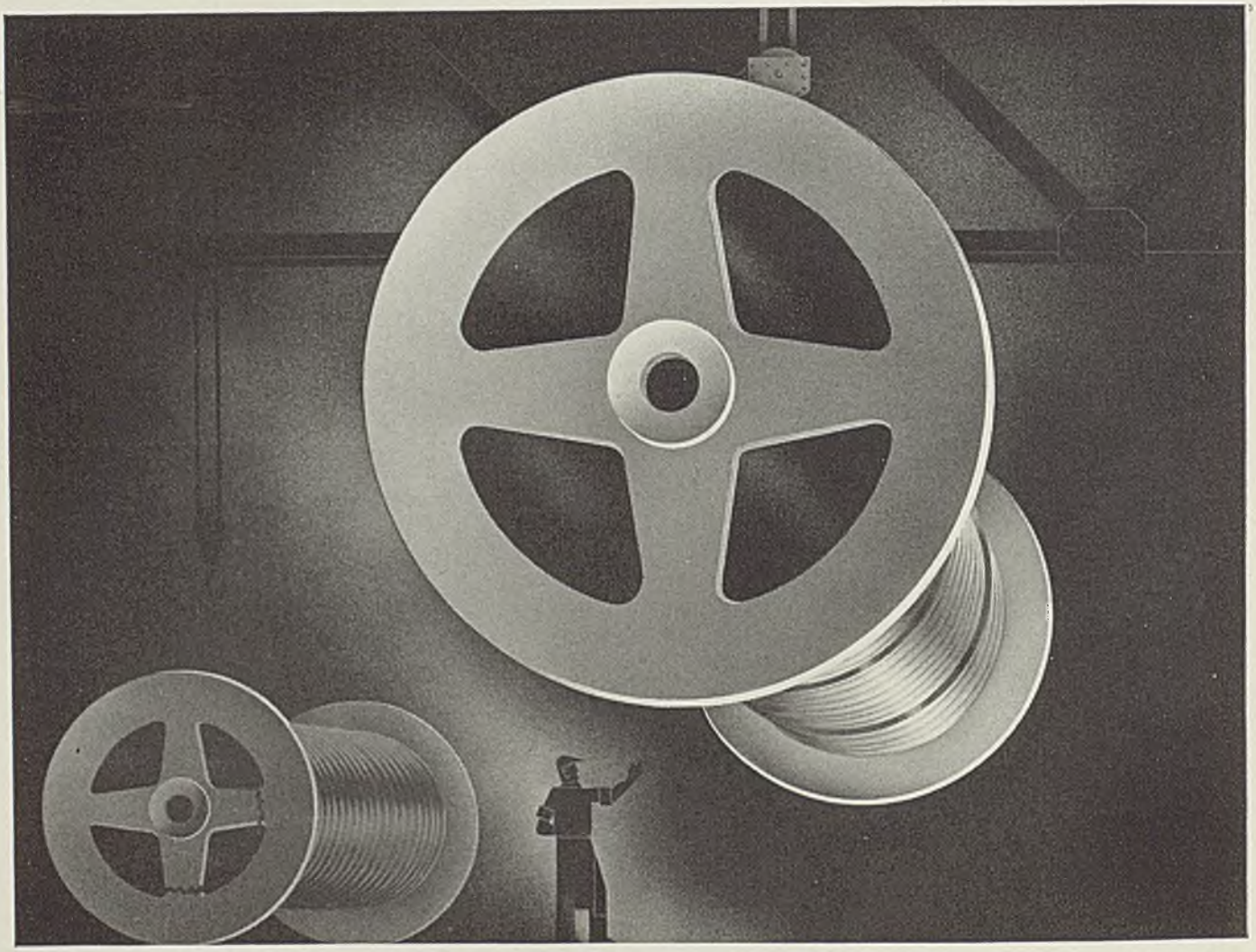
STEEL
FOR FORTY-EIGHT YEARS—IRON TRADE REVIEW

Contents

Vol. 101-No. 23 December 6, 1937



Cutting down reject percentages in difficult castings

● THE difficulties ordinarily encountered in bringing large castings of varying sections safely out of the mold have been strikingly demonstrated in one foundryman's experience with hoisting drums. With the usual carbon cast steel, the spokes had a tendency to pull away from the drum on cooling. Cracks and breaks brought the rejects to a discouraging percentage.

● By the simple addition of Molybdenum, the solution was found. The better casting qualities of Moly cast steels are explained in this now widely recognized technical fact: The expansion of steel, cooling through the transformation point, is virtually eliminated by the addition of Molybdenum. The effect reduces the likelihood of cracked castings, especially in those having radical differences in section.

Our technical book, "Molybdenum," contains practical data on Moly irons and steels. It will be sent on request — as will also our monthly news-sheet, "The Moly Matrix." Be free to consult our laboratory on special ferrous problems. . . . Climax Molybdenum Company, 500 Fifth Avenue, New York City.

PRODUCERS OF FERRO-MOLYBDENUM, CALCIUM MOLYBDATE AND MOLYBDENUM TRIOXIDE

Climax Mo-lyb-den-um Company

MOLY

As the Editor Views the News

FAINT indications of increasing resistance to the downward trend of business activity are found in the week's news. Output in the automobile industry snapped back to 86,848 units last week (p. 37), after dipping to 59,405 in the preceding seven-day period. The rate of steelworks operations stood at 30.5 per cent of capacity (p. 28), a drop of only 1 point and an evidence that the recent downward trend is leveling off. Advances in the quotations for steelmaking scrap in the East have lifted STEEL's composite of scrap prices from $12.75 to $12.91 (p. 101), representing the first interruption to declines in 13 consecutive weeks.

• • •

The approaching meeting of the National Association of Manufacturers will focus renewed attention upon relations between government and business.

Business in Politics

Ernest T. Weir last week broached a platform for this relationship when he said (p. 30) "The practical course is for business men to accept the fact that government is in business and probably will be in business, to some degree, permanently. . . . Since government is in business, business men must get into government. This . . . means business men must get into politics. The old feeling, once widely held among business men, that politics is dirty or a waste of time, certainly has no validity now."

• • •

Point is given to this view by the one-sided aspect of the Washington political scene today. The balance of power politically is held by the influential organized labor and agricultural blocs. The voice of business has been reduced almost to an inaudible whisper. It is not likely that it will be heard again with clarity until business men individually—and not by proxy—display a more active interest in politics. To be influential in politics, one must know and work with politicians. If six average business men could be locked up in a room with six typical congressmen, and the dozen told they would not be released until they had come to an understanding on a controversial subject—such as for instance the wage and hour bill (pp. 41, 43)—all would emerge wiser and more tolerant in their views.

Political Power Nil

• • •

Manufacturers of household equipment and appliances, such as stoves, refrigerators, metal cabinets, sinks, washing machines, ironers, etc. have gone to great lengths in recent years to improve the appearance of their products. Designs have been revolutionized, new finishes have been introduced and considerable emphasis has been placed upon color. What is the consumer reaction to these changes—particularly as to color? STEEL's editors recently queried retail merchants in several large cities as to trends in buying in relation to color and finish. The response (p. 60) indicated a swing toward a more conservative use of color. The "color in the kitchen" fad is waning. Beauty and simplicity in finish seem to be preferred to the ornate. These trends should be gratifying to manufacturers.

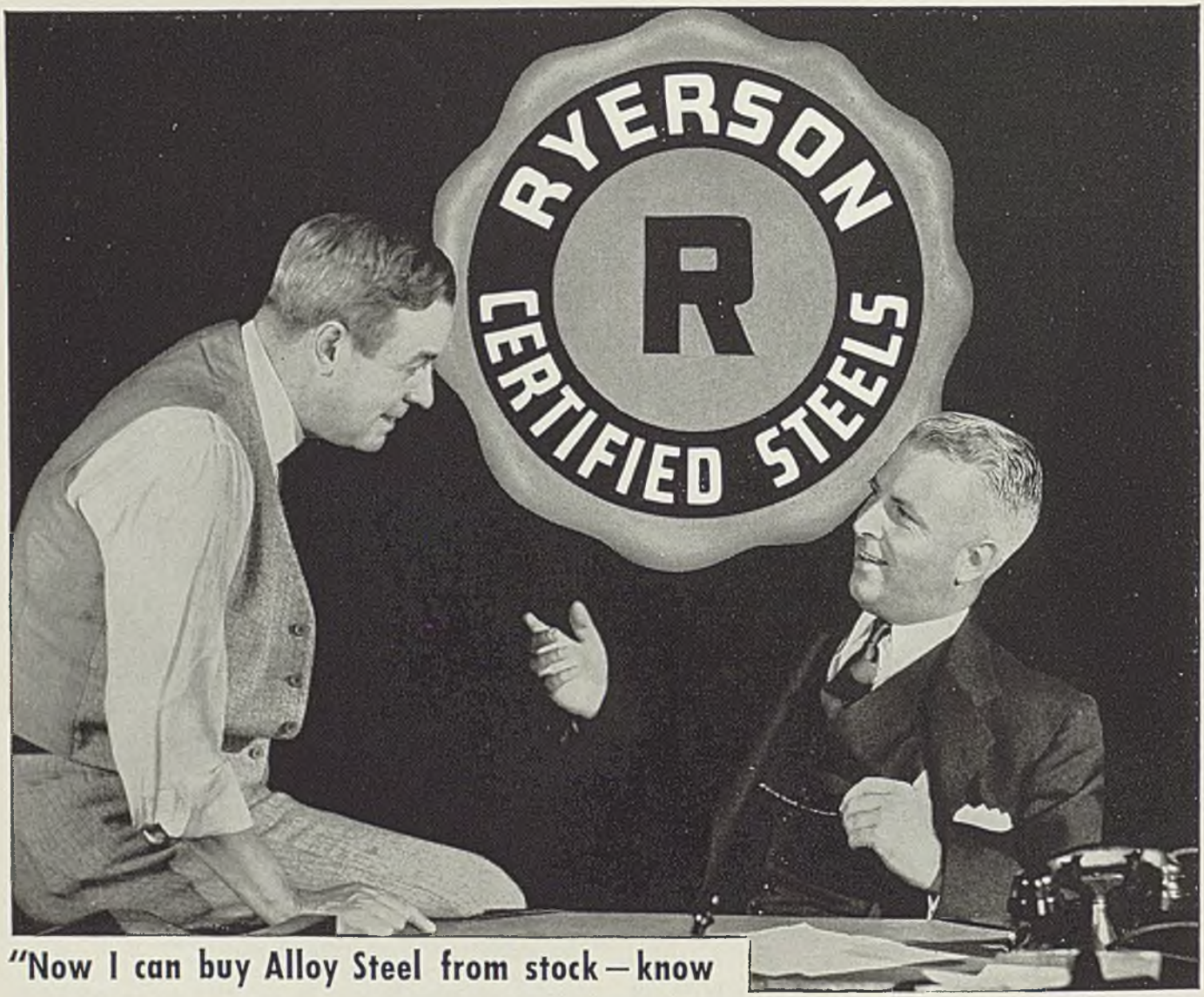
Trends to Beauty

• • •

A four-room house, recently completed near Detroit, of a type which can be sold completely ready for occupancy for from $2500 to $3000 (p. 82), utilizes steel floor joists and steel framing but permits the use of wood, insulation board, plywood or other materials for siding and interior walls and ceilings. . . . The familiar thick granite curb found in the downtown sections of many large cities may yield to economic pressure for a thinner and more durable substitute. In narrow streets every inch of road width counts. A curb armor of malleable cast iron (p. 80) meets this requirement so satisfactorily that it is gaining acceptance among the engineers of contractors and municipalities. Perhaps iron and steel products could be adapted to some other unexplored uses in streets.

Curb Armor Is of Iron

E. L. Shaner



"Now I can buy Alloy Steel from stock—know what I'm getting—and depend on uniformly good heat treatment results at lower cost."

Now you can get Certified Alloy Steels — steels in which the alloying elements all come within a very narrow range; steels in which the grain size and other hardening characteristics are also accurately controlled.

In addition, every bar is identified and you receive complete data on its chemical and physical properties as well as its reaction to heat treatment.

With Ryerson Certified Alloy Steels, the PURCHASER knows and has a record of the exact quality of steel delivered on every order—the HEAT TREATER has a guide to help in securing accurate results without experimenting and testing—the METALLURGICAL DEPARTMENT has data upon which they can base recommendations for any special treatments—the PRODUCTION DEPARTMENT schedule is not delayed because steel has failed to respond properly to heat treatment.

Let us give you complete story of Ryerson Certified Steels. Write for Booklet L2. Joseph T. Ryerson & Son, Inc. Plants at: Chicago, Milwaukee, St. Louis, Cincinnati, Detroit, Cleveland, Buffalo, Boston, Philadelphia, Jersey City.

Ryerson Certified Steels include all kinds, shapes and sizes of standard and special steel products.

HOT ROLLED ALLOYS
S.A.E. 2315, 2320, 2330, 2335, 2340, 2345, 2350, 3115, 3120, 3130, 3135, 3140, 3250, 4140, 4615, 6145, 52100; Rycase, Rytense A. A.

COLD DRAWN ALLOYS
S.A.E. 2315, 2320, 2330, 3115, 3120, 3135, 3140.

HEAT TREATED ALLOYS
Ryco (hot rolled); Rycrome (hot rolled and cold drawn); Nikrome "M" (hot rolled); Ry-Ax and Ry-Arm (hot rolled).

STAINLESS STEELS
Allegheny Stainless Sheets, Plates, Rounds, Squares, Hexagons, Flats, Angles, Pipe, Tubing, Bolts, Nuts, etc., in a variety of finishes.

COLD FINISHED STEELS
Standard Shafting; turned ground and polished; Special Accuracy Stock; Rycase High Manganese Screw Stock; S.A.E. 1020, 1035, 1112, 1120, etc.

TOOL STEELS
Ryerson B.F.D. Die Steel; "Shock" Steel; V. D. Steel; High Speed Tool Steel; etc.

GENERAL STEEL PRODUCTS
Beams; Channels; Angles; Tees; Zees; Plates; Sheets; Spring Steel; Boiler Tubes and Fittings; Bolts; Nuts; Rivets; Nails; etc

Write for the Ryerson Stock List

RYERSON STEEL-SERVICE

"Great Expectations" for Steel in Five-Year Small-Homes Program

■ STEEL producers and fabricators are watching with interest development of President Roosevelt's proposal for stimulation of a $12,000,000,000 to $16,000,000,000 building program, the essential features of which have been incorporated in bills introduced in both the house and senate.

While entertaining no illusions as to the difficulties besetting the plan, the steel industry recognizes it stands to gain in any revival of housing construction, and considers hopefully the prospects for such a revival as result of the easier financing provisions suggested.

The Chief Executive's message to congress recommended construction of an average of 600,000 to 800,000 dwelling units annually for the next five years to overcome the accumulated shortage and to meet the normal growth in population.

To facilitate this, he urged amendment of the housing act to increase the insurable limit on loans on small houses, costing under $6000, from the present 80 per cent of appraisal value to 90 per cent; reduce the overall financing costs of such mortgages, as reflected in interest rates, from 6.24 per cent to 5½ per cent, or in the case of houses valued at $3000 or less, to 5¼ per cent; broaden the mortgage insurance features to cover groups of houses for sale or rent; liberalize provisions relating to large scale properties built by limited dividend corporations.

To Handle Large Loans

He also proposed creation of a national mortgage association with $15,000,000 capital, advanced by the Reconstruction Finance Corp., to facilitate handling of large construction loans.

Clarence M. Wooley, chairman, American Radiator & Standard Sanitary Corp., New York.

"The President's message provides all the financial mechanisms essential for a widespread and sustained revival of housing construction. It represents to the building and construction industry a veritable charter of new life and vitality for an erstwhile dormant section of the business world.

"It provides for practically every need to start the flow of capital in channels now dried up, but which formerly energized the services of 4,000,000 men, from the forest and mine to railroads and factories."

Some Optimism Shown

While sentiment is not uniformly as optimistic as that expressed by Mr. Wooley, many building-steel men believe the easier down payment suggested will help greatly in stimulating interest. For example, a down payment of $500 on a $5000 house will tempt more people than a down payment of $1000 as now required.

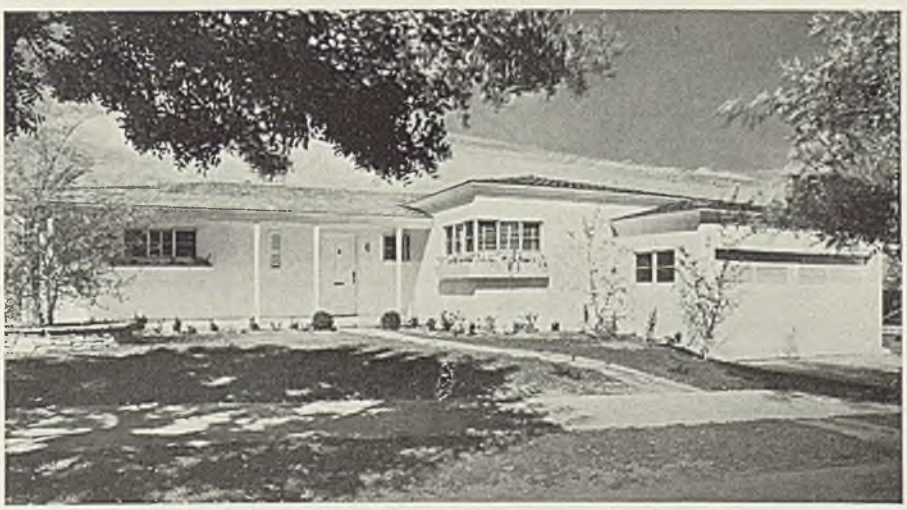
Reduction of the down payment and also of the interest and service charges as proposed, does not appear, however, to be in keeping with what is usually accepted as sound practice in private business.

Also questioned is the degree of success likely to result from the proposed conferences with manufacturers of building products and with labor in an attempt to lower construction costs. Manufacturers doubt that any considerable reduction in material prices can be made without downward revision of wages and other cost items.

Launching of the program in the face of the present business recession is considered an unfortunate factor. Its chances for success, many believe, would have been much better had the proposal been made when business was on the upgrade.

Notwithstanding these doubts,

Puts Its Millionth Pound of Steel in This House



■ Three and one-half years ago the first Palmer cellular-type steel house was erected in Los Angeles by Palmer Steel Homes Inc. (Described in STEEL, June 4, 1934). When the company completed the six-room home, illustrated, recently it announced that it had used "its millionth pound of steel" in such construction. A building survey gives the valuation of all the steel houses in Los Angeles county as $1,500,000, and Los Angeles claims this leads all cities

steel men find much that is encouraging in the President's proposal. Recognition by him of the theory of more goods at lower prices, instead of fewer goods at higher prices, is salutary.

His message turns the spotlight on the fact that the long-continued lag in building is a drag on all industry, and that if this were revived, all industry would benefit.

Spur to steel from a successful development of the program should be reflected in increased demand for plumbing, heating and sanitation and household appliances, especially in such essential items as stoves and refrigerators.

Builders of all-steel frame and prefabricated houses believe they stand to benefit, at least proportionately, in whatever stimulation results. In fact, they hope to gain more than their past share in housing as their practices become standardized and the sales resistance to this type housing is reduced.

Their past share has been light —less than 1 per cent of total construction. It is estimated no more than 2500 of the light-gage, flat-rolled steel houses have been constructed in the last five years.

Hot-rolled steel members, of course, often are used in conventional construction, although the total of this tonnage cannot be estimated accurately.

Must Break Sales Resistance

First cost and sales resistance to any departure from the conventional are seen as deterrents to rapid progress of the pre-fabricated dwelling by F. T. Llewellyn, research engineer, United States Steel Corp. At the annual convention of the American Institute of Steel Construction, White Sulphur Springs, W. Va., last fall, he said:

"In a keenly competitive market, such as that of low cost housing, there appears to be only two ways in which psychological resistance to a new material, such as steel, can be overcome. Either a campaign of education must be undertaken to explain and impress the advantages of steel, or else steel construction must be offered at a lower cost. Real estate men state the public is not yet satisfied to buy steel houses at the same price as conventional construction, and that steel houses will not be in general demand unless they are offered, at least for introductory purposes, at a concession in price."

No sooner was the President's plan announced than a number of manufacturers of low-cost steel houses renewed publicity campaigns.

Steel Buildings Inc., Middletown, O., stated that it has met the cost objection by offering a three-room, flat-roof house with bath at $2200, a four-room house at $2400, and other sizes and types at corresponding costs.

The President's proposal for building 600,000 to 800,000 houses a year for the next five years, a total of 3,000,000 to 4,000,000, would more than double normal construction, estimated at about 300,000 annually. For the past seven years, construction has averaged only 180,000 a year. This has shown only a slight increase in the early part of 1937.

A government survey of building in 94 cities of more than 100,000 population reveals 33,848 new dwellings erected in the first half of 1937, compared with 24,780 in the first half of 1936, a gain of 36.6 per cent. Cost of this residential construction was $235,091,285 in the first half of 1937, against $175,802,807 in 1936, an increase of 33.7 per cent.

Nonresidential buildings erected in the first half of 1937 totaled 29,541, costing $163,481,717, compared with 25,072 such buildings costing $142,338,384 in the first half of 1936.

1500 Tons of Steel in Chain Fence Award

■ Contract for manufacture and erection of 55 miles of six-foot chain link fence at $188,000 has been awarded the Anchor Post Fence Co., Baltimore, by the Metropolitan water district of Southern California. More than 1500 tons of steel will be required, and the fence will be manufactured at the company's Baltimore and Los Angeles plants.

Exact location of the job is in the Imperial Valley desert, California, and fence will be erected around the reservoirs and on both sides of the open sections of the Colorado river aqueduct. William F. Brannan, company president, states it is the largest fencing contract ever awarded in this country.

Canadian Imports from U. S. Doubled in Sept.

■ During September Canadian imports of iron and steel and their products from the United States were valued at $14,162,000, against $7,859,000 in September, 1936. Machinery led the list, with total value of $3,503,000, compared with $2,291,000 for the same month last year. Total iron and steel imports into Canada were valued at $17,507,000, against $10,098,000 for September, 1936.

Exports to the United States more than doubled also, at $791,000, compared with $331,000 for the same period last year. Total Canadian iron and steel exports were $4,809,000, against $3,732,000 in 1936.

Steel on Farms, in Engineers' Forum

■ Engineering problems in farm operation were reviewed at the fall meeting of the American Society of Agricultural Engineers, held at the Stevens hotel, Chicago, Nov. 29-Dec. 2. Attendance was about 350.

Program of the meeting consisted of sessions of the various divisions of the society, including rural electric, farm structures, power and machinery and soil and water conservation.

Addressing a farm structures session, Earl D. Anderson, agricultural engineer, Republic Steel Corp., Chicago, stated that steel is playing an important part in the new architectural treatment of the farm barn and that when used judiciously in those parts of the structures where it serves the purpose best and in combination with other materials where its use will be more satisfactory, steel offers great possibilities for further improvements in barns.

"Galvanized sheets are finding new applications in making barn repairs," he indicated. "Having gained a recognized place as a fire resistant roofing material, because of the protection offered against sparks on roofs and the transmission of fire from one building to another, siding boards, which may not in their present condition be satisfactory for that purpose, may serve as a base for the speedy application of metal sheets, to provide a weather-tight wall."

Fire Hazard Eliminated

Changing farming methods, resulting in the storage of hay with a high moisture content, have made this feed highly susceptible to spontaneous ignition. This condition results in heavy fire losses to barns when hay is stored on the second floor, according to Mr. Anderson. This fire hazard is being eliminated by the use of individual, steel-lined, ventilated, hay containers resembling a silo. In such instances the barn may be reduced to one story in height, thereby simplifying the bracing and making steel framing members in light sections adaptable.

"Early steel roof trusses adopted for barns undoubtedly were much heavier than need be, with resulting relatively high cost compared with other common building materials," he pointed out. "Steel framing members, however, find a more ready application to the one-story stables where lighter sections have been used. In a comparatively recent design both wall columns and roof members are of light, open web sections fabricated at the factory and assembled in the field by bolting to-

gether. Wall columns are bolted to the masonry foundation and longitudinal sections, to take care of end sway, are bolted to the roof members both at the peak and at the eaves. The building is roofed and clad both inside and out with galvanized sheets."

Discussions of galvanized steel products were included in two papers, one on "Field Tests of Zinc-Coated Metals," by Russell Passane, American Rolling Mill Co., the other on "Electrogalvanizing of Wire and Sheets," by L. H. Winkler, Bethlehem Steel Co.

October Machine Exports Highest Since July, 1929

■ Exports of industrial machinery from the United States in October were valued at $24,438,596, highest monthly figure since July, 1929, and a gain of 53 per cent over $16,000,-332 in October, 1936, according to the machinery division of the department of commerce.

Foreign sales in ten months this year were valued at $206,801,869, an increase of 47 per cent over the corresponding period in 1936. Power-generating machinery, except electric and automotive, led in the advance with a gain of 83 per cent; mining, well and pumping machinery increased 68 per cent; power-driven metal-working machinery 45 per cent, and construction and conveying machinery 43 per cent.

Farm implement and machinery exports in October totaled $6,826,-322, or 61 per cent over October, 1936. For ten months total sales were 73 per cent over the corresponding months in 1936.

FINANCIAL

SHEET & TUBE REDUCES COMMON DIVIDEND

■ Youngstown Sheet & Tube Co. directors declared the regular quarterly dividend of $1.37½ per share on preferred shares, payable Jan. 1 to record of Dec. 9. The regular quarterly common dividend was reduced from $1 per share to 75 cents per share, payable Dec. 20 to record of Dec. 9. This brings the dividend distribution to common shareholders in 1937 to $3.25 per share.

♦

E. J. Kulas, president, Midland Steel Products Co., announced that the board of directors last week declared dividends of $2 per share on the 8 per cent cumulative first preferred shares; 50 cents on the $2 noncumulative dividend shares, both payable Jan. 1, and $3 on common stock payable Dec. 24. All are payable to shareholders of record Dec. 15. No dividend will be paid on the common stock Jan. 1.

♦

Interlake Iron Corp., Chicago, has declared a dividend of 25 cents a share on common stock, payable Dec. 23 to record Dec. 9. The company resumed payments with 40 cents Sept. 30.

♦

Link-Belt Co., Chicago, declared an extra dividend of $1 on its common stock, payable Dec. 23 to record Dec. 10, in addition to the regular quarterly dividend of 50 cents, payable March 1 to record of Feb. 15.

♦

National Malleable & Steel Castings Co., Cleveland, announced a dividend of 50 cents a share, payable Dec. 22 to stock of record Dec. 8. Like payment was made Sept. 13.

♦

Directors of Thompson Products Co., Cleveland, voted a dividend of 30 cents on common stock and $1.25 a share on prior preference stock, both payable Dec. 23 to stock of record Dec. 15. The 30 cents dividend on the common brought disbursements this year to $1.70 a share, against $1.50 paid last year. The dividend on 96,000 shares of prior preference stock would ordinarily be paid Jan. 2. This makes $6.25 paid on preferred this year.

♦

Minneapolis-Honeywell Regulator Co., Minneapolis, declared an extra dividend of 50 cents a share, payable Dec. 23 to record Dec. 14. Action on the quarterly dividend is not due at this time.

"How We Earn Our Living"

■ Speaking to its employes and stockholders, through the medium of its *US Steel News*, the United States Steel Corp. last week presented an elementary account of its receipts and disbursements from 1928 through 1936—the period of its present management.

In this period, "U. S. Steel paid out the sum of $405,000,000 as a return to those who owned the property used by the managers and workers. This was 13.7 per cent of the sum left over to the companies. However, not all of this was earned during the period. U. S. Steel has to draw to the extent of $41,000,000 on sums which had previously been earned but had been left in the business as working capital.

"Taking the value of U. S. Steel property as shown by its books—which is the investment cost of the property—the actual earned return to the owners of the property over the period that included great prosperity and deep depression was at the rate of 2½ per cent a year. Such a condition is not good for anyone. Most of all, it is not good for those who want to earn good wages by good work."

January 1, 1928, to December 31, 1936
(000,000 omitted)

U. S. Steel received from the public in exchange for goods and services		$5,921
This was disposed of as follows:		
Items over which U. S. Steel had no control:		
Goods and services purchased from others	$2,142	
Taxes	379	
Depreciation and depletion	457	2,978
(Of which $87,000,000 was wages paid directly by U. S. Steel and not included in "Wages" below)		
Balance remaining (being 49.7% of the Gross Receipts)		$2.943
Disposed of as follows:		
Wages and salaries (being 85% of "balance remaining")		2,502
Leaving a balance of		$ 441
Disposed of as follows:		
Interest paid for the use of assets representing savings, the ownership of which is evidenced by bonds and mortgages	$ 77	
Dividends paid for the use of assets representing savings, the ownership of which is evidenced by preferred and common stock, being 13.7% of "balance remaining"	405	482
Leaving a deficit of		$ 41
provided from savings made on behalf of the owners by U. S. Steel during prior periods.		

(The sum of $482.000,000 paid for the use of assets by U. S. Steel reduced to an average annual return on the average amount of assets used during the period amounts to 2.829% per year. Since $41,000,000 was withdrawn from prior earnings, the earned return was 2.497% per year.)

Coal Producers Study New Prices

■ WESTERN PENNSYLVANIA'S leading coal producers last week expressed favorable first impressions of new minimum prices ordered effective Dec. 16 by National Bituminous Coal commission, but would go no further, pending further study. Only a few coal men had received copies of the new price schedules, but expected them from Washington soon.

Most of the increased revenues from the new minimum will be paid by industrial consumers, with corresponding benefits to be named to domestic users. Industry is estimated to consume 85 to 87 per cent of all soft coal produced. Those having "captive tonnage" mines will not be affected by the new prices.

Byron H. Canon, executive secretary of the Western Pennsylvania Coal Producers' association, says a special meeting will be held soon to discuss probable effect of the changes on the bituminous industry, adding "the new setup looks all right as far as we can see now, but if we find some adjustments are needed, we won't delay in asking for them."

H. E. Booth, vice president in charge of sales, Pittsburgh Coal Co., reputed largest producer in the industry, said the commission "undoubtedly feels it will have to make a great many corrections and adjustments in order to make prices reflect the proper relationship between sizes of coal and between various competing districts."

No. 1 Lucy Furnace Razed; Will Dismantle No. 2 Soon

■ Lucy blast furnace No. 1, at Fifty-first street and the Allegheny river, Pittsburgh, was pulled down by cables and the hearth dynamited last Friday. No. 2 stack will be dismantled in two or three weeks, and will mark the end of the historic blast furnace plant named for the wife of Andrew Carnegie.

Both furnaces were properties of the original Carnegie Steel Co. No. 1 stack was built in 1872 and No. 2 in 1877. Combined annual capacity of the furnaces was 113,900 tons of bessemer and basic pig iron, ferromanganese, spiegeleisen and ferrosilicon.

Issues Recommendations On Die Head Chasers

■ Simplified practice recommendation on die-head chasers (for self-opening and adjustable die-heads) has been reaffirmed without change, according to the national bureau of standards. The recommendation was developed in 1926, revised in 1927 and 1929 and reaffirmed in 1931. Copies may be obtained from the government printing office, Washington.

District Steel Rates

Percentage of Open-Hearth Ingot Capacity Engaged in Leading Districts

	Week ended Dec. 4	Change	Same week 1936	Same week 1935
Pittsburgh ..	24	— 3	72	43
Chicago	30	None	77	63
Eastern Pa...	31	+ 4	48.5	39.5
Youngstown..	35	— 2	78	60
Wheeling ...	30	— 5	92	78
Cleveland ...	31	+ 3	79.5	82
Buffalo	21	None	84	47
Birmingham..	54	None	74	56
New England	32	+ 5	91	93
Cincinnati ...	14	—15	96	†
St. Louis.....	20.6	None	68	†
Detroit	50	— 9	95	94
Average....	30.5	— 1	76.5	57

†Not reported.

Columbia Steel Lights Improved Utah Stack

■ Columbia Steel Co.'s Provo, Utah, blast furnace was blown in last week after a two-month idleness for relining and reconditioning. The stack was last relined in 1931 and was in continuous operation since then.

Improvements to the furnace included an electrically-operated clay gun for closing the iron notch, an automatic stock line recorder, an automatic hot blast temperature control, and copper plates in the wall section of the lining up to 30 feet above the mantle.

The residue iron accumulated in the bottom of the hearth since 1931 weighed approximately 100 tons.

World Tin Consumption Rises; U. S. Leading

■ World tin consumption for the year ended September, 1937, totaled 177,443 tons, 17,774 more than in the preceding year. Production increased 24,300 tons to 197,700 tons, according to the International Tin Research and Development council.

The United States used 83,486 tons, nearly half of the total amount consumed. This was an increase of 17.7 per cent. Russia's consumption showed the greatest percentage gain, 35.5 per cent, to 12,022 tons. Germany used 10,929 tons, 28.9 per cent more than the preceding year.

World tin plate production for the year ended in October increased 509,000 tons over the preceding year to 4,090,000 tons. World production of tin in September totaled 19,143 tons compared to 17,135 tons in August.

PRODUCTION

■ Steel works operating rates last week were unsettled, with a national rate of 30½ per cent, 1 point lower than the preceding week. At four centers the rate was unchanged, at three there was a slight rise and at five there was some contraction. Indications are for a lower rate this week as several open hearths are scheduled to go down.

Pittsburgh—Off 3 points to 24 per cent. Pittsburgh Steel Co. has resumed blast on one stack banked over Thanksgiving. Its steel works at Monessen, Pa., has been running continuously.

Youngstown, O.—Down 2 points to 35 per cent. Schedules for this week indicate a rate of probably less than 30 per cent with Carnegie-Illinois Steel Corp. taking off two open hearths, Republic Steel Corp. one or two and Youngstown Sheet & Tube Co. possibly closing the Brier Hill works.

St. Louis — Unchanged at 20.6 per cent. Two open hearths are expected to be added this week.

Birmingham, Ala. — Unchanged at 54 per cent. Schedule for this week is 10 points lower with removal of two open hearths by the Tennessee company. A blast furnace will also be blown out by the same company.

Detroit — Down 9 points to 50 per cent.

Chicago — Unchanged at 30 per cent.

Wheeling — Down 5 points to 30 per cent, two open hearths being taken off.

Central eastern seaboard — Up 4 points to 31 per cent as a reflection of partial recovery from the holiday week. One mill which was down entirely has lighted one furnace and another will add a fourth Tuesday.

Cincinnati — Down 15 points to 14 per cent, schedules depending from day to day on accumulation of orders.

Buffalo — Unchanged at 21 per cent, with nine open hearths active.

New England — Up 5 points to 32 per cent, the first half in the declining rate in several months. Schedules for this week indicate several points additional rise.

Cleveland — Up 3 points to 31 per cent, one additional open hearth being lighted.

37 Furnaces Out, Iron Output Drops 28.2 Per Cent

■ PRODUCTION of coke pig iron in the United States suffered another severe setback during November as 37 additional blast furnaces were withdrawn from operation. Average daily output of 66,925 gross tons, registered a loss of 26,334 tons, or 28.2 per cent, from the October rate of 93,259 tons. This was the smallest daily rate since March, 1936, with 66,004 tons.

After reaching a 1937 high of 192 operating furnaces in July, the total has been reduced to 114, a drop of 78 in four months. The number producing iron is the smallest since September, 1935, when only 104 were active.

Total production in November was 2,007,740 gross tons, which, compared with the 2,891,026 tons in October, was a loss of 883,286 tons, or 30.5 per cent. This was the smallest total output for any month since February, 1936, with 1,838,932 tons.

In the eleven months of the current year, production has aggregated 35,205,374 tons, this being an increase of 7,647,862 tons, or 27.8 per cent over the 27,557,512 tons made in the corresponding period of 1936.

During November, 29 nonmerchant or steelworks furnaces were blown out or banked and 2 were made active; of the merchant classification, 10 were blown out, none in.

Furnaces resuming during November were: In Ohio: One Mingo, Carnegie-Illinois Steel Corp. In Alabama: Fairfield No. 6, Tennessee Coal Iron & Railroad Co.

Stacks blowing out or banking were: In Ohio: Massillon, River No. 3 and one Youngstown, Republic Steel Corp.; Lorain Nos. 3 and 4, National Tube Co.; Brier Hill No. 1, Youngstown Sheet & Tube Co.; one Ohio, Carnegie-Illinois Steel Corp. In Pennsylvania: Monongahela Nos. 2 and 4, National Tube Co.; one Eliza, Jones & Laughlin Steel Corp.; Monessen No. 2, Pittsburgh Steel Co.; Shenango No. 1, Shenango Furnace Co.; one Swede, Alan Wood Steel Co.; Cambria, J, K and L, and Steelton B, Bethlehem Steel Co.; one Duquesne and three Edgar Thomson, Carnegie-Illinois Steel Corp.; Colonial, Colonial Iron Co. In New York; One Buffalo, Republic Steel Corp.; Lackawanna F and J, Bethlehem Steel Co.; one Buffalo, National Steel Corp.; one Harriet, Wickwire Spencer Steel Co. In Massachusetts: Everett, Mystic Iron Works. In Alabama: Alabama City and one Pioneer, Republic Steel Corp.; one North Birmingham, Sloss-Sheffield Steel & Iron Co.; one Woodward, Woodward Iron Co. In Kentucky: Ashland, American Rolling Mill Co. In Minnesota: Zenith, Interlake Iron Corp. In Indiana: Gary Nos. 7 and 11, Carnegie-Illinois Steel Corp.; Madeline Nos. 2 and 4, Inland Steel Co. In Illinois: So. Chicago No. 4, Youngstown Sheet & Tube Co.

MONTHLY IRON PRODUCTION

Gross Tons

	1937	1936	1935
Jan.	3,219,741	2,029,304	1,478,443
Feb.	3,020,006	1,838,932	1,614,905
March	3,470,470	2,046,121	1,770,990
April	3,400,636	2,409,474	1,671,556
May	3,545,180	2,659,643	1,735,577
June	3,115,302	2,596,528	1,558,463
July	3,501,359	2,595,791	1,520,340
Aug.	3,616,954	2,711,726	1,759,782
Sept.	3,417,960	2,728,257	1,770,259
Oct.	2,891,026	2,991,794	1,978,379
Nov.	2,007,740	2,949,942	2,066,293
Tot. 11 mo.	35,205,374	27,557,512	18,924,987
Dec.	.....	3,125,192	2,115,496
Total	.....	30,682,704	21,040,483

NOVEMBER IRON PRODUCTION

	No. in blast last day of Nov.	Oct.	Total tonnage Merchant	Non-merchant
Ohio	26	32	110,440	336,843
Penna.	33	48	104,198*	426,863*
Alabama	14	17	88,065	105,742*
Illinois	9	10	71,410	109,608
New York	9	14	73,610	97,888
Colorado	2	2		
Indiana	7	11	22,434*	279,977
Maryland	4	4		
Virginia	1	1		
Kentucky	1	2		
Mass.	0	1		
Tenn.	0	0		
Utah	0	0	18,918	161,744
West Va.	3	3		
Michigan	4	4		
Minnesota	1	2		
Missouri	0	0		
	114	151	489,075*	1,518,665*

*Includes ferro and spiegeleisen.

AVERAGE DAILY PRODUCTION

Gross Tons

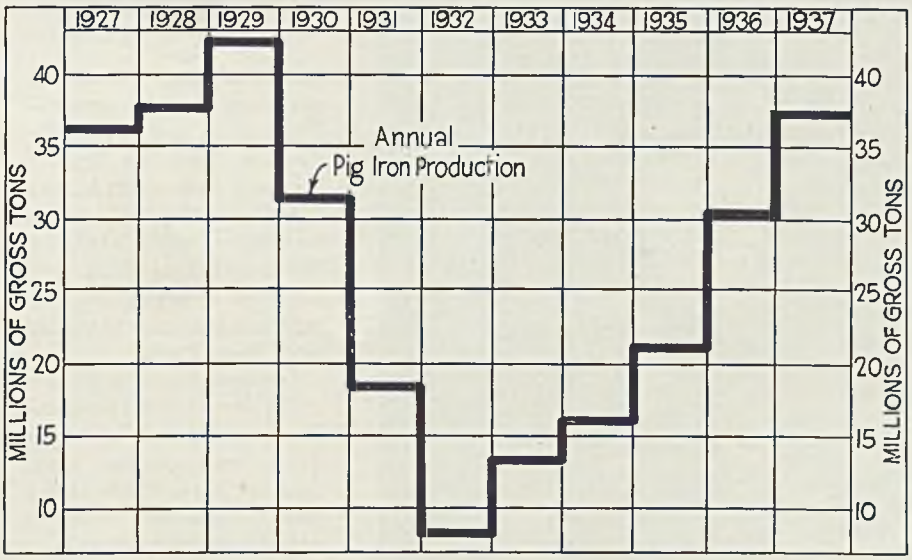
	1937	1936	1935	1934
Jan.	103,863	65,461	47,692	39,537
Feb.	107,857	63,411	57,675	45,385
March	111,951	66,004	57,120	52,438
April	113,354	80,316	55,719	57,873
May	114,360	85,795	55,986	66,370
June	103,843	86,551	51,949	64,563
July	112,947	83,735	49,043	39,630
Aug.	116,676	87,475	56,767	34,199
Sept.	113,932	90,942	59,009	29,969
Oct.	93,259	96,509	63,818	30,689
Nov.	66,925	98,331	68,876	31,930
Dec.	.....	100,813	68,242	33,161
Ave.	105,405	83,832	57,694	43,774

RATE OF OPERATION

(Relation of Production to Capacity)

	1937[1]	1936[2]	1935[3]	1934[4]
Jan.	76.6	48.2	34.2	28.3
Feb.	79.5	46.6	41.4	32.5
March	82.5	48.5	41.0	37.5
April	83.7	59.1	40.0	41.4
May	84.3	63.1	40.2	47.5
June	76.6	63.6	37.2	46.3
July	82.9	61.5	35.2	28.4
Aug.	85.7	64.3	40.7	24.5
Sept.	83.7	66.9	42.5	21.5
Oct.	68.4	71.0	45.8	22.1
Nov.	49.1	72.3	49.5	22.8
Dec.	....	74.2	49.0	23.7

[1]First half based on capacity of 49,512,737 gross tons, Dec. 31, 1936—second half on capacity of 49,727,737 tons, June 30, 1937; [2]capacity of 49,777,893 tons, Dec. 31, 1935; [3]capacity of 50,845,741 tons, Dec. 31, 1934; [4]capacity of 50,975,561 tons, Dec. 31, 1933. Capacities by American Iron and Steel Institute.



■ Production of coke pig iron in 11 months this year amounted to 35,205,374 gross tons, and with December estimated at 1,500,000 tons, a total of approximately 36,700,000 tons is indicated for the year. This compares with 30,682,704 tons in 1936

Government in Business, So Enter Politics, Weir Urges Business Men

■ BUSINESS men should leave the sidelines and get into government to help direct its economic activity into constructive channels, declared Ernest T. Weir, chairman, National Steel Corp., before the Cincinnati chamber of commerce last week. Mr. Weir also spoke last week before the Chicago Economic club on current labor relations.

Government intervention in business to some degree may be expected as a permanent feature of American life, he pointed out. Accepting this, business men should do all "within their power to shape the effect of government upon economic activity so that it will work for and not against the great objective—which government and business share—of higher living standards for America."

After briefly describing economic conditions prevailing in the early days of his company, Mr. Weir commented on several major changes.

"One is bewildered if he attempts to analyze the diverse elements that have contributed to this change. The picture becomes clearer, however, if we confine our attention to the one basic change which is the product of the events of recent years and at the same time is the major cause of the unfamiliar, insecure and disturbing atmosphere in which we, as Americans, find ourselves today.

Collectivism Grows

"This basic change is the enormous extension of governmental activity—what we might call 'public business'—into every phase of economic life, and the relative contraction of strictly private business.

"It is collectivism, growing and swallowing the individualism which we have always regarded as so typically American. The process has already gone so far that I believe you could hardly find a business enterprise anywhere in the United States which could accurately be described as private."

Referring to the President's attacks on business men, Mr. Weir said:

"Even before taking office, Mr. Roosevelt took the position that business leaders, and also wealthy people as a class, were his enemies, enemies of his program, and therefore, enemies of progress. He since has divided his administration's energies between fighting this so-called class, and fighting the depression.

"Perhaps Mr. Roosevelt's greatest mistake was in stirring up hatreds, fears and uncertainties which have discouraged the very people who could have given the most effective co-operation in any sound program designed to reach his professed objectives."

Mr. Weir urged business men to assume a greater political responsibility.

"Since government is in business, business men must get into government. This, of course, means that business men must get into politics."

Pleading that business men should run for local, state and national offices, he said: "It would not matter one way or the other which political party elected them. The important thing is that trained business viewpoints would be brought to bear on governmental actions affecting economic activity. This now means the great majority of all governmental actions."

Mr. Weir also suggested business men should use their influence to have the educational system, from grade school through college, place greater stress on training in political science because, "today politics, and through politics, government is the most important of the influences shaping the environment" in which people make their living.

Pattern Is Military

In his Chicago address he declared unsettled labor conditions prevail because the national administration and leaders of organized labor have made "the false assumption that labor relations must be founded on a basis of conflict and, therefore, have shaped their action in the spirit and with methods of war."

Pointing out that employers and employes are mutually dependent upon the unobstructed operation of industry for their livelihoods, he said:

"A sound basis for labor relations depends upon the direct opposite—the spirit and methods of peace. Whatever differences employers and employes may have between themselves, these differences are minor in face of the fundamental economic necessity that they stand united in

Stainless Streamliner, and How It Is Fabricated

■ First light-weight, stainless steel, streamlined train to serve Philadelphia, and the first of its kind to be seen in the Middle Atlantic states, has been completed by Edward G. Budd Mfg. Co., for the Reading Co. It will run between that city and New York.

Locomotive is a Pacific type, encased in a streamlined shell of stainless steel, and carbon steel painted blue. Each of the five car bodies is fabricated of 18-8 stainless. Below is an unusual photo showing how the Budd 'shotweld' method of spot welding is used in fabricating stainless steel cars

making their (industrial) organization fulfill its essential purpose—that is, produce goods or services of a quality and at a price that society will accept. Society is the employer of the business organization, and it is a ruthless employer."

Different reactions from employers have been evoked by the labor situation under the New Deal, he said. The position taken by companies in the "Little Steel" strike, however, is representative of that of many other employers.

Defending the independent companies which resisted unionization efforts, Mr. Weir stated that if the companies had yielded, complete unionization, first of the steel industry and then all industry, would have followed.

"We would have universal unionization in the United States, and with it, the concentration in the hands of a small group of labor-politicians of the greatest political power in the country—a power extremely dangerous in the hands of men who, with much less power, display an utter disregard for life, property, law or anything that stands between them and their ambition . . .

"If all industry were unionized, the apparent gains of each would be neutralized by similar gains of all the others. As a result, real wages would be the same as now."

Reorganization Plan

Unions, he said, should be required to reorganize so that the rank and file members could control policies and officers; should publish certified audits of accounts; should be prohibited from contributing to political campaign funds, and should be held responsible for the statements and acts of their agents. It should be illegal to call a strike without a prior vote of the employes in the plant involved, and in the event of a strike it should be illegal to transport pickets from other plants or industries.

He recommended the principle of the employes representation plan "because its purpose is to establish a basis for peace, its methods provide for co-operation, and its character adapts it to the structure of modern industry. With these great fundamental advantages in its favor, I see nothing to prevent the elimination of any drawbacks it may have at present."

"Eventually the real workers of this country, with the support of public opinion, are going to have exactly the kind of labor relations they want. If left to their own devices—free from the high-pressure influence of alien interests—I am confident that, in co-operation with employers, they will work out a system of employer-employe relations where the basis is harmony and understanding, not conflict."

Forty Million Tons of Ore on Hand As Third Largest Lake Season Ends

■ NINETEEN THIRTY-SEVEN has been notable for an unusually heavy movement of iron ore—third largest in history—although the decline in consumption in late months not only checked shipments but also caused the accumulation of abnormally large stocks.

The movement of bituminous coal from Lake Erie ports apparently will establish an all-time record this year, and it is possible the season's lake shipment of limestone will reach a new high.

When the ore season closed last week the total amount shipped by vessel was 62,598,836 long tons, third largest, exceeded only by 65,204,600 tons in 1929 and 64,673,000 tons in 1916.

Early Months Were High

The all-rail shipment, with some tonnage still to be moved, is estimated at 600,000 tons, and with this the aggregate for the year is 63,198,836 tons. The comparative total for 1929 was 66,157,359 tons, and for 1916, 66,673,000 tons.

Month after month in the first half this year, lake shipments far exceeded those in the comparable periods of 1936, but the situation was reversed in the latter months. The November total was only 1,424,679 tons—2,933,472 tons less than in November 1936.

The following table shows the iron ore tonnage moved from upper lake ports:

Port	1937	1936
Escanaba	3,147,977	2,392,958
Marquette	5,101,700	4,284,377
Ashland	5,651,879	4,623,618
Superior	22,222,116	16,236,502
Duluth	16,731,688	11,738,528
Two Harbors	9,743,476	5,546,040
Total	62,598,836	44,822,023

The 1937 total is an increase of 17,776,813 tons, or 39.6 per cent, over 1936.

Stocks of iron ore at lower lake ports and furnaces were approximately 40,000,000 tons, fourth highest amount at that date in history.

The record high for stock accumulation was touched Dec. 1, 1922, with 44,004,201 tons. Other top points were reached in 1923, with 42,836,466 tons, and in 1926, with 42,760,964 tons.

Last year on Dec. 1 the figure was 35,378,068, which was considered slightly above average. The normal amount on Dec. 1 is considered as between 30,000,000 and 35,000,000.

Shipments of bituminous coal from Lake Erie ports will reach approximately 45,259,700 short tons. Including Nov. 21, a total of 44,259,700 tons was shipped. The aggregate will be about 1,249,000 tons more than the record mark of 44,010,585 set last year. Previously the largest was 37,933,249 in 1929; followed by 1930, with 36,839,923 tons.

Last year's mark of 12,080,672 short tons of limestone is almost certain to be surpassed this year. The record year to date is 1929, with 16,269,612 tons.

"Cease and Desist" to Metal Window Makers

■ Nineteen corporations, comprising substantially all the manufacturers and distributors of metal window products, have been ordered by the federal trade commission to cease and desist from certain practices, effect of which was held to establish and maintain fixed minimum prices. The order also named the manufacturers' trade association, Metal Window institute, Washington.

The commission charges that acting through the institute, the companies "since May, 1935, have entered into agreements and understandings and engaged in certain practices thereunder which have had the effect of unlawfully restricting trade and eliminating competition . . . substantially enhancing prices and maintaining them at artificial levels."

Lake Shipments of Iron Ore, Coal, Limestone

	Iron Ore (Long tons—2240 lbs.)	Bituminous Coal (Short tons—2000 lbs.)	Limestone (Short tons—2000 lbs.)
1937	62,598,836	45,259,700*	16,500,000*
1936	44,822,023	44,010,585	12,080,672
1935	28,362,368	34,730,099	9,082,155
1934	22,249,600	34,869,536	7,392,218
1933	21,623,898	31,351,353	6,664,629
1932	3,567,985	24,563,391	3,928,840
1931	23,467,786	30,415,291	7,208,946
1930	46,582,982	36,839,923	12,432,628
1929	65,204,600	37,933,249	16,269,612

*Estimate for coal is based on actual total up to Nov. 22. That for limestone is based on a reasonable ratio to iron ore, and is likely to be low rather than high.

MEN OF INDUSTRY

■ BENJAMIN F. FAIRLESS, newly elected president of the United States Steel Corp., will be given a testimonial dinner by the Pittsburgh chamber of commerce on Dec. 20. H. B. Kirkpatrick, president of the chamber, announced the dinner committee members as Charles Arbuthnot III, Charles E. Bennett, W. H. Burchfield, Frank J. Chesterman, William M. Duff, Arthur E. Brown, Frank F. Brooks, Wilmer M. Jacoby, Charles A. Rowan, E. W. Smith, C. F. C. Arensberg, E. J. Priddey, William J. Cummins, H. S. Metcalfe and Joseph Orbin.

♦

John Howe Hall, consulting engineer on steel foundry practice, has established headquarters at 6802 Lincoln Drive, Germantown, Philadelphia.

♦

Leonard H. Church, for some years regional and associate editor for McGraw-Hill Publishing Co., and Herbert P. Harris have become associated with the Cleveland office of Hill & Knowlton, industrial publicity agents.

♦

Earle E. Brown, who represented the Continental Steel Corp., Kokomo, Ind., in California many years, has been named district sales representative in Kansas and Nebraska and in Kansas City, Mo. His headquarters will be in Kansas City.

♦

Edward R. Stettinius Jr., chairman of the finance committee, United States Steel Corp., New York, and who next April will become chairman of the board of the Steel corporation, has been nominated for membership in the New York state chamber of commerce.

♦

Walter C. Evans, manager of the radio division, Westinghouse Electric & Mfg. Co., and located at the Chicopee Falls plant, recently sailed for Havana, Cuba, to attend the Inter-American Radio conference convening there for a period of several weeks.

♦

George Howard Ritchie, chief engineer of the transportation department, Tennessee Coal, Iron & Railroad Co., has been promoted to general superitendent of that department. Mr. Ritchie succeeds Henry J. Wurtele, who has joined Birmingham Southern Railroad Co. as vice president.

♦

R. A. Lackey, for many years vice president and plant manager, Payson Mfg. Co., Chicago, manufacturer of builders' hardware, has retired from active service but continues on the board of directors. A testimonial dinner was tendered Mr. Lackey Nov. 15, on which occasion he was presented an album containing the signatures of his 200 associates. His friends also presented him with a watch.

♦

W. E. Wechter, associated with the Worthington Pump & Machinery Corp., Harrison, N. J., since graduation from Purdue university in 1923, has been placed in charge of oil and gas engine sales in the Atlantic seaboard territory. He succeeds R. L. Howes, recently resigned. Mr. Wechter will make his headquarters in New York.

♦

Norton McKean has been elected vice president, American Meter Co., New York. Mr. McKean first became associated with American Meter in 1919 as superintendent of its Boston plant, after which he was made general superintendent of the company and manager of the D. McDonald & Co. works at Albany, N. Y. He will continue in those executive duties.

♦

William P. Laytham, William P. Laytham & Sons, Paterson, N. J., has been elected president, New Jersey Foundrymen's association, succeeding Walter H. Cole, Moore Bros., Elizabeth, N. J., who retired after serving three years.

G. W. Hannay, Barnett Foundry Machine Co., Irvington, N. J., has been elected vice president, succeeding Mr. Laytham. John L. Carter, 83 Polk street, Newark, N. J., and J. A. Williamson, Isbell Porter Co., Newark, have been re-elected secretary and treasurer, respectively.

♦

R. G. Guthrie, past president, American Society for Metals, and consulting metallurgist for the Peoples Gas Light & Coke Co., Chicago, has been reappointed chairman of the ferrous metals committee, industrial gas section, American Gas association, New York. E. W. Esslinger, Cincinnati Gas & Electric Co., Cincinnati, is vice chairman.

Ralph D. Hawkins, Bridgeport Gas Light Co., Bridgeport, Conn., has been made chairman, nonferrous metals committee, industrial gas section, and S. Procter Rodgers, Consolidated Electric Light & Power Co., Baltimore, vice chairman. All are well known in both the ferrous and nonferrous industries and will serve until Sept. 30, 1938.

♦

J. H. Van Moss, since December, 1936, assistant vice president of American Car & Foundry Co., New York, has been appointed western sales manager for the company, with headquarters in Chicago. W. P. McBride will assist Mr. Van Moss. These changes become effective Jan. 1.

Prior to his association with American Car & Foundry in 1927, Mr. Van Moss was for many years connected with various railroads. Mr. McBride joined the company in 1923.

♦

Cary D. Terrell will resign Jan. 1 as vice president of American Car & Foundry Co., with offices in Chicago, after serving the company for 28 years. He has been associated

Third Steel Freighter "Governor Miller"

■ The GOVERNOR MILLER, third bulk ore carrier to be launched within a month for the Pittsburgh Steamship Co., United States Steel Corp., subsidiary, entered the water last Thursday at Lorain, O.

Nathan L. Miller

When the last of the four new vessels for the Pittsburgh company, the JOHN HULST, is launched shortly at River Rouge, Mich., the fleet will number 73 freighters and six barges. The WILLIAM A. IRVIN was launched Nov. 10 at Lorain, and the RALPH H. WATSON Nov. 20 at River Rouge.

The launching of the GOVERNOR MILLER, named for Nathan L. Miller, general counsel for the Steel corporation, was the occasion of a civic celebration, attended by officials of the corporation and its subsidiaries. Miss Constance Miller, Mr. Miller's daughter, was sponsor.

In an address at a luncheon given by the Lorain chamber of commerce following the launching Mr. Miller expressed an optimistic view of business.

with the Chicago office since 1919, first as sales agent and then as assistant vice president in charge of sales. In 1927 he was elected a vice president. His resignation is due to ill health.

♦

Arthur R. Robinson, R. L. Batteiger Co., Philadelphia, has been elected president, Philadelphia chapter, Institute of Scrap Iron and Steel Inc. Other officers elected include: Vice president, Lewis Raphaelson, Wilmington, Del.; secretary, Philip Bailis, Max Bailis & Sons, Philadelphia; treasurer, J. Bantivoglio, Camden Iron & Metal Co., Camden, N. J.

♦

Gus P. Doll, who resigned as president of the Corcoran-Brown Lamp Co., will assume presidency Jan. 1 of the Valvoline Oil Co., with headquarters in Cincinnati. Mr. Doll also resigned as president and director, Perma-Maid Co. Inc., subsidiary of the Electric Auto-Lite Co., and as director, United Lens Corp., Detroit, and Canadian Motor Lamp Co., Windsor, Canada.

♦

W. H. Hammond, sales manager, hoist and body division of Gar Wood Industries Inc., Detroit, has been appointed on the all-star road show publicity committee, manufacturers' division, American Road Builders' association, National Press building, Washington. This committee is promoting national interest in the 1938 road show and convention which is to be held in Cleveland, Jan. 17-21.

♦

Charles O. McIntosh, West Hartford, Conn., was re-elected president of the southern New England chapter, Institute of Scrap Iron and Steel Inc., at its annual meeting, Nov. 3. Other officers elected include: Vice president, Sidney Albert, Albert Bros., Waterbury, Conn.; secretary-treasurer, S. Samuel Kasden, H. Kasden & Sons Inc., New Haven, Conn.

♦

Joseph A. Moskowitz, Samuel Sons Iron & Steel Co., Brooklyn, N. Y., has been elected president, New York chapter, Institute of Scrap Iron and Steel Inc. Other officers elected include: First vice president, George Betten, S. Betten Inc., New York; second vice president, Charles Dreifus Jr., Charles Dreifus Co., New York; secretary, Abe Schiffman, Scrap Iron Baling Corp., Brooklyn; treasurer, Morris Machlin, Machlin Bros. Inc., New York.

DIED:

■ STANLEY T. SCOFIELD, assistant to vice president, United States Steel Corp., in Chicago, Nov. 30. Born in Buckhorn Furnace in the Hanging Rock iron region of southern Ohio, May 20, 1886, he attended Ohio State university and was graduated in 1905 with a B.A. degree. He was in advertising work a number of years, specializing in industrial and financial accounts. At one time he was general advertising and sales promotion manager of Fairbanks, Morse & Co., Chicago. He left that position in 1929 and carried on special steel market research work with the Penton Publishing Co., Cleveland, publisher of STEEL and other business papers. In 1933 he was placed in charge of a newly-formed sales research department of the Steel corporation, with headquarters in Chicago, and on April 1 this year he was appointed assistant to vice president, with headquarters in New York.

♦

H. L. Stinard, 46, vice president and sales manager, Federal Gear Inc., Cleveland, in that city, Nov. 29.

♦

Joseph B. Deischer, 49, for the past eight years manager, Columbia Malleable Iron Co., Columbia, Pa., Nov. 23.

♦

H. G. Kreissl, 53, western division manager, American Radiator Co., in Evanston, Ill., Nov. 29. He had been associated with the company 31 years.

♦

Laurence M. Hartzell, former assistant manager of the Cincinnati offices of the former Carnegie Steel Co. and the Tennessee Coal, Iron & Railroad Co., in Cincinnati, Nov. 24.

♦

George E. Gaddis, 70, for many years credit manager and latterly special representative of sales for American Can Co., New York, Nov. 25, in Summit, N. J.

♦

Arthur Johnson, 73, associated with the International Harvester Co. for 42 years before his retirement in 1929, in Chicago, Nov. 24. When he retired he was head of the experimental department.

♦

M. N. Hurd, 61, president and general manager, Ingram-Richardson Mfg. Co. of Indiana, Frankfort, Ind., in that city, Nov. 26. He had served as general manager since the plant was established 21 years ago.

♦

Dennis F. Cullinan, 69, purchasing agent, Buffalo Bolt Co., North Tonawanda, N. Y., in Buffalo, Nov. 25. Mr. Cullinan had served the Buffalo Bolt Co. and its predecessor continuously for 51 years.

♦

Fred L. Watson, 71, formerly director, Federal Export Corp. and the Cosmopolitan Shipping Co., New York, in Chicago, Nov. 26. For 28 years before his resignation in 1917 he was treasurer, American Steel & Wire Co., Chicago.

LABOR

STEEL EMPLOYMENT DOWN 2.7 PER CENT IN OCTOBER

■ Steel employment in October declined only one-seventh as much as steel production, and total payrolls dropped only half as much as output, according to figures released by the American Iron and Steel institute.

A total of 586,600 was employed in October, only 2.7 per cent below the September total of 602,700 which was within 0.1 per cent of the all-time peak of 603,100 employes at work.

Total steel payrolls were $76,191,000 during the month, a decline of 11.5 per cent from September's $86,161,000. Tonnage of steel ingots produced in October was 21 per cent less than in September of this year.

Both employment and payrolls in October were substantially above the totals in October, 1936, despite a 25 per cent drop in tonnage. Number of employes in October, 1937, was over 10 per cent greater than the total of 531,400 in October, 1936, while October, 1937, payrolls were 7 per cent above the $71,110,000 paid out during October of last year.

From March, the peak of 1937 in steel production, through October, ingot tonnage has declined 35 per cent, but over the same period steel payrolls have declined only 16 per cent and the number of employes has actually increased 1.6 per cent.

PENNSYLVANIA POSTPONES 44-HOUR LAW ENFORCEMENT

Enforcement of Pennsylvania's 44-hour week law was postponed until Jan. 3 after manufacturing industries and other employers had protested they would not be able to comply with its provisions at this time.

Scheduled to go into effect Dec. 1, the law was not enforced and a month's leeway was granted. Attorney General Charles J. Margiotti has urged the act be tested in the courts.

BAR IRON WAGES REAFFIRMED

Card rates for Amalgamated Association of Iron, Steel and Tin Workers employed by members of the Western Bar Iron association will remain unchanged for November and December. The $2.45 card continues for boiling, bar, and 12-inch mills, and a $2.55 card for guide and 10-inch mills. The association and the union report the average price for bar iron has been unchanged since April 1 of this year.

Ten Months Steel Exports Above '29

■ EXPORTS of iron and steel products, excluding scrap, in October amounted to 336,993 gross tons, valued at $23,314,188, the third highest monthly total this year. Tonnage increased 17.2 per cent and value 20.9 per cent over September. Compared with October, 1936, the tonnage was up 156.1 per cent, and value 164.5 per cent, according to the metals and minerals division, department of commerce.

Exports, excluding scrap, in ten months this year not only greatly exceeded the corresponding period of 1936 but also were larger than in the ten months in 1929. Total this year was 2,864,063 tons, compared with 958,807 tons in the 1936 period and 2,032,086 tons in the 1929 period. If the monthly average is continued for November and December total exports for 1937 will approximate 3,436,872 tons and reach the seventh highest annual volume on record. Years exceeding this figure are 1915 to 1920, inclusive.

Scrap exports in October were 185,618 tons, compared with 256,191 tons in September, a decline of 27.5 per cent. Compared with October, 1936, there was a gain of 48 per cent from the 125,357 tons exported that month.

For ten months scrap exports in 1937 totaled 3,520,812 tons, the highest level ever reached in a similar period. In 1936 the ten months total was 1,751,046 tons.

In general October imports show little variation from September and the ten-month total is only slightly lower than in the same period of 1936. October imports were 37,186 gross tons, compared with 37,071 tons in September and 64,509 tons in September, 1936. For ten months this year imports were 481,272 tons, against 552,275 tons in the same period of 1936. Most of this difference is the result of smaller imports of scrap and pig iron.

FOREIGN TRADE OF UNITED STATES IN IRON AND STEEL

Gross Tons

	1937		1936	
	Imports	Exports	Imports	Exports
Jan.	43,063	201,692	50,489	241,564
Feb.	41,628	290,987	43,358	213,802
March	51,805	570,584	56,720	264,337
April	68,197	683,674	49,277	301,987
May	49,050	969,222	59,391	314,950
June	44,771	826,534	59,910	294,951
July	47,012	889,438	47,490	296,738
Aug.	61,489	836,319	60,697	295,341
Sept.	37,071	543,740	59,993	235,784
Oct.	37,186	522,611	64,509	261,882
10 mos.	481,272	6,384,875	552,275	2,709,853
Nov.	.....	.....	61,970	203,297
Dec.	.....	.....	52,584	244,156
Total	.....	.....	666,838	3,162,694

ORIGIN OF OCTOBER IMPORTS

Gross Tons

	Iron ore	Pig iron	Manganese ore	Ferromanganese
Norway	6,086	.....	.....	429
Sweden	36,860	.....	.....	.....
Canada	84	736	.....	119
Cuba	33,000	.....	.....	.....
Chili	152,750	.....	.....	.....
Australia	17,858	.....	.....	.....
Newfoundland	9,000	.....	.....	.....
United Kingd.	30	.....	.....	.....
Iran	49	.....	.....	.....
Gold Coast	.....	.....	13,378	.....
Netherlands	.....	4,119	.....	.....
British India	.....	7,015	1,953	75
Soviet Russia	.....	.....	15,327	.....
Brazil	.....	.....	6,719	.....
Japan	.....	.....	.....	33
Other countries	252,717	.....	.....	.....
Total	500,334	11,870	37,377	656

	Sheets, skelp and sawplate	Structural steel	Steel bars	Hoops and bands
Belgium	111	3,777	986	1,067
France	29	196	113	209
Germany	.....	97	56	32
Netherlands	.....	.....	110	.....
Sweden	1	.....	545	2
United Kingdom	1	20	88	.....
Canada	.....	7	16	.....
Austria	.....	.....	3	.....
Czechoslovakia	.....	.....	11	.....
Total	142	4,097	1,928	1,310

U. S. IMPORTS FOR CONSUMPTION OF IRON AND STEEL PRODUCTS

Gross Tons

Articles	Oct. 1937	Sept. 1937	Jan. thru Oct.'37
Pig iron	11,870	7,911	95,908
Sponge iron	24	230	2,434
Ferromanganese (1)	656	1,898	23,216
Spiegeleisen	222	3,000	17,116
Ferrochrome (2)	20	.....	260
Ferrosilicon (3)	345	504	2,729
Other ferroalloys (4)	.....	.....	52
Steel ingots, blooms	6	.....	130
Billets	335	101	1,821
Concrete reinf. bars	14	149	3,766
Hollow bar and drill steel	295	105	2,159
Bars, solid or hollow	1,928	1,714	39,918
Iron slabs	.....	.....	1
Iron bars	116	286	1,743
Wire rods	1,282	1,658	13,779
Boiler and other plate	9	.....	213
Sheets, skelp, saw plate	142	18	8,485
Die blocks or blanks	5	2	98
Tin plate, taggers' tin and terne plate	15	29	206
Structural shapes	4,097	2,537	68,649
Sashes, frames (5)	.....	.....	.....
Sheet piling	.....	.....	2,161
Rails and fastenings	140	1,134	7,813
Cast iron pipe, fittings	113	658	2,729
Malleable iron pipe ftgs.	.....	117	404
Welded pipe	615	357	8,079
Other pipe	1,166	1,573	28,729
Cotton ties	.....	.....	454
Other hoops and bands	1,310	932	23,237
Barbed wire	2,367	1,624	14,629
Iron and steel wire	308	345	4,131
Teleg. and tele. wire	1	.....	17
Flat wire and strips	288	371	3,102
Wire rope and strand	309	320	3,127
Other wire	99	146	3,085
Nails, tacks, staples	1,010	321	14,047
Bolts, nuts, rivets	69	10	546
Horse and mule shoes	38	64	379
Castings and forgings	288	391	3,979
Total, gross tons	29,502	28,505	403,331
Iron and steel scrap	7,684	8,566	77,941
GRAND TOTAL	37,186	37,071	481,272

(1) Manganese content; (2) chrome content; (3) silicon content; (4) alloy content; (5) formerly included with "Structural shapes."

UNITED STATES EXPORTS OF IRON AND STEEL PRODUCTS

Gross Tons

Articles	Oct. 1937	Sept. 1937	Jan. thru Oct.'37
Pig iron	66,297	64,945	719,666
Ferromanganese and spiegeleisen	3	1	1,629
Other ferroalloys	235	655	2,338
*Ingots, blooms etc.:			
Not containing alloy	35,730	18,909	227,981
Alloy incl. stainless	218	1,778	6,994
Bars, iron	45	138	2,001
Bars, concrete	1,407	1,913	14,405
*Other steel bars:			
Not containing alloy	12,562	9,722	101,722
Stainless steel	9	9	189
Alloy not stainless	466	546	5,332
Wire rods	7,182	7,571	50,750
Boiler plate	2,804	537	8,228
*Other plates, not fab.:			
Not containing alloy	52,105	42,497	318,274
Stainless steel	4	111	143
Alloy not stainless	14	55	2,404
Skelp	3,892	11,830	73,889
Sheets, galv. iron	347	400	4,317
Sheets, galv. steel	7,841	6,794	62,903
*Sheets, "black" steel:			
Not containing alloy	27,273	27,069	233,174
Stainless steel	42	124	1,047
Alloy not stainless	81	992	4,624
Sheets, black iron	1,331	1,372	9,812
*Strip steel, cold-rolled:			
Not containing alloy	2,327	3,868	27,272
Stainless steel	89	49	431
Alloy not stainless	64	39	519
*Strip steel, hot-rolled:			
Not containing alloy	5,388	6,839	66,827
Stainless steel	14	2	116
Alloy not stainless	3	14	515
Tin plate, taggers' tin	36,098	20,815	270,180
Terne plate	332	404	4,424
Tanks, except lined	4,521	3,534	28,965
Shapes, not fabricated	8,650	10,585	117,954
Shapes, fabricated	4,514	3,055	30,580
Plates, fabricated	4,158	1,335	21,480
Metal lath	93	239	1,652
Frames and sashes	158	177	1,409
Sheet piling	1,635	1,296	6,406
Rails, 60 lbs.	8,308	7,124	60,426
Rails, under 60 lbs.	172	1,211	9,366
†Rails, relaying	5,940	1,369	23,319
Rail fastenings	1,703	339	9,394
Switches, frogs, etc.	80	287	1,972
Railroad spikes	450	159	2,676
R. R. bolts, nuts, etc.	112	110	991
Boiler tubes, seamless	2,895	830	12,331
Do welded	212	120	638
Pipe:			
Seamless casing and oil line	7,735	4,363	60,811
Do welded	1,139	573	6,659
Seaml. blk., ex. csg.	975	573	11,036
Pipe fittings:			
Mall. iron screwed	632	284	4,393
Cast iron screwed	250	285	2,657
Pipe and fittings for:			
Cast iron pressure	971	2,293	18,185
Cast iron soil	393	510	6,022
Pipe welded:			
Black steel	1,138	1,684	18,153
Black wrought iron	389	170	4,120
Galvanized steel	957	1,481	15,947
Galv. wrought iron	227	181	1,817
Pipe and fittings:			
Riveted iron or steel	24	8	532
Wire:			
Plain iron or steel	2,507	1,831	29,110
Galvanized	2,061	1,260	20,662
Barbed	2,763	2,434	30,388
Woven wire fencing	231	129	2,809
*Woven wire screen:			
Insect	62	24	523
Other	49	56	895
‡Wire rope	486	694	5,651
‡Wire strand	71	255	1,133
†Card clothing	2	1	45
Other wire	680	673	7,690
Wire nails	704	968	15,044
Horseshoe nails	79	75	766
Tacks	41	35	329
Other nails, staples	279	288	2,585
Bolts, etc.	937	1,065	9,642
Castings:			
*Gray iron, semisteel	352	365	4,885
Malleable iron	263	85	3,850
*Steel, not alloy	246	158	1,920
Alloy incl. stainless	199	125	1,435
Car wheels, tires, axles	1,437	1,673	14,044
Horseshoes and calks	4	2	173
*Forgings, n. e. s.:			
Not containing alloy	801	1,126	7,706
Alloy incl. stainless	105	54	781
Total (gross tons)	336,993	287,549	2,864,063
Scrap, iron and steel	184,547	252,713	3,466,055
Scrap, tin plate	278	622	13,090
†Tin pl. circles, strips, cobbles, etc.	60	2,260	12,720
Waste-waste tin plate	733	596	28,947
Total scrap, gr. tons	185,618	256,191	3,520,812
GRAND TOTAL	522,611	543,740	6,384,875
Iron ore (gross tons)	167,132	163,653	1,229,848

*No comparisons available; †New class; ‡No distinction prior to 1936.

Activities of Steel Users and Makers

■ General Electric Co. recently opened a new plant at Pittsfield, Mass., for research development, design and manufacture of molded plastics products. Plant represents an investment of approximately $1,000,000 and will be the center of most of the company's plastics activities.

Market for plastics in 1938 has been estimated at about $60,000,000 for the whole industry. Demand for these products has increased sharply during the past several years, necessitating expansion of molding plants.

♦

Continental Machine Specialties Inc., Minneapolis, has announced an accomplishment contest for users of the "Doall" contour machine. Basis of award will be unusual accomplishments through the use of this method of machining.

♦

Standard Tube Sales Corp., Maspeth, Long Island, N. Y., has been appointed exclusive sales agent in the East, from Maine to Maryland, inclusive, for the Standard Tube Co., Detroit, manufacturer of seamless and welded steel tubing and boiler tubes.

♦

Ohio Electric Mfg. Co., Cleveland, has named the following representatives for the sale of its fractional size motors: C. D. Blincoe, 2123 Trevillion way, Louisville, Ky.; H. L. Prather, 2708 Essex street, Southeast, Minneapolis; Delavan Engineering Co., Des Moines, Iowa.

♦

Roots-Connersville Blower Corp., Connersville, Ind., has appointed W. E. Burke, 24 Tolman street, Waltham, Mass., to handle sales of pumps in New England, and Warren E. Quillman, 1411 Surrey Lane, Overbrook Hills, Philadelphia, to cover Virginia, Delaware, Maryland, southern New Jersey and eastern Pennsylvania.

The company has also appointed the following as exclusive distributors for turbine pumps in the Buffalo and Erie, Pa., districts; Buffalo Mill Supply Co. Inc., Buffalo, and F. W. Allen & Son, Erie.

♦

Republic Steel Corp., Cleveland, has named the following as distributors of its tubular products: Bomar Gross Inc., Jamaica, N. Y.; Drake Supply Co., Los Angeles; Iowa Machinery & Supply Co., Des Moines, Iowa; Wilkins Pipe & Supply Co., Peoria, Ill., and Woodmanse Mfg. Co., Freeport, Ill.

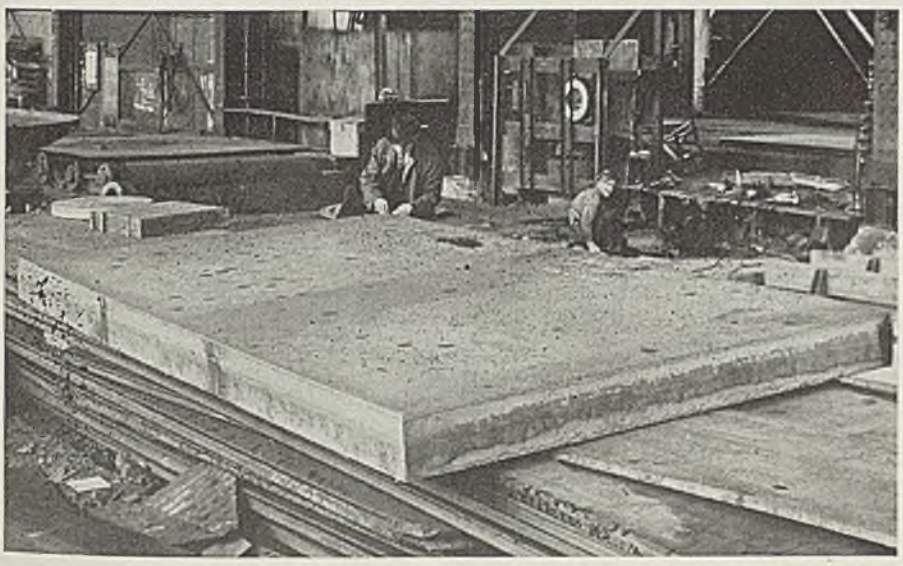
♦

Homestead Valve Mfg. Co. Inc., Coraopolis, Pa., has named the following exclusive representatives to handle the complete line of Homestead quarter-turn, lift-plug, boiler blow-off and protected seat hydraulic operating valves: Charles A. Randorf, Buffalo; Beeler-MacWilliams Inc., Syracuse, N. Y.; W. E. Mushet Co., Portland, Oreg.; Clowe & Cowan Inc., Amarillo, Tex.; Paul R. Winston Co., Dallas, Tex.; Waterworks Equipment Co., Salt Lake City, Utah; Tazewell Buchanan, Richmond, Va.

♦

Republic Oil Refining Co. of Pittsburgh, an affiliate of Plymouth Oil Co., and the Standard Oil Co. of Kansas, have joined in the organization of the Duval Gasoline Co., which will start construction immediately of a gasoline plant at Benevides, Tex., in the Duval field. D. W. Hovey, vice president of Republic Oil Refining, will be president of the new company.

Finished Steel Plate Weighs Nearly 30 Tons



■ Heaviest finished steel plate ever produced by Lukens Steel Co., Coatesville, Pa., measures 182 x 108½ x 10 inches and weighs 58,746 pounds. Rolled recently on Lukens' 206-inch mill, the world's largest plate mill, it will be used in fabricating a bolster plate for a large mechanical press

Tool Steels Marked By Color Spraying

■ Color spraying for marking tool steel bars of various analyses has been adopted by A. Milne & Co., New York. Usually such bars have been marked by labeling or end marking, methods which made identification of bar remnants difficult.

Milne's method is to spray the entire surface of the bar with a color distinctive to a particular analysis. When accompanied by a color chart, the bar may be easily identified, even by an inexperienced worker, no matter how much has been cut from it.

Other advantages claimed are: Bars may be readily identified in the machine shop when sent in from stock and errors prevented; shop men know exactly what grade of steel they are working and give it proper heat treatment; stock clerks can tell at a glance how much steel of various grades they have; short ends of one grade will not be misplaced with other grades.

Convention Calendar

Dec. 6-9 — American Society of Mechanical Engineers. Fifty-eighth annual meeting at Engineering Societies building, New York. C. E. Davies, 29 West Thirty-ninth street, New York, is secretary.

Dec. 6-11 — Exposition of Chemical Industries. Biennial exposition at Grand Central Palace, New York. Charles F. Roth, Grand Central Palace, New York, is manager.

Dec. 7-9—National Association of Manufacturers. Annual convention and congress of American industry at Waldorf-Astoria hotel, New York. Noel Sargent, 11 West Forty-second street, New York, is secretary.

Dec. 8-10—Society of Automotive Engineers. Production meeting at Hotel Durant, Flint, Mich. John A. C. Warner, 29 West Thirty-ninth street, New York, is general manager.

Dec. 9—American Supply and Machinery Manufacturers' association. Zone meeting at Westchester Country club, Rye, N. Y. R. Kennedy Hanson, 1108 Clark building, is secretary-manager.

Jan. 12-14—Institute of Scrap Iron and Steel. Tenth annual convention at Ambassador hotel, Atlantic City, N. J. Benjamin Schwartz, 11 West Forty-second street, New York, is director general.

INTER-DEPARTMENTAL CORRESPONDENCE

To Jim Sholund, Production Manager

From J. Fredericks, General Manager

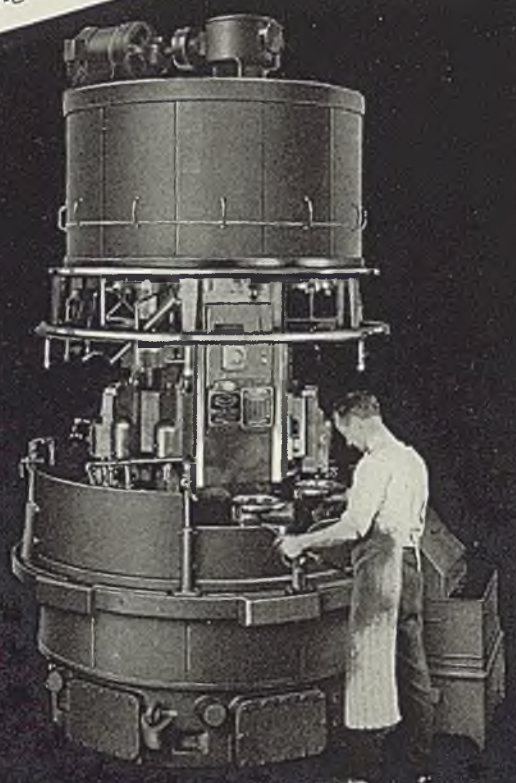
Date 10/1/37

Subject;

Your report on New Equipment recently installed

and from the foregoing combined with your time analysis chart, it can readily be seen that this Bullard Mult-Au-Matic installation is already a Profitable move. I'm glad to know, too, that you feel that it is a key unit in regulating your production schedules.

You have conclusively proved the value of replacement with other Bullard Mult-Au-Matics, and so I suggest that you now make out your formal request for such of these machines as you need; do it right away while the going is good.



It has become increasingly evident that possibilities afforded by the Mult-Au-Matic Method with Standard Tooling will be an important factor in future industrial activity.

As an instance: One concern uses this Method for quantities as low as 50 pieces. They make a time-saving more than sufficient to absorb change-over time from job to job. They lower operating cost and provide greater productive versatility.

Write today for details about The Mult-Au-Matic Method for small and medium quantity production.

THE BULLARD COMPANY
Bridgeport Connecticut

MIRRORS OF MOTORDOM

DETROIT

■ SPURRED by acceleration of Ford assembly lines, the motor industry is showing signs of shaking off the blue funk which has been enveloping it, although recuperation from the Thanksgiving day interruption is slow. Ford has inched assemblies up to about 3000 per day, operating five days last week. Two of the Ford open hearths were put back in service last Monday. Opening of the widened and improved hot strip mill, scheduled for this week, has been delayed one week.

Formal announcement of the new models from the Rouge plant was made last week, with a splurge of advertising space in newspapers and a fanfare of publicity around salesrooms.

For 1938 Ford is emphasizing two separate and distinct lines are available—the standard, powered with either the 60 or 85-horsepower engine, and in three body styles; and the deluxe with 85-horsepower engine and in eight body types. It is reported the bodies on the deluxe line are sufficiently large to be fitted on the new and larger 116-inch wheelbase chassis and 100-horsepower engine being readied for future appearance.

Ford Introduces New Truck

Both new Ford lines feature longer hoods, that on the deluxe showing a nearly vertical front carried in a "V" well down into the radiator grille. Horizontal lines of the grille bars and louvres are echoed in a band of stainless steel carried along the belt to the rear.

In the commercial field, Ford is announcing a new 1-ton truck available in several body types. This model was introduced to permit wider use of the 60-horsepower engine in trucks. The truck line is distinguished by a redesigned radiator grille aimed to give the front end a more massive appearance.

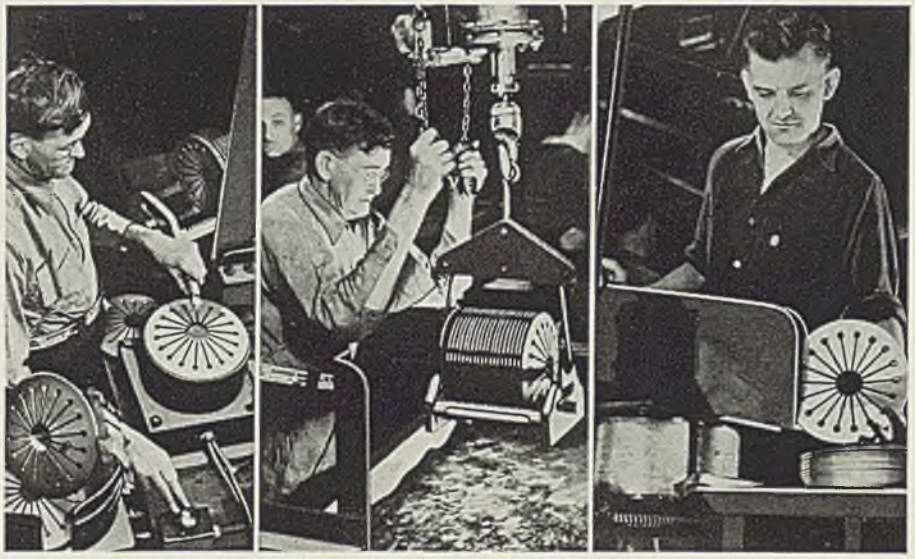
Sample cars have been shipped to dealers by Plymouth on its 1938 line of commercial cars, available in three different models on 116-inch wheelbase chassis. Frame side channels are 6 inches deep and five cross members are used for extra strength. All bodies and cabs are of solid steel construction.

BY A. H. ALLEN
Detroit Editor, STEEL

The truck and commercial car picture generally is considered unusually bright, despite reports of a few cancellations of orders in recent weeks. Registrations of motor trucks have reached a new high of 4,023,606, requiring a force of some 3,000,000 men in their operation. Nearly $600,000,000 is grossed annually by for-hire trucking concerns, while some 48,000 communities depend solely on motor trucks for transportation.

From all present indications this year will set a new record high in truck production, estimates putting the total in excess of 900,000. Factory sales for the first nine months of the year were 764,176, or 12 per

As Clutch Spring Member Is Tested for Flaws



■ Showing three steps in testing Chevrolet's new diaphragm clutch spring member. At left, an operator is magnetizing one of the stamped spring steel disks by placing it momentarily in a strong magnetic field. Center, a rack of the magnetized springs is being lowered into a bath containing fine iron filings in suspension. When the rack is removed, the springs are washed and inspected by the operator at the right. Any fine cracks in the steel will be indicated by adherence of the iron filings. It is essential that any traces of fatigue failure be detected before installation, since in service the member must flex with each operation of the clutch pedal

MIRRORS OF MOTORDOM

cent ahead of 1929, the record year thus far.

Automobile company export managers are talking a good year for 1938, confidently expecting a continuation of the lively sales experienced this year. Sales for this year likely will top 630,000 units, a gain of 24 per cent over last year, and three times the volume of 1932. One-seventh of the export business in automobiles is done with Canada. Second place goes to the Union of South Africa and following, in order, are Belgium, Argentine, Mexico, Japan, Sweden, the United Kingdom, France and Brazil.

■ GOVERNMENT figures on automobile production in the United States and Canada for October show a total of 337,979, an increase of about 107,000 units over October of last year. Ten-month total for assemblies this year is 4,292,992, compared with 3,691,517 in the same period last year.

November and December output is going to fall considerably behind the pace set last year, estimates placing the November total at 350,000 and December at 300,000. This year-end slip probably will mean the total for the year will fall just short of the 5,000,000-mark which forecasters were looking to see broken this year. But in spite of a little stumbling at the goal line, the motor industry is chalking up its second best year in history.

Bulwarking the assembly picture for the next eight weeks will be a heavy schedule by Ford. Approval has been given to material buys on the basis of 250,000 assemblies between Dec. 1 and Feb. 1 which is pretty close to peak production at the Rouge. For material requiring in excess of 60 days for fabrication, Ford schedules now indicate release of an additional 200,000 cars after Feb. 1. Of course, the trend of sales will have an important bearing on these plans, but right now there is no lack of enthusiasm in the Ford organization. And those who toured Ford salesrooms last Tuesday evening on the occasion of the formal debut of the new cars reported large crowds at each branch despite the unseasonably cold weather. Whether buyers or merely curious cannot be determined as yet, but at least the crowds came.

Automobile Production

Passenger Cars and Trucks—United States and Canada
By Department of Commerce

	1935	1936	1937
Jan.	300,335	377,244	399,634
Feb.	350,346	300,810	383,698
March	447,894	438,943	519,177
April	477,059	527,625	553,415
May	381,809	480,518	540,357
June	372,085	469,368	521,139
July	345,297	451,206	456,909
Aug.	245,075	275,934	405,064
Sept.	92,728	139,820	175,620
Oct.	280,316	230,049	337,979
10 mos.	3,292,944	3,691,517	4,292,992
Nov.	408,550	405,799	*350,000
Dec.	418,317	518,958	.....
Year	4,119,811	4,616,274	.....

Estimated by *Ward's Automotive Reports*

Week ended:

Nov. 6	89,770
Nov. 13	85,325
Nov. 20	85,757
Nov. 27	†58,955
Dec. 4	86,848

	Week ending Dec. 4	Nov. 27
General Motors	42,075	24,075
Chrysler	20,700	16,020
Ford	13,070	7,960
All others	11,003	†10,900

*Estimated †Revised

■ OTHER producers are paring schedules for December with monotonous regularity, and layoffs are extending from plant forces to office and executive employes. Purchasing and planning departments are slicing their personnel, and many of those taken on during the last year or two are again "at liberty."

The difficulties of seniority are complicating some of these layoffs and are causing some heavy worrying by those still at work, especially where, for example, transfer men from shop to office is taken into consideration. One typical question being asked is: Who comes ahead of whom in a department where one group of men has been in the department for, say, six years, and another group has been in the department for only one year, but the latter is made up of shop men who have service records of perhaps 15 or 20 years?

Packard closed practically all departments last Wednesday and Thursday for the annual inventory period. Usually this period has been for a full week, but this year it was attempted to complete the work in two days. One visitor to the plant last week said he never in his life saw so many men busy on inventory in one plant.

General Motors reports dealer stocks are 85,000 ahead of the same time last year and retail deliveries two-thirds the volume of last year.

Chrysler divisions have made sharp reductions in schedules and reports are heard of downward adjustment in certain wage rates. Notes attached to Chrysler scrap lists for December pointed to the fact appreciable reductions in tonnages could be expected.

Graham appears to be meeting with good sales of its new design and is taking material and parts as fast as they can be delivered. Production is being set up on the basis of 1800 cars monthly, and a number of minor "bugs" are being ironed out of the manufacturing setup as lines are becoming geared to this pace of 80-90 cars per day.

■ REACTIONISTS in the labor contingent appeared to be fairly well under control after Homer Martin, UAW president, announced the appointment of Charles Madden as "dictator" of the Pontiac local. It develops Martin was besieged by petitions from Pontiac and Fisher Body employes who wanted to return to their jobs without delay, declaring the strike had been engineered by a small minority of recalcitrant unionists.

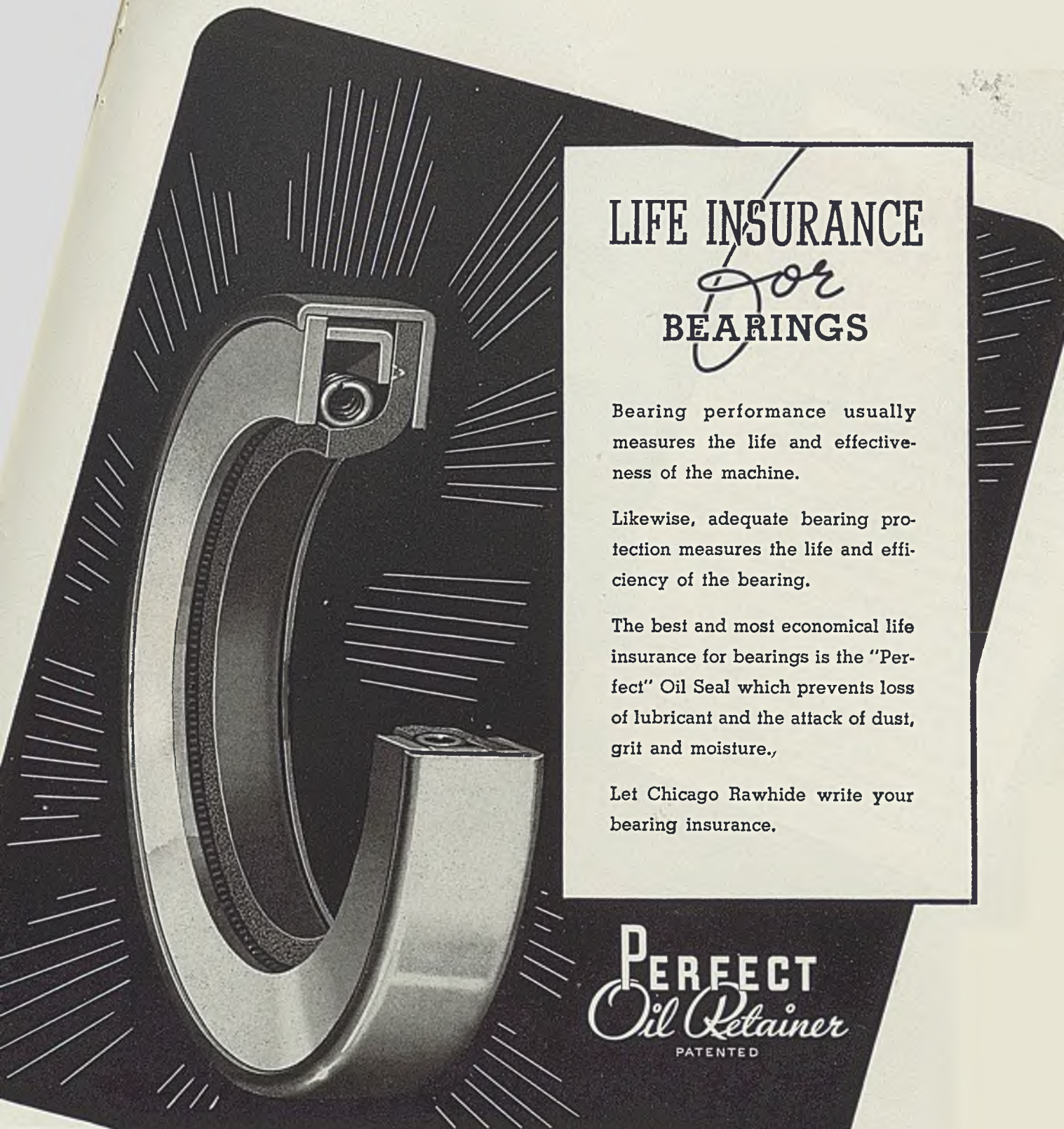
In proposing to reopen negotiations between General Motors and the UAW, the latter has suggested restrictions on both its members and management representatives in respect to "wildcat" strikes. The UAW would guarantee resumption of production within 24 hours of the start of any disturbance, would institute fines and other punishment for supervisory officials proved to be "instigators" or 'fomenters" of wildcat sitdowns.

Three hundred sitdowners late last week evacuated the plant of the Bundy Tubing Co. pending negotiations with the management.

■ NEW $500,000 plant of Champion Spark Plug Co. in Middlesex, England, has been placed in operation and expects to turn out 6,000,000 plugs in the next 12 months.

Hudson has announced seven new commercial cars for the 1938 season, all on a 6-cylinder Terraplane chassis with ¾-ton capacity rating.

Dave R. Wilson, president of Willys, states that out of the 18,000,000 owners of used cars in this country, 14,000,000 have incomes under $40 per week.



LIFE INSURANCE for BEARINGS

Bearing performance usually measures the life and effectiveness of the machine.

Likewise, adequate bearing protection measures the life and efficiency of the bearing.

The best and most economical life insurance for bearings is the "Perfect" Oil Seal which prevents loss of lubricant and the attack of dust, grit and moisture.,

Let Chicago Rawhide write your bearing insurance.

PERFECT
Oil Retainer
PATENTED

CHICAGO RAWHIDE MANUFACTURING CO.

1308 ELSTON AVENUE, CHICAGO, ILLINOIS

59 Years Manufacturing Quality Mechanical Leather Goods Exclusively

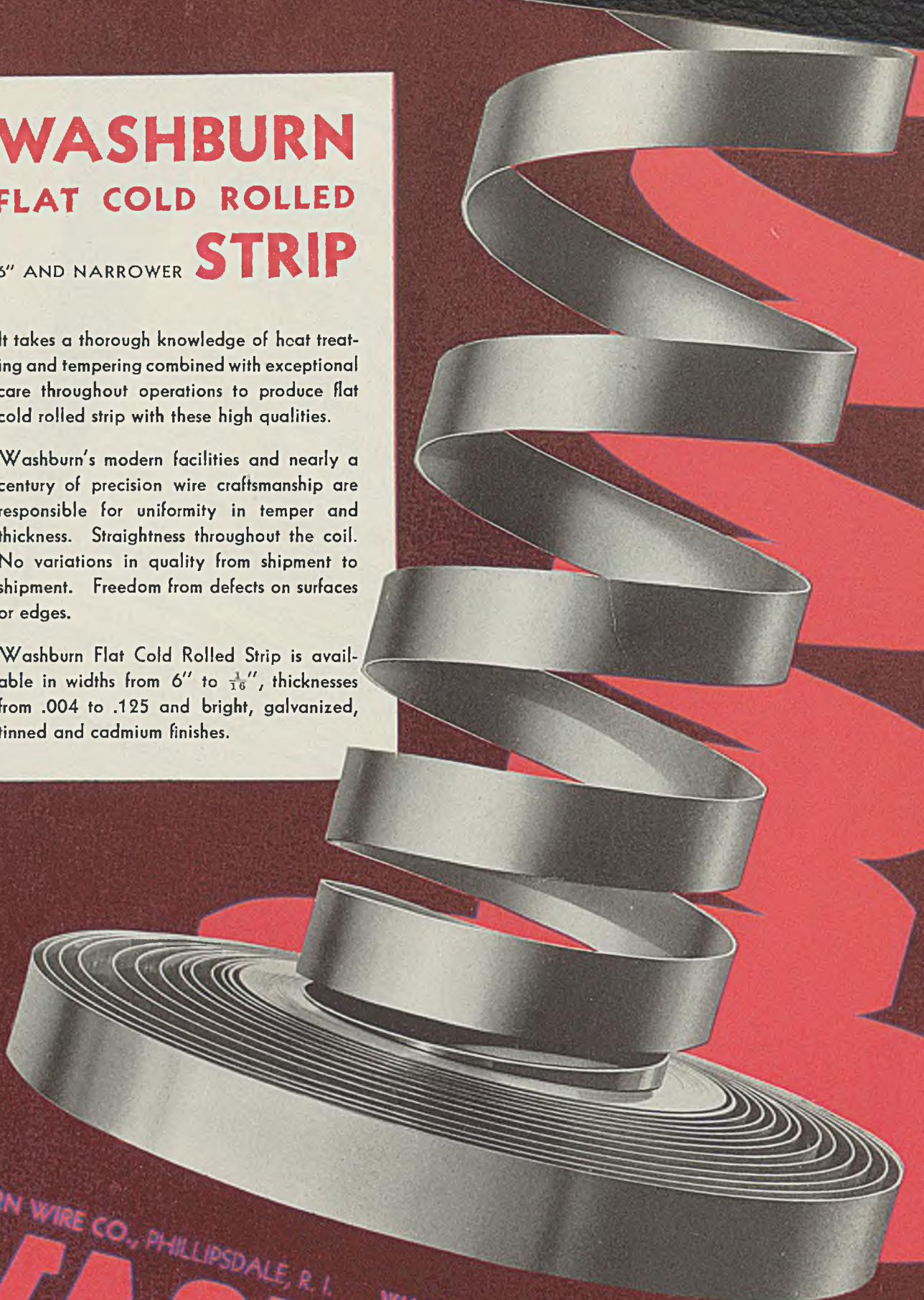
PHILADELPHIA CLEVELAND NEW YORK DETROIT BOSTON PITTSBURGH CINCINNATI

WASHBURN
FLAT COLD ROLLED
6" AND NARROWER STRIP

It takes a thorough knowledge of heat treating and tempering combined with exceptional care throughout operations to produce flat cold rolled strip with these high qualities.

Washburn's modern facilities and nearly a century of precision wire craftsmanship are responsible for uniformity in temper and thickness. Straightness throughout the coil. No variations in quality from shipment to shipment. Freedom from defects on surfaces or edges.

Washburn Flat Cold Rolled Strip is available in widths from 6" to $\frac{1}{16}$", thicknesses from .004 to .125 and bright, galvanized, tinned and cadmium finishes.



WASHBURN WIRE CO., PHILLIPSDALE, R. I.

WASHBURN WIRE CO., Inc., NEW YORK CITY

WASHBURN

CLEAN, UNIFORM BILLETS — STRIP — RECTANGULAR
TEMPERED AND UNTEMPERED FLAT AND

WINDOWS OF WASHINGTON

BY L. M. LAMM

Washington Editor, STEEL

WASHINGTON

■ LAST WEEK President Roosevelt sent two special messages to congress; one dealing with the housing situation and the other with roads and highways.

In the housing message the President made a plea for co-operation on a housing schedule which he hoped would pep up building in this country, with an ultimate program of some sixteen billion dollars in the next five years.

He requested of congress that it amend certain present laws to make for easier money for private building and called upon both the building industry and labor to decrease wages and products so that such a program could go forward.

The President stated in his message that to help attain the end of immediate boom in the building industry "it is my intention to initiate a series of conferences with representatives of industry, labor, and finance, with a view to giving housing construction a fresh start in the coming building year and averting a recurrence of the conditions that brought about the reverses of the present year. If these groups will co-operate in this effort, as I believe they will, the result cannot but work to the advantage of our whole national economy."

Ready-Made Bills a Novelty

In sending his message to congress the Chief Executive included a bill which he suggests will do the work. Incidentally, it is interesting to recall that up to the present administration no president ever sent a written bill to congress asking that it be rubber stamped. But under present conditions, that has come to be such an every day occurrence that no ever thinks about it.

The bill and the message proposed a six point legislative program designed to promote construction of some three or four million units during the next five years.

Proposals made in the message seem to represent the limit to which government can go in encouraging private construction, and, if approved by congress, will permit the building of homes on the most favorable financial terms in the history of the country. The government's contribution to the revival of construction activity, as the President sees it as outlined in his message, should take the form of enlarging the national housing act of 1934.

The highway message has stirred up a hornet's nest at the capitol. According to reliable information the federal government is now granting some $250,000,000 a year for highway purposes. Under the plan proposed by the President nothing would be granted for 1939 and in 1940 the sum would be cut to $125,000,000.

It is natural that members of congress from states whcih have been making use of this money are much put out about the message. They are really in open revolt and some congressional leaders say that a bill embodying such a plan will never be passed. Incidentally, for some unknown reason Mr. Roosevelt did not see his way to submitting a proposed bill with the highway message.

The President in his message on the subject said that "in view of the large amounts which have been contributed by the federal government, particularly during the past five years, for construction of public roads, and because of the necessity for taking definite steps to reduce expenditures for the purpose of securing a balanced budget," I recommend so and so.

TO STUDY STEEL HOUSE PROTECTION FROM RUST

In connection with the low cost housing construction study being made by the bureau of standards as the result of a recent congressional appropriation, it has just been learned that a specific study is to be made of the use of steel in such construction.

It is proposed, it is understood, to limit the study of the surface treatment of steel for corrosion prevention largely to painted structures. The purpose of the investigation, it is explained, is to obtain, from various available sources, such information relative to the painting of sheet steel as appears to be of value to those interested in the construction, financing, or maintenance of low cost steel houses.

It is understood that particular attention will be paid to:

1. The extent of the use of sheet steel, as such or as structural units fabricated from sheets, in low cost houses.
2. Method of fabrication and installation of structural units with their possible effects on subsequent corrosion, including the effects of different materials in contact, and the effect of damage to paint or priming coats applied in the shop by subsequent operations such as welding or other methods of assembly.

Seeks Corrosion Data

3. The tendency for corrosive conditions to obtain in service, particularly the conditions that favor corrosion by condensed moisture.
4. Methods of preliminary surface treatment and painting in general use for prefabricated steel units and related structures, with particular reference to the initial protection of enclosed areas.
5. Cost of painting as compared to total cost of house including initial cost and upkeep.
6. Data on the durability of painted steel structures under various conditions of service including types and locations of failures when available.

In connection with this study the bureau has invited interested industrial groups to co-operate in the program by exchanging informa-

tion on problems connected with the corrosion and protection of sheet steel used in building construction. Offers of manufacturers to submit specimens of recommended material to be included in laboratory tests will receive consideration, the bureau officials state.

WAGE-HOUR BILL FORCED OUT FOR HOUSE ACTION

Pressure behind the wages and hours bill has forced it to the floor of the house for action Dec. 13. This was something of a surprise as the refusal of the rules committee to act, and opposition to the present bill by the A. F. of L. had made it seem doubtful if consideration would be possible at this session.

STEEL COMMON LABOR WELL PAID, STUDY SHOWS

A study has just been completed by the bureau of labor statistics of the hourly entrance rates of common unskilled laborers in the iron and steel and 19 other industries, as indicated in July of this year.

The study shows, that in the iron and steel industry the average hourly entrance rate for the United States was 58½ cents, in the North it was 59½ cents and in the South 53.4 cents. In this same industry the percentage of common laborers receiving less than 40 cents per hour was 0.9 in the whole United States; 0.4 in the North and 3.4 in the South.

RAILROADS PROMISE HUGE SPENDING FOR EQUIPMENT

Hearings were begun last week before the interstate commerce commission in connection with the flat 15 per cent freight rate increase asked by the railroad carriers. Hearings were also begun before the federal trade commission in its case against cement manufacturers.

The steel industry will be much interested in the cement case because the multiple basing point is one of the principal questions involved in the complaint and it has been stated by authorities at the commission that the decision in the cement case will be used as a precedent for later action in the steel industry if a supporting court decision is obtained on final adjudication.

At the interstate commerce commission the hearings last week covered testimony of the carriers. Further hearings will be held in various parts of the country. The commission is making every effort to expedite this hearing.

Most of the leading railroad heads of the country told the commission that it will have to do something to bring the roads out of their financial difficulties. Also there was talk about the high price of railroad supplies, such as rails, cars and other products using considerable steel.

Ralph Budd, president of the Chicago, Burlington & Quincy, told the commission that "the railways might well replace their two million cars in the next two decades through the purchase of 100,000 new cars a year, at an annual expenditure of $300,000,000. They also might advantageously purchase 2000 new locomotives annually for the next several years, at a yearly cost of another $300,000,000, while a like sum could be spent to good purpose for other physical improvements to the railway plant. Such a program", he told the commission, "of capital expenditures, however, calls for the restoration and stabilization of railroad credit, which, in turn, can be brought about only by adequate net earnings."

Mr. Budd told the commission also, in talking of needs of the roads for improving their equipment that "improvements that have been made in track materials, particularly rail, afford the railroads an opportunity to spend large amounts of money for track betterments upon which they could show a very satisfactory return. One of the cheering things about the railway outlook is the opportunity which lies immediately before us to spend large amounts of money for units of plant which in each case would be far superior to those which have been retired or would be replaced."

Speaking for his own road only, Mr. Budd told the commission that "some new locomotives should be built every year; there should be some improvements made in our shops in the way of machinery and tools; and, of course, we will have to make rather extensive renewals of rails."

F. E. Williamson, president of the New York Central told the commission that "the doors of railroad purchasing agents' offices, now closed except for the buying of current necessities, will be thrown open and employment in all branches of railroad service will doubtless increase if railroads are permitted to earn adequate revenues."

ROPER SAYS TRADE PACTS AID TO FOREIGN TRADE

In his annual report to congress, Secretary of Commerce Roper, discussing the reciprocal trade agreement program, says that "from the facts at hand, it is evident that the trade agreements program is a real stimulus to the increase of our foreign trade, exports as well as imports.

"This actual increase in our foreign trade," he continued, "due to the trade agreements program, has caused increased employment and thus contributed to the prosperity of the United States. Present exploratory studies by the department may lead to the conclusion of additional agreements, which should serve to stimulate further the growth of our foreign trade."

Reference is also made to the business advisory council in which Mr. Roper points out that "the purpose of the council was to make available to the department of commerce the careful judgment and practical experience of industrial leaders on matters affecting the relation of the department and business."

Mr. Roper states that "in view of the past record and the present vigorous activity of the council, which still retains a full and representative membership, the department is confident of its continued invaluable assistance."

INDUSTRIAL COAL PRICE HIGHER; DOMESTIC DOWN

The national bituminous coal commission last week published prices for all bituminous coal, to become effective Dec. 16, in which prices established for industrial and railroad fuel are higher than heretofore and for domestic sizes generally lower than average prices for such grades in the past.

It was stated by the commission that industrial prices were increased to bring them into line with the cost of production, as provided for in the bituminous coal act of 1937.

At the same time the commission made public marketing rules and regulations which will govern sales of all bituminous coal in districts 1 to 13 inclusive, comprising all producing areas east of the Mississippi and the state of Iowa. This area produces more than 80 per cent of all bituminous coal mined in the United States and Alaska. These new rules also are effective Dec. 16.

LABOR SEES RECESSION AS TEMPORARY PAUSE

This fall's unexpected recession in business activity follows the longest production rise since 1929, a time when some of the more urgent depression shortages were in part made up and when wholesalers and retailers, for the first time since the depression, laid in large supplies of goods against the future, says the A. F. of L. in its monthly survey.

The federation states that "the present decline appears to be a temporary check in our progress toward larger production volumes and higher standards of living, while business waits for accumulated supplies to be worked off. Whether it will be of long duration depends to an important degree on our ability to maintain buying power close to its present levels, so that inventories of clothing and household supplies may be quickly consumed and a strong market provided for durable consumer goods such as homes and automobiles."

Law Will Fail If It Penalizes Innocent Employers and Employes

PROPOSALS for wage and hour legislation such as those now confronting congress deserve careful consideration from all angles. Too often laws of this type are passed hurriedly in the heat of a reform movement. Under such circumstances persons who discuss the pending legislation from the standpoint of how it will work in practice often are characterized by reform politicians as obstructionists or reactionaries and their counsel is discounted.

In the present case no harm can come from a thorough-going study of the practical result of the proposed bill. Its sponsors desire to legislate out of existence extremely low wages and unreasonably long periods of work. Few individuals in any walk of life disagree with this objective. Many, however, entertain grave doubts as to whether the bill, as drafted, will work out as planned. Judging from extensive experience with similar laws, the result may easily defeat the purpose for which it was written.

Some State Laws Harass Best Employers Without Correcting Objectionable Practices of Minority

Several states have passed labor laws limiting the hours of work and prescribing certain regulations pertaining to conditions of employment. In almost every case, these laws, like the proposed federal law, were designed to outlaw notoriously bad conditions existing in a very small minority of business establishments.

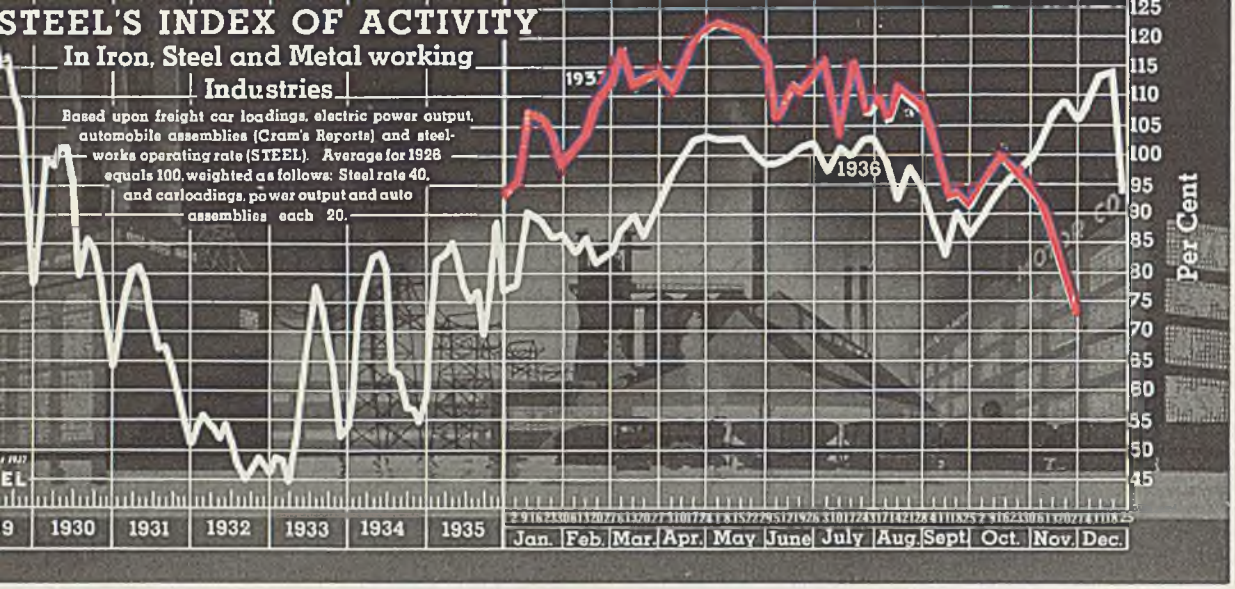
In practice these laws, largely because of the inflexibility of some of their provisions, have inflicted unnecessary hardships upon thousands of employers whose standards of wages, hours and conditions of employment for many years have been far superior to the standards established by the new legislation. At the same time, it is extremely doubtful whether the laws are being observed by many small employers, some of whom have less than a dozen employes and maintain low wage scales, long hours and deplorable working conditions.

Congress Should Profit from Mistakes of States; Draft Law To Curb Culprits, Not To Hit Majority

The inflexibility of these laws makes it more difficult for good employers to employ individuals at the high standards they have been trying to maintain. Employes in these above-average establishments resent the restrictions, feeling that they detract from the security of their jobs.

Washington should take care that it does not repeat the mistakes of some of the states. The proposed federal law will hamstring employers who do not need regulation, probably will be only partly effective in correcting admitted evils in a minority of plants, and will place additional hardships upon persons seeking employment

If we must have a wage and hour law now, draft it to affect only the culprits. Do not permit it to add to the burdens of above-average employers.



STEEL'S index of activity declined 12.1 points to 72.8 in the week ending Nov. 20

Week ending	1937	1936	1935	1934	1933	1932	1931	1930
Sept. 18	95.0	90.1	69.4	58.1	68.2	47.8	65.6	86.2
Sept. 25	93.0	86.2	68.5	89.3	66.9	48.0	65.2	83.8
Oct. 2	96.0	89.0	73.3	54.7	67.4	47.7	62.4	81.0
Oct. 9	99.0	83.4	74.9	56.4	66.0	48.4	61.5	79.4
Oct. 16	101.8	95.9	77.4	58.2	60.9	48.7	57.9	77.5
Oct. 23	97.5	97.1	82.4	56.3	58.0	48.7	58.2	78.8
Oct. 30	95.7	99.1	86.4	55.0	52.3	48.4	59.2	72.5
Nov. 6	92.4	102.1	88.4	54.9	50.7	48.5	56.0	71.5
Nov. 13	86.5	107.9	88.8	55.2	52.6	47.7	55.5	73.0
Nov. 20	84.9†	109.9	90.9	54.4	55.4	49.2	54.8	71.0
Nov. 27	72.8*	105.2	86.0	51.9	49.7	47.5	51.4	66.9

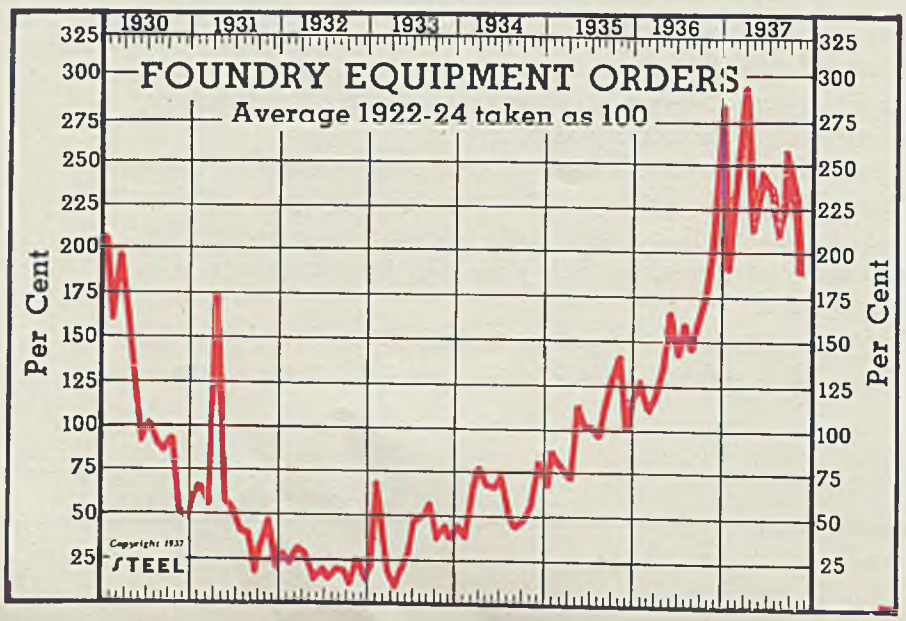
*Preliminary. †Revised.

Activity Tending Toward Stability at Lower Levels

RECORDS of business for the week ending Nov. 27 are distorted somewhat by the interruption to activity occasioned by the observance of the Thanksgiving holiday. Due partly to this factor, and to a greater extent to a sharp dip in automobile production, STEEL'S index of activity declined from 84.9 to 72.8.

This is an abnormally severe drop for the week embracing Thanksgiving day. In the corresponding week in 1929 the recession was from 87.8 to 80.9; in 1930 from 71.0 to 66.9; in 1931 from 54.8 to 51.4; in 1932 from 49.2 to 47.5; in 1933 from 55.4 to 49.7; in 1934 from 54.4 to 51.9; in 1935 from 90.9 to 86.0 and in 1936 from 109.9 to 105.2. Thus the sharpest recession in Thanksgiving week in the previous eight years was 6.9, or slightly more than half of the loss in the current week.

Signs are beginning to appear to indicate that the downward trend line is leveling out. The steelworks rate in the week ending Dec. 4 will show only a moderate change from that of the preceding week. The automobile situation, recently affected by spasmodic labor trouble and the postponement of Ford production schedules, now seems headed toward stabilization, but at lower levels than anticipated prior to the shows. Automobile output for the week ending Dec. 4 (p. 38) should reflect this trend.

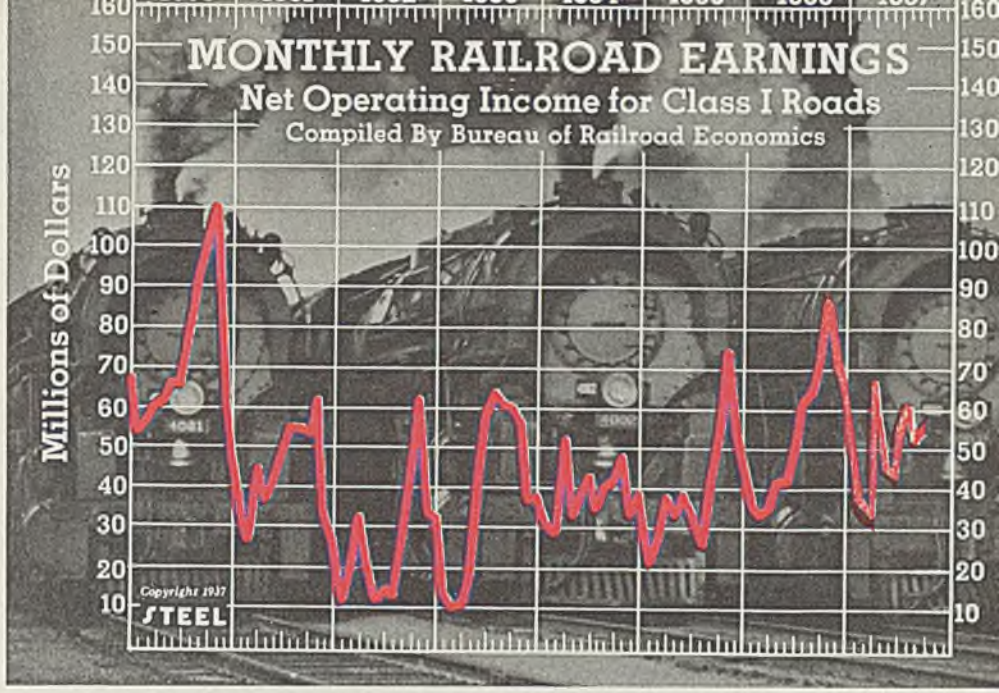


	Per Cent			
	1937	1936	1935	1934
Jan.	190.9	127.0	76.6	37.2
Feb.	249.5	110.4	75.7	65.8
March	294.2	115.0	69.4	75.4
April	208.3	134.0	113.2	67.9
May	242.0	165.4	100.7	66.5
June	228.2	141.4	100.2	70.4
July	204.0	159.6	94.0	50.7
Aug.	257.5	144.8	113.0	43.1
Sept.	231.8	161.0	128.5	46.4
Oct.	185.2	173.8	140.0	55.3
Nov.	.....	200.4	100.4	80.4
Dec.	.....	283.3	118.1	66.9

BUSINESS TREND

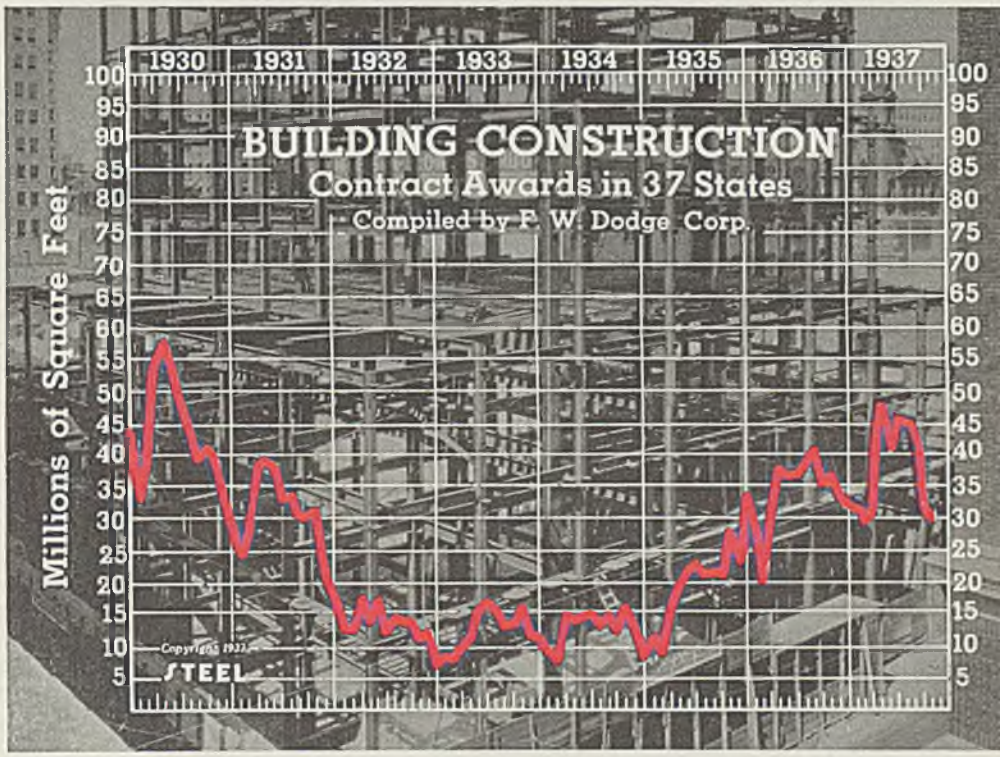
Railroads Earn 1.96 Per Cent On Investment in September

	1937	1936	1935
Jan....	$38,436,679	$35,728,532	$21,934,645
Feb....	38,358,638	33,594,718	26,296,411
March.	69,379,328	35,205,513	38,129,871
April..	47,807,447	41,493,455	34,708,718
May...	43,662,959	41,797,047	39,598,511
June .	58.939,875	50,312,580	34,102,703
July...	60,527,576	61,773,765	26,919,343
Aug...	50,307,881	64,680,717	42,156,706
Sept...	59,304,948	70,096,166	57,349,265
Oct....	.....	89,851,409	75,454,501
Nov...	.....	72,410,571	54,224,290
Dec....	.....	70,519,601	46,020,695



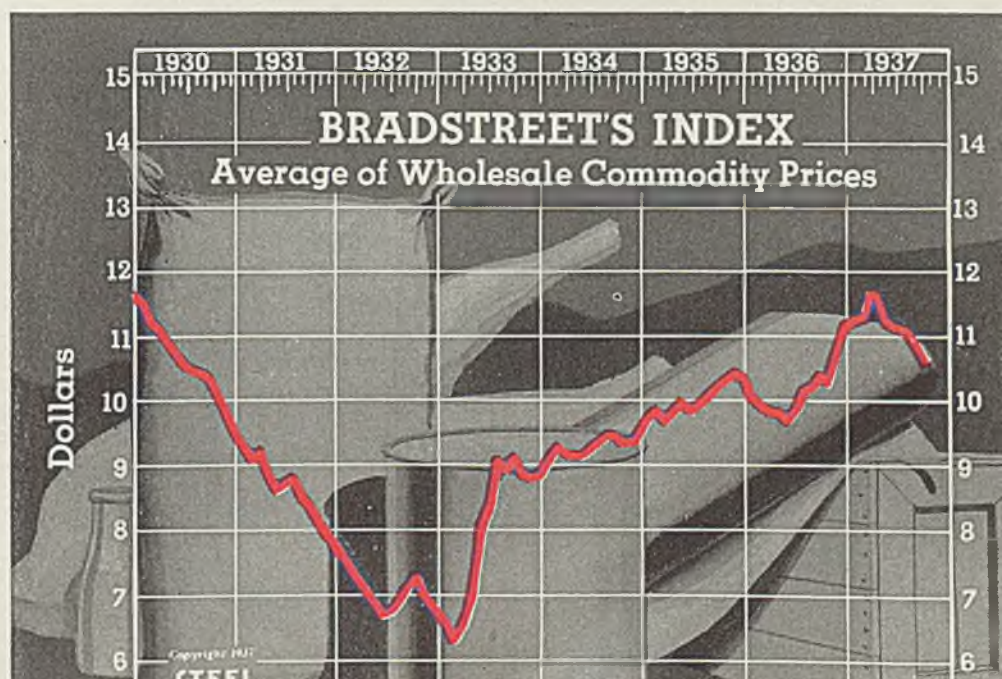
October Building Awards Shows Moderate Decline

	Square Feet		
	1937	1936	1935
Jan....	33,470,000	27,053,300	11,245,100
Feb....	29,942,100	20,856,700	9,670,300
Mar.	41,567,800	31,257,900	15,845,300
Apr....	48,396,100	37,490,200	19,917,300
May...	40,287,900	36,362,100	22,276,200
June .	46,393,100	36,883,900	22,878,000
July...	45,812,600	38,762,500	21,565,900
Aug...	42,077,100	40,285,100	21,545,400
Sept...	32,364,300	35,448,000	21,365,700
Oct...	30,266,100	36,718,900	27,775,900
Nov.	.....	34,947,500	24,120,700
Dec.	.....	33,632,600	33,441,900

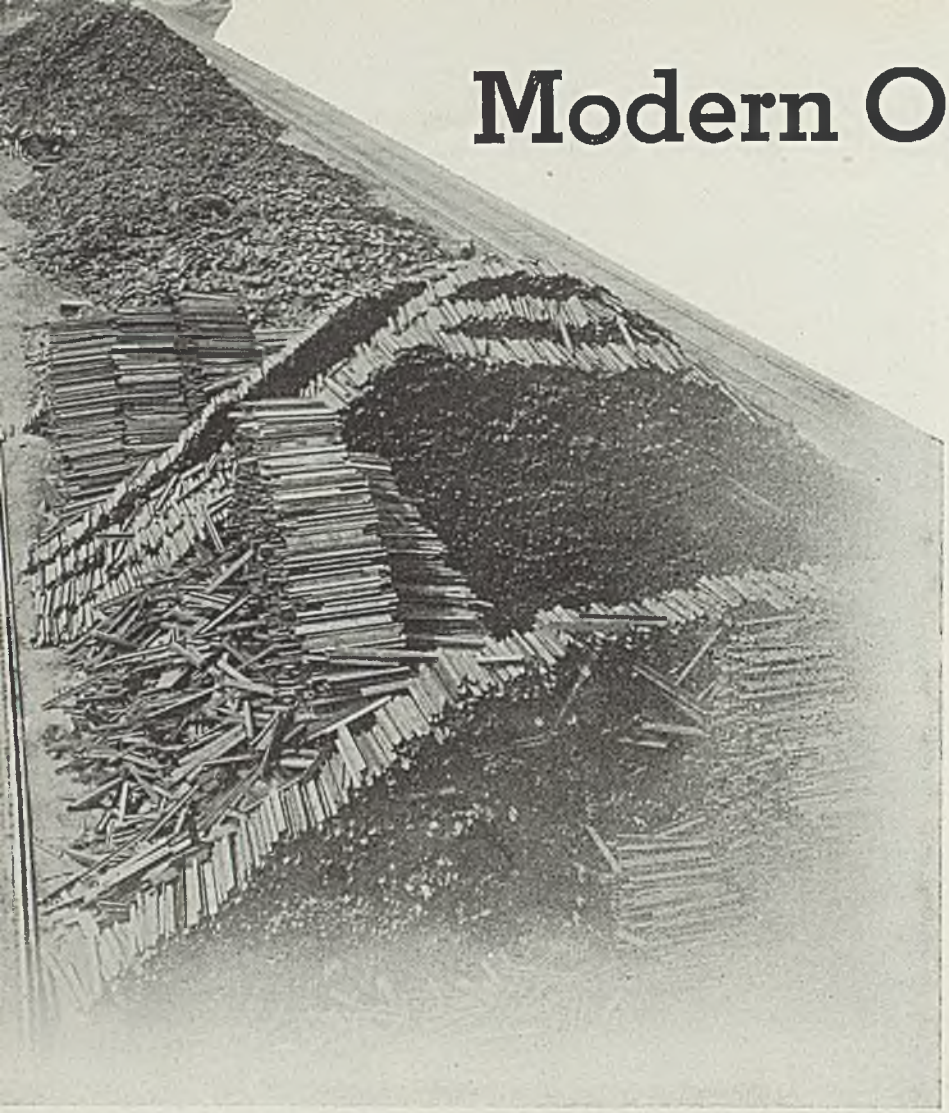


Commodity Price Index Shows Slight Loss on Oct. 1

	1937	1936	1935	1934
Jan. 1.....	$11.13	$10.36	$9.49	$9.01
Feb. 1.....	11.23	10.02	9.78	9.26
Mar. 1.....	11.34	9.92	9.79	9.17
Apr. 1.....	11.81	9.85	9.66	9.16
May 1.....	11.51	9.81	9.79	9.14
June 1.....	11.33	9.73	9.90	9.24
July 1.....	11.27	9.85	9.84	9.32
Aug. 1.....	11.19	10.14	9.91	8.48
Sept. 1.....	10.96	10.19	10.00	9.45
Oct. 1.....	10.85	10.27	10.17	9.27
Nov. 1.....	....	10.22	10.28	9.29
Dec. 1.....	....	10.78	10.40	9.49



Modern Open Hearth



Raw material for fine steel castings —piles of railroad scrap and pig iron in the yards of the American Steel Foundries, Granite City, Ill.

■ THE FIRST open hearth steel melting furnaces were characterized by improper design, insufficient steel binding, lack of steel jacketing and insulation, poor and unsuited refractories, and required the invention and application of appropriate control through which operating data could be obtained and applied for systemizing the procedure to be followed by a better selected and more educated operating personnel. The operations carried on in that period were further branded with long working days and general inefficiency of both man and equipment.

In the intervening years great improvements have been made in the general technique followed in the production of open hearth heats. This technique has been developed through the modification of furnace design and through the use of devices for accurately knowing the existing conditions during the melting and refining periods.

The following details pertain to the current basic open hearth steel refining practices in use at the Granite City works of the American Steel Foundries for the production of steel for castings.

The first basic open hearth heat as produced at the Granite City works was in 1894. Subsequently, six 25-ton furnaces were built and employed till 1931 when the cumulative improvements in open hearth practice dictated complete rearrangement of that department.

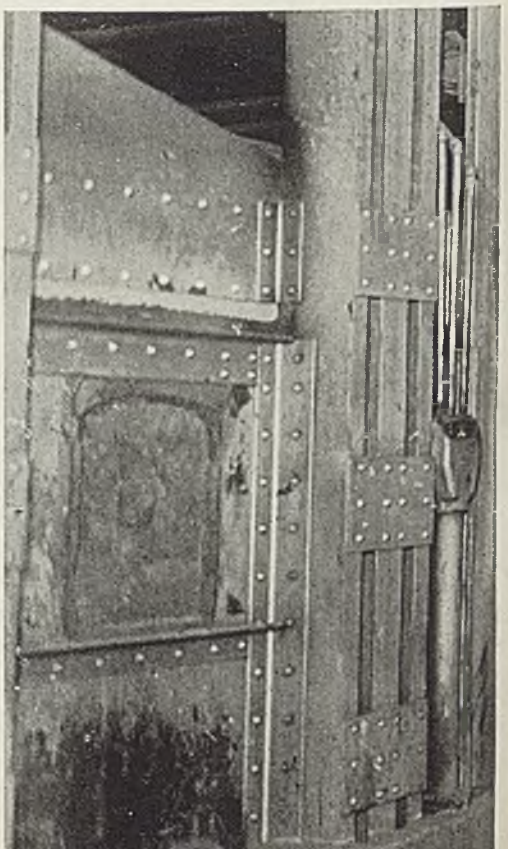
There are three basic furnaces in use at the present time into each of which 30 tons are generally charged and refined. The furnaces are known as the Stevens type and are encased with steel plate on the outside, with the exception of the roof. Between the plate and the brickwork, insulation is employed.

Assuming the furnace is complete mechanically and structurally, a small wood fire is started in the stack and in front of each furnace door with the reversing valves set in the center to pull both ways to the stack. Care must be taken that the flames do not come in contact with the walls or the roof of the furnace.

As the furnace dries out, the fire is built up to cover the furnace bottom and continued about 72 hours. Fuel oil must not be turned on until the walls begin to show a reddish color. At the time fuel oil is turned on the furnace, the consumption should be held as low as possible with a maximum consumption of 50 gallons per hour.

Care must be taken that the furnace bottom is clean when the fuel oil is turned on the furnace. When the fuel oil is turned on the furnace, the reversing valves are taken off center, and the furnace is reversed after one hour. The time of reversals is gradually cut down until at the end of about 48 hours the time of reversals is fifteen minutes.

It is important that the temperature of the furnace be increased gradually, with a minimum of 48 hours to bring the furnace to work-



Practice in the Steel Foundry

BY JOHN W. PORTER
Assistant Works Manager
American Steel Foundries
Granite City, Ill.

ing temperature. The furnace having been brought to the proper temperature, the work of building the bottom can be started.

Double burned magnesite is employed for all new furnace bottoms. Magnesite is used because it is generally purer than dolomite and has a higher melting point; furthermore, it does not slack as quickly if the furnace is not operated for a period. The magnesite is mixed with ground basic slag in the proportion of three parts magnesite and one part slag. This mixture will be referred to as magnesite mix. It is important to select slag free from steel and ground as fine or finer than the double burned magnesite. No other bonds of any nature are used with these materials.

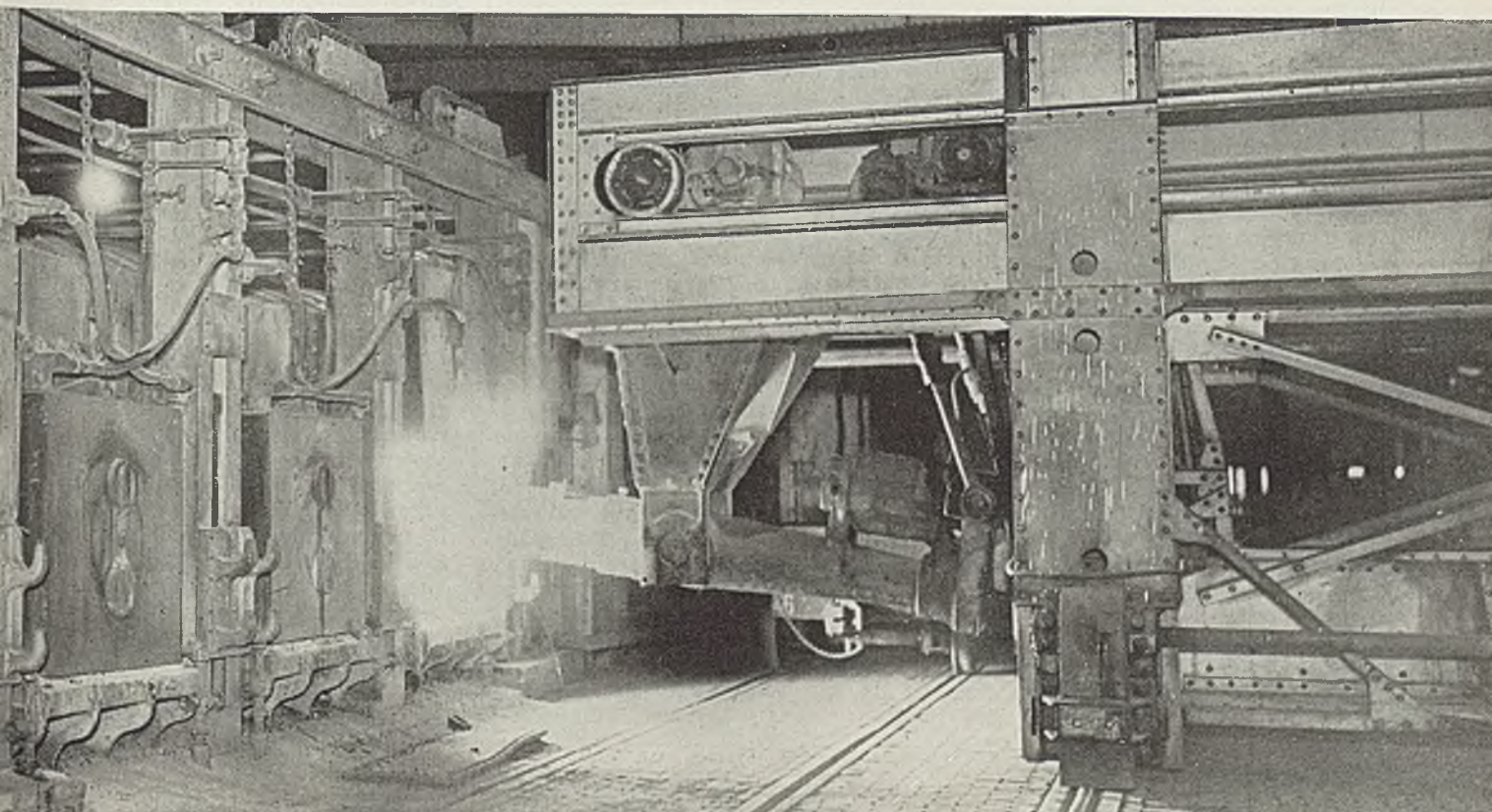
A coating of slag is placed on the brickwork before any magnesite mix is used. The material should be spread over the furnace bottom as evenly as possible with layers not over ¼-inch thick, and sufficient time allowed for the material to sinter properly before the next layer is placed in the furnace.

For the first three inches of bottom placed in the furnace, an interval of not less than 2½ hours should elapse before the next layer is placed in the furnace.

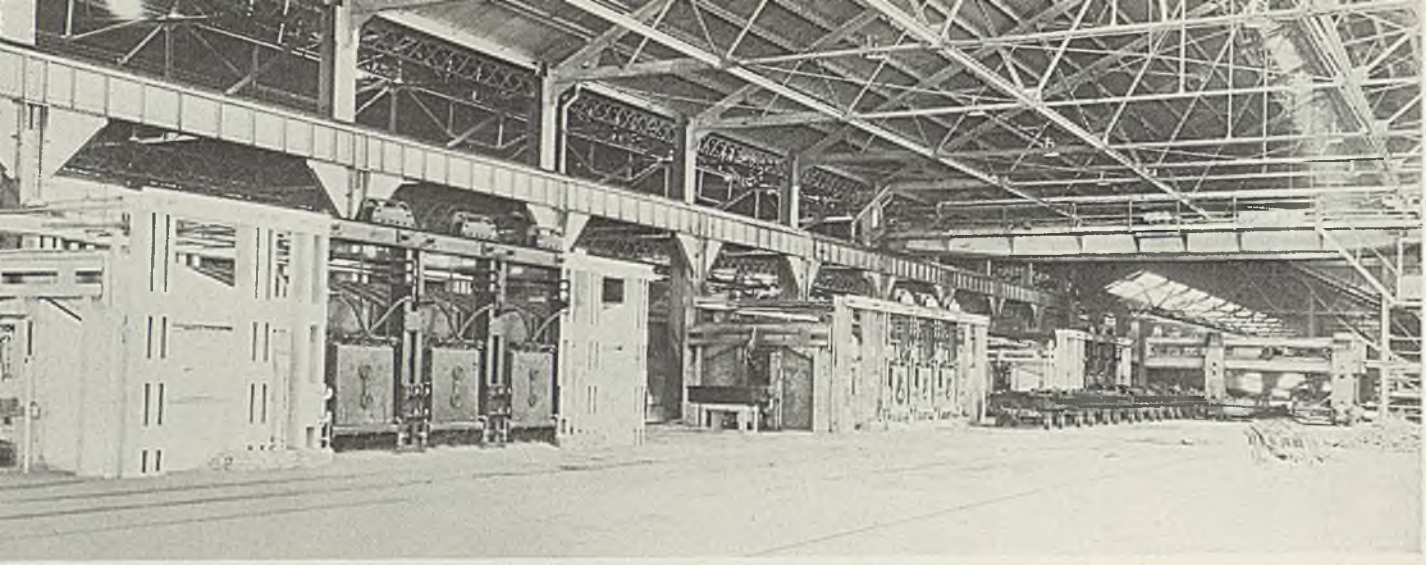
After the bottom is 3 inches thick, tests are made at least three times in 24 hours, by shutting off the fuel oil, allowing the bottom to cool for 30 minutes, and striking the bottom with the end of a rod to test the solidity of the material in place.

After the bottom has been built up, until it is about 3 inches thick, about 12 samples of the bottom are obtained in 24 hours by a rod properly equipped, and after cooling, are broken and the fractures examined for solidity.

The mixture of three-fourths magnesite and one-fourth slag is used on side walls exclusively. Some slag will flow out of the mixture to the furnace bottom. Magnesite without slag is used to fill in the furnace bottom and absorb this excess slag. The proportion of slag in the mixture should be adjusted to produce a solid bottom. The practice of taking samples is continued until the bottom is complete. The layers of magnesite mix are continued until the level of the tap-



Open hearths are first charged with plate scrap to cover the bottom and furnish a base for the lime which is to follow



Three open hearth furnaces face out on the charging floor shown here

ping hole is reached. The time necessary to build a bottom in a 30-ton basic open hearth furnace is about six days.

Ground slag is charged into the furnace, placing this as high as possible on the sides of the furnace, using the same methods used to place material for the bottom. This is repeated after approximately one hour and continued until there is a depth of 2 to 6 inches of liquid slag on the furnace bottom. The liquid slag is splashed as high as possible on the walls and ends of the furnace to allow the magnesite to absorb as much as possible of this liquid slag. The time allowed for this slagging bottom should not be less than five hours.

Charging Procedure

The slag is then tapped and the furnace is ready for the first heat.

In making up the furnace charge, consideration should be given to the material on hand, chemical analysis, price, and space required in the furnace.

The material in the charge should be charged in the following order:

1st—Scrap.

2nd—Petroleum Coke and Manganese Ore.

3rd—Lime.

4th—Scrap, except Rails.

5th—Rails.

6th—Pig Iron.

The first material charged into the furnace on each heat should be selected with a purpose of covering the bottom of the furnace and furnishing a bed for the lime. This will prevent the lime from sticking to the furnace bottom. Plate scrap is probably the best for this purpose. Lime should be spread over the first scrap charged as evenly as possible.

The furnace should be arranged with two sources of draft—a fan to force air into the furnace, and a stack to draw air out of the furnace. The amount of air admitted to the furnace is controlled by the diaphragm, which also controls the fuel oil. The stack is provided with a damper and manometer, so that the proper condition and balance pressure can be maintained in the furnace.

The draft in the furnace at the downtakes should be about 0.07-inch on the outgoing end, and about 0.05-inch on the incoming end. It is necessary to have a slight plus pressure in the furnace to avoid cold air entering the furnace. When the final additions are made, the draft is reduced to 0.04-inch in the stack.

The fuel oil and steam are cut down at the same time. This condition is maintained until the heat is tapped. The reduction of draft, fuel oils and steam at the time of making the final additions is recommended, because this condition cuts down the amount of oxidation of the metal and consequently less loss of manganese and carbon, and of chromium when used.

Fuel Specifications

Fuel oil of a gravity of 5 to 12 degrees Baume' is used. The temperature of fuel oil, when it enters the furnace is 170 to 190 degrees Fahr. A preheater is used for the oil before it enters the burner. The amount of fuel oil being burned per hour is indicated and recorded. The amount of fuel oil necessary cannot be definitely stated, but can be determined by experience for each furnace, and after being determined, should be followed closely. 120 to 130 gallons per hour after charging is the general rate employed.

The fuel oil rate of flow is reduced when the heat is melted. On this the melter must depend on his own judgment. On heats which melt very hot, the consumption of fuel oil may be cut down as low as 80 to 90 gallons per hour when the final additions are made.

At the time final additions are made, the fuel oil should be cut down as low as possible, depending on the judgment of the melter in charge.

The use of superheated steam for atomizing the fuel oil is in order to be assured of dry steam. The temperature of the superheated steam at the regulator should be 600 to 700 degrees Fahr. The pressure should be 55 to 60 pounds at the regulator. This is maintained until the heat is melted. When the heat is melted, the steam pressure is adjusted to the conditions in the furnace, depending on the judgment of the melter in charge. When the final additions are made, the steam pressure is reduced and a soft rolling flame is held until the heat is completed and is ready to be tapped.

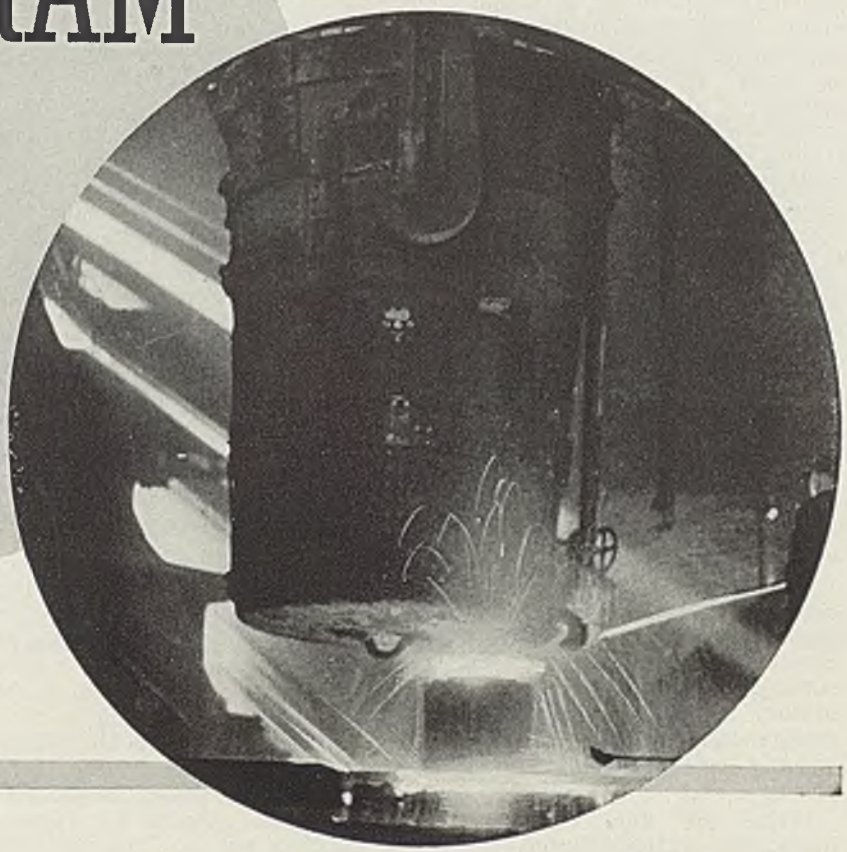
Beginning the Heat

The furnace charge should contain sufficient lime to remove the impurities in the metal and furnish protection to the metal from an oxidizing flame. Whenever it is necessary to use fluorspar to condition the slag, the amount of fluorspar used should be held to a minimum.

During charging and until the lime starts to come up, the furnace should be run with a full flame, predetermined settings being maintained by the instruments. The temperature of the bath at the time the charge is melted should be high enough to gradually cut down the fuel oil, air and steam. By this practice some manganese and chromium reverts to the steel from the slag.

As soon as the heat is melted and the lime is up, which is indicated by the absence of localized violent boiling action in the bath, a spoon test of the metal should be taken, the melter judging the carbon content by the size of the crystals in the fracture. Upon the carbon content the melter bases his judgment as to the amount of iron ore to add, and also to the time it is to be used. The heat should be at a fairly high temperature;

VANCORAM FERRO ALLOYS



FERRO-VANADIUM
Open Hearth, Electric and Crucible Grades

FERRO-SILICON
15%, 50%, 75%, 80-90%, 90-95%

FERRO-TITANIUM
High, Medium and Low Carbon Grades

FERRO-CHROMIUM
High Carbon Grade (4 to 6% carbon).
Low Carbon Grades (from maximum .06% carbon to maximum 2% carbon).
Special Iron Foundry Grade

ALSIFER
The Ferro-Silicon-Aluminum Deoxidizer Without a Disadvantage.

CHROMIUM METAL

•

These grades of Vancoram Brand Ferro-Chromium are carried in stock and supplied as required in large lumps, or crushed or ground to various sizes. Write for complete information.

VANADIUM CORPORATION OF AMERICA
420 LEXINGTON AVENUE, NEW YORK, N. Y.
Plants at Bridgeville, Pa., and Niagara Falls, N. Y.
Research and Development Laboratories, Bridgeville, Pa.

VANADIUM STEELS

METALS VANCORAM ALLOYS

FOR STRENGTH • TOUGHNESS • DURABILITY

the slag should be in a mushy condition.

After the iron ore addition, the bath will break into a brisk boiling action, which should gradually slow down to a uniform gentle boiling action over its entire surface, the boiling action becoming less intense and the carbon drop less rapid as the bath approaches a carbon content of 0.25. During this time the amount of fuel, air and draft should be gradually diminished but still keeping a plus pressure. The slag should be assuming a creamy condition. Iron ore should not be used until the slag is in a mushy condition.

Taking Spoon Tests

Tests are taken by first slagging the spoon thoroughly, then thrusting it down into the steel, withdrawing it and pouring the steel into a test mold. The test should be cooled slowly and all tests given approximately the same treatment, or variations in the results of the analysis may be expected when the laboratory uses the color method of analysis.

On the first preliminary test the chemical laboratory determines the carbon, manganese, sulphur, and on chrome heats, chromium. On all subsequent tests the chemical laboratory determines the carbon and manganese. Other tests are taken as the refinement of the metal proceeds.

When the final additions are made, the draft is cut down. The amount of fuel oil burned and steam used for atomizing is reduced as much as possible, and this condition is maintained until the heat is tapped.

The material used to close the tap hole should be removed from the outside, leaving only a few inches of material on the inside. The tap hole and the runner should be thoroughly cleaned before proceeding. A tapping rod should then be inserted through the observation hole in the center door of the furnace, slagged, and after locating the tapping hole, the rod is thrust endwise against the material left in the tap hole until the rod pushes through and allows the heat to run out of the tap hole into the ladle.

When the metal in the ladle is approximately one foot deep, the bottom of the chute over the runner is opened, allowing the material in the chute to run into the stream of metal as it runs from the furnace into the ladle.

The chemist's report of the carbon and the manganese in the final preliminary test is usually received too late to make adjustments of the addition charged into the furnace. The adjustments required are, therefore, made in the materials charged in the chute over the furnace runner.

Maintaining Furnace Bottoms

Furnace bottoms should be maintained in good condition. This can be accomplished by proper care. After a heat is tapped, the furnace bottom should be free from pools of slag or steel. When the bottom becomes uneven, due to lime adhering to it or due to portions of the bottom materials becoming loosened by the action of the bath, the pools should be splashed or rabbled out so that the slag or steel will drain out at the tap hole.

When a large or deep hole occurs in the bottom, care should be taken to rabble it out clean, then dry it up with bottom materials. After drying, the hole is to be filled with bottom material, each addition being sintered until the hole is built up to the bottom level.

After all the pools have been rubbed out and filled in with bottom material where this is necessary, slag should be shoveled in in front of the tap hole to stop the flow of slag into it. The tapping hole is then filled in from the outside with bottom material, which should be rammed in tight.

The slag line along the back wall and ends is then made up by throwing bottom material on it with a shovel. The front wall is made up by placing bottom material on it with a spoon.

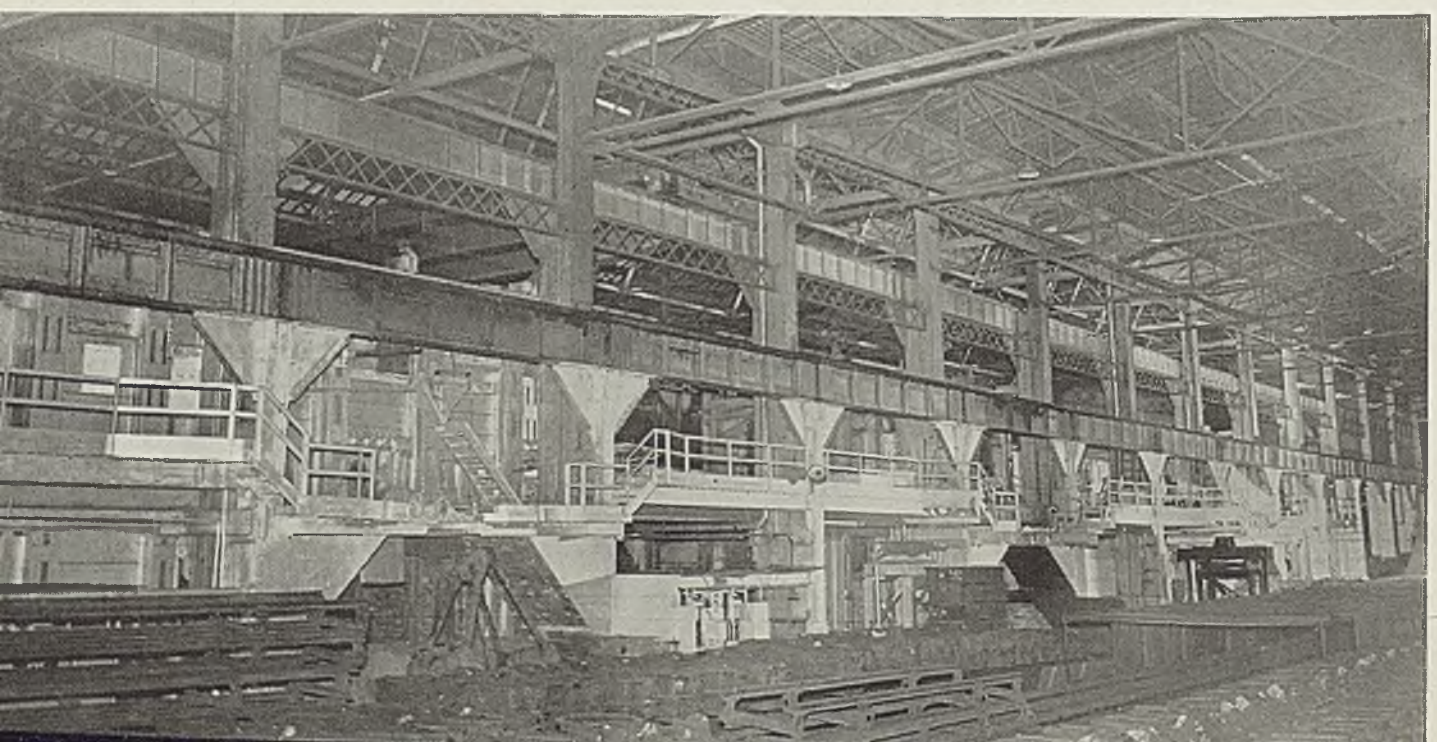
Contour Kept Constant

The contour of the bottom along the back wall and the opening into the tap hole must be maintained, so that when the tap hole is opened the slag will not run out until the steel is practically all out.

At the end of each week, when the last heat has been tapped, the furnace should be run hot so as to slag the bottom, and two or more slag heats run off, depending on the bottom condition. The bottom should not be made up again until within one hour of charging.

The diameter of the tapping hole should be maintained as close as possible to 6 inches. When repairs are necessary, a 6-inch pipe should be placed in the hole and the space around it filled in with a mixture of gannister or chrome, and cement.

The furnace bottom should always provide for a bath depth of 22 inches, the measurement to be taken at the center of the furnace.



Rear view of the furnaces, where heats are tapped into ladles, in turn being poured into the molds shown on the floor in foreground

KEMP Helps to Keep the OK in OKONITE

Kemp Immersion Melting (with gas) which supplies molten tin in the world's most modern tin stacks*, now brings its characteristic economy and efficiency to a new job.

Shown above is the new *10 ton Kemp Immersion Melting Pot* built for The Okonite Company and supplying molten metal for continuous wire coating. Here again, the *Kemp* principle of 100 percent gas-air premixing permits putting the heat where it belongs, *inside the metal,* not outside the pot. Results are five-fold:

1. Kemp saves 40 percent (or more) in fuel.
2. Kemp gives the closest temperature control ever secured.
3. Kemp gives material dross reduction.
4. Kemp delivers metal as rapidly as it can be used, melting keeps abreast of *any* production schedule.
5. Kemp improves working conditions through thorough heat insulation.

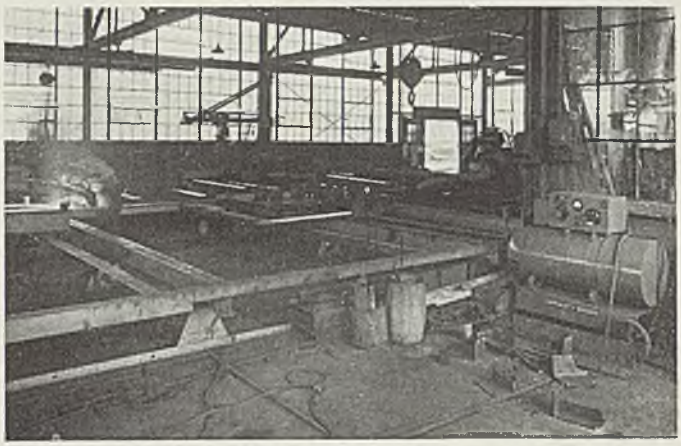
For details on all possible immersion melting applications, address The **C. M. Kemp Mfg. Co., 405 East Oliver St., Baltimore, Md. or Oliver Bldg., Pittsburgh, Pa.**

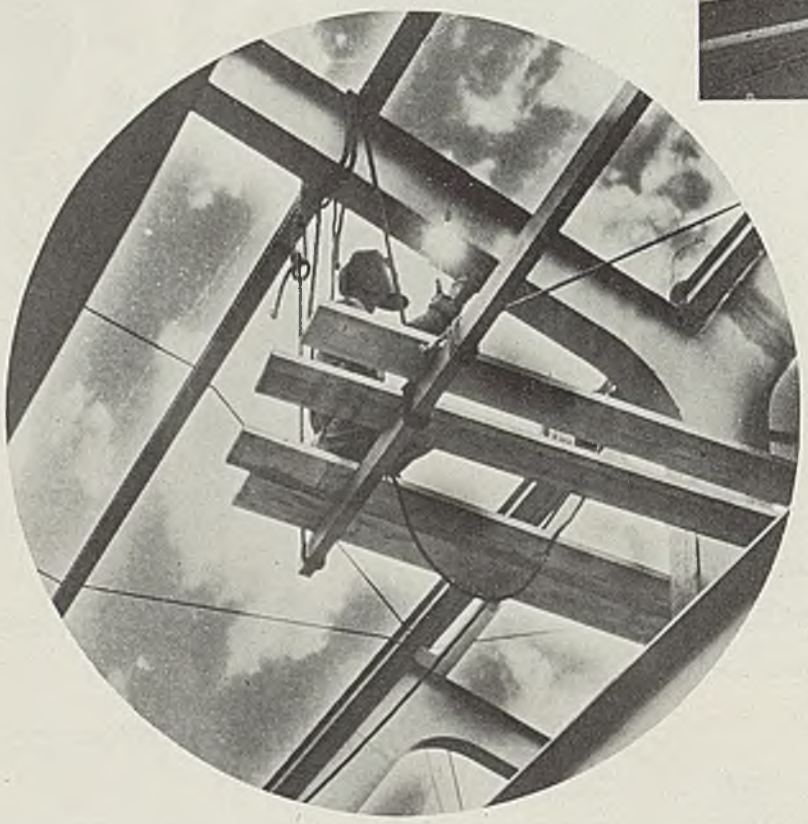
**Kemp-heated tin pots serve Carnegie-Illinois, Wheeling, Weirton, Bethlehem, Follansbee, Jones and Laughlin, Inland, Tennessee Coal and Iron, Crown Cork and Seal.*

KEMP of BALTIMORE

"Steel Carpenter" Erects All-Welded Steel Structure

■ SHOP fabrication and erection of steel by electric welding made possible remarkably fast construction of the new 1314-ton steel framed addition to the Lincoln Electric Co. plant, Cleveland. The plant, containing 200,000 square feet of manufacturing space, was completed in less than three months, which is no longer than the time customarily allowed for building a standard 6-room house.





Designed and erected by the Austin Co., Cleveland, this plant is the first to utilize completely an all-welded rigid saw tooth frame and "tree-form" columns. This type of construction provides unobstructed space from floor to roof over extensive floor areas, permitting maximum advantage of shadowless illumination with all cross members eliminated.

Above at right is a view of the fabricating plant where all steel for the plant was fabricated by electric welding. Operator is welding a piece of tubing to the foot of a column for bolting column to base plate in field. The extent of prefabrication is illustrated by the fact that of 29,600 lineal feet of welding required for the job, only 4600 feet were welded on the site.

In circle is a "steel carpenter" fusing two structural members together without the use of intermediate connecting members.

Below is a 240-foot "cathedral" bay with an 80-foot clear span located on the second floor. Extensive use has been made of glass blocks and sash in continuous horizontal runs. Functional design has been applied to produce an efficient and attractive plant. Skylight faces north at peak of roof where continuous heat valves for natural ventilation have been installed. Roof is of cement tile and has a bonded waterproof surface.

Absence of usual noise of rivet guns is noteworthy in this case since the building was erected adjacent to a golf course and close to a residential district. The success of this project combined with the fact the revised New York building code recognizes the use of welding in building construction indicate that the "steel carpenter" is about to become one of industry's most useful workmen.

About Tests

Frankly speaking, the above four tests have been selected. They were selected because they were near the average of all the tests on record and because they were typical. All were made on production jobs.

You know and we know that one test does not mean much. *On more than ten thousand tests Molybdenum-Tungsten high speed tools averaged twenty percent better than similar tools made of 18-4-1 steel.* Such an average obtained by careful statistical methods is dependable.

MO-MAX*

Molybdenum-Tungsten High Speed Steel

has been in general commercial use for more than four years. Many tool manufacturers now use it for their regular high speed product. Many consumers are using it for the high speed tools made in their own tool rooms.

It requires 8% less weight of steel to make a tool . . . It is easy to weld . . . It is easy to forge . . . It is easy to machine . . . It is easy to grind . . . Its tools are harder . . . Its tools are tougher . . . Its tools have superior cutting quality.

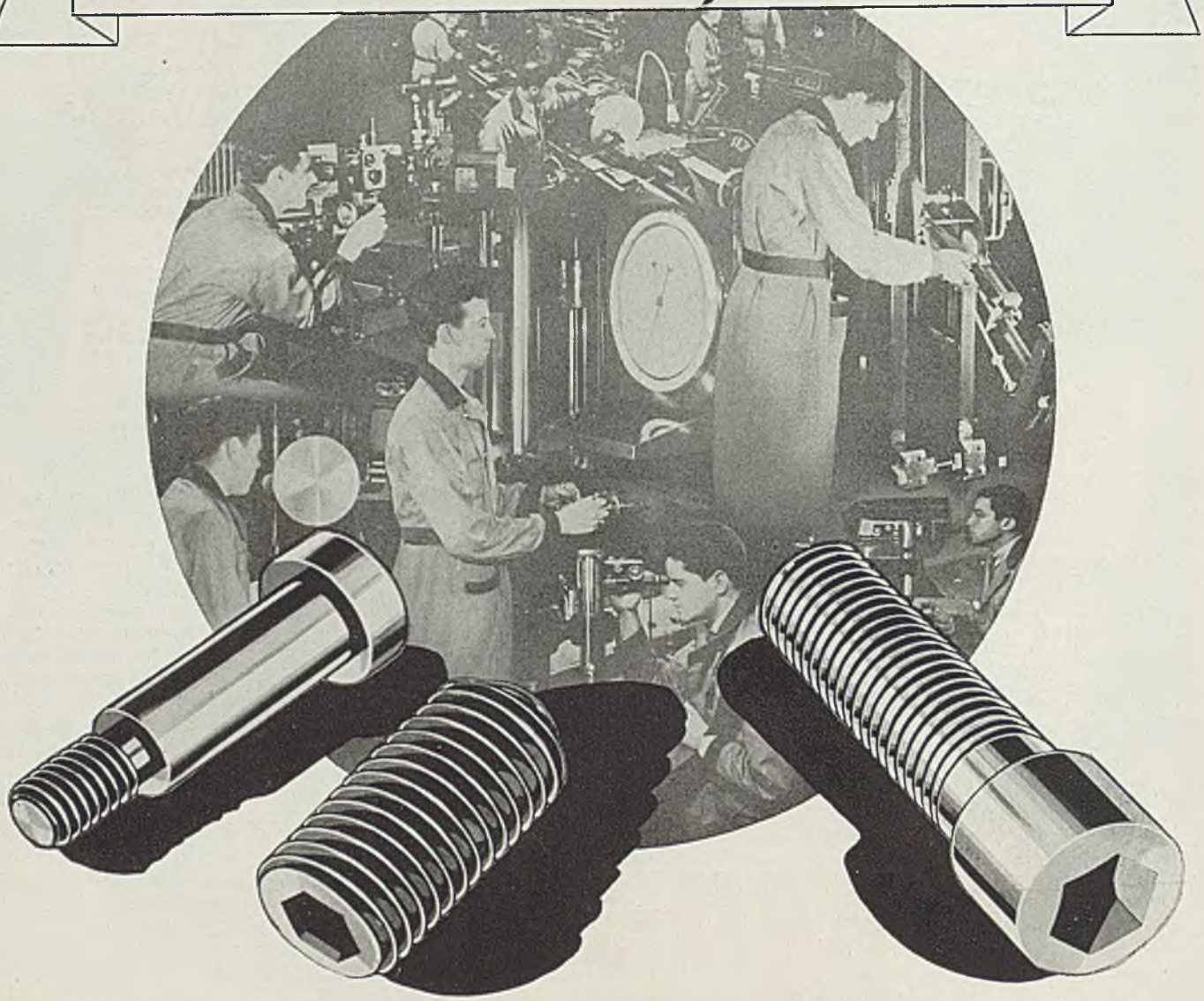
Leading steel companies in North America and Europe are now licensed to make MO-MAX. A booklet giving the essential data may be obtained by addressing The Cleveland Twist Drill Company, Cleveland, Ohio.

SHIFT TO MO-MAX FOR QUALITY AND QUANTITY PRODUCTION

*MO-MAX is a proprietary name owned and controlled by The Cleveland Twist Drill Company and its only licensed use by others is on steel made and sold by licensees under U. S. Patent Nos. 1,937,334; 1,998,953; 1,998,954; 1,998,955; 1,998,956; 1,998,957; and Canadian Patent Nos. 346,506; 364,032 and 364,033.

7795

Better than they need be



. . . that's what buyers say when they examine the new Parker-Kalon Cold-forged Socket Screws. These new Screws have set a higher standard of quality that wins the unqualified approval of engineers and production men.

There are good reasons for the excellence of these new Screws. They are the result of more than two years of intensive research and development work . . . and the unequalled Parker-Kalon Laboratory facilities for securing and controlling the strength, precision and other essential qualities of socket screws.

Send for free samples of the type you use, and descriptive folder. The product will speak for itself.

PARKER-KALON CORPORATION, 214 Varick Street, New York

BETTER
than they need be
in every essential
- ☑ Engineered **STRENGTH**
- ☑ Controlled **UNIFORMITY**
- ☑ Micrometer **ACCURACY**
- ☑ Faultless **DESIGN**

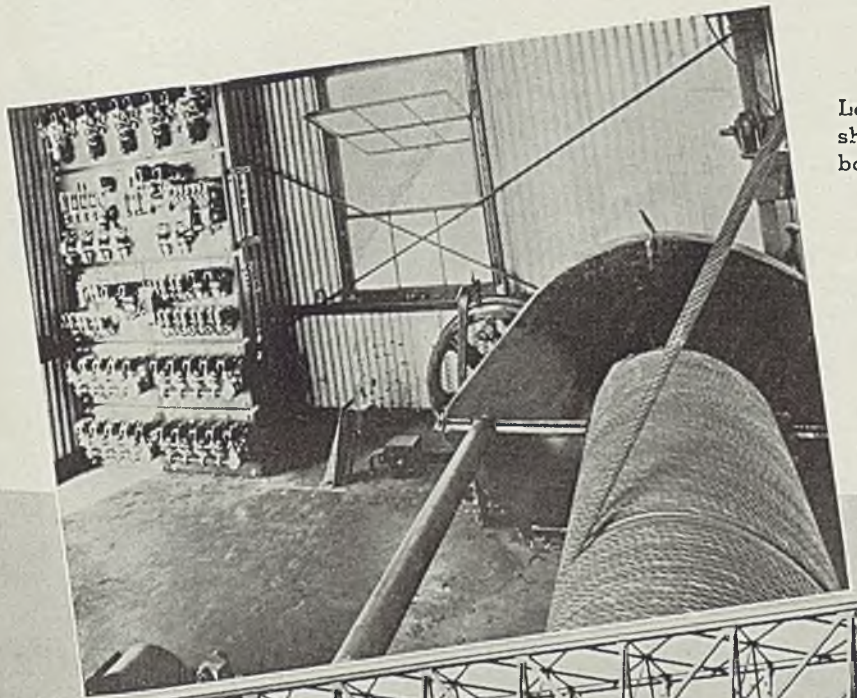
PARKER-KALON *Cold-forged* SOCKET SCREWS

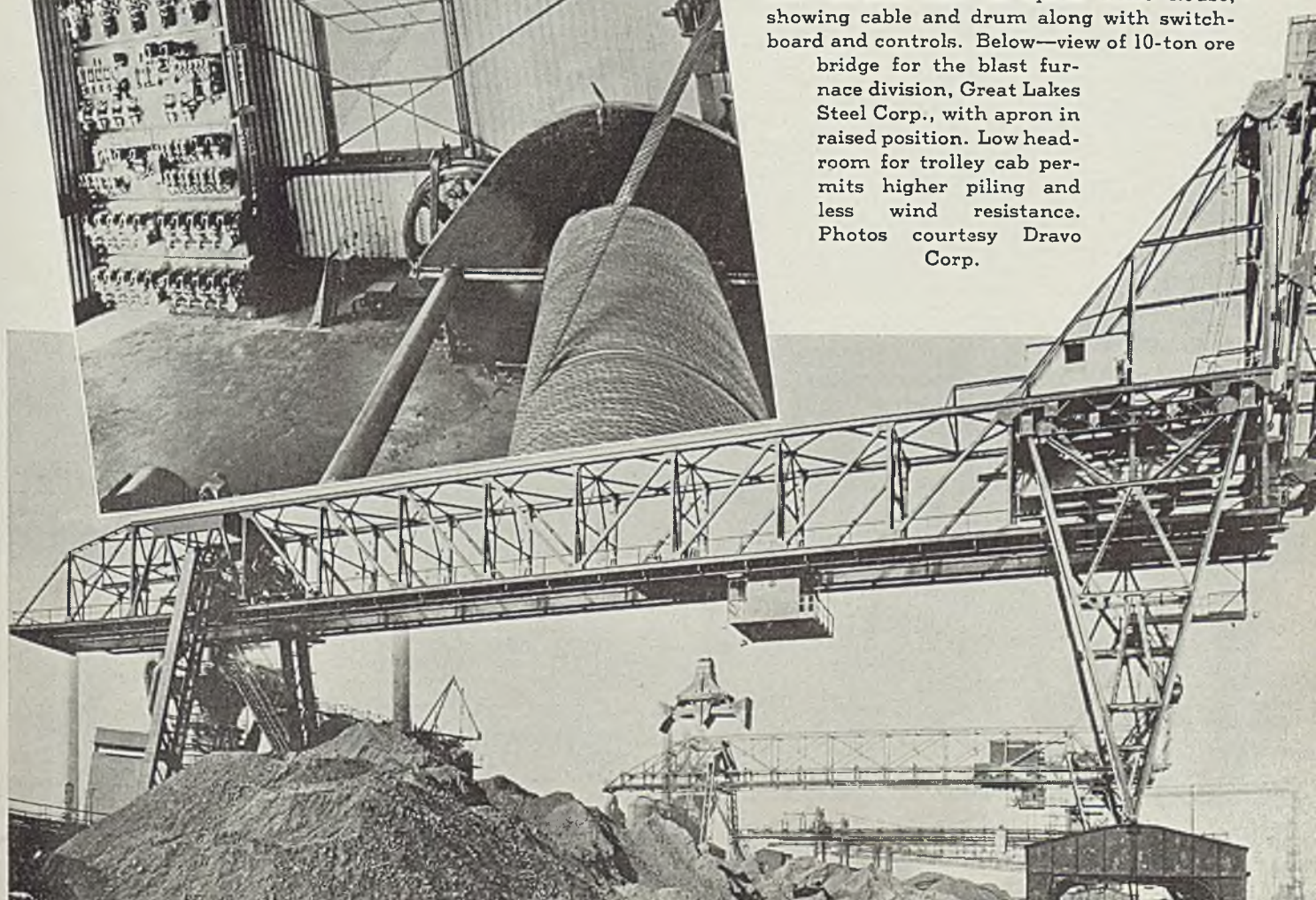
MATERIALS HANDLING

Interlocking Safety Devices Among Design Features of New Ore Bridge

■ UNUSUAL design and operating features characterize a new 10-ton ore bridge recently placed in operation at the Great Lakes Steel Corp.'s Hanna Furnace dock, Detroit. This bridge has overall length of 350 feet and central span of 187 feet. To provide clearance for masts of ore boats, the apron extending over the water can be hoisted to almost vertical position. In addition, it was necessary to make use of an already existing dock and track, which had been built for bridges of 7-ton capacity. This necessitated a distribution of load over an unusually large area, which was accomplished by a short V-shaped pier leg built to rest on the center of a 28-foot span portal extending over two tracks. Further distribution of load was obtained by providing a distance of 45 feet between centers of trucks, and a distance of six feet between wheels on each truck.

Consisting of a trussed section carrying the track beams, the apron is pin connected at its top chord to the span structure. This arrangement provides a seat on the track





Left—Interior view of apron hoist house, showing cable and drum along with switchboard and controls. Below—view of 10-ton ore bridge for the blast furnace division, Great Lakes Steel Corp., with apron in raised position. Low headroom for trolley cab permits higher piling and less wind resistance. Photos courtesy Dravo Corp.

MATERIALS HANDLING

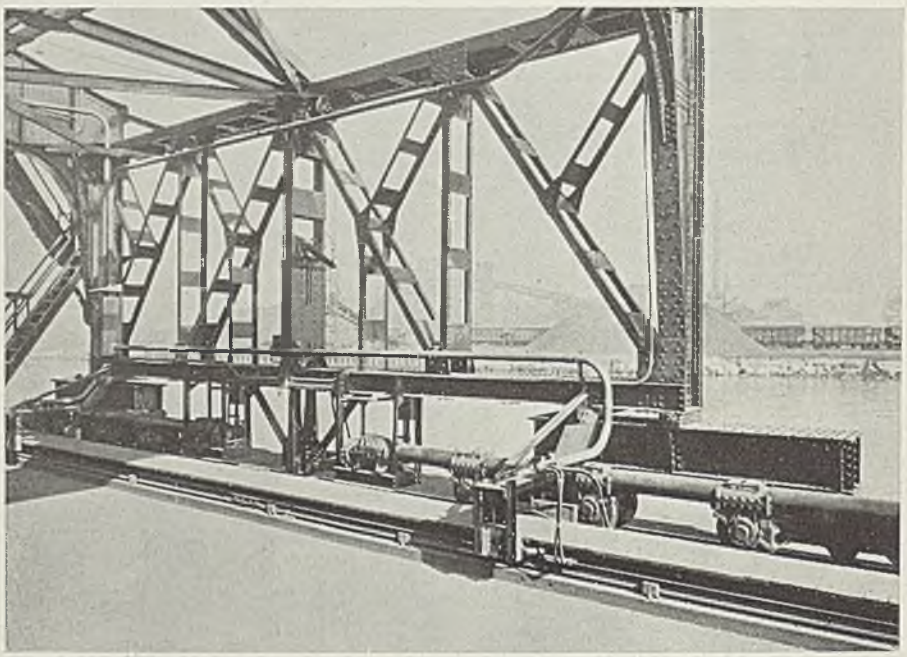
beam for supporting the apron in case the pin fails. The apron is suspended on two sets of I-bars on each side, pin connected at the top of the mast structure and arranged to nest when the apron is in raised position. Bumpers at the end of the apron resist trolley frame impact in the event of over-travel. A stop and a limit switch prevent overhoisting of the apron. An automatic double hook latch mounted on top of the tower engages pins on the apron when it is raised. The latch is released from the apron hoisting house by means of a rope. The apron is raised and lowered by means of an electric hoist located above the pier leg on top of the span structure.

Bridge mounting is on 24 heat treated rolled steel double flanged wheels, each having a diameter of 24 inches. Eight wheels completely equalized by equalizer beams are provided for the shear leg, and 16 wheels for the pier leg. All wheels are driven by a series of worm gear reducer units, one unit being provided on each axle. Worm gear cases are of cast steel and are supported on the axle by roller bearings. A torque arm on the case engages the torque pin on the truck frame. Worm gear units are driven by alloy steel hollow shafts which operate through universal joints fitted with needle type roller bearings.

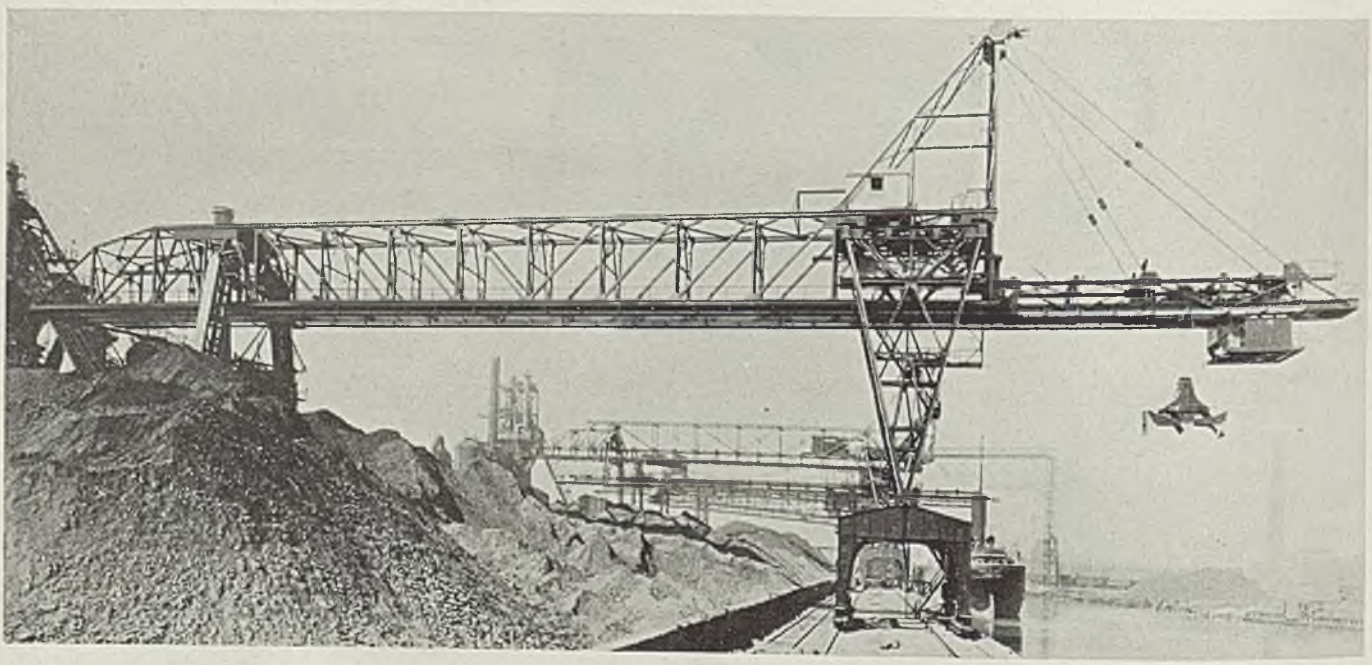
Pier leg is of the V-type, the wide portion of the V carrying the bridge truss while the point is pin connected to the portal structure. Skewing plates where the bridge rests upon the leg are of heavy cast bronze, smoothly machined, sliding upon smooth finished steel plates. Provision is made for protection from weather and for lubrication of these plates. The leg is built of beam sections with heavy bracing to withstand operating stresses.

Built up plate and channel sections of the shear leg are also well braced. Wheelbase of the leg is 60 feet, center to center of the equalizer rockers, and each corner of

(*Please turn to Page* 98)



Above—Water side truck of bridge portal showing motor drive, conductor rail and equalizer rocker pin on portal trucks. Below—General view of 10-ton ore bridge with apron in lowered position



TWO MORGAN CRANES IN A CONVERTER AIS

• Two 60-ton 66′-0″ span, 4-girder type, ladle cranes with 15-ton auxiliary trolleys, serving a converter aisle, are shown here. Both are equipped with welded fabricated trolleys and bridge trucks, highly efficient type brakes and anti-friction bearings throughout. Morgan accept the newest proved advances in crane construction. In over 55 years of experience, Morgan Engineering has had the opportunity to observe with its customers the lifetime of the huge cranes required in handling hot metal. Longevity of service life is of course based

★

★

★

★

★

DESIGNERS • MANUFACTURERS • CONT
Blooming Mills • Plate Mills • Struc
Electric Traveling Cranes • Charging
Ingot Stripping Machines • Soaking
Electric Welded Fabrication • Lad
Steam Hammers • Steam Hydraul
Presses • Special Machinery for S

THE MORGAN ENGINEER
ALLIANCE, OHIO

WELDING, ETC.

BY ROBERT E. KINKEAD

Future Prosperity Depends on Development

■ During the current pause in economic recovery while the tax spenders correct some of their errors in collecting revenues from the 130 million, it is opportune to consider the forces at work to place welding knowledge in a position to render greater service.

It is all very well to point with pious horror to the fools in high places in Washington but it is more practical to begin cleaning out the cobwebs at home first.

Congress and the administration are no better and not much worse than usual. They will take all the money away from the public they can without precipitating a revolution, in order that their political fences may be made as secure as possible—but it was always thus, and is the same in countries that have different forms of government. Effort applied to a technical science like welding benefits and elevates everyone; effort applied to government for two thousand years has not produced a single new idea for the very good reason that government is non-productive and wholly parasitic.

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 the welding field at the present moment there are less than five development programs moving in the direction of developing new methods of welding. All the remainder of scientific work is in the application of existing and well-known methods. The pile of unused scientific knowledge has diminished to alarmingly small size. The final end product of such conditions is a bitterly competitive industry where competition is based solely on selling price or who will take the largest loss to sell at all. Evidences of the beginning of such conditions are appearing with increasing frequency.

Taking the welding industry as a whole, and including flame-cutting, it is doubtful if 1 per cent of the total sales is spent in creating future markets by development of new processes. In the field of arc welding, which has heretofore been the fair-haired child of the whole business, it is practically certain that not one manufacturer or user has spent as much as $1000 in the last 24 months on original development work in new processes.

It is all very well to slap down the politicians to keep them from running away with all the money in the country; they need slapping down right now. But if the welding industry is going fat-headed because it is mad at the politicians and stops development work, the welding industry in five years will be asking the politicians for a subsidy to keep it in operation—like, for instance, the farmers, merchant marine and railroads.

Welding 1000 Ships

■ Chairman Kennedy's report to the President on need for a fleet of 1000 modern merchant vessels to serve the interest of foreign trade and naval defense is a challenge to the welding fraternity to come forward with plans for building better vessels at lower cost.

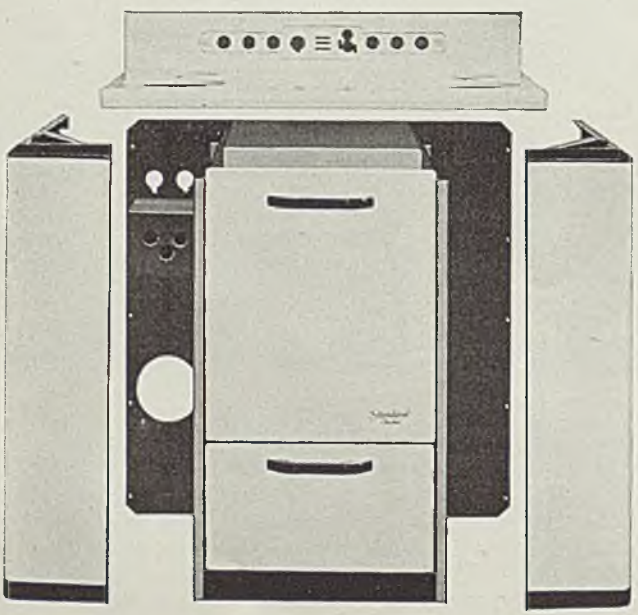
In the last five years the navy has proved that welded ships are safe and seaworthy. Sun Ship Building Co., Chester, Pa., demonstrated that tankers can be economically welded. Other shipyards have shown interest in the new method of construction.

But the main difficulty is that private capital has not yet been interested in building combination mail, freight and passenger ships of the kind needed. The prospect for interesting private capital at present is not exciting.

All things considered, we had better do without the ships rather than tax all the people to build them for government operation at a loss which will necessitate more taxes. For every million borrowed for this purpose, we pay back two million in principal and interest in, say, 30 years. If the operating loss is 5 per cent per year, there is an additional million and a half to be paid back out of taxes. Thus, for every million borrowed for this purpose, 3½ million must be paid back.

When any sound program of ship building is ready to be put across, the welding and steel industries may be counted on to produce methods which will reduce costs and make better ships. With two new processes capable of putting on 150 to 200 pounds of weld metal per hour, the technical problems are not severe.

Range Has Welded Features



■ New model range manufactured by Standard Electric Stove Co., Toledo, O., has the inside as a welded unit, with porcelain parts applied in the manner shown. The oven is one - piece welded, with recessed burners and integrally-stamped runners

Whitey Sez:

"In bones, it's the combined numbers that make a 'natural'... In welding, 'naturals' are a combination of good metals and welding rods of known analyses."

MAURATH, INC., CLEVELAND

BUILDER OF BETTER WELDING ELECTRODES IN ALL ANALYSES

SURFACE TREATMENT AND FINISHING OF METALS

Survey of Recent Buying Trends Again Shows Most Popular Colors and Finishes

■ POPULAR buying trends and their effects upon color schemes, type of finish and design are objects of constant study by manufacturers and retailers of consumer goods.

The correct interpretation of public buying reactions and anticipation of changes in popular taste spell the difference between success and failure in profitable merchandising.

Keen competition and the necessity for creating sales appeal make periodic model changes mandatory in most consumer goods lines. This involves restyling, adoption of new materials, new methods of finishing and, of course, improvement of quality.

The question of color is a very sensitive subject with most manufacturers. Disregarding temporary color fads created by manufacturers willing to gamble on cashing in quickly on passing fancies, there is a widespread and growing demand for standardization of colors. This is especially true in durable goods which housewives purchase with the view of creating a harmonizing color scheme in the home. Pioneer work along these lines is now being pursued by the National Retail Dry Goods association (STEEL, October 25, p. 62).

About a year ago (November 2, 1937, p. 60) STEEL published a short survey of popular buying trends based on the experience of several large department stores. Recently, the same stores were again contacted to determine whether or not there had been any changes in buying habits during the ensuing year

Changes are surprisingly few. In fact they have been confined largely to new lines which have been introduced.

White Still Popular

The strong trend, noted last year, toward white backgrounds in all metal goods used in households continues as firm as ever with every indication of remaining permanent. The "color in the kitchen" craze, which created such confusion for awhile has definitely died. This does not mean, however, that color is not in demand. It is definitely wanted as a trim for the white background. Red, blue and green trimmed ware are still very popular but housewives are becoming insistent about color matching.

Where solid colors are sold, red is generally the most popular. This is, however, confined largely to smaller objects which will not dominate the color scheme the housewife is setting up. Solid green colors appear to have no sales appeal at all.

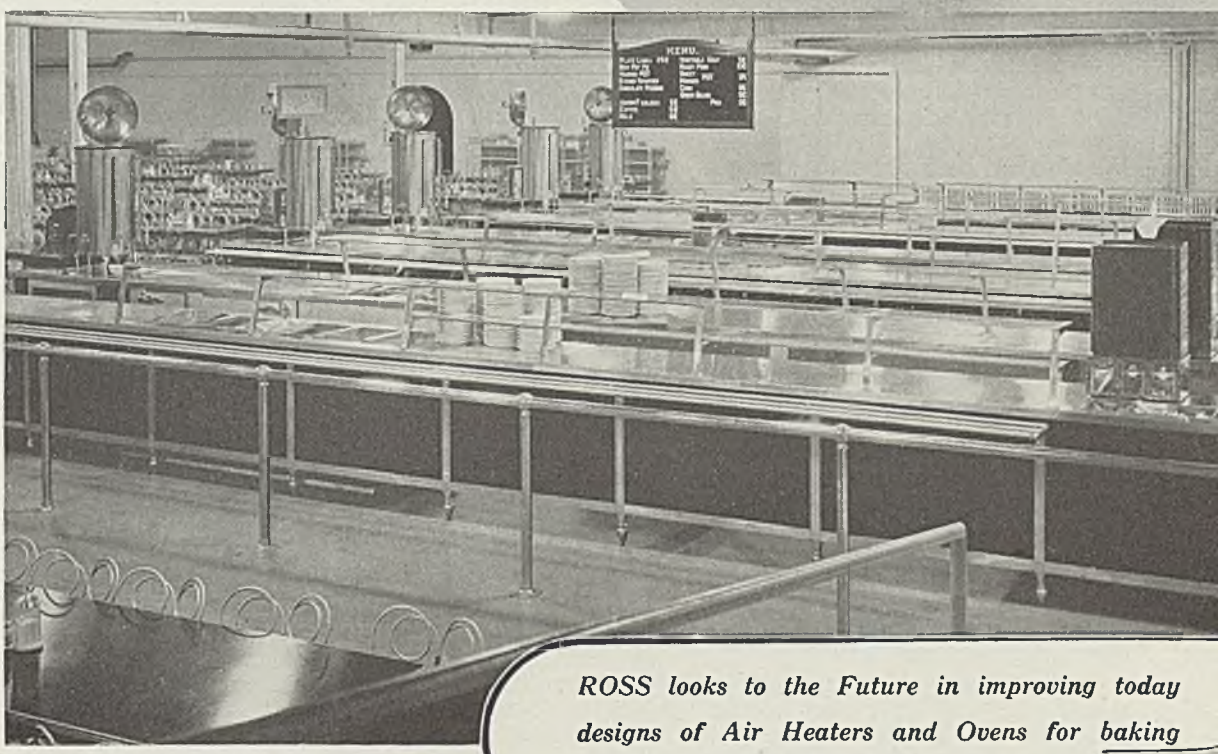
As was pointed out last year, color popularity varies over the country. The particular case pointed out was delphinium blue which was introduced last year and sold rapidly in New York, Pittsburgh, Chicago and Detroit. In Cleveland, however, it came in very slowly. At the time it was said that the color was gaining in popularity but results have proved very disappointing and the color is still a slow seller in Cleveland. In the aforementioned cities, however, the color continues in public favor and moves very well. Local color favorites can only be determined by consulting retailers in each area.

The desire for colors which fit into general color schemes extends out of the metal products field and into such lines as ceramics and wood. Colored dishes of brilliant hue are selling well, provided they match with colored wooden and metal trays. Fabrics and other materials are also feeling the influence of this trend and manufacturers of curtains, linoleum, kitchen cabinets (metal or wood) table cloths, oil cloth and many other items are becoming acutely conscious of the need for standard colors.

Demand Stainless Steel

Stainless steel continues to make inroads on other materials in many lines. This is especially true in flat ware such as cutlery. There is a strong growing demand for heavy stainless steel cooking utensils which are now favored over heavy aluminum. Recently introduced is a new line of stainless steel serving dishes which fulfill the purpose of a cooking utensil and yet retain the attractive appearance required of table service. Heat resistant bake-

Ross looks to the future



Stainless Steel Cafeteria of National Cash Register Company

ROSS looks to the Future in improving today designs of Air Heaters and Ovens for baking protective coatings on steel. . . . .

THE future for Steel is assuming gigantic proportion It is now in the hands of the clever designers of myriad of future modern products to be shaped from ra steel sheets.

One of the most important factors in this development w be the colorful finishes and protective coatings for the steel products now on their way.

With its extensive experience in providing the efficien economical air heaters and oven equipment used by many of the automobile and metal furniture manufacturer the J. O. Ross Engineering Corporation is especially we qualified to design and build required equipment for ba ing protective coatings on steel products of the future.

From executives advancing with the trend, we will welcome an o portunity to assist in planning for conversion from raw steel she to beautifully finished product. Our Bulletins No. 122 and No. 1 sent on request.

J. O. Ross Engineering Corporation

Main Office—350 Madison Avenue, New York

lite trays are furnished with this ware.

In last year's survey it was noted that there was a definite demand for a waste basket made from stainless steel, Monel metal or aluminum. It was also stated that a soft satin finish was desired. Paint was not wanted as a finish for these baskets. So far as can be determined, waste baskets of this type were not brought out during the past year and the demand remains unsatisfied.

In decorative serving ware, there has been no change in popularity; hand hammered aluminum, satin finished aluminum and bright aluminum with a satin chrome finished interior are still selling as strongly as ever. Sales would be much greater, however, if prices could be reduced somewhat. In connection with this, several beautiful aluminum cocktail shakers have been introduced during the past year but they are priced so high that a competing line of glassware built along sturdy attractive lines outsells them greatly.

Enameled metal trays in bright colors with decalcomania designs have been selling well and promise to continue popular. Numerous die cast boxes and trays finished in metallic colors have been selling very well. These include cigarette boxes, jewelry boxes, pin trays and the like.

Copper appears to remain in steady demand for ornamental trays, vases, plaques and the like.

One retailer reported a return to the old fashioned type of silperware with "gingerbread" filigree designs and rounded shapes. Claiming that popular taste was swinging away from straight lines, this retailer has stocked a complete line of silver reminiscent of Cellini and the "whatnots" of the gay 90's. All other retailers denied this trend, firmly pointing out that such ware was not only garish but very difficult to clean. It was claimed that only elderly people would ever purchase such ware. All were agreed, however, that higher grades of silverware were gaining heavily over cheaper plate.

Bright colors are in demand but must be used conservatively in harmonious ensembles as a trim or to prevent monotony. Model changes will be confined largely to changes in line and improvement of quality. Straight lines are still popular and promise to remain so. Soft satin finishes are preferred in metals except where such finish will interfere with cleaning, such as stainless steel skillets and the like. Table tops of stainless steel, monel metal and porcelain enamel are all in demand. Surveys indicate that public taste is improving and the trend is decidedly conservative.

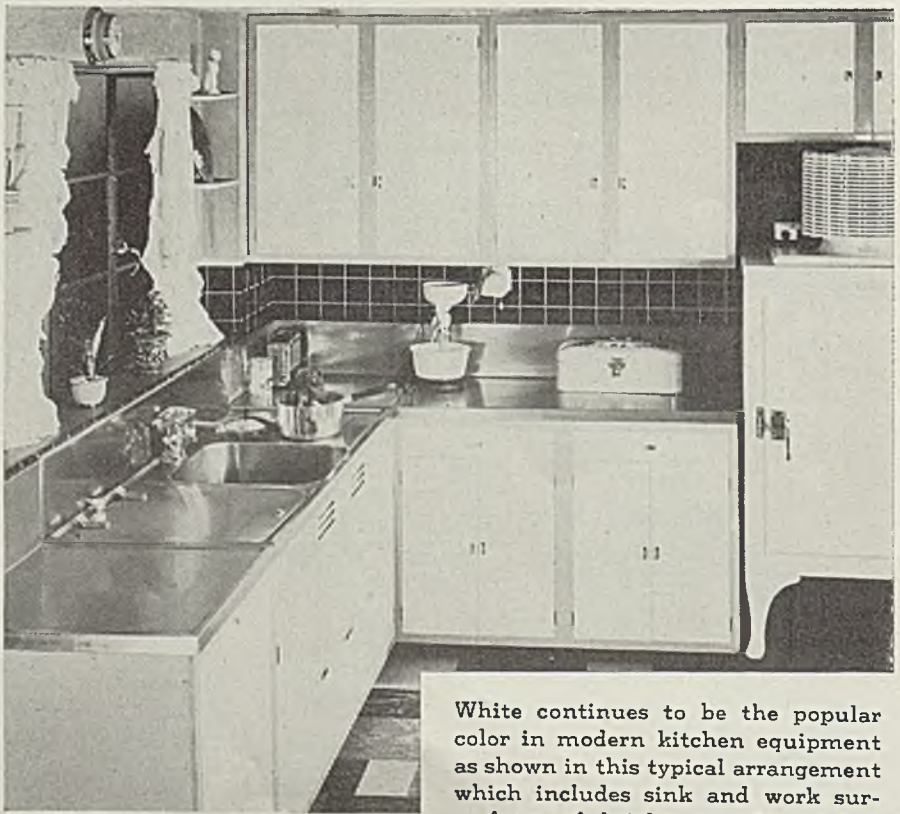
Reduce Oxide Inventories

■ For a long time inventory losses on discontinued colors in basic oxides, has been one of the most persistent and at times disconcerting problems found in porcelain enameling plants. Blended oxides can not be used satisfactorily on any but the exact shade of color for which they were blended. Yet in order to avoid costly production delays it was necessary, when stocking blended oxides, to purchase a sufficient quantity to provide a margin of safety above estimated requirements. This margin of safety frequently became dead inventory which had to be written off the books as a loss.

Other headaches could be attributed directly to the use of blended oxides. When an order came through for a particular color it was necessary to send an approximate shade with written instructions as to variations required to the oxide supplier; this meant a delay while the supplier furnished fired sample plates, finally received an o.k. and then blended the required quantity and shipped it to the manufacturer.

These difficulties are relegated to the past by the system of matching colors with basic oxides as outlined in the booklet *Solving The Color Problem,* publication of which was announced today by the Porcelain Enamel and Mfg. Co., Baltimore.

The booklet, which is designed as a hand-book on color matching in porcelain enameling plants, in addition to a complete description of methods and formulae for forty different colors in general use, contains a chart showing actual colors of basic oxide and many of the colors which can be produced by blending them, as well as general instruction for mixing, countless other colors.



White continues to be the popular color in modern kitchen equipment as shown in this typical arrangement which includes sink and work surfaces of bright monel metal

Preventing Mildew

■ Mercuric chloride is considered the most effective toxic to employ for the prevention of mildew on painted surfaces. However, where it is desired to use a chemical relatively nontoxic to humans, it is suggested that good results may be obtained through the use of sodium silico fluoride, phthalic anhydride, Dowicides or similar substances.

White marine antifouling paints are more nearly immune to attack than are dark or colored paints. Zinc oxide paints, with or without titanium dioxide, have been found very suitable.

Those who have been using copper sulphate to improve the adhesion of paints to galvanized metal will find that any of the several proprietary etching agents are more effective. Those who prefer to make up their own agents will find the following formula very satisfactory:

60 volumes of alcohol
30 volumes of toluol
5 volumes of carbon tetrachloride
5 volumes of hydrochloric acid.

Fortieth Year

CHAMBERSBURG

SINCE-1897

THE HISTORY of modern forging closely parallels the 40 year history of the Chambersburg Engineering Company. The contributions of Chambersburg to the solution of every forging problem presented by industry, with its ever-increasing demand for speed, accuracy and lower cost, are among the highest achievements of the forging industry...

CHAMBERSBURG

ENGINEERING CO., CHAMBERSBURG, PA.

Wire Stitching Replaces Riveting In Fastening Light Gage Sheet Steel

AN INTERESTING method of fastening cold rolled steel sheets has been developed by Bostitch Inc., East Greenwich, R. I., and is already extensively in use in industries engaged in the fabrication of steel sheets. This new method is that of "stitching" the steel in much the same way that books are wire stitched but with especially designed equipment.

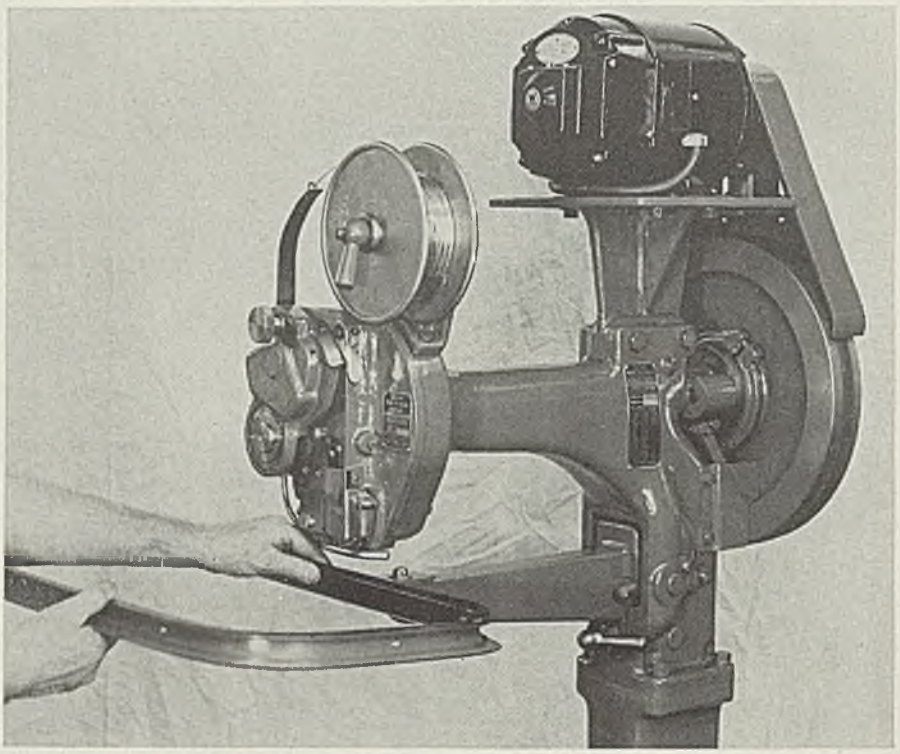
Construction of steel automobile bodies is one field in which this method of fastening has many applications. It is used with great effiiciency and economy in fastening fiber tacking strips or insulating pads to body panels and floor boards and is also employed for joining two steel sheets where the requirements will admit this type of fastening.

To force a piece of wire through steel 0.030-inch, 0.040-inch and even 0.050-inch in thickness, using a wire soft enough for clinching, presented the severest requirements that the wire stitching industry has ever faced. This has been successfully achieved through the design of the supporting and operating mechanism and by using special heavy duty parts. So efficient is the penetration in this machine that the wire actually punches out a small disk of steel as it comes through.

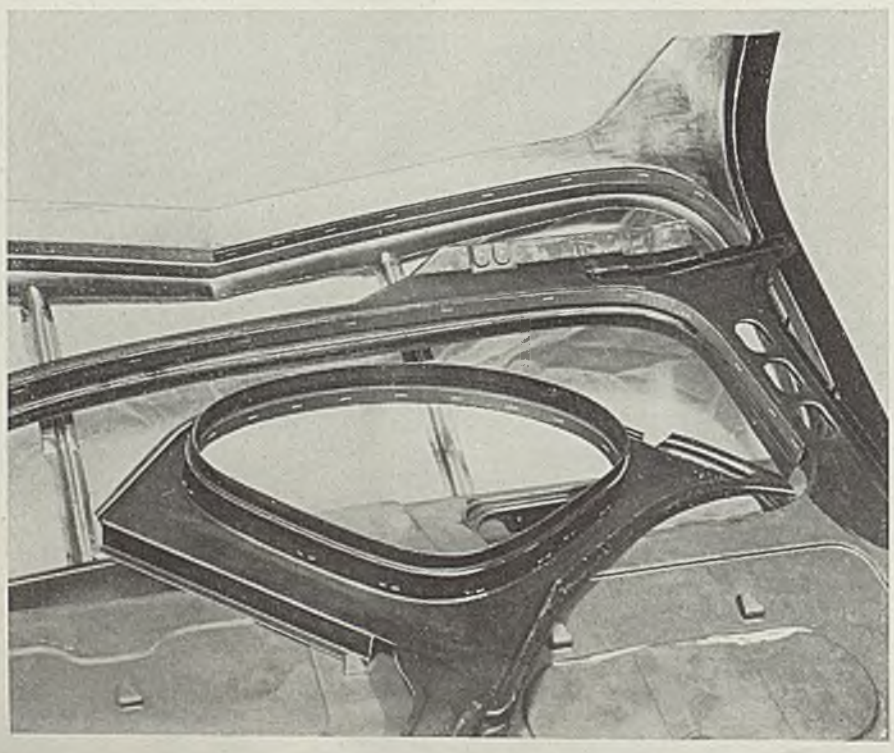
There is a variety of requirements for different steel stitching jobs, and variations of the machine are available to meet the demands. To facilitate the even spacing of the stitches, a special nonrepeating clutch has been developed which permits only one stitch to be driven each time the treadle is pressed. In work where spacing is not essential the stitcher may be operated continuously.

This type of fastening eliminates the necessity of preparing the parts to be stitched by perforating the holes for rivets and also saves the time required for inserting the rivet in the hole and placing it on a riveting machine. With steel stitching, the work is merely run through the machine and the stitch is applied at the point desired without previous preparation.

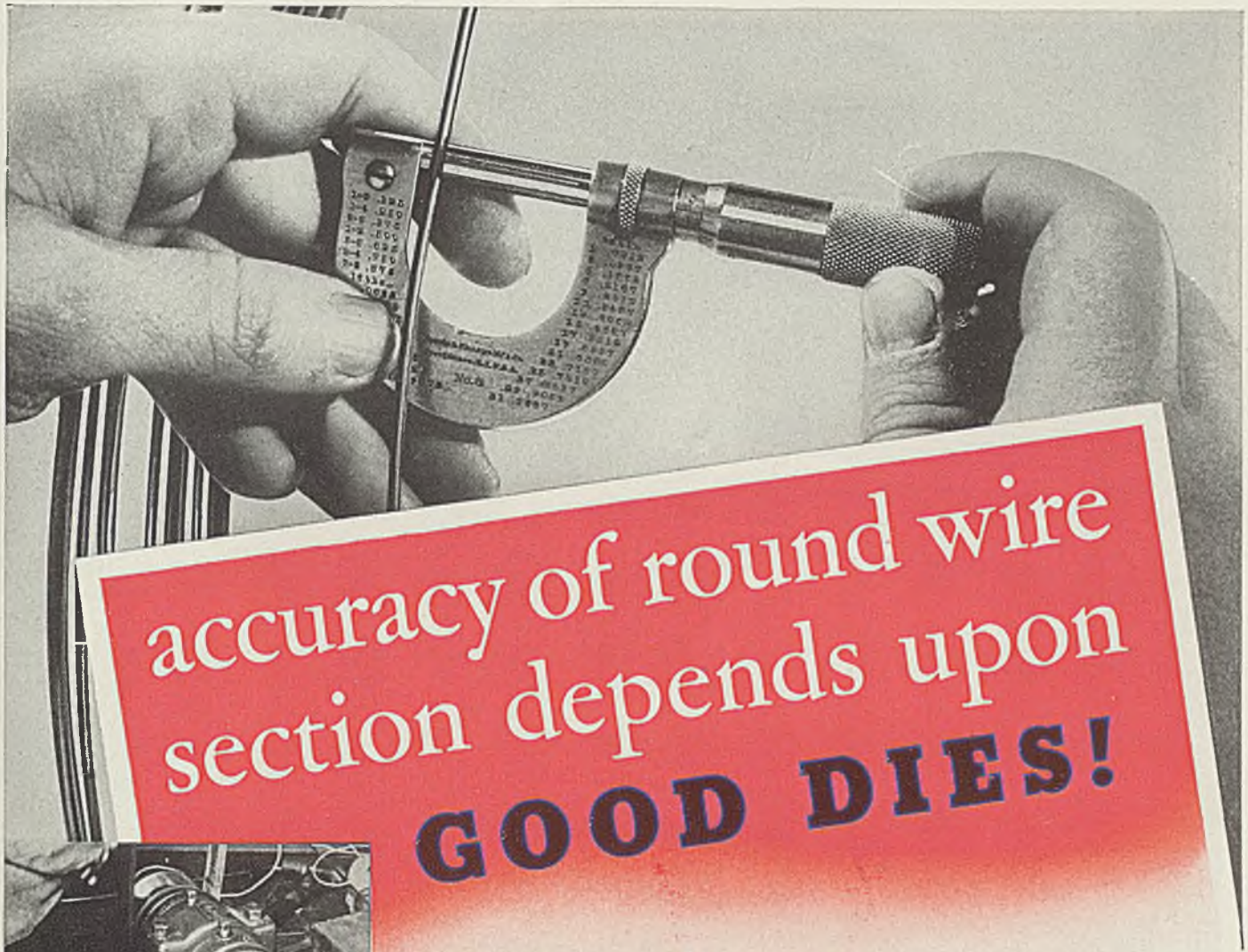
Seven different types of machines have been developed for this work and several of the country's largest manufacturers now have large numbers of them in continuous operation. Engineers and others concerned with the fastening of steel sheets should address the company at East Greenwich, R. I. for further information.



Shown here is method of machine stitching weather stripping to garnish molding for automobile window



Automobile windshield frame, body panel and window frame showing how steel stitching is employed to fasten fiber tacking strips to the steel



accuracy of round wire section depends upon GOOD DIES!

Resizing of dies is a fine art. In the Wickwire Spencer mills the die-makers have learned their trade from father to son. No more competent craftsmen can be found anywhere.

In that the cross sectional area of wire affects its stiffness, accuracy of size and shape is an important factor in determining the quality of the finished wire, its ease of working, and absence of tool breakage. Accuracy of section of all drawn wire depends upon the maintenance of proper drawing dies.

In the Wickwire Spencer mills, wire drawers and inspectors are constantly on the lookout for over-gauge of wire, and any die that may cause such trouble is withdrawn from service until it can be resized for use in drawing heavier wire.

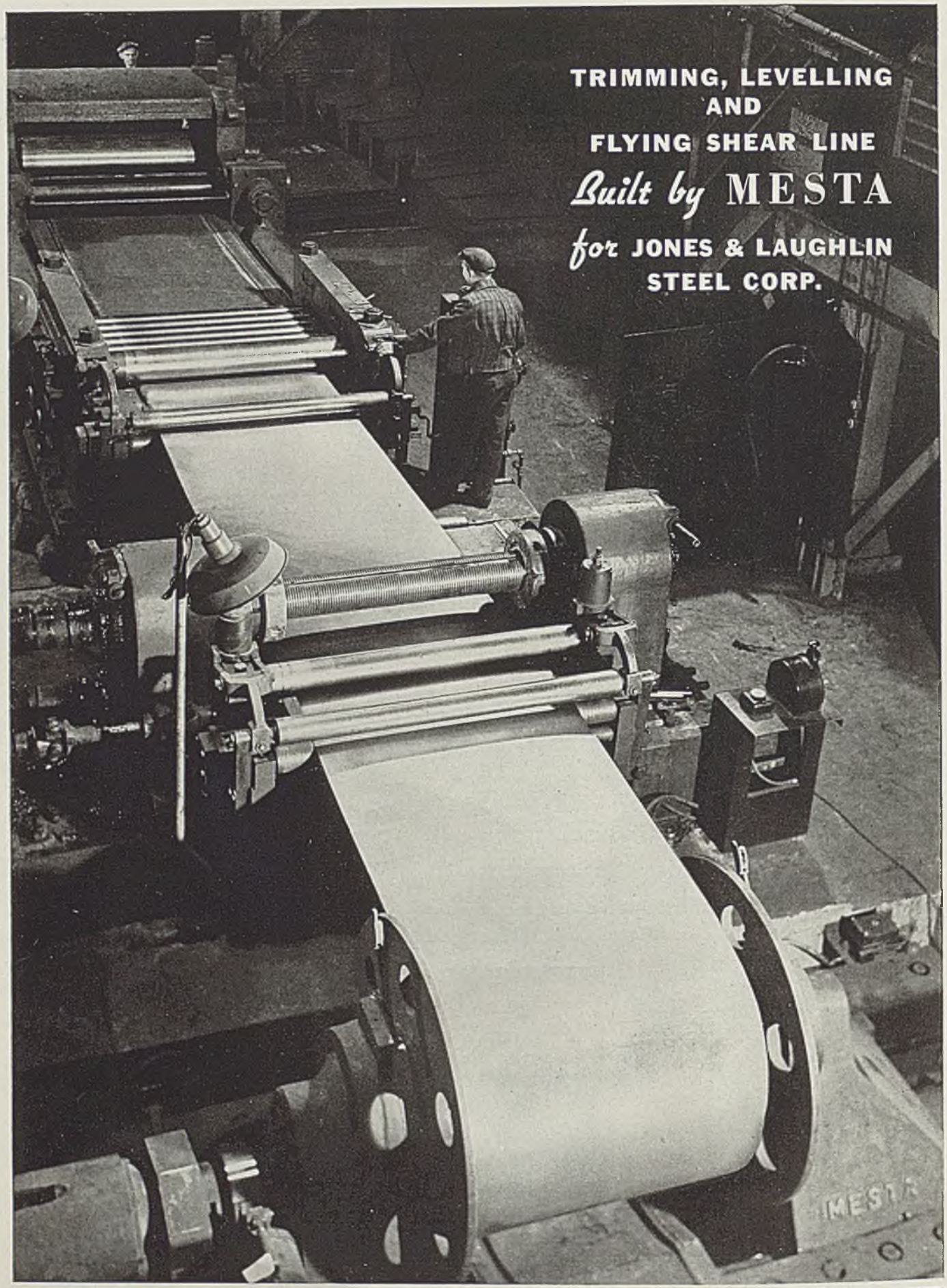
Here the art of die-making is more than drilling and polishing holes through tungsten-carbide and South African diamonds. It includes a comprehensive study of the proper angles of reduction for every metal that we draw, and the designing of dies so that they do not change shape nor chip. Wickwire Spencer produces accurate wire.

WICKWIRE SPENCER STEEL COMPANY

New York City, Buffalo, Chicago, Detroit, Worcester. Pacific Coast Headquarters: San Francisco. Warehouses: Los Angeles, Seattle, Portland. Export Sales Dept.: New York

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—Dent Spacer 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.

WISSCO WIRE
by Wickwire Spencer



MESTA MACHINE COMPANY, PITTSBURGH, PA.

PROGRESS IN STEELMAKING

New Valve Assures Easy Bell Operation with High Top Pressure

BY OWEN R. RICE

Freyn Engineering Co., Chicago

■ SOME blast furnaces operate with rather high top pressures, either habitually or occasionally. In some instances, troubles have developed, due to the fact that the gas pressure supporting the large bell has been sufficient to hold that bell closed, at least temporarily, when the bell suspension is slacked. Even though this action may not take place, the substantial upward pressure on the large bell may affect its initial lowering action.

For these reasons, some operators have shown preference of those methods of bell operation which cause a definite downward force to be applied to the large bell, without sole dependence on gravity to cause that bell to lower.

Gravity Is Desirable

On the other hand, gravity is the simplest and most effective medium possible for opening the large bell. Its use avoids complexity and obviates undesirable mechanical factors associated with the transmission of a downward push through the relatively long and non-rigid bell-rod and associated members.

The new gas pressure equalizing by-pass valve removes the objection to gravity operation of the large bell. It eliminates all possibility of difficulties of large bell operation associated with high top pressure by eliminating the cause. It equalizes the gas pressure above and below the large bell just before the latter is lowered.

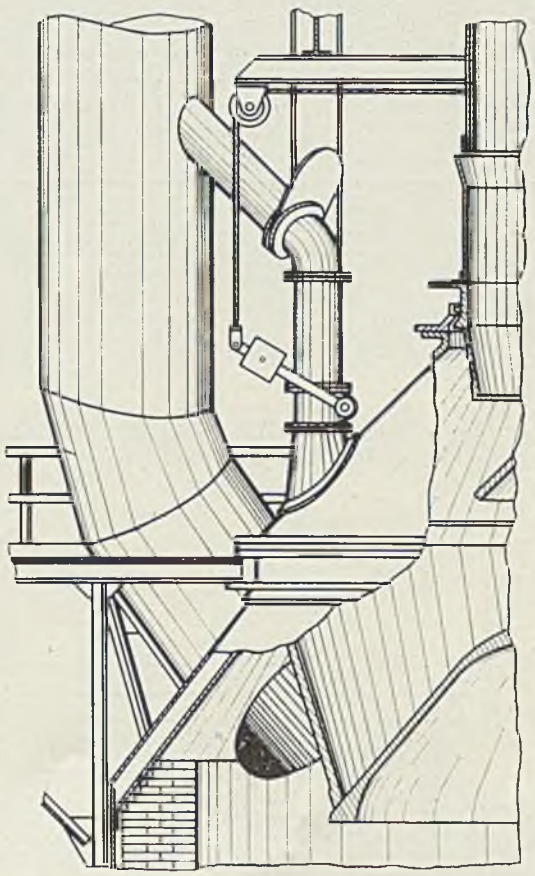
The pressure equalizing valve is inserted in a short pipe line connecting one of the gas uptakes with the space between the bells. The valve is of self-cleaning type so that any coke or other spillage upon it is discharged to the large bell hopper.

The valve is operated through a small cable, by an air cylinder or oil cylinder, controlled by an electrically-actuated valve, or by a mo-

■

Working drawing of the new valve in position on a furnace. It is claimed this type installation insures easy bell operation even with high top pressure

■



tor-driven mechanism located at the skip engine house. With either arrangement, the control for the pressure equalizing valve is incorporated as a part of the bell control system in such manner that the equalizing valve is opened before the large bell is opened. It closes shortly thereafter. Interlocking prevents operation of the equalizing valve when the small bell is open. Opening of the small bell when the equalizing valve is open is also prevented by interlocking.

An installation of this character was made at a 1000-ton furnace, recently reconstructed in the Cleveland district. This valve is operated by an air cylinder in conformity with the pneumatic operation of the bells themselves.

Floors Made Acidproof

■ Floors can be made acidproof and resistant to abrasion, according to Flexrock Co., 800 Delaware avenue, Philadelphia, by application of a new refractory material, developed by that company, which can be used over old or new concrete floors.

Reduces Conversion Cost

■ Nickel chilled rolls are being used increasingly for continuous hot strip and sheet mills, the tendency being to install them in all stands instead of the last stand. They are given a high rating when used as work rolls in the 3 and 4-high water cooled stands. Adoption of alloy steel rolls has reduced conversion costs in many cases because of few rejections of product, fewer roll changes and fewer roll redressings. Tests on a 4-high water cooled mill disclose that medium alloy steel rolls with a Shore value ranging from 70 to 80 afford four to five times more tonnage between grinds than ordinary chilled rolls and fully alloyed rolls as high as ten times more tonnage than ordinary chilled rolls per grind.

Packing Corrosion

■ While stainless steel is immune from the corrosive action of many gases, liquids and solids yet contact with leather packing results in corrosion by electrolysis. Salts impregnated into the leather during the tanning process combine with moisture in the atmosphere and form an electrolyte which pits the steel. This pitting action arises only when the stainless shaft is idle. Other packing materials, such as flax or hemp, impregnated with grease or wax filler made from a lime or soda base, exert a similar effect. Impregnating the packing with a filler which neutralizes the salts and thus nullifies any electric charges eliminates the tendency to corrode the steel.

Four Motions on Chipper

■ A billet chipper recently placed in operation for removing surface defects from all sides of billets weighing from 5 to 15 tons has four motions which are accomplished by means of four motors, the largest being a direct-current unit. The carriage is driven by a 29-horsepower, separately ventilated motor which is required to make up to 100 starts per minute. The toolhead drive is by a 20-horsepower, fan-cooled motor which runs continuously. The tool elevator has a vertical gear motor with a solenoid brake; this motor is energized 35 to 40 times per minute and is insulated. The table-roll drive has a 10-horsepower, fan-cooled motor.

Minimizing Scrap Loss

■ Removing defects from the surface of billets intended for conversion into seamless tubes is accomplished at a Pennsylvania plant by oxyacetylene gas at a cost of about $1 per ton. Approximately 36 pounds of steel is lost per ton of billets scalped. This method of surface cleaning is not used on alloy steel or billets in excess of 0.30 per cent carbon. Warming high-carbon billets before scarfing is recommended to prevent the formation of alligator cracks at the lower part of the cut troughs.

Oil Requirements

■ Improvements in the design of plain bearings for overhead cranes has effected many operating economies. The new bearings are equipped with oil seals to prevent oil seepage and a reservoir to avoid an ample supply of lubricant. The frequency of renewal of the lubricant is in keeping with that of bearings of the antifriction type. Advantages claimed for the new bearings are prevention of oil leakage and retention of the oil supply, thus minimizing the quantity of oil and service necessary.

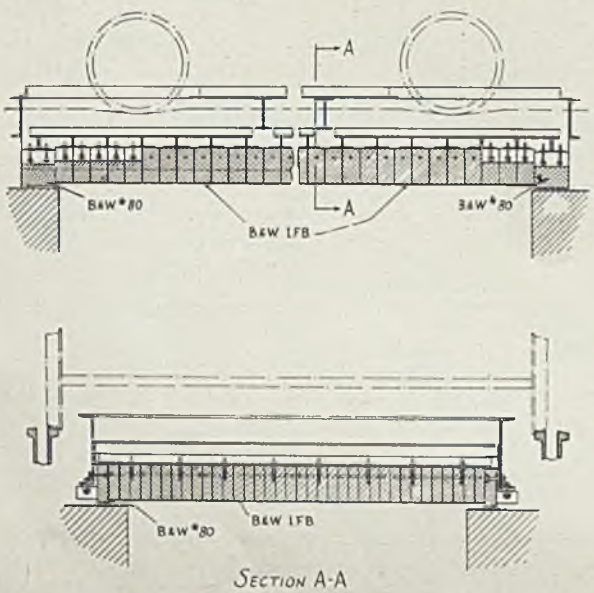
Regulators Make Savings

■ Blast furnace stoves frequently are kept on gas longer than efficient operation requires. Once the checker brick are heated to a safe maximum temperature, any further increase leads to a waste of gas. Accurate and dependable recording instruments for this application, therefore, are essential. At one plant the installation of automatic hot blast regulators has resulted in a saving in fuel costs of about 10 cents per ton of iron and a saving in the payroll exceeding $700 a month.

Increasing Roll Hardness

■ Many grain rolls employed for the production of shapes and rounds now contain nickel whereas but a few years ago they were free of this element. The trend is toward a nickel content of 2½ to 3½ per cent in order to obtain increased hardness to resist the speeds and pressures involved in present-day conversion schedules.

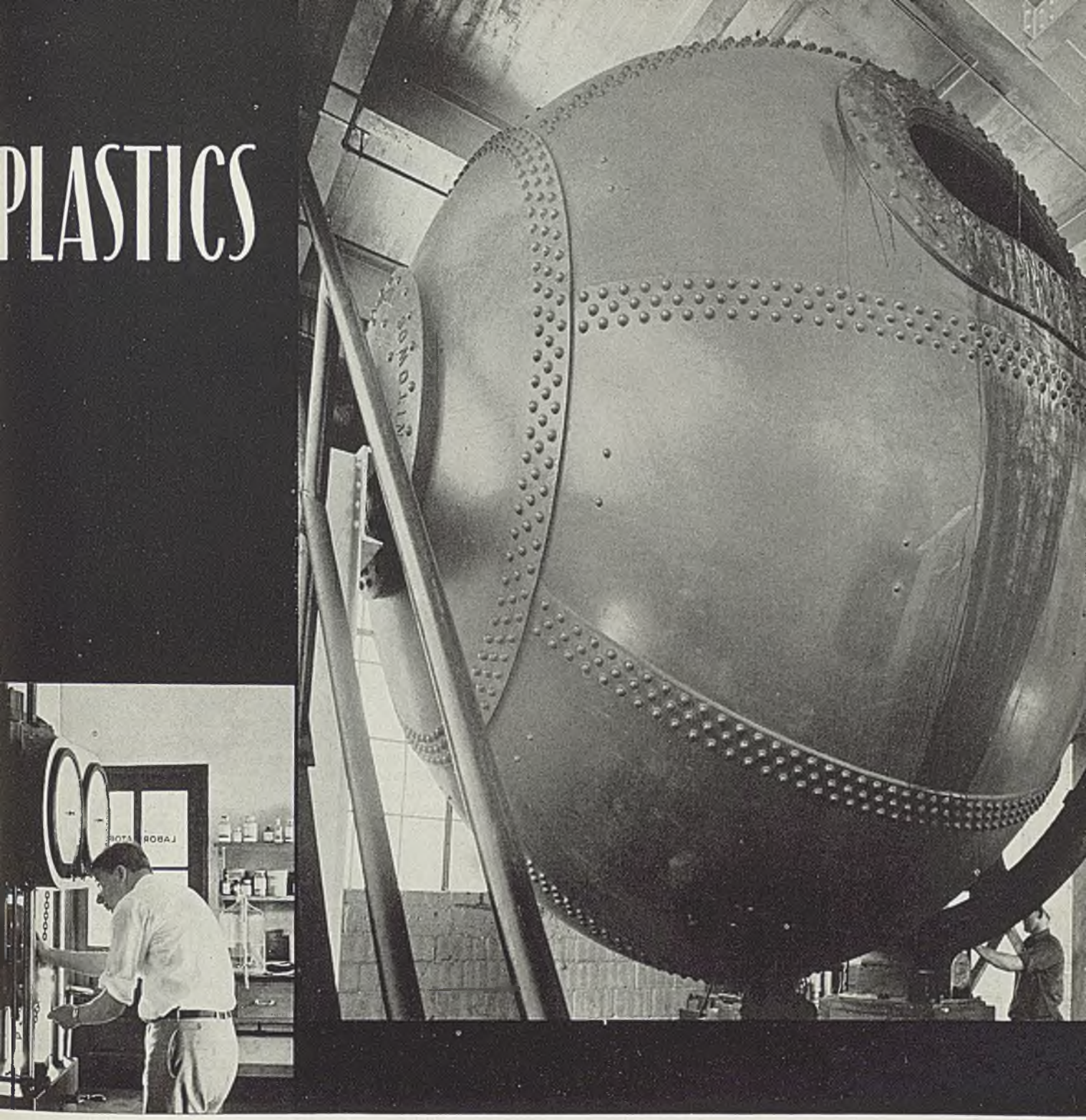
Designs New Soaking Pit Cover



SECTION A-A

■ Babcock & Wilcox Co., New York, announces a new design for soaking pit covers or similar constructions. As shown by the sketch, the refractory body of the arch is formed of B & W insulating firebrick, while the marginal portions are formed of high density B & W firebrick.

PLASTICS



TAYLOR Phenol Fabric . . . a form of plastic material that, cut into gears, has strength for the heaviest duty at about one-sixth the weight of steel, has also the ability to absorb shocks and deaden noise. It is impervious to oil and water and most chemicals, unaffected by oxidation, fumes and dust. A truly remarkable material, synthetic product of modern research, of known characteristics . . . tested in the Taylor Fibre Company's laboratory on a Southwark-Emery Universal Testing Machine.

Industry must have facts. Southwark-Emery testing equipment provides them. We should like to tell you more about this essential equipment. Ask for Bulletin 131.

BALDWIN-SOUTHWARK CORP.

Southwark Division, Philadelphia

Pacific Coast Representative: THE PELTON WATER WHEEL CO.
San Francisco

SOUTHWARK-EMERY · testing machines

POWER DRIVES

Corrects Impression on Roller Chain Speeds

■ THE FOLLOWING letter has been received commenting on the article "Weighing Advantages of Belts, Chains and Variable Speed Units," which appeared in this department in the November 1 issue. To correct the impression on limitations of roller chain drive speeds the letter is quoted in full.

STEEL
1213 West Third Street
Cleveland, Ohio

Gentlemen:

We have appreciated and enjoyed your "Power Drives" section in STEEL, *and ordinarily we have agreed with its contents, but it is necessary to call your attention to what we believe to be a serious error on page 85 of your November 1 issue.*

It used to be true that roller chains were used at lower speeds than for inverted tooth or so-called "silent" chains, but not for the last decade. Articles have appeared in the technical press on this subject from time to time, and for a number of years this company has devoted a substantial portion of its advertising appropriations to dispelling this erroneous tradition, but apparently without the success for which we had hoped. The reprints that accompany this letter are fairly typical of the form that our efforts have taken; we are not justified in burdening you with a complete file of this sort.

As a matter of fact, we believe that roller chains are more suitable for high rotative speeds and for high linear speeds, pitch for pitch, than are inverted tooth chains, principally because they are lighter in weight. It is purely a matter of mechanics, but you will find that chain makers who produce both chains, inverted tooth and roller types, catalog rotative speeds of about 3600 revolutions per minute as allowable for ⅜-inch pitch chains of both kinds. Roller chain makers who, like ourselves, do not produce the inverted tooth type are perhaps more inclined to show a little higher rotative speeds for roller type chains than the others, but we believe that you will agree with us that we have submitted satisfactory evidence that we are correct in describing roller chains as high-speed chains and in advertising them as such.

Yours very truly,
DIAMOND CHAIN & MFG. CO.
By W. A. Warrick
Mechanical Engineer

Literature enclosed with Mr. Warrick's letter illustrates and describes numerous installations of high-speed roller chain drives in industrial applications. For example, one application of a timing drive illustrated shows ⅜-inch pitch Diamond roller type timing chain operating at 5400 revolutions per minute. In another statement speeds are listed varying from 3730 revolutions per minute up to 40 horsepower to 240 revolutions per minute at 1250 horsepower.

The literature also describes the wide possibilities of use on long, medium or short centers and says any standard roller chain may be in contact with and drive sprockets from either side so that relative positions of machine units or directions of rotation have no limitations on the drive. One plant, it is stated, has over 10,000 such roller chain drive installations in operation.

Roller chains (and other types of chain as well) have progressed extensively during the past decade, as Mr. Warrick states. This is due to improved manufacturing processes with closer tolerences, the use of modern steels of controlled analysis and known characteristics and the application of the latest developments in heat treatment.

Rubber Flexible Coupling

■ A new type of flexible coupling has been developed for straight-line connection of driving and driven shafts with light power requirements as necessary on many types of small machines.

Ease of connection and long life, without attention after installation, are very desirable features for such machines from both manufacturer's and user's standpoints.

This coupling is made in the form of a cylinder from either rubber or neoprene. In either end of the cylinder are openings for the shafts of the motor and pump, or other unit being driven. These openings are of circular shape with one side flattened and are designed to fit varying sized shafts of the same general cross section.

With this arrangement, it is possible merely to insert the shafts in the openings and still secure a drive, as the co-operating flat sides do not require set screws, keys, or attachments of any kind.

As there may be a tendency for the hard shaft to abrade the resilient material of the cylinder to such an extent that the driving means would be lost, wear-resisting inserts are molded into the coupling to take this driving force. These inserts,

LINK-BELT ROLLER CHAIN DRIVES CARRIED IN STOCK BY THESE DISTRIBUTORS:

ASHEVILLE, N. C.
The Tidewater Sup. Co., Inc.
ATLANTA, GA.
Fulton Supply Co.
Link-Belt Company
AUGUSTA, GA.
S. Donald Fortson Co.
BALTIMORE, MD.
The Charles Zies & Sons Co.
BIRMINGHAM, ALA.
Moore-Handley Hardware Co.
SOUTH BOSTON, MASS.
Underwood Machinery Co.
BRIDGEPORT, CONN.
Electric Repair Company
BUFFALO, N. Y.
J. A. Webb Belting Co., Inc.
CHARLESTON, S. C.
The Cameron & Barkley Co.
CHATTANOOGA, TENN.
Mills & Lupton Supply Co.
CHICAGO, ILL.
Chicago Pulley & Shafting Co.
Great Lakes Supply Corp.
Illinois Gear & Machine Co.
CINCINNATI, OHIO
The E. W. Buschman Co.
CLEVELAND, OHIO
The Cleveland Tool & Sup. Co.
COLUMBIA, S. C.
The Tidewater Sup. Co., Inc.
COLUMBUS, OHIO
The Ross-Willoughby Co.
CORPUS CHRISTI, TEX.
San Antonio Mach. & Sup. Co.
DALLAS, TEXAS
Link-Belt Company
Southern Supply Co.
DAYTON, OHIO
The Klinger-Dills Company
DENVER, COLO.
Hendrie & Bolthoff Mfg. & Supply Co.
DES MOINES, IOWA
Electrical Engineering & Construction Co.
DETROIT, MICH.
Link-Belt Company
EVANSVILLE, IND.
Evansville Supply Co.
FORT WAYNE, IND.
Ft. Wayne Pipe & Sup. Co.
HOUSTON, TEXAS
Texas Belting Co., Inc.
INDIANAPOLIS, IND.
Link-Belt Company
JACKSONVILLE, FLA.
The Cameron & Barkley Co.
JOLIET, ILL.
Barrett Hardware Company
KANSAS CITY, MO.
Webb Belting Co.
Stowe Hardware Company
KINGSPORT, TENN.
Slip-Not Belting Corp.
KNOXVILLE, TENN.
Knoxville Belting & Supply Co.
LOS ANGELES, CALIF.
Link-Belt Company, Pac. Div.
MARTINSBURG, W. VA.
W. H. Heiston & Son
MEMPHIS, TENN.
Industrial Supplies, Inc.
MINNEAPOLIS, MINN.
Link Belt Supply Co.
MOBILE, ALA.
Turner Supply Co.
NEENAH, WIS.
J. W. Hewitt Machine Co.
NEW ORLEANS, LA.
R. J. Tricon Company
NEW YORK, N. Y.
Frank Tracy, Inc.
NORFOLK, VIRGINIA
The Tidewater Sup. Co., Inc.
OKLAHOMA CITY, OKLA.
L. V. Hopkins Company
Southwestern Gin Mach. Shops
OMAHA, NEB.
American Machy. & Supply Co.
PATERSON, N. J.
Watson-Flagg Machine Co., Inc.

PHILADELPHIA, PA.
Charles Bond Company
Lamont Gear & Machine Co.
Link-Belt Company
PITTSBURGH, PA.
Colonial Supply Co.
PORTLAND, ORE.
Link-Belt Company, Pacific Div.
PROVIDENCE, R. I.
R. I. Supply & Engineering Co.
RICHMOND, VA.
James McGraw, Inc.
ROANOKE, VA.
Tidewater Supply Co., Inc.
ROCHESTER, N. Y.
Cross Bros. Company
SALT LAKE CITY, UTAH
Industrial Supply Co.
SAN ANTONIO, TEX.
Alamo Iron Works
San Antonio Machine & Sup. Co.
SAN FRANCISCO, CALIF.
Link-Belt Company, Pacific Div.
SEATTLE, WASH.
Link-Belt Company, Pac. Div.
SHREVEPORT, LA.
Pelican Well Tool & Sup. Co.
SPRINGFIELD, OHIO
The Ross-Willoughby Co.
ST. LOUIS, MO.
Briner Electric Co.
TAMPA, FLA.
The Cameron & Barkley Co.
TOLEDO, OHIO
National Supply Co.
TRENTON, N. J.
Wiley-Hughes Supply Co.
TULSA, OKLA.
Marshall Supply & Equip. Co.
WACO, TEXAS
San Antonio Mach. & Sup. Co.
WICHITA, KANS.
Stowe Hardware Company
YORK, PA.
Geo. F. Motter's Sons Sup. Co.

IN CANADA

MONTREAL, QUEBEC
Link-Belt Limited
TORONTO, ONTARIO
Link-Belt Limited
VANCOUVER, B.C.
Link-Belt Limited

IN OTHER COUNTRIES

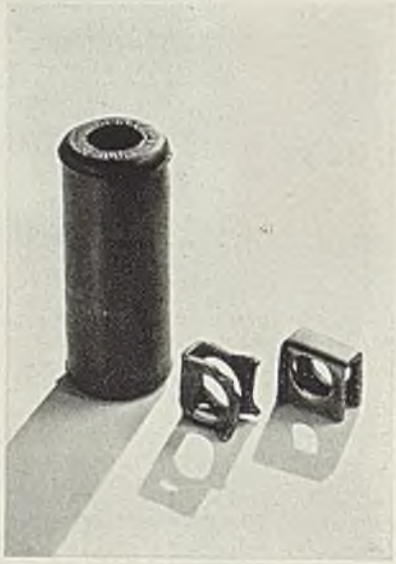
BOGOTA, COLOMBIA, S. A.
Tulio Ospina y Cia.
BUENOS AIRES, ARGENTINA
General Electric, S. A.
CALI, COLOMBIA, S. A.
Tulio Ospina y Cia.
SAN JOSE, COSTA RICA
Grace & Co., C. A.
GUATEMALA CITY, GUATEMALA
Grace & Co., C. A.
HAVANA, CUBA
Woodward, McMillan & Cia.
MEDELLIN, COLOMBIA, S. A.
Tulio Ospina y Cia.
MEXICO, D. F.
General Supply Company, S. A.
MANAGUA, NICARAGUA
Grace & Co., C. A.
PARIS, FRANCE
C. Comiot
SAN SALVADOR, EL SALVADOR
Grace & Co., C. A.
SYDNEY, N. S. W., AUSTRALIA
Link-Belt Company, Ltd.
THE HAGUE, HOLLAND
James Ruben
TURIN, ITALY
Ditta Antonio Novo

shown in the accompanying illustration, are generally U-shaped in cross section. The opening in the insert is also circular with one side flattened to fit the shaft. As these inserts are molded into position and a very good adhesion is obtained between the metal and the resilient material, a good bond is insured. However, corners of the inserts are crimped to give an even better bond between them and the rubber or Neoprene.

With this design, the coupling will withstand considerable torsional strains without breaking down, and, it is said, will return to initial or zero position as soon as the strain is released. It will absorb the shocks coincident with sudden starting or stopping and will withstand considerable misalignment without damage. It has the further advantage of being easy to install.

Where the coupling may come in contact with oil, the cylinder is fabricated from Neoprene. Oil swells natural rubber and rapidly deteriorates it, while Neoprene maintains its properties virtually unchanged, even after extended immersion in oil. It is swelled slightly, but not to any considerable extent. Neoprene, Du Pont's chloroprene rubber, also resists the deteriorating effects of many chemicals, heat, sunlight and aging.

This patented coupling is available in lengths from 1¼ to 4½ inches and shaft sizes from ¼ to ¾-inch, and may be made to order for shaft diameters ranging from 1 to 1½ inches.



Driving power for this rubber or neoprene flexible coupling for light power requirements is obtained by a flat side in the opening matching a flat side on shaft. Photo courtesy Henry Engineering Co., Moline, Ill.

Beveling Piston Rings

■ Effect of a sharp edge in scraping oil or lubricant from a bearing and the advantage of beveling or rounding the edge has long been applied to the grooving of sleeve bearings.

An experiment with beveled piston rings in a steam engine, as reported in the October issue of *Esso Oilways* seems to indicate similar advantages. In this case the average life of the two ⅞-inch rings was only about 2 months. Naturally the lubricant was blamed and a higher-priced lubricant was used.

These also lasted about the same length of time and the set replaced gave poorer service. As no rings were in stock the engineer beveled the edges of an old set of rings, as had been recommended by the supplier of the first lubricant used, until the flat bearing surface was only ⅝-inch wide. The type of oil first used was again placed in service.

These rings have now been working satisfactorily for over 15 months without change and are expected to last several months more, or until the next general overhauling period.

Perhaps similar treatment may be used to advantage on other equipment with piston rings. The bevel not only prevents scraping the lubricant, but also provides a small oil pocket or groove to feed lubricant to the bearing surface.

♦

The cost of a belt or any type of drive should be determined in satisfactory service rendered instead of cost per foot. No drive is economical unless it does provide satisfactory service.

In a section of a plant standardized to drives by motors of two different horsepower ratings the center distances and sheaves are so designed that the same size of V-belt is used. The only difference is in the number of multiple strands in the two drives. This standardization permits carrying a smaller stock of spare V-belts.

♦

Where tension is established by a screw takeup, applying sufficient tension for proper operation often is injurious to the belt when standing idle.

♦

By changing to one of the efficient types of short-center drives countershafts or other double reduction units often can be eliminated.

♦

Experience has shown that the action of a pivoted motor base absorbs the effect of centrifugal force on the belt, even under above-normal operating speeds. However, instead of disregarding centrifugal force, most transmission engineers include it in the computations as an additional factor of safety.

♦

Photo-electric relays are being used to stop electric heating processes automatically when a metal part reaches a preset temperature. Operation is controlled by the light emitted, which is a direct function of the temperature, from the heated part.

♦

A $10,000 machine tool of the latest design may be made inefficient by the use of a poorly selected control.

♦

Dull tools increase power consumption. The use of indicating instruments, connected in the motor circuit but placed in view of the operator, shows when tools should be sharpened.

♦

Motors out of balance cause vibration. One easy way to test is to place the motor on four pieces of live rubber and test with an indicator. If no vibration is indicated, any vibration in the machine is from some other source.

♦

When transformers, switches and cables on incoming and distribution lines run hot, they are overloaded. Unless corrected by decreasing the load or increasing the capacity this condition may result in a total failure or a disastrous fire. When making a change, survey the entire installation and include provision for peak loads on probable increments in future requirements. Such changes are expensive but necessary and should provide for sufficient capacity for several years.

♦

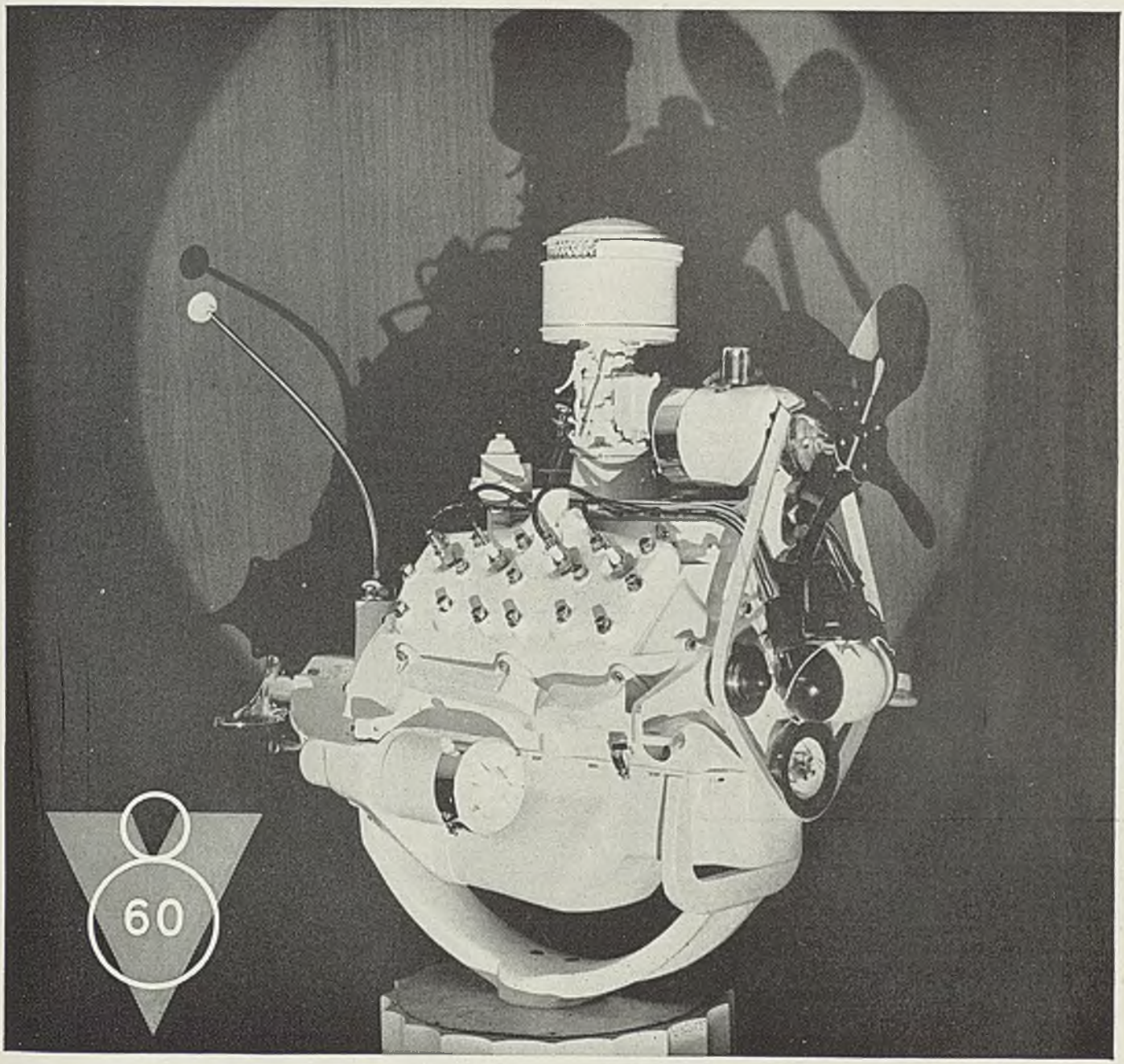
Diesel engines connected to generators for production of power have proved economical in many plants, particularly where steam is not required in heating and process work.

♦

A plate on machines stating, "This machine cost $1000," or whatever it did, increases the pride of the worker and the care he bestows on it. This is said to decrease wear and maintenance.

♦

Across-the-line starters may draw as much as six times the normal full-load current when starting. The current-supply circuits must be capable of handling this high demand whether power is purchased, and so subject to public utility rulings, or generated at the plant.



PUBLIC ECONOMY No. 1

V-type eight-cylinder engines were put in Ford cars over a chorus of "can'ts" and "never will bes." For years eight-cylinder cars were mentioned in the same breath with mink coats and big bank balances.

It took the unequaled experience and tremendous manufacturing facilities of the Ford Motor Company to bring the V-8 engine to the low-price field.

For years it was said that eight-cylinder engines cost more to run. Henry Ford believed that design—and not the number of cylinders—determined the cost of running an engine. Laboratory and road tests proved to his satisfaction that he was right. Ford facilities and experience kept production costs down—and the Ford V-8 was introduced to the world.

The records of oil and gasoline economy turned in from then on by Ford owners over millions of road miles proved conclusively that added cylinders had little to do with operating costs. Thus, the Ford V-8 engine proved its ability to meet the rigid economy requirements of the low-price field.

If any lingering doubt existed, the Ford V-8 "60," introduced a year ago, swept it aside and proved beyond question that V-8 engines can be built to operate with rock-bottom economy.

Instinctively the world of thrifty motorists responded to the announcement of a smaller Ford V-8 engine—and it was right! Letters began to pour in with records of 22 to 27 miles to the gallon—and even more!

In the first year of its career more than 300,000 motorists adopted the 60-horsepower Ford V-8. It became, in short, Public Economy No. 1. Today, it is the symbol of economy in fine-car motordom. That is appropriate, since "economy" is—and always has been—a Ford word.

Ford

FORD MOTOR COMPANY

Cornell Conference Considers Sand and Metal Problems

■ A SERIES of regional meetings in various sections of the country under the auspices of the American Foundrymen's association with program and operating detail arranged by the local chapters, culminated for the present year in a meeting at Cornell university, Ithaca, N. Y., Nov. 26 and 27. Designed primarily to cover the northwestern New York area, the meeting was sponsored jointly by the A.F.A., the Buffalo chapter of the association and by Cornell university.

An unusually interesting and instructive series of papers on the program attracted a registered attendance of 190 with approximately 40 others who attended one or more sessions. The student body of the university was absent on account of the Thanksgiving holiday. The well balanced program included papers on foundry sands, malleable iron, alloy cast iron, steel castings, nonferrous castings and cupola practice. After the conclusion of the formal program on the second day, a demonstration was staged in the laboratories of the university covering material testing, microscopic examination of cast metals and photo-elastic investigation. With the exception of the laboratory demonstration, the entire program including relaxation periods and entertainment features was staged in Willard Straight Hall.

Following an address of welcome by S. C. Hollister, Dean, college of engineering, a paper dealing with several features of the malleable iron industry, prepared by the late J. B. Deischer, plant manager, Columbia Malleable Castings Corp., Columbia, Pa., was presented by H. B. Hanley, American Laundry Machinery Co., Rochester, N. Y.

According to the author of the paper the most recent notable achievement in the malleable foundry industry is the perfection of the so called short cycle annealing of malleable iron castings. In certain plants the standard annealing time now is 31½ hours while in others a 15 hour annealing cycle has been established. However, this short cycle annealing of malleable iron cannot be done without special equipment. Chemical composition and physical structure of the white iron also are important factors.

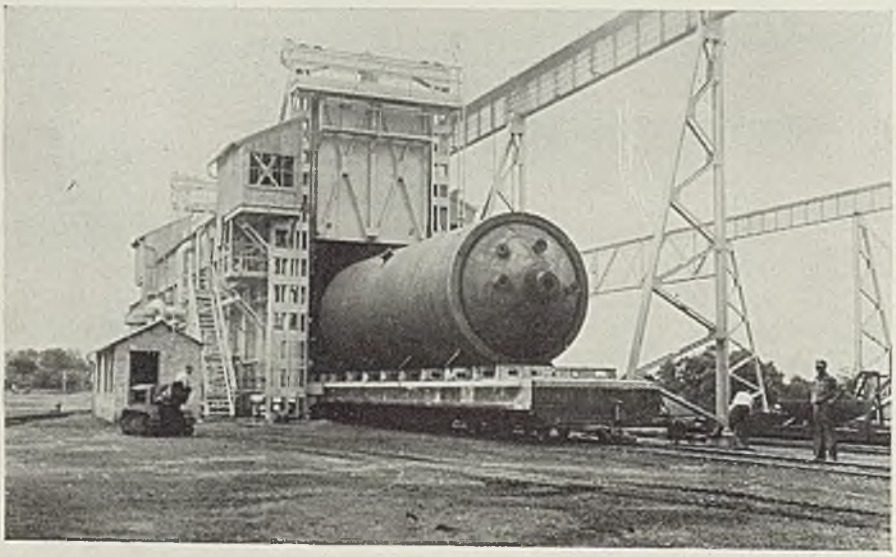
Short Cycle Annealing

The second essential of short cycle annealing involves accurate and sensitive oven temperature control in a specially designed oven with flat roof, indirect heating. The controlled atmosphere permits elimination of annealing pots and packing material, a feature which accounts for approximately 50 per cent of the burden in a pot type oven. In the 15-hour cycle the charge is raised to a temperature of 1750 degrees Fahr. in 1 hour, held at that temperature for 4 hours, dropped to 1400 degrees in 1 hour and then lowered gradually to 1200 degrees in 9 hours. In the 31½-hour cycle, the first 9 hours are consumed in raising the oven temperature to 1750 degrees. The charge is held at this temperature for 10 hours, then in 2 hours lowered to 1400 degrees and then stepped down slowly over a period of 9½ hours to a temperature of 1200 degrees.

Other developments covered in the paper include the duplexing process where the metal is melted in a cupola and then transferred to the air furnace. Pearlitic cast iron in the author's opinion should be definitely identified by a suitable name and specification to differentiate it from malleable iron. In the ensuing discussion it was pointed out that A. S. T. M. is working on a definite specification for pearlitic iron.

Two papers dealing with foundry sands were presented at a session presided over by Dr. H. Ries, Geology department, Cornell university and actively connected over a period of many years with all sand work conducted by the American Foundrymen's association. The first paper dealing with mixing and

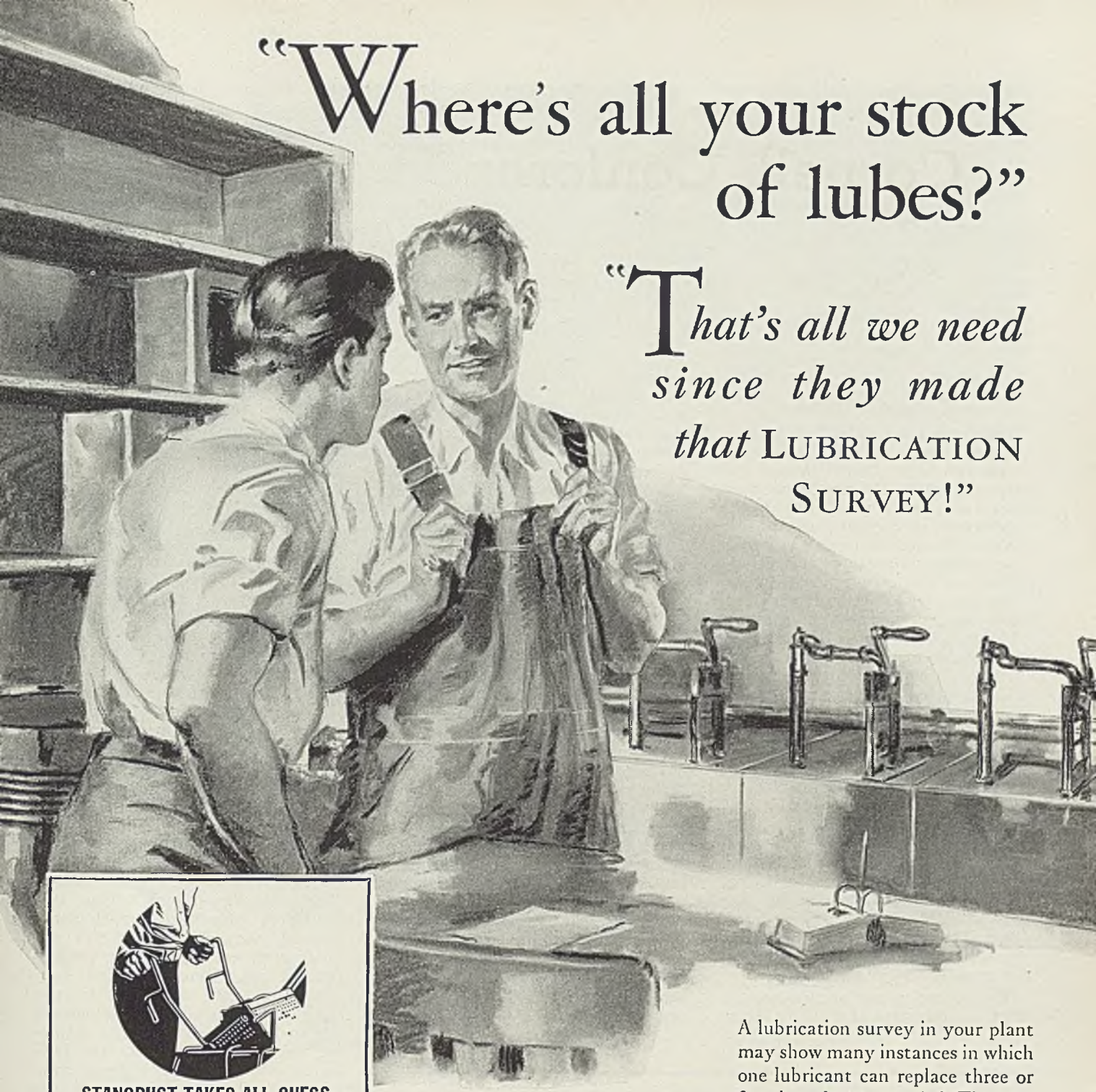
Large Stress Reliever



■ Photograph made at Birmingham plant of Chicago Bridge & Iron Co. shows a pulp digester for Union Bag & Paper Co., Savannah, Ga., going through new stress relieving furnace. The furnace is 80 feet long inside by 14 feet wide by 17 feet and 4 inches high and is fired by 64 gas burners using Birmingham by-product gas. X-ray equipment capable of penetrating up to 2½-inch plates is carried as part of the new furnace

"Where's all your stock of lubes?"

"That's all we need since they made that LUBRICATION SURVEY!"



STANORUST TAKES ALL GUESS-WORK OUT OF RUST PREVENTION

A scientifically developed rust preventive will prove to be the cheapest weapon against corrosion losses when the cost of application and removal, plus the actual protection provided, is considered.

STANORUST

—does not crack, chip or peel, and gives maximum protection over longer periods of time

—is easily removed when necessary

—can be applied by spraying or dipping, as conditions demand

—is clear, odorless, and will not cause skin irritations.

Because you get *all* these features in one product, Stanorust meets *every* condition where control of corrosion is a problem. Your local Standard Lubrication Engineer will help you choose the correct grades for your service.

A THOROUGH, scientific examination of your lubrication requirements by a Standard Lubrication Engineer will show *many* ways in which you can save money, particularly on your stock of lubricants.

Complicated lubricant stocks are hard to handle and dispense, and confusing to stock clerks and oilers alike. As a result of this confusion, lubrication recommendations are frequently ignored, definitely contributing to higher maintenance and lubricating costs.

A lubrication survey in your plant may show many instances in which one lubricant can replace three or four brands now carried. The saving this means is evident: reduced stock, less waste, less handling and lubricating time, and above all, full assurance of the right lubricant for every job.

Call the Lubrication Engineer at your local Standard Oil (Indiana) office. Let him tell you *how* a lubrication survey can bring about further cost reduction in your own plant. There's no obligation. Make an appointment with him today.

THE RIGHT LUBRICANT • PROPERLY APPLIED • TO REDUCE COST

STANDARD OIL COMPANY (INDIANA)

LUBRICATION ENGINEERING

blending foundry sands was presented by L. B. Knight, vice president, National Engineering Co., Chicago. He claimed a survey of many foundries indicated from 40 to 60 per cent of the scrap loss is attributable to the sand. A large part of this loss could be prevented if the same care and attention were given the preparation of the sand, as usually is given to the metal. Even small foundries may find it profitable to install mechanical equipment for controlling permeability, bond strength, moisture and inert fines.

Sand Control Illustrated

A number of slides illustrated various types of installation for small and large foundries and reference was made to results obtained in the character of the sand, the appearance of the castings and the saving effected in operating cost. The speaker emphasized part played by the control and removal of inert fines in controlling permeability. Tests have shown that the removal of 2 or 3 per cent of fines from a given sand will result in a larger increase in permeability than the addition of 30 per cent new coarse silica sand. Successful sand control, conditioning and reclamation program may be had by the intelligent use of equipment to: 1—Properly clean and screen the sand. 2—Control the amount of fines. 3—Properly prepare the sand in a batch type muller to use a minimum amount of bond and moisture and to obtain maximum uniformity of sand conditions. 4—Aerate the sand after it has been properly conditioned. In the ensuing discussion several points were elaborated by the speaker.

The second paper at this session "Facing Mixtures for Gray Iron, Malleable, Steel and Nonferrous Castings" was presented by N. J. Dunbeck, Eastern Clay Products Inc., Eifort, O. Departing somewhat from the usual practice in presenting papers on this subject, the author presented a series of actual weights and percentages of materials employed in facings for various weights of castings.

Practical aspects of production of alloy cast irons were discussed by R. G. McElwee, Vanadium Corp. of America, Detroit, at a session presided over by H. H. Judson, foundry superintendent, Goulds Pumps Inc., Seneca Falls, N. Y. By way of introduction the speaker directed attention to the close connection between quick anneal malleable iron and the so-called high test gray iron. While temperature is an important factor in the production of alloy irons, the time factor is even more important and must be determined accurately not only in the melting period, but also during the cooling period and if necessary during the subsequent heat treating period.

Steel Castings Discussed

At the steel casting session in the afternoon under the chairmanship of T. H. Burke, Otis Elevator Co., Buffalo, N. Y., a paper on modern development and trends in steel castings was presented by V. T. Malcolm, metallurgist, Chapman Valve Co., Indian Orchard, Mass. Through series of slides the author illustrated methods of X-ray and gamma ray tests in detection of hidden flaws. At the same session W. J. Corbett, works manager, The Atlas Steel Casting Co., Buffalo, presented a paper on steel foundry practice, in which he discussed the importance of design, pattern construction, methods of molding, general planning for production and the variables constantly encountered. In many cases long practical experience is the only guide on which the foundryman can depend in setting the shrinkage allowance.

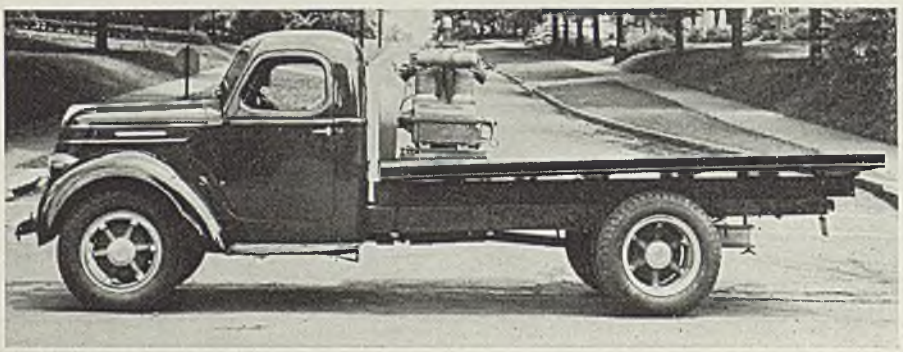
The role of silicon in nonferrous castings was discussed by H. W. Gillett, technical adviser, Battelle Memorial Institute, Columbus, O., at a nonferrous castings session under the chairmanship of A. Lockwood, Lumen Bearing Co., Buffalo, N. Y. Following a brief reference to the physical properties of the metal and to its history, the speaker referred to early German experiments in the use of the element in combination with other elements, the base of all present alloys susceptible to heat treatment. As an alloy in the aluminum industry silicon has wide application. On copper base mixtures the situation is still indefinite. Silicon additions make the bronzes sensitive to gas and lead. Traces of lead in silicon aluminum bronze have been known to reduce the tensile strength from 10,000 to 20,000 pounds per square inch. Contamination may come from hearth of furnace unless furnace is operated solely on the special metal. Care should be observed to segregate the scrap in the foundry and machine shop.

Cover Melting Process

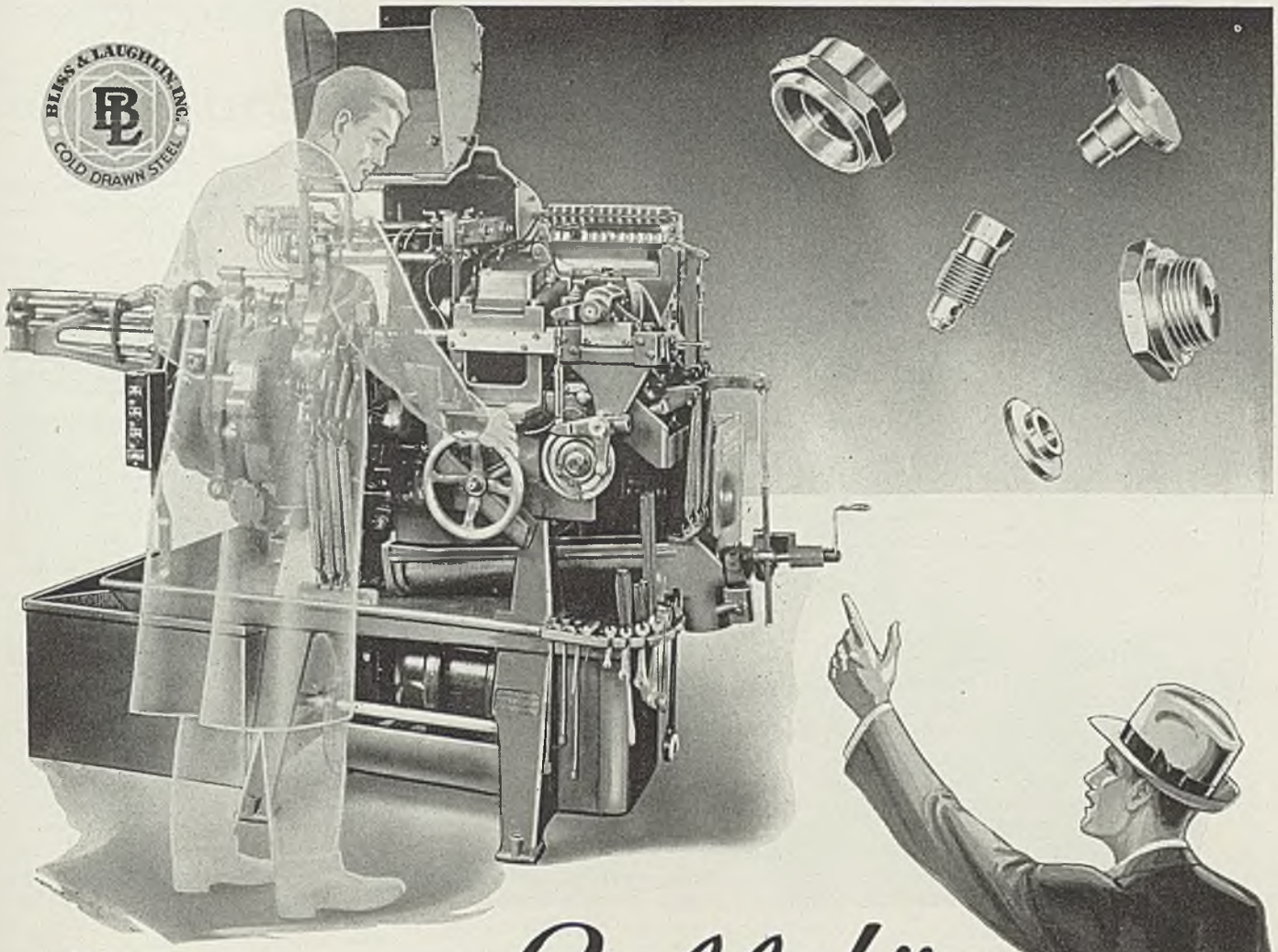
In the last session on the program, with Professor A. E. Wells, department of mechanical engineering as chairman, Donald J. Reese, foundry engineer, development and research division, International Nickel Co., New York, presented a paper which covered many phases of the cupola melting process, including proportion of coke, limestone and iron, effect of steel additions to the charge, blast pressure and volume, size and position of tuyeres, diameter and height of cupola. He illustrated and described a front slagging spout where the proper elevation of the outer end of the spout is found by dividing the blast pressure by 4 and adding a half inch. Thus if the blast pressure is 20 ounces the outer end of the spout will be 5½ inches higher than the tap hole.

At the banquet Friday night in Willard Straight Hall at which D. M. Avey, secretary treasurer of the American Foundrymen's association acted as toastmaster, brief addresses were delivered by Dr. E. E. Day, president, Cornell university, and by H. B. Hanley, foundry manager American Laundry Machinery Co., Rochester, N. Y. The principal address was delivered by Cameron Beck, director, New York Stock Exchange institute who had for his theme the present state of the nation and what should be done.

Outwears Running Mate



■ This air compressor, built by Davey Compressor Co., Kent, O., was first sold to Oklahoma Contracting Corp. in 1932 and mounted on a new tractor. After six years of hard usage the tractor wore out, but the compressor, still serviceable, was returned to the Davey plant where it was mounted on a new International truck



"Say, Bill!..."

COLD DRAWN BARS

•

ULTRA-CUT STEEL

•

GROUND SHAFTING

•

ALLOY STEELS

BETTER MADE STEELS
LABORATORY TESTED

"You have been telling me about that small ragged tip left on your machine parts after cut-off. I have taken that problem up with B & L Service Engineers, and here is a sketch they prepared showing a simple tool grind which will lick the problem for you."

* * *

Troubles like this are happening almost hourly in machine shops from coast to coast. That's where our field service men can help you. They are trained in the practical end of steel fabricating work, and are always ready to give suggestions on better machining methods.

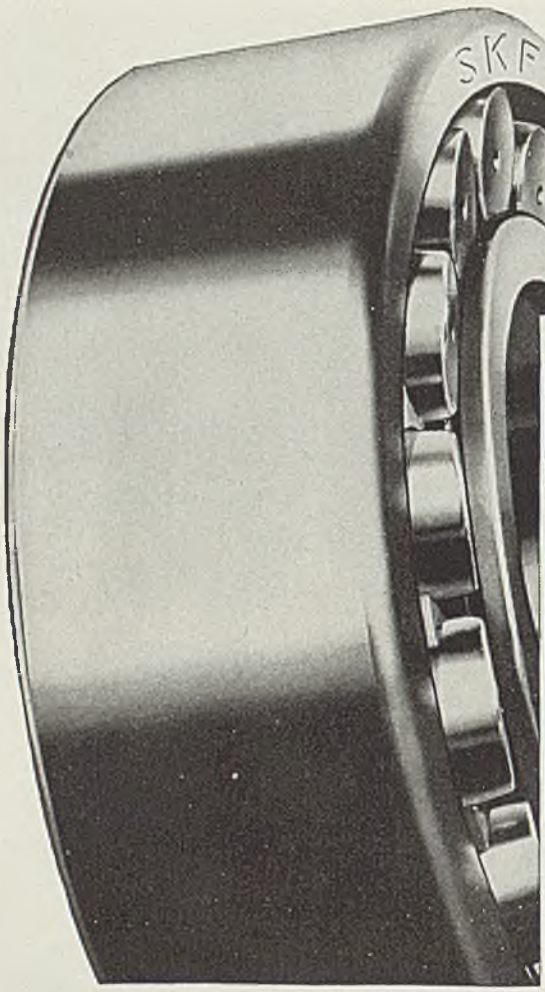
Next time our representative drops into the plant, don't hesitate to tell him your problems. You will find him a "regular fellow"—just as anxious to get results from B & L machining steels as you are. If he can't answer your question direct, he will refer it to our technical department.

Besides the subject of machines, tools, oils and tool grinds, there is the all-important question of what type screw stock is best for your job. There is a grade of B & L Cold Finished Screw Stock for every machine and every purpose:—

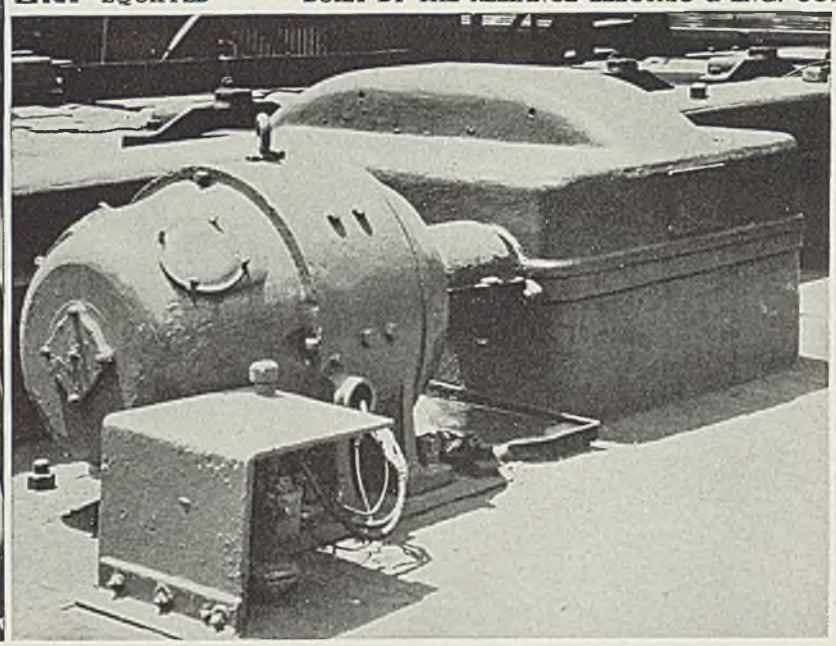
- Ultra-Cut for maximum machinability
- Open Hearth Steel for carburized parts
- SAE 1112 for slower speed automatics
- Special Screw Stock for special jobs

BLISS & LAUGHLIN, INC.

HARVEY, ILL. *Sales Offices in all Principal Cities* BUFFALO, N.Y.



SKF-EQUIPPED BUILT BY THE RELIANCE ELECTRIC & ENG. CO.



QUALITIES THAT COUNT

are in SKF *Bearings on steel mill motors*

- EVERY desirable characteristic necessary for antifriction bearings to succeed in steel mill service is in the SKF Bearings on this Reliance motor.

Dependability, permanent precision, long life, no adjustments and ruggedness are a few of the many advantages of SKF Bearings. That is why SKF Bearings enable motors to maintain high efficiency, eliminate electrical troubles due to worn bearings, and, besides, maintain the initial air gap indefinitely. That, too, is why SKF-equipped motors are establishing new performance records the world over. 4000

MORE THAN **1200** TYPES AND SIZES

Industry comes to SKF for unbiased bearing counsel because SKF makes practically all types of anti-friction bearings.

SKF INDUSTRIES, INC., FRONT ST. & ERIE AVE., PHILA., PA.

SKF

BALL AND ROLLER BEARINGS

Refrigerator Heat Leakage Is Accurately Measured

■ DETERMINATION of refrigerator heat leak value is attracting the attention of numerous manufacturers as a means of comparing values of insulation efficiency, and maintaining uniformity in production. Using this method the refrigerator manufacturer can determine the comparative heat losses in refrigerators using various types of insulation and make a scientific selection. Also, with daily or periodic tests as a part of control of quality procedure, designers are assured that specifications on insulation are being maintained.

Power consumption of refrigerators is receiving ever increasing attention due to the highly competitive market, and, as the power consumed is affected directly by the losses through the insulation it is readily seen that an accurate method of determining these losses can be made a valuable asset. This article outlines the method and laboratory installed recently by the Westinghouse Electric & Mfg. Co. at the Mansfield, O., works as a part of the control of quality procedure for determining heat leak values and performance data.

Insulated All Around

Room itself is 14 x 17 feet and is completely insulated on all sides. A temperature of 80 degrees Fahr. ± ½ degree is maintained. Heating and cooling is provided by means of a recirculating system by which the air is kept in constant circulation and is passed either through heating or cooling ducts, or recirculated direct, depending upon room conditions. Recirculation is determined by the room thermostat which is directly connected to various dampers located in the recirculation ducts. Cooling is supplied by a standard commercial refrigeration unit, with heat supplied by a radiator located directly above the cooling coil. An automatic steam shutoff is used so that when the thermostat does not call for heat the steam valve is closed.

Incoming air enters the room at the ceiling, being expelled in all directions by a circular deflector. Exhaust is made through a duct located directly under the incoming air duct. A circular deflector is placed over the mouth of the exhaust duct leaving a space of about 7 inches.

Room temperature is recorded by means of a thermometer operating 24 hours per day. Voltage supply is constant within plus or minus one volt by means of a separately maintained voltage regulator, used for this test only. A recording voltmeter gives an accurate check at all times of the voltage conditions. To insure further accuracy all kilowatt hour-meters are calibrated at the load points at which the readings are taken—25 to 50 watts. Room temperature is checked for each test by means of a thermocouple soldered to a brass cube of approximately 1 cubic inch in volume.

Each day refrigerators are selected at random from production and placed in the laboratory. Door seal is carefully checked and thermocouples are located in the food compartment. Each thermocouple is shielded from radiant heat by wrapping the junction with a white tape. A heat source located in the bottom (center) of the food compartment maintains the inside temperature of the refrigerator at 125 degrees Fahr. ± 5 degrees. A light bulb provides a simple and practical heat source using from 25 to 50 watts depending on the size of the refrigerator tested. As the room is maintained at 80 degrees Fahr. the difference in temperature between the inside and the outside of the box is between 40 and 50 degrees which is the approximate difference between box temperature and room temperature under normal operating conditions.

With the source of heat building up the inside temperature and the unit turned "off," the refrigerator is allowed to saturate for a period of 24 hours to insure stabilized condition. When the internal temperature reaches a stabilized condition, all the heat being produced by the heat source is being lost through the insulation and various points of leakage.

Two sets of readings are then taken, one after the temperature stabilization is reached and one set at the end of the test period, and the heat leak value is determined as follows:

T^1 = Temperature of thermocouple No. 1.
T^2 = Temperature of Thermocouple No. 2.
T^3 = Temperature of thermocouple No. 3.
T^4 = Temperature of thermocouple No. 4.
T = Average of T^1, T^2, T^3, and T^4.
W^1 = Watthour reading at start of test period (after stabilization).
W^2 = Watthour reading at end of test.
Time = Hours duration of test.
Temp. Diff. = Difference between room temp. and temp. (T), inside of refrigerator.

$$\text{Heat Leak Value} = \frac{(W^2 - W^1) \times 3.415}{\text{Hours} \times \text{Temp Diff. Fahr.}}$$

= B.T.U. per hour per degree Fahr. Difference.

Example:
T = Average Temp in Cabinet = 125.5° Fahr.
$W^2 - W^1$ = 1018 watt hour
Room Temp. = 80°
Time = 24 hours

$$\text{Heat Leak Value} = \frac{1018 \times 3.415}{24 \times 45.5}$$

= 3.18 B.t.u./hour/degrees Fahr. difference.

In addition to obtaining heat leakage values a laboratory of this type with its constantly maintained temperature and voltage conditions provides ideal conditions for making performance tests such as kilowatt

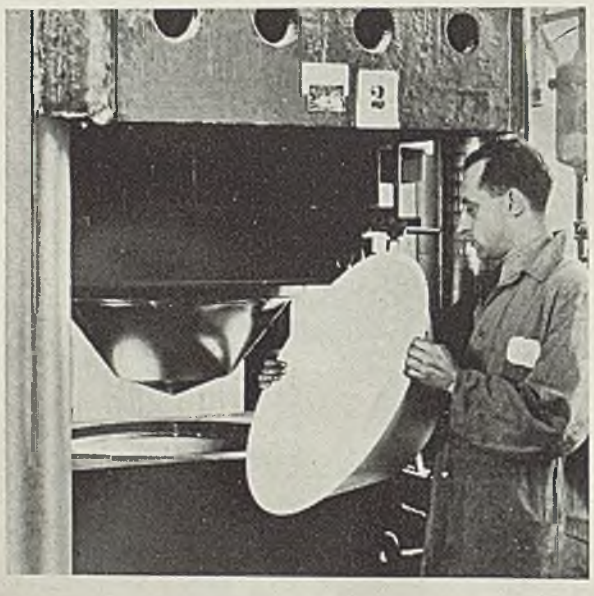
Refrigerator "heat leak" is measured in this air conditioned laboratory. Incoming air is deflected in all directions by circular deflector shown in ceiling

hour consumption, per cent of running time and box temperature. A small meter board is used consisting of a kilowatt hour meter and self starting electric clock connected by means of a series relay, so that the clock only runs when the refrigerator is actually operating. In this way the exact number of minutes of operation are registered by the clock. Temperatures in the box are registered on a recording thermometer. In this way a comparison of daily results may be made using the same operating conditions for each test.

The advantages of such a laboratory include provision of a definite checkup on daily production of refrigerators for consistancy of insulation, insuring a uniform product; provision of a definite method of comparison between different types of insulation when changes are contemplated, using the insulation under the actual operating conditions; and stable operating conditions available for performance test which gives the most satisfactory conditions for comparative tests.

Large Plastic Part Made in Steel Mold in Huge Press

■ Largest 1-piece plastic molded part to be produced by General Electric Co. is a Plaskon light reflector having an area of 550 square inches and weighing only five pounds. Made for Wakefield Brass Co., it has a diameter of 26½ inches and depth of 11¼ inches. The reflector was molded in a 1500-ton hydraulic press, of which General Electric Co. has one at Fort Wayne, Ind., and three at Meriden, Conn. The mold used in making this reflector is of steel and weighs five tons. Its creation required four months. A week was required for heat treatment, the mold being quenched during this period in a bath of approximately 15,000 gallons of circulated oil.



Plastic light reflector is produced by steel mold in a 1500-ton hydraulic press

New Curb Armor Is Of Malleable Iron

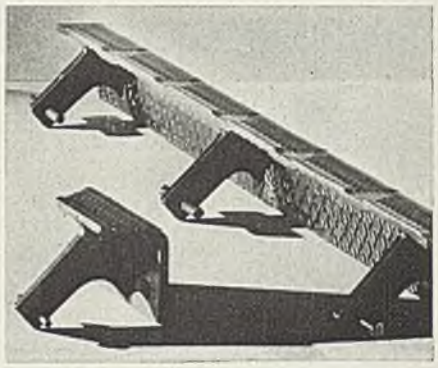
■ An unusual item, finding increasing acceptance among the engineering departments of contractors and municipalities, is malleable iron curb armor.

This curb armor, patented and licensed by the Chicago Malleable Castings Co., Chicago, provides several important advantages, and is doing much to eliminate the dangerous, jagged curbing so frequently seen in cities and on highways, and which is often the cause of expensive accidents and damage suits.

In the repair of narrow streets where every foot of width becomes a factor of safety, the street width can be increased, if curb armor is used, by about one foot over what is possible with a curb of granite, without materially lessening the width of the sidewalk.

Made of tough, corrosion resisting malleable iron, the armor is adaptable to any kind of curbing, straight or curved, and regardless of curve radius. Straightaway sections are cast in 24-inch units, returns in 4-inch sections. This permits immediate installation after delivery since the armor is simply inserted in the concrete immediately after pouring, and concrete tamped beneath the armor units. Leveling and final finishing complete the job.

The anchor design of the armor puts an end to any chance of loosening by impact or heat expansion, two factors which have always been the cause of rapid disintegration of other types of curb armor. Beveled edges on each section which overlap prevent traffic from ripping the armor loose or from damaging tires and wheels. Actual installations have revealed considerable economies in construction and original costs. No blueprinting or detailed specifications are necessary in ordering.



Straightaway sections of malleable iron curb armor are cast in 24-inch units, returns cast in 4-inch sections. Below—Armor is inserted in the concrete immediately after pouring, and concrete tamped beneath the armor units

Malleability Increased

■ Usually the proportion of tin used in bronzes intended for cold-working may amount to seven or eight per cent, but recent work suggests that there are advantages in using as much as 14 per cent of tin.

Dr. Ing. H. Lepp, Compagnie Generale d'Electro-Metallurgie, Paris, has found greatly improved elongation and malleability in bronzes of this kind which have been properly degassed. His results occur in technical publication, series D, No. 3, recently issued by the International Tin Research and Development council.

STEEL

shrinks the map

OF AMERICA

Philadelphia used to be two days from New York. Now *steel* makes it in two hours.....You can live in healthful suburbs yet work in the city, because your steel automobile makes minutes out of miles .... You can do business with the nation and the world -- instead of only a few neighbors -- because of steel machinery and transport. Because it constantly conquers distance and discomforts, *steel* makes America the most compact and progressive continent in the world.

Because steel is so definitely part of our modern life, we take it too much for granted. Do you realize that there are not scores, not hundreds but thousands of kinds of steel? Each has a certain purpose or product for which it is best suited. Here at Youngstown, when we receive an order for steel -- no matter how small nor how routine the use -- we will not begin that order until we are certain we have exactly the right steel for the purpose.

THE YOUNGSTOWN SHEET AND TUBE COMPANY

Manufacturers of Carbon and Alloy Steels

General Offices YOUNGSTOWN, OHIO

QUALITY YOUNGSTOWN SERVICE

YOUNGSTOWN

Sheets - Plates - Pipe and Tubular Products - Conduit - Tin Plate - Bars Rods Wire - Nails - Unions - Tie Plates and Spikes

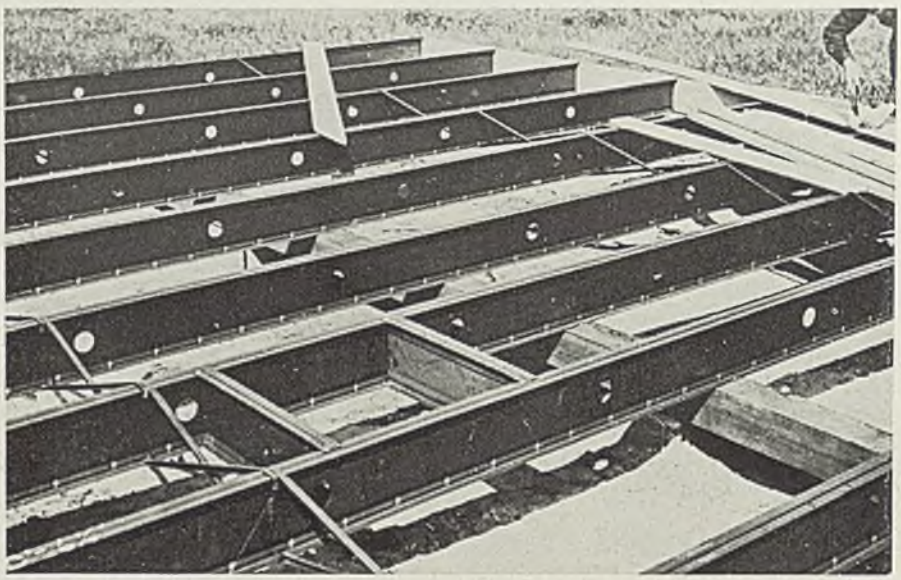
Composite-Panel House Features Steel Framing

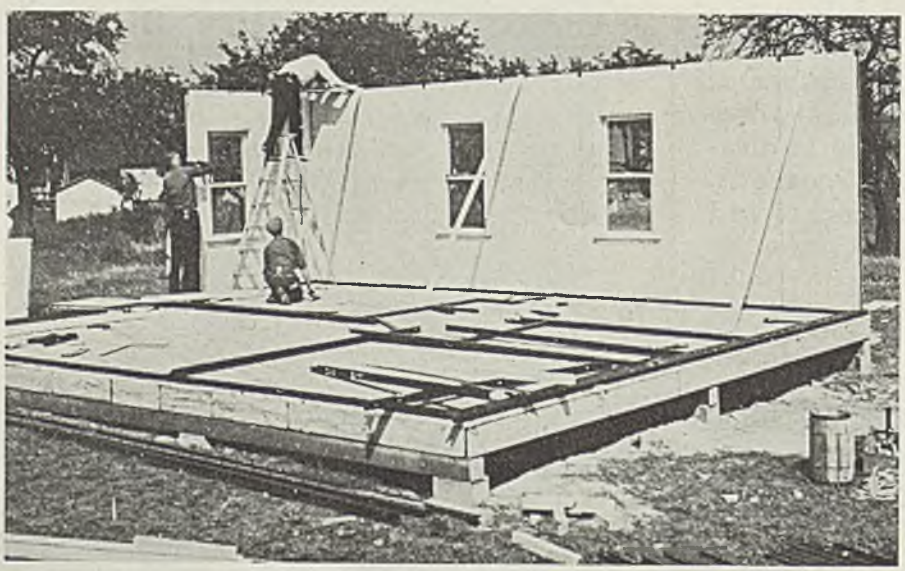
■ A NEW TYPE of house in the low-cost housing field was introduced to the building industry recently when the first composite-panel home, designed by Stran-Steel division of Great Lakes Steel Corp., Ecorse, Mich., was completed just outside Detroit.

This one-story house, with four rooms and bath, is unique in that it will be prefabricated by lumber companies of housing materials on hand—materials now merchandized through lumber dealers. Thus, costly transportation charges of the ordinary prefabricated house are practically eliminated.

The panels are made in the lumber yard—rigid insulation board on the outside and plywood on the inside attached to wood studs. Doors and windows are likewise fitted into these panels right at the lumber yard.

Panels are then delivered to the contractor at the site of the home where they are locked into steel channel and stud framing. Wood, brick or shingles may be used for the siding and any type of roofing material. Battens of wood cover the joining of the plywood inside walls, which are finished with paint. The ceiling insulation board is cut to resemble tile. The house can be erected in a week.





Steel floor joists are the rigid foundation of the new composite-panel home. Below—Windows, doors and regulation composite-paneling are joined to the steel studs by the lumber dealer and hauled to the site where floor joists have already been laid

Important feature is the "sky-scraper" construction—steel framing throughout—which eliminates sagging and settling, and reduces the hazards of termites, fire, lightning and earthquake. The patented nailing groove of Stran-Steel framing permits nailing wood or other collateral material direct to the steel.

The model house constructed, with wood siding and asbestos shingle roofing, can be sold complete, ready for occupany, for between $2500 to $3000, depending upon local real estate costs, it is claimed.

The four rooms of the model house are living room, kitchen and two bedrooms, each of the latter two with a clothes closet and doored cupboard. The kitchen has an enameled sink and tray for laundry, and cooking is done by electricity, gas or oil. Circulating heat from an oil burner, housed in a hallway niche, provides warmth at a low cost. The bathroom has modern regulation equipment.

Why Metric System Is Not Best for America

■ *Modern Weights and Measures,* board, 75 pages, 5½ x 8½ inches; published by American Institute of Weights and Measures, New York; supplied by STEEL, Cleveland, for $1; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London.

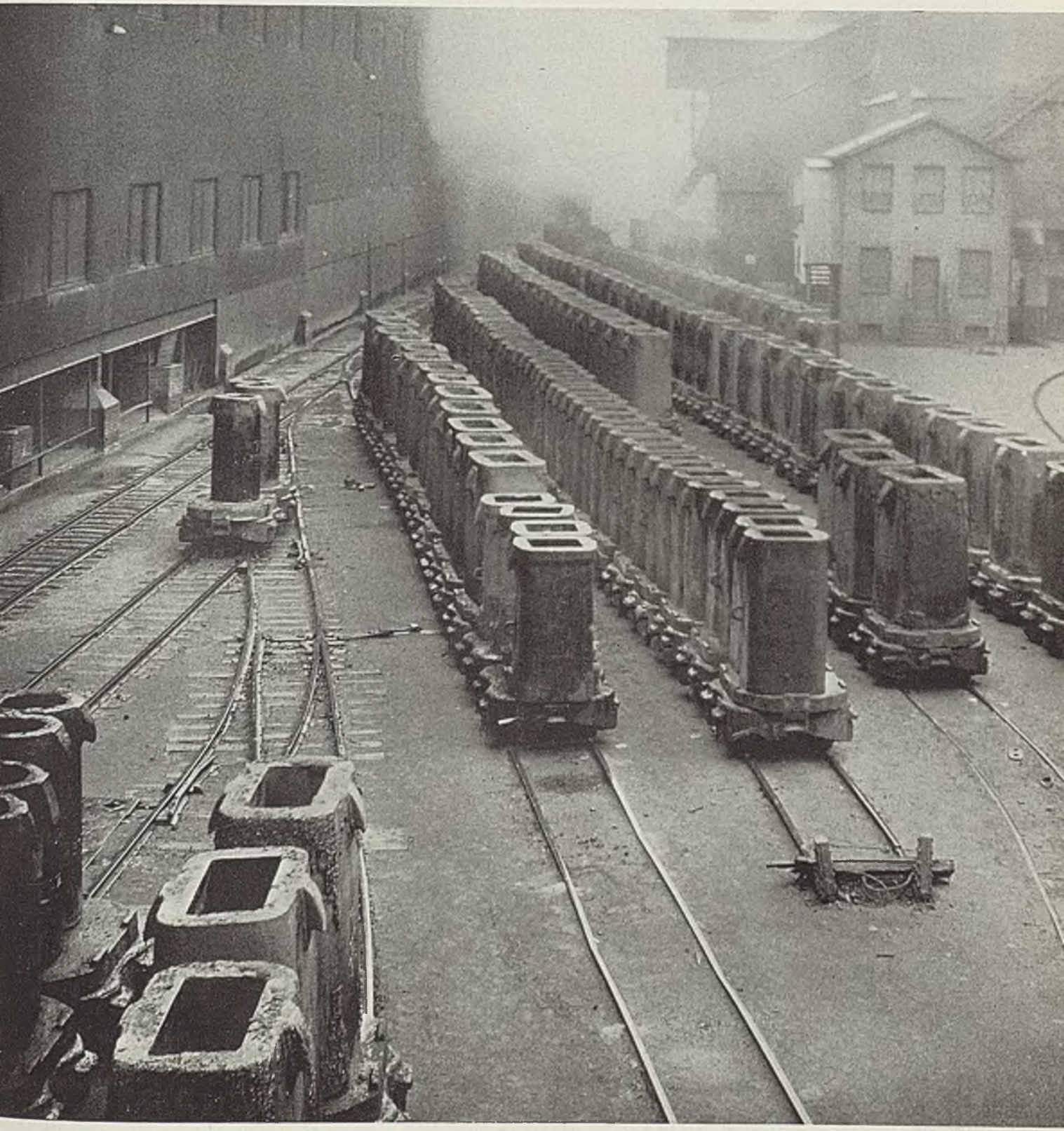
This discussion of the history of weights and measures used in the United States, as well as in Great Britain and its possessions, is undertaken, the author says, with no opposition to the metric system as such but in opposition to proposals that the present system be declared illegal and the metric system be imposed instead. The latter has been legal in America since 1866 but has made little headway in ousting the English-American standards now in use.

The author, who doubtless speaks for the institute, believes abandonment of a system so deeply ingrained in the habits and minds of so many people cannot be brought about without the risk of economic disaster.

Discussion is of great interest and the views of a large number of engineers on the proposal to substitute the metric system by law are included.

for Half a Century

. LEADER IN INGOT MOULDS



ALLEY MOULD AND IRON CORPORATION

HUBBARD, OHIO

GENERAL OFFICES: HUBBARD, OHIO

Special Problems Met In Welding Oil Well Casing

■ IN THE production division of the petroleum industry the welding of oil well casing pipe seems destined to become an accepted standard operation. Yet in spite of the advantages which are offered by a satisfactory job there are numerous special problems involved which differentiate this application from the many pipe welding jobs that have been completely approved.

Some of these problems affect the welder only indirectly. One of these is the fire hazard when gas is present. This was a source of worry at the beginning but it was found to be adequately controlled by the use of heavy mud. In rotary drilling the weight of the mud can be controlled, and as a hole is kept full of mud at all times operators are able to control the gas, except in a very few fields. These more hazardous fields are known and welding is not attempted in them.

The same hazard exists in other methods of running casings, however, because sparks may be thrown off by threaded and coupled pipe and by tools inside the casing. Another problem arises from the fact that deep well casing pipe is frequently made of medium carbon steel of high tensile strength and the high carbon content of the material makes necessary special procedures which slow up the work. And time is precious in oil well work. However, if other difficulties are overcome, which appears to be a certainty, it is probable that casings of more easily weldable quality will be made available without undue sacrifice of strength.

Some Advantage Lost

It should be obvious that a considerable portion of the advantage gained by using the higher carbon steels is lost by the reduced efficiency of the pipe wall where threads are cut, and this could be more than offset by using material which would permit of developing 100 per cent efficiency at the joint. Success in this field will therefore depend on perfecting operating methods that insure gas tight joints at a speed comparable to running a string of coupled joints.

Electric arc welding has the preference of most contractors, because of the greater ease of making a double bead weld, and of minimizing the heating of the parent metal. The arc weld suffers less quenching effect when the finished joint is lowered into the well, and that is of great importance to the contractor, who wants to go down with the casing without loss even of seconds.

Oil men are interested in two qualities that are inherent in a good pipe weld. One is that if made leakproof it stays leakproof because there is nothing about it that can work loose. Another is that it can be made permanently as strong as the pipe itself.

Problem Involves Speed

The welding problem, then, is to do a 100 per cent job and do it fast. Some of the earliest welded strings took as much as three times the running time as equivalent coupled strings but that time differential has been almost completely removed, and after a little more experience has been gained there will be no question as to the speed of running an arc welded string.

It might be well to observe that the petroleum industry is interested in this subject because it expects to get a better well casing, just as arc welding has made possible better pipe lines, better pressure vessels and better storage tanks, at no increase in cost. Consequently there has been a large amount of research done on this casing subject, in which welded joints of many kinds have been subjected to every known test, and working procedures combined with new mechanical devices to reduce the running time.

Much interest has naturally centered in the subject of joint design. In general the choice is between a butt joint and some form of the bell and spigot type of pipe joint, and both types are being used. Kane Boiler Works, Galveston, Tex., has been working on this problem for over 15 years, starting with large diameter pit casing for water wells and following down through to the small diameter (5½-inch) casing used for the mile-deep oil wells of the present day.

This company has patented a bell and spigot type of joint which has an inside bevel on the lip of the bell. The claim made for this design is that full penetration through the root of the weld is obtained on the first bead, which is refined in its structure by the second, or sealing, bead. There is of course no chance for weld metal to protrude into the pipe, so high heats can be used, which fact in turn helps to reduce

Preparatory to welding, workmen at left are aligning a 10½-inch plain end seamless oil pipe line casing, and at right are tacking a similar casing. Both bell joints and bell and spigot joints are being used at present in oil pipe welding

the welding time which is required.

Records of some 200 strings of casing recently run by this company in sizes from 5½ inches to 18 inches in diameter, and totaling well over 40 miles, show that the time has compared very favorably with that of coupled joints. The casing cost has often been appreciably lowered. Over 600 strings of oil well casing have been run to date, averaging some 1600 feet in length. The average length of string is increasing because the company is now running some strings of over 6500 feet and will very shortly run some 7500-foot strings. Faster work can be done when circumstances warrant the increased cost of equipment and overhead for doubling the number of welds made at one time.

Continued study of the mechanical problems and welding problems involved will undoubtedly lead to reduced costs and better welded casings. The amount of welding involved is considerably greater than in the case of overland pipe lines. In 1936 there were over 20,000 oil and gas wells drilled and cased at an average depth of about 4000 feet. Continued drilling activity, taking into account the trend toward deeper wells, could easily develop a welding volume equivalent to 15,000 to 20,000 miles of casing pipe annually.

S.A.E. Announces Program For Production

■ An interesting program has been arranged for the 1937 production meeting of the Society of Automotive Engineers to be held Dec. 8-10 at Hotel Durant, Flint, Mich. Featuring the three-day meeting are five technical sessions, two afternoons of plant visitations, and the production dinner. Inspection trips will be made to plants of the Buick Motor Co., Fisher Body Co., and A. C. Spark Plug Co.

Details of the program are as follows:

Wednesday, Dec. 8

AFTERNOON

Pistons and Forgings

"Casting and Machining Ford Cast Steel Pistons," by W. F. Pioch, Ford Motor Co., Dearborn, Mich.

"Precision Forging Practice," by L. A. Danse, Cadillac Motor Car Co., Detroit.

EVENING

Electric Welding

"Fundamentals of Welding," by C. A. Adams, Edward G. Budd Mfg. Co., Philadelphia.

"Recent Developments in Resistance Welding," by J. S. Williams, P. R. Mallory & Co., Indianapolis.

Thursday, Dec. 9

AFTERNOON

Finishing and Planning

"Finishing Automotive Parts with Synthetic Resin Enamels," by J. L. McCloud, Dearborn, Mich.

"Purchasing, Planning and Scheduling Parts for Building Multiple Model Automobiles," by D. A. Wallace, Chrysler Corp., Detroit.

EVENING

Machining Problems

"Do We Understand the Grinding Process?" by R. V. Hutchinson, Olds Motor Works, Lansing, Mich.

"Peculiar Machining Problems of Automatic Transmissions," by F. C. Pyper, Buick Motor Co., Flint, Mich.

Friday, Dec. 10

AFTERNOON

Gears and Splines

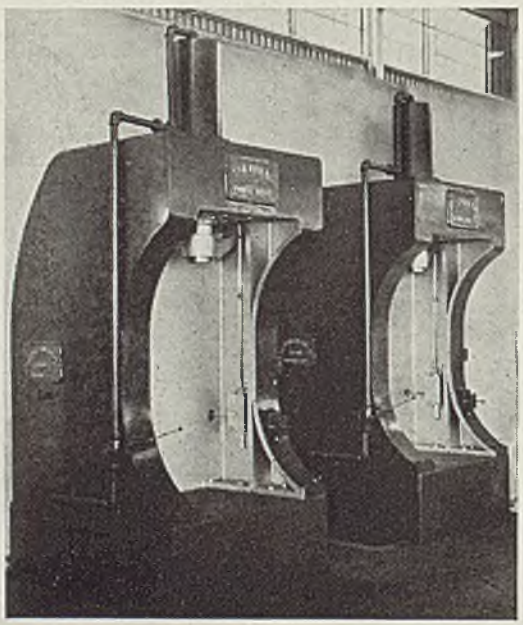
"Recent Developments in Spline and Gear Cutting and Finishing," by R. B. Haynes, Spicer Mfg. Corp., Toledo, O.

"Economical Mass Production of Accurate Gears," by C. H. Stanard, Buick Motor Co., Flint, Mich.

EVENING

Dinner. Speaker: Arnold Lenz, Chevrolet Motor Co., Flint, Mich.

Presses Made in New Form



■ These interesting power presses by Colonial Broach Co., Detroit, are rated at 50 tons capacity. Stroke is 18 inches and operation is hydraulic with 1000-pound pressure pumps. Welded steel unit construction is used and platen of 36 square inches has clearance for handling large work. These, the first two produced, are for automotive assembly work

Ingot Phase Called Most Neglected Period

■ *Ingot Phase of Steel Production*, by Emil Gathmann; 76 pages, 6¾ x 10 inches, board binding.

This volume is being distributed to steel producers, buyers of steel

Emil Gathmann

or students of metallurgy who write on their company letterhead.

It is devoted to the ingot phase, the period embracing the operations involved from finishing the heat, through teeming, solidification and reheating of the ingot to the initial working on the mill. Believing this period has been the most neglected but the most important in the entire process, Mr. Gathmann has been impelled to prepare this survey.

He describes new practices in this phase of production, improvements that the steelmaker may or may not be familiar with, and focuses attention on details that make or mar quality of his product.

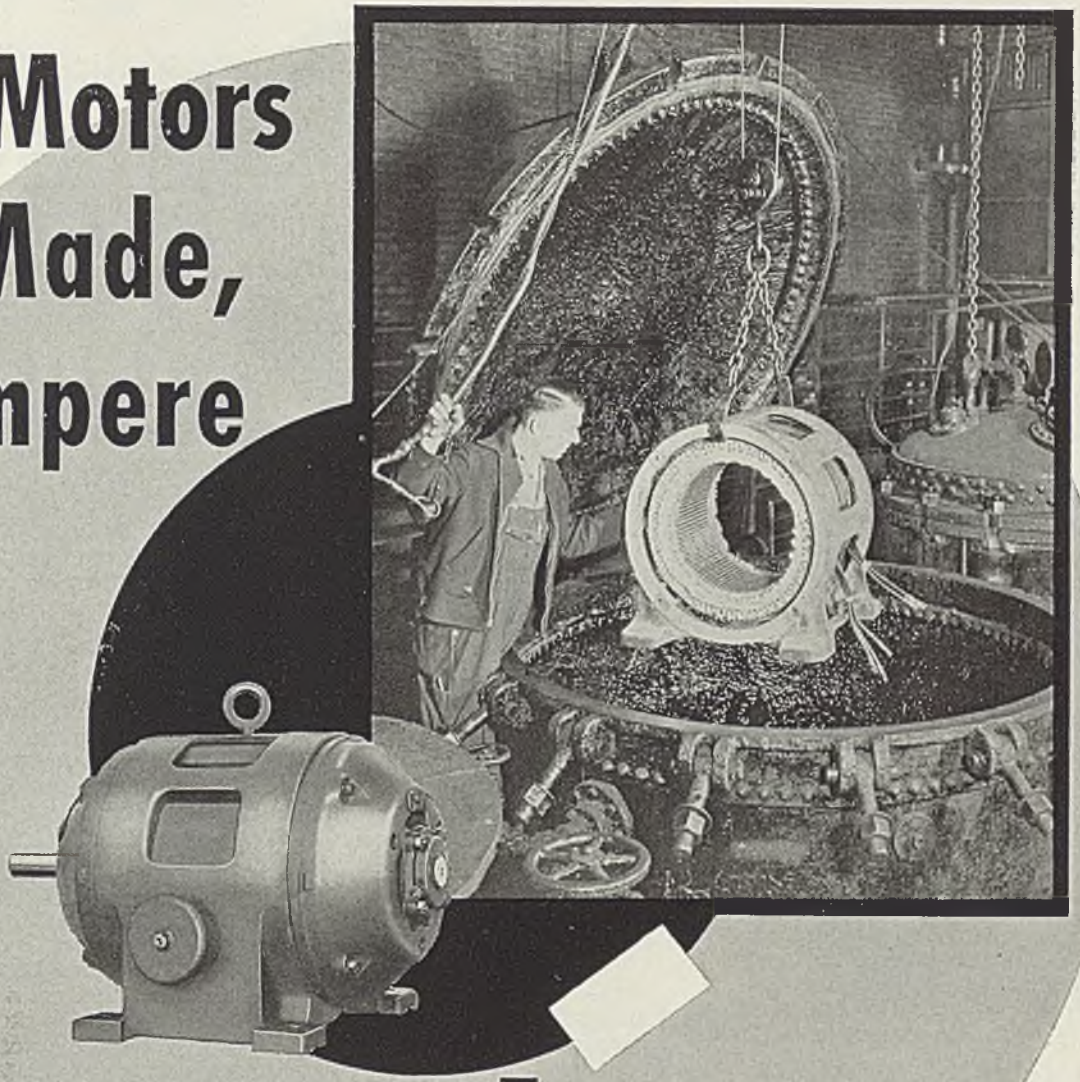
Emphasis is placed on the necessity for soundness and relative homogeneity of the ingot, which is the foundation for everything that comes after. If it is sound and relatively homogeneous, the quality of the product can be assured; if it is piped and highly segregated the product will be mediocre at best and lacking in dependability.

The text is well illustrated by halftones and diagrams to visualize the ingot interior under various conditions and make clear the descriptions of procedure.

Chutes Are Aluminum

■ Haslett Chute & Conveyor Co., Oaks, Pa., has developed for home installation a model of its laundry chute originally designed for hotels, hospitals and larger buildings. The new chute is made completely of welded aluminum and equipped with two flush wall openings, covered with die cast, satin finish, aluminum doors. It is made in three sections.

How Motors are Made, at Ampere



The illustration shows an induction motor stator about to have its life line lengthened—by means of the vacuum impregnation process.

The stator is placed in a vacuum tank under a high vacuum to remove the last traces of moisture, and is then subjected (under heavy pressure and high heat) to impregnation with insulating varnish. The varnish penetrates to every part of the windings, filling any air pockets that may have been present, and making the windings dirt, oil and moisture resisting to the highest possible degree.

This process is not used generally in the making of motors because it is an expensive process requiring very expensive equipment. It is used at Ampere—that is the reason Crocker-Wheeler motors last so long on the job.

CROCKER-WHEELER ELEC. MFG. CO.

Main Office and Works: AMPERE, N. J.

SALES OFFICES IN PRINCIPAL CITIES

CROCKER-WHEELER

TRADE MARK REG. U.S. PAT. OFF.

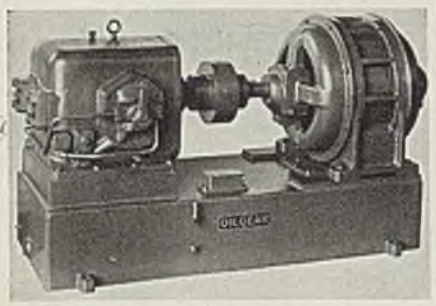
EXCELLENT ENGINEERING

NEW EQUIPMENT

Oil Flow Reversed In Displacement Pump

Oilgear Co., 1301 West Bruce street, Milwaukee, has introduced in its line of variable displacement, fluid power pumps the type DH pump which, when used in combination with one or more motors, constitutes a variable speed transmission for driving conveyors and machines in manufacturing plants.

Finger-tip actuation of a small lever provides stepless variation of fluid power delivered in either direction from zero to maximum. Movement of control lever through an angle of 50 degrees to either side of the neutral bypass or idle position increases the displacement automatically in proportion to the movement of control lever. Rams on linear applications and output shafts on rotary applications follow-up or respond instantly to the will of operator. Mounting of control lever 90 degrees or 180 degrees permits convenient installation of semi-automatic or full automatic controls to pump from any remote part of machine. Since oil flow is reversed by the pump control, no external control valves are required and installation is greatly simplified.



Type DH Oilgear variable displacement pump has large motor base

This simple control makes the DH pump suitable for operating straightening, assembling, forcing, broaching, extruding and general manufacturing presses, push and pull broaching machines, stretching machines, rim rollers and welding machines.

Airport Tractor Adapted To Industrial Work

Mercury Mfg. Co., 4044 South Halstead street, Chicago, has announced a new gasoline-driven industrial tractor, originally developed for handling super-transport airships and general airport service, and now available for industrial work.

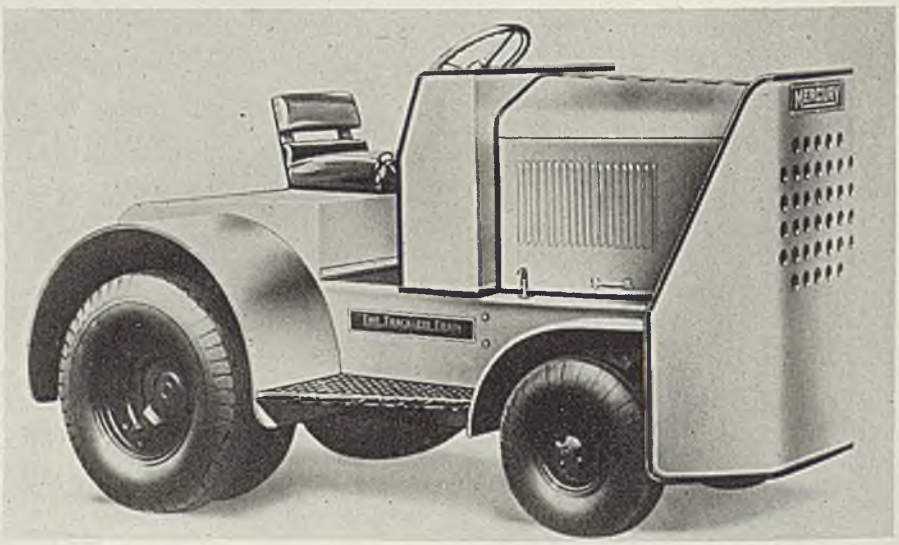
This unit is designed for maneuverability, tractive effort, smooth handling, wide speed range and appearance. It employs a Chrysler 6-cylinder, heavy-duty type, truck engine governed at 2400 revolutions per minute with rear axle ratio of 12.23 to 1 through double-reduction bevel and spur gear drive with full-floating Timken mounted dual wheels. This power plant is said to deliver an extremely smooth pull without slipping the clutch.

By keeping the short wheel base of 60 inches and turning the front wheels to an angle of 45 degrees, a short turning radius is effected. This tractor has truck-type 4-speed transmission with provision for power take-off. It is spring-suspended front and rear. Battery, self-starter, horn and pneumatic tires are standard equipment. Optional accessories include snow plow, power-driven broom, headlights and either solid or pneumatic-type drive tires may be specified.

Embosses Metal Tags

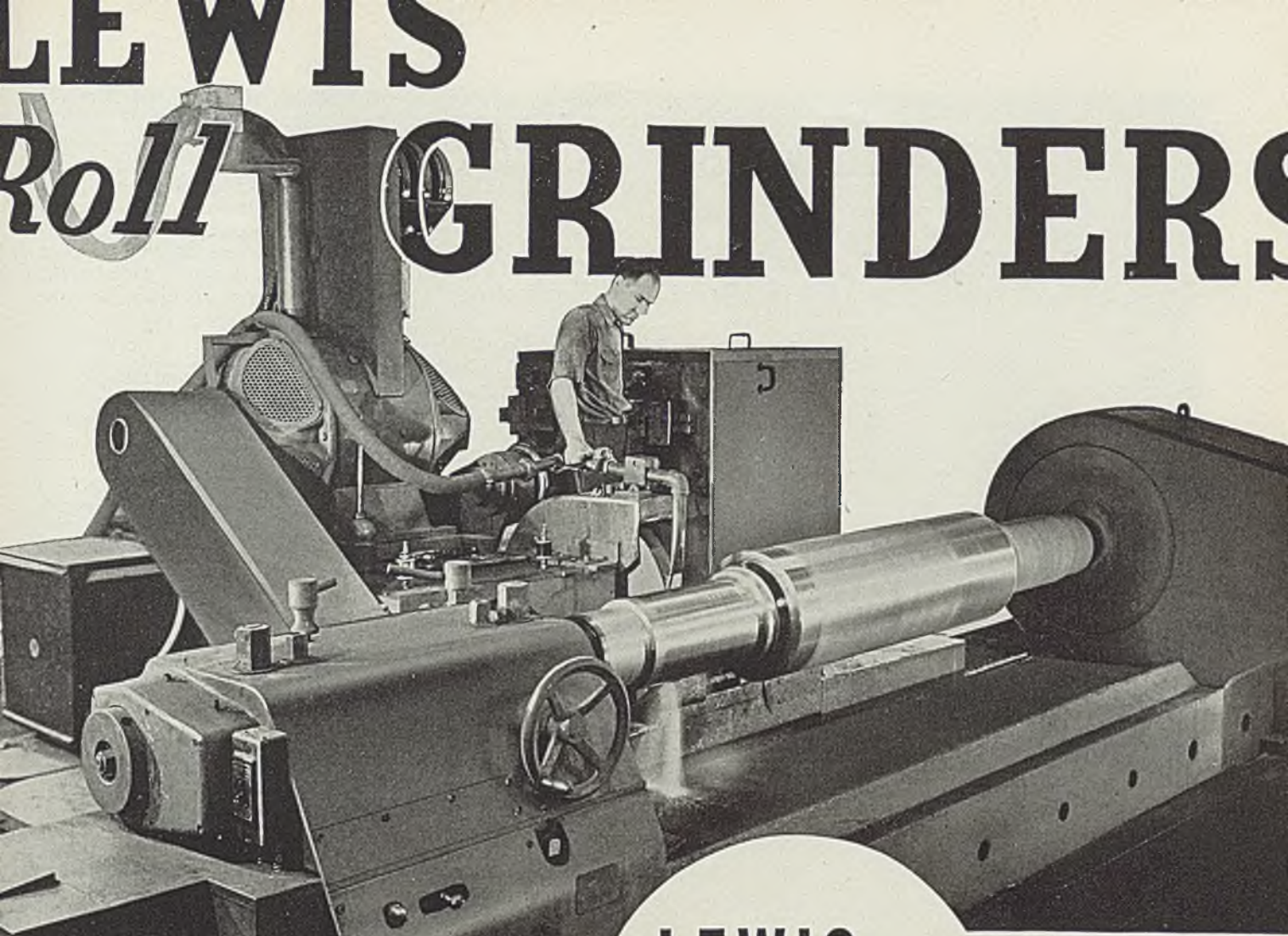
Pannier Bros. Stamp Co., 207 Sandusky street, Pittsburgh, has placed on the market a new metal tag embossing machine, capable of embossing from 1 to 6 tags at one time. The machine is to be known as model 344.

Embossing characters are engraved on the teeth of the embossing wheels. The upper wheel is engraved with female characters while the corresponding lower wheel has the male characters engraved on a similar tooth. Characters include

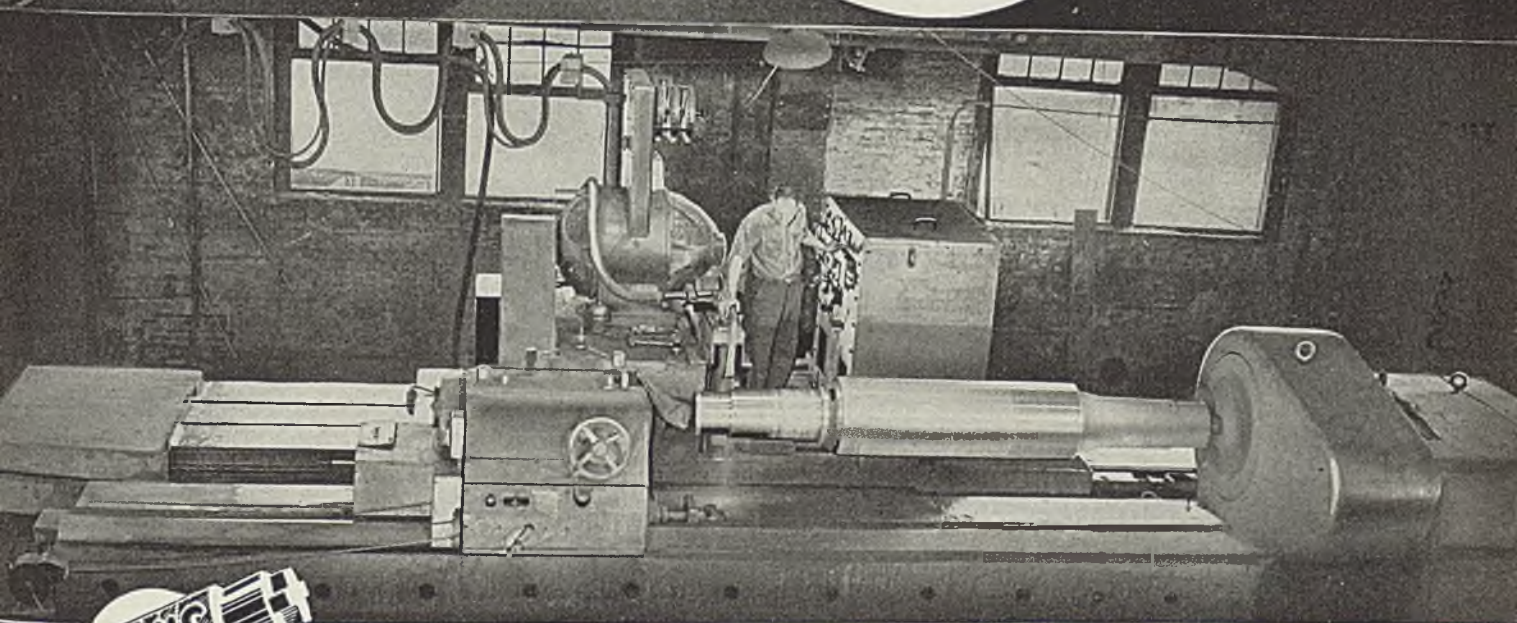


Known as "The Trackless Train," this gasoline-driven tractor, built by Mercury Mfg. Co., Chicago, employs a 6-cylinder Chrysler engine. The tractor was originally developed for airport service but is now available for industrial work

LEWIS Roll GRINDERS



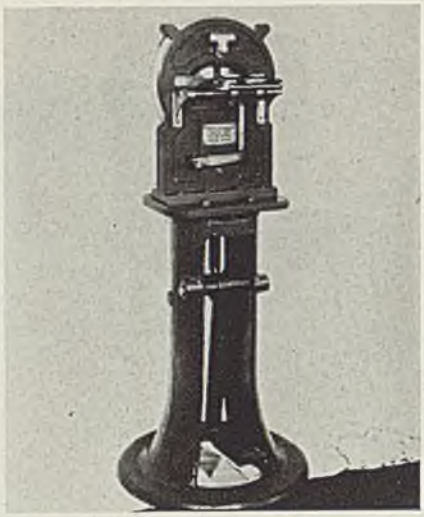
LEWIS *makes heavy duty*
ROLL GRINDERS *for*
the iron and steel industry.



LEWIS FOUNDRY & MACHINE CO.
PITTSBURGH, PA.

the alphabet, figures and punctuation.

Embossing wheels are meshed with the gear teeth of the outer or control wheel, which actuates the revolution of both embossing wheels simultaneously. Movement of control wheel clockwise or counterclockwise positions the character desired. Depression of foot treadle



Model 344 Pannier embossing machine is capable of embossing from 1 to 6 tags at a time

embosses character on the metal tag. Same movement of treadle causes tag, after embossing, to move automatically one space to the left into position for the next character. A brass guide is provided with the machine to emboss tags shorter than 5½ inches in length. Machine is 54 inches high and the overall weight is 500 pounds. This model is available in 5 types, with embossing capacities from 6 to 9 lines, and 24 to 27 characters to a line.

Metal Hose Is Flexible

■ Atlantic Metal Hose Co., 123 West 64th street, New York, is manufacturing Atlantic seamless metallic hose in bronze as well as steel and available in diameters of from ⅛ to 3 inches.

Made from seamless tubing, flexibility is derived from a corrugated, bellows construction. Hose can be used for extremely high pressures and temperatures and is claimed to be entirely leakproof. Type A is for normal pressures, type A-1 with single wire braid for high pressures and type A-1 with steel or brass casing for very high pressures and severe conditions.

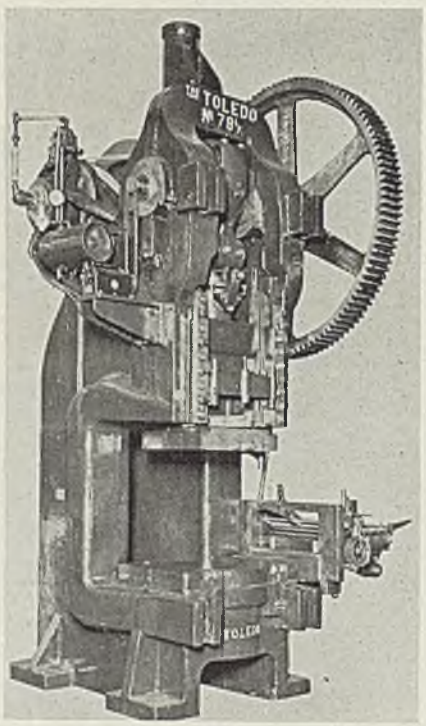
Also a company product is seamless welded steel hose for diesel engine exhaust purposes and available in sizes from 1½ up to and including 20-inch internal diameter. Construction has no interlocking joints to open up nor packing to rely on for tightness. Hose is furnished in straight lengths or bent to specifications, equipped with flanges or nipples brazed on.

Automatic Feed Press Has Semisteel Frame

■ Toledo Machine & Tool Co., 1420 Hastings street, Toledo, O., has brought out a new and improved No. 79½ open back, automatic feed press mounted on fixed legs and equipped with a single roll feed with a 7-roll, power-driven straightener to provide an automatic method of feeding the stock from 0 to 12 inches.

Frame of the machine is a one-piece high-test semisteel casting. A 15-horsepower, 1200-revolutions per minute motor is required to operate the press. Both driveshaft and flywheel are mounted on anti-friction roller bearings, while frame and connection bearings are bronze bushed.

Features of the machine include an electric push-button control requiring the operator to keep both hands on palm buttons until completion of working portion of the stroke, an antirepeat mechanism, air brakes for stopping the flywheel, air counter-balanced slide and a crossbar knockout.



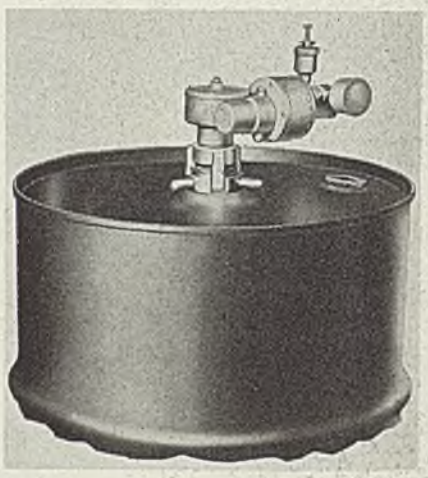
This No. 79½ Toledo open back, automatic feed press has a frame of one-piece semisteel casting

Feed is mounted on the bolster and the level at which the rolls operate can be adjusted up or down to suit the height of dies. Electrical protective switches can be incorporated in the dies or on the feeds and hooked up in series with button to stop the press should a jam occur at the feed.

Unit Agitates Paint

■ DeVilbiss Co., Toledo, O., recently introduced a new method of agitating paint in shipping containers by means of an air motor drive. The unit consists of a standard air motor and a reduction unit.

Included in the unit are two drivers, one for a 1½-inch square and



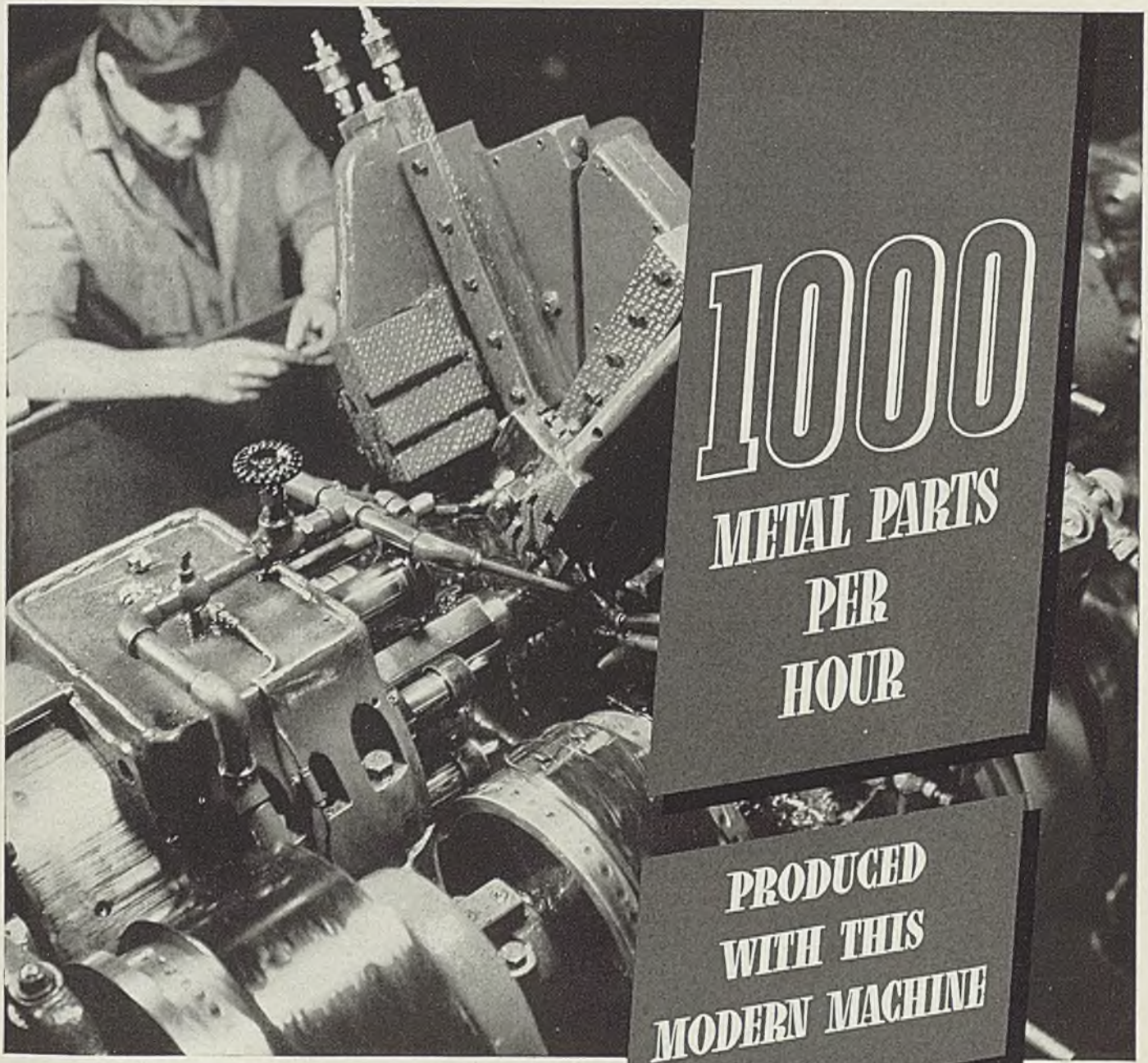
DeVilbiss air motor drive is used to agitate paint. Motor fits on drum and is portable

one for a ⅝-inch square on the agitator shaft. An adapter with 1½-inch and 2½-inch straight male pipe thread and 1¼-inch female pipe thread to fit the openings in the paint drums is included.

The unit is portable, and may be transferred from one drum to another. Change is made by lifting off the agitator shaft and disconnecting the air line. The unit will operate from a 1 horsepower or larger air compressor, depending upon the speed of agitation required. Speed of motor may be adjusted from 10 revolutions per minute up.

New Fire Detector Enclosed in Vacuum Tube

■ Thomas A. Edison Inc., Orange, N. J., has introduced a new and improved type of fire detector which is contained in a vacuum tube which in turn, protects the mechanism against any deleterious effects, in-



THIS SIX-SPINDLE AUTOMATIC MACHINE produces 1000 metal pieces for door knobs in an hour. The bar stock is cut at a surface speed of approximately 200 ft. per minute and is formed, knurled, drilled and cut off in this machine.

GULF QUALITY LUBRICANTS INSURE ACCURATE WORK...AT FULL CAPACITY

Accurate, high-speed production— that's what modern machines like this are built for!

And they'll perform at peak efficiency when lubrication is right. Finely finished parts built with close tolerances must have the protection of the highest quality oil to insure accurate work and a high rate of production.

When you bring the Gulf engineer into the "picture" in your plant you enlist the cooperative service of a man whose broad experience and knowledge of lubrication can be a real help to you in maintaining efficient production from every machine you operate. He will recommend the scientific use of the lubricants exactly suited to the requirements of your equipment. Then, periodically, he will check the performance of each machine and suggest such further improvements in lubrication practice as are needed to provide for the operating conditions encountered.

This kind of lubrication service has a real dollar and cents value to you. Talk with the Gulf engineer when he calls.

GULF OIL CORPORATION GULF INDUSTRIAL LUBRICATION **GULF REFINING COMPANY**

cluding dust, air and the possibility of tampering.

Sensitivity and calibration, it is claimed, are made possible through the vacuum tube design. These characteristics are also claimed to be maintained over long periods of time extending through the normal life of the property. Periodic testing may be done at any time without disrupting, in any way, future operation of the alarm system. The detector has been approved for a 15-foot spacing. This reduces the number of units required and installation costs.

Detectors are approved for both open and closed circuits up to 250 volts. Standard rating for open circuit is, 135 degrees Fahr., 185 degrees Fahr., or 260 degrees Fahr., 110 volts, 0.5 ampere; closed circuit rating is 135 degrees Fahr., 110 volts, 0.5 ampere. This high current-carrying capacity offers the advantage of additional apparatus in the system.

Induction Furnace Made For High Melting Metals

■ Lepel High Frequency Laboratories Inc., 39 West Sixtieth street, New York, has introduced type F-2 induction furnace, which, when combined with its type C-6 converter, is claimed to have accurate temperature control, rapid heat acceleration and an automatic stirring of the charge, it is claimed.

A 12.8-cubic inch charge can be melted. The charge is poured by partially raising the crucible out of the coil. This is accomplished by stepping down on the foot pedal, which is located under the furnace. Then, embraced with a pair of tongs, the crucible is poured in the conventional manner. Platinum and other high-melting metals and alloys may be melted with the equipment.

Type C-2, 3½ kilovolt amperes converter is of tungsten-quenched gap type having a variable frequency and primary exciter circuit, which is tuned and coupled to a low loss tank circuit. The function of the tank circuit is to store energy which, during each oscillation, is not absorbed by the load in the furnace. Because of low loss, free-swinging characteristics of the tank circuit, advantages claimed include lower voltage across the furnace coil, heating of loads poorly coupled with magnetic flux in furnace coil, high energy absorption in low specific resistivity metals and alloys, more space between coil and crucible for heat insulation, and high supply line power.

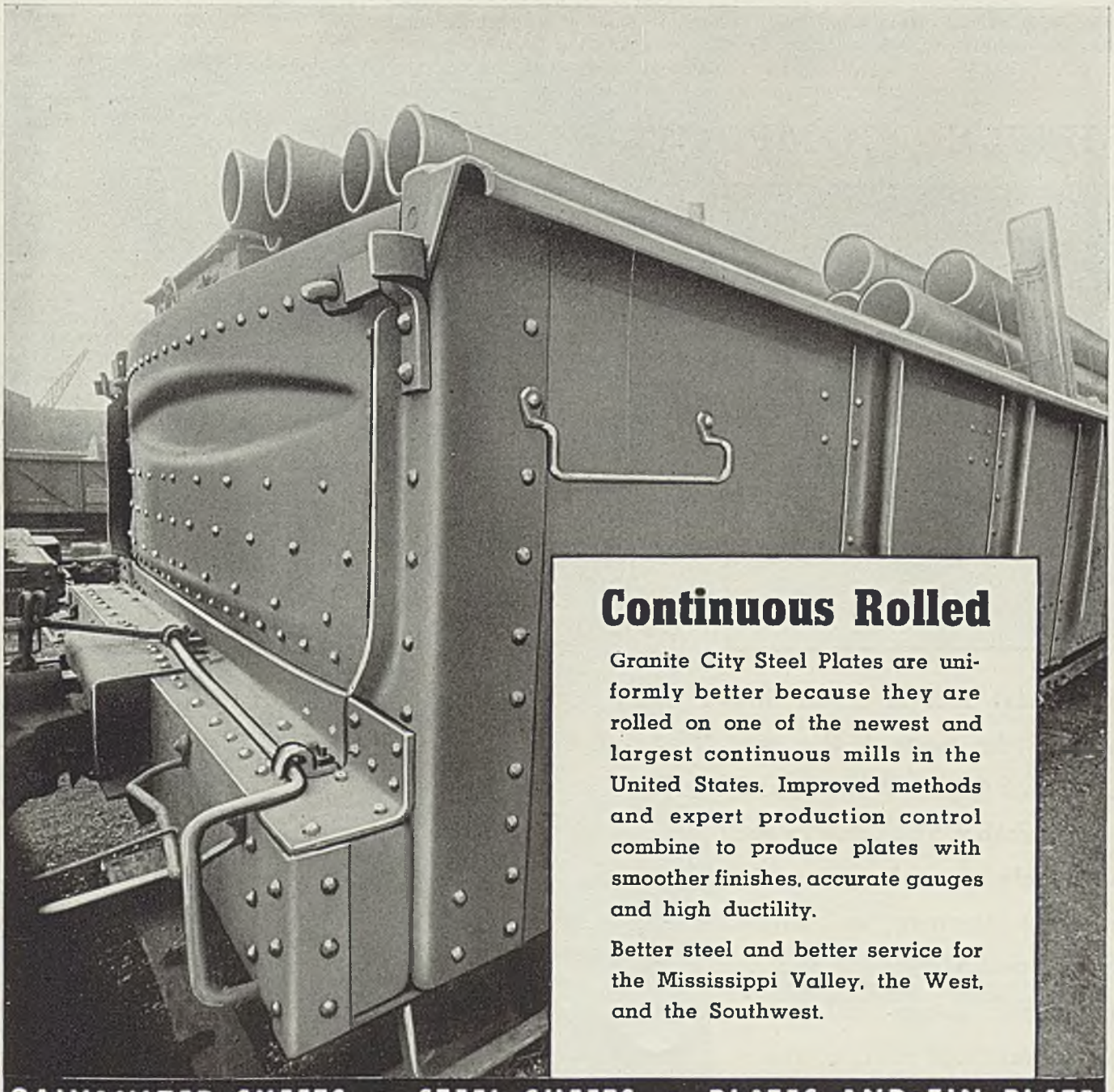
Constructs Pump With Horizontal Split Casing

■ Allis-Chalmers Co., Milwaukee, has recently introduced an improved design of multi-stage pump into the high pressure boiler feed pump field. This pump is called the Doubleton type because of the use of double suction impellers as well as double balance of the rotating element.

New Allis-Chalmers multi-stage pump is known as Doubleton type because of double suction impellers and double balance of rotating element

Double suction impellers provide axial balance and the positions of the successive volute passages which surround each impeller are

GRANITE CITY STEEL PLATES



Continuous Rolled

Granite City Steel Plates are uniformly better because they are rolled on one of the newest and largest continuous mills in the United States. Improved methods and expert production control combine to produce plates with smoother finishes, accurate gauges and high ductility.

Better steel and better service for the Mississippi Valley, the West, and the Southwest.

GALVANIZED SHEETS • STEEL SHEETS • PLATES AND TIN PLATE

SINCE GRANITE CITY STEEL 1878

GRANITE CITY STEEL CO.

GRANITE CITY, ILLINOIS

1209 R. A. Long Bldg., Kansas City
1805 Boatmen's Bank Bldg., St. Louis
1613 Pioneer Building, St. Paul
1602 Mariner Tower, Milwaukee
8 South Michigan Blvd., Chicago

NOW OPERATING ONE OF THE LARGEST CONTINUOUS MILLS IN THE UNITED STATES

made largely to equalize unbalanced radial forces on the impellers. Pumps are made with horizontally-split casings for pressures of 1500 pounds and over. Design and bolting has been worked out so that no difficulty is experienced in maintaining tight joint and retaining advantages of split casing construction, it is claimed.

Make Soldering Pliers

■ Ideal Commutator Dresser Co., 1934 Park avenue, Sycamore, Ill., has announced its No. 2 midget-type, Thermo-Grip pliers, a soldering unit claimed to electrically heat, sweat joints without unsweating adjacent connections or involving flame hazard.

The tool has been designed especially for soldering small objects and for work in restricted spaces such as switchboards, generators and small radios. Small power requirement permit the use of the unit on any standard lighting circuit without danger of overloading the circuit or burning out fuses. Pliers are made of cast bronze with long, slender, small jaws. The jaws are hinged at the back and have a spring which holds them normally in open position.

Flexible Shaft Units Are Bench or Suspended Type

■ Stow Mfg. Co., Binghamton, N. Y., has announced two new flexible shaft units to be designated as Assembly P and Assembly V.

Assembly P is designed for bench mounting and may be used equally well on a truck or may be mounted on a wall in back of the bench. It is equipped with Stow ball-bearing counter shaft, hinged and provided with a screw for belt adjustment. Unit is swiveled in both horizontal and vertical plane, giving the flexible shaft greater freedom and making it possible to use the shaft in any position without injury.

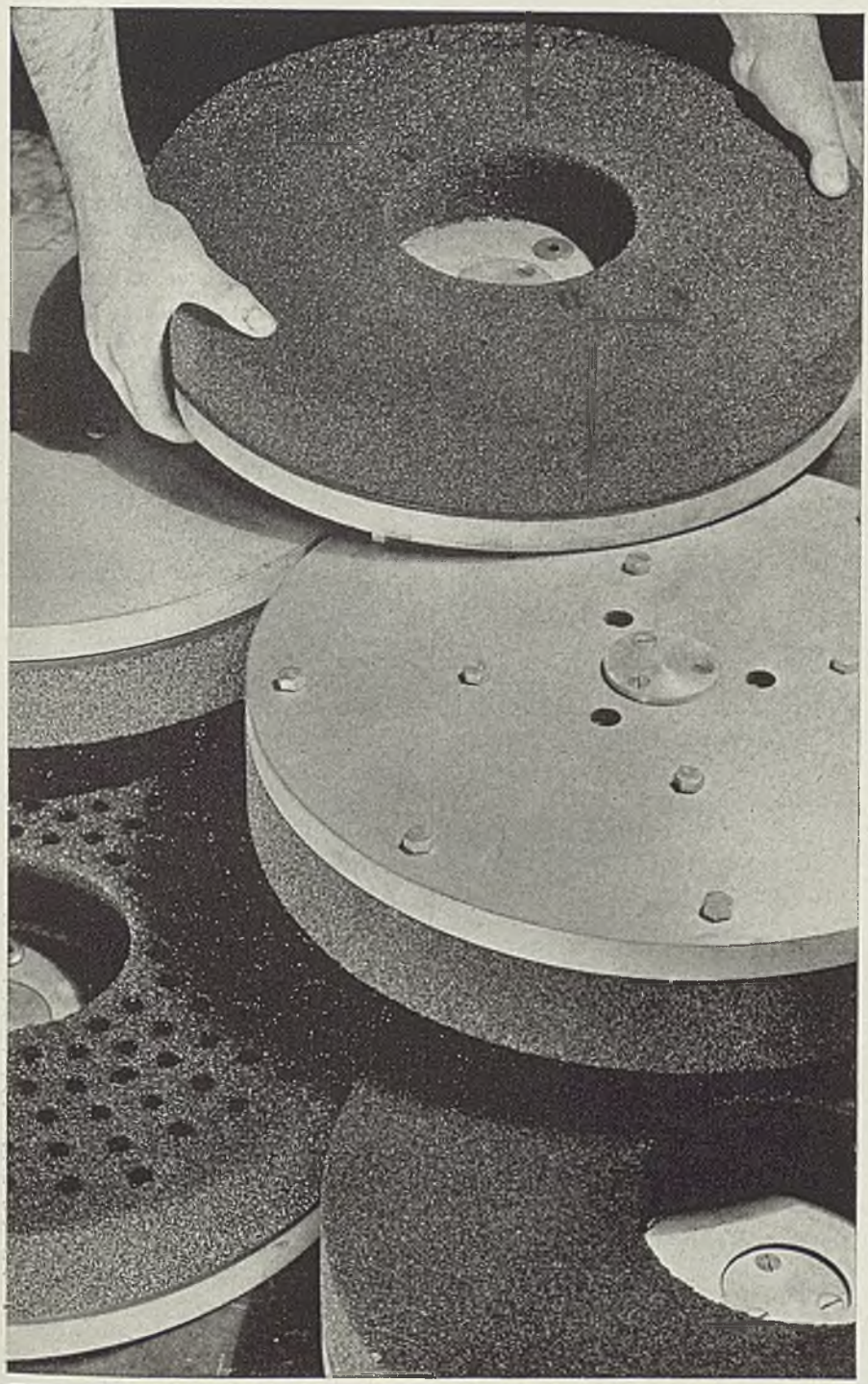
Assembly V is designed for production in shops where floor space is at a premium. It may be mounted on a trolley or suspended from a hook. Construction is essentially the same as the bench type assembly and both are three-speed units. Standard equipment for both includes switch, cord, plug, and ball-bearing hand piece with clamp spindle to take grinding wheels, buffs, or scratch brushes. Angle heads and special hand pieces can be furnished interchangeable with the standard hand piece. Motors can be furnished for any electrical specification, although list prices are made out for 110-120 volts, 60 cycle, 1-phase up to and including ½-horsepower, and 3-phase for 1 horsepower.

Pumps Are Aluminum

■ Marlow Pumps, Ridgewood, N. J., has announced the development of a new pump attached to a 4-cycle type engine, and guaranteed to prime up to 25 feet.

The pump is made of aluminum in 2 inch and 3 inch sizes, the former weighing 98 pounds and the latter 108 pounds. It is equipped with oil seal on the stuffing box, eliminating all need for packing. Automatic control valve stops the recirculation as soon as pump is primed. Features of the pump include valve seat inserts, aluminum cylinder head, either rope or footstarter available without changing parts, speed control arrangement, air cleaner, high tension magneto and pistol-grip handle for carrying by one man or pipe handle for carrying by two. Both units are fitted with hand hole plate on the suction passageway, through which trash may be removed without stopping or losing priming water.

THE DISC WHEELS THAT CAUSED A REVOLUTION!



DISC WHEELS BY CARBORUNDUM have revolutionized the whole process of disc grinding. First, because they're not merely discs—they're *mounted grinding wheels.* Second, because they come in a range of grits impossible with the ordinary paper or cloth disc.

INCREASED PRODUCTION..BETTER FINISHES. A wide selection of grits means you get the right wheel for every job. This results in better finished pieces . . . increased production.

WHEEL BOLTS DIRECTLY TO PLATE. A specially designed nut and bolt system holds the abrasive wheel to the face plate. Thus, you have a better balanced disc. Replacement is easy. There's no gluing or pressing. These new disc wheels are made in every practical shape and size. They are available both in Carborundum Brand Silicon Carbide and Aloxite Brand Aluminum Oxide . . . you can get the right wheel to grind any metal, soft or hard. We'll be glad to give you more detailed information on request.

CARBORUNDUM
REG. U. S. PAT. OFF.
ABRASIVE PRODUCTS

Illustration at left shows group of Carborundum Brand Silicon Carbide and Aloxite Brand Aluminum Oxide Disc Grinding Wheels. Note specially designed nut and bolt system for holding abrasive wheel to plate.

THE CARBORUNDUM COMPANY • NIAGARA FALLS, N.Y.

Sales Offices and Warehouses in New York, Chicago, Boston, Philadelphia, Cleveland, Detroit, Cincinnati, Pittsburgh, Grand Rapids

(Carborundum and Aloxite are registered trade-marks of The Carborundum Company)

RECENT PUBLICATIONS OF MANUFACTURERS

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

Chucking Tools—Gisholt Machine Co., Madison, Wis., has published a catalog embodying descriptions of chucking and bar tools, and including engineering data.

Saws — W. O. Barnes Co., Detroit, has published a 32-page booklet embodying information on hack saws, hand saws and coping saws. A price list is also included.

Clutches — Niagara Machine & Tool Works, 637 Northland avenue, Buffalo, N. Y., has released a folder illustrating and describing its 14-point engagement sleeve clutch.

Rheostats — Udylite Co., 1651 East Grand boulevard, Detroit, has released a folder containing descriptions and specifications on the Udylite rheostat.

Cements — Quigley Co., 56 West Forty-fifth street, New York, has prepared an 8-page bulletin illustrating and describing uses of acid-proof cements.

Casters — Vervoort Specialties Corp., Falconer, N. Y., has issued a bulletin containing descriptions, specifications and a price list of its Vervoort casters, top swivels, wooden rollers and rubber rollers.

Hydraulic Equipment — W. F. & John Barnes Co., Rockford, Ill., has issued a 4-page folder containing illustrated descriptions of gear pumps. This folder is the second of a series.

Salt Bath Furnace — Ajax Electric Co., Frankford avenue and Allen street, Philadelphia, has released bulletin 105 describing Ajax-Hultgren salt bath furnace, including engineering data.

Roll Grinding — Abrasive Co., Tacony and Fraley streets, Philadelphia, has compiled a 17-page booklet discussing grinding wheels and methods used in hot strip mills. Engineering data is presented.

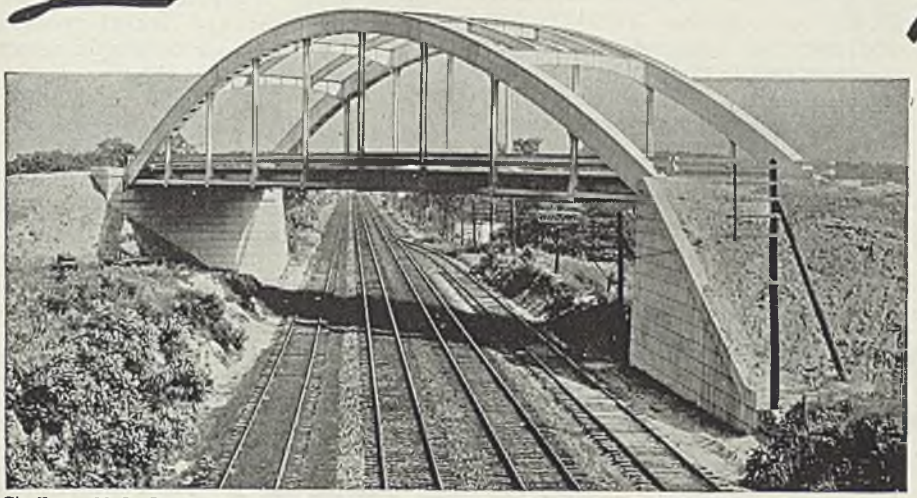
Steel Guide—Timken Roller Bearing Co., Canton, O., has published bulletin 20 entitled "A Guide for Users of High Temperature Steels." Presented in the bulletin are engineering data and graphic factors on the selection of steels.

Heating — Trane Co., La Crosse, Wis., has published an 8-page booklet describing air conditioning and its five basic elements. Five specific examples are included, showing how air conditioning has proved successful.

Monel and Nickel — International Nickel Co., 67 Wall street, New York, has prepared a booklet entitled "Monel and Nickel in the Chemical Industries" which includes illustrations and engineering data concerning Monel, nickel and Inconel in the chemical industries.

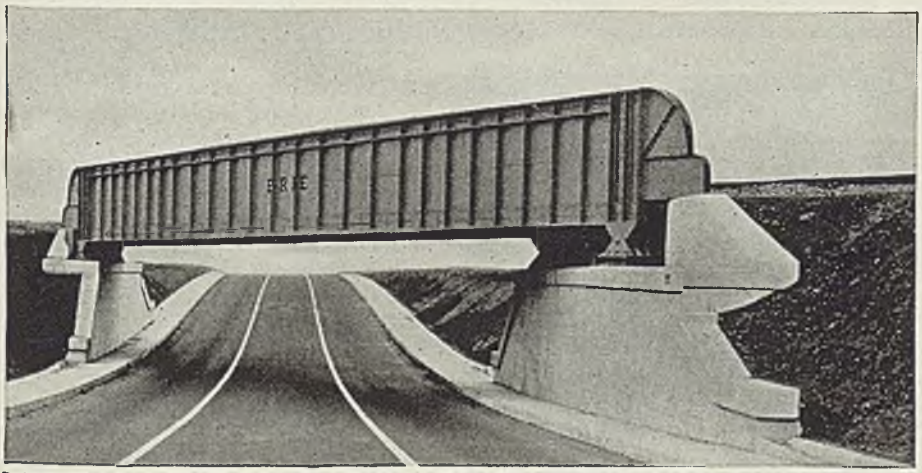
Shims — Laminated Shim Co., 21 Forty-fourth avenue, Long Island City, N. Y., has published a folder with information and illustrations of the steps in factory assembly of Laminum precision adjustment shims.

Little BRIDGES PLAY *Big* PARTS, TOO!



Ch. Engr., N. L. Smith, Maryland State Roads Comm., Gen. Contractors, P. Reddington & Sons

H. H. Kranz, Engr. of Highways, Cincinnati, O.; Gen. Contractors, Kerpen Construction Co.



Built by Erie R. R. Co., C. S. Fanning, Ch. Engr.; F. A. Howard, Engr. of Structures.

MODERN grade separation projects show the trend to simplified, efficient lines—to strong, low-cost construction. They indicate the decrease in below-deck depth to maintain required clearances with a minimum amount of approach fill or excavation. Built of steel, they assure sturdiness and long service. The successful adaptability to esthetic treatment harmonizes a practical utility to its surroundings.

Illustrated are three types of grade crossings recently fabricated by American Bridge. The Rockville, Md., span (above) typifies the distinctive, graceful appearance of the tied arch. The pleasing, vaulted profile of the continuous, rigid frame marks the lines of Cincinnati's McMillan Street Bridge (middle). The Big Tree, N. J. railroad crossing (bottom) shows an harmonious adaptation of the efficient plate-girder span.

Little bridges play big parts, too, in American Bridge Company's history. The same care, the same service, the same half-century of experience are available to you whether your projected bridge is large or small.

AMERICAN BRIDGE COMPANY

General Offices: Frick Building, Pittsburgh, Pa.

Baltimore Boston Chicago Cincinnati Cleveland Denver Detroit Duluth
Minneapolis New York Philadelphia St. Louis

Columbia Steel Company, San Francisco, *Pacific Coast Distributors* • United States Steel Products Company, New York, *Export Distributors*

UNITED STATES STEEL

Safety Devices Feature Of New Ore Bridge

(*Concluded from Page* 56)

the leg is carried on four 24-inch diameter wheels.

Truck equalizers are built up of heavy structural steel beams and plates, supporting the main equalizers by means of rocker bearings. Main equalizers are constructed similarly and support the legs on rocker bearings. Four spring set patented rail clamps, two on the shear leg and two on the pier portal, are provided. Clamps are entirely automatic and controls are interlocked with bridge travel motors, and may be operated only by the operator on the main trolley. Clamps on each end of the bridge may be operated independently, and one end of the bridge can be moved while the other remains stationary. The movement, of course, is limited by the skew limit of the bridge and is controlled automatically by a skew limit switch. In the event of high winds, an anemometer will cut off power at a predetermined wind velocity, and either stop the bridge or prevent its being moved.

Trolley is equpiped with two 200-horsepower hoist motors, two 90-horsepower trolley travel motors, one 6½-horsepower turntable motor and a 5-horsepower blower motor. The hoist will handle a 150-cubic foot capacity digging bucket at a speed of 230 feet per minute. Trolley motors provide a travel speed of 900 feet per minute. Gears are heat treated and have hobbed or generated teeth for quiet operation. Shafting and axles are heat treated forged steel. Trolley bearings are of roller bearing type.

Trolley motors are cradle mounted, suspended from the axles. Gears are enclosed in oil tight gear cases and are oil lubricated.

Cooling air for hoist and trolley motors for use during hot weather operation is provided by a blower having a 4200 cubic feet per minute capacity at five inches static pressure. The blower is equipped with replaceable dry type air filters.

One feature of the design is the small amount of headroom for the trolley cab. Trolley track beams are located on a level with the lower chord of the bridge truss. This requires less overall height of bridge structure for a given height of pile and also provides less wind resistance to the structure.

Doubles Storage Space Without Building

■ Often manufacturers overlook possibilities for true economies which may be effected by better arrangement of machines, or by attaining maximum use out of available building contents. Possibilities for substantial savings through greater utilization of space formerly unoccupied are illustrated by an experience of a manufacturer who uses sizable quantities of cold rolled strip steel.

Before installing his present materials handling system, he had tentative plans for building a warehouse addition. Later, it was found that by stacking materials all the way to the ceiling, it would be possible to double the existing storage capacity. Under such a system, it was necessary to supersede manual stacking. In this instance, a high lift-truck was found practical. The estimated cost of the warehouse addition was approximately $50,000, and modernization of the materials handling system is given major credit for avoiding the expenditure.

Signs Indicate Decline Nears Bottom

Scrap Makes Gain; Auto Output Up; Pig Iron Off 28.2%

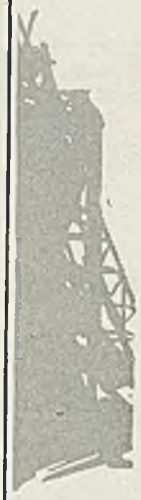
MARKET IN TABLOID

DEMAND . . . . . *Slow, November equals October for some makers.*

PRICES . . . . *Steady, scrap makes slight rise.*

PRODUCTION . . *Operations down 1 point to 30.5 per cent of capacity.*

SHIPMENTS . . . *Most buyers demand immediate delivery.*



SOME indications are appearing that the decline in steel production has reached close to the bottom. While there is no expectation of an immediate reversal to an upward movement, general sentiment is that whatever important change comes will be favorable.

Consumers continue to operate largely from inventory but some buying of small lots is being done, indicating depletion of stocks in various lines. Some steel producers booked as much business in November as in October, indicating a leveling of demand. The forward look indicates continued quiet until the end of the year, with some recovery after stock-taking and somewhat better demand in all lines through first quarter.

Apparently the scrap market has reached practically the bottom of the current movement, as indicated by a rise of 50 cents in steelmaking grades in the East and unchanged quotations at other important consuming centers. It appears that present prices are too low to tempt tonnage out and supplies are becoming scarce. Railroads are holding back some of their usual offerings and other producers are laying down scrap rather than sell for low prices.

The prices of tin plate has been reaffirmed at $5.35, Pittsburgh, for 1938.

Various adjustments in the production last week resulted in a net loss of 1 point, to a national operating rate of 30.5 per cent. Central eastern seaboard gained 4 points to 31 per cent, New England 5 points to 32 and Cleveland 3 points to 31. The rate held unchanged at Chicago at 30 per cent, Buffalo 21, Birmingham 54 and St. Louis 20.6. At Youngstown the rate declined 2 points to 35 per cent, at Pittsburgh 3 points to 34, at Wheeling 5 points to 30, at Cincinnati 15 points to 14 and at Detroit 9 points to 50.

Pig iron production in November declined 28.2 per cent from the October average daily rate, to 66,925 tons. This is the lowest rate since March, 1936, when it was 66,004. In November last year the rate was 98,331 tons. Total production dropped 30.5 per cent to 2,007,740 tons, lowest since February, 1936, when 1,838,932 tons were produced. Output for 11 months this year totals 35,205,374 tons, a gain of 7,647,862 or 27.8 per cent over the corresponding period in 1936. In four months this year, since July, a total of 78 blast furnaces have been blown out, 37 being lost during November. November operations were at 49.1 per cent of capacity, lowest rate since March, 1936, when it was 48.5 per cent.

Automobile production rebounded to 86,848 last week, highest since the first week in November, and a gain of almost 28,000 over Thanksgiving holiday week. Ford has increased production to a rate of 3000 units daily and produced 13,700 last week, compared with 7960 the week before. General Motors assemblies were 42,075, against 24,075 the preceding week; Chrysler 20,700 compared with 16,020; and all others 11,003, against a revised figure of 10,900 for the holiday week. The leading producer reported dealer stocks were 85,000 ahead of this time last year and retail deliveries were two-thirds of last year's volume.

Exports of steel products for ten months not only exceeded those for the same period in 1936 by 198.7 per cent but also were 40.9 per cent greater than for the same period in 1929. It is estimated that if the remaining two months give tonnages equal to the average for these ten months the year's total will exceed all preceding years except the six years 1915 to 1920 inclusive. Scrap shipments for ten months are at the highest level ever reached in the history of the steel industry, totaling 3,520,812 tons, practically double those of the same period in 1936. Imports of steel products in October were practically the same as in September and considerably lower than in October, 1936.

For the first time in 13 weeks, since the end of August, the composite of steelmaking scrap shows an increase. The composite now is $12.91, a rise of 16 cents from the previous week. This is caused by advanced prices in the East, where competition for export tonnage has enlivened the market. The iron and steel composite is unchanged at $38.86 and the finished steel composite at $61.70.

COMPOSITE MARKET AVERAGES

	Dec. 4	Nov. 27	Nov. 20	One Month Ago Nov., 1937	Three Months Ago Sept., 1937	One Year Ago Dec., 1936	Five Years Ago Dec., 1932
Iron and Steel	$38.86	$38.86	$38.90	$38.96	$40.16	$35.15	$28.28
Finished Steel	61.70	61.70	61.70	61.70	61.70	53.90	46.74
Steelworks Scrap ..	12.91	12.75	13.08	13.32	18.99	16.92	6.41

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.

COMPARISON OF PRICES

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

Finished Material

	Dec. 4, 1937	Nov. 1937	Sept. 1937	Dec. 1936
Steel bars, Pittsburgh	2.45c	2.45c	2.45c	2.05c
Steel bars, Chicago	2.50	2.50	2.50	2.10
Steel bars, Philadelphia	2.74	2.74	2.74	2.36
Iron bars, Terre Haute, Ind.	2.35	2.35	2.35	1.95
Shapes, Pittsburgh	2.25	2.25	2.25	1.90
Shapes, Philadelphia	2.45½	2.46	2.46	2.12
Shapes, Chicago	2.30	2.30	2.30	1.95
Tank plates, Pittsburgh	2.25	2.25	2.25	1.90
Tank plates, Philadelphia	2.43½	2.44	2.44	2.09
Tank plates, Chicago	2.30	2.30	2.30	1.95
Sheets, No. 10, hot rolled, Pitts.	2.40	2.40	2.40	2.10
Sheets, No. 24, hot ann., Pitts.	3.15	3.15	3.15	2.75
Sheets, No. 24, galv., Pitts.	3.80	3.80	3.80	3.35
Sheets, No. 10, hot rolled, Gary	2.50	2.50	2.50	2.25
Sheets, No. 24, hot anneal., Gary	3.25	3.25	3.25	2.90
Sheets, No. 24, galvan., Gary	3.90	3.90	3.90	3.50
Plain wire, Pittsburgh	2.90	2.90	2.90	2.60
Tin plate, per base box, Pitts.	$5.35	$5.35	$5.35	$5.25
Wire nails, Pittsburgh	2.75	2.75	2.75	2.20

Semifinished Material

Sheet, bars, open-hearth, Youngs.	$37.00	$37.00	$37.00	$32.50
Sheet bars, open-hearth, Pitts.	37.00	37.00	37.00	32.50
Billets, open-hearth, Pittsburgh	37.00	37.00	37.00	32.50
Wire rods, No. 5 to $\frac{0}{32}$-inch, Pitts.	47.00	47.00	47.00	40.75

Pig Iron

	Dec. 4, 1937	Nov. 1937	Sept. 1937	Dec. 1936
Bessemer, del. Pittsburgh	$25.26	$25.26	$25.26	$21.8132
Basic, Valley	23.50	23.50	23.50	20.00
Basic, eastern del. East. Pa.	25.26	25.26	25.26	21.81
No. 2 fdy., del. Pittsburgh	25.21	25.21	25.21	21.3132
No. 2 fdy., Chicago	24.00	24.00	24.00	20.50
Southern No. 2, Birmingham	20.38	20.38	20.38	16.88
Southern No. 2, del. Cincinnati	23.89	23.89	23.69	19.69
No. 2 X eastern, del. Phila.	26.135	26.14	26.14	22.68
Malleable, Valley	24.00	24.00	24.00	20.50
Malleable, Chicago	24.00	24.00	24.00	20.50
Lake Sup., charcoal, del. Chicago	30.24	30.14	30.04	26.2528
Gray forge, del. Pittsburgh	24.17	24.17	24.17	20.6741
Ferromanganese, del. Pittsburgh	107.49	107.35	107.29	82.65

Scrap

Heavy melting steel, Pittsburgh	$13.25	$14.10	$20.40	$18.55
Heavy melt. steel, No. 2, E. Pa.	12.75	12.25	16.69	14.13
Heavy melting steel, Chicago	11.75	12.55	17.85	17.00
Rails for rolling, Chicago	14.25	15.10	20.35	17.25
Railroad steel specialties, Chicago	15.75	16.75	20.50	19.00

Coke

Connellsville, furnace, ovens	$4.37	$4.37	$4.45	$4.00
Connellsville, foundry, ovens	5.25	5.25	5.25	4.40
Chicago, by-product foundry, del.	11.00	11.00	11.00	9.75

STEEL, IRON, RAW MATERIAL, FUEL AND METALS PRICES

Except when otherwise designated, prices are base, f.o.b. cars.

Sheet Steel

Prices Subject to Quantity Extras and deductions (Except Galvanized)

Hot Rolled No. 10, 24-48 in.

Pittsburgh	2.40c
Gary	2.50c
Chicago, delivered	2.53½c
Detroit, del.	2.60c
New York, del.	2.74c
Philadelphia, del.	2.70c
Birmingham	2.55c
St. Louis, del.	2.63c
Granite City, Ill.	2.60c
Pacific ports, f.o.b. dock	2.96c

Hot Rolled Annealed No. 24

Pittsburgh	3.15c
Gary	3.25c
Chicago, delivered	3.28½c
Detroit, delivered	3.35c
New York, delivered	3.49c
Philadelphia, del.	3.45c
Birmingham	3.30c
St. Louis, del.	3.38c
Granite City, Ill.	3.35c
Pacific ports, f.o.b. dock	3.81c

Galvanized No. 24

Pittsburgh	3.80c
Gary	3.90c
Chicago, delivered	3.93½c
Philadelphia, del.	4.10c
New York, delivered	4.14c
Birmingham	3.95c
St. Louis, del.	4.03c
Granite City, Ill.	4.00c
Pacific ports, f.o.b. dock	4.41c

Tin Mill Black No. 28

Pittsburgh	3.30c
Gary	3.40c
St. Louis, delivered	3.53c
Granite City, Ill.	3.50c

Cold Rolled No. 10

Pittsburgh	3.10c
Gary	3.20c
Detroit, delivered	3.31c
Philadelphia, del.	3.40c
New York, del.	3.44c
St. Louis, del.	3.33c
Granite City, Ill.	3.30c
Pacific ports, f.o.b. dock	3.71c

Cold Rolled No. 20

Pittsburgh	3.55c
Gary	3.65c
Detroit, delivered	3.76c
Philadelphia, del.	3.85c
New York, del.	3.89c
St. Louis	3.78c
Granite City, Ill.	3.75c

Enameling Sheets

Pittsburgh, No. 10	2.90c
Pittsburgh, No. 20	3.50c
Gary, No. 10	3.00c
Gary, No. 20	3.60c
St. Louis, No. 10	3.13c
St. Louis, No. 20	3.73c

Tin and Terne Plate

Gary base, 10 cents higher

Tin plate, coke (base box) Pittsburgh	$5.35
Waste-waste, 2.75c; strip	2.50c
Long ternes, No. 24, unassorted, Pitts.	4.10c

Corrosion and Heat-Resistant Alloys

Pittsburgh base, cents per lb.

Chrome-Nickel

	No. 302	No. 304
Bars	24.00	25.00
Plates	27.00	29.00
Sheets	34.00	36.00
Hot strip	21.50	23.50
Cold strip	28.00	30.00

Straight Chromes

	No. 410	No. 430	No. 442	No. 446
Bars	18.50	19.00	22.50	27.50
Plates	21.50	22.00	25.50	30.50
Sheets	26.50	29.00	32.50	36.50
Hot strip	17.00	17.50	23.00	28.00
Cold stp.	22.00	22.50	28.50	36.50

Steel Plate

Pittsburgh	2.25c
New York, del.	2.54c
Philadelphia, del.	2.44½c
Boston, delivered	2.66c
Buffalo, delivered	2.49½c
Chicago or Gary	2.30c
Cleveland, del.	2.45½c
Birmingham	2.40c
Coatesville, base	2.35c
Sparrows Pt., base	2.35c
Pacific ports, f.o.b. cars, dock	2.81c
St. Louis, delivered	2.52c

Structural Shapes

Pittsburgh	2.25c
Philadelphia, del.	2.46½c
New York, del.	2.51¼c
Boston, delivered	2.64½c
Bethlehem	2.35c
Chicago	2.30c
Cleveland, del.	2.46c
Buffalo	2.35c
Gulf Ports	2.66c
Birmingham	2.40c
Pacific ports, f.o.b. cars, dock	2.81c
St. Louis, del.	2.52c

Bars

Soft Steel
(Base, 3 to 25 tons)

Pittsburgh	2.45c
Chicago or Gary	2.50c
Duluth	2.60c
Birmingham	2.60c
Cleveland	2.50c
Buffalo	2.55c
Detroit, delivered	2.60c
Pacific ports, f.o.b. cars, dock	3.01c
Philadelphia, del.	2.75c
Boston, delivered	2.86c
New York, del.	2.79c
Pittsburgh, forg. qual.	2.80c

Rail Steel
To Manufacturing Trade

Pittsburgh	2.30c
Chicago or Gary	2.35c
Cleveland	2.35c
Moline, Ill.	2.35c
Buffalo	2.40c
Birmingham	2.45c

Iron

Terre Haute, Ind.	2.35c
Chicago	2.40c
Philadelphia	2.64c
Pittsburgh, refined	3.50-8.00c

Reinforcing

New billet, straight lengths, quoted by distributors

Pittsburgh	2.55c
Chicago, Gary, Buffalo, Cleve., Birm., Young...	2.60c
Gulf ports	2.91c
Pacific coast ports, f.o.b. car docks	2.96c
Philadelphia, del.	2.85c

Rail steel, straight lengths, quoted by distributors

Pittsburgh	2.40c
Chicago, Buffalo, Cleveland, Birm., Young....	2.45c
Gulf ports	2.81c

Wire Products

Prices apply to mixed carloads, base; less carloads subject to quantity extras.

Base Pitts.-Cleve. 100 lb. keg.

Standard wire nails	$2.75
Cement coated nails	$2.75

(Per pound)

Polished staples	3.45c
Galv. fence staples	3.70c
Barbed wire, galv.	3.40c
Annealed fence wire	3.15c
Galv. fence wire	3.55c
Woven wire fencing (base C. L. column)	74
Single loop bale ties, (base C. L. column)	63

To Manufacturing Trade

Plain wire, 6-9 ga.	2.90c
Galvanized wire	2.95c
Anderson, Ind. (merchant products only) and Chicago up $1; Duluth and Worcester up $2; Birmingham up $3.	
Spring wire, Pitts. or Cleveland	3.50c
Do., Chicago up $1, Worc. $2.	

Cold-Finished Carbon Bars and Shafting

Pittsburgh	2.90c
Chicago	2.95c
Gary, Ind.	2.95c
Detroit	2.95c
Cleveland	2.95c
Buffalo	3.00c

Subject to quantity deductions and extras. List dated Aug. 26, 1935; revised Oct. 1, 1936.

Alloy Steel Bars (Hot)

(Base, 3 to 25 tons)

Pittsburgh, Buffalo, Chicago, Massillon, Canton, Bethlehem	3.00c

Alloy	Diff.	Alloy	Diff.
S.A.E.		S.A.E.	
2000	0.35	3100	0.70
2100	0.75	3200	1.35
2300	1.55	3300	3.80
2500	2.25	3400	3.20
4100 0.15 to 0.25 Mo.			0.55
4600 0.20 to 0.30 Mo. 1.50-2.00 Ni.			1.10
5100 0.80-1.10 Cr.			0.45
5100 Cr. spring			0.15
6100 bars			1.20
6100 spring			0.85
Cr. N., Van.			1.50
Carbon Van.			0.85
9200 spring flats			0.15
9200 spring rounds, squares			0.40

Piling

Pittsburgh	2.60c
Chicago, Buffalo	2.70c

Strip and Hoops

(Base, hot-rolled, 25-1 ton)

(Base, cold-rolled, 25-3 tons)

Hot strip to 23⅞-in.	
Pittsburgh	2.40c
Chicago or Gary	2.50c
Birmingham base	2.55c
Detroit, del.	2.61c
Philadelphia, del.	2.70c
New York, del.	2.74c
Cooperage hoop,	
Pittsburgh	2.50c
Chicago	2.60c
Cold strip, 0.25 carbon and under, Pittsburgh, Cleveland	3.20c
Detroit, del.	3.41c
Worcester, Mass.	3.40c

Carbon	Pitts.	Cleve.	Worcester, Mass.
0.26—0.50	3.20c		4.30c
0.51—0.75	4.45c		4.65c
0.76—1.00	6.30c		6.50c
Over 1.00	8.50c		8.70c

Rails, Track Material

(Gross Tons)

Standard rails, mill	$42.50
Relay rails, Pittsburgh, 20—100 lbs.	32.50-35.50
Light rails, billet qual., Pittsburgh, Chicago	$43.00
Do., rerolling quality	42.00
Angle bars, billet, Gary, Pittsburgh, So. Chicago	2.80c
Do., axle steel	3.35c
Spikes, R. R. base	3.15c
Track bolts, base	4.35c
Tie plates, base	$46.00

Base, light rails 25 to 60 lbs.; 20 lbs. up $2; 16 lbs. up $4; 12 lbs. up $8; 8 lbs. up $10. Base railroad spikes 200 kegs or more; base tie plates 20 tons.

Bolts and Nuts

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

Carriage and Machine

½ x 6 and smaller	65-5 off
Do. larger, to 1-in.	60-10 off
Do. 1⅛ and 1¼-in.	60-5 off
Tire bolts	50 off

Plow Bolts

All sizes	65-5 off

Stove Bolts

In packages with nuts attached 70 off; in packages with nuts separate 70-10 off; in bulk 80 off on 15,000 of 3-inch and shorter, or 5000 over 3-inch.

Step bolts	50-10-5 off
Elevator bolts	50-10-5 off

Nuts

S. A. E. semifinished hex.:	
½ to ⅞-inch	60-10 off
Do., 9/16 to 1-inch	60-5 off
Do., over 1-inch	60 off

Hexagon Cap Screws

Milled	50-10 off
Upset, 1-in., smaller	60 off

Square Head Set Screws

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

Rivets, Wrought Washers

Structural, Pittsburgh, Cleveland	3.60c
Structural, Chicago	3.70c
⅞-inch and smaller, Pitts., Chi., Cleve.	65-5 off
Wrought washers, Pitts., Chi., Phila. to jobbers and large nut, bolt mfrs. l.c.l. $5.40; c.l. $5.75	off

Cut Nails

Cut nails, C. L. Pitts. (10% disc. on all extras)	$3.60
Do., less carloads, 5 kegs or more, no discount on any extras	$3.90
Do., under 5 kegs no disc. on any extras	$4.05

Welded Iron, Steel Pipe

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

Butt Weld

Steel

In.	Blk.	Galv.
½	59½	49
¾	62½	53
1—3	64½	55½

Iron

¾	26	8
1—1¼	30	14
1½	34	16½
2	33½	16

Lap Weld

Steel

2	57	47½
2½—3	60	50½
3½—6	62	52½
7 and 8	61	50½
9 and 10	60½	50

Iron

2	26½	10
2½—3½	27½	12½
4	29½	16
4½—8	28½	15
9—12	24½	10

Line Pipe

Steel

1 to 3, butt weld	63½
2, lap weld	56
2½ to 3, lap weld	59
3½ to 6, lap weld	61
7 and 8, lap weld	60
10-inch, lap weld	59½
12-inch, lap weld	58½

Butt Weld

Iron

	Blk.	Galv.
¾	25	7
1 and 1¼	29	13
1½	33	15½
2	32½	15

Lap Weld

1½	23½	7
2	25½	9
2½ to 3½	26½	11½
4	28½	15
4½ to 8	27½	14
9 to 12	23½	9

Boiler Tubes

Carloads minimum wall seamless steel boiler tubes, cut lengths 4 to 24 feet, f.o.b. Pittsburgh, base price per 100 feet subject to usual extras.

Lap Weld

Sizes	Steel	Charcoal Iron
1½" OD x 13 Ga.	$10.45	$23.71
1¾" OD x 13 Ga.	11.89	22.93
2" OD x 13 Ga.	13.31	19.35
2" OD x 11 Ga.	15.49	23.36
2¼" OD x 13 Ga.	14.82	21.68
2¼" OD x 11 Ga.	17.38	26.02
2½" OD x 12 Ga.	17.82	26.57
2¾" OD x 12 Ga.	18.86	29.00
3" OD x 12 Ga.	19.73	31.36
3½" OD x 11 Ga.	24.89	39.81
4" OD x 10 Ga.	30.81	49.90
5" OD x 9 Ga.	47.57	73.93
6" OD x 7 Ga.	73.25	.....

Seamless

	Hot Rolled	Cold Drawn
1" OD x 13 Ga.	$ 8.41	$ 9.46
1¼" OD x 13 Ga.	9.96	11.21
1½" OD x 13 Ga.	11.00	12.38
1¾" OD x 13 Ga.	12.51	14.09
2" OD x 13 Ga.	14.02	15.78
2¼" OD x 13 Ga.	15.63	17.60
2¼" OD x 12 Ga.	17.21	19.37
2½" OD x 12 Ga.	18.85	21.22
2¾" OD x 12 Ga.	19.98	22.49
3" OD x 12 Ga.	20.97	23.60
4½" OD x 10 Ga.	40.15	45.19
3½" OD x 11 Ga.	26.47	29.79
4" OD x 10 Ga.	32.83	36.94
5" OD x 9 Ga.	50.38	56.71
6" OD x 7 Ga.	77.35	87.07

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

6-in. & over, Birm.	$46.00-47.00
4-in., Birmingham	49.00-50.00
4-in., Chicago	57.20-58.20
6 to 24-in., Chicago	54.20-55.20
6-in. & over, east fdy.	50.00
Do., 4-in.	53.00

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

Semifinished Steel

Billets and Blooms

4 x 4-inch base; gross ton

Pitts., Chi., Cleve., Buffalo, Young., Birm.	$37.00
Philadelphia	42.30
Duluth	39.00

Forging Billets

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

Pitts., Chicago, Buffalo	43.00
Forging, Duluth	45.00

Sheet Bars

Pitts., Cleve., Young., Sparrows Point	37.00

Slabs

Pitts., Chicago, Cleveland, Youngstown	37.00

Wire Rods

Pitts., Cleve., No. 5 to ⅜-inch incl.	47.00
Do., over ⅜ to 41/64-inch incl.	52.00

Chicago up $1; Worcester up $2.

Skelp

Pitts., Chi., Young., Buff., Coatesville, Sparrows Pt.	2.10c

Coke

Price Per Net Ton

Beehive Ovens

Connellsville, fur.	$4.25- 4.50
Connellsville, fdry.	5.00- 5.50
Connell. prem. fdry.	5.75- 6.25
New River fdry.	6.50- 6.75
Wise county fdry.	5.75- 6.00
Wise county fur.	4.75- 5.00

By-Product Foundry

Newark, N. J., del.	10.88-11.35
Chi., ov., outside del.	10.25
Chicago, del.	11.00
Milwaukee, ovens	11.00
New England, del.	12.50
St. Louis, del.	11.00-11.50
Birmingham, ovens	7.50
Indianapolis, del.	10.50
Cincinnati, del.	10.50
Cleveland, del.	11.05
Buffalo, del.	10.50
Detroit, del.	11.10
Philadelphia, del.	10.60

Coke By-Products

Spot, gal. Producers' Plants

Pure and 90% benzol	16.00c
Toluol	30.00c
Solvent naphtha	30.00c
Industrial xylol	30.00c

Per lb. f.o.b. Frankford and St. Louis

Phenol (200 lb. drums)	16.25c
do. (450 lbs.)	15.25c

Eastern Plants, per lb.

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

Per ton, bulk, f.o.b. oven or port	
Sulphate of ammonia	$29.00

Pig Iron

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

Basing Points:	No. 2 Fdry.	Malle-able	Basic	Besse-mer
Bethlehem, Pa.	$25.00	$25.50	$23.50	$26.00
Birdsboro, Pa.	25.00	25.50	24.50	26.00
Birmingham, Ala.‡	20.38	.....	19.38	25.00
Buffalo	24.00	24.50	23.00	25.00
Chicago	24.00	24.00	23.50	24.50
Cleveland	24.00	24.00	23.50	24.50
Detroit	24.00	24.00	23.50	24.50
Duluth	24.50	24.50	.....	25.00
Erie, Pa.	24.00	24.50	23.50	25.00
Everett, Mass.	25.75	26.25	25.25	26.75
Hamilton, O.	24.00	24.00	23.50	.....
Neville Island, Pa.	24.00	24.00	23.50	24.50
Provo, Utah	22.00	.....	.....	.....
Sharpsville, Pa.	24.00	24.00	23.50	24.50
Sparrow's Point, Md.	25.00	.....	24.50	.....
Swedeland, Pa.	25.00	25.50	24.50	26.00
Toledo, O.	24.00	24.00	23.50	24.50
Youngstown, O.	24.00	24.00	23.50	24.50

‡Subject to 38 cents deduction for 0.70 per cent phosphorus or higher.

Delivered from Basing Points:

Akron, O., from Cleveland	25.39	25.39	24.89	25.89
Baltimore from Birmingham	25.78	.....	24.66	.....
Boston from Birmingham	26.57	.....	26.07	.....
Boston from Everett, Mass.	26.30	26.80	25.80	27.30
Boston from Buffalo	26.45	26.95	25.95	27.45
Brooklyn, N. Y., from Bethlehem	27.47	27.97	.....	.....
Brooklyn, N. Y., from Bmghm.	27.25	.....	.....	.....
Canton, O., from Cleveland	25.39	25.39	24.89	25.89
Chicago from Birmingham	24.42	.....	24.30	.....
Cincinnati from Hamilton, O.	24.27	25.11	24.61	.....
Cincinnati from Birmingham	23.89	.....	22.89	.....
Cleveland from Birmingham	24.32	.....	23.82	.....
Mansfield, O., from Toledo, O.	25.94	25.94	25.44	25.44
Milwaukee from Chicago	25.10	25.10	24.60	25.10
Muskegon, Mich., from Chicago, Toledo or Detroit	27.10	27.10	26.60	27.60
Newark, N. J., from Birmingham	26.21	.....	.....	.....
Newark, N. J, from Bethlehem	26.53	27.03	.....	.....
Philadelphia from Birmingham	25.58	.....	25.46	.....
Philadelphia from Swedeland, Pa.	25.84	26.34	25.34	.....
Pittsburgh district from Neville Island	Neville, base plus 63c, 76c, and $1.13 switch'g charges			
Saginaw, Mich., from Detroit	26.45	26.45	25.95	25.95
St. Louis, northern	24.55	24.55	24.05	.....
St. Louis from Birmingham	†24.12	.....	23.82	.....
St. Paul from Duluth	26.08	26.08	.....	26.58

†Over 0.70 phos.

Low Phos.

Basing Points: Birdsboro and Steelton, Pa., and Standish, N. Y., $28.50, Phila. base, standard and copper bearing, $29.63.

Gray Forge		Charcoal	
Valley furnace	$23.50	Lake Superior fur.	$27.00
Pitts. dist. fur.	23.50	do., del. Chicago	30.24
		Lyles, Tenn.	26.50

Silvery†

Jackson county, O., base: 6-6.50 per cent $28.50; 6.51-7—$29.00; 7-7.50—$29.50; 7.51-8—$30.00; 8-8.50—$30.50; 8.51-9—$31.00; 9-9.50—$31.50; Buffalo $1.25 higher.

Bessemer Ferrosilicon†

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

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

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

Refractories

Per 1000 f.o.b. Works, Net Prices

Fire Clay Brick

Super Quality

Pa., Mo., Ky.	$64.60

First Quality

Pa., Ill., Md., Mo., Ky.	51.30
Alabama, Georgia	51.30
New Jersey	56.00

Second Quality

Pa., Ill., Ky., Md., Mo.	46.55
Georgia, Alabama	41.80
New Jersey	51.00

Ohio

First quality	43.70
Intermediate	39.90
Second quality	35.15

Malleable Bung Brick

All bases	$59.85

Silica Brick

Pennsylvania	$51.30
Joliet, E. Chicago	59.85
Birmingham, Ala.	51.30

Ladle Brick

(Pa., O., W. Va., Mo.)

Dry press	$30.00
Wire cut	$28.00

Magnesite

Imported dead-burned grains, net ton f.o.b. Chester, Pa., and Baltimore bases (bags)	$45.00
Domestic dead-burned grains, net ton f.o.b. Chester, Pa., and Baltimore bases (bags)	43.00

Base Brick

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

Chrome brick	$49.00
Chem. bonded chrome	49.00
Magnesite brick	69.00
Chem. bonded magnesite	59.00

Fluorspar, 85-5

Washed gravel, duty paid, tide, net ton	$23.50-24.00
Washed gravel, f.o.b. Ill., Ky., net ton, carloads, all rail	$20.00
Do., for barge	$22.00
No. 2 lump	22.00-23.00

Ferroalloys

Dollars, except Ferrochrome

Ferromanganese, 78-82%, tidewater, duty pd.	$102.50
Do., Baltimore, base	102.50
Do., del. Pittsburgh	107.49
Spiegeleisen, 19-21% dom. Palmerton, Pa., spot	33.00
Do., New Orleans	33.00
Do., 26-28%, Palmerton	39.00
Ferrosilicon, 50% freight allowed, c.l.	69.50
Do., less carload	77.00
Do., 75 per cent	126-130.00
Spot, $5 a ton higher.	
Silicoman., 2½ carbon	106.50
2% carbon 111.50; 1%,	121.50
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb. del.	10.50
Ferrotungsten, stand., lb. con. del. cars	2.95-3.00
Ferrovanadium, 35 to 40% lb., cont.	2.70-2.90
Ferrotitanium, c. l., prod-plant, frt. all., net ton	142.50
Spot, carlots	145.00
Spot, ton lots	150.00
Ferrophosphorus, per ton, c. l., 17-19% Rockdale, Tenn., basis, 18%, $3 unitage	63.50
Ferrophosphorus, electrolytic, per ton c. l., 23-26% f.o.b. Anniston, Ala., 24% $3 unitage	80.00
Ferromolybdenum, stand. 55-65%, lb.	0.95
Molybdate, lb. cont.	0.80

†Carloads. Quan. diff. apply.

Nonferrous

METAL PRICES OF THE WEEK

Spot unless otherwise specified. Cents per pound

	Copper: Electro, del. Conn.	Copper: Lake, del. Midwest	Copper: Casting, refinery	Straits Tin, New York: Spot	Straits Tin, New York: Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Alumi-num 99%	Antimony American Spot, N. Y.	Nickel Cath-odes
Nov. 27	10.75	11.12½	10.27½	42.50	42.50	5.00	4.85	5.25	20.00	14.75	35.00
Nov. 29	10.75	11.12½	10.27½	42.50	42.50	5.00	4.85	5.25	20.00	14.75	35.00
Nov. 30	10.75	11.12½	10.27½	42.50	42.50	5.00	4.85	5.25	20.00	14.75	35.00
Dec. 1	10.50	11.12½	10.27½	43.25	43.25	5.00	4.85	5.25	20.00	14.75	35.00
Dec. 2	10.00	11.12½	9.75	43.37½	43.37½	5.00	4.85	5.00	20.00	14.75	35.00
Dec. 3	10.50	11.12½	10.02½	44.15	44.15	5.00	4.85	5.00	20.00	14.75	35.00

MILL PRODUCTS

F.o.b. mill base, cents per lb. except as specified. Copper brass products based on 11.00c Conn. copper

Sheets

Yellow brass (high)	17.37½
Copper, hot rolled	19.12½
Lead, cut to jobbers	8.50
Zinc, 100-lb. base	10.50

Tubes

High, yellow brass	20.12½
Seamless copper	19.87½

Rods

High yellow brass	13.37½
Copper, hot rolled	15.62½

Anodes

Copper, untrimmed	16.37½

Wire

Yellow brass (high)	17.62½

OLD METALS

Nom. Del. buying prices

No. 1 Composition Red Brass

New York	5.50-5.75
Cleveland	6.12½-6.37½
Chicago	5.75-6.00
St. Louis	5.87½-6.12½

Heavy Copper and Wire

New York, No. 1	7.50-7.75
Cleveland, No. 1	7.25-7.50
Chicago, No. 1	7.50-7.75
St. Louis	7.25-7.50

Composition Brass Borings

New York	5.00-5.25

Light Copper

New York	5.50-5.75
Cleveland	5.25-5.50
Chicago	5.25-5.50
St. Louis	5.00-5.25

Light Brass

Cleveland	2.37½-2.87½
Chicago	3.75-4.00
St. Louis	3.12½-3.62½

Lead

New York	4.00-4.25
Cleveland	3.25-3.50
Chicago	3.75-4.00
St. Louis	3.25-3.50

Zinc

New York	2.25-2.50
Cleveland	2.00-2.25
St. Louis	2.50-2.75

Aluminum

Borings, Cleveland	5.50-6.00
Mixed cast, Cleve.	9.50-9.75
Clips, soft, Cleve.	11.00-11.50
Mixed cast, St. L.	10.00-10.50

SECONDARY METALS

Brass, ingot, 85-5-5-5, lcl.	11.25
Stand. No. 12 alum.	17.50-18.00

WAREHOUSE IRON AND STEEL PRICES

Cents per pound for delivery within metropolitan districts of cities specified

STEEL BARS

Baltimore	4.00c
Birmingham	3.85c
Boston††	4.05c
Buffalo	3.90c
Chattanooga	4.21c
Chicago (j)	3.85c
Cincinnati	4.05c
Cleveland	3.75c
Detroit	3.93½c
Houston	3.10c
Los Angeles	4.30c
Milwaukee	3.96c-4.11c
New Orleans	4.20c
New York‡ (d)	4.12c
Pitts. (h)	3.80c
Philadelphia	4.00c
Portland	4.50c
San Francisco	4.20c
Seattle	4.45c
St. Louis	4.09c
St. Paul	4.10c-4.25c
Tulsa	3.35c

IRON BARS

Portland	3.50c
Chattanooga	4.21c
Baltimore*	3.25c
Cincinnati	4.05c
New York‡ (d)	3.65c
Philadelphia	4.00c
St. Louis	4.09c

REINFORCING BARS

Buffalo	3.10c
Birmingham	3.85c
Chattanooga	4.21c
Cleveland (c)	2.55c
Cincinnati	3.75c
Houston	3.25c
Los Angeles, c.l.	2.975c
New Orleans*	3.24c
Pitts., plain (h)	2.55c
Pitts., twisted squares (h)	3.95c
San Francisco	2.97½c
Seattle	2.975c
St. Louis	3.99c
Tulsa	3.25c
Young	2.30c-2.60c

SHAPES

Baltimore	3.90c
Birmingham	3.75c
Boston††	3.92c
Buffalo	3.80c
Chattanooga	4.11c
Chicago	3.75c
Cincinnati	3.95c
Cleveland	3.86c
Detroit	3.95c
Houston	3.10c
Los Angeles	4.30c
Milwaukee	3.86c
New Orleans	4.10c
New York‡ (d)	3.97c
Philadelphia	3.90c
Pittsburgh (h)	3.70c
Portland (i)	4.25c
San Francisco	4.05c
Seattle (i)	4.25c
St. Louis	3.99c
St. Paul	4.00c
Tulsa	3.60c

PLATES

Baltimore	3.90c
Birmingham	3.75c
Boston††	3.93c
Buffalo	3.80c
Chattanooga	4.11c
Chicago	3.75c
Cincinnati	3.95c
Cleve., ¼-in., o'r	3.86c
Detroit	3.95c
Detroit, 5/16-in.	4.15c
Houston	3.10c
Los Angeles	4.30c
Milwaukee	3.86c
New Orleans	4.10c
New York‡ (d)	4.00c
Philadelphia	3.90c
Phila. floor	5.25c
Pittsburgh (h)	3.70c
Portland	4.25c
San Francisco	4.05c
Seattle	4.25c
St. Louis	3.99c
St. Paul	4.00c
Tulsa	3.60c

NO. 10 BLUE

Baltimore	3.95c
Birmingham	3.80c
Boston (g)	4.00c
Buffalo, 8-10 ga.	3.97c
Chattanooga	4.16c
Chicago	3.85c
Cincinnati,	4.00c
Cleveland	3.91c
Det. 8-10 ga.	3.93½c
Houston	3.45c
Los Angeles	4.50c
Milwaukee	3.96c
New Orleans	4.35c
New York‡ (d)	4.07c
Portland	4.25c
Philadelphia	4.00c
Pittsburgh (h)	3.75c
San Francisco	4.30c
Seattle	4.50c
St. Louis	4.39c
St. Paul	4.10c
Tulsa	3.80c

NO. 24 BLACK

Baltimore*†	4.50c
Birmingham	4.55c
Boston (g)	4.75c
Buffalo	4.80c
Chattanooga*	4.06c
Chicago	4.45c-5.10c
Cincinnati	4.75c
Cleveland	4.66c
Detroit	4.68½c
Los Angeles	5.05c
Milwaukee	4.56c-5.21c
New York‡ (d)	4.82c
Philadelphia	4.65c
Pitts.** (h)	4.75c
Portland	5.15c
Seattle	5.35c
San Francisco	5.15c
St. Louis	4.84c
St. Paul	4.75c
Tulsa	4.85c

NO. 24 GALV. SHEETS

Baltimore*†	4.70c
Birmingham	5.20c
Buffalo	5.45c
Boston (g)	5.30c
Chattanooga*	4.76c
Chicago (h)	5.10c-5.75c
Cincinnati	5.40c
Cleveland	5.31c
Detroit	5.40c
Houston	4.50c
Los Angeles	5.75c
Milwaukee	5.21c-5.86c
New Orleans*	5.75c
New York‡ (d)	5.47c
Philadelphia	5.30c
Pitts.** (h)	5.40c
Portland	5.90c
San Francisco	5.85c
Seattle	5.90c
St. Louis	5.49c
St. Paul	5.40c
Tulsa	5.20c

BANDS

Baltimore	4.20c
Birmingham	4.05c
Boston††	4.25c
Buffalo	4.22c
Chattanooga	4.41c
Cincinnati	4.25c
Cleveland	4.16c
Chicago	4.10c
Detroit, 3/16 & Und.	4.185c
Houston	3.35c
Los Angeles	4.80c
Milwaukee	4.21c
New Orleans	4.75c
New York‡ (d)	4.32c
Philadelphia	4.10c
Pittsburgh (h)	4.00c
Portland	5.00c
San Francisco	4.80c
Seattle	4.95c
St. Louis	4.34c
St. Paul	4.35c

HOOPS

Baltimore	4.45c
Boston††	5.25c
Buffalo	4.22c
Chicago	4.10c
Cincinnati	4.25c
Detroit, 14 & Und.	4.185c
Los Angeles	6.55c
Milwaukee	4.21c
New York‡ (d)	4.32c
Philadelphia	4.35c
Pittsburgh (h)	4.50c
Portland	6.50c
San Francisco	6.50c
Seattle	6.30c
St. Louis	4.34c
St. Paul	4.35c

COLD FIN. STEEL

Baltimore (c)	4.50c
Birmingham	4.91c
Boston*	4.65c
Buffalo (h)	4.35c
Chattanooga*	4.86c
Chicago (h)	4.30c
Cincinnati	4.50c
Cleveland (h)	4.30c
Detroit	4.30c
Los Ang. (f) (d)	6.85c
Milwaukee	4.41c
New Orleans	5.10c
New York‡ (d)	4.57c
Philadelphia	4.53c
Pittsburgh	4.15c
Portland (f) (d)	7.10c
San Fran. (f) (d)	6.80c
Seattle (f) (d)	7.10c
St. Louis	4.54c
St. Paul	4.77c
Tulsa	4.80c

COLD ROLLED STRIP

Boston	3.845c
Buffalo	3.79c
Chicago	3.87c
Cincinnati	3.82c
Cleveland (b)	3.60c
Detroit	3.43c
New York‡ (d)	3.92c
St. Louis	4.54c

TOOL STEELS

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

	Base
High speed	69c
High carbon, Cr.	45c
Oil hardening	26c
Special tool	24c
Extra tool	20c
Regular tool	16c
Water hardening	12½c

Uniform extras apply.

BOLTS AND NUTS

(100 pounds or over)	Discount
Birmingham	50-10
Chicago (a)	55 to 60
Cleveland	60-5-5
Detroit	70-10
Milwaukee	60 to 65
New Orleans	60
Pittsburgh	65-5

(a) Under 100 lbs., 50 off.

(b) Plus straightening, cutting and quantity differentials; (c) Plus mill, size and quantity extras; (d) Quantity base; (e) New mill classif. (f) Rounds only; (g) 50 bundles or over; (h) Outside delivery, 10c less; (i) Under 3 in.; (j) Shapes other than rounds, flats, fillet angles, 0.15c higher.

On plates, shapes, bars, hot strip and blue annealed quantity extras and discounts as follows: Under 100 lbs., add $1.50; 100 to 399 lbs., add 50c; 400 to 3999 lbs., base; 4000 to 9999 lbs., deduct 10c; over 10,000 lbs., deduct 15c. At Cleveland, under 400 lbs., add 50c, with $1 minimum invoice.

‡Domestic steel; *Plus quantity extras; **One to 9 bundles; *† 50 or more bundles; †New extras apply; ††Base 10,000 lbs., extras on less.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, Dec. 2

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

	British gross tons U. K. ports £ s d	Continental Channel or North Sea ports, metric tons Quoted in dollars at current value	**Quoted in gold pounds sterling £ s d
PIG IRON			
Foundry, 2.50-3.00 Silicon	$30.00 6 0 0	$21.61	2 14 0
Basic bessemer	.....	20.95	2 12 0
Hematite, Phos. .03-.05	36.25 7 5 0	.....	.....
SEMIFINISHED STEEL			
Billets	$39.38 7 17 6	$43.11	5 7 6
Wire rods, No. 5 gage	54.13 10 16 6	49.13	6 2 6
FINISHED STEEL			
Standard rails	$50.63 10 2 6	$46.12	5 15 0
Merchant bars	2.73c 12 5 0	2.17c to 2.27c	6 0 0 to 6 5 0
Structural shapes	2.37c 10 12 6	1.94c	5 7 6
Plates, †¼ in. or 5 mm.	2.58c 11 11 3	2.59c	7 2 6
Sheets, black, 24 gage or 0.5 mm	3.34c 15 0 0	3.18c	8 15 0††
Sheets, gal., 24 gage, corr.	4.18c 18 15 0	3.99c	11 0 0
Bands and strips	3.07c 13 15 0	2.36c	6 10 0
Plain wire, base	4.35c 19 10 0	2.54c	7 0 0
Galvanized wire, base	5.18c 23 5 0	3.18c	8 15 0
Wire nails, base	4.13c 18 10 0	2.90c	8 0 0
Tin plate, box 108 lbs.	$ 5.81 1 3 3	.....	.....

British ferromanganese $102.50 delivered Atlantic seaboard, duty-paid.

Domestic Prices at Works or Furnace—Last Reported

	£ s d		French Francs		Belgian Francs		Reich Marks
Fdy. pig iron, Si. 2.5	$26.50 5 6 0(a)	$18.84	554	$25.84	760	$25.47	63
Basic bessemer pig iron	25.00 5 0 0(a)	.....	.....	.....	.....	28.10 (b)	69.50
Furnace coke	9.38 1 17 6	6.43	189	7.31	215	7.78	19
Billets	39.38 7 17 6	25.76	757.50	32.64	960	39.01	96.50
Standard rails	2.26c 10 2 6	1.62c	1,080	2.06c	1,375	2.38c	132
Merchant bars	2.55c 11 9 0	1.49c	995	1.65c	1,100	1.98c	110
Structural shapes	2.46c 11 0 6	1.46c	970	1.65c	1,100	1.93c	107
Plates, †¼-in. or 5 mm.	2.61c 11 14 3	1.86c	1,240	2.06c	1,375	2.29c	127
Sheets, black	3.51c 15 15 0§	2.25c	1,500‡	2.36c	1,575‡	2.59c	144‡
Sheets, galv., corr., 24 ga. or 0.5 mm	4.35c 19 10 0	3.30c	2,200	2.85c	1,900	6.66c	370
Plain wire	4.35c 19 10 0	2.28c	1,520	2.48c	1,650	3.11c	173
Bands and strips	2.72c 12 4 0	1.68c	1,120	2.33c	1,550	2.29c	127

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

**Gold pound sterling carries a premium of 64.7 per cent over paper sterling.

IRON AND STEEL SCRAP PRICES

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

HEAVY MELTING STEEL

Birmingham, No. 1.	10.00
Birmingham, No. 2.	9.00
Bos. dock No. 1 exp.	13.50-14.00
N. Eng. del. No. 1..	13.50
Buffalo, No. 1.....	12.50-13.00
Buffalo, No. 2.....	11.50-12.00
Chicago, No. 1	11.50-12.00
Cleveland, No. 1....	12.50-13.00
Cleveland, No. 2....	11.50-12.00
Detroit, No. 1.....	9.00- 9.50
Eastern Pa., No. 1..	14.00-14.50
Eastern Pa., No. 2..	12.50-13.00
Federal, Ill.	11.50-12.00
Granite City, R. R..	12.50-13.00
Granite City, No. 2.	11.50-12.00
New York, No. 1 ...	†13.00
N. Y. dock No. 1 exp	13.00-13.50
Pitts., No. 1 (R. R.)	14.00-14.50
Pitts., No. 1 (dlr.)..	13.00-13.50
Pittsburgh, No. 2...	12.00-12.50
St. Louis, R. R.....	12.50-13.00
St. Louis, No. 2....	11.50-12.00
San Francisco, No. 1	14.00-15.00
Seattle, No. 1	8.00
Seattle, No. 2	7.00
Toronto, dirs. No. 1.	12.00
Toronto, No. 2	11.00
Valleys, No. 1	13.50-14.00

COMPRESSED SHEETS

Buffalo, dealers ...	11.50-12.00
Chicago, factory ...	10.50-11.00
Chicago, dealer	10.00-10.50
Cleveland	12.00-12.50
Detroit	9.75-10.25
E. Pa., new mat. ...	14.00-14.50
E. Pa., old mat.....	10.50-11.00
Pittsburgh	13.00-13.50
St. Louis	7.25- 7.75
Valleys	12.50-13.00

BUNDLED SHEETS

Buffalo	9.50-10.00
Cincinnati, del.	9.50-10.00
Cleveland	9.00- 9.50
Pittsburgh	12.00-12.50
St. Louis	6.75- 7.00
Toronto, dealers ...	8.00

SHEET CLIPPINGS, LOOSE

Chicago	6.25- 6.75
Cincinnati	6.00- 6.50
Detroit	6.50- 7.00
St. Louis	5.75- 6.25

STEEL RAILS, SHORT

Birmingham	15.00
Buffalo	18.00-18.50
Chicago (3 ft.)	15.00-15.50
Chicago (2 ft.)	15.50-16.00
Cincinnati, del.	17.00-17.50
Detroit	14.50-15.00
Pitts., 3 ft. and less	17.00-17.50
St. Louis, 2 ft. & less	15.00-15.50

STEEL RAILS, SCRAP

Boston district	†11.00
Buffalo	15.50-16.00
Chicago	11.50-12.00
Cleveland	16.50-17.00
Pittsburgh	14.50-15.00
St. Louis	12.50-13.00
Seattle	10.00

STOVE PLATE

Birmingham	8.00- 8.50
Boston, district	†7.00- 7.25
Buffalo	11.50-12.00
Chicago, net	8.50- 9.00
Cincinnati, dealers..	5.50- 6.00
Detroit, net	8.50- 9.00
Eastern Pa.	12.00-12.50
New York, fdry. ...	†8.50- 9.00
St. Louis	9.50-10.00
Toronto, deal'rs, net	10.00

SPRINGS

Buffalo	18.00-18.50
Chicago, coil	16.50-17.00
Chicago, leaf	15.50-16.00
Eastern Pa.	18.00-18.50
Pittsburgh	16.50-17.00
St. Louis	15.00-15.50

ANGLE BARS—STEEL

Chicago	13.50-14.00
St. Louis	14.00-14.50

RAILROAD SPECIALTIES

Chicago	15.50-16.00

LOW PHOSPHORUS

Buffalo, crops	18.50-19.00
Cleveland, crops ...	19.50-20.50
Eastern Pa., crops..	19.00-19.50
Pittsburgh, crops...	18.00-18.50

FROGS, SWITCHES

Chicago	11.50-12.00
St. Louis, cut	12.75-13.25

SHOVELING STEEL

Federal, Ill.	11.50-12.00
Granite City, Ill.....	11.50-12.00
Toronto, dealers....	10.00

RAILROAD WROUGHT

Birmingham	11.00-11.50
Boston district	†9.00- 9.50
Buffalo, No. 1	11.00-11.50
Buffalo, No. 2	13.00-13.50
Chicago, No. 1 net..	10.00-10.50
Cincinnati, No. 2...	9.50-10.00
Eastern Pa., No. 1..	15.50-16.00
St. Louis, No. 1....	8.00- 8.50
St. Louis, No. 2....	12.00-12.50
Toronto, No. 1 dlr...	16.00

SPECIFICATION PIPE

Eastern Pa.	13.50-14.00
New York	†9.50-10.00

BUSHELING

Buffalo, No. 1	11.50-12.00
Chicago, No. 1	10.00-10.50
Cincin., No. 1, deal..	8.50- 9.00
Cincinnati, No. 2...	3.00- 3.50
Cleveland, No. 2...	8.50- 9.00
Detroit, No. 1, new.	9.00- 9.50
Valleys, new, No. 1	12.50-13.00
Toronto, dealers....	9.00

MACHINE TURNINGS

Birmingham	6.00- 7.00
Buffalo	9.00- 9.50
Chicago	6.50- 7.00
Cincinnati, dealers..	4.00- 4.50
Cleveland	7.50- 8.00
Detroit	5.00- 5.50
Eastern Pa.	8.50- 9.00
New York	†5.00- 5.50
Pittsburgh	7.00- 7.50
St. Louis	5.00- 5.50
Toronto, dealers ...	8.00- 8.50
Valleys	9.50-10.00

BORINGS AND TURNINGS

For Blast Furnace Use

Boston district	†2.00
Buffalo	9.00- 9.50
Cincinnati, dealers..	3.50- 4.00
Cleveland	9.00- 9.50
Detroit	6.00- 6.50
Eastern Pa.	8.00- 8.50
New York	†4.50- 5.00
Pittsburgh	7.00- 7.50
Toronto, dealers...	8.00- 8.50

CAST IRON BORINGS

Birmingham	6.00- 7.00
Boston dist. chem...	†7.50- 8.00
Bos. dist. for mills	†7.00- 7.50
Buffalo	9.00- 9.50
Chicago	7.00- 7.50
Cincinnati, dealers..	3.50- 4.00
Cleveland	9.00- 9.50
Detroit	6.00- 6.50
E. Pa., chemical....	13.50-14.00
New York	†4.50- 5.00
St. Louis	6.00- 6.50
Toronto, dealers....	9.00

PIPE AND FLUES

Cincinnati, dealers..	7.00- 7.50
Chicago, net	7.50- 8.00

RAILROAD GRATE BARS

Buffalo	9.50-10.00
Chicago, net	8.50- 9.00
Cincinnati	5.50- 6.00
Eastern Pa.	12.00-12.50
New York	†8.50- 9.00
St. Louis	9.00- 9.50

FORGE FLASHINGS

Boston district	†6.00
Buffalo	11.50-12.00
Cleveland	11.00-11.50
Detroit	8.50- 9.00
Pittsburgh	12.00-12.50

FORGE SCRAP

Boston district	†6.00
Chicago, heavy	15.50-16.00

ARCH BARS, TRANSOMS

St. Louis	16.00-16.50

AXLE TURNINGS

Boston district	†7.50
Buffalo	13.00-13.50
Chicago, elec. fur...	11.50-12.00
Eastern Pa.	12.00-12.50
St. Louis	9.50-10.00
Toronto	9.50

STEEL CAR AXLES

Birmingham	16.00-17.00
Buffalo	18.00-18.50
Boston district	†14.00
Chicago, net	17.00-17.50
Eastern Pa.	20.50-21.50
St. Louis	18.50-19.00

SHAFTING

Boston district	†15.00
New York	†15.50-16.00
Eastern Pa.	19.00-19.50
St. Louis	13.00-13.50

CAR WHEELS

Birmingham	14.00-15.00
Boston dist., iron...	†10.00
Buffalo, steel	18.50-19.00
Chicago, iron	14.50-15.00
Chicago, rolled steel	15.00-15.50
Cincinnati, iron	15.00-15.50
Eastern Pa., iron..	16.50-17.00
Eastern Pa., steel..	18.00-18.50
Pittsburgh, iron	15.00-15.50
Pittsburgh, steel....	17.00-17.50
St. Louis, iron	14.00-14.50
St. Louis, steel	15.00-15.50

NO. 1 CAST SCRAP

Birmingham	14.00-14.50
Boston, No. 1 mach.	†10.00
N. Eng. del. No. 2..	12.00
N. Eng. del. textile.	15.50-16.00
Buffalo, cupola	13.50-14.00
Buffalo, mach.	14.50-15.00
Chicago, agri. net..	10.50-11.00
Chicago, auto	11.50-12.00
Chicago, railr'd net	10.50-11.00
Chicago, mach. net.	11.50-12.00
Cincin., mach. cup...	10.50-11.00
Cleveland, mach....	17.00-17.50
Eastern Pa., cupola.	16.00-16.50
E. Pa., mixed yard.	13.50-14.00
Pittsburgh, cupola..	16.00-16.50
San Francisco, del..	13.50-14.00
Seattle	8.00
St. Louis, No. 1....	12.00-12.50
St. L., No. 1, mach.	12.50-13.00
Toronto, No. 1, mach., net	14.00-15.00

HEAVY CAST

Boston dist. break..	†8.50
N. Eng., del.	12.50-13.00
Buffalo, break	11.50-12.00
Cleveland, break....	14.50-15.50
Detroit, break.	10.00-10.50
Detroit, auto net...	12.50-13.00
Eastern Pa.	14.00-14.50
New York, break. ..	†10.50-11.00
Pittsburgh	13.00-13.50

MALLEABLE

Birmingham, R. R.	12.50-13.50
New England, del...	16.00
Buffalo	14.00-14.50
Chicago, R. R.	14.00-14.50
Cincin., agri. del...	10.50-11.00
Cleveland, rail	15.50-16.00
Detroit, auto	11.50-12.00
Eastern Pa., R. R. ..	16.50-17.50
Pittsburgh, rail	13.75-14.25
St. Louis, R. R.	14.00-14.50

RAILS FOR ROLLING

5 feet and over

Birmingham	16.00-17.00
Boston	†12.00
Chicago	14.00-14.50
Eastern Pa.	18.00-18.50
New York	†15.50-16.00
St. Louis	13.75-14.25

LOCOMOTIVE TIRES

Chicago (cut)	16.00-16.50
St. Louis, No. 1	14.75-15.25

LOW PHOS. PUNCHINGS

Buffalo	17.50-18.00
Chicago	14.50-15.00
Eastern Pa.	18.00-18.50
Pittsburgh (heavy)	16.00-16.50
Pittsburgh (light)..	14.00-14.50
Seattle	15.00

Iron Ore

Lake Superior Ore

Gross ton, 51½%

Lower Lake Ports

Old range bessemer.....	$5.25
Mesabi nonbess.	4.95
High phosphorus	4.85
Mesabi bessemer	5.10
Old range nonbess.	5.10

Eastern Local Ore

Cents, unit, del. E. Pa.

Foundry and basic 56.63% con.	9.00-10.00
Cop.-free low phos. 58-60%	nominal

Foreign Ore

Cents per unit, f.a.s. Atlantic

Foreign manganiferous ore, 45.55% iron, 6-10% man. nom.	12.00
No. Afr. low phos.	nominal
Swedish low phos...	17.00-18.00
Spanish No. Africa basic, 50 to 60% nom.	12.00
Tungsten, sh. ton, unit, duty paid...nom.	$24.00
N. F., fdy., 55%	7.00
Chrome ore, 48% gross ton, c.i.f...	$25.50-26.50

Manganese Ore

Prices not including duty, cents per unit cargo lots.

Caucasian, 50-52%.. ..... non.	45.00
So. African, 50-52% ..... non.	45.00
Indian, 50-52%	Nominal

Sheets

Sheet Prices, Page 102

Pittsburgh — Sheet mill operations here continue to contract slowly. While jobbing mills still are rolling at 28 per cent of capacity, unchanged from last week, common black sheet production here is down 4 points to 36 per cent, and galvanized output at 36 per cent is down 2 points from last week. Little new business is appearing, consumers evidently being out of the market temporarily against the impending inventory period. Shipments continue of fair volume to miscellaneous users, but in general automotive builders are not yet releasing much tonnage.

Cleveland—Producers report specifications continue spotty, representing only actual needs of consumers, for prompt shipment. It is claimed that more than 50 per cent of consumers are now carrying stocks below the monthly average during the first three quarters this year. However, until after the year end inventory period little substantial buying is anticipated. In more than one instance buyers are placing orders for shipment after the first of the year, in spite of the fact that their present stocks are seriously depleted.

Chicago—Sheet demand is slightly heavier, aided by better specifications from the automotive industry and by scattered improvement in buying by miscellaneous users. The decline in consumers' stocks is regarded as the principal stimulus to demand. Mills still are unable to accumulate backlogs and early delivery is available on practically all grades and sizes.

Boston—Only in spots is sheet buying holding, car lot releases by an air conditioning builder and a producer of locker shelving being fairly frequent. One shop fabricating truck tank bodies is moderately busy, but oil burner tank demand has flattened to a low rate. Miscellaneous requirements are light, with jobbers specifying little.

New York—Consuming operations in this district continue to shrink, although still at a rate enabling buyers of sheets to make further inroads into stocks. Meanwhile, releases are being confined almost entirely to small lots for urgent replacements. Sellers look for little gain over the remainder of this year.

Cincinnati — Sheet mills are on light schedules in harmony with the desultory demand, which has yielded ground to year-end influences. Because of material inventories held by some consumers,

mills foresee little improvement in the remainder of this quarter although alert for reappearance of orders which may herald the upturn. The market is distinguished by absence of pressure on prices.

Philadelphia — The automotive trade has issued limited releases for hot and cold-rolled sheets, one of the few bright spots in the current picture. Miscellaneous requirements are still light.

St. Louis — Specifications for sheets have shown moderate betterment during the past week or ten days. Users are working off stocks on hand and need replenishments. Roofing demands have bettered with more seasonable weather and there is a fair demand from makers of drums and barrels. New buying is light, particularly from the leading groups of consumers. Stove operations have virtually ceased and a letdown has occurred in farm implement activities. Warehouse buying continues slow. Prices are holding well.

Birmingham, Ala.—Some recession in output of sheets is noted, with specifications from dealers particularly light. A perceptible drop in demand both for drum stock and roofing is largely responsible.

Strip

Strip Prices, Page 103

Pittsburgh — Narrow strip is slightly more active than wide strip, but producers of most widths are reducing output in line with generally diminishing requirements. Hot-rolled output is down to 30 per cent against 33 per cent last week, and cold-rolled is off four points to 31 per cent. Of course, the approach of inventory season is having its usual effect. This year, however, the contraction is complicated by slow automotive demand. Superior Steel Corp. is planning to move its general offices next week to the plant at Carnegie, Pa., but the executive offices will be retained in the Grant building.

Cleveland—Producers of hot and cold-rolled strip report a modest improvement in specifications from some sources. Current orders are for prompt delivery and represent only the actual needs of the consumer. Inventories are generally below normal with the possible exception of a few electrical equipment manufacturers. Due to the comparatively low inventories and the fact that specifications are estimated to be well below consumption, most sellers expect considerable improvement in order volume around the middle of January.

Chicago — Occasional gains have been noted in automotive strip orders but this business and demand elsewhere have improved insufficiently to bolster shipments and production to any marked degree. Best orders are coming from farm equipment manufacturers, operations in that industry being relatively higher than among other major users.

Boston—Narrow cold strip production has declined further to about 30 to 35 per cent with no improvement in consumer demand. Buying, while well spread, shows no increase and in some instances is slower with users reducing inventories on all specifications possible. Demand from sources connected with the automobile industry continues disappointing. Hot strip buying is still sluggish. Prices are steady.

New York — Cold-rolled strip demand continues sluggish with finishing operations in some departments further reduced. Consumers still operate largely on inventories which will be substantially lowered before real buying is likely to develop. Current volume is almost entirely for fill-in requirements and the uneven character of specifications

tends to hamper steady rolling operations and increase costs. Prompt delivery is asked and there has been little tonnage booked for next quarter delivery. Hot strip buying is at a low point. Prices are steady and unchanged.

Philadelphia — Narrow strip in both hot and cold-rolled specifications is still dull. Stamping plants in general are working short weeks. Prices are steady. According to reports Philco will move its auto radio division to Detroit, thus eliminating one of the important district outlets for hot strip. However, opening of General Motors new plant at Trenton, N. J., in February or March will provide an important customer for cold-rolled strip.

Birmingham, Ala.—Strip, along with most other specifications, is somewhat off from previous weeks, especially since seasonal demands for cotton ties has considerably slackened.

Plates

Plate Prices, Page 102

Cleveland—Now that most lake vessels have been docked for the winter, some improvement is anticipated in demand for plates for general repairs and improvements. The local mill has been operating only as enough orders accumulated to warrant continued operation over a stretch of three to four days. However, some improvement is anticipated soon after the first of the year when the railroads will have a more definite idea of rates.

Chicago — Plate demand continues slow, deriving only slight support from railroads, which are ordering only occasional small lots for repair purposes. Requirements of structural fabricators also are light though inquiries have been moderately heavier lately. Prospects for better demand from railroad shops and car builders appear to hinge largely on the outcome of the request for higher freight rates. Demand from tank fabricators is fairly heavy though off moderately from the rate of earlier months.

Boston—Plate buying is light with prompt delivery specified. On some sizes immediate shipment is difficult, mills lacking sufficient tonnage to insure rolling schedules. In such cases when several items are included in the order, delivery is split, part of the tonnage going forward at once with the remainder promised as soon as possible. Water tanks account for several hundred tons, the Kingston, Mass., project going to an Eastern Pennsylvania mill. Hampden, Me., also has a water tank out for estimates. Railroads are buying in small lots, in some cases just enough to avoid quantity extras. Producers are also accusing competitors of moderate indirect price shading. After a mild flurry, floor plate buying has slumped.

New York—Closing date for bids on four tankers, with alternates, for Standard Oil Co. of New Jersey has been advanced to Dec. 6. Additional tankers are under consideration by this company, which may buy as many as eight. Each will require about 5000 tons of hull steel, about two thirds plates. The plate market otherwise is featureless with general buying at the lowest point of the year.

Philadelphia — No improvement is noted in demand for steel plates, with incoming business of some producers sufficient for not more than two or three days rolling each week. New York Shipbuilding Corp., Camden, N. J., is low bidder on a destroyer tender and seaplane tender requiring 4745 and 4680 tons of

plates, respectively. One tender probably will be awarded to a government shipyard. Moderate foreign plate inquiry is reported, with the going market $2 to $3 under the domestic market.

Birmingham, Ala.—Production of plates is dependent almost wholly upon scattered odds and ends, and probably is at the lowest point of the past 90 days or more.

San Francisco—The state of California will open bids on Dec. 7 for 200 tons for two 400-horsepower boilers and one 250-horsepower boiler for three different projects. So far this year 59,972 tons have been booked, compared with 113,542 tons for the corresponding period in 1936.

Seattle — Unstated tonnages are involved in steel penstocks and inlet pipes for the Coulee project, bids to bureau of reclamation, Denver, Jan. 6. Spec. 760 calls for three 72-inch diameter and eighteen 18-foot diameter penstocks, also twelve 14-foot diameter inlet pipes. Department also plans construction of a railroad spur to lead to proposed rolling mill for fabrication of material on the ground. Local shops are figuring on several sizable water storage tanks planned by municipalities in this area.

Plate Contracts Pending

Unstated, penstocks and inlet pipes for Coulee dam project; bids to bureau of reclamation, Denver, Jan. 6, 1938.
Unstated, storage tank and tower for Othello, Wash.; Allan R. Scott, Spokane, engineer; bids Dec. 14.

Bars

Bar Prices, Page 102

Pittsburgh — Scarcely sufficient new steel bar tonnages are being placed on mill books to sustain even present low operating rates and the present quiet situation appears likely to become accentuated over the next fortnight. Alloy bar needs seem no more pressing at the moment than the common varieties of bars.

Cleveland—Local forging concerns continue to specify for only actual requirements for prompt shipment. Most are operating under curtailed schedules although a moderate improvement has been reported in some instances. Specifications from auto builders continue to reflect the current low operating schedules. However, demand from farm implement manufacturers while off substantially from a month ago, is still resisting the present recession better than most other industries.

Chicago — Steel bar specifications are fairly steady, marked by occasional gains in demand from the automotive industry and miscellaneous consumers. Improved buying generally is a consequence of depleted inventories of users rather than any definite upturn in consumption. Farm equipment builders continue the heaviest individual bar consumers, operations of this industry holding at a relatively high rate.

Boston—Commercial steel bar demand is sluggish with warehouse stocks still ample. As a result jobbers are generally placing fill-in requirements only. Alloy and forging material is less active, but the former in small lots for machinery and miscellaneous needs is making relatively the best showing. District government shops continue to take fair shipments of special alloy stock.

New York—Commercial bar buying is at a low ebb as consumers and warehouses still have good stocks with shrinking consumption.

Philadelphia — Some miscellaneous small lot business in steel bars has been booked but little general

improvement is expected for the remainder of the year. Prices are steady for domestic business but concessions of as much as $6 are heard of on export sales.

Pipe

Pipe Prices, Page 103

Pittsburgh — The welded pipe trade continues to slow down in general, but oil country goods demand still is fairly well sustained, especially for medium-sized seamless tubing. Small pipe requirements are expected to reappear in larger volume after the year-end inventory has been concluded by distributors.

Cleveland—Cast iron pipe foundries report new projects are coming out in an encouraging volume. Pending work includes 455 tons of 8 and 6-inch for an extension to a water distribution system at Sandusky, O., bids Dec. 6. A similar project for Middletown, O., is due for bids Dec. 7, tonnage unstated. J. B. Clow & Son Co., Cleveland, was awarded 200 tons of 16-inch, contracts 295 and 303, for a water distribution system at Akron, O.

Boston—Substantial improvement in buying and inquiry is enhanced by the placing of close to 1000 tons of steel pipe for an oil refinery project in Maine. The district foundry has booked 1175 tons, cast pipe, for Lincoln, Mass., and Hampden, Me., while miscellaneous orders are also in better volume. North Haverhill, N. H., is taking bids on 430 tons. Merchant steel pipe buying is light.

New York — Cast pipe inquiries are slightly heavier, but foundries are meeting increased competition from a cement-asbestos pipe, the recent opening on several hundred tons, Dresden, N. Y., going to the latter. New York city has bids on 425 tons while about 850 tons for Esopus, N. Y., is being closed. Miscellaneous buying is maintained, but a good part of this type of buying is filled from foundry stocks and producer operations have slowed.

Birmingham, Ala. — Production of cast iron pipe holds the slight improvement noted a week ago with producers confident business pending will augment production schedules not later than the first of the new year.

San Francisco—Cast iron pipe lettings were all confined to lots of less than 100 tons and awards for the year so far total 25,943 tons, compared with 44,502 tons for the same period a year ago. More business is pending now than at any other time during the year and over 5200 tons are involved. San Bernardino, Calif., has taken bids on 181 tons of 4 to 8-inch, Class 250 pipe.

Seattle—Inquiry has improved and several sizable jobs are out for figures, some naming steel or transite pipe as alternates. Vancouver, Wash., is in market for water system equipment. Toledo, Oreg., is considering figures for 7000 feet of 10-inch steel mains. Bureau of reclamation has received tenders for furnishing 100 tons ½ to 6-inch galvanized and black steel pipe for Coulee dam. Gold Bar, Wash., has been allotted $11,635 WPA funds for improvements. Other Washington cities about to award contracts or planning pipe and system improvements include Lowell, $87,000; Monroe, $72,000; Milton, $61,700; Tenino, $80,000; Alderwood Manor, $32,600. Pipe, tanks, pumps, hydrants and other accessories are involved.

Cast Pipe Placed

1000 tons, 6 to 12-inch, Hampden, Me., to Warren Foundry & Pipe Co., Everett, Mass.

475 tons, Hartford, Conn., to R. D. Wood & Co., Florence, N. J.

296 tons, contracts 295 and 303, feeder mains, PWA project, Akron, O., to

J. B. Clow & Sons Co., Cleveland.
175 tons, 12-inch, Lincoln, Mass., to Warren Foundry & Pipe Co., Everett, Mass.
150 tons, 12 to 24-inch, New Rochelle, N. Y., to Donaldson Iron Works, Emaus, Pa., bids Dec. 2.

Cast Pipe Pending

1300 tons, 8-inch, for Ninth Avenue SW improvement, Seattle; bids in.
700 tons (alternate for steel and transite) King county district No. 7, Seattle; bids in.
455 tons, 8, 6-inch extensions to water system, Sandusky, O.; bids Dec. 6.
430 tons, 10-inch and under, North Haverhill, N. H.
300 tons, 4, 6-inch, storage and various miscellaneous installations, Cleveland; bids Dec. 10.
181 tons, 4 to 8-in, Class 250, San Bernardino, Calif.; bids opened.
125 tons, 3, 4 and 6-inch, Class 100 and 150, for Yakima, Wash.; bids in.
Unstated tonnage, extension to water system, Middletown, O.; bids Dec. 7.

Wire

Wire Prices, Page 103

Pittsburgh — One ray of encouragement for wire trade prospects appears in the low state to which the stocks of both distributors and manufacturers have fallen. Already small lot shipments are urgently requested occasionally for fill-in purposes as consumers seek to avoid adding to inventories at this time.

Cleveland—Wire sellers note little if any improvement in specifications. In most instances new orders have leveled off at the current low volume, representing only actual needs. Most consumers have normal or subnormal inventories, but in almost every instance they are still intent on reducing stocks as the year end inventory period nears. The unusually disappointing demand at this time of the year from the automotive builders has been an important adverse influence to partsmakers here.

Chicago — Wire demand continues slow, with little prospect of a definite change for the better seen for December. Occasional improvement in orders is resulting from stock depletion by consumers but such business is insufficient to effect a change in the trend of total buying. Jobbers are interested in holding down stocks and in most cases are sufficiently well supplied to require little additional material.

Boston—Uneven but diversified demand for wire goods is reflected in mill finishing operations, which are slightly lower. Individual orders are small and for immediate shipment, consumers buying only what is absolutely needed to meet current needs. Consumption of wire products, while gradually declining, is still above incoming tonnage. Users continue to operate largely on inventories, which in many instances are heavier than normal. Some purchasing agents are under fire from directing executives for alleged overbuying and are more apprehensive as to future prices. Any material reduction would result in markdowns on inventory values. Wire prices are firm, however, with surprisingly little pressure for lower quotations.

Birmingham, Ala.—Dealers continue without major specifications with the result that production continues on virtually a hand to mouth basis. With completion of the approaching inventory season, however, it is expected demand for wire products will show a material increase.

New York — Despite light buying, consumer wire inventories are not being worked off as rapidly as hoped and many users will apparently enter first quarter with substantial stocks of some specifications. While producers look for improvement in demand soon after the first of the year, the upturn is expected to be moderate and centered mostly on an increase in fill-in buying which has predominated for weeks. Dull-

ness is distributed through the entire list of wire products with some mills noting rope and cable averaging slightly better than most items. Integrated works have rather large supplies of rods and semifinished material. Finished mill operations are estimated at about 35 per cent. Prices are steady and firm.

San Francisco—Metropolitan water district, Los Angeles, under specification No. 251, has awarded 2000 tons of chain link fence, 1200 tons of posts and 300 tons of fastenings to two interests. Pittsburgh Steel Co., Pittsburgh, secured schedules 2, 3, 4 and 5 and Anchor Post Fence Co., Baltimore, booked schedule 1.

Rails, Cars

Track Material Prices, Page 103

Placing of 50,000 tons of rails and 10,000 tons of fastenings by a group of southern railroads, Atlantic Coast Line, Louisville & Nashville, Nashville, Chattanooga & St. Louis and the Clinchfield, is the largest purchase by these lines since 1931. In addition to the Louisville & Nashville and Nashville, Chattanooga & St. Louis awards, already reported, the Atlantic Coast Line and Clinchfield have placed 14,000 tons with Tennessee Coal, Iron & Railroad Co., Ensley, Ala.

Norfolk & Western is in the market for 25,000 tons of 131-pound rails. South Manchurian railroad is asking bids on 2000 cars in addition to the inquiry for 50 to 100 locomotives previously issued.

Rail Orders Placed

Atlantic Coast Line, 14,000 tons, to Tennessee Coal, Iron & Railroad Co., Birmingham, Ala.

Car Orders Pending

South Manchurian Railroad, 1000 gondolas, 500 box and 500 flat cars; bids asked.

Rail Orders Pending

Kansas City Southern, 5000 tons.
Norfolk & Western, 25,000 tons 131-pound rails; bids asked.

Buses Booked

American Car & Foundry Motors Co., New York: Fifteen coaches for Gary Railways Co., Gary, Ind.; five for Los Angeles Railway Corp. Los Angeles; three for San Diego Electric Railway Co., San Diego, Calif.; one for Collacut Coach Lines, Oshawa, Ont.; one for Cumberland & Westernport Transit Co., Frostburg, Md.

Shapes

Structural Shape Prices, Page 102

New York — Bids close Dec. 9 on 3000 tons, Flushing river superstructure, Queens approach, Bronx-Whitestone bridge, New York. This inquiry, with 5400 tons for another Rockefeller Center building, now being figured, are the outstanding unplaced structural projects. Few sizable bridge jobs are in prospect for the near future and private construction needs are sagging. Current tonnage placed is running well under the average for this district during the first three quarters of the year.

Structural steel fabricated and shipped during October continued in its usual large volume, according to the American Institute of Steel Construction, New York, although the new orders booked that month were

the lowest of the year. Shipments during October represented 63.8 per cent of normal (the annual average from 1928-1931), whereas shipments for the first ten months of the year averaged 60.5 per cent. New orders during the month were 20.1 per cent of normal, while the bookings for the first ten months averaged 59.1. This has resulted in a curtailment of the backlog of the industry by approximately one-fifth.

Cleveland—Trend in structural awards is unchanged. Most small fabricators are comparatively active on recent bookings from private sources. While current awards are limited to tonnages ranging up to 50 tons, Bethlehem Steel Co., Bethlehem, Pa., was awarded the steel on two Ohio state bridges, in Knox and Auglaize counties. More than one fabricator believes considerable tonnage is pending in elaborate expansion programs being held up, awaiting a more definite and encouraging outlook.

Chicago — Inquiries continue fairly numerous and are marked by a preponderance of private jobs. While most projects take less than 1000 tons, the total of all new work is nearly 10,000 tons. A boiler house for the city of Springfield, Ill., involves 1000 tons while a warehouse at Burlington, Iowa, will take 750.

Boston — While large individual tonnage projects are lacking, volume is well maintained by broader inquiry for schools, post offices and miscellaneous construction needs. About 3000 tons are now up for figures. Of this tonnage bridges contribute little new work, a 375-ton span at Norwich, Conn., being the most impressive. Boston structural shop operations and backlogs, with a few exceptions, are lower.

Philadelphia — Public work continues to dominate, but most of the jobs are for small tonnages. Dates for bids will be named soon for the farm show building, Harrisburg, requiring 1900 tons.

Birmingham, Ala. — Output of shapes in the southern territory is lighter than it has been in several months with backlogs, long since depleted.

San Francisco — Movement of structural shapes continues restricted with awards not exceeding 1500 tons. So far this year 138,839 tons have been placed, compared with 152,370 tons in 1936. Unnamed interest secured 428 tons for the Clark Fork river bridge in Mineral county, Montana. The sub-contract for 3000 tons of sheet piling and shapes for the Mare Island drydock is expected soon. Metropolitan water district, Los Angeles, will open bids on Dec. 10 for a year's requirement of 6-inch, 20 and 30-pound H beam tunnel ribs and spreaders, involving a sizable tonnage.

Seattle—Interest centers in opening of bids at Spokane, Dec. 10, for the Coulee dam second unit involving 41,000 tons of shapes. Washington state received bids Nov. 30 for highway projects calling for 475 tons shapes in addition to an unstated tonnage of steel piling. Bids were opened by army engineers, Kansas City, Dec. 3 for control gates for the Fort Peck dam. Bureau of roads has called bids Dec.

Shape Awards Compared

	Tons
Week ended Dec. 4	13,526
Week ended Nov. 27	8,668
Week ended Nov. 20	21,736
This week, 1936	17,132
Weekly average, 1936	16,332
Weekly average, 1937	23,840
Weekly average, November	24,633
Total to date, 1936	1,069,349
Total to date, 1937	1,168,236

Includes awards of 100 tons or more.

8 at Ogden, Utah, for a 125 foot steel span to be erected in Bonner county, Idaho.

Shape Contracts Placed

1150 tons, apartment, Thirty-fifth street and Madison avenue, New York, to Harris Structural Steel Co., New York; through Wallenstein Construction Co., New York.

1000 tons, women's wing, University hospitals, Pittsburgh, to Bethlehem Steel Co., Bethlehem, Pa.

850 tons, airplane hangars, New Baltimore, Md., for city of Baltimore, to Lehigh Structural Steel Co., Allentown, Pa.

775 tons, black and galvanized I-beams, welding quality, navy department, delivery to Brooklyn and Philadelphia, bulk to Jones & Laughlin Steel Corp., Pittsburgh, with Joseph E. Cattie & Bros., Philadelphia, and Penn Galvanizing Co., Philadelphia sharing in award; bids Nov. 5, schedule 900-1180. Material is for battleships NORTH CAROLINA and WASHINGTON.

700 tons, state highway bridge, route 281, Fallingston, Pa., to Phoenix Bridge Co., Phoenixville, Pa.

600 tons, bridge, Edgerton, Wis., to Bethlehem Steel Co., Bethlehem, Pa.

545 tons, storage building, John Eichler Brewing Co., New York, to Harris Structural Steel Co., New York.

540 tons, two car floats, Nashville, Chattanooga & St. Louis railway, Paducah, Ky., to Nashville Bridge Co., Nashville, Tenn.

500 tons, bridge, Alvord, Mo., to Missouri Valley Bridge & Iron Co., Leavenworth, Kans.

465 tons, bridge, Cotrilla, Tex., to Virginia Bridge Co., Roanoke, Va.

435 tons, bridge FAP 173-B and C, Cleveland county, and bridge 5-A, Noble county, Oklahoma, to J. B. Klein Iron & Foundry Co., Oklahoma City, Okla.

428 tons, bridge over Clark Fork river, Mineral county, Montana, to unnamed interest.

400 tons, building, Museum of Modern Art, New York, to Post & McCord, New York; John Lowry, Inc., New York, general contractor.

400 tons, state highway bridge FAP-257-F, Columbia Falls, Mont., to Minneapolis Moline Power Implement Co., Minneapolis.

370 tons, highway bridge over Barnegat Bay, Mantoloking, N. J., for Ocean county, New Jersey, to Bethlehem Steel Co., Bethlehem, Pa.

354 tons, Flathead river bridge, Flathead county, Montana to unnamed interest.

340 tons, two Ohio state bridges, in Knox and Auglaize counties, to Bethlehem Steel Co., Bethlehem, Pa.

325 tons, power house, Briggs Mfg. Co., Detroit, to Whitehead & Kales Co., Detroit.

313 tons, bridges, Prowers and Baca counties, Colorado, to Minneapolis-Moline Power Implement Co., Minneapolis; Southern Colorado Construction Co., Colorado Springs, Colo., general contractor.

300 tons, administration building, Buffalo Sewage authority, Bird Island, to Carnegie-Illinois Steel Corp., Pittsburgh; includes 173 tons of piling.

300 tons, bridge, Chicago & North Western railroad, Milwaukee, to Bethlehem Steel Co., Bethlehem, Pa.

295 tons, furnace steel, Rust Furnace Co., Indiana Harbor, Ind., to Joseph T. Ryerson & Son Inc., Chicago.

264 tons, building, Coca Cola Co., Providence, R. I., to Bethlehem Steel Co., Bethlehem, Pa.; Rowley Construction Co., Pawtucket, R. I., general contractor.

260 tons, state overpass, Chesapeake & Ohio railroad, Winifrede Junction, W. Va., to Bethlehem Steel Co., Bethlehem, Pa.

250 tons, bridge sec. 20F, Williamson county, Blairsville, Ill., to St. Louis Structural Steel Co., East St. Louis, Ill.

245 tons, bridge, Paola, Kans., to St. Joseph Structural Steel Co., St. Joseph, Mo.

215 tons, field house and athletic cage, University of New Hampshire, Durham, N. H., to American Bridge Co., Pittsburgh.

170 tons, bridges, various locations, Vermont, U. S. department of agriculture, No. 399, to Phoenix Bridge Co., Phoenixville, Pa.

150 tons, music building, Polytechnic high school, Long Beach, Calif., to Minneapolis-Moline Power Implement Co., Minneapolis.

145 tons, building, Montgomery Ward Co., Aberdeen, S. Dak., to Crown Iron Works Co., Minneapolis.

120 tons, power house, South Omaha, Nebr., to Omaha Steel Works, Omaha, Nebr.

112 tons, combination stack and water tank, Ohio Public Service Co., Warren, O., to American Bridge Co., Pittsburgh.

110 tons, high school, East Bakersfield, Calif., to unnamed interest.

100 tons, sheet piling, United States Engineer Office, Los Angeles, proposal 101, to Inland Steel Co., Chicago.

Shape Contracts Pending

5400 tons, building No. 7, Rockefeller Center, New York.

5000 tons, tool die shop, Ford Motor Co., Dearborn, Mich.
3000 tons, superstructure, Flushing river bridge and Northern boulevard grade crossing, Queens approach, Bronx-Whitestone bridge, New York; bids Dec. 9, Triborough bridge authority, N. Y. This tonnage includes 64,000 pounds cast steel shoes and expansion plates; 128,000 pounds, miscellaneous steel; 7700 square feet, roadway grating; 130,000 pounds, trunnions and bearings; 140,000 pounds, operating machinery.
1000 tons, boiler house, city of Springfield, Ill.
1000 tons, bridge, Lafayette avenue, Bay City, Mich.
750 tons, warehouse, J. I. Case Co. Burlington, Iowa.
635 tons, building, Armstrong Rubber Co., Natchez, Miss.
575 tons, wharf, Beaumont, Tex.
550 tons, textile plant building, Calhoun, S. C.
500 tons, eight-story building, William Hengerer Co.'s store, Buffalo.
480 tons, state bridges, Indiana; bids Dec. 7.
475 tons, bridge and highway work, Washington state; bids in.
433 tons, bridge, St. Charles, Mo.
400 tons, junior high school, Braddock, Pa.
400 tons, state hangar, Warwick, R. I.
370 tons, school, Polk, Pa.; McCloskey & Co.; Philadelphia, low.
300 tons, distillery building, Seagrams-Distillers Corp., Lawrenceburg, Ind.
275 tons, school, Nanticoke, Pa.; bids in.
275 tons, school addition, Belmont, Mass.
275 tons, state bridge, Norwich, Conn.
220 tons, bridge, Columbia county, Pennsylvania; bids Dec. 10.
205 tons, bridge, Crooked Creek dam, near Ford City, Pa.; bids Dec. 17 to U. S. engineer, Pittsburgh; work also takes 100 tons, black steel and cast iron pipe; also 55 tons miscellaneous metal work.
185 tons, state bridge route 35, section 12, New Jersey; bids Dec. 13.
185 tons, bridge, Middlesex county, N. J.; bids Dec. 13.
180 tons, piling, four groins, Bethany Beach, Md.; W. P. Short, Bethany Beach, low at $25,719.
175 tons, chemistry building, Lowell Textile Institute, Lowell, Mass.; Louis Marion & Son Inc., Lowell, low on general contract.
150 tons, theater building, Schine Theatre Enterprises, Auburn, N. Y.
150 tons, public auditorium, Burlington, Iowa.
150 tons, Central school, Caledonia, N. Y., bids Dec. 10.
120 tons, shop building, Silver Roberts Iron Works, Denver.
105 tons, bridge, Tionesta creek dam, Tionesta, Pa.; bids Dec. 18 to U. S. engineer, Pittsburgh; work also takes 120 tons, wrought, steel and cast pipe, also 70 tons miscellaneous metal work.
103 tons, bridge, Elk county, Pennsylvania; bids Dec. 10.
100 tons, signal and refuge bay platform, St. Louis municipal bridge; List & Weatherly, Kansas City, Mo., low bidder.
Unstated, Roza project bridges and gates, also gates and hoists for Semino dam; bids in to bureau of reclamation, Denver.
Unstated, control gates for Fort Peck, Mont.; bids in to U. S. engineer, Kansas City.
Unstated, 125-foot steel span for bureau of roads in Bonner county, Idaho; bids in at Odgen, Dec. 8.
Unstated, crane for Bonneville dam; Star Iron & Steel Co., Tacoma, Wash., low.

Reinforcing

Reinforcing Bar Prices, Page 103

New York — Close to 2000 tons has been awarded, leaving estimated pending tonnage the lowest in months. Buying includes 1600 tons for a Bronx bridge and about 350 tons for New Jersey highway and bridge work. Except for 925 tons for the Union City approach, Lincoln tunnel, large inquiries are few with about 1000 tons bid, but still pending, for New York and New Jersey state highway projects. Prices continue erratic.

Boston—Awards have slackened with new inquiry also light. Small lots predominate with few substantial tonnage projects being estimated. Bridge requirements are small while highway needs during the next few months are expected to offer little support. Concrete bar prices continue to be shaded.

Cleveland — Reinforcing awards are limited to small projects ranging up to 50 tons, although most

are well under 25 tons. It is expected that the 325 tons for the retaining wall at the Pennsylvania railroad's unloading dock, Sandusky, O., will be awarded this week. No new inquiries worthy of note have appeared within the last ten days. Prices remain spotty.

Chicago — Concrete bar inquiries are less numerous but a fair tonnage still is pending. Except for various schools pending in Illinois and Wisconsin, most prospective business is for private work. Bridge building is providing but few orders. Bar shipments have declined further, but while little improvement in deliveries is in prospect during winter months, a steady rate of deliveries is looked for.

Philadelphia — McCloskey & Co., Philadelphia, has placed 350 tons for the Norristown state hospital, with Sweets Steel Co.,Williamsport, Pa. Some tonnage remains to be placed for state work, but private jobs are scarce.

Birmingham, Ala.—Awards for concrete bars, while not up to expectations, has served to momentarily increase the tempo of production, and sustain ingot production.

San Francisco—Although a fair volume of business was placed, new inquiries continue to come forth for figures slowly and pending business does not exceed 4000 tons. Awards aggregated 2368 tons and brought the year's total to 91,182 tons, compared with 223,866 tons last year.

Seattle—Future business looks more promising, but meanwhile local rolling mills are operating intermittently as small contracts are booked. Schools and postoffices are the principal contracts in the construction field, but they require only small tonnages. No announcement has been made as to when the reclamation department will buy the 25,000 tons of reinforcing required for the Coulee project, nor has the award been placed for 1157 tons for the Roza project, bids opened Nov. 8. About 600 tons are pending in Washington state highway jobs, bids in.

Concrete Bars Compared

	Tons
Week ended Dec. 4	4,056
Week ended Nov. 27	4,635
Week ended Nov. 20	4,714
This week, 1936	2,495
Weekly average, 1936	6,065
Weekly average, 1937	6,179
Weekly average, November	6,282
Total to date, 1936	315,917
Total to date, 1937	302,775

Includes awards of 100 tons or more.

Reinforcing Steel Awards

1700 tons, bridge approach and grade crossing elimination, Cypress avenue, Bronx, N. Y., to Carroll-McCreary Co., Brooklyn, N. Y., J. Leopold & Co., New York, general contractor.

391 tons, filter plant, Charlotte, N. C., to Easterby & Muma Co., Charlotte, through Southeastern Construction Co., Charlotte, general contractor.

350 tons, hospital, Torrance, Pa., to Sweets Steel Co., Williamsport, Pa.; through Matthew Cummings, Boston, general contractor.

250 tons, Panama, to Carroll-McCreary Co., Brooklyn, N. Y.; bids in schedule 3301, class 2.

250 tons, high school, East Bakersfield, Calif., to Kyle & Co., Fresno, Calif.

200 tons, highway projects, Lakehurst, Ocean and Monmouth county, New Jersey, to Igoe Bros., Newark, N. J.; Highway Corp., Newark, general contractor.

150 tons, highway project, Monmouth county, New Jersey, to Igoe Bros., Newark, N. J.; E. H. Ellis, Westville, N. J., general contractor.

150 tons, plate girder bridge, route 281, section 7, Bucks county, Pennsylvania, to Bethlehem Steel Co., Bethlehem, Pa.

150 tons, film building, North San Vicente boulevard, Hollywood, Calif., to unnamed interest.

140 tons, bridges, Prowers and Baca counties, Colorado, to Eaton Metal Products Co., Denver; Southern Colo-

rado Construction Co., Colorado Springs, Colo., general contractor.

125 tons, school, Porterville, Calif., to Kyle & Co. Fresno, Calif.

100 tons, school, Mojave, Calif., to unnamed interest.

100 tons, post office, Monrovia, Calif., to unnamed interest.

Reinforcing Steel Pending

925 tons, main approach roadway and ramps, Bergenline avenue to Pleasant avenue, Union City, N. J., approach to Lincoln tunnel; bids Dec. 16, Port of New York authority, contract MHT-71; work also takes 100 tons of structural cast and miscellaneous steel 150 tons, post office, Canal street branch, New York.

400 tons, Columbia avenue viaduct city of Cincinnati; Penker Construction Co., Cincinnati, reported low on general contract.

375 tons, Washington state highway projects; bids in.

363 tons, superstructure, Flushing river bridge and Northern avenue grade separation, Queens approach, Bronx-Whitestone bridge; bids Dec. 9 to Triborough Bridge authority, New York.

300 tons, power plant, Edison Electric Illuminating Co., South Boston, Mass.

300 tons, Lakeside power house, Springfield, Ill.

225 tons, bridge, Wichita, Kans.

211 tons, bureau of reclamation, Denver; schedule A-46,511-A; bids in.

104 tons, Whittier school, Berkeley, Calif.; bids opened.

100 tons, school, Cuyahoga Falls, O.

100 tons, officers quarters, Hickam Field, T. H.; bids postponed until Dec. 15.

100 tons, research building, Procter & Gamble Co., of Cincinnati.

100 tons, state hospital addition, Stellacoom, Wash.; bids at Olympia, Dec. 16.

Unstated tonnage, eight-story building William Hengerer Co.'s store, John W. Cowper Co., Inc., Buffalo, general contractor.

Pig Iron

Pig Iron Prices, Page 104

Pittsburgh—Subsiding pig iron demand in this usually busy consuming area is leading to additional merchant blast furnaces being banked or blown out. No. 2 foundry and malleable irons are moving in one or two carload lots, but activities of local foundries still are very much circumscribed. Present indications point to the diminished demand of the present continuing at least several more weeks.

Cleveland — Producers continue fairly active completing shipments against contracts placed for fourth quarter delivery. However, due to the abrupt recession in production schedules of most foundries, considerable tonnage is expected to be carried over into next quarter. November shipments of most producers fell below October. A comparatively moderate volume of tonnage has been booked for first quarter delivery, although in most instances it is considerably less than that booked before the comparable periods of preceding quarter this year.

Chicago—November showed a 25 per cent reduction in pig iron shipments and a further decrease is seen for December. Foundries continue to reduce stocks, inventories now being well below the tonnage on hand a year ago. As a consequence, some consumers will be forced to re-enter the market during coming weeks. New business is expected to consist of spot orders, however, rather than quarterly contracts. Consumption is spotty, being best maintained among farm equipment manufacturers. Jobbing foundries anticipate slow schedules during the balance of the year. The market is steady on new business at $24, furnace, for No. 2 foundry and malleable.

Boston—Mystic Iron Works furnace, Everett, Mass., went out of blast Dec. 1, having been producing since May 1. Stocks accumulated are well balanced, but not considered large. It is estimated the district

furnace, producing slightly better than 500 tons daily in recent months, shipped close to 50,000 tons abroad during the period of operations. Current high costs, labor and materials, operated against building up overlarge stocks before suspension. Buying continues light for current needs by the smaller consumers with some additional decline in melting operations.

New York—Pig iron business continues on a hand-to-mouth basis, with consumers endeavoring to keep stocks as low as possible pending inventory. Later in the month a better volume of new orders may be entered for material for delivery after inventory. Stocks at most consuming plants are low, notwithstanding the recent low rate of foundry operations.

Philadelphia — Little change is noted in pig iron buying which is light and for spot needs only. Foundry operations are averaging four days weekly with some working one or two days.

Buffalo—Further decline in melting operations is reflected in the slowing of pig iron shipments. With producers anticipating a quiet month a large portion of current orders will be extended into the new year. December shipments in all probability will be far below total of the two preceding months and the same month last year. Foundries are continuing to work off inventories. Republic Steel Corp. shut down one of its two blast furnaces leaving seven of the fifteen stacks in blast.

Cincinnati — Shipments of pig iron lag behind the melt which has shown declining tendencies. Foundries generally aim to reduce inventories. Buying for third quarter was conservative so that no excessive tonnage will be carried over. However, contracting for future needs is being delayed until requirements are more definite. Some furnace interests anticipate deliveries this month will be below the November tonnage.

St. Louis — Shipments of pig iron have picked up moderately during the past week, but this minor spurt will not bring the November total up to that of the preceding month or any earlier month since February. While melters are cutting heavily into stocks, they will have large tonnages under contract, a goodly part of which will carry into first quarter.

Only large sale reported was 1000 tons of malleable to an agricultural implement maker for first quarter delivery. Some small lots of special analysis are being made, but the aggregate of such transfers is not impressive. Stove shops are down for the balance of this year. New patterns and models are being designed. Operations at steel foundries have receded further, and new business is disappointing. Automotive releases are also under expectations.

Makers of machinery are still fairly active, but their backlogs are dwindling. Operations at fabricating yards are from 30 to 35 per cent of capacity, and will be reduced during the next two weeks.

Birmingham, Ala. — Blast furnace operations remain below the level of previous weeks with a comparatively inactive market although stacking of iron has not been pronounced, and the melt is comparatively satisfactory.

Toronto, Ont.—With steel operations in Canada holding at the high level attained earlier in the year demand for merchant pig iron continues in good volume. Melters are entering the market at regular intervals for supplies and weekly sales continue at approximately 2500 tons. No new contract placing has been reported and while some melters have taken in supplies to carry them to year-end the majority still are taking iron as demands dictate, pro-

viding a steady spot market. Production of pig iron continues at peak levels with October output at the highest rate since January, 1930. Prices are firm and unchanged and local interests do not look for further revision this year.

Scrap

Scrap Prices, Page 106

Philadelphia—The first upturn for many weeks has made its appearance in the market here, largely a reflection of more active demand for export tonnage. Dealers are paying $14.50 for No. 1 heavy melting steel for delivery to at least one domestic user, which indicates a $15 market. Approximately 3000 tons of new compressed sheets has been sold at the equivalent of $14.50, delivered. Exporters have advanced buying prices 50 cents, to $15, f.a.s., for No. 1 and $14 for No. 2. Additional tonnage has been sold for delivery to Italy at $16 by larger yard dealers. Cargo space is more plentiful and several boats are due within the next few weeks. The entire market is buoyant although consumers are showing little interest, due to restricted requirements.

Pittsburgh — New business in iron and steel scrap is so scarce as to be negligible. Shipments on orders continue in a desultory way, but scrap trade interest is at the lowest point in years. Further recessions in specialties prices are noticeable, ranging from 50 cents up to $1.50. The standard heavy steel grades, however, continue unchanged.

Chicago — While scrap demand continues slow, prices for the time being have leveled off and generally hold at figures attained a week ago. Mills show little interest in making new commitments in view of curtailed operations and brokers are unwilling to buy actively.

Boston—Actual loading of iron and steel scrap for export and prospective increase in cargo space is heavier, relieving congestion at several points, notably Providence, R. I., and Portland, Me. While most of this tonnage has been bought and assembled some scrap to round out needs is being bought for dock delivery, shippers paying up to $14 for No. 1 heavy melting steel with other grades for export steady. Domestic demand continues slack, with prices on some grades for both New England and Pennsylvania shipment 50 cents a ton lower.

New York — Downward changes in quotations on scrap are less frequent, though many grades are still nominal, due to lack of buying. Prices are steady for export with shippers paying $13.50 for most of their No. 1 heavy melting steel. Despite more available cargo space for export there is no increase in buying as material accumulated on barges is being loaded. There is substantially better movement of scrap against old export orders taken before the recent transactions. The Phoenixville, Pa., melter is taking moderate shipments of No. 2 steel, stove plate and cast grades but little is moving from this district.

Buffalo — While the iron and steel scrap market remained in a stalemate, as far as sales were concerned, a decided improvement in sentiment was noted among some of the large dealers, who expressed belief the bottom has been reached.

Spotty inquiry, combined with an expansion in the movement to lay down stocks and await higher prices, imparted a stronger undertone.

Detroit—On the basis of bids on automotive lists this week, the scrap market appears to be scraping bottom, with sentiment inclined to be a

trifle more bullish, if anything. Prices are holding at the level of the past two weeks, although considerably below the quotations on scrap lists a month ago. Chrysler, Buick, Ternstedt and Chevrolet scrap tonnages all come up for bidding and buyers apparently were inclined to gage present prices satisfactory, believing that the market will turn upward within three months.

Cincinnati — Prices in the iron and steel scrap market are lower, but the drying up of supplies may be an indication that they are near the bottom. Little scrap is appearing, collections are off and dealers are holding accumulations. Consumer demand is no better, possibly at the lowest point of the year. Absence of mill buying is pronounced, leaving quotations without adequate test.

St. Louis—In the absence of trading in iron and steel scrap prices remained nominally unchanged at the lowest levels of the recent decline. Offerings from all quarters have greatly diminished, those of dealers having practically disappeared. No railroad lists were before the trade.

The belief prevails among sellers that the bottom has been reached, and while no buying in volume is looked for before late in December, it is thought that at that time prices will be higher.

Birmingham, Ala.—Scrap market continues particularly inactive with the largest users out of the market. Further price recessions would not be surprising. A few purchases, mostly by foundries, are reported.

Seattle — Private reports from Japan indicate that buyers will not be actively in the market again before March or April, stocks being sufficient in the meantime. No trans-Pacific shipments are en route although some exporting houses hold contracts which have not been financed. It is known that letters of credit will be furnished for any needed supplies. Meanwhile prices are nominal, No. 1 and No. 2 melting being quoted at $8 and $7, respectively. Dealers will take attractive tonnages to hold for higher prices but there is no inducement for country shippers. Local rolling mills are not buying and only occasional small lots are being taken by foundries.

Toronto, Ont.—In the iron and steel scrap markets new business is steady but lacking in special feature. Steel mills in the Hamilton district are taking delivery of heavy melting steel and turnings but are not pushing dealers for supplies. Montreal dealers, however, report less demand for steel grades, and curtailment in iron scrap sales. Demand for machinery cast and stove plate is steady with dealers reporting difficulty in meeting all requirements from consumers. No revision has been announced in price lists although some dealers are offering 50 cents to $1 above market for desirable lots.

Warehouse

Warehouse Prices, Page 105

New York—Continued shading on galvanized sheets by numerous jobbers in this district has resulted in leading warehouse interests officially reducing prices approximately $5 per ton and revising quantity classifications. The new price is $5 per hundred pounds in lots of 10 bundles or more, $5.25 for less than 10 bundles. Prices on hot-rolled annealed sheets from store will also be reduced early next week.

Cleveland—Warehouse distributors report a further decrease in order volume and aggregate tonnage shipped in November compared with October. However, the decline was

smaller than expected at the middle of the month and in some instances an improvement was noted during the last half when compared. Most distributors look for a leveling off in shipments at the current volume through the remainder of this year.

Chicago—Sales are expected to continue downward trend which prevailed during November, with recovery deferred at least until January. The season is accentuating the decrease in consumption of steel among warehouse customers.

Philadelphia — Business is slow with consumers gearing purchases closely to actual needs. Total number of orders is holding up well but are small individually. Prices are steady.

Cincinnati — Warehouse demand is fairly steady with no marked shrinkage attributable to year-end influences. Sales are, almost without exception, for early needs and in small tonnages. Jobbers' inventories are not excessive. Prices remain firm.

St. Louis — Continued quietness marks jobber business. November sales fell below October, but compared favorably with a year ago. All buyers seem anxious to hold down inventory, and are purchasing from hand to mouth. Building materials are slow, though in the immediate past there has been a fair movement of plates, structural shapes and forgings for special jobs. Stove plants are down for the year, and except for a few repair items, there is no buying from that source. Bright spot is still oil country goods for the new Illinois fields and Arkansas, where activities are active. Prices are steady.

Seattle—Jobbing houses are marking time. Demand is unimportant and sales confined to small lots of miscellaneous items. No pickup is expected before middle of January. Prices are steady.

Iron Ore

Iron Ore Prices, Page 106

Baltimore—Arrivals of ore here so far reflect only in slight measure the sharp decline in ore consumption over recent weeks. During the period, Nov. 9 to Nov. 24, inclusive, the following iron ore shipments were received: 11,000 tons, from Daiquiri, Cuba, Nov. 9; 21,200 tons, Cruz Grande, Chile, Nov. 12; 12,000 tons, Daiquiri, Nov. 17; 7164 tons, Narvik, Sweden, Nov. 21.

Manganese ore arrivals comprised 8350 tons from Calcutta, India, Nov. 9; 8500 tons, Takoradi, Gold Coast, West Africa, Nov. 12; 7750 tons, Poti, Russia, Nov. 14; 2200 tons, Calcutta, Nov. 16; 7331 tons, Calcutta, Nov. 19; 8350 tons, Poti, Nov. 21; and 6300 tons, Santiago, Cuba, Nov. 24.

Chrome arrivals include 2500 tons of chrome bearing ore from Masinioc Zambelos, Nov. 12; 3310 tons, Lourenco Marquis, Portuguese East Africe, Nov. 17; 6614 tons, Fethiye, Turkey, Nov. 17; 3495 tons, Lourenco Marquis, Nov. 17; and 1850 tons, Beira, Portuguese East Africa, Nov. 22.

Miscellaneous arrivals include 600 tons of ferromanganese from Torsberg, Nov. 20; 390 tons ferromanganese, 408 barrels calcium silicon and 98 barrels of zirconium alloy from Sauda, Norway, Nov. 21; and one case of nustras mineral, Santiago, Cuba, Nov. 24.

Bolts, Nuts, Rivets

Bolt, Nut, Rivet Prices, Page 103

Prospects for heavier specifications for bolts, nuts and rivets continue unfavorable as consumers and jobbers are intent on holding down inventories. Consumption is spotty

and lower on the average. Requirements of farm equipment manufacturers are seasonally heavy but restricted demand from railroads and car builders is holding total business at a low rate. First quarter contracts to be issued soon will carry current prices.

Prices of Tin Mill Products Extended

Pittsburgh—Present prices on tin mill products have been reaffirmed for the Jan. 1-Sept. 30, 1938 period by Carnegie-Illinois Steel Corp. Transportation charges at time of shipment will determine delivered prices.

Present delivered prices on tin mill black plate have been extended for shipment to March 31, subject to transportation charges at time of shipment.

New York—Export demand for tin plate has dropped to the low point of the year with foreign buyers holding until they can gage the trend of prices here. Announcement of unchanged price probably will produce some new orders.

Steel in Europe

Foreign Steel Prices, Page 105

London — (*By Cable*) — An agreement on ship plate export prices has been concluded with representatives of American Steel interests at the cartel meeting at Paris and extension of the agreement over other products is expected to follow. The price of ship plates for the Dutch and Scandinavian markets has been lowered £2. British hematite has been increased 10s for all 1938 deliveries. All steel prices are now stabilized until the end of 1938. The market is quiet and steady. All new business is for 1938 delivery and plants are all working at close to capacity.

The Continent reports that export markets are showing some revival in demand.

Ferroalloys

Ferroalloy Prices, Page 104

New York—Another light month in the movement of ferroalloys is being generally expected in December. Reflecting the general trend in steelmaking, last month was the slowest to date and December, in fact, is likely to be even less active, Particularly is this likely to be true as no increase in prices are expected, when sellers of most ferroalloys open their books for next quarter.

This opening of books should come around the middle of this month. Meanwhile, ferromanganese is holding at $102.50, duty paid, Atlantic ports, and domestic spiegeleisen, at $33, Palmerton, Pa., for 19 to 21 per cent material, and $39 for 26 to 28 per cent.

Ferrotungsten, which has shown the most price variation of all the principal ferroalloys over recent months, due to the unsettlement in tungsten ore, is unchanged from a week ago at $1.85 to $2 per pound tungsten contained, freight allowed, in car lots.

Metallurgical Coke

Coke Prices, Page 103

An occasional piece of new business in beehive coke comes to Connellsville producers who still are operating, probably due to large steelworks' tapering off their by-product oven operations. These had been selling some coke in the open market, particularly to foundries. Such foundries as are operating, therefore, are turning to the use of beehive fuel. Because oven opera-

Behind the Scenes with STEEL

Honest John

■ STANDARDS of honesty have changed immensely in the past 83 years, if the standards set forth in "Life, Liberty and the Pursuit of Happiness," recently issued pamphlet built by National Machine Tool Builders' Association. According to this criterion, issued in 1854, "any employe who is in the habit of smoking Spanish cigars, getting shaved at a barber shop, going to dances and other such places of amusement, will surely give his employer reason to be suspicious of his integrity and all around honesty." We have never smoked Spanish cigars.

Antiscotch

■ WE have found the perfect antithesis of the penny-pinching clans. This gentleman hails from Saginaw, Mich., and the act which has brought him out of the crowd occurred last week. Constant readers of this column are no doubt aware that at this very moment presses are grinding out scads of copies of STEEL's gigantic super colossal yearbook issue. Now, in order to find out what the industry has been doing to publish in this book, key men are asked to send in comments and are provided with post-free return envelopes for same. This Saginese carefully scratched off all the dope about postage being free if mailed in the U.S., etc., and pasted a brand new three-center over the permit number. Probably wanted to preserve the independence of his comments, remove any trace of professionalism from his reputation.

Red Faces Dept.

■ FINE and red indeed was the face of Jack Cronin, STEEL's veteran materials handling editor, when he was caught last week in a misspelling of Mr. P. W. Van Orden's name, right at the head of his own department. He tried to blame everyone in the printshop, but finally wound up by admitting it was the fault of the typewriter maker, who had put the keys where they belong instead of where Jack thought they were.

Beg Pahdon, Suh?

■ WE BELIEVE the whole thing is just a misunderstanding. If it isn't our honor is besmirched, and we shall be unable to hold up our heads, both of them. Seems that in the Washington *Post* appeared a picture of Mason Locke Weems, the famous "lying parson" who started all the ruckus about George Washington and the cherry tree. Under the picture appeared in all capital letters the noble name "SHRDLU." Mister C. H. Strand, East Falls Church, Va., seems to think there is a strain of character common to both. If we thought for a moment he was intimating that all we say in this weekly space was not forthright and honest, we'd at once challenge the gentleman, give him choice of weapons and meet him at sunrise, providing he'd stay in East Falls Church, Va.

Add Ads

■ WE HOPE the Society for Prevention of Cruelty to Children doesn't get after the Clark Controller people for violating the child labor laws in their fine new ad inside the front cover. The youthful demonstrator of the equally youthful controller is a bit tender, withal. Looks like a born salesman, though. "Look who's making welded tubing!" say the Ohio seamless folks, and we did look, on page 107, only to discover it is nobody else but Ohio Seamless itself. First notes of Christmas spirit come from Cleveland Twist Drill Co., in the MoMax ad on page 53. Paeans of praise to Ford's punsters, for their Public Economy No. 1, splattered all over page 73.

—SHRDLU

tions in the Connellsville regions have been steadily adjusting themselves to decreasing requirements, this is resulting in actual market stability with quotations unchanged. Last May, 3600 Connellsville beehive ovens were in blast, but today something like 900 such ovens are actually producing and shipping coke.

Week's Imports Light

Philadelphia—Imports during the week ended Nov. 27 were confined to 1115 tons of chrome ore from the Phillipine islands, 66 tons of structural shapes from Belgium and the following from Sweden: wire rods 20 tons, steel tubes 91 tons, steel forgings 24 tons, steel bars 55 tons.

Nonferrous Metals

Nonferrous Metal Prices, Page 104

New York—Undertone of domestice nonferrous metal markets strengthened last Friday following easiness earlier in the week. Copper advanced ½-cent to 10.50c while zinc appeared firmer at the 5-cent level. Tin advanced steadily during the week while lead held steady.

Copper—A custom smelter lowered prices ¼-cent on Wednesday and ½-cent further on Thursday and then reversed the trend by posting a ½-cent advance on Friday. Consumer buying interest was aroused at the 10-cent level which has been pointed out for several weeks as the turning point. When the market was returned to the 10.50-cent level sales dried up. Primary mine producers held at 11.00c, Connecticut. There was no change in either fabricated products or brass ingot.

Lead—St. Joseph Lead Co. continued to restrict sales at the 5-cent level but other sellers reported moderate business. The market closed steady at 5.00c, New York, and 4.85c, East St. Louis.

Zinc—Sales continued close to an all-time low rate although prices eased $5 per ton on Wednesday to the basis of 5.00c, East St. Louis. The leading custom smelter is setting the price pace and it appears to be only a question of how much ore this interest cares to accumulate at a given price in view of the slack sales volume.

Tin—Straits spot prices advanced steadily to close at 44.15c. The undertone of the London market strengthened on active consumer buying at lower levels.

Antimony — Both Chinese and American spot held unchanged at 14.75c, New York.

Pictorial Accident Bulletins Effective

■ Picture drawings in the form of "stick-men" have been the means of attracting accident-careless workmen to safety bulletins in the Pittsburg, Calif., plant of Columbia Steel Co., subsidiary of United States Steel Corp.

Explaining the method's effectiveness before the recent national safety congress and exposition in Kansas City, Mo., Earl Spitzer, the company's safety engineer, said:

"These simple drawings showing the position of workmen with respect to apparatus before, during and after the accident enabled the workers to see at a glance what caused the accident and how it might have been prevented.

"The idea caught on immediately and practically all of our men stopped, read and studied the reports."

Wage Earners Outnumber Salaried Employes 12 to 1

■ Steel companies employ twice as many wage earners per salaried employe as do all other manufacturing industries in the aggregate. Twelve wage earners for each white-collared worker were employed in 1935, against a ratio of 6.8 to 1 in all other industries. Similarly, the steel industry paid $5.95 in wages for each dollar in salaries, compared with $3.20 to $1 for all other industries.

This greater preponderance of wage earners and wages in the steel industry, as explained by the American Iron and Steel institute, is due to the relatively high degree of skill required of steelworkers, necessitating less close supervision. Another factor is the fact steel plants are large in size, few in number, requiring fewer supervisory and administrative personnel.

Approximately 300,000 of the industry's wage earners were granted vacations with pay during 1937, according to an institute survey of 100 companies employing more than 90 per cent of the industry's workers.

32.7 Per Cent of Inland Employes More Than 40

■ Inland Steel Co. payrolls refute the frequent reports that men more than 40 years of age cannot find jobs in industry.

In October the company employed 4257 men at its Indiana Harbor plant who are more than 40. This includes 27 employes between 70 and 77 years old.

Another 57 are more than 65, the retirement age under the social security program. There are 3002 between 40 and 50 years old, and 1015 between 50 and 60. Between 60 and 65 there 156 others.

The total of Inland employes more than 40 years of age constitute 32.7 per cent of the 12,998 employed at Indiana Harbor in October.

Study Developments In Collective Bargaining

■ A factual summary of recent developments in collective bargaining in the steel industry has been published by the industrial relations section, department of economics and social institutions, Princeton university, Princeton, N. J.

The report traces group relations in the industry since 1933, with particular emphasis on developments of the current year. Without attempts to evaluate or conclude, it analyzes employe representative plans, the Steel Workers Organizing committee and its drive to unionize the industry, wages and working conditions, provisions of agreements signed with SWOC, and the growth of independent unions.

Dumore Co., Racine, Wis., has completed a $10,000 addition to its factory. Containing 640 square feet, it consists of two rooms for spraying and baking of paint.

Bauxite on Island of Yap Aids Japanese

■ Discovery of bauxite on the small island of Yap, mandated to Japan by the League of Nations, will make Japan self-sufficient in aluminum, according to the Institute of Pacific Relations.

Investigations by the Mitsui Mining Co. indicate that at least 5,000,000 tons of aluminum can be produced from ore mined on Yap and other small, adjacent islands. The South Sea Aluminum Industry Co., with capital of two million yen at the start and the right to increase this later to ten million yen, has been organized to develop the deposits.

By 1938, it is estimated, developments will have proceeded far enough to make Japan self-sufficient, and an annual production of 50,000 to 60,000 tons of metal probably will be attained.

Simplified Practice for Roofing Ternes Revised

■ Current revision of simplified practice recommendation for roofing ternes has been accepted by the industry and will become effective Nov. 1, according to the national bureau of standards. The revised recommendation will be identified as R30-37.

First approved in 1925, the original recommendation established seven weights of coating for roofing ternes, ranging from 8 to 40 pounds, and provided no roofing terne lighter than 10 gage be manufactured. These provisions are retained in the revision and a packing schedule for roofing terne in boxes and rolls and a method of marking roofing in rolls added.

Chicago Is Selected for 1938 Safety Congress

■ National Safety council, Chicago, will hold its 1938 National Safety congress in Chicago, Oct. 10-14. Next year marks the silver jubilee of the council, which, during the past 25 years, has grown from two men and a small office to a nation-wide organization. The 1938 congress will have 200 sessions and more than 400 speakers. More than 8000 attended the 1937 congress in Kansas City, Mo.

Brazil's Ore Exports Gain Moderately

■ A moderate increase in iron ore exportations from Brazil in point of tonnage and a substantial gain in point of percentage is indicated for this year, according to the bureau of mines. Reports to this bureau fix iron ore shipments from Rio de Janeiro for the first eight months of this year at 127,589 metric tons, against 110,995 metric tons for the entire year of 1936.

Great Britain has been the largest importer of Brazilian iron ore, taking 77,658 metric tons in the first eight months, compared with 62,494 metric tons in all of 1936; Canada is second, with 25,040, against 32,830; Holland third, with 15,664, against 7753; Belgium fourth, with 9200, against 7918; and Germany last, with 27 tons, against none last year.

Equipment

Cleveland—Machine tool and plant equipment buying in November was far below the October volume and lag in new inquiry indicates slight if any improvement in December. Recession in business this fall has made possible earlier deliveries, some items obtainable now in two or three weeks where three or four months were required earlier in the year. Most builders have backlogs sufficient to maintain operations until Jan. 1.

Chicago—Machinery and equipment sales declined during November and insufficient business is in sight to indicate a reversal of the trend this month. The letdown in machine tool orders is reflected in deliveries of five to six weeks offered on some items in contrast to the shipments of 12 to 14 weeks required this summer. While railroads generally are inactive in inquiring for machine tools, the Monon's recent list of 20 items again is active. Only a few roads are seeking prices in estimating 1938 budgets. Small tool business continues slow and is well below the average for the year to date.

Boston—Heavy export sales have partially offset the decline in domestic orders for machinery with several New England shops able to maintain backlogs and operations. While machine building schedules are generally steady, in spots there is some slowing down. Deliveries are improving on some lines. Builders of textile mill equipment are less active with some stop orders on volume previously booked. A Worcester district works, however, recently booked 456 fine cotton looms for a Manchester, Eng., interest.

New York — Machinery orders have dropped with considerable volume already estimated held up. Backlogs with some builders, however, are maintained by heavy export sales for spring delivery. Machine building shop operations are slower in some directions, but in general production holds considerably better than the industrial average. Deliveries show spotty improvement, although some builders are still quoting delivery on certain lines of lathes at about 20 weeks.

Cincinnati — Reports the Japanese government bought three large lathes here, for manufacture of airplane parts and war machinery, were circulated, although tool companies withheld verification. Buyers also inquired for a large list of lathes but interest lagged when January delivery was demanded.

Seattle — Demand continues fair for electrical equipment, pumping machinery, diesel units and road maintenance items but industrial plants are hesitant about making improvements and replacements. The lumber situation is weak, the industry beset by labor troubles and falling sales. Clallam county, Wash., will open bids at Port Angeles Dec. 10 for drag trailer and equipment. Several important rural power line jobs are under way in the Pacific Northwest.

Construction and Enterprise

Ohio

CINCINNATI—Procter & Gamble Co. is taking bids for construction of a four-story administration and research and engineering building at its plant in Ivorydale. Cost with equipment $150,000.

CLEVELAND — Cleveland Electric Illuminating Co. approved plans for two-story addition to indoor power substation at 8705 Harvard avenue. Cost with equipment $75,000. Building superstructure awarded to Sam W. Emerson Co., 1836 Euclid avenue.

EDON, O.—Federal emergency administration of public works is taking bids to Dec. 15 for the installation of a general waterworks system on which original bids were rejected. Estimated cost $43,600. Carl J. Simon, Van Wert, O., engineer.

WELLINGTON, O.—City plans sewage disposal plant to cost $35,000. T. Laundon city engineer.

WELLSVILLE, O.—Federal Emergency administration of public works is taking bids to Dec. 15 for extensions and improvements to the waterworks system. Cost estimated at $152,604. R. H.

Hunter, Wooster, O., engineer.

WEST ALEXANDRIA, O.—Village approved $25,000 bond issue for sanitary sewerage system and disposal plant to cost $94,000, and handled as WPA project. J. A. Craven, 212 Central avenue, Dayton, O., engineer.

WOOSTER, O.—City approved $325,000 bond issue for sewerage system and sewage disposal plant. H. B. Jones Co., Second National building, Toledo, O., engineer.

WRIGHT FIELD, DAYTON, O.—War department, air corps, will receive bids until 10 a.m., Dec. 13 for 600 feet of seamless chrome molybdenum steel tubing, specification 57-180-20; 12,000 feet seamless chrome nickel, corrosion resistant, grade 1ss, specification 57-180-3B, delivery Osborn, O.; until 10 a.m. Dec. 10 for heavy-duty self aligning aircraft ball bearings in four sizes, and various quantities of roller and ball bearings in different sizes; until 10 a.m. Dec. 10 bids for refrigerating machinery for a cold chamber at Wright field.

Illinois

BEARDSTOWN, ILL.—United States engineer, post office building, Canal and Van Buren streets, Chicago, will receive bids to Dec. 9 for control station with electrical system, machinery and equipment at New LaGrange lock and dam, Illinois river near Beardstown. Includes gasoline-electric standby power unit, lock lighting system, transformers and regulators, electric tow-haulage unit, and hand-operated traveling bridge crane and complete auxiliary equipment.

CHICAGO—Bids will be taken to Dec. 16 for the southwest sewage treatment works division LL, sanitary district of Chicago, James A. Sullivan, clerk.

CHICAGO — International Harvester Co. has started work on a $1,000,000 addition to its tractor works here. The new building will include 240,000 square feet of floor space and will be used entirely for production of crawler-type tractors.

Indiana

INDIANAPOLIS—Globe Valve Corp., Delphi, Ind., has filed articles of incorporation with Indiana secretary of state. Corporation formed to manufacture valves and plumbing fixtures, and has 500 shares of no par value capital stock. Incorporators are Max Gerber, F. A. Welsh and S. A. Young.

SALEM, IND.—Board of public works, H. C. Hazelbaker, clerk, soon takes bids for the construction of a sewage treatment plant and sewerage system, including electrically driven 75-gallon-per minute horizontal screw feed centrifugal sludge pump, single acting or double plunger type sludge pump, one 200-gallon-per minute vertical type non-clogging heavy duty raw sewage pump. Cost $60,000. R. B. Moore Co. Inc., Indiana Pythian building, Indianapolis, engineer.

Michigan

LEXINGTON, MICH.—Village is planning construction of waterworks system. Preliminary plans have been revised. Francis Engineering Co., Saginaw, Mich., engineer.

YPSILANTI, MICH.—City is contemplating construction of a sewage disposal plant. Voters have approved $120,000 bond issue and federal government has granted $90,900 toward the project.

Massachusetts

MARBLEHEAD, MASS.—Town municipal light department will take bids to Dec. 10 on diesel engine for municipal electric lighting plant.

SPRINGFIELD, MASS.—City, C. W. Phillips, superintendent department of streets and engineering is planning sewage disposal plant to cost $1,158,000.

Metcalf & Eddy, 1300 Statler building, Boston, engineers.

New York

NEW YORK—R. C. Stanhope Inc., 101 West Thirty-first street, wants to purchase a motor, 150 to 175-horsepower, 230-volt direct current for driving air compressor.

PLATTSBURG, N. Y.—Bids will be taken to 2 p.m. Dec. 23 for a municipal sewage treatment plant to cost an estimated $141,500. William T. Field Engineers Inc., Watertown, N. Y., consulting engineer.

Pennsylvania

BENTLEYVILLE, PA.—Borough plans water supply system including storage reservoir, 2500 lineal feet 8-inch pipe, 175,000-gallon storage tank, filtration plant and pumping station 300,000 gallons capacity and distribution system involving 39,000 lineal feet of pipe, fire hydrants and meters. Cost $138,000. Chester Engineers, Century building, Pittsburgh.

MEADVILLE, PA.—Hookless Fastener Co. plans installation of motors and controls, conveyors and other equipment in new additions to metal working plant. Estimated cost is over $100,000. W. D. Walker, president.

Alabama

BIRMINGHAM, ALA.—Machinery and building of Winter Paper Stock Co., destroyed by fire.

District of Columbia

WASHINGTON—Department of agriculture, division of purchase, sales and traffic, wants bids to Dec. 17 on one tractor, invitation 954, delivery Manhattan, Kans., and until Dec. 14 for one tractor, invitation 952, delivery Painted Post, N. Y.

WASHINGTON—Procurement division, branch of supply, treasury department, will receive bids until 10 a. m. Dec. 13 on machine tools, small machinery, and accessories and parts under class 40 of the general schedule of supplies. Items include pneumatic rock drill bits, electric drills, electric hammers, portable grinders, valve refacers, and abrasive wheels. Bids will be received until 10 a. m. Dec. 10, for three vacuum pumps, ceno-hyvac motor driven, mounted on iron base, finished in non-chipping black japan, 10½ inches high x 9 inches wide x 18½ inches long; similar to Central Scientific Co. catalog No. 91105; 110 volts alternating current, 60 cycle.

WASHINGTON—Office of the general purchasing officer, the Panama Canal will receive bids until 10:30 a.m., Dec. 13, schedule 3304, for various quantities and sizes of twist drills, bridge reamers, assorted files, wood screws, barrel bolts, carpenter's hammers, sledge hammers, machetes, cold chisels, ratchet braces, scythe blades, pipe diestocks and hand sprayers, delivery Cristobal or Balboa, Canal Zone; schedule 3303, structural steel, sheet aluminum, wire rope, steel wire, welded steel pipe, pipe fittings, pipe unions, railing fittings, relief valves, cocks, steel bolts, nuts, and rivets, steel snatch blocks, delivery Cristobal or Balboa, Canal Zone, Isthmus of Panama.

WASHINGTON—Bureau of supplies and accounts, navy department, will receive bids until 10 a.m., Dec. 10, schedule 2192, for one motor driven coil-winding machine, delivery various east or west coast points; schedule 2193, one motor-driven glue-jointer and edge molder, delivery Mare Island, Calif.; schedule

2202, one motor-driven swaging rotary machine, delivery various east coast points; schedule 2221, pneumatic drills and grinders, delivery Portsmouth, N. H. and Brooklyn, N. Y.; schedule 2227, oil purifiers and spare parts, delivery Portsmouth, N. H.; schedule 2243, automatic steam towing machine with winding device and spare parts, delivery Norfolk, Va.

Until Dec. 14, schedule 2196, aluminum and aluminum alloy, delivery various east and west coast points; schedule 2204, marine-boiler steel plate, delivery various east or west coast points; schedule 2207, foundry, pig iron, delivery various east and west coast points; schedule 2210, one motor-driven press brake, delivery Puget Sound, Wash.; schedule 2211, fabric and helical springs, delivery various east and west coast points; schedule 2212, crucibles without covers delivery various east and west coast points; schedule 2213, corrosion-resisting sheet and strip steel, delivery various east and west coast points; schedule 2223, combination shear, punch, coper and notcher, delivery San Diego, California; schedule 2224, marine gasoline engines and spare parts, delivery Mare Island, Calif.; schedule 2229, marine-boiler steel plates, delivery various east and west coast points; schedule 2230, fittings, welding ends, delivery various east and west coast points; schedule 2255, steel and roller path forgings, delivery Washington; schedule 2258, gasoline engine driven tractors, delivery San Diego, Calif.; schedule 2264 centrifugal motor-driven pumping units and controls, delivery Annapolis, Md.

Until Dec. 17, schedule 2077, six motor-driven turret lathes, delivery Puget Sound, Wash.; schedule 2232, six light duty motor-driven engine lathes, delivery San Pedro, Calif.; schedule 2252, power-squaring motor-driven shears, delivery San Diego, Calif.; schedule 2266, completely finished steel rollers, delivery Washington.

Kentucky

BUTLER, KY.—City plans pump house including 50,000-gallon steel storage tank, gas fired chlorinator and distribution system. Cost $31,500. J. T. Gillig, Walton building, Lexington, Ky., engineer. City is also taking bids on waterworks system to cost $32,000.

Florida

JACKSONVILLE, FLA.—Distilling and storage plant of Edgewood Chemical Co. outside city limits at Edgewood avenue and Atlantic Coast line tracks damaged by fire.

ORLANDO, FLA. — Florida Public Service Co., Orlando, plans remodeling and expanding of five power substations at different points on the system, including steel structures, replacement of existing station housing and supports, installation of transformers, switchgear, voltage regulators and auxiliary equipment. Gross capacity will be increased by more than 2500 kilovolt-amperes. Work starts early in 1938.

Georgia

ATLANTA, GA.—William E. Dunn Jr., dealer, 240 Peachtree arcade, is inquiring for a plunger pump, preferably No. 5 A. D. Cook make.

Mississippi

ITTA BENA, MISS.—City, L. W. Ely, mayor, plans changing electric light plants from 220-volt direct current to 110-volt alternating current and installing water meters. Equipment includes generator, starting tanks, air compressor, day fuel oil storage tank, gages, electric wiring, high service water pump and all necessary equipment to change system from direct current to alternating current, including new meters and poles.

YAZOO CITY, MISS.—Public service commission receives bids Dec. 10 for constructing, furnishing and erecting boiler at city light plant on foundations furnished by the city. J. B. Williams, Yazoo city, consulting engineer.

North Carolina

HIGH POINT, N. C. — City, E. M. Knox, city manager, is considering report by Charles T. Main Inc., 201 Devonshire street, Boston for proposed municipal hydro-electric generating plant on Yadkin river near Winston-Salem, N. C., including power dam, generating station of 24,000 kilowatt initial capacity, and power distributing lines. Estimated cost $6,000,000. Murray & Flood, 369 Lexington avenue, New York, consulting engineers.

RALEIGH, N. C.—Division of purchase and contract, Box 1357, Raleigh, N. C. wants bids to Dec. 9 on corrugated metal pipe and structural and miscellaneous steel. Delivery Raleigh, N. C.

Louisiana

MONROE, LA.—Barker & Woods, Hous-

ton, Tex., plans construction of 47 miles of 6 inch pipe line from Lisbon field of Clairborne and Lincoln Parish, La., to Monroe.

OPELOUSAS, LA.—Andrew Moresi will let contract soon for building bottling plant on Vine street, including new machinery.

PORT BARRE, LA.—Town, L. J. Voorhies, Baton Rouge, engineer, receives bids Dec. 10 for waterworks system, including well, surface reservoir, elevated tank, pump house and pumps, distribution system and metered services. Estimated cost $27,700.

RUSTON, LA.—City, Charles C. Goyne, mayor, voted bonds for extension of water lines, sewer lines, and construction of sewage disposal plant. Bids to be opened in March. Includes Imhoff tanks, trickling filters, final settling tanks, sludge beds, two sewage lift stations, chlorinator, rotary sewage distributors. Estimated cost $135,000.

SHREVEPORT, LA.—Mike Despot, 545 Kingshighway, will establish brewery in four-story building, Culpeper and Van Loan streets. Will remodel building and install new machinery. Cost is $500,000.

Tennessee

CHATTANOOGA, TENN.—O. B. Andrews Co. plans installation of motors controls, conveyors and other equipment for addition to paperboard mill. Cost $100,000. R. H. Hunt Co., Chattanooga Bank building, architect.

KNOXVILLE, TENN.—City, George R. Dempster, city manager, receives bids to Dec. 15 (date changed from Nov. 30) for electric distribution system. Burns & McDonnell Engineering Co., 107 West Linwood boulevard, Kansas City, Mo., engineer.

MEMPHIS, TENN.—Board of water and light commissioners receives bids to Dec. 21 for electrical equipment including transformers, wiring, etc. for two substations. Cost of buildings and equipment $230,000.

MEMPHIS, TENN.—Board of light and water commissioners, light and water division, receives bids Dec. 9 for preparation of sites and furnishing materials and labor for structures and mechanical equipment of substation C and for substation F.

Virginia

NEWCASTLE, VA.—State corporation commission, Richmond, Va., has granted permission to Meadow Creek Corp., M. E. Marcuse, president, Richmond, Va., to build dam and power plant near here to furnish, in conjunction with rural electrification co-operative, power to consumers in Craig and Botetourt counties. Cost, exclusive of land, $58,000.

Missouri

ST. LOUIS—St. Louis Cotton Picker Co., 8000 North Broadway, plans manufacturing mechanical cotton picker.

ST. LOUIS—H. & P. Machinery Co., 5819 Enright avenue, wants to purchase a generator, 500 kilovolt-ampere, 2300 volt, 3 phase 60 cycle alternating current, direct connected to steam engine.

ST. LOUIS—Mississippi Valley Equipment Co., Chamber of Commerce building, wants uniflow steam engine and generator, 75-kilowatt, 3 phase, 60 cycle, 220 volt; Heisler-geared locomotive 60 to 75 tons; locomotive crane, 30-ton steam or gasoline; air compressor, 1500 feet or larger, motor-driven; Symons cone crusher, 3 or 4 feet.

Oklahoma

TULSA, OKLA.—Phillips Petroleum Co., Philtower building, Tulsa, plans installing six copper sweetening plants here, one to be installed at company's Judkins natural gas plant, Odessa, Tex.; process only natural gasoline for the present. Five additional units will be constructed at company's Alamo refinery at Borger in Panhandle area of northwest Texas, to process output of polymerized, cracked, vapor recovery and straight run gasoline and naphtha distillates.

Wisconsin

BALSAM LAKE, WIS.—Polk county board is considering appropriation of $100,000 for building and equipping new highway warehouse and service shop. V. A. Hansen, county clerk.

KENOSHA, WIS.—Kenosha Foundry Co. has been incorporated by Thomas G. Harvey, Einar Monteen and Mrs. Monteen to engage in manufacture of gray iron castings. Production plans have not been revealed.

MADISON, WIS.—Board of normal school regents, E. G. Doudna, secretary, will take bids to Dec. 9 for new high pressure central heating plant to be installed at state teachers' college, La Crosse, Wis. Cost is $95,000.

MENASHA, WIS.—Watler Bros. Brewing Co. plans malting plant with 500,000-bushel capacity. Estimated cost $50,000.

MILWAUKEE—A. O. Smith Corp. has announced acquisition of Smith Meter Co., Los Angeles, to round out its line of products for the oil industry. California concern manufactures measuring devices for refineries, tank car loading racks and oil trucks. Production expansion to be arranged at once.

Minnesota

FAIRMONT, MINN.—City, Stanley Stewart, clerk, is contemplating an enlargement of the sewage treatment plant. Cost $45,000.

KERKHOVEN, MINN.—City, J. F. Floren, clerk, is contemplating construction of a new sewage treatment plant, including Imhoff tank, clarifier and filter to cost around $25,000. M. E. Chamberlin, Montevideo, Minn., engineer.

MADELIA, MINN.—Village, C. E. Seymour, clerk has rejected all bids on construction of power house, diesel generating machinery and electric distribution system. Will advertise for bids soon after Jan. 1. Burlingame, Hitchcock & Estabrook, Minneapolis, consulting engineers.

MANKATO, MINN.—City, F. W. Bates, clerk, is contemplating construction of a sewage disposal plant. A. Kircher, city engineer.

NEW ULM, MINN.—City, A. C. Sannwald, clerk, will soon take bids on furnishing a turbine unit for the municipal power plant. R. D. Thomas & Associates, Minneapolis, consulting engineers.

SPRINGFIELD, MINN.—City, A. C. Mueller, city clerk, is considering the construction of a sewage treatment plant to cost $40,000. Buell & Winter, Insurance Exchange building, Sioux City, Iowa, engineers, are preparing preliminary plans.

ST. JAMES, MINN.—City, Laurette A. Grogan, clerk, will hold a special elec-

tion soon to vote on a $25,000 bond issue to finance the construction of a water filtration plant.

Texas

BROWNWOOD, TEX.—Brown County Water Improvement District No. 1, C. Y. Early, president, receives bids Dec. 22 for irrigation improvements, including main canal, distribution system, pumps and equipment; estimated cost $175,000. Harrington & Cortelyou, and Tamm & Fitzgerald, engineers, Box 464, Brownwood.

HOUSTON, TEX.—Armour & Co., Union stockyards, Chicago, will build $1,000,000 packing plant here, construction to start soon. It will be a complete meat processing plant, including primary treatment plant for waste disposal to be erected on company grounds. James A. Baker Jr., Esperson building, Houston, is company attorney.

SAN ANTONIO, TEX.—San Antonio Brewing Association, B. B. McGimsey, 312 James street, takes bids soon on brewery improvements, including steel tanks, refrigeration equipment and filter rooms. Cost estimated at $125,000. L. M. J. Dielmann, 145 North street, architect. (Noted Oct. 15.)

TEXAS CITY, TEX.—Republic Oil & Refining Co. will construct 10,000-barrel unit at its plant, which includes laboratory and construction of three 55,000-barrel oil storage tanks.

North Dakota

MINOT, N. DAK. — Lignite Products Corp. of America Inc. plans installation of motors, conveyors, hoists and other equipment in new plant units to replace structures destroyed by fire few weeks ago. Cost $150,000. Manager is Harold Kempel.

Iowa

WEST LIBERTY, IOWA—City, Ralph W. Evans, clerk, is contemplating the construction of a filtration plant and will prepare plans soon.

Nebraska

ARLINGTON, NEBR.—State railway commission has granted permission to Nebraska Power Co., Seventeenth and Harney streets, Omaha, Nebr., to construct a four-mile power line near here. Clarence Minard, company engineer.

COLUMBUS, NEBR.—Loup River Public Power District has filed an application with the state railway commission for permission to construct a 70-mile, 115,000-volt power line from Columbus to Lincoln, Nebr. Harold Kramer is district secretary. Harza Engineering Co., 205 West Wacker drive, Chicago, engineer.

FAIRBURY, NEBR. — City, Elsie Schnuelle, clerk, is taking bids to Dec. 20, on a 450-pound pressure water tube boiler with superheater, air preheater, and coal burner, fans, ducts and fittings; one steam turbogenerator, 2500 kilovolt-ampere, 3600 revolutions per minute, 2300 volt 3-phase 60 cycle complete with condenser and auxiliaries; two boiler feed pumps, 110 gallons-per-minute, 500 pounds working pressure. Estimated cost $132,000.

Pacific Coast

CARMEL, CALIF.—Carmel sanitary district plans construction of a sewage treatment plant, building to begin in March 1938. Cost $60,000. C. C. Kennedy, Call building, San Francisco, engineer.

LOS ANGELES—Citrus Machinery Co. will erect a new machinery plant at Twelfth street and Pachappa avenue, Riverside, Calif.

RIVERSIDE, CALIF. — Nevada-California Electric Corp., 3771 Eighth street plans purchasing transformers and high voltage switching equipment to reduce 138,000 volts on Boulder power line to 95,000 volts. Includes four transformers rated at 12,000 kilovolt-amperes each. Cost including construction of one substation $500,000.

SALEM, WASH. — Fire Nov. 20 destroyed the plant and stock of Salem Box & Mfg. Co. and damaged the yards of Copeland Lumber Co.

SEATTLE — Bids have been received for the proposed remodeling of the White Motor Co. plant, Rainier and Dearborn streets. Cost $15,000.

SEATTLE — Bids called by the navy department for proposed $25,000 improvement schedule at Sand Point power plant originally set for Nov. 24 have been postponed. New call awaits revised plans.

SOUTH BEND, WASH. — Cron & Co. is erecting an oyster canning plant to cost $30,000. General contract has been awarded to Dan Coulter.

SPOKANE — Imperial Oil Co. plans enlargement of local refining plant to handle 7000 barrels instead of present 4000. New equipment will be added. Cost with equipment $350,000.

Comments

Readers are invited to comment upon articles, editorials, reports, prices or other editorial material appearing in STEEL. The editors cannot publish unsigned communications, but at their discretion may permit a writer to use a pseudonym when a bona fide reason exists for withholding his identity. Letters should be brief—preferably not exceeding 250 words.

Editorial Is Commended

To the Editor:

Permit me to congratulate you on your excellent editorial in the Nov. 29 issue of STEEL.

I certainly like the heading "Leadership in co-operation will succeed where leadership in dissension has failed."

I would suggest that you send a copy of this editorial to — — and — — (one a statesman, and the other a newspaper publisher).

WM. E. CROCOMBE

President,
American Manganese Steel Co.,
Chicago.

Should Avoid Pessimism

To the Editor:

STEEL should be praised for its apparent policy of refraining from printing ultra-pessimistic articles dealing with phases of the present dull business activity. Commentators in the newspapers and on the radio frequently paint sensational pictures of dismal business news, and thereby inspire the public with wholly unreasonable fears. This apprehension on the part of the man in the street results in a lack of confidence which often is not entirely justified by actual conditions.

As I see it, one of the functions of business publications is to help their readers to conduct their affairs more profitably. Hence it follows that trade journals ought to try to point out how conditions can be improved. In so doing, slack activity must be recognized, but it surely ought not to be emphasized to the extent that business men feel impelled to throw up their hands in despair. The nation can weather the present setback—as it has done in the past—if everyone keeps trying.

MANUFACTURER

Detroit

Getting Into Politics

To the Editor:

Ernest T. Weir's recommendation that business get off the bench and into the game—government—is one of the most challenging I have read (STEEL, Dec. 6, page 30). Since advent of the New Deal, have not too many of us been content with a "downtown coach's" job?

Accepting, as Mr. Weir suggests, that government intervention in business is permanent, should we not forsake criticism for action—direct action? If our government is to be a representative one, must not business, big and little, be represented as well as agriculture, labor and the professions? Government is a major and increasing cost to business and industry, and business should devote at least as much attention to it as to other similar costs.

Should not more of us follow the example of Adman Bruce Barton, congressman-elect from New York?

Only thus can we halt the divagation of the administration; its experimenting first with a doctrine of scarcity, then a doctrine of plenty; its prating first that we must get prices up, then that we must get prices down; that we must have security for all, but we must tax business' reserves; that we must shorten working hours only to discover in amazed bewilderment that discouraged business already has been forced to cut the work week.

READER

Cincinnati

Not a Bad Year

To the Editor:

Because business in steel has dropped off the past two or three months we are likely to feel downhearted. But is 1937 such a poor year? Not at all.

Although our expectation of making a new record in production this year will be blasted by the "recession," we don't call it a "depression," the figure probably will not be much below the much-vaunted 1929. We were up within 2 per cent of that dizzy height at the beginning of autumn and probably the debacle of the last quarter will not carry us far down the ladder. I have an idea that we will close 1937 at not more than 10 per cent under that total.

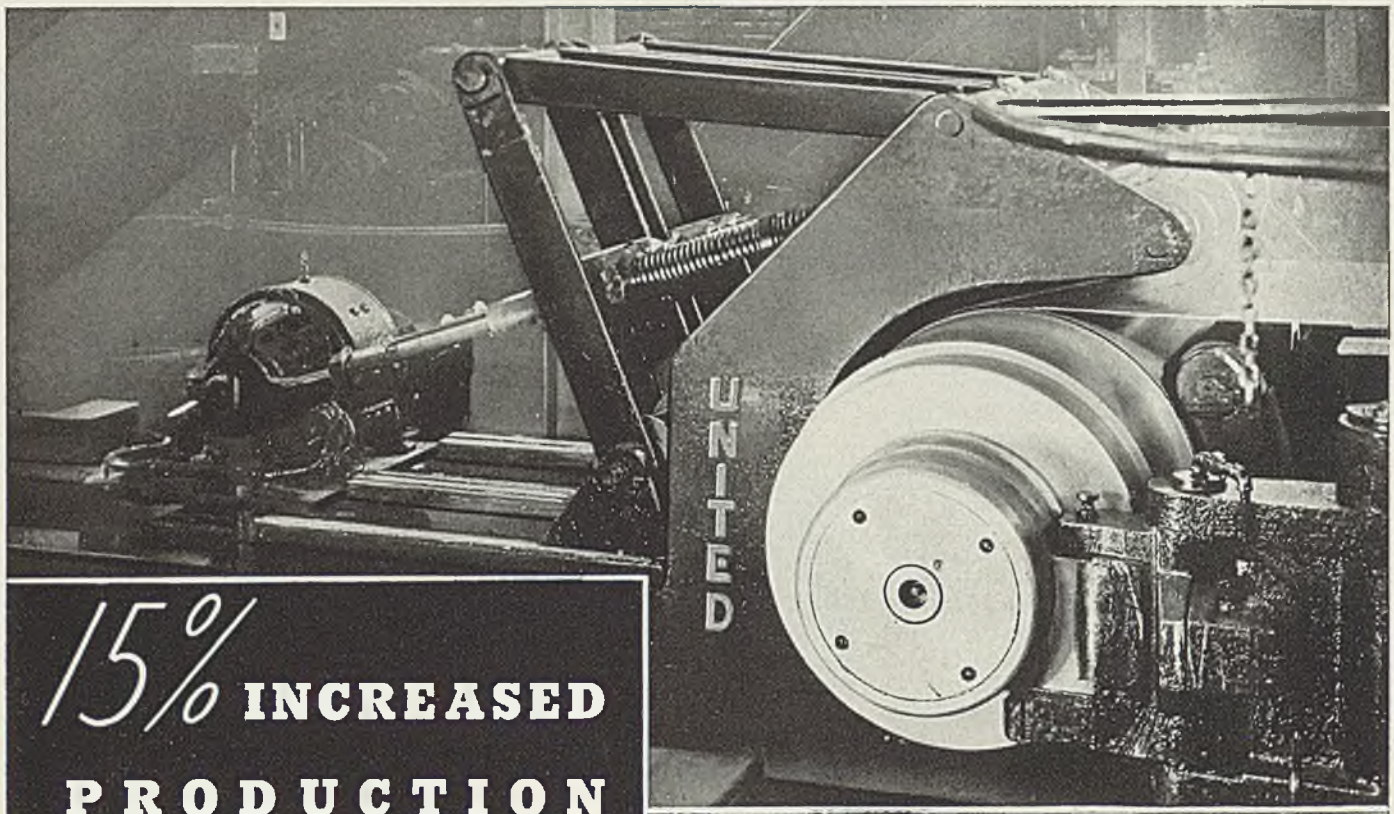
Another heartening sign I find in STEEL's report on steel exports, for the first ten months. These exports, not counting in the heavy scrap tonnage, were practically three times the 1936 figure for the same period and some 800,000 tons greater than outward-bound steel in 1929.

If we had not gone to such heights in 1929 we would think 1937 a whale of a year. The only disquieting thought in connection with the present situation is where we go from here, what the condition will be in 1938. Most of the wiseacres who make charts and cast the business horoscope tell us that after the first three months next year we will be back on the track and sailing smoothly at a good rate.

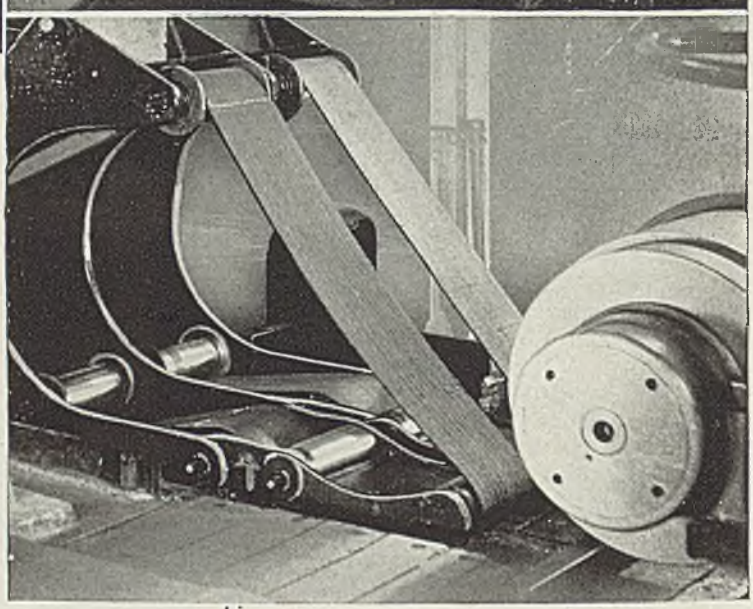
I hope this is not just wishful thinking, but a true prophecy.

OBSERVER

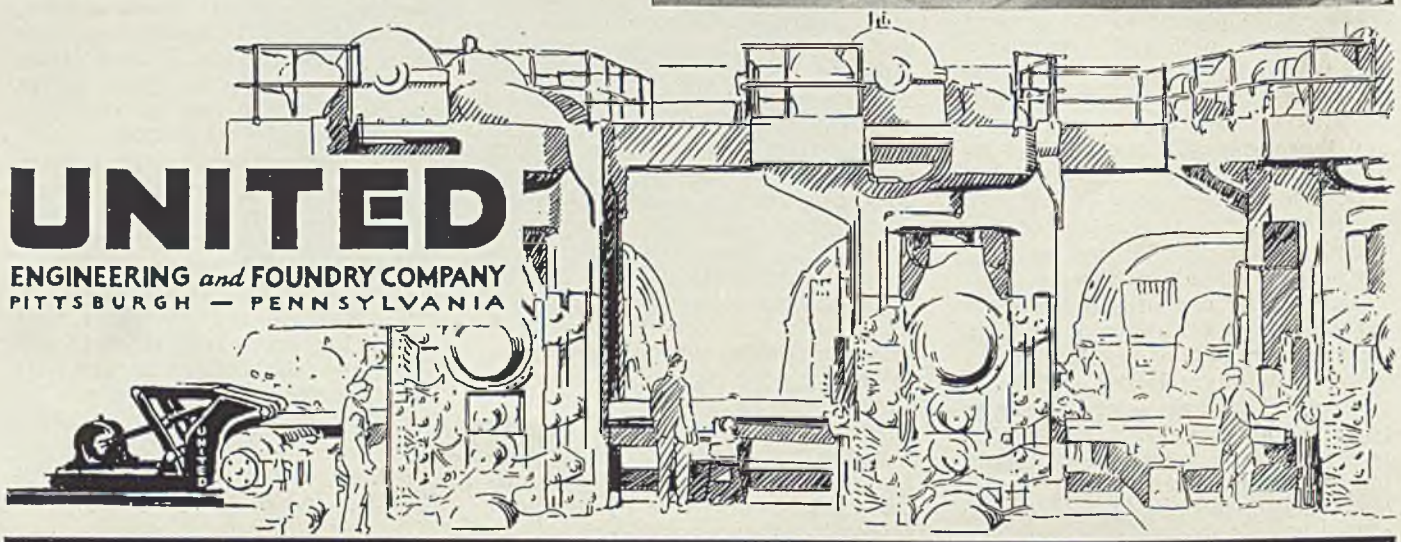
Evanston, Ill.



15% INCREASED PRODUCTION



● United Belt Wrappers are now successfully wrapping cold reduced strip on collapsible tension reels up to 48" wide and up to No. 18 gage (.050" thick) in regular production.



UNITED
ENGINEERING *and* FOUNDRY COMPANY
PITTSBURGH — PENNSYLVANIA

ASSOCIATED COMPANIES: DAVY AND UNITED ENGINEERING COMPANY, LTD., SHEFFIELD, ENGLAND · DOMINION ENGINEERING WORKS, LTD., MONTREAL, P. Q.