle-Plate fabricating shops have much work in hand, tank and boiler jobs, ship repairs and plant replacements. Pulp and paper mills are installing new equipment and making extensions.

#### Contracts Placed

700 tons, Eagle Mountain pumping plant, metropolitan water district, Los Angeles, to unnamed interest. 565 tons, pipe line, Climax, Colo., to Thompson Mfg. Co., Denver.

450 tons, three coal barges, for Campbell Transportation Co., Pittsburgh, to Dravo Contracting Co., Neville Island, Pittsburgh.
300 tons, 22-inch water pipe, East Marginal way, Seattle, to Puget Sound Machinery Depot, Seattle.

170 tons, 66-inch pipe line, Sheboygan, Wis., to Alco Products Inc., New York.

155 tons, two stand pipes. West Point,
N. Y., to Chicago Bridge & Iron
Works, Chicago, through war department.

100 tons, dredge pipeline for port of Astoria, Oreg., to Puget Sound Ma-chinery Depot, Seattle.

#### Contracts Pending

12,000 tons, hull steel, two ships for Matson lines, San Francisco, Moore Dry Dock Co., Oakland, Calif., apparently low on general construction, with Newport News Shipbuilding & Dry Dock Co., second; it is considered possible that only one boat will be built. 7780 tons, 36-inch welded steel pipe,

# WORTHY OF SALVAGE!

Through a combination of circumstances the Claire Furnace at Sharpsville is the only blast furnace plant in years scheduled for dismantlement whose modern design, recent construction and condition due to brevity of service deserves a place in your modernization or reconstruction plans for your furnace plant.

#### We Will Dismantle And Erect Same At Your Plant.

- 1-750-ton MODERN FURNACE heavy shell, double skip, Otis hoist, McKee top, 4 uptakes, condition excellent.
- 3-22' x 100' BRASSERT STOVES-1/8" bottom ring, double riveted throughout, Steinhart burners.

18' DUST CATCHER-with downcomers. 12' BRASSERT WASHER AND DRYER 25-ton LADLES—LADLE HOUSE and CRANE 150' PIG CASTING MACHINE. Heil & Patterson Single Strand.

- 2—130 ft. ATLAS SCALE CARS
- 1-MESTA LOW PRESSURE BLOWING EN-GINE-84x84x60.
- 1-MESTA HIGH PRESSURE BLOWING EN-GINE-46x84x60.
- 1-MESTA CONDENSER with Wheeler jet in pump.
- 1-DRAVO ORE BRIDGE-130' span, 60' overhang-5-ton capacity with runway. MODERN STOCK HOUSE, TRESTLE, BINS.

#### YES! We Have Another Furnace Plant

at Josephine, Pa. while not modern, there are many items of interest to any industrial plant. Full list to be published later.

#### MACHINE TOOLS-

1-Moline gang drill, direct drive	\$200.00
1-60" Bausch Radial Drill, direct drive	400.00
Nos. 6-7-8-9 Sturtevant belt driven blowers each	150.00
1-20" Radius Newton structural Miller direct drive	700.00
3-Bull riveters, air operatedeach	150.00
2-12" Israel Johnson latheseach	150.00
1—120" Niles Horizontal Boring Mill	650.00
1-84" Niles Planer 22 ft. table	650.00
1-48" Cincinnati Planer 111/2 ft. table	500.00
1-9" No. 17 Jarecki pipe threader	250.00
1—7" Landis pipe threader	200.00
1—2" Acme bolt cutter	150.00
1-Betts Machine Co. slotter 20" stroke direct drive	550.00
1—Trip hammer, 3" stroke, High Speed Hammer Co	250.00
1-Ryerson Bevel Shear, direct drive	350.00

#### WHEN YOU PLAN TO BUILD . . . WHEN YOU WANT TO DISMANTLE... HETZ

# HETZ CONSTRUCTION CO., INC.

NILES, OHIO **PHONE 1203** 

Stone Canyon pipe line, metropolitan water district, Los Angeles; bids May 25.

1750 tons, pipe line, Washington, D. C. 1000 tons, hull steel, ocean-going dredge, Goethals, for war department, Washington, bids postponed to June 1; a substantial amount of machinery will be installed.

480 tons, 80 pontoons and 50 lengths of shore pipe, for New Orleans army engineers, bids June 8.

180 tons, gate shafts. Fort Peck dam. Mont.; bids opened.

124 tons, pipe for Ralston Creek dam, Denver, Colo.: United Construction Co., Denver, low at \$1,041,252 on general contract,

# Transportation

Track Material Prices, Page 89

Awards of freight cars the past week totaled 6900, Chesapeake & Ohio distributing 5400, Pere Marquette 500 and Norfolk & Western 1000. Definite placing of 2000 cars by Missouri Pacific was also announced, it is reported that Norfolk & Western, in addition to 1000 cars awarded in March to its own shops and 1000 awarded last week to out-

side shops, plans building 1000 more in its own shops. Details of these car awards are shown below. This total constitutes the largest car buying since the Pennsylvania placed 10,000 cars in December, 1935.

According to trade estimates these cars will require about 107,250 tons of plates, shapes and bars and 39,000 tons of wheels and axles.

New York, New Haven & Hartford has placed ten locomotives with Baldwin Locomotive Works, Eddystone, Pa.

Some eastern roads are said to be planning to buy additional rail tonnage for delivery before July 1, to supplement purchases made earlier in the year. Cleveland Railway Co., Cleveland, has placed 1100 tons of girder rails with Carnegie-Illinois Steel Corp., Pittsburgh, and also has placed 211 tons of plates with the same producer.

# Valuable Information for Users of Cold Rolled Strip Steel

For the special convenience of cold rolled strip users, complete information of frequent demand has been compiled in a new pocket size 72-page Handhook now ready for distribution. Up-todate data on tolerances, weights, finishes, tempers, and manufacturing details, heretofore unavailable, are included in this valuable new reference book. You can secure a copy, free, by sending your request on your firm letterhead at once. The supply is limited so do not delay Write, now, to be sure that you will receive a copy of this very useful Handbook.

THE THOMAS STEEL COMPANY WARREN, OHIO

Specialized Producers of Cold Rolled Strip Steel



# STRIP STEEL BRIGHT STEEL-ZINC COATED COPPER COATED

#### Car Orders Placed

Chesapeake & Ohio, 5400 steel cars: 1800 fifty-ton hoppers, to American Car & Foundry Co., Huntington, W. Va.; 1200 fifty-ton hoppers, to Pullman Standard Car Mfg. Co., Butler, Pa.; 500 fifty-ton hoppers to Pullman Standard Car Mfg. Co., Richmond, Va.; 500 fifty-ton box cars, to General American Car Co., East Chicago, Ind.; 500 fifty-ton box cars to Pullman Standard Car Mfg. Co., Richmond, Va.; 500 highside and 150 lowside fifty-ton gondolas, to Bethlehem Steel Co., Johnstown, Pa.; 100 fifty-ton lowside gondolas, to Ralston Steel Car Co., Columbus, O.; 150 fifty-ton automobile box cars with loaders, to Pullman Standard Car Mfg. Co., Michigan City, Ind.

Missouri Pacific, 2000 cars: 1500 fiftyton steel box cars, to Mt. Vernon Car Mfg. Co., Mt. Vernon, Ill.; 500 fiftyfive ton steel hopper cars, to American Car & Foundry Co., New York.

Norfolk & Western, 1000 fifty-ton steel coal cars; 500 each to Pressed Steel Car Co., McKees Rocks, Pa., and Virginia Bridge & Iron Works, Roanoke, Va.

Pere Marquette, 100 forty-ton steel furniture and 400 forty-ton automobile cars with loaders, to Ralston Steel Car Co., Columbus, O.

#### Locomotives Placed

New York, New Haven & Hartford, 10 steam passenger locomotives to the Baldwin Locomotive Works, Eddystone, Pa.

#### Rail Orders Placed

Cleveland Railway Co., Cleveland, 1100 tons girder rails, to Carnegie-Illinois Steel Corp., Plttsburgh.

#### Car Orders Pending

St. Louis Southwestern, 50 steel automobile cars and five air conditioned coaches; court permission granted.

#### Locomotives Pending

St. Louis Southwestern, five locomo-

tives; court permission granted,

#### Rail Orders Pending

United States Engineer, Seattle, 522 tons of 65-pound rails for Gray's Harbor jetty; bids June 11.

# Sheets

Sheet Prices, Page 88

Pittburgh — Average sheet mill operations tended slightly lower last week, at 65 per cent of capacity, against an average of 70 per cent two weeks ago. Demand is well diversified. Discussion on third-quarter prices has not reached any decision. Effective May 21, the extra for tack plate quality sheets was advanced from 20 cents to 30 cents per 100 pounds.

Cleveland — Independent sheet mills continue to operate at 75 to 80 per cent of capacity, some being well booked through June. Purchasers are beginning to take more seriously the tentative proposal to advance quotations by \$2 or \$3 a ton for third quarter.

Chicago—Except for slackening in automotive needs, sheet demand is well sustained. A larger decrease in automotive deliveries is expected late in June, while the date of resumption of deliveries for 1937 models is indefinite. Some small trial orders in connection with new models have been placed, however. Sheet mills are well fortified with backlogs, with three to four weeks the quickest delivery available on any grade. Third quarter sheet prices may be announced this week.

New York—Following a dip a week ago sheet buying is more active with orders coming from various household equipment builders, usually for prompt delivery. Snead & Co., Jersey City, N. J., has booked the shelving contract for the archives building, Washington, long pending, and is reported distributing formal contracts for 6500 tons of steel, principally sheets,

Philadelphia—With sheet sellers scheduled to open books for third quarter soon, attention of the trade is being centered upon prospects for a price change. The trade still doubts there will be an increase. In some quarters it is believed that If there is no increase in the base prices there will be at least adjustment in the extras. One report is that a reduction is contemplated in the pickling extra, with increases in certain other extras, in possibly gage or width. New buying is appreciably lighter than a week or two ago.

Cincinnati—Sheet demand has changed little in the past three weeks, the rate being sufficient to

keep production, now about 80 per cent, at good levels during June. There is an increase in buying for outdoor construction jobs.

Buffalo—Sheetmakers are operating at 85 per cent of capacity and will maintain a rate of 80 to 85 per cent the entire month.

St. Louis—Large consumers of steel sheets and miscellaneous users continue active purchasers. May to date has been the most prosperous in point of shipments and new orders booked since 1931. Galvanized material shows a tendency to taper from the recent high level, particularly

on heavier gages. The tin plate situation is reported satisfactory.

Birmingham, Ala. — Continued activity is noted in sheets. No indications are noted looking to an early cessation of the activity.

#### Quicksilver

New York—Quicksilver prices are barely steady here in a quiet market with supplies more freely offered. Small lots are quoted \$75.50 to \$76 a virgin flask with round lots held at \$75.



Cold Drawn Bars Shafting Special Sections Alloy Steels

# BLISS & LAUGHLIN, INC.

HARVEY, ILL. Sales Offices in all Principal Cities BUFFALO. N.Y.

with B & L Cold Drawn Steel

# Pipe

Pipe Prices, Page 89

Pittsburgh-Successful bidders are expected to be announced soon for supplying 25,000 tons of line pipe for the Shell-Union Oil Co. in the proposed line from Bakersfield, Calif., to refineries at San Francisco bay. The 360-mile line project for the Old Dutch Refining Co., from Muskegon, Mich., to a point near Cincinnati, has not yet developed to the inquiry

stage. Specifications for oil country goods, standard pipe and mechanical tubing show steadiness. Prices are

Allegheny county will take bids on cast iron pressure pipe and fittings, soil pipe and fittings, rigid conduit and electrical wire until May 28.

Chicago-Nearly 10,000 tons of cast pipe is pending for three local municipalities. Chicago is inquiring for 2827 tons of 4, 8, 12 and 24-inch material, while Evanston, Ill., is expected in the market for about 1000 tons. Requirements for the Cicero,

Ill., project are expected to run close to 6000 tons.

New York-After several weeks of inactivity, the cast pipe market here is featured by an inquiry for 7000 tons. Lettings the past week were restricted to a small total. Prices are unchanged and firm.

San Francisco-The only award of size pending is 190 tons for Alhambra, Calif. Eureka, Calif., has also opened bids on 103 tons of 12-inch class B, pipe. Bids have been submitted by various pipe interests to the Shell Oil Co. for a 304-mile line, calling for 25,000 tons.

Seattle-Demand for cast pipe is not keeping pace with other items, and few projects are pending. American Cast Iron Pipe Co. was awarded 175 tons of 8-inch pipe for East Marginal Way improvement and about 50 tons of 14-inch class B for Renton, Wash. Portland received bids May 20 for 525 tons of 6, 8 and 12inch cast pipe. Yakima, Wash., will open bids May 25 for main line and lateral extensions for an irrigation system. At Wallace, Idaho, improvements are planned by Citizens Utility Co., to include 6-inch mains and accessories, with plans by N. B. Hough, Spokane, engineer.

#### Cast Pipe Placed

225 tons, 8-inch for Seattle, and 14-inch class B for Renton, Wash., to American Cast Iron Pipe Co., Birmingham,

100 tons, department of purchase, New York, to Donaldson Iron Co., Emaus, Pa., and United States Pipe & Foundry Co., Burlington, N. J.

#### Cast Pipe Pending

7000 tons, 4, 6 and 8-inch; Public Service Corp. of New Jersey, Newark, N. J. 6000 tons, Cicero, Ill.; Leininger Con-struction Co., Chicago, general contractor.

2827 tons, 4, 8, 12 and 24-inch, Chicago;

bids June 2. 1000 tons, Evanston, Ill. 525 tons, 6, 8 and 12-inch, Portland, Oreg., improvement; bids in.

190 tons, 6 and 8-inch, class 250, Alhambra, Calif.; bids opened. 103 tons, 12-inch, class B, Eureka, Calif.;

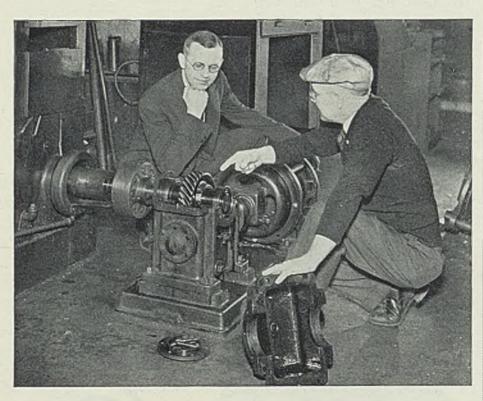
bids opened. Unstated tonnage, new waterworks and system, Random Lake,

sewerage system, Wis.; bids June 4.

#### Cold Finished

Cold Finished Prices, Page 89

Pittsburgh - Manufacturers of farm implements and bicycles have been prominently in the cold-finished bar market on requirements for summer manufacturing schedules, which in several cases have been revised upward. Cold-drawn carbon bars are quoted 2.10c, base, Pittsburgh, with alloy quality, 2.95c.



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## Strip Steel

Strip Prices, Page 89

Cleveland—Consumers of hot and cold-rolled strip are urging shipments on a heavy volume of specifications. Business in narrow widths continues good, especially in cold-rolled. Auto partsmakers are buying cautiously. Consumers seem to be showing more immediate interest in reports of an impending price rise for third quarter and an important increase in June buying from this source may follow.

Chicago—Strip steel demand remains in fair volume despite moderate slackening in automotive needs. The latter recession is not expected to accelerate until the middle or latter part of June. Business from miscellaneous consumers is well maintained and mills anticipate operations close to their present level through the remainder of this quarter. Announcement regarding third quarter prices is looked for this week.

New York—Narrow strip tonnage is declining, due in part to fewer releases from automobile accessory makers. Prices are firmer.

#### Tin Plate

Tin Plate Prices, Page 88

Pittsburgh-Mill operations in the tin plate industry have moved up 5 points more the past week and are now at a full 100 per cent of capacity. In fact, some producers have had to put on extra turns over and above the usual weekly requirements, so that theoretically some mills are operating at better than 100 per cent. From all indications this rate of activity will continue for at least two to three weeks. Demand for coldreducea tin plate continues greatly in excess of capacity to produce and four, five and six-week delivery promises are not uncommon.

#### Coke By-Products

Coke By-Product Prices, Page 89

New York—Demand for coke oven by-products continues active and in general is in excess of the supply. In fact, demand for distillates appears to be increasing. No changes in prices are reported.

#### Wire

Wire Prices, Page 89

Pittsburgh—The market has been adequately tested on important business that continues to develop increasingly through second quarter.

Certain price irregularities on nails have undoubtedly been caused by carry-over stocks in the hands of distributors from first quarter. Plain manufacturing wire remains 2.40c, base, Pittsburgh, and spring wire, 3.05c

Chicago—While demand for wire and wire products tends downward, the recession so far has been gradual and business still makes a favorable comparison with that during the corresponding period of the past several years. Automotive needs remain heavy despite some slackening, though a further decrease in buying

is expected. Activity in merchant wire products is affected seasonally in rural districts. Consumption of barbed wire and fencing, however, remains at a better rate than a year ago. Prices are steady, with third quarter levels expected to be announced within the next week to ten days.

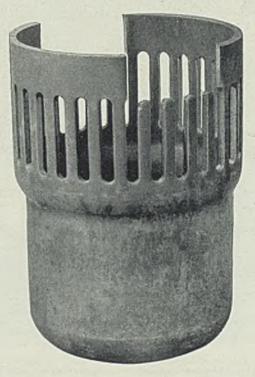
New York—Approximately eight miles of 6-foot, chain link wire fence will be required by the Motor Development Corp. for its proposed speedway at Roosevelt field; 200 tons of steel will be required for guard rail

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# Shapes

Structural Shape Prices, Page 88

(Note—An advance of \$2 a ton in the price of structural shapes was announced by Carnegie-Illinois Steel Corp. late last week, effective July 1.)

Pittsburgh—American Bridge Co. contracted to fabricate 2000 tons for the New York Central and express highway job, New York, and has also formally closed on the 2800-ton all-welded warehouse job at Mansfield,

O., for Westinghouse Electric & Mfg. Co. Pennsylvania state highway department announced that Freeland Inc. is low on steel truss bridge for Westmoreland county, requiring 650 tons of shapes. Inquiry is slow, listing only a 1000-ton Providence, R. I., school and a 900-ton Catholic hospital in New York, as outstanding.

Chicago—Fabricators and producers of plain material continue busy in completion of old contracts, while new business is rather moderate. Bids are to be taken next month on a Mississippi river lock involving 1000 tons while bids are expected to be asked next quarter on five dams to accompany locks which were built last year. Bridge and grade crossing eliminations predominate new inquiries.

New York—Lettings aggregated about 4000 tons. Pending list continues to mount and among new projects is a new building in Radio City to require about 12,000 tons. Eastern fabricating shops continue active on work previously booked.

Philadelphia—While buying has been negligible, several sizable jobs are up for early action. On a junior high school requiring 2650 tons of shapes McCloskey & Co., general contractors, are low.

St. Louis—Structural shapes are somewhat more active, materially assisted by highway projects. At mid-May fabricators were working at a moderately higher rate than a month earlier. A number of pending small jobs are expected to close soon.

Birmingham, Ala.—Backlogs are of sufficient volume to warrant operations for three to four months, while new business is anticipated which will extend this. Ingalls Iron Works Co. is fabricating 800 tons for an incinerator in New York.

San Francisco—A fair tonnage was booked, totaling 2757 tons. Consolidated Steel Corp. secured 450 tons for six bridges for the United States engineer office, Los Angeles. Southern Pacific Co. will open bids June 1 for 2950 freight cars in addition to 20 horse express cars. The majority are expected to be built in eastern car plants, though the company will build some at its Sacramento, Calif., shops

Scattle—Inquiry is active, the aggregate of small jobs of 20 to 50 tons being larger than normal, much due to repair work in industrial plants. Pacific coast fabricators are planning to bid soon on the navy's proposed steel drydock for Pearl Harbor, Hawaii, involving 35,000 tons.

#### Shape Contracts Placed

2000 tons, West Ninety-fourth to West Ninety-eighth street section, New York Central railroad-express high-

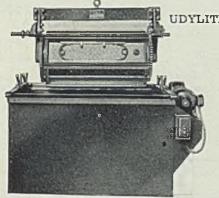
# Shape Awards Compared

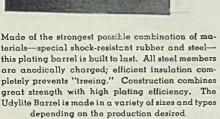
	Tons
Week ended May 22	13,205
Week ended May 15	40,039
Week ended May 8	13,200
This week, 1935	15,356
Weekly average, 1935	17,081
Weekly average, 1936	19,972
Weekly average, April	16,431
Total to date, 1935	314,932
Total to date, 1936	399,440

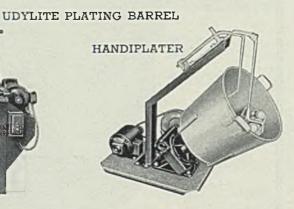
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This small, inexpensive plater operates with a few gallons of solution taken from the regular still or barrel plating tank. Cylinder, which is detachable, has capacity ranging from a handful up to one-half peck. A sturdy, efficient unit from the rubber-lined steel cylinder to the fabricated steel base, the Handiplater represents an investment low in cost—high in utility value.

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Cleveland 3756 Carnegie Ave. San Francisco
114 Sansome Street

way bridge, to American Bridge Co., Pittsburgh.

1500 tons, nurses home, St. Luke's hospital, New York, to Bethlehem Steel Co., Bethlehem, Pa., through Marc Eidlitz & Son, New York.

820 tons, bridge, Okmulgee county, Oklahoma, to J. B. Klein Iron Foundry Co., Oklahoma City, Okla. 800 tons, incinerator, New York, to In-galls Iron Works Co., Birmingham,

600 tons, oil barges for New York har-bor to Ingalls Iron Works Co., Bir-

mingham, Ala. 550 tons, building, for Libbey-Owens Glass Co., Toledo, O., to Pittsburgh Bridge & Iron Co., Pittsburgh.

450 tons, six bridges for United States engineer office, Los Angeles, project No. 633, to Consolidated Steel

Corp., Los Angeles.
430 tons, bridge, Cook county, Illinois,
to Mississippi Valley Structural

Steel Co., Decatur, III.
420 tons, building, Toledo, O., for National Supply Co., to R. C. Mahon Co., Detroit.

Pueblo county. 410 tons, overpass, Colorado, to Minneapolis-Moline Power Implement Co., Minneapolis.

400 tons, smelter extractor building for unstated buyer. Tacoma, Wash., to Minneapolis-Moline Power Implement Co., Minneapolis.

400 tons. Gertz department store addition, Jamaica, N. Y., to Norton Steel Co., New York; previously reported as going to Harris Structural Steel Co., New York.

Co., New YOFK.

350 tons, warehouse, Seattle, for Bethlehem Steel Co., to Pacific Car & Foundry Co., Seattle.

345 tons, high school building, Anacostia, D. C., to Barber & Ross Inc., Washington Washington.

5 tons, state highway viaduct, Zelienople, Pa., to Jones & Laughlin Steel Corp., Pittsburgh.

325 tons, addition, federal prison industries. Northeast penitentiary, Lewisburg, Pa., to the Bethlehem Steel Co., Bethlehem, Pa. 305 tons, bridge, Bourban county, Kansas, to Kansas City Structural Steel Co., Kansas City, Mo. 250 tons, railroad bridge for unstated buyer, Lake Forest, Ill., to Milwaukee Bridge Co., Milwaukee

Bridge Co., Milwaukee.

250 tons, bridge, Marion county, Kansas, to Pittsburgh-Des Moines Steel Co., Pittsburgh,

Co., Pittsburgh.
245 tons, junior high school, Morrisville, N. Y., to Syracuse Engineering Co., Syracuse, N. Y.
225 tons, bridge, Edwards county.
Kansas, to Kansas City Structural Steel Co., Kansas City, Mo.
200 tons, senior high school, Peoria, Ill.,

to Mississippi Valley Structural Steel Co., Decatur, Ill.

200 tons, cattle building, Ft. Tex., to North Texas Iron & Steel Co., Ft. Worth.

200 tons, bridge, St. Elmo, Ill., to Stupp Bros. Bridge & Iron Co., St. Louis.
200 tons, grade separation, St. Louis, to Stupp Bros. Bridge & Iron Co., St.

Louis.

200 tons, portal assemblies, Coulee dam project, Oregon, to unnamed mid-western interests.

195 tons, manufacturing building,
Fredericksburg, Va., to Belmont
Iron Works, Eddystone, Pa.
190 tons, state highway bridges, Rock-

ingham junction. New Hampshire, to American Bridge Co., Pittsburgh.
180 tons, school, Union Springs, N. Y.,
to Genesee Bridge Co., Rochester.
N. Y.

155 tons, bridge, Dunn county, Wis-consin, to Wisconsin Bridge & Iron Co., Milwaukee,

130 tons, bridge, Clarke county, Kan-

sas, to Illinois Steel Bridge Co., Jacksonville, 111.

130 tons, Sewanhaka high school, El-mont, N. Y., to Adler & Nielson Co. Inc., Long Island City, N. Y. 105 tons, power plant, Boulder dam,

Nevada, to Crane-O'Fallon Co., Chicago.

115 tons, bridge, Grundy county, Missouri, to St. Joseph Structural Steel Co., St. Joseph, Mo.

100 tons, Naples canal retaining wall, Long Beach, Calif., to unnamed in-

#### Shape Contracts Pending

35,000 tons, navy floating drydock for

Pearl Harbor, Hawali; bids to navy department soon.

12,000 tons, building, Radio City, New York.

3100 tons, hospital, Jersey City, N. J.; Lehigh Structural Steel Co., Allentown, Pa., low.

2650 tons, junior high school, Philadel-phia, McCloskey & Co., Philadelphia, low on general contract.

1400 tons, building, Keebler-Weyl Baking Co., Philadelphia; general contractors' bids to be opened May 25.

1000 tons, Hickory creek bridge and crossing ellminations, Joliet, Ill.; Bethlehem Steel Co., Bethlehem, Pa., low, Powers Thompson Construction Co., Joliet, low on general contract.

# American



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### AMERICAN MONORAIL CO.

13102 Athens Ave., Cleveland, O.

1000 tons, state bridges, Indiana; bids June 2.

1000 tons, Mississippi river lock No. 24, Clarksville, Mo.; bids June 23, to United States engineers, St. Louis. 1000 tons, high school, Providence, R. I.

950 tons, state bridges, Texas. 900 tons, Catholic institutional hospital,

New York.

697 tons, rails, drift and machine bolts and spikes, south jetty, Grays Harbor, Wash.; bids June 11.

685 tons, viaduct, Kedzie avenue near Seventy-fifth street, Chicago; R. C.

Mahon Co., Detroit, low.

650 tons, steel truss bridge and encased I-beam underpass, North Huntingdon township, Westmoreland county, Pennsylvania; Freeland Inc., Pitts-burgh, low at \$177,308.58 on bids taken by state highway department, Harrisburg, Pa., May 15. Included, 68 tons of plain steel bars.

600 tons, factory b Corp., Amcelle, Md. building, Celanese

600 tons, highway bridges, various locations, Minnesota.

500 tons, plant building, Campana Corp., Batavia, Ill.; Frank D. Chase Inc., Chicago, engineer.

425 tons, postoffice, Greenville, S. C. 400 tons, lookout towers, various locations for department of agriculture.

183 tons, six state under-crossings near Niles, Alameda county, California; bids June 10.

143 tons, subway, Brookfield, Cook county, Ill.; Lakeside Bridge & Steel Co., Milwaukee, low. 125 tons, building, International Print-

ing Ink Co., Newark, N. J. 100 tons, two buildings, United States Military academy, West Point, N. Y. Unstated, navy buildings, Laulaulei, Hawaii; bids to navy department, July 15.

# Reinforcing

Reinforcing Bar Prices, Page 89

New York-While numerous tonnages are involved in recent orders, the total is small. No large orders have been placed of late. Current inquiry also is relatively small so that the market is quieter than at any time this year.

Pittsburgh-Jobbers seem to be making more liberal commitments on material for stock and the market is active considering the period of the vear. New billet bars on certain sales range downward from the official market of 2.05c, base, Pittsburgh, and are quoted 1.95c-2.05c.

Chicago-Suppliers will be able to maintain heavy shipments for a number of weeks ahead. Outlook for new business remains favorable and an active summer is in prospect. Additional inquiries are to be issued early next quarter for five Mississippi river dams, probably requiring several thousand tons. Illinois highway and crossing elimination construction is developing a number of fair size inquiries. Prices continue somewhat irregular.

Philadelphia - Following heavy buying recently sales have been light with nothing at 100 tons or over reported. However, trade prospects are still promising with 700 tons active for a junior high school on which project McCloskey & Co., general contractor, is low. Prices in general are steadier than a month ago.

San Francisco-The market was active, over 600 tons being placed. Unnamed interests booked 1220 tons for the Naples canal retaining wall, Long Beach, Calif., and 760 tons for a crossing at Portland, Oreg. Security Materials Co. booked 575 tons for the Horace Mann school, Pasadena,



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#### Concrete Awards Compared

	Tons
Week ended May 22	2,739
Week ended May 15	15,314
Week ended May 8	2,391
This week, 1935	5,422
Weekly average, 1935	6,862
Weekly average, 1936	6,697
Weekly average, April	4,756
Total to date, 1935	104,677
Total to date, 1936	133,939

Calif. New inquiries include 427 tons for six under-crossings near Niles, Calif., 389 tons for the Treasury department, Los Angeles, and 294 tons for a filtration plant at Sacramento, Calif.

Seattle-New business is lacking due to less than normal heavy building construction. Unstated tonnages are involved in construction at the Crow, Shoshone and Fort Berthold Indian agencies, bids opened at Billings, Mont., May 18.

#### Reinforcing Steel Awards

1220 tons, retaining wall for Naples canal, Long Beach, Calif., to unnamed interest.

375 tons, additional, Horace Mann school, Pasadena, Calif., to Security Materials

Co., Los Angeles.

350 tons, north side sewage treatment works, Chicago sanitary district; 210 tons to Concrete Engineering Co., Chicago, 140 tons to Olney J. Dean & Co., Cicero, Ill. Paschen Bros. Inc., Chicago, general contractor.

250 tons, Illinois highway work, Concrete Engineering Co., Chicago. work, to

240 tons, Ralston Creek dam, Denver, to unnamed interest; general contract to United Construction Co., Denver, at \$1,041,252.

180 tons, Missoula, Mont., postoffice, to Bethlehem Steel Co., Seattle; A. Belanger, Seattle, general contractor. 174 tons, subway at Winslow, Ariz., to

unnamed interest.

#### Reinforcing Steel Pending

700 tons, junior high school, Philadel-phia; McCloskey & Co., Philadel-phia, low.

500 tons, Mississippi river lock No. 24, Clarksville, Mo.; bids June 23 to United States engineers, St. Louis.

427 tons, six state under-crossings near Niles, Alameda county, California; bids June 10.

400 tons, Rock river bridge, Rockford, Ill.; Ferguson Construction Co., Rockford, low for general contract.

290 tons, three state bridges in San Bernardino county, California; bids

June 4. 200 tons, two buildings, United States

Military academy, West Point, N. Y. 176 tons, spikes, bolts, washers and other items, Grays Harbor jetty project, Washington; bids to United States engineer, Seattle, June 11.

125 tons, automobile speedway, Roose-

velt Field, N. Y.

100 tons, route S 6, section 1, Passaic county, New Jersey; Union Building & Construction Co., Passaic, N. J.,

#### Bolts, Nuts, Rivets

Bolt, Nut, Rivet Prices, Page 89

Miscellaneous demand for bolts, nuts and rivets is commencing to taper, but consumption by railroads and freight car builders is increasing. Implement and tractor builders hold to an active rate of operations, while a decrease in needs of automotive parts interests is appearing. Prices remain unsettled, with concessions from the nominal market a regular occurrence. Changes in

quotations next quarter are thought likely to depend on revisions in raw material costs.

# Pig Iron

Pig Iron Prices, Page 90

Pittsburgh-Steel foundries, including makers of molds, rolls, and heavy railroad castings, are lending active support to the market, but the gray iron foundries are inactive. Availability of No. 1 cupola east scrap at around \$15.50, delivered Pittsburgh, is still a serious competitive influence on pig iron. Prices are firm.

Cleveland-Shipments from blast furnaces continue to increase steadily, promising to top April shipments by a good margin. Youngstown Sheet & Tube Co. several days ago began casting iron from Jeannette stack at its Brier Hill works which recently was relighted after several years idleness.

Chicago-Foundry operations continue steady and shipments are slightly ahead of the April rate. Suppliers



of malleable castings for the automotive industry are experiencing lighter operations, but this is being offset in a large measure by better demand for railroad equipment parts. Third quarter books are expected to be opened next week, with no change in prices.

New York—Pig iron prices are expected to be reaffirmed, when sellers open books for third quarter around June 1. Buying, meanwhile, is spotty, with orders of hand-to-mouth character

Philadelphia — Sellers generally look for no change in prices for the

third quarter. Volume continues steady, and in general, short of sellers' expectations. The next few weeks, however, should see some improvement, as stocks at most consuming plants are light.

Cincinnati—Shipments during May were slightly heavier than in April. Ordering continues to be in small lots, for prompt shipment. Prices are firm.

St. Louis—Movement of pig iron to melters continues at a high rate. and indications point to a heavier total tonnage this month than last. With the exception of the stove in-

dustry, the melt generally holds up well. Increased operations at steel plants making heavy railroad castings more than offset reductions elsewhere. New ordering is confined to small lots for prompt shipment, the aggregate of which represent a fairly large tonnage. Prices are firm.

Birmingham, Ala.—The market continues to lag, though shops and plants of consumers are fairly active and report many contracts in hand, and new business in prospect. Prices are firm, with no intimation of a change for the third quarter. Spot orders are fairly numerous.

Toronto, Ont.—Demand for merchant iron has picked up and sales now are about 1200 tons weekly. Several good tonnage orders were booked recently and inquiries again are current. Local blast furnace representatives look for continued strong demand for some months to come. Prices are firm and unchanged.

# Behind the Scenes with STEEL

#### Toot! Toot!

L OOKING over stoneproofs of this week's issue our wandering gaze was halted by the picture (p. 42) of the "whistle man" in a Detroit plant guiding a crancload of bundled sheets down an aisle and (presumably) blowing his little whistle so people will get out of the way.

It looks like a great safety idea. We always duck instinctively when a craneman wafts a load of material over our head in a plant. Slings have been known to break and when we want to be covered up with a bundle of sheets it will be the Peperell variety and not deep-drawing 22-gage.

Fine thing to take up slack in employment, too. In the first place, you will need more hands to lead these craneloads through the plant; and in the second place, the whistle manufacturers will have to put on more whistle-builders to meet the rising demand. One big difficulty with the thing, though, is that with whistle-men guiding all cranes, the interiors of some plants are going to sound like a covey of traffic cops in convention.

We can't figure out why the lad in the picture referred to above looks so sad. Maybe he wants a new whistle,

#### Object Lesson

ED KREUTZBERG of the editorial staff passes along a story he picked up at the meeting of the Power Transmission council in Atlantic City the other day.

It seems that there was a teacher who sought to give her pupils an object lesson on the ravages of alcohol as an internal treatment. She placed an angleworm in a glass of water, and then in a glass of alcohol. The poor worm naturally couldn't take the alcohol, and so coiled up and passed out.

The teacher then turned to her class and asked what this demonstration proved to them. One wise little girl (there's always one of them in these stories) popped up and said it appeared to her that "if you drink liquor you won't have worms."

#### Nuf Shred

RECENT mention here of a new type of cabbage shredder of stainless steel started things. Quick as Bold Venture the mail brought a letter from an eastern steel company, the writer breaking right down and confessing to

a lot of trouble with his cabbage shredding, and wanting to know who makes the new device.

Our heart goes out to anyone who comes right out in the open and admits his weaknesses. We told the above gentleman where he could get help. Now, what's your trouble?

INQUISITIVE CAMERA DEPT .- IV



Earl L. Shaner, editor of STEEL, since 1927 and active with the publication since 1916, jotting down his impressions of the week's news as the hungry presses scream for copy.

#### Popularity

A READER writes in to ask if we won't please run our picture in the Inquisitive Camera Dept. He would like to see what sort of a dope (here!) grinds out this stuff every week.

This department, basking in the gloom of anonymity, intensely camerashy, may thus be forced to yield to the desires of readers. Watch the weekly photos for a huge Frankenstein-looking monster.

#### Eyes on Institute

LOOK for complete reports of the annual meeting of the nation's steel-masters Thursday in next week's issue of STEEL. American Iron and Steel institute meetings are red-letter days for the steel producing industry. Next Monday our editors will give you interpretations of activities at the Commodore hotel—technical, economic and otherwise.

-SHRDLU

# Scrap

Scrap Prices, Page 91

Pittsburgh - A continued quiet market settled 25 cents a ton last week to \$14.25 to \$14.75 for No. 1 heavy melting market for Pittsburgh delivery, the minimum of which covered representative offers of consuming mills to buy and the maximum, brokers' appraisal of their current selling figure. In line with No. 1 steel, hydraulic compressed sheet scrap is quoted \$14 to \$14.50, No. 2 steel, \$13 to \$13.50 and scrap rails, \$14.50 to \$15. Machine shop turnings remain unchanged at \$9.50 to \$10, blast furnace at \$8.75 to \$9.25 and cast is fairly strong at \$13.50 to \$14. Considerable opinion exists here that the market is touching a first half low point.

Cleveland-Purchase of a number of smaller lots of various grades of iron and steel scrap, aggregating 20,000 to 25,000 tons, by a Youngstown district steelmaker has settled the valley market down 50 cents to the basis of \$14 to \$14.50 for No. 1 heavy melting. Most current new business is in small lots, with local mills showing no interest. Shipments from Cleveland dealers continue fairly steady as also appear current quotations which in successive preceding weeks had weakened. Cast material especially continues to be held firmly.

Chicago — Scrap is quiet as regards new business from mills and steelworks indicate they will not reenter the market soon. In the meantime prices generally are steady, with the exception of some specialty items. Heavy melting steel con-

tinues \$12.50 to \$13, supported by buying activity of dealers and brokers in filling orders taken at higher levels. While price reductions have tended to restrict the area from which scrap is being drawn, plenty is available to fill.

Boston — Dealers again have reduced buying prices on numerous grades of iron and steel scrap, as tonnage continues to offer in larger volume than can be absorbed. Shipments to domestic consuming plants are comparatively small and there also is a lull in export demand.

New York - Brokers' buying prices on scrap continue to sag and most grades are quoted at 25 to 75 cents a ton lower than a week ago. Endeavors to make sales of No. 1 heavy melting steel indicate that eastern Pennsylvania mills are not willing to pay higher than \$12 delivered, while brokers do not see their way clear to selling at less than \$13. In the same way export buyers after sales at \$13.50, f.a.s., New York, for No. 1 heavy melting steel dropped their prices gradually to \$11 at which the last business was done.

Philadelphia—A further drop is noted in heavy melting steel and several other grades. No. 1 steel is now holding at \$12 to \$12.50, delivered, consuming point, with the inside figure the more truly representative, and No. 2 at \$11 to \$11.50. This is a decline of about \$2 from the recent peak.

The export market continues weak, with little interest on the other side and with dealers' offering prices for Port Richmond again down 50 cents a ton, to \$11 for No. 1. For the first time in several weeks there are some export offers for No. 2, to apply against old contracts. These offerings are \$10, I'ort Richmond.

Approximately 4000 tons of scrap will be reclaimed by Bethlehem Steel Co. from the old Mary blast furnace at Hokendauqua, Pa. This furnace was at one time owned by the Thomas Iron Co. and was last operated in 1927. It underwent certain dismantling in 1934, with what was left of the stack having been acquired recently by Bethlehem Steel Co. for conversion into scrap.

Birmingham, Ala. — Little iron and steel scrap is moving compared to a month or two ago.

Cincinnati—Scrap continues weak with no evidence that mills are ready to buy tonnage at current prices. Rejections on No. 2 steel are more common.

Buffalo—Dealers are cleaning their yards through shipments on old orders. Belief is expressed that comparatively little scrap will remain when these are completed. Offers of

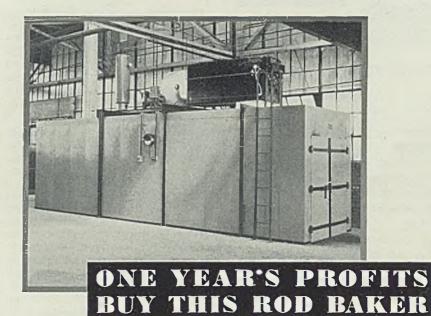
\$13 for No. 1 heavy melting steel have brought no response from dealers

Detroit—The downward course of prices for the past six weeks appeared to be arrested last week and from several factors it seemed that the major decline was over. Though No. 2 steel hydraulic compressed sheets lost 50 cents a ton during the week, No. 1 steel holds unchanged at \$10.25 to \$10.75.

St. Louis—Absence of general buying of iron and steel scrap has caused further weakness with specific reductions on several grades. The only purchase of any size was 4500 to

5000 tons of No. 2 heavy melting steel by an east side mill. The price was reported at \$10.50 per ton, or \$2 per ton below the last previous purchase, several weeks ago. Delivery during the next 30 days is specified, and the business was split between four dealers.

Scattle—The market for steel and iron scrap is weaker, Japan having withdrawn entirely. Active buying by mills and foundries is sustaining the domestic trade, requirements being large. Export prices for No. 1 heavy melting steel average \$10.50, local mills paying \$10 for No. 1 and \$8 for No. 2. Exporters are still in-



INTERPRET these facts for yourself! A two-alley Morrison rod baker is, today, out-producing an old type unit of six-alley capacity. This new oven takes but one hour per charge. The former equipment took three to four. Fuel and space are cut to one-third, yet total production is appreciably increased. Another thing—rod from the Morrison oven comes in perfect condition for drawing and is absolutely uniform throughout the coil no matter how it is stacked on the truck. What would all these profit-making qualities mean in your own mill?

Other Morrison equipment is designed for annealing, heat-treating, and galvanizing; tank and pot heating; and other industrial process heating applications utilizing the recirculating forced convection method.



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# KITCHEN MAID Cabinets . . .



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## SHERWIN-WILLIAMS FINISHES



SEE THE SHERWIN-WILLIAMS FINISHING ENGINEER terested in attractive tonnages as tidewater stocks are not large.

Toronto, Ont.—Iron and steel scrap sales are steady, but the market as a whole is spotty with demand specialized. In the steel grades there is a steady call for heavy melting steel and turnings from mills in the Hamilton district, and Montreal dealers report active demand for heavy melting, car wheels, axles and rails. Foundries are taking machinery cast in fair quantities.

#### Warehouse

Warehouse Prices, Page 92

Pittsburgh — Prices on jobbing steel hold fairly firm and more consumer interest is apparent on deliveries than on quotations. The size of the average order is larger, and with orders more numerous, total bookings have also improved to the high point for 1936.

Chicago—While sales hold to a relatively high level, warehouses note a lessening in pressure in demand and a gradual recession is in prospect for coming weeks. Prices are unchanged.

New York—Demand for finished rolled steel products out of warehouse continues well above that in April, so that current volume is the largest so far this year. Prices are unchanged and in general are firm, with the exception of galvanized sheets.

Philadelphia—Demand for iron and steel out of warehouse has been lagging the past week. However, some jobbers believe that May business will be about on a parity with April, which was the best month this year. Prices are unchanged.

Detroit—May's daily average for shipments of warehouse steel is better than the relative April showing. Orders are not only more numerous but larger. Prices are unchanged.

Cincinnati—While industrial buying from warehouses has been sustained, a gain in tonnage is current from demand for building materials. Inquiries forecast early expansion in this latter demand.

St. Louis—Warehouse business has maintained the fair gains recorded during the first half of May. Volume has been bolstered by requirements of the construction industry. A fair volume is going to industrial repair shops, railroad buying is reported active, and the general manufacturing trade is somewhat spotty. Prices are steady.

Seattle—Business continues in good volume, increases being noted in the agricultural and industrial fields. PWA projects are still calling

for a good turnover of miscellaneous items. Mill buying is negligible. Lack of heavy building construction is noted and this is reflected in jobbers' trade. Replacement items are moving freely. Efforts continue to stabilize the price situation,

#### Iron Ore

Iron Ore Prices, Page 91

Cleveland-Total of 237 vessels of the 319 in the American bulk freighter fleet sailing the Great Lakes is in operation this season, comparing with 152 boats of the total of 324 a year ago, according to figures compiled by M. A. Hanna Co. The percentage of operating vessels to the fleet total is 74.29 compared with 46.91 a year ago, and the percentage of the total tonnage in commission is 77.50 against 52.36 a year ago. On the list of lake vessels appear 25 fleets, all but three of which have vessels in commission. The total trip capacity of the fleets is 2,688,100 tons against 2,720,300 tons a year ago. Of the 237 ships now operating, 204 are engaged in the Lake Superior iron ore trade.

National Steel Corp.'s new Great Lakes freighter, the ERNEST T. WEIR, completed its first round trip in the service of the company, May 15, when it brought a cargo of iron ore into Cleveland. The Weir was acquired in February from the Kinsman Transit Co., Cleveland. A number of additions have been made to the boat by her new owners, including a new steel propeller and a streamlined rudder. The Weir will be run in regular service with the seven other freighters operated by the steel company's subsidiary, the Producers Steamship Co.

Erie docks May 1, 1936...19,369,690 Total May 1, 1935.....24,816,783

Philadelphia—Arrival of 6042 tons of iron ore from Chile featured iron and steel importations here during the week ended May 16. Shipments of 154 tons of chrome ore and 64 tons of manganese ore came in from British India.

#### Ferroalloys

Ferroalloy Prices, Page 90

New York—While May shipments of ferromanganese may not be as

heavy as last month, when volume reached the highest peak in considerable time, sellers report that the current month will show a substantial movement. Sellers are expected to open books for third quarter around the middle of June, when many in the trade believe prices will be reaffirmed at \$75, duty paid, Atlantic and Gulf ports. Domestic spiegeleisen, 19 to 21 per cent, is holding at \$26, Palmerton, Pa., on quantities up to 50 tons, and \$24 on lots of 50 tons and over.

# Steel in Europe

Foreign Steel Prices Page 92

London — (By Cable) — Because producers of steel and iron, particularly pig iron, in Great Britain, are heavily booked ahead, current buying is limited and deliveries are greatly deferred. A general rise of prices is expected in July. Most mills are operating at capacity except on plates, sheets and galvanized sheets. Exports are dull and there is little demand for tin plate.

Iron and steel imports in April were 120,773 gross tons, compared with 130,332 tons in March and 123,-224 tons in February. Exports in April were 177,519 gross tons, compared with 163,412 tons in March and 167,845 tons in February.

The Continent reports export trade generally dull with Russia competing strongly in pig iron markets.

#### Metallurgical Coke

Coke Prices, Page 89

Spotty foundry participation in the beehive metallurgical coke market continues, but for prompt shipment sellers are able to obtain the maximum of the present \$4.25-\$4.35 market on common foundry brand, and in fact some small sales have been reported at as high as \$4.50. By-product coke deliveries in the Chicago district are steady at about the April rate and well ahead of the rate a year ago. Prices are steady. Birmingham, Ala., producers continue output at unchanged rate and consumption absorbs their full tonnage.

#### Refractories

Refractories Prices, Page 90

Pittsburgh—Jones & Laughlin Steel Corp. last week placed a contract for relining of No. 2 blast furnace at Aliquippa, Pa. Carnegie-Illinois Steel Corp. is about to place contracts for relining and rehabilitation of No. 1 furnace at Ohio works, and has also in prospect relining of Nos. 6 and 7 blast furnaces at Carrie works. Demand for open-hearth brick is steady and requirements of glass makers and other brick users are in generally unchanged volume. Prices on refractories are without change.

#### Nonferrous Metals

Nonferrous Metal Prices, Page 90

New York—Sustained consumption of copper, lead, and zinc featured major nonferrous metal markets last week. Prices continued to hold at steady levels.

Copper—Shipments are moving well to consumers and the tendency to seek earlier delivery than originally ordered has given the market a more favorable aspect so far as the likelihood of heavier buying is concerned. Sellers are cheerful and are holding electrolytic firm at 9.50c. Connecticut. Refiners cut red metal scrap bids sharply due to recent heavy intakes and liberal supplies offered.

Lead—Demand continued moderate and prices firm at 4.45c, East St. Louis, and 4.60c, New York. Clinton

H. Crane, president of St. Joseph Lead Co., stated that the price is still relatively low and may well be expected to advance when buying increases further.

Zinc—Consumption of prime western continued to hold steady and unfilled orders are currently at the lowest level since last July. The industry is in a strong statistical position and, therefore, smelters maintained firm asking prices at 4.90c, East St. Louis.

Tin—Straits tin prices showed resistance to further weakness after mid-week with closing prices on spot around 45.80c. Recent low levels were attributed to the belief that supplies will be increased in the near future by an adjustment of export quotas held by the leading producers.

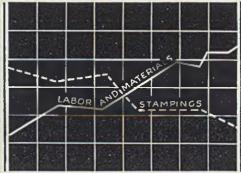
#### Semifinished

(Note—Carnegle-Illinois Steel Corp. late last week announced an advance of \$2 a ton in prices of rerolling and forging billets and sheet bars, effective July 1.)

Semifinished Prices, Page 89

Pittsburgh—Over the past week shipments of sheet bars, billets and slabs from the Pittsburgh district

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have shown little change and are generally comparable with those of April. A strong market influence is the demand for semifinished steel by tin plate producers. Forging-quality billet and wire rod requirements are -undergoing some decline, but tube round and skelp specifications are making up for this deficiency. Sheet bars, skelp and rerolling billets are all quoted on the basis of \$28 per gross ton, Pittsburgh, forging quality billets, \$35, and wire rods \$38, \$40 and \$42, the latter being on three size bases.

#### Dismantling Brings Blast Furnace Parts on Market

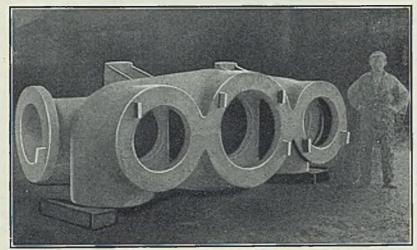
Hetz Construction Co. Inc., Niles, O., has bought from Republic Steel Corp., Cleveland, the two stacks and other equipment at Josephine furnace, Josephine, Pa. This plant was acquired by Republic when Corrigan, McKinney Steel Co. was absorbed and was offered for sale several weeks ago. The Hetz company takes over the plant by outright cash purchase at \$72,000. A requirement is that dismantling is to be completed in six months and the Republic corporation reserves the right to repur-

chase any portion of the material or scrap it desires.

Dismantling of Claire blast furnace at Sharpsville, Pa., by the Hetz company brings on the market considerable equipment of relatively recent design. This includes the entire 750-ton stack with heavy shell, double skip, Otis hoist, McKee top, four uptakes; three 22 x 100-foot Brassert stoves with Steinhart burners; 18-inch dustcatcher with downcomers; 12-inch Brassert washer and dryer; 150-foot Heyl & Patterson single strand pig casting machine; Mesta low pressure and Mesta high pressure blowing engines; Mesta condenser; Dravo ore bridge, five-ton capacity; 130-foot span and 60-foot overhang and a number of other items.

Toledo Steel Products Co., Toledo, O., has changed its Detroit warehouse location to 443 East Fort street. The entire Toledo line, including such recent additions as Eccentric tie-rod ends, Tryon shackles, silent "U" shackles, Harris shackle bushings, pistons and chrome-plated pins, will be handled from the new location. Advantages afforded by the change include increased floor space and greater accessibility.

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District Offices

New York

Philadelphia Portland, O. Chicago St. Louis San Francisco

# Equipment

Pittsburgh - Amtorg Trading Corp., New York, has purchased two three-high mills for shipment to Russia, which will be used for making tin plate breakdowns, from the Lewis Foundry & Machine Co., Groveton, Pa., subsidiary of Blaw-Knox Co.

Carnegie-Illinois Steel Corp.'s plans for extensive blast furnace rehabilitation at a number of its Pittsburgh district works are proceeding slowly. Appropriation has been authorized but not yet released for relining and reconstruction of No. 1 stack at the Ohio works, Youngstown, O., and No. 6 furnace at Carrie works, Pittsburgh, has been recommended for rehabilitation but not yet authorized. The No. 7 furnace, also at Carrie works, will soon be recommended for rehabilitation but has not yet been submitted to United States Steel Corp. headquarters.

Jones & Laughlin Steel Corp., which recently purchased nine 108foot motor room cranes, is requesting delivery by the third week in June. Additional subcontracts in connection with the J. & L. continuous strip sheet mill being built at South Side, Pittsburgh, are being placed. J. & L. expects to have this mill in operation by fall. Last week the company also placed a contract for the relining of its No. 2 blast furnace at Aliquippa, Pa.

Youngstown Sheet & Tube Co. has placed orders for two four-high mills with United Engineering & Foundry Co., Pittsburgh, in its program for expansion of tin plate output at the Indiana Harbor, Ind., plant. The purchases involve a 42-inch reversing cold-reduction mill and a skin pass mill, which were authorized Youngstown Sheet & Tube Co. in a \$1,300,000 appropriation for additional capacity at the Indiana Harbor plant. A reversing mill for the same plant was purchased from United Engineering in 1933.

The new mills will be built from the same basic designs as formerly except that the skin-pass mill will include special processing equipment. United Engineering will start production on the order immediately and delivery will be made in the fall. The reversing mill will handle coils up to 8000 pounds in tin plate gages with a length of more than a mile. The material will be annealed in coil form in conformity with a new practice, then temper passed on the skin pass mill, which is of United Engineering design and especially developed for deepest-draw tin plate.

Chicago-Activity in most equipment markets is supported at a fairly high rate by a steady volume of moderate orders. Machine tool purchases generally are made up of small

individual lots, but the relatively large number of these holds the total volume close to the improved rate of April. While orders from railroads still are light, business from the carriers is improving. Rising production of air-conditioning equipment is reflected in heavier orders for sheet metal working machines from the increasing number of companies engaging in this business.

New York—Demand for machine tools and allied equipment continues heavy and the current volume appears to be at the best level so far this year. All lines of equipment share this activity, with presses, brakes, shears and other units in the sheet metal industry here dominating. Most orders are limited to one or two tools. Recent purchases have been made by the General Electric Co., Schenectady, N. Y., for its refrigeration and turbine department. The Moore Drop Forge Co., has bought some hammers and other equipment for its Chicopee, Mass., plant. Some scattered orders have been placed by the Brooklyn and Philadelphia navy yards.

proved \$36,000 bond issue as part of financing of \$90,000 WPA flood control project to include pumping stations and new sewer system. Douglas Bowling is mayor. (Noted STEEL April 27.)

PORTSMOUTH, O. — Voters have approved \$75,000 bond issue as part of financing of \$457,595 flood defense program. Included will be a new pumping station at Eleventh and Washington streets, replacement of three old steam pumping stations, and strengthening of fill along river shore. Frank E. Sheehan is city manager, L. L. Henninger WPA director, district No. 11, Chillicothe, O. (Noted STEEL April 20.)

RIO GRANDE, O. — Village plans waterworks and sewage system to cost \$40,000. Ernest Wiseman is mayor.

SYLVANIA, O. — Village plans power plant and distribution system and has authorized George Champe & Associates, Nicholas building, Toledo, O., to prepare estimates of cost of construction and operation. Eugene Saunders is village councilman in charge.

# Construction and Enterprise

#### Ohio

ASHLEY, O. — Village has approved \$12,000 bond issue as part of cost of \$49,000 for proposed waterworks system, on which bids will be taken soon. Ray Whipple is mayor and Jennings & Lawrence, 12 North Third street, Columbus, O., are engineers. (Noted Steel April 13 and May 14.)

BARNESVILLE, O. — City plans boiler installation at waterworks. Jennings & Lawrence, 12 North Third street, Columbus, O., engineers, are preparing plans. A. W. Laughlin is mayor.

BETHESDA, O.—Hensley Mills Co., Barnesville, O., may construct a branch plant here.

BETHESDA, O.—Village plans sewage treatment plant and sewer system, to mature after sale of bonds. Rollin F. MacDowell, Chester-Twelfth building, Cleveland, is engineer, and W. H. Jones is mayor.

BRYAN, O. — Are Equipment Corp., manufacturer of automotive and industrial lubricating equipment, will probably be in the market for numerous machine tools within several months after present housing expansion is completed, J. C. Markey is president. (Noted STEEL May 18.)

CLEVELAND — Byerlyte Corp., 2484 West Fourth street, will erect an addition to its asphalt refining plant to cost between \$25,000 and \$30,000. D. N. Myers is president.

CLEVELAND — Surface Alloy Corp. has been organized by Edward C. Daoust, R. L. Haverick and Kenneth H. Pauley. Correspondent is Baldwin & Vrooman, Midland building.

CLEVELAND—Department of public service, Miles E. Evans, director, room 213, City hall, is taking bids due May 28 for sewage plant equipment. Engineer is George B. Gascoigne, Leader building.

CLEVELAND — Cellular Steel Panel Co., 7016 Euclid avenue, has been formed to erect modern steel homes in Cleveland. The Mills Co., 965 Wayside road, East Cleveland, will manufacture panels for the houses. Mills G. Clark is president.

CRESTON, O. — Village taking bids May 28 for construction of pumping station with 250-gallons-per-minute deep well pump at waterworks. W. K. Bechtel is village clerk, Floyd Browne, Marion, O., engineer.

DAYTON, O. - Contracting officer,

materiel division, Wright field, will take bids until June 2 for electric power plants, circular 36-854.

MANSFIELD, O. — Murray D. Shaffer, city service director, City hall, is taking bids June 2 for furnishing pumping machinery and erecting a pumphouse, estimated to cost \$8500.

MANSFIELD, O. — City taking bids due May 29 for \$60,000 equipment for sewage disposal plant. Murray D. Shaffer is service director, City hall, and George B. Sower, 1836 Euclid avenue, Cleveland, is engineer.

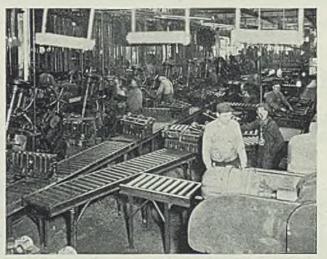
NEW BOSTON, O. - Voters have ap-

#### Pennsylvania

BESSEMER, PA. — Borough Secretary Charles B. Nord will receive bids until June 4 for constructing and equipping part of municipal water supply system. Engineer is Thomas A. Gilkey, 407 Greer building, New Castle, Pa.

CARLISLE, PA. — Hollinger Mills plans rebuilding and repairing rug and carpet mill at cost of \$37,000, with equipment.

ESSINGTON, PA. - Linde Air Prod-



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Port Hope, Ont., Can.

ucts Co., Carbide & Carbon building, 30 East Forty-second street, New York, has purchased five acres at Essington and Marsden avenues and will construct a branch plant.

FRANKLIN, PA. — Franklin Scrap Iron Co., 138 Howard street, has opened a scrap yard to deal in all grades of scrap metals, and at present is in the market for a small sized locomotive crane. H. Halperin is owner.

MILLVALE, PA. — Duquesne Mine Supply Co., 2 Cross street, plans construction of one-story manufacturing plant.

NAZARETH, PA. — International Cement Co., 342 Madison avenue, New York, plans improvements to portland

cement plant at cost of about \$80,000.

OIL CITY, PA. — Keystone Public Service Co. plans extensions and improvements in its steam-operated electric generating plant, including new equipment, at an estimated cost of \$350,000

PHILADELPHIA — Turner Machine Co. has been organized at 921 Tioga street by William Turner.

PHILADELPHIA—Frankfort arsenal will receive bids until May 29 for boiler tubes, inventory 314-36-497, and until June 22 for an automatic drilling machine, inventory 314-36-495.

PITTSBURGH — Crucible Steel Co., B. F. Hufnagle president, 2001 Oliver building, is taking bids for construction of one-story, 30 x 42-foot mill pickling plant on Reedsdale street. G. G. Gulland is company engineer in charge.

ST. MARYS, PA. — Stackpole Carbon Co., H. C. Stackpole, vice president and manager, plans construction of two-story, 65 x 130-foot factory on Tannery street, to cost \$80,000.

WALNUTPORT, PA. — American Nickeloid Co. plans a one-story plant addition, and will install considerable new machinery and equipment.

WASHINGTON, PA. — South Strabane School board, T. Scott Pease secretary, rural delivery No. 2, Washington, will receive bids until June 1 for construction of a low-pressure steam heating plant. Arthur L. Smith, Manifold, Pa., is engineer.

#### Connecticut

NORWALK, CONN. — City planning commission, E. Scofield engineer, City hall, plans construction of incinerator to cost \$25,000.

#### Massachusetts

ASHLAND, MASS. — Warren Telechron Co., manufacturer of electric clocks, has bought local plant of General Chemical & Solvents Co. and will remodel it and use it for fabrication of punch press parts.

TAUNTON, MASS.—Glenwood Range Co., 330 West Water street, plans converting one-story,  $150 \times 160$ -foot foundry into an enameling plant, work to cost over \$37,000.

#### Vermont

BURLINGTON, VT. — Colonial Beacon Oil Co., Inc., 150 Shelburne road, plans construction of bulk plant to include storage tanks, and to cost \$50,000.

#### New York

BROOKLYN, N. Y. — J. B. Williams Inc., architect, 423 Thirty-eighth street, is in charge of alteration plans for Koch & Wagner, 32 Court street. Work will cost \$30,000 with equipment.

BROOKLYN, N. Y. — Jerome Sherman, 245 Putnam street, plans erection of steel storage tanks, warehouse and pumping unit at Brant and Setanket streets, work to cost \$312,000.

BUFFALO — Industrial Minerals Corp. of America, 231 Jackson building, will construct a \$100,000 plant for milling ores of non-metallic minerals. Properties in North Carollina, New Mexico and California may be further developed and equipped at a later date. Robert E. Lowther is president.

MIDDLETOWN, N. Y. — Pioneer Ice Cream Co., 205 East Twenty-fourth street, New York, plans construction of plant addition at branch here on Mohegan street.

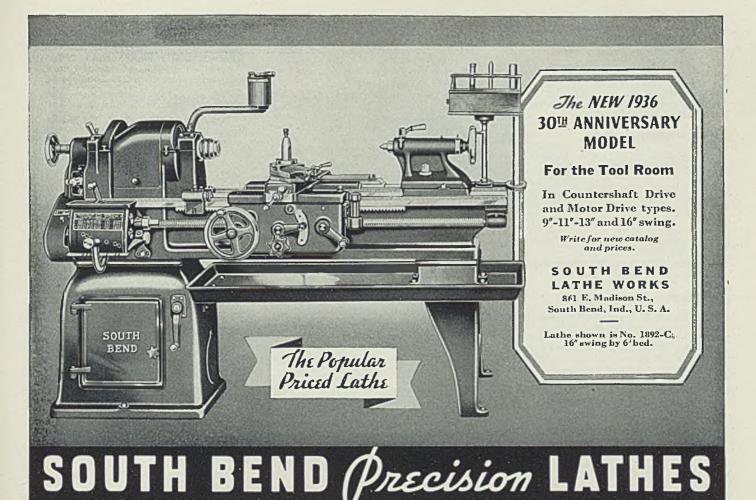
NEW YORK — Reynolds Metals Co. Inc., 19 Rector street, manufacturer of metal folls and similar specialties, has acquired properties and buildings of Lucey Mfg. Co. in Chattanooga, Tenn., manufacturer of boilers and plate products, and will recondition the plant.

PLATTSBURG, N. Y. — City will construct municipal light plant to cost around \$590,000, following approval by voters. PWA has allotted \$234,000.

ROCHESTER, N. Y.—Rochester Gas & Electric Co., 89 East avenue, will (Please turn to Page 112)







#### The Manufacture of Steel Sheets

By

Edward S. Lawrence

DESCRIBES sequence of operations in sheetmaking from manufacture of steel to finished sheet, with especial reference to production of high grade sheets for automobile bodies; influence of various methods upon quality of product and causes and prevention of defects are given attention; description fol-244 116 lows current practice and is devoid of unnecessary Illustrations Pages technicalities.

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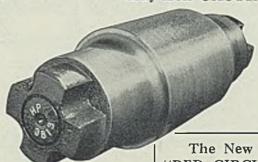
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"RED CIRCLE" Heat Treated Chilled Rolls for SHEET and TIN MILLS

Hyde Park Foundry & Machine Co. HYDE PARK, PA., U. S. A. (Pittsburgh District)

#### -Construction and Enterprise-

(Continued from Page 110)

take bids soon for constructing and equipping steam turbogenerating plant to cost \$1,000,000. Engineer is E. M. Gilbert Engineering Corp., 512 Washington street, Reading, Pa.

#### New Jersey

NEWARK, N. J. — J. H. Reinfeld Inc., Frelinghuysen avenue and Nobel street, will let contract soon for construction of four-story 90 x 316-foot distillery with equipment, to cost \$200,-000, Architect is F. Grad & Son, 48 Commerce street.

TRENTON, N. J.—Consolidated Feldspar Corp., Trenton Trust building, H. P. Margerum, president, plans construction of a \$100,000 feldspar treatment plant at Canon City, Colo.

#### Michigan

DETROIT — Unitor Corp., manufacturer of an electrically operated combination kitchen utility, will build an assembly plant at 5419 Federal avenue, where main offices will be located after completion. Architect is Cyril Edward Schley, Lafayette building.

#### Illinois

BELLEVILLE, ILL. — City will take bids soon for construction of sewage disposal plant to cost \$434,545.

CHICAGO—Textile Mfg. & Supply Co., 135 South La Salle street, has been incorporated, with Sam and Leonard B. Ettelson, 120 South La Salle street, correspondents.

CHICAGO — Chicago Tool & Engineering Co., 8389 South Chicago avenue, has been incorporated to deal in steel products by Charles A. and Clarence A. Palmgren and M. E. Spitzley.

CHICAGO — Union Asbestos & Rubber Co., 310 South Michigan avenue, plans erection of \$250,000 factory for manufacture of asbestos textile products, to be adjacent to present plant at

MAURATH

7300 UNION AVENUE-CLEVELAND

1821 South Forty-fourth avenue, Cicero, Ill. Starrett Bros., 8 South Dearborn avenue, have general building contract, exclusive of machinery.

COLLINSVILLE, ILL. — City will take bids June 15 for sewage system expansion and for construction of sewage treatment plant to cost \$161,000, with PWA aid. Caldwell Engineering Co., Jacksonville, 1ll., engineer.

ROCKFORD, 1LL.—Bradley Machinery Co., 212 Mill street, has been incorporated to deal in all kinds of machinery.

#### Indiana

ANDERSON, IND.—Greer Steel Co., Dover, O., plans construction of a new factory here, and construction will begin soon.

ANDERSON, IND.—Pierce Governor Co., 1625 Ohio avenue, is starting work on an addition to cost \$50,000, to be used for manufacturing automatic chokes.

INDIANAPOLIS—Superior Bearings Corp., 518 East McCarty street, has been formed to manufacture metal bearings and machinery. Incorporators are F. W. Pintzke, J. Downing and G. O. Burns.

LA PORTE, IND. — Russell B. Moore Co. Inc., engineer, 930 Indiana Pythian building, Indianapolis, will take bids June 12 for construction of a sewage disposal plant to cost \$250,000, with PWA aid. Equipment has been purchased. L. Darrow is chairman of board of public works of La Porte. (Noted STEEL May 11.)

#### Alabama

BIRMINGHAM, ALA. — City commission has authorized issuance of \$4,000,000 water supply system bonds.

BIRMINGHAM, ALA. — Universal Atlas Portland Cement Co., Brown-Marx building, will start immediately to rebuild and enlarge the Leeds mill at a cost of \$1,500,000.

BIRMINGHAM, ALA. - Appalachian

Gold Mining Co., Harry Reynolds manager, 2173 Highland avenue, is in the market for a diesel engine and an electric generator, both 125-horsepower.

#### Maryland

BALTIMORE — Maj. E. H. Besse, purchasing and contracting officer, Holabird quartermaster depot, will take bids until June 15 for hand and machine tools and shop and garage equipment, inventory 398-36-154.

FREDERICK, MD.—City plans \$200,000 sewage system and will take bids after May 20. Whitman, Requardt & Smith, Charles and Biddle streets, Baltimore, engineers.

OCEAN CITY, MD. — City plans construction of sewage treatment plant to cost \$110,000, with PWA aid. C. Gardner, Salisbury, Md., is engineer.

#### District of Columbia

WASHINGTON—Chief of engineers, 2726 Munitions building, will receive bids June 15 for searchlight power plants, advertisement 36-33.

#### Kentucky

VINE GROVE, KY.—Mission Springs Distilling Co. Inc., 406 Republic building, Louisville, Ky., plans construction of 100-barrel daily capacity plant here, to cost \$170,000.

#### Florida

MIAMI, FLA. — Evans Mfg. Co., Harry Barnhard president, is installing machinery for chromium steel furniture plant at Seventy-fourth street and Second avenue Northeast.

MIAMI, FLA.—Pittsburgh Plate Glass Co., Grant building, Pittsburgh, plans construction of \$125,000 three-story, 84 x 161-foot building on the northwest corner of Twelfth street, Northeast, and Biscayne boulevard. H. B. Higgins is vice president.

OCALA, FIA. — Ocala Gas Co. plans doubling capacity of present plant, J. D. Wilkes is engineer, Ocala.

#### Georgia

ATLANTA, GA. — Cudahy Packing Co., 463 Whitehall street, Southwest, plans repairs to packing plant, Brazell, Miller & Newbanks, Norris building, are engineers.

#### Louisiana

DONALDSONVILLE, LA.—F. B. Medford, city engineer, will receive bids June 13 for construction of refuse incinerator. Dr. Henry A. Folse is mayor.

#### Mississippi

NETTLETON, MISS. — City will take bids May 26 for construction of waterworks and sewage disposal system to include deep well pump, elevated tank, pump station and disposal plant, total costing \$60,000. Totten & Loving, engineers, Atlanta, Ga.

#### North Carolina

FARMVILLE, N. C. — Board of town commissioners authorized issuance of \$119,000 bonds, \$100,000 for electric system, \$10,000 for water system, and \$9000 for sewer system.

GREENSBORO, N. C. — El Moro (Please turn to Page 114)



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(Concluded from Page 112)

Cigar Co. plans repairs and alterations to plant to cost over \$100,000.

GREENSBORO, N. C. — Robinson R. Stabler, 410 Hillcrest drive, is in the market for an engine-generator set, 550 volts.

SAXAPAHAW, N. C. — Sellers Mfg. Co. plans installation of 825-horsepower engine.

#### Tennessee

MEMPHIS, TENN,—Gulf Refining Co., Gulf building, Pittsburgh, plans to remodel its property on the northeast corner of Gayoso and South Second streets. Estes W. Mann, Shrine building, is architect.

#### Virginia

CHARLOTTESVILLE, VA.—Virginia Public Service Co. will spend \$1,375,000 for construction in 1936, \$500,000 for additional facilities of steam generating station at Alexandria, Va.

FALLS CHURCH, VA.—Town council voted to install new sewage system to cost \$120,000. L. P. Daniel is mayor.

HANGER, VA. — Oakwood Smokeless Coal Corp., Frank S. Easley secretary, Bluefield, W. Va., will spend \$250,000 for development of mine along Norfolk & Western railroad's new line in Buchanan county. A tipple and other equipment will be needed.

#### Missouri

CHILLICOTHE, MO. — Hurley Lumber Co., Elm and Jackson streets, will rebuild burned mill.

ST. LOUIS — Kranz Automotive Body Co., 3032 Gravois avenue, will take bids soon for construction of a factory addition, one-story, 24 x 125 feet, at Gravois and Minnesota avenues. Architect is L. Haefer, 3844 Utah Place.

ST. LOUIS-Monsanto Chemical Co., 1724 South Second street, plans expan-

ROTARY

sion of electric furnace facilities and gradual removal of this work from its plant at Anniston, Ala., to the branch to be constructed at Monsanto, Tenn., where phosphoric acid will be the main product. A large part of the recently announced \$6,000,000 bond issue will be allocated for construction and equipment of the new plant, which will include a treating plant. (Noted STEEL May 18.)

#### Arkansas

SMACKOVER, ARK. — Louisiana Iron & Supply Co., Shreveport, La., has acquired Simms refinery in Smackover, a 3000-barrel skimming and cracking plant.

#### Texas

AMARILLO, TEX. — Illinois Zinc Co., 302 South Michigan avenue, Chicago, plans acquiring smelting plant site here, construction to cost \$300,000 with equipment.

#### Wisconsin

GREEN BAY, WIS. — Metropolitan sewerage commission is taking bids until May 29 for nine items of equipment, including pumps, generators, and a gas holder for a large extension of the sewage treatment plant and storm water pumping plant.

MILWAUKEE—Plankinton Packing Co., 230 South Muskego avenue, is starting work on a one-story addition, 100 x 150 feet. E. G. Six is manager.

MILWAUKEE—Charles A. Krause Milling Co., South Forty-third street and West Burnham avenue, is starting construction of a five-story mill addition, 31 x 60 feet. Universal Construction Corp., 908 West Juneau avenue, has general contract for building only.

#### South Dakota

RAPID CITY, S. DAK. — City voted \$90,000 bonds May 12 for water system

improvements to cost \$100,000. H. W. Zolpher is city engineer. (Noted Steel April 4.)

SALEM, S. DAK. — City plans installation of filtration plant at waterworks. C. H. McCoy is auditor.

#### Pacific Coast

BURBANK, CALIF. — Three G Distillery, 3112 West San Fernando road, is taking bids for addition to cost \$25,000, including boiler house. D. Greenberg is president, and Arlos R. Sedgley, 910 Serrano avenue, Los Angeles, is architect. (Noted Steel May 4.)

LOS ANGELES — American Foundry Co., 906 Date street, will enlarge its plant.

LOS ANGELES — O'Keefe & Merritt Co., stove and refrigerator manufacturer, 3700 East Olympic boulevard, will build a plant addition.

LOS ANGELES — Balboa Brewing Co., 1834 North Main street, plans construction of two-story bottling plant to cost \$200,000. W. D. McAllister, 1709 West Eighth street, is engineer.

LOS ANGELES — Hepburn & McTavish Ltd., 432 Colyton street, distiller, is taking bids for construction of new distillery, to include a power plant. Arlos R. Sedgley, 910 Serrano avenue, is architect. (Noted Steel May 11.)

SAN BERNARDINO, CALIF. — California Concentrates Ltd., M. H. Collins president, will soon start construction of the first of four factories on South G street for manufacturing a dry processing ore machine. A machine shop, warehouse, demonstration plant and commercial plant will be constructed.

PORTLAND, OREG. — Krect-Shave Razor Co., 3005 Sandy boulevard, Northeast, plans installation of a complete nickel plating unit.

HOQUIAM, WASH. — Grays Harbor Chair & Mfg. Co. will build an addition to plant, 36 x 140 feet, with new machinery and equipment. Clarence George, Aberdeen, Wash., is architect.

MORTON, WASH.—City plans \$45,000 electric light plant and distribution system and has retained Burwell Bantz, engineer, to survey possibilities. WPA aid will be sought.

SEATTLE — Casein Mfg. Co., S. C. Leonardson manager, 701 Myrtle street, will rebuild its fire-damaged plant and install new machinery and equipment.

#### Canada

LONDON, ONT. — Hygrade Corrugated Products Co. Ltd., 640 Williams street, will take bids soon for construction of one-story, 130 x 150-foot addition to plant to cost \$40,000. Engineer is A. M. Plper, 1 Moore building.

PORT COLBOURNE, ONT. — International Nickel Co. of Canada Ltd., Bank of Commerce building, Toronto, Ont., plans construction of three electrolytic units at refinery on Davis street, to cost around \$1,000,000.

WINDSOR, ONT.—Dirco Twin Truck Co. of Canada Ltd., J. E. McKean vice president, plans construction of motor vehicle manufacturing plant to cost \$40,000.

MONTREAL, QUE. — Department of public works, 97 Notre Dame avenue, J. E. Blanchard director, plans waterworks improvements, including sewage disposal plant, in 1936, to cost \$447,000, and waterworks extension to cost \$1,600,000.

