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STEEL

ESTABLISHED 1882

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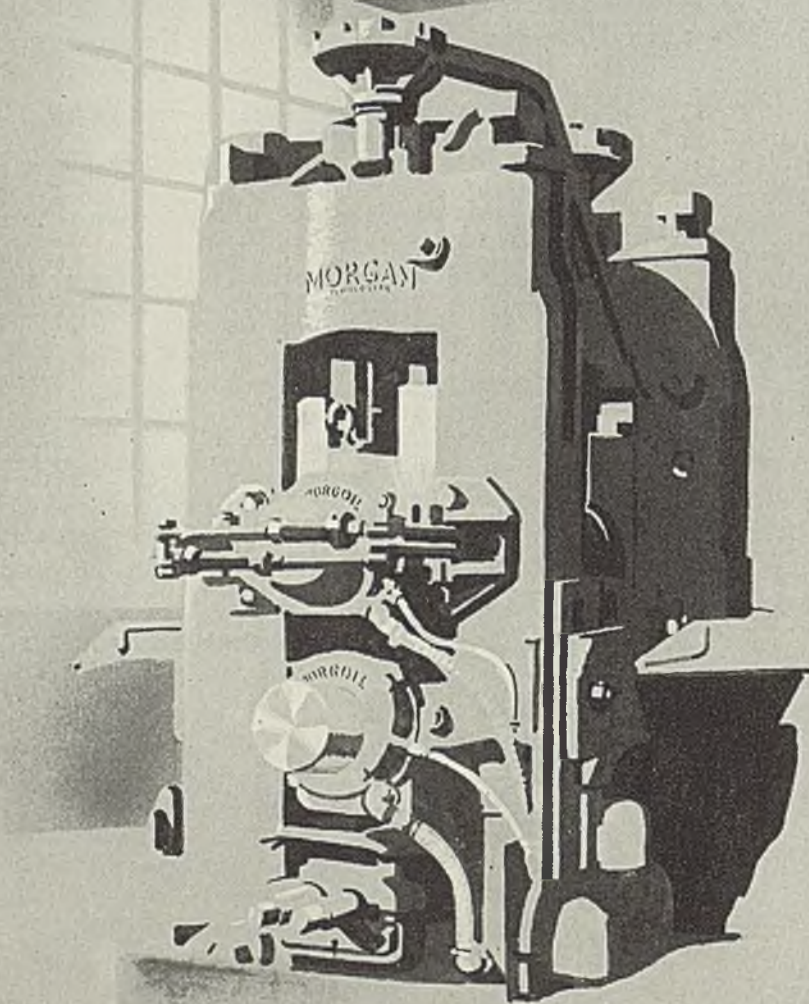
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PRODUCTION • PROCESSING • DISTRIBUTION • USE

February 12, 1940

**MORGAN CONTINUOUS ROLLING MILLS REVOLUTIONIZE THE INDUSTRY
TODAY JUST AS THEY DID HALF A CENTURY AGO**



It is a tribute to the skill and thoroughness of Morgan engineers that many of the revolutionary new mills installed at the turn of the century are still giving faithful service. Designed to meet the growing demands of their day, they also anticipated the needs of the future.

Morgan Continuous Rolling Mills of today are built in the same fine tradition of thoroughness and provision for the future. *But there is also a difference!* For this modern equipment must handle far greater tonnage at higher speeds and with lower power consumption—maintain greater accuracy to assure uniformly high quality of product. Morgan planning and equipment afford a solid foundation for future profits.

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MORGAN CONTINUOUS ROLLING MILLS • ROD • STRIP • MERCHANT SHAPES

STEEL

PRODUCTION • PROCESSING • DISTRIBUTION • USE

As the Editor Views

The News

■ LAST week the steelmaking rate again dropped off (p. 25) and now stands at 71 per cent of ingot capacity. With new steel buying equivalent to less than 50 per cent of capacity, additional declines (p. 81) are in sight. Much steel is coming out of inventories. At the same time consumption is somewhat less intense. On the other hand, export demand is more active than a month ago. Last week's outstanding market development was that base prices withstood the test of a purchase of 25,000 tons, mostly sheets, by Ford Motor Co. Despite declining production schedules, automobile builders will buy some more tonnage. Scrap prices have weakened further in a dull market.

"Modern Pioneers" dinners were held last week (p. 21) at Cleveland and Minneapolis, will be held in other cities this week, in honor of some 500 men whose inventions have created vast numbers of jobs under the American enterprise system. Culmination of the program will be the presentation of scrolls, in New York, Feb. 27, to the country's 19 leading inventors and research workers. . . Can manufacturers exert an influence over next November's election results? STEEL believes they can provided they work with sufficient vigor along "grass-root" lines. . . Aircraft engine capacity expansion is to be aided (p. 33) by a machine tool priority plan.

Pioneers Honored

Supreme Court (p. 31) has consented to decide whether the secretary of labor has authority, under the Walsh-Healey act, to set minimum steel wages. . . A new senate bill would replace the United States tariff commission with a foreign trade board "necessary if we shall realistically meet world trade conditions". . . Following the examples of toothpaste, floor wax and other manufacturers, the automobile industry (p. 35) now

Shipbuilding Gains Seen

is employing humor, real or alleged, as a sales tool. . . Further substantial gains in American shipbuilding (p. 33) are expected this year. . . Tax collectors in 1939 took more money from motorists (p. 36) than builders received for new cars and trucks.

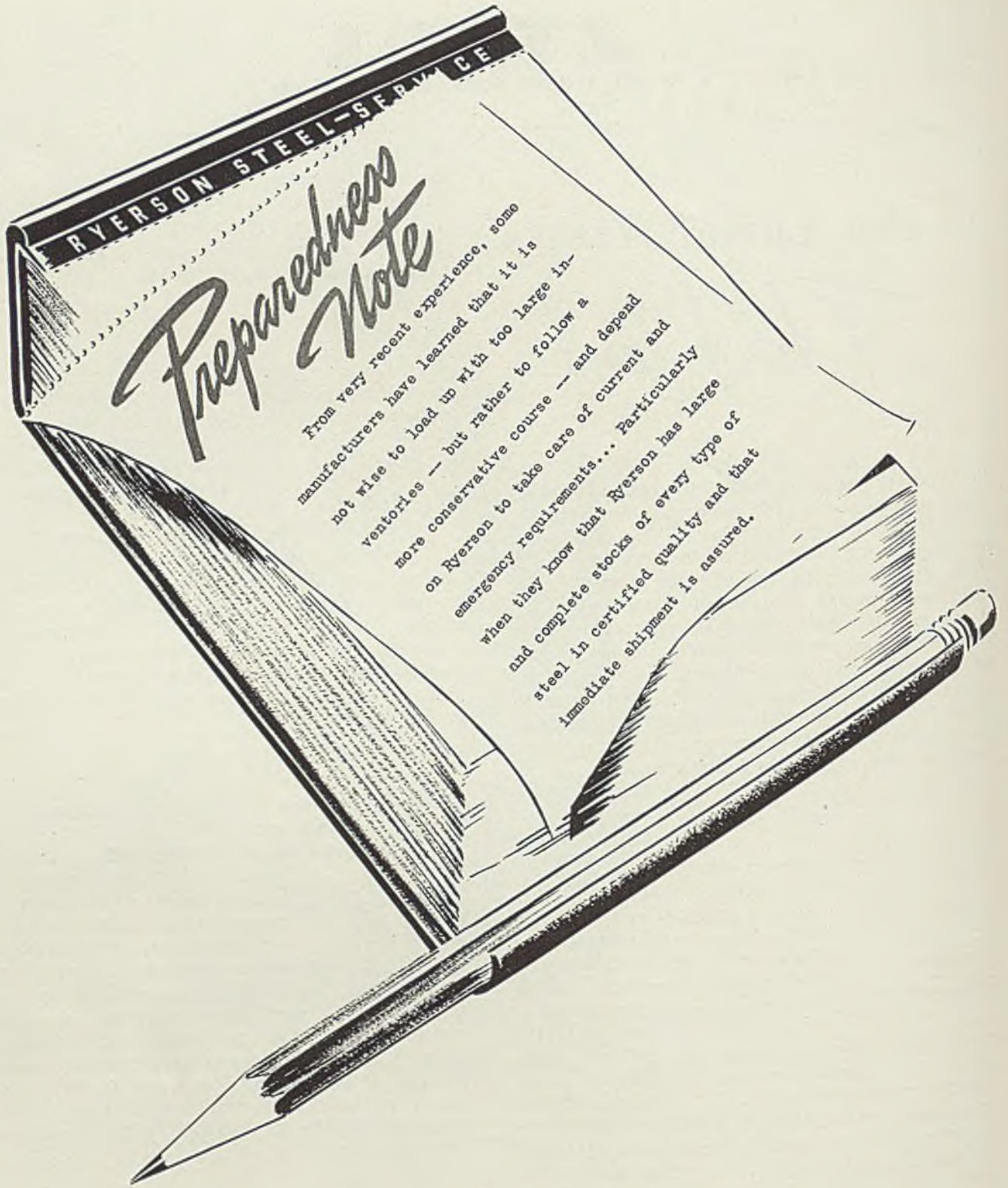
Another example of that modern industrial wonder, the windowless plant, now is in operation (p. 42) at Indianapolis. Illumination, air and other working factors are completely controlled, with resultant increased efficiency. . . Available for short-run production of cold-formed or stamped parts (p. 48) is a new die steel. . . One-cover-coat porcelain enameling (p. 51) has caused rapid changes in inspection standards and in some cases inspection departments have advanced slightly faster than production. . . With some new synthetic resin coatings (p. 52) anticorrosive primers can be made to dry in a single minute. . . Composite steel and alloy ingots (p. 54) are produced by a new process.

New Plant Windowless

Parabolic ceilings (p. 59) provide a means for improving the quality of office lighting. . . Fly-ash is reclaimed and sold at a profit (p. 64) through the use of an airtight conveying system equipped with electrostatic precipitators. . . A silver soldering technique (p. 66) may be used in making joints in wire screen with mesh as fine as 76 to the inch. . . By a new process (p. 68) zinc or aluminum-base die castings may be cleaned without peeling or blistering of plated deposits. . . After ten years, the iron alloy research program of Engineering Foundation (p. 69) is nearing completion. . . Annual meeting of the American Society of Tool Engineers (p. 70) will be held in New York, March 7-9.

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Honoring



Modern Pioneers . . .

■ COMMEMORATING the 150th anniversary of the United States patent office, the first of some 500 inventors and industrial research workers were honored last week for outstanding contributions to progress through pioneering achievement on American industrial frontiers.

At dinners in Cleveland and Minneapolis, 36 scrolls were presented to nominees selected through the National Association of Manufacturers' "Modern Pioneers" program, to recognize those men whose efforts have made possible more employment, better living conditions for all.

Similar regional banquets will be held in major industrial cities through February. Dates: San Francisco, Feb. 14; Detroit, Feb. 15; Philadelphia, Feb. 16; Hartford, Conn., Feb. 16; Los Angeles, Feb. 16; St. Louis, Feb. 19; Baltimore, Feb. 19; Rochester, N. Y., Feb. 19; Chicago, Feb. 20; Boston, Feb. 20; Cincinnati, Feb. 21. Climax of the program will be Feb. 27 when 19 national "modern pioneers" will be honored at a dinner at the Waldorf-Astoria hotel, New York. The local nominees in the New York district also will receive awards at the national dinner.

Names of the 19 inventors and scientists who received national awards have not been made public yet, but it is known that such outstanding men as Henry Ford, Orville Wright, Charles F. Kettering and John B. Tytus are among those nominated.

The "modern pioneer" program was conceived to dramatize to the American people the important part

the patent system plays in providing them with everyday necessities and luxuries and the essential part it must play in future progress.

Speakers at the dinners last week emphasized that this nation is dependent on its inventors and research workers for new goods, new services, new employment opportunities, and that the patent system, established in 1790, has provided a stimulus not only to the inventor and research worker but also to the manufacturer and investor. It has, they said, typified, perhaps better than any other American institution, the American reward for individual initiative.

Made Living Conditions Better

When the patent system first was founded, not one-third, but 95 per cent of this nation was "ill-clothed, ill-fed and ill-housed," said Walter D. Fuller, president, Curtis Publishing Co., Philadelphia, speaking at Cleveland. At the half-way mark 75 years ago two-thirds of this nation was still "ill-clothed, ill-fed and ill-housed." Today even the most radical say that no more than one-third are living under such conditions.

"The cure for these remaining troubles is clearly the same medicine which has been so successful in the past."

Nominations for "modern pioneer" awards were made by manufacturers, executives of manufacturing trade associations, and members of professional, scientific and engineering societies throughout the nation. Selection of those to be honored was made by a committee headed

by Dr. Karl T. Compton, president, Massachusetts Institute of Technology. Other committee members: Forest R. Moulton, permanent secretary, American Association for Advancement of Science; George B. Pegram, dean, graduate faculties of Columbia university; John T. Tate, dean, College of Science, Literature and the Arts, University of Minnesota; Edward R. Weidlein, director, Mellon institute; Frank C. Whitmore, dean, School of Chemistry and Physics, Pennsylvania State college.

General requirements for nomination: To be eligible for nomination for an award, an inventor or research worker must have discovered or invented "an art, machine, manufacture, or composition of matter, or useful improvement thereof" upon which the United States patent office has issued a patent within the last 25 years and which has been put into use by industry and through such use (a) increased employment, (b) provided a new commodity or service, (c) reduced the cost of a product already in use, or (d) improved quality of a product already in use.

Modern pioneers presented scrolls at Cleveland were:

Carl Lewis Beal, manager, development and engineering, American Anode Inc., Akron, O.

Joseph Becker, vice president and general manager in charge of construction and engineering, Koppers Co., Pittsburgh.

Tracy V. Buckwalter, vice president, Timken Roller Bearing Co., Canton, O.

Arthur Foster Case, consulting

engineer, Wellman Engineering Co., Cleveland.

Dr. Frank Conrad, assistant chief engineer, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

Joseph Victor Emmons, metallurgical engineer, Cleveland Twist Drill Co., Cleveland.

Clyde C. Farmer, director of engineering, Westinghouse Air Brake Co., Wilmerding, Pa.

Lars O. Grondahl, director of research and engineering, Union Switch & Signal Co., Swissdale, Pa.

William Jacob Harshaw, president and director of research, Harshaw Chemical Co., Cleveland.

John K. Hodnette, electrical engineer, Westinghouse Electric & Mfg. Co., Sharon, Pa.

Joseph Francis Joy, director of research and development, Joy Mfg. Co., Franklin, Pa.

James B. Kirby, Apex Electrical Mfg. Co., Cleveland.

Samuel B. Kraut, electrical engineer, Westinghouse Electric & Mfg. Co., Cleveland.

John Cromwell Lincoln, chairman of the board, and James Finney Lincoln, president, Lincoln Electric Co., Cleveland.

Dr. Walther Mathesius, vice president in charge of operations, United States Steel Corp., Pittsburgh.

Frank Ernest Moore, president, Mathews Conveyer Co., Ellwood City, Pa.

Marvin Pipkin, chemical engineer, General Electric Co., lamp development laboratory, Nela Park, Cleveland.

Carl F. Prutton, head of the department of chemistry, Case School of Applied Science, Cleveland.

Abram P. Steckel, Cold Metal Process Co., Youngstown, O.

Dr. Gideon Sundbach, Talon Inc., Meadville, Pa.

Dr. Harry F. Waite, president, Picker X-Ray Corp., Waite Mfg. Division Inc., Cleveland.

Harry M. Naugle, chairman of the board, Rotary Electric Steel Co., Detroit.

Harry Lloyd Benner, E. I. du Pont de Nemours & Co., Cleveland.

Ralph E. Hall, Ph.D., director, Hall Laboratories, Pittsburgh.

Alfred F. Harris, engineer, and chairman of the board, Harris, Seybold, Potter Co., Cleveland.

Hayden B. Kline, vice president in charge of plant operations, Industrial Rayon Corp., Cleveland.

Rex De Ore McDill, president, Inspection Machinery Co., Cleveland.

Waldo Lonsbury Semon, research chemist, B. F. Goodrich Co., Akron, O.

William Clyde Stevens, machine designer, Firestone Tire & Rubber Co., Akron, O.

Bengt Kjellgren, vice president, and Charles Baldwin Sawyer, chair-



■ Emblem on scrolls awarded to inventors and research workers by the National Association of Manufacturers in commemorating the 150th anniversary of the patent system

man of board, Brush Laboratories Co., Cleveland.

Honored at Minneapolis:

Clarence Wilson Carter, Hart-Carter Co., Minneapolis.

Edward Wilson Davis, director and professor, mines experiment station, University of Minnesota, Minneapolis.

Frederick S. Denison, engineer, Minneapolis-Honeywell Regulator Co., Minneapolis.

Lauritz D. S. Dinesen, president and designing engineer, Perfection Mfg. Corp., Minneapolis.

Halvor Orin Halvorson, professor of bacteriology, University of Min-

Current Events In Chicago . . .

By J. F. POWELL, Chicago Editor, STEEL

■ A NEAT business in toys is being done by Arcade Mfg. Co., Freeport, Ill., which has been making replicas of late model tractors. Cast iron and steel, with rubber tires and gaudy colors, the little vehicles find their way not only to nurseries and kindergartens but to many an executive desk. With no commercial interest or agreement in the matter, International Harvester Co., Chicago, has obligingly supplied plans of its new tractors to the toymakers to aid in making authentic models. The Harvester company does, however, order a substantial number of the new models each time, usually for use at luncheons announcing new Harvester tractors, where the toys are distributed as souvenirs. Guests at a luncheon last summer, where the new Farmall-A small

nesota, Minneapolis.

Henry L. Prestholdt, Monite Waterproof Glue Co., Minneapolis.

Charles Perkins Strite, 417 Tarrymore avenue, Minneapolis.

Tax Policy, Labor Board Attacked at Del Monte

■ Sharp criticism of the present administration's tax program was voiced by James F. Lincoln, president, Lincoln Electric Co., Cleveland, before the sixteenth annual conference of iron, steel and allied industries, held at Del Monte, Calif., Feb. 8-10.

"One third of our national income now goes for taxes", declared Mr. Lincoln. "But," he said, "even more dangerous is the fact that we now have one third of our people either directly or indirectly dependent upon government support—and many of them are proud of it. When the individual is glad to be a pauper, there is shipwreck ahead."

Approximately 300 delegates attended the conference which was held under the auspices of the California state chamber of commerce.

J. Stewart Neary, Los Angeles attorney, attacked the national labor relations act. Its "fundamental deficiency is the fact that it does not accord employers who are accused of unfair labor practices the simple and well recognized procedural rights which society has for generations accorded to accused felons, murderers and thieves. In that respect the act is unfair, unjust and one-sided."

The conference approved resolutions favoring mediations of labor disputes on a voluntary basis and merit rating in unemployment insurance legislation.

tractor was announced, were given models of the new equipment. At a luncheon held in Chicago recently in connection with the introduction of three new diesel-powered, crawler-type tractors at the thirty-seventh annual road show, the Harvester company proffered its guests models of one of the new lines.

♦ Pullman-Standard Car Mfg. Co., Chicago, has started delivery of 500 new light-weight box cars built in its district shops. Each new car weighs approximately 35,300 pounds. The saving in weight, because of use of alloy steels, is close to 10,000 pounds, and permits use of more cars per freight train. Two hundred of the new cars go to Wheeling & Lake Erie, 200 to Nickel Plate, and 100 to Pere Marquette.

Canadian Yards Awarded 50 Ship Contracts, Totaling \$25,000,000

TORONTO, ONT.

■ WAR contracts in substantially increased volume were placed by Canadian war supply board last week. Awards were chiefly for ships, aircraft and munitions.

Steel mills are maintaining capacity operations, and sheet and plate production is booked solid for the next six months. Bars, reinforcing and structural steel, small steel lines including wire, fencing and wire products are more active.

Shipbuilding contracts totaling \$25,000,000 were awarded last week to builders in eastern Canada. While most awards to date are for war purpose, it is said contracts for merchant vessels soon will be awarded.

Contracts placed: Canadian Steamship Lines and its subsidiary, Davie Shipbuilding Co., Lauzon, Que., ten ships; Canada Vickers Ltd., Montreal, Que., eight; Marine Industries Ltd., Sorel, Que., seven; Morton Engineering Co. Ltd., Quebec, Que., six; Port Arthur Shipbuilding Co. Ltd., Port Arthur, Ont., eight; Collingwood Shipyards Ltd., eight and Kingston, Ont., shipyards, three. Delivery is expected to start next November.

Sales Highest Since 1920

Other orders: Aircraft supplies, British Aeroplane Engines Ltd., Montreal, \$32,900; British air ministry, \$960,000; Irvin Air Chute Ltd., \$8800. Mechanical transport, Leyland Motors Ltd., Toronto, \$34,135; Ford Motor Co. of Canada Ltd., Windsor, Ont., \$33,450.

Machinery, tools and hardware, Williams & Wilson Ltd., Montreal, \$8235; John R. Hepburn Ltd., Toronto, \$6585; Canadian Fairbanks Morse Ltd., Ottawa, Ont., \$5667.

Munitions, British admiralty, \$246,200; Sawyer-Massey Ltd., Hamilton, Ont., \$80,657; Stanley Steel Co. Ltd., Hamilton, \$13,200; Canadian General Electric Co. Ltd., Ottawa, \$14,865 and Hall Machinery Co. Ltd., Sherbrooke, Que, \$45,577.

Ross H. McMaster, president, Steel Co. of Canada Ltd., Hamilton, Ont., reports company's 1939 sales exceeded those of any year since 1920, when prices were much higher than at present. He stated current production is at capacity and there are substantial backlogs, though steel consumption recently has been considerably below production.

Continuance of capacity operations will depend, he said, on extent to which war requirements engage

Canadian steel facilities. Company's new open hearth came into production just before end of 1939 and tenders now have been asked for construction of a tin plate mill at Hamilton.

Republic Appeals Labor Case to Supreme Court

■ Challenging a national labor relations board ruling, upheld last November by the third federal circuit court of appeals, Republic Steel Corp., Cleveland, petitioned United States Supreme Court last week to review the case. The circuit court had upheld a board order requiring the company to reinstate, with back pay, striking employes not returned to work following the 1937 strike.

Eleven questions raised by the board's rulings in the case, and dealing chiefly with reinstatement of strikers and strike violence are included in the petition. It contends "a hearing before a board which has already made up its mind as to every question of law and fact involved in the case is . . . not a hearing which amounts to due process of law."

Republic's petition points out "undisputed evidence disclosed the sole cause of the strike was the company's lawful refusal to sign a

written collective bargaining contract presented to it by the Steel Workers Organizing committee as a step in the drive of the CIO to organize the nation's steel industry."

In the Inland Steel Co. hearings, based on the same "Little Steel" strike, the labor board had decided the strike was caused by Inland's failure to sign a SWOC contract, states the petition. In Republic's case, however, the board decided the strike was caused by alleged unfair labor practices.

"This remarkable disparity in the conclusions announced by the board in these two cases as to the cause of the SWOC strike against 'Little Steel' in the summer of 1937," says the petition, "alone emphasizes the importance of a review of this phase of this case by this court."

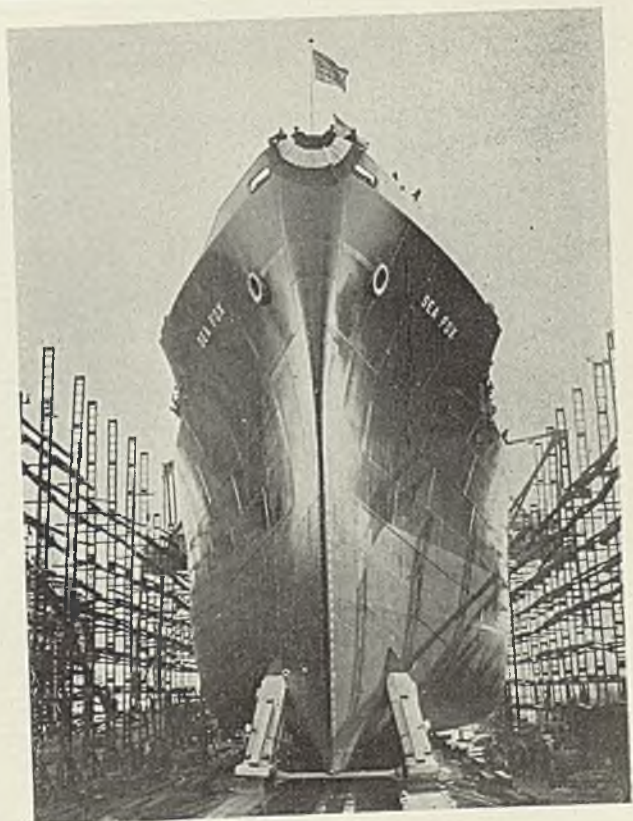
Another important question raised by the company deals with that part of the board's ruling which held strikers might engage in some acts of violence and commit some violations of law and still be eligible for reinstatement.

The petition also calls attention of the Supreme Court to the board's use of its so-called "background" fact-finding technique in a way "so opposed to the laws and rules of evidence that it should be supervised by this court."

In the Republic case, states the petition, "the board predicated its finding upon an invalid inference based on 'background' alone, and not upon direct and definite evidence."

Launch Fast Cargo Ship

■ S. S. SEA FOX, launched recently at Kearney, N. J., is the first of six fast cargo ships for United States Maritime commission and has a normal operating speed of 16½ knots compared to the 10 or 12 knots of ships now in service. NEA photo



FINANCIAL

YOUNGSTOWN SHEET & TUBE NETS \$5,004,484 IN 1939

■ YOUNGSTOWN Sheet & Tube Co., Youngstown, O., in a preliminary earnings statement reports net profit of \$5,004,484, equal to \$2.49 a share on common for 1939, compared to a deficit of \$658,934 in preceding year. Company earned net profit of \$12,190,649 or \$6.79 a share in 1937 and \$10,564,501 in 1936.

Based on reports for first nine months and the full year, indicated fourth 1939 quarter net profit was \$3,693,225, compared with \$90,108 in corresponding 1938 period and \$765,066 in period ended Sept. 30.

Earnings comparisons:

| Quarters | 1939 | 1938 | 1937 |
|------------------|-------------|------------|--------------|
| First | \$217,107 | \$139,529* | \$4,886,020 |
| Second | 329,086 | 118,033 | 2,022,112 |
| Third | 765,066 | 726,546* | 3,586,495 |
| Fourth | 3,693,225 | 90,108 | 1,696,022 |
| Year | \$5,004,484 | \$658,934* | \$12,190,649 |
| Earned on Common | \$2.49 | \$0.89* | \$6.79 |

* Loss.

■ A. M. Castle Co., Chicago, reports 1939 net profit of \$349,185, equal to \$1.46 a share on capital stock, compared to net income of \$216,406 or 90 cents a share in 1938. Fourth quarter net earnings were \$202,971 or 85 cents a share, compared to \$59,700, equal to 25 cents a share, in corresponding 1938 period.

■ Harbison-Walker Refractories Co., Pittsburgh, in a preliminary state-

ment reports \$1,869,000 net profit for 1939, equal to \$1.24 a share on common. This compares with net profit of \$736,434 or 41 cents a share on common for preceding year. Fourth 1939 quarter indicated net profit, based on nine months' and the year's reports, was \$952,100, compared to \$388,134 in corresponding 1938 period.

■ Virginia Iron, Coal & Coke Co., Roanoke, Va., had a December quarter net profit of \$7042 compared to a \$22,847 deficit in same 1938 period. Preliminary report indicated a net loss of \$99,840 for 1939, compared to a loss of \$157,891 in preceding year.

■ Pittsburgh Coke & Iron Co., Pittsburgh, reports 1939 net profit of \$542,759, compared to \$216,773 in preceding year. Fourth quarter net income was \$298,211 against \$40,517 in corresponding 1938 period.

■ Carpenter Steel Co., Reading, Pa., reports fourth 1939 quarter net profit of \$382,033, compared to \$60,281 for same 1938 period. Company earned \$873,811 net profit in 1939; deficit of \$41,919 was incurred in previous year.

■ Woodward Iron Co., Woodward, Ala., reports 1939 net profit of \$631,177, equal to \$2.25 a share, compared to net income of \$532,880 or \$1.97 a share for preceding year. Fourth 1939 quarter net profit was \$243,329 or 87 cents a share, against net income of \$150,798, equal to 56 cents

a share, in period ended Sept. Net earnings in last 1938 quarter were \$229,184.

■ Caterpillar Tractor Co., Peoria, Ill., reports fourth 1939 quarter profit of \$2,103,735, equal to \$1.08 a share on common, compared to \$1,636,608 or 54 cents a share for corresponding 1938 period. Net income for quarter ended Sept. 30 was \$585,775 or 77 cents a share.

Net profit for the year was \$4,004,890, equal, after dividends on preferred stock, to \$2.89 a share on common. For 1938 net earnings totaled \$2,660,742 or \$1.41 a share.

Bethlehem Steel Plans \$105,000,000 Bond Issue

■ Reports that Bethlehem Steel Corp., Wilmington, Del., was planning to file with securities and exchange commission registration statement for corporate refunding totaling \$105,000,000 were confirmed late last week. Eugene G. Grace, president, said the corporation would file its statement Feb. 9.

According to Mr. Grace, the principal amount would consist of \$35,000,000 of one to ten-year serial debentures with varying rates of interest, and \$70,000,000 of consolidated mortgage bonds to be issued in two series. One series will be 20-year 3 per cent bonds, the other 25-year 3 1/4 per cent bonds.

Bonds of each new series will have a sinking fund starting after the 10-year debentures mature.

Proceeds will be used to retire approximately \$102,000,000 of consolidated mortgage bonds outstanding. These include series "D" 4 1/4 per cent bonds and series "E" 3 3/4 per cent bonds, redeemable at 105.

It is expected the new securities will be offered about Feb. 29 by a group of underwriters headed by Kuhn, Loeb & Co.; Smith, Barney & Co., and Mellon Securities Corp.

Fewer Blast Furnaces Operating in January

■ Actual production of coke pig iron in the United States in January totaled 3,593,354 gross tons, according to complete reports from blast furnace operators. Average daily rate of production was 115,915 tons. These figures are essentially as reported in STEEL for Feb. 5, p. 28, in a compilation involving some estimation.

Active blast furnaces on Jan. 31 totaled 177 instead of 179 as reported. Birmingham No. 4 furnace of Sloss-Sheffield Steel & Iron Co., in Alabama, was taken out for repairs, and Rockdale furnace of Tennessee Products Corp. in Tennessee, did not blow in as scheduled.

Reports to Employees by Radio



■ Innovation in simplifying annual company reports was President B. C. Heacock's broadcast to 11,500 Caterpillar Tractor Co. employees last week. Sitting before a microphone in Peoria, Ill., Mr. Heacock thumbed through the Caterpillar report, informally talked about sales, profits and employment during 1939. Employees had received mailed copies of the report the same day

PRODUCTION . . .

Steelmaking Continues Downward; Rate Off 5½ Points to 71 Per Cent

■ STEELWORKS operations last week declined 5½ points to 71 per cent. Seven districts reduced operations, one made a slight gain and four maintained the level of the preceding week. Last year the rate was 54 per cent; two years ago 30 per cent.

Youngstown, O. — Declined 7 points to 44 per cent. Schedule for this week probably will be 39 to 40 per cent. Youngstown Sheet & Tube Co. took off two open hearths and Republic Steel Corp. one during the week. Carnegie-Illinois Steel Corp. has suspended its No. 2 furnace at Ohio works for relining after continuous operation since 1929, except for patching of lining in 1931, producing 3,500,000 tons since last relining. This would be a world record except for the patching job.

Chicago — Loss of 11 points, to 74½ per cent, the sharpest decline since the fall of 1937. One producer maintains unchanged schedule, another increased output because of agricultural steel demand, all others curtailing.

Birmingham, Ala. — Continues at

District Steel Rates

Percentage of Ingot Capacity Engaged in Leading Districts

| | Week ended Feb. 10 | Change | Same week | |
|---------------------|--------------------|--------|-----------|------|
| | | | 1939 | 1938 |
| Pittsburgh . . . | 69 | - 4 | 46 | 31 |
| Chicago | 74.5 | -11 | 51 | 25 |
| Eastern Pa. | 68 | -10 | 36 | 30 |
| Youngstown . . . | 44 | - 7 | 44 | 23 |
| Wheeling | 86 | + 4 | 64 | 44 |
| Cleveland | 70 | - 5 | 56.5 | 33 |
| Buffalo | 60.5 | None | 37 | 18.5 |
| Birmingham . . . | 90 | None | 80 | 61 |
| New England . . . | 63 | - 3 | 70 | 27 |
| Cincinnati | 61 | - 3.5 | 55 | 28 |
| St. Louis | 70 | None | 50 | 21 |
| Detroit | 93 | None | 94 | 47 |
| Average | 71 | - 5.5 | 54 | 30 |

90 per cent, an open hearth off half of the previous week being lighted last midweek.

St. Louis — Holds at 70 per cent for the second week, with 17 of 28 open hearths active.

Cincinnati — Drop of 3½ points to 61 per cent as backlogs are worked down.



Cleveland — Curtailed 5 points to 70 per cent on reductions by two plants.

Buffalo — Steady at 60½ per cent, with 26 of 43 open hearths in production.

Pittsburgh — Off 4 points to 69 per cent on general readjustments.

Wheeling — Up 4 points to 86 per cent.

Central eastern seaboard — Down 10 points to 68 per cent, some producers at less than 50 per cent. Finishing mills are at a higher rate, using ingot stocks.

New England — Receded 3 points to 63 per cent, with the same schedule planned for this week.

Detroit — Unchanged at 93 per cent of capacity.

January Ingots Off but Fourth 5-Million Month

■ Production of 5,017,588 gross tons of open-hearth and bessemer steel ingots in January represented the fourth successive month in which output exceeded 5,000,000 tons. The best previous record in this respect was in March, April and May, 1937, when that monthly tonnage was made, according to the American Iron and Steel institute.

The January total was 3 per cent lower than 5,164,420 tons made in December and 58 per cent greater than 3,174,352 tons in January, 1939.

The steel industry in January operated at 83.18 per cent of capacity, against 85.57 per cent in December and 52.48 per cent in January, 1939. Average production per week in January was 1,132,638 tons, compared with 1,168,421 tons weekly in December and 716,558 tons in January, 1939.

Percentages of capacity operated are based on annual capacity as of Dec. 31, 1938, the same basis as the 1939 figures, until capacity as of Dec. 31, 1939, has been announced by the institute. The weekly capacity, however, is slightly different for 1940, owing to an added day in February giving 52.28 weeks, against 52.14 weeks in 1939.

Steel Ingot Statistics

| | Calculated Monthly Production—All Companies | | | Weekly production, all of companies, gross tons month | Number of weeks in month | |
|---|---|----------------------|------------|---|--------------------------|----------------------|
| | —Open Hearth— | —Bessemer— | —Total— | | | |
| | Gross tons | Per cent of capacity | Gross tons | Per cent of capacity | Gross tons | Per cent of capacity |
| 1940 Reported by Companies which in 1938 made 98.67% of Open-Hearth and 99.90% of Bessemer. | | | | | | |
| Jan. | 4,762,231 | 86.71 | 255,357 | 47.28 | 5,017,588 | 83.18 |
| 1939 Reported by Companies which in 1938 made 98.67% of Open-Hearth and 99.90% of Bessemer. | | | | | | |
| Jan. | 3,026,710 | 54.96 | 147,642 | 27.26 | 3,174,352 | 52.48 |
| Feb. | 2,792,267 | 56.15 | 196,382 | 40.16 | 2,988,649 | 54.72 |
| March | 3,210,481 | 58.30 | 194,889 | 35.99 | 3,405,370 | 56.30 |
| April | 2,768,269 | 51.91 | 205,977 | 39.28 | 2,974,246 | 50.78 |
| May | 2,752,549 | 49.98 | 170,326 | 31.45 | 2,922,875 | 48.32 |
| June | 2,937,622 | 55.08 | 187,666 | 35.78 | 3,125,288 | 53.35 |
| July | 2,932,924 | 53.38 | 229,610 | 42.49 | 3,162,534 | 52.40 |
| Aug. | 3,516,219 | 63.85 | 247,199 | 45.65 | 3,763,418 | 62.22 |
| Sept. | 3,933,885 | 73.94 | 297,425 | 56.84 | 4,231,310 | 72.41 |
| Oct. | 4,988,416 | 90.58 | 405,405 | 74.86 | 5,393,821 | 89.17 |
| Nov. | 5,057,655 | 94.83 | 404,961 | 77.22 | 5,462,616 | 93.26 |
| Dec. | 4,848,702 | 88.24 | 315,718 | 58.43 | 5,164,420 | 85.57 |
| Total | 42,765,699 | 65.98 | 3,003,200 | 47.12 | 45,768,899 | 64.29 |

Percentages of capacity operated for 1940 are calculated on weekly capacities of 1,239,824 gross tons open-hearth ingots and 121,920 gross tons bessemer ingots, total, 1,361,744 gross tons; based on annual capacities as of Dec. 31, 1938, as follows: Open-hearth ingots, 64,817,994 gross tons; bessemer ingots 6,374,000 gross tons.

Percentages of capacity operated for 1939 are calculated on weekly capacities of 1,243,153 gross tons open-hearth ingots and 122,248 gross tons bessemer ingots; total, 1,365,401 gross tons; based on annual capacities as of Dec. 31, 1938, as follows: Open-hearth ingots, 64,817,994 gross tons; bessemer ingots, 6,374,000 gross tons.

MEETINGS

ACETYLENE ASSOCIATION TO CONVENE IN MILWAUKEE

■ FOR TIETH convention of International Acetylene association will be held at Hotel Schroeder, Milwaukee, April 10-12. The program will include a scientific forum on oxy-acetylene cutting of metals, a series of roundtable discussions and technical sessions dealing with the use of the oxyacetylene process in welding, cutting and heat treating.

SHEET GALVANIZERS GROUP WILL MEET IN PITTSBURGH

Four years after its first meeting, the Galvanizers committee, sponsored by the American Zinc Institute Inc., is returning to Pittsburgh for its annual spring session. It will meet at the William Penn hotel, April 11-12. Plant trips are scheduled for the first day. Papers to be presented at technical sessions on the second day will form the basis for roundtable discussions relating to the common problems of the sheet galvanizing shop.

Twenty steel companies are now represented in the committee's membership, the latest acquisition being the Great Lakes Steel Corp., Detroit. Three new members of the governing board were elected recently as follows: C. K. Lytle, Tennessee Coal, Iron & Railroad Co., Birmingham, Ala.; J. J. Shuman, Jones & Laughlin Steel Corp., Pittsburgh; and C. H. Steele, Steel Co. of Canada Ltd., Hamilton, Ont.

HOT DIP GALVANIZERS SET ANNUAL MEETING DATE

American Hot Dip Galvanizers' association has scheduled its annual meeting at the William Penn hotel, Pittsburgh, Feb. 29-March 1. The program will consist of technical and business sessions and the annual election of officers.

ELECTRIC STEEL MELTING LECTURES AT BATTELLE

A series of lectures on the "principles of electric steel melting" will be held at Battelle Memorial institute, Columbus, O., March 21-23, under sponsorship of the Steel Founders' Society of America and Electric Metal Makers' Guild. The conference will be directed by Charles W. Briggs, technical advisor of the Steel Founders and is offered with registration fee.

Lectures scheduled for the first day are: "Electric Steel Melting Furnaces," by N. R. Stansel, industrial heating engineer, General Electric Co., Schenectady, N. Y.; "Carbon and Graphite Electrodes," by T. L. Nelson, service engineer, National Carbon Co., Cleveland; "Refrac-

tories and Furnace Linings," by L. S. Fry, works manager, Joslyn Mfg. & Supply Co., Ft. Wayne, Ind.; "Raw Materials," by Adolph Scheid Jr., assistant works manager, Columbia Tool Steel Co., Chicago Heights, Ill.

Second day lectures are: "Fundamentals of Chemistry of Steelmaking," by C. H. Herty Jr., research engineer, Bethlehem Steel Co., Bethlehem, Pa.; "Application of Chemistry to Acid and Basic Practice," by C. E. Sims, research metallurgist, Battelle Memorial institute.

Scheduled for the final day are: "Electric Power and Its Economical Use," by H. W. Gillett, chief technical advisor, Battelle Memorial institute; "Operation Methods," by C. W. Briggs; "Fluidity and Temperature Measurements," by C. H. Lorig, research metallurgist, Battelle Memorial institute; "Tapping and Metal Transfer," by C. W. Briggs.

MANAGEMENT GROUP WILL HOLD PERSONNEL MEETING

Personnel division of the American Management association will hold a conference at the Palmer House, Chicago, Feb. 14-16. Topics for discussion will include management-personnel relations, collective bargaining, job evaluation, wage standardization and social security.

A.S.M.E. SELECTS WORCESTER FOR ITS SPRING MEETING

American Society of Mechanical Engineers will hold its spring meeting at Hotel Bancroft, Worcester, Mass., May 1-3, under sponsorship of the Worcester section. Twenty-six papers will be presented at 13 technical sessions. A general luncheon will feature the first day and a banquet the evening of the second.

Papers scheduled for various sessions include: Iron and steel—"From Anvil to Press," by John W. Higgins, president, Worcester Pressed Steel Co., "Modern Metal Forming," by Harold T. Burke, chief tool designer of the same company, "Factors in Fatigue of Helical Springs," by R. R. Tatnall, Wickwire Spencer Steel Co.; Machine shop practice—"Deep Drilling," by Eric Hirvonen, Leland-Gifford Co., "Use of High-Speed Photography in Study of Machine Motions," by Victor Sepavich, Crompton & Knowles Loom Works; Materials handling—"Modern Developments in Materials Handling," by Russell Hastings, chief engineer, Lewis-Shepard Sales Corp., Watertown, Mass., "Handling Finished Machine Tools," by A. L. Wilkinson, Leland-Gifford Co.

CINCINNATI IS NAMED FOR CHEMICAL SOCIETY MEETING

Ninety-ninth meeting of the American Chemical society will be conducted in Cincinnati, April 8-12, with 17 of the organization's pro-

fessional divisions participating. The program will include a number of symposia on current problems including the utilization of agricultural wastes, combustion of solid fuels, chemistry of insulation, cellulose plastics, and industrial research.

TRANSPORTATION SYMPOSIUM AT A.S.T.M. SPRING MEETING

A two-session symposium on "New Materials in Transportation" will feature the spring meeting of the American Society for Testing Materials at Hotel Statler, Detroit, March 6, during A.S.T.M. committee week. Sessions will be held morning and afternoon, with a dinner to be served in the evening.

A paper scheduled for the morning is "Exhaust Valve Materials for Internal Combustion Engines," by S. D. Heron, Ethyl Gasoline Corp., and O. E. Harder and M. R. Nestor, Battelle Memorial institute. Two other papers will deal with fuels and lubrication. "Developments in Alloy Steel" will be discussed at the afternoon session by E. W. Upham, Chrysler Corp., W. H. Graves, Packard Motor Car Co., A. L. Boegehold, General Motors Corp. and F. E. McCleary, Chrysler Corp. Rubber and concrete will be considered in two other papers.

More than 100 meetings of committees will be held during the five days. Committees scheduling meetings include: A-1 on steel, A-3 on cast iron, A-5 on corrosion of iron and steel, A-7 on malleable iron castings, B-3 on corrosion of nonferrous metals, C-8 on refractories, and research committee on fatigue of metals.

EASTERN HIGHWAY MEN TO MEET IN ATLANTIC CITY

Association of Highway Officials of North Atlantic states is holding its sixteenth annual convention at Hotel Ambassador, Atlantic City, N. J., starting Feb. 14. A highway industries exhibit will be conducted concurrently with the meeting.

NATIONAL FOREIGN TRADE WEEK, MAY 19-25

National foreign trade week, sponsored by United States chamber of commerce, Washington, will be observed May 19-25. Subjects for discussion by community chambers of commerce include effect of war on trade, prospects in Latin America, policy in the Orient, protection for home industry and its bearing on tariff bargaining.

The national organization will issue a bulletin in February describing preliminary plans for observance of the week in various cities. In March it will distribute, on request, large multicolored world map posters.

What's New at Pittsburgh . . .

By R. L. HARTFORD, Pittsburgh Editor, STEEL

■ PERENNIAL problem of Pennsylvania's soft coal operators is up for discussion again although there is not yet any solution in sight. Problem is freight rate discrimination in favor of southern producers, which has caused the loss of mid-western markets by the Pennsylvania producers despite a shorter freight haul.

Southern mines now produce nearly all coal used in the Michigan and Indiana territory, most of which once came from Pennsylvania. During the Earle administration the problem was much discussed, but all that resulted was a lot of publicity for the Democratic administration. Now the Republicans are considering the situation, and Secretary of Commerce Richard P. Brown met with producers here last week.

Local coal interests are pessimistic, however, and believe the solution must come from outside the state. Efforts have been made to interest Washington in the industry's plight. Most of the larger companies are near the breaking point financially.

Union Embarrasses Murray

Testifying before the senate labor committee last week, Philip Murray, chairman, Steel Workers' Organizing committee, said the grievance procedure at Jones & Laughlin Steel Corp. has set an example for the entire industry and that relations at its Aliquippa plant are exemplary. While he was speaking, 30 of his followers at Aliquippa walked out of the temper mills in the tin plate department on an unauthorized strike, violating the union's contract.

Reason for walkout was given as a reduction in tonnage rates, arising from a renovating of the mill resulting in increased tonnage output per man. The revision in rates downward left the men with an increase in pay, but less than they would have had under the former rate. No grievance was presented by the regular grievance committee. However, after two days, union leaders persuaded the men to go back to work and present the complaint in the manner stipulated by contract.

New Housing Grant

Housing activity in Allegheny county outside Pittsburgh was increased last week with a grant of \$541,000 for a 124-family unit in Etna, northern suburb. This is the

fifth job granted in the county, the preceding four being in McKees Rocks, Rankin, Homestead and Clairton, all steel towns. Total cost of three projects is about \$4,000,000. Chief use of steel will be in concrete reinforcement, the entire project taking close to 1000 tons.

Favor Independent Union

Recently the United Electrical, Radio Workers and Machinists' Union announced its withdrawal from the election scheduled for the Sharon, Pa., plant of Westinghouse Electric & Mfg. Co. Last week the election was held, and the result shows union's reason for withdrawal. Employees voted heavily in favor of Sharon Westinghouse Employees' association, an independent.

Manufacturers' Stocks Rise in December

■ Manufacturers' inventories continued to rise in December, but did not appear excessive in relation to volume of business transacted, according to preliminary indexes compiled by National Industrial Conference board's division of industrial economics. New orders, however, showed further substantial decline for the third consecutive month. Viewed in light of that development, the inventory situation

appeared less favorable than in November.

Value of inventories Dec. 31, based on about 500 representative companies, was 3.3 per cent greater than a month earlier, compared to an increase of 7.3 per cent from October to November. Inventories increased 13 per cent since August, have reached the highest level since March, 1938.

Part of the August-December rise in inventories was attributable, says the report, to price increases. Physical volume of stocks has not risen as sharply as the dollar value.

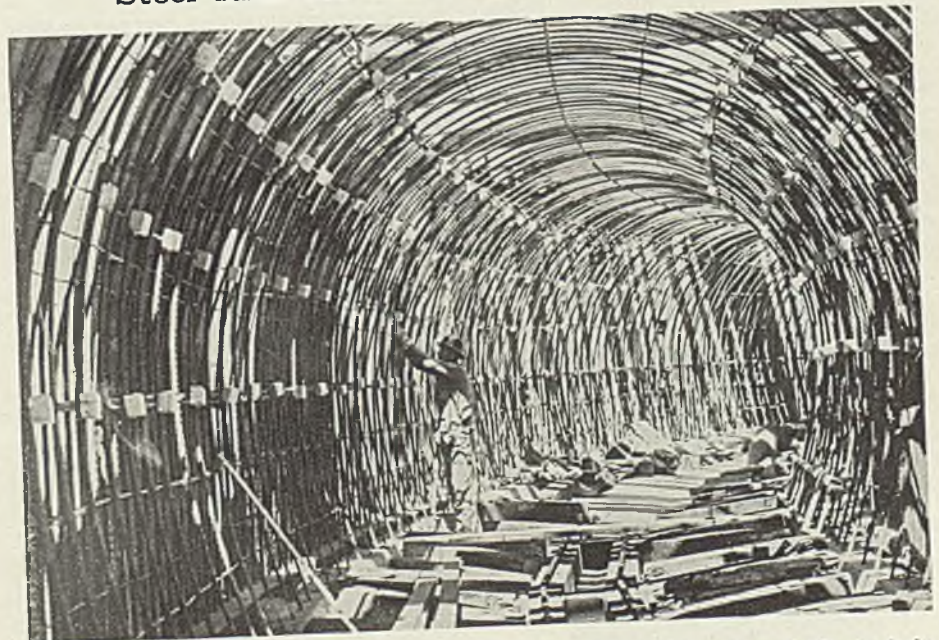
Crypt To Include Movie Of Freighter Launching

■ Pittsburgh Steamship Co., subsidiary of United States Steel Corp., has been invited to make a contribution to Oglethorpe university's "crypt of civilization," containing examples of modern way of life which are to be preserved for 6000 years.

Motion picture film depicting launching of the William A. Irvin will be contributed by the company for inclusion in the collection, which will be complete to the point that a motion picture projector will be included to show this and other films when the crypt is opened. The film is the first complete motion picture ever made of the launching of a Great Lakes freighter.

Crypt itself is a metal and concrete vault, 20 x 10 x 10 feet, with a stainless steel door and is to be buried beneath the administration building at the university in Georgia.

Steel Ribs for Los Angeles Storm Sewer



■ Setting steel ribs prior to pouring cement in this huge storm drain to help prevent heavy storms from inundating Los Angeles if, and when it rains. NEA photo

MEN of INDUSTRY

■ ROBERT A. PETERSON has been appointed superintendent of hot mills, Cuyahoga works, American Steel & Wire Co., Cleveland, subsidiary of United States Steel Corp. He succeeds A. G. Montgomery, previously appointed assistant chief engineer. Mr. Peterson became associated with American Steel & Wire in 1934 as a rolling mill adviser and in 1936 was appointed assistant superintendent of merchant, wheel and axle mills, Gary works, Carnegie-Illinois Steel Corp., another Steel corporation subsidiary. In 1937 he was made superintendent, merchant bar mills. R. W. H. Atcherson has been named Mr. Peterson's successor at Gary, having served as special engineer at the Gary works since 1929. Mr. Atcherson has been employed in the steel industry 38 years. Prior to joining the Gary works in 1922, he was with Inland Steel Co., Chicago.



Robert A. Peterson

Earl G. Goehle, formerly master mechanic, Michigan Seamless Tube Co., South Lyons, Mich., has joined Tube Reducing Corp., Newark, N. J., as production and factory manager.

Neale E. Stearns, heretofore associated with McKinzey-Kearney & Co. since 1930, has been appointed supervisor of business procedures, Inland Steel Co., Chicago.

A. F. Colling has been appointed executive vice president, Wackman Welded Ware Co., St. Louis, with headquarters in the company's New York district sales office.

T. R. Bissell has joined Tris Speaker in a partnership to represent Rotary Electric Steel Co., De-



T. R. Bissell

troit, in the Ohio district. Headquarters are in the NBC building, Cleveland. Mr. Bissell formerly was Cleveland district sales manager for Timken Steel & Tube division, Timken Roller Bearing Co., Canton, O., with which company he had been associated a number of years.

J. A. Coffey, general traffic manager, Continental Steel Corp., Kokomo, Ind., has been named a member of the executive committee of the newly organized Transportation Institute of Indiana.

Tomlinson Fort, associated with the New York office of Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., since 1931, has been transferred to East Pittsburgh as assistant manager of central station sales.

Paul Lindberg, until recently superintendent of rolling mills, Steel & Tube division, Timken Roller Bearing Co., Canton, O., has been appointed superintendent of rolling mills, steel division, Copperweld Steel Co., Warren, O.

John F. Smith Jr., heretofore assistant manager, order department, Inland Steel Co., Chicago, has been promoted to manager of that department. He succeeds Powell Pardee who will assume special duties in the department of inspection and metallurgy.

H. C. Sauer has been transferred from Chicago, where he has been in a managerial capacity the past nine years, to the New York branch of Timken Roller Bearing Co., Canton, O. He succeeds J. W. Berri-

man, manager, who has been granted an indefinite leave of absence due to ill health. L. J. Halderman, the past ten years manager of the company's Kansas City, Mo., branch, has been transferred to Chicago. F. A. Weisenberger becomes manager, Kansas City branch, being promoted from the Pittsburgh sales force.

Otto L. Lauch, assistant chief engineer, Pickands, Mather & Co., Cleveland, in the Lake Superior district, has been promoted to chief engineer. He succeeds J. C. Metcalf, who has been made assistant manager. E. W. Leach also has been named assistant manager.

C. H. McGrath, formerly general purchasing agent, has been appointed assistant to the president, American Brake Shoe & Foundry Co., New York. W. T. Kelly Jr., heretofore assistant to the general purchasing agent, becomes general purchasing agent.

William G. Summers is now associated with T. Griffiths Roberts, Harrison building, Philadelphia, who is representative for Fitzsimons Co., Youngstown, O., and SAE Steels and E. W. Ferry Screw Products Co., Cleveland. Mr. Summers formerly was in the purchasing department of Phoenix Iron Co.

Edward D. Herrick has resigned as president, Lycoming Mfg. Co., Williamsport, Pa., to become president and director, Linn Mfg. Co., Mount Morris, N. Y., maker of load carrying tractors. He had been identified with the Lycoming company in various capacities the past 22 years.

J. M. Cosgrove has been appointed director, development laboratory,



J. M. Cosgrove

Standard Steel Spring Co., Coraopolis, Pa. He will be actively interested in research on the new corrosion proof coating developed by the company. Mr. Cosgrove was formerly chief chemist, Noblitt-Sparks Industries Inc., and before that, process control engineer for Meaker Co., and development engineer in charge of plated finishes for Western Electric Co.

C. F. Succop, president, American Roller Bearing Co., Pittsburgh, has appointed his son, Larry N. Succop, as sales engineer to represent the company in the Southwest, with headquarters at Houston, Tex. Mr. Succop was graduated from Shady-side academy; attended Yale university two years and completed his



Larry N. Succop

engineering education at Carnegie Institute of Technology. He has spent a year in the plant's engineering department.

L. N. Shannon, vice president and works manager, Stockham Pipe Fittings Co., Birmingham, Ala., and Herbert S. Simpson, president, National Engineering Co., Chicago,



L. N. Shannon



M. L. Jacobs

Who has been elected vice president in charge of raw materials, Bethlehem Steel Co., Bethlehem, Pa., as noted in STEEL, Feb. 5, page 40

have been nominated for president and vice president, respectively, American Foundrymen's association, Chicago. Directors nominated to serve three-year terms include: Henry S. Washburn, president, Plainville Casting Co., Plainville, Conn.; George W. Cannon, vice president, Campbell, Wyant & Cannon Foundry Co., Muskegon, Mich.; L. P. Robinson, sales manager, Werner G. Smith Co., Cleveland; Harold J. Roast, vice president, Canadian Bronze Co., Montreal, Canada; B. D. Claffey, manager, gray iron division, General Malleable Corp., Waukesha, Wis.

John R. Hertzler and Ralph B. Meisenhelder have been appointed general sales manager and assistant to the president, respectively, York Ice Machinery Corp, York, Pa. Mr. Hertzler became associated with York in 1927 as a sales student, and since 1937 had been general representative. Mr. Meisenhelder joined York Mfg. Co., predecessor to York Ice Machinery Corp., in 1906 as a clerk, and in 1930 was named assistant to general sales manager.

Died:

■ HARRY A. LORD, 59, Pittsburgh district sales manager, American Rolling Mill Co., Middletown, O., in Orlando, Fla., Feb. 6. He entered the steel business as a stenographer for the firm of Horner & Gough, and within a few years was made a salesman. He became Pittsburgh district sales manager for Armco about 25 years ago.

Arthur Jesse Hall, 52, former superintendent, Ohio Structural Steel Co., Newton Falls, O., at his

home in Alliance, O., Jan. 22. Following service with Ohio Structural Steel he was assistant master mechanic, General Steel Casting Corp., Eddystone, Pa.

Harold P. Rosenberg, 49, purchasing agent, American Steel Foundries, Alliance, O., in Alliance, Jan. 30.

Thompson Spencer Hanna, 87, who retired 15 years ago as New York district sales manager, Vulcan Crucible Steel Co., in Orange, N. J., Jan. 25.

Walter L. Toy, 50, president, Scott & Williams Inc., Laconia, N. H., builder of knitting machinery, in Laconia, Jan. 25.

Rupert G. Jeffrey, 63, president, Whitney Screw Co., Nashua, N. H., Jan. 26 in that city.

John J. Frasmer, general sales manager, Stevens-Adamson Mfg. Co., Aurora, Ill., conveyor manufacturer, in that city, Feb. 4.

Omer P. Byers, 72, for 28 years Cleveland branch manager for International Harvester Co. Inc., Chicago, in Cleveland, Jan. 28.

Joseph Irving Simmons, 57, vice president, John Simmons Co., New York, and general manager, Simmons Pipe Bending Co., Newark, N. J., in Montclair, N. J., Jan. 31.

Charles McNicholl, former traffic manager, American Bridge Co., Pittsburgh, and at one time president of the Traffic club, in Pittsburgh, recently.

T. S. Perkins, in Irwin, Pa., Jan. 7. Mr. Perkins had been retired since 1933 when he held the position of general manager of merchandising engineering, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

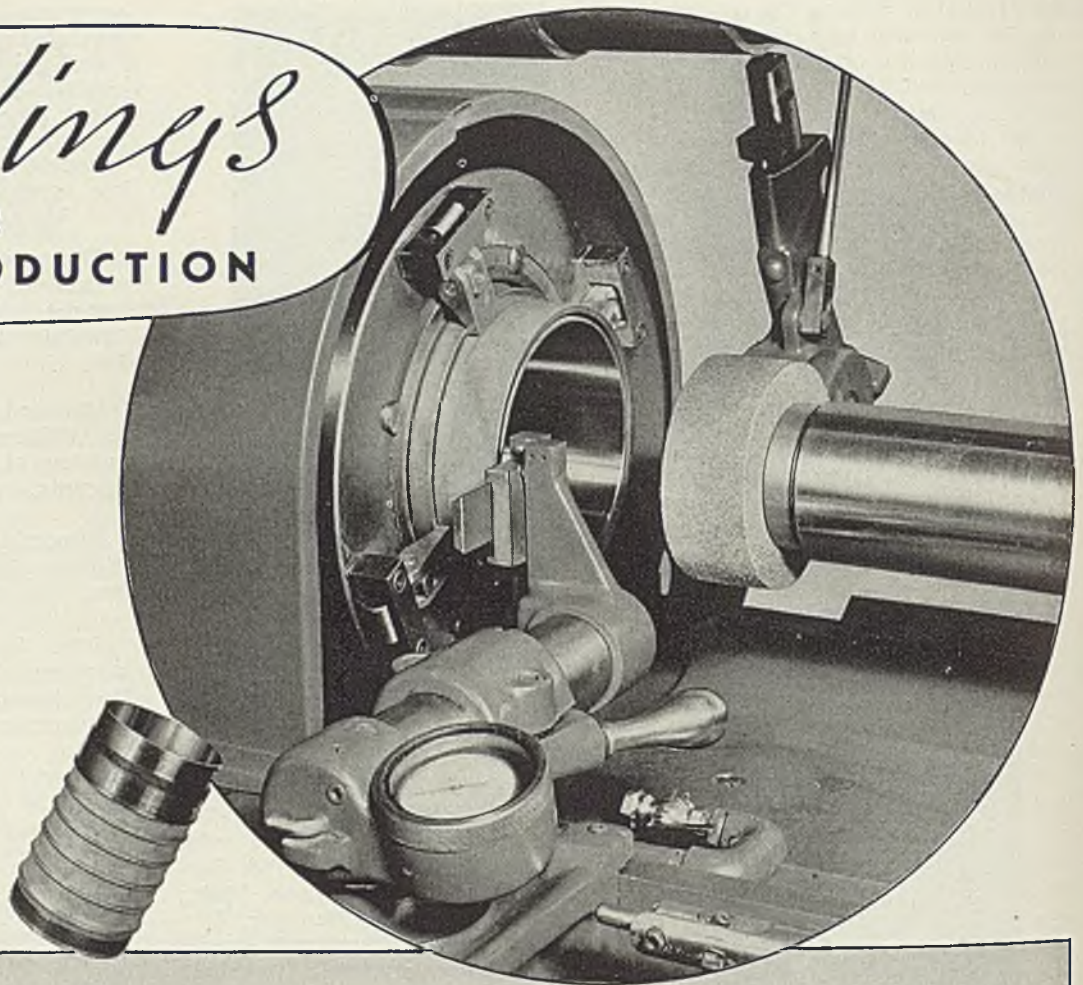
Elmer E. Price, 55, the past five years a member of the New York sales staff of Carnegie-Illinois Steel Corp., in Elizabeth, N. J., Jan. 31. He had been with Carnegie organization since 1899, first at Pittsburgh and later at Buffalo.

Samuel M. Vauclain, 83, chairman of the board, Baldwin Locomotive Works, Philadelphia, at his home near Philadelphia, Feb. 3. He joined Baldwin as an inspector, becoming vice president in 1911, president in 1919, and chairman in 1929.

Walter A. Forbes, 70, chairman of the board, Gunite Foundries Corp., Rockford, Ill., in that city, recently. He was also a director, Mattison Machine Co., Rockford, and was formerly with Rockford Malleable Iron Works.

Wings

FOR PRODUCTION



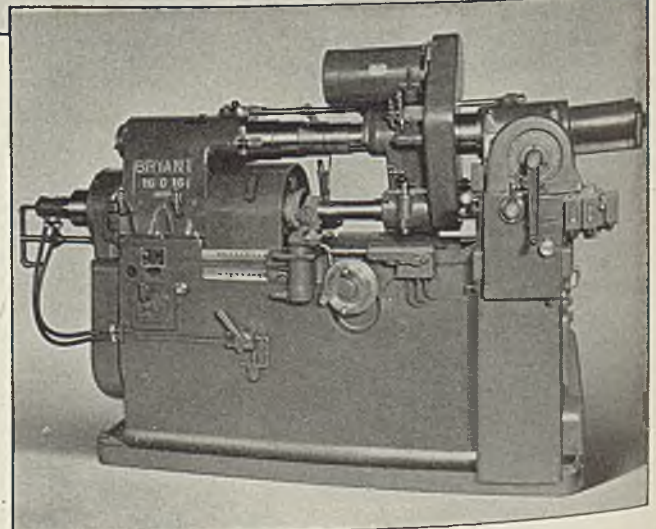
THE BRYANT 16-C-16 is being used by leading aircraft manufacturers throughout the world for speeding production and obtaining finer finish and greater accuracy on aircraft cylinder barrels. The Bryant principle of wheel suspension is a large contributing factor in producing cylinders rapidly, maintaining absolute roundness and straightness, and

a superior finish. The liquid cooled cylinder shown above, is produced in 20 minutes, floor to floor.

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Windows of WASHINGTON



By L. M. LAMM

Washington Editor, STEEL

WASHINGTON

■ SUPREME Court has granted labor department's petition for review of findings of the lower courts in the Walsh-Healey minimum steel wages case.

While no date was set for hearing the appeal, justice department officials believe it will be argued during the March 25-April 6 term.

Decision of the Supreme Court will not involve constitutionality of the Walsh-Healey act. However, one important question to be answered is whether or not the secretary of labor has authority to determine minimum steel wages.

Another issue is the definition of the word "locality." Counsel for Lukens Steel Co., Coatesville, Pa., and other steel companies which have contested the case for more than a year has held that inclusion of the word "locality" was not consistent with the decision itself.

Protest Minimum Wage Ruling

Recapitulating, briefly, proceedings to date:

On July 11, 1938, the administrator of the division of public contracts of the labor department notified the steel industry that it would hold a hearing to take testimony on recommendations which would be made to the secretary of labor to determine the prevailing minimum wage in the steel industry. On July 25 and 26 the board held a hearing at which the steel companies were represented. It was not until Nov. 19 that the industry received copies of the findings of fact and recommendations.

The steel industry was not satisfied with the recommendations of the secretary and asked for an oral argument which was held before the assistant secretary of labor. On Jan. 16, 1939, a final order was issued by the secretary making the new wages effective March 1.

On Feb. 25, 1939, Lukens and

other companies filed a complaint in the federal district court, asking that a temporary order be issued restraining the secretary of labor from putting into effect the proposed new wages. On Feb. 28 a limited temporary restraining order was granted by the court. On March 6 the government filed a motion to dismiss the complaint, and on March 14 the temporary restraining order was dissolved and the motion to dismiss the complaint was granted by the court.

On March 17 the steel companies filed an original petition in the court of appeals of the District of Columbia for an injunction pending final hearing and determination. After argument on March 22, the court of appeals on March 27 granted an injunction pending further order of the court which enjoined the labor department from continuing to enforce the minimum wage order.

On March 29 the government filed a memorandum for reargument, and on April 4 the motion and appeal from the order of the district court for argument in the court of appeals was held. On April 13 the government filed a motion to dissolve the temporary injunction which had been granted by the court of appeals. On Aug. 4 the court of appeals announced a reversal of the judgment of the district court. The government then asked the United States Supreme Court for a writ of certiorari, which has just been granted.

TRADE COMMISSION STATES PURPOSE OF SURVEY

Federal trade commission, in a pending appropriation bill, has been granted \$88,000 with which to make a survey of methods and costs of distribution in industry. To clarify misunderstanding regarding the survey the commission states:

"The purpose of the inquiry is to

ascertain and assemble pertinent facts concerning the whole subject of distribution in a number of industries. This will involve examining different methods of distribution and, necessarily, the more important items of costs. Some industries will be included in which expenditures for advertising no doubt will be small; in others the advertising costs may be substantial.

"There is no purpose or intention of singling out advertising any more than any other item of the cost of distribution and no more emphasis will be placed on advertising costs in this inquiry than was done in such recent inquiries as agricultural income, farm implements and motor vehicles.

"In the numerous general inquiries conducted by the commission and in the many thousands of cases in which it has made investigations and taken corrective action the commission has never made any declaration or taken any position against advertising as such. Furthermore, no such action is contemplated.

"Its action with respect to this subject has been confined to the elimination of false and misleading advertising under the federal trade commission act, and of unlawful advertising allowances under the Robinson-Patman act. . . ."

SAYS NLRB SHOULD NOT HANDLE CIO-AFL DISPUTES

Suggestion has been made before the house special Smith labor board investigating committee that the board be relieved from taking part in disputes between Congress of Industrial Organizations and the American Federation of Labor. It was made to the committee last week by Lloyd K. Garrison, University of Wisconsin law school.

J. Warren Madden, board chairman, told the committee the suggestion was worth a most careful

study and gave it his qualified indorsement.

He stated that following plans suggested by Mr. Garrison, the two labor groups would have to work out some basis on which they could agree before they could go to the labor board for a settlement of disputes with their employers.

Continuing his testimony, Mr. Madden admitted there have been differences among the three members of the board regarding both procedure and hearings. He stated that until William M. Leiserson became a member the board had followed a certain formula regarding CIO-AFL controversies.

MALLEABLE CAST COUPLINGS DUTIABLE AT 40 PER CENT

Cast malleable iron pipe couplings or fittings imported into United States have been held dutiable at 45 per cent as manufactures of metal by United States court of customs and patent appeals.

Opinion was handed down in the case of Dulien Steel Products Inc. against the United States. Cast malleable iron pipe couplings or fittings imported from Japan were assessed at 45 per cent as manufactures of metals. Importers protested they were properly dutiable at 20 per cent as castings wholly of cast iron, advanced in condition by processes or operations subsequent to the casting process but not made up into articles or parts thereof.

Customs court overruled protest and lower court's decision has just been affirmed by court of appeals.

VANDBERG ADVOCATES FOREIGN TRADE BOARD

Bill providing for abolition of the United States tariff commission and creation, in its place, of a new foreign trade board has been introduced in the senate by Senator Vandenberg, Michigan. It provides for centralization of all powers and functions relating to promotion of foreign trade and protection of domestic industry.

Introducing the bill, Senator Vandenberg explained it seeks to provide practical machinery for keeping our tariffs in constant adjustment to competitive American costs of production, without general tariff revisions. This method, he declared, of handling the problems suggests an answer to those who insist there is no middle ground between congressional log-rolling and the Hull trade agreements program.

In further explanation of his bill, Senator Vandenberg said:

"Such an agency is necessary if we shall realistically meet world-trade conditions. It will be doubly necessary in post-war periods of readjustment. All of the principal

nations of the world have already abandoned most of the methods previously employed in world trade . . .

"These nations have resorted to unilateral actions, such as exchange controls, quotas, embargoes, and other export and import controls, and they have extended such arrangements through a constantly growing network of exclusive, bilateral agreements, most of which leave our interests entirely out in the cold. . . .

"It is vital that our foreign-trade policy should be consistent within itself and should not present a constant quarrel between different policies pursued by different branches of the same government."

Such an agency, he said, should operate independently, and on a parity with other executive departments. It should be subject only to general direction of the President and congress. It should not be subordinated to the state department, because the latter specializes in political and diplomatic contracts and is not equipped or intended to deal with problems of commerce and finance.

Furthermore, said Senator Vandenberg, the foreign trade board must be composed of men thoroughly experienced in all phases of our domestic economy, and representing all national interests so that it may speak authentically for all America.

TNEC DECIDES NOT TO SEEK FURTHER AUTHORIZATION

Temporary national economics committee will present to congress, about March 1, reports dealing with particular phases of its investigations.

Committee has discussed the question of funds and decided not to ask further authorization. The last session of congress authorized \$90,000 more than was actually appropriated. This sum the committee expects to request and to utilize for completion of work now in process, summarization and analysis of the material and preparation of the final report.

The latter will not begin until completion of hearings now scheduled and of various researches under way, and will not be finished until late November or December.

Hearings and research are to be completed by about June 1 following which there will be a thorough analysis and summarization of hearings and reports.

RAILROADS SEEK PERMIT TO REDUCE FREIGHT RATES

Application has been filed with interstate commerce commission by eastern and southern railroads to permit establishment of rate reductions up to 15 cents per 100 pounds, with carload minimum of 70,000

pounds, on iron and steel articles moving to Gulf ports. Reduction is to meet water competition.

Proposed rates would apply to New Orleans; Gulfport, Miss.; Mobile and Pascagoula, Ala.; and Pensacola, Fla. From Birmingham, Ala., to New Orleans the cut would be from 37 to 22 cents, while the rate from Birmingham to Mobile would be 19 cents.

Proposal also contemplates reductions of 15 cents per ton because of market competition from St. Louis, East St. Louis, Ill., Ohio river crossings, Virginia-Maryland gateways and points in official territory, including Illinois to Gulf ports.

COMMITTEE REPORT FAVORS TRADE PACT EXTENSIONS

House ways and means committee has ordered a favorable report on the bill proposing a three-year extension of the present trade agreements act which expires in June.

Dr. John Lee Coulter, consulting economist, National Association of Manufacturers, was the last witness to appear in opposition to extension of the act. He held the government's own figures proved the agreements injurious to both industry and agriculture.

"The Feb. 1 figures of the department of commerce," Dr. Coulter said, "show that agricultural imports have increased 36 per cent since 1934, when the trade treaty act was passed. Thus, effect of trade agreements on the American farmer has been to add more than one-third to foreign products which now enter his domestic market.

"This foreign competition has had a direct effect upon income of the American farmer, has lessened demand for agriculture laborers, and lowered farm demand for products of industry."

WALSH-HEALEY IRON, STEEL AWARDS TOTAL \$433,867

During the week ended Jan. 27, the government purchased \$433,867.48 worth of iron and steel products under the Walsh-Healey act as follows: Bethlehem Steel Co., Bethlehem, Pa., \$162,634.75; Crucible Steel Co. of America, New York, \$80,868.75.

Lansdowne Steel & Iron Co., Morton, Pa., \$57,000; Barnard Aviation Equipment Co. Inc., Newark, N. J., \$17,035.12; Frank M. Weaver & Co. Inc., Lansdale, Pa., \$11,736; Central Iron & Steel Co., Harrisburg, Pa., \$31,670.84.

Union Boiler & Mfg. Co., Lebanon, Pa., \$37,450; Northern Pacific Railway Co., Seattle, \$10,164; Rustless Iron & Steel Corp., Baltimore, \$14,066.20; and Walworth Co., New York, \$11,241.82.

STEEL

AVIATION

PRIORITY ON MACHINE TOOLS SOUGHT BY ENGINE BUILDERS

■ WHEN Secretary of Treasury Henry Morgenthau asked plane-makers what limited plane production they answered it was a shortage of engines. Engine builders said engine production was held up by shortage of machine tools. Last week Mr. Morgenthau called the machine tool builders to Washington to ask their co-operation on a program to give priority to engine builders' orders for machine tools and to consider plant expansions.

Machine tool builders pointed out domestic consumers have been given priority. Domestic users now usually get three to eight-month delivery on the same tools which would take an eight to twelve-month delivery on a foreign order.

Rapid Expansion Feared

Toolmakers do not want to over-expand and be left "holding the bag" when orders dwindle as in the days following the first World war. Section 102 of the 1938 revenue act which penalizes accumulation of reserves also worries the machine tool builders. Another concern is the danger of hiring "trouble makers" in making hasty additions to personnel.

After the conferences there was every indication the toolmakers would voluntarily accept suggestions of the secretary. An 80 per

cent compliance to the priority plan is expected from the first meeting of machine tool builders to be held soon.

For a recent survey of the machine tool builders' opinions on plant expansion, see STEEL, Dec. 18, 1939, p. 23.

United Aircraft Corp., Hartford, Conn., last week purchased 16 acres of land adjoining its present plant. Twenty-four hour shift is in effect at the new \$6,000,000 Allison war-plane engine plant, Indianapolis.

Orders on the way amount to \$25,000,000 for Brewster Aeronautical Corp., Long Island City, N. Y., Republic Aviation Corp., Farmingdale, Long Island, N. Y., and Vultee Aircraft Inc., Downey, Calif. Brewster backlog is at \$21,000,000, and Republic unfilled orders, \$15,200,000. Swedish government is buying 144 interceptor pursuit planes to cost \$9,000,000 from Vultee Aircraft, which will bring unfilled orders to \$15,000,000. England also is negotiating for about 100 of these pursuit ships, which are capable of 350 miles per hour, carry a 22-millimeter "aerial cannon" and bombs. Lockheed Aircraft Corp., Burbank, Calif., sold six Lodestar planes for \$560,000 to two French aircraft units, and 16 Lodestars and equipment, costing \$2,000,000, to South African Airways.

Increasing business activity is reflected in passenger traffic on 16 domestic airlines which report January air mileage 15 per cent lower than December, but 55 per cent over January, 1939. Several new

airlines are proposed: American Airlines, Detroit to Toronto or Toronto to New York; Northwest Airlines Inc., Seattle to New York via Toronto, and Twin Cities to St. Louis; Trans-Canada Airlines, Toronto to New York.

International airways proposed Syndicate of Holland-American line, Royal Dutch Airlines, Fokker and the Dutch government, from Holland to United States via north Atlantic; Swedish, Danish, Norwegian, Finnish national lines, from those countries to United States; South African Airways, from Lake Victoria to Cape of Good Hope.

A surprising move by the United States joint army and navy aeronautical board was release of the new Bell Airacobra pursuit ship for negotiations in foreign sales. Capable of making 400 miles an hour, the plane carries a 37-millimeter cannon, armament and has a single liquid-cooled engine. Armament and power plant details are secret.

Predicts Further Gains In U. S. Shipbuilding

■ Further substantial gains in American shipbuilding this year are predicted by J. Lewis Luckenbach, president, American Bureau of Shipping.

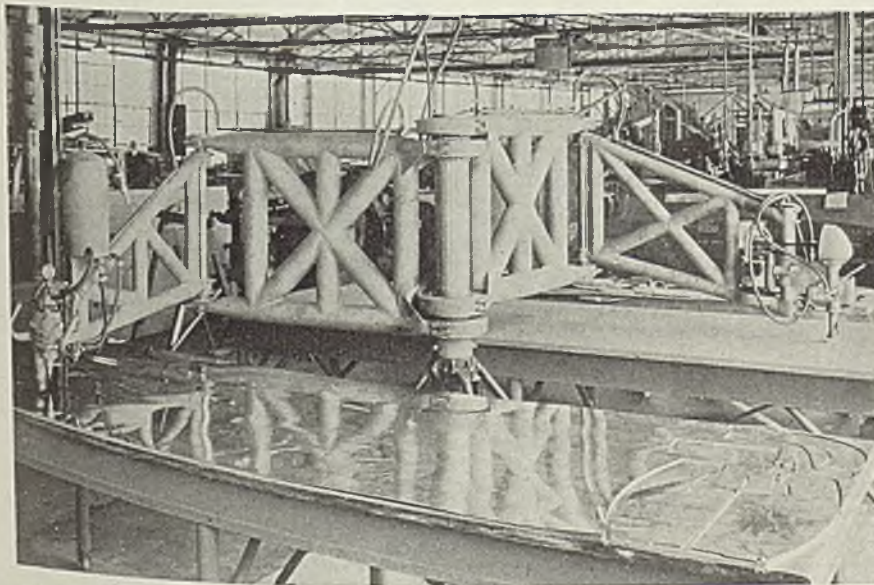
Marine engineering, he said in reviewing recent developments, continues to show marked improvement in fuel economy, with the trend toward high pressures and higher superheat increasing. Internal combustion engines are being installed in about one-third of the new maritime commission ships.

"Improvement," said Mr. Luckenbach, "is being made through the more general use of welding, and at least ten all-welded ships of the larger types may be expected to be delivered during the year, while increased welding will be typical for all."

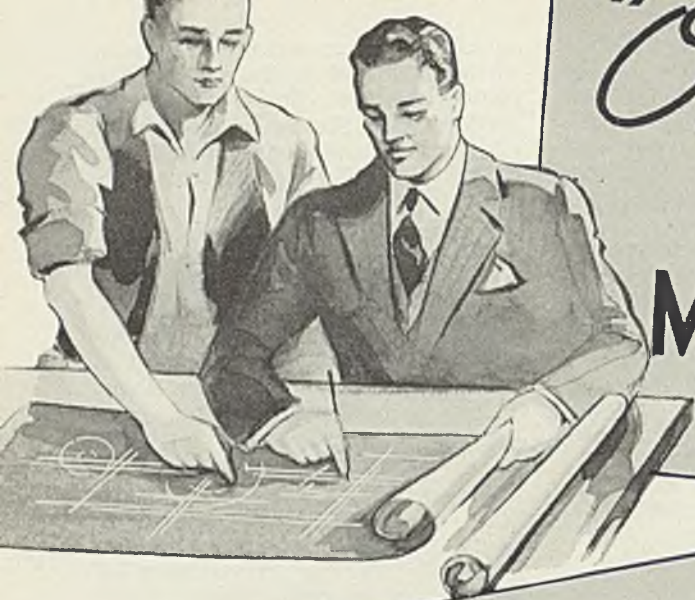
Two hundred twenty-two vessels of 1,157,365 gross tons were being built to the bureau's classification Jan. 31, according to Mr. Luckenbach, compared to 177 vessels of 677,980 gross tons a year ago. Ships now under construction include 20 large tankers; 105 vessels for the United States maritime commission; two cargo vessels for American Export Lines; three passenger-cargo vessels, Mississippi Shipping; three cargo ships, Seas Shipping Co.; two seatrain vessels, Seatrain Lines; and one large passenger ship, United States Lines.

While 28 vessels, 2000 gross tons or over, with a total gross tonnage of 239,958 were delivered in 1939, 52 seagoing ships with aggregate gross tonnage of 470,500 will probably be completed this year.

Aircraft Design In Machine Tools



■ Influence of aircraft design on machine tools is seen in the light weight but extremely rigid welded tubular construction of this routing machine for sheet metal work, designed and built by Beech Aircraft Corp., Wichita, Kans. One pedestal serves for two routing machines which operate independently. Routing tool is powered by compressed air and tool head may be moved in any direction to suit work



Only 34 Seconds
WITH A
MULT-AU-MATIC™

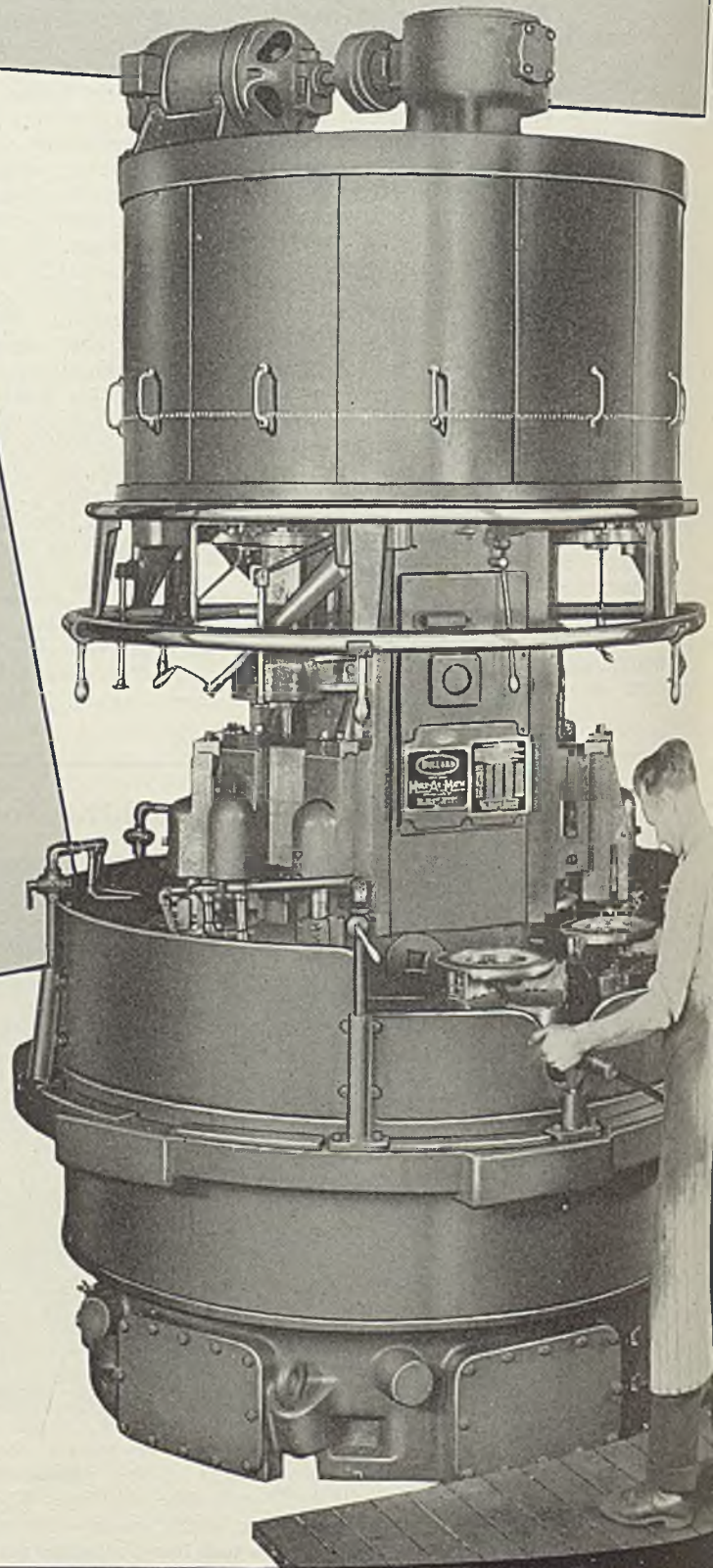
THE JOB..

Machining an adapter which involved eleven operations, including rough and finish turning, rough and finish boring, rough and finish facing and chamfering.

THE SOLUTION..

An 8" 6 spindle type D Multi-Au-Matic, tooled according to the layout supplied by Bullard engineers.

● This manufacturer bought a Multi-Au-Matic because a Bullard Engineering Study showed him a lower manufacturing cost per piece on the Multi-Au-Matic than he was able to obtain by any other method. Submit your job, without obligation, for similar study.



THE BULLARD COMPANY

BRIDGEPORT, CONNECTICUT

BULLARD

Mirrors of MOTORDOM

By A. H. ALLEN
Detroit Editor, STEEL



DETROIT

HUMOR, either genuine or alleged, has come to be a potent sales argument, as manufacturers of toothpaste, floor wax, gelatin desserts and other products can testify. Nightly the radio air is filled with gags and guffaws all aimed to move the sales line upward.

Taking their cue from these antics, Ford dealers have set about to "fill the air" with 1-minute "spot" announcements in a humorous vein designed to pep up sales of used cars. The announcements, decidedly "screwball" in character, are ground out by a Chicago advertising agency writer and are then forwarded to New York for recording. The records are being flooded out to radio stations throughout the country—the Dearborn branch for example scheduling 4000 over a period of three months.

Announcements are sung instead of read and are interlarded with a lot of grunts and double-talk which has proved highly infectious. Youngsters are reported to be singing them while at play. One dealer, an outcast apparently, said they were driving his wife crazy.

Old Cars Kept Moving

The used car situation among dealers is not regarded critical just now, but Ford dealers are taking precautions to keep old cars moving and to prevent a logjam such as was experienced two years ago when manufacturers pooled \$1,250,000 to whittle down excess used car stocks.

Another sample of something different in used car merchandising methods is the accompanying reproduction of an advertisement appearing in a recent Sunday Detroit paper. This one was compiled jointly by salesmen and an advertising writer and hits a new high in

metaphorical merchandising effort.

Sales of both new and used cars currently are easier. A seasonal decline, expected at this time of the year, has been accentuated by widespread bad weather. However, car builders are not disturbed and are building up distributors' stocks in preparation for the customary active spring selling season which should be under way in four to six weeks.

Show committee of the Automobile Manufacturers association has announced the first showing of 1941 models will be at Grand Central

Palace, New York, Oct. 12-19, thus squelching rumors that new model introductions would be deferred until next January. The fall introductions—the show last year was Oct. 15-22—have proved to result in a longer selling season, bringing peaks in the fall and again in the spring. If new models were introduced in January, as was the practice some years ago, the A.M.A. committee felt it would bring the two sales peaks too close together for maximum sales.

Activity on 1941 models is proceeding apace, with some plants bringing greater pressure on die programs. General Motors, it is understood, wants all new model dies ready for production by July 15, which means that Fisher Body engineering divisions are stepping up their programs. This early date probably covers only Buick, Pontiac and Olds, since it has been the custom to defer new model activity on Chevrolet and Cadillac-La Salle until a little later in the season.

Machinery Deliveries Improving

Buying of new machinery and production tools is perfunctory, with some exceptions such as Ford where buying holds steady throughout most of the year. Deliveries on machine tools are improving steadily by virtue of the tapering in domestic demand and the automotive customers may not find so much difficulty in getting delivery of new equipment as anticipated a few months ago. Foreign sales continue high and deliveries are long deferred, but these have been divorced from domestic needs by equipment builders.

Steel buying was highlighted last week by Ford's placing of approximately 25,000 tons, principally sheets, for March production requirements—around 100,000 cars. Mills report Ford buyers raised some objections over the \$2 coil extra on cold-rolled sheets, but as

Big "HOSS" SWAPPIN'!

BRING IN YOUR OLD NAG
and Swap for One of These REGISTERED THOROUGHBREDS

NO CASH NEEDED
If Your Nag Is Worth 20 Pct. of One of Ours



\$465

\$525

\$295

\$225

\$235

\$375

\$185

\$245

We've Been Pasturing 'Em Long Enough! The Finest Corral of "Hoss Flesh" in Detroit Is on the Block!

REMEMBER: OUR SWAPPING POLICY... WE'LL ASSUME HALF THE DOCTOR BILLS FOR THE FIRST 30 DAYS AFTER YOU BUY THE HORSE.

DRIVE IN YOUR HUCKABACKS AND LET'S GO!
OUR STABLE BOYS WILL BE IN THE CORRAL UNTIL 11 EVERY NIGHT

Ye Olde BERT BAKER, INC. Livery Stable
"THE BIG LOT"
9800 GRAND RIVER AVE., COR. LIVERNOIS
NORTHLAWN 9200

Used car ads in newspaper classified sections are usually pretty drab things, but here is one from the "Detroit Free Press" with a novel twist. Occasionally novel stunts like this are all that is necessary to swing sales off dead center

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far as is known there was no disposition on the part of producers to waive this charge.

Other car builders, it is believed, will be in the market for steel this month to cover for spring production schedules. Even Chrysler, which last fall covered on steel well into March, may be in the market again shortly as a result of near-record production in January. Chrysler, of course, lost about two months' production by being strikebound last fall, and the corporation's statisticians estimate production should continue at least a month beyond that of other producers.

■ TIME'S inexorable march again was emphasized last week with the retirement of 77-year old Alex Dow, for nearly three decades head of the powerful Detroit Edison Co., one of the most profitable and progressive utility companies in the country. Turning his post over to A. C. Marshall, vice president and general manager, Mr. Dow said he was "dead weary" of his task but will continue as chairman of the executive committee.

Mr. Dow is the rugged and shrewd Scot type, reminding one of the late Andrew Carnegie. When he took over the reins as vice president in 1896 he said, "I propose to give Detroit the best general and commercial and domestic lighting system in the country, with such services and prices as will be of general acceptance." This he appears to have done, for there are few utility companies offering the complete services which Detroit Edison does. Newcomers to the city marvel that all their electric light bulbs are supplied and replaced free of charge, that worn-out accessories such as cords, switches and the like, can be replaced gratis at any time. And when a householder blows a fuse, he promptly calls Detroit Edison and in a matter of minutes a service man is at his door.

Naturally Detroit Edison profited immensely with the unparalleled expansion in industry which took place in Detroit between 1912 and 1940. Power demands, both domestic and industrial, skyrocketed, which perhaps made elaboration of the company's service a simple matter from a cost standpoint.

Over 30 years ago, Mr. Dow expressed his simple philosophy of business: "First, you must keep up your property; you must maintain it so that its value is the same at the end of the year as it was at the beginning. Second, there are two more important things—pay your help going wages and a little better, and pay your stockholders a reasonable dividend. Finally, if over and above these requirements

there remains an excess of revenue, cut down your rates."

■ DEMONSTRATION of how to effect important economies in handling of materials is provided by recent changes made by a local manufacturer of rear axle housings in large quantities. These housings are shipped to Cleveland for sub-assembly operations as fast as they come off the fabricating conveyor in the plant here. Former practice was to load four of them on a hand truck, cart them to a waiting freight car and stack them 200 to the car. Cost of this handling operation by this method was figured at \$0.1345 per housing.

Now, as the housings come off the conveyor, they are stacked in

Automobile Production

| Passenger Cars and Trucks—United States and Canada | | | |
|--|-----------|-----------|-----------|
| By Department of Commerce | | | |
| | 1937 | 1938 | 1939 |
| Jan..... | 399,186 | 226,952 | 356,950 |
| Feb..... | 383,900 | 202,597 | 317,517 |
| March.... | 519,022 | 238,447 | 389,489 |
| April..... | 553,231 | 237,929 | 354,263 |
| May..... | 540,377 | 210,174 | 313,214 |
| June..... | 521,153 | 189,402 | 324,235 |
| July..... | 456,909 | 150,450 | 218,478 |
| Aug..... | 405,072 | 96,946 | 103,343 |
| Sept..... | 175,630 | 89,623 | 192,672 |
| Oct..... | 337,979 | 215,286 | 324,673 |
| Nov..... | 376,629 | 390,405 | 368,538 |
| Dec..... | 347,349 | 406,960 | 469,002 |
| Year..... | 5,016,437 | 2,655,171 | 3,732,374 |

| Estimated by Ward's Reports | | |
|-----------------------------|---------|--------|
| Week ended: | 1940 | 1939† |
| Jan. 13 | 111,330 | 86,925 |
| Jan. 20 | 108,545 | 90,205 |
| Jan. 27 | 106,400 | 89,200 |
| Feb. 3 | 101,240 | 79,410 |
| Feb. 10 | 95,985 | 84,500 |

| | Week Ended | |
|----------------------|------------|--------|
| | Feb. 10 | Feb. 3 |
| General Motors | 38,295 | 39,480 |
| Chrysler | 25,905 | 26,965 |
| Ford | 20,600 | 26,000 |
| All others | 11,185 | 8,795 |

piles of 20 (ten and ten), strapped together securely with steel bands, carried by fork truck to the freight car and loaded 320 to the car. Cost by this method proved to be \$0.082 per housing, a saving of \$0.0525 or about 40 per cent, not figuring the 60 per cent larger load in the freight car.

Of course, on top of the saving must be placed a charge for amortizing the cost of trucks, but even so economies are effected, and similar savings are made in the Cleveland plant receiving the axles.

Builders of materials handling equipment daily are confronted with the job of showing hard-headed buyers just how their equip-

ment can save the buyer money. Many of the large automotive plants have experts who devote their full time to problems incident to movement of materials, and they are tough babies to convince.

Reshuffling of the Graham-Paige sales department is believed to be the forerunner of early introduction of the Graham lines for 1940, which will include the Hollywood and Clipper models, in the motif of the Hupp Skylark. August Johnson is the new executive vice president in charge of sales and he has appointed a new group of regional managers. J. B. Graham, president, will now devote full time to engineering and production problems. All this activity follows approval of refinancing plans by the RFC, involving payment of certain creditors' claims and the provision of new working capital amounting to about \$1,000,000.

All chassis, body and instrument panel wiring in Dodge models now is being enclosed in a thermoplastic harness rendering them water, gas, oil, acid and flame proof. Basic element of the safety treatment is a thermoplastic tape which first is wound around the wiring in machines and then processed in ovens at 240 degrees Fahr.

Buick's January sales totaled 19,044 units, 46.6 per cent ahead of last year and nearly three times the average of the past ten years.

"It is a startling and thought-provoking fact," said D. U. Bathrick, Pontiac general sales manager, in a recent Philadelphia address, "that the tax collectors in 1938 took more money from motorists than all the motor factories received for new cars and trucks sold in the United States that year." Margin in favor of the tax collector is estimated to be \$129,000,000.

Austin Co. Builds Elco Boat Shop in Record Time

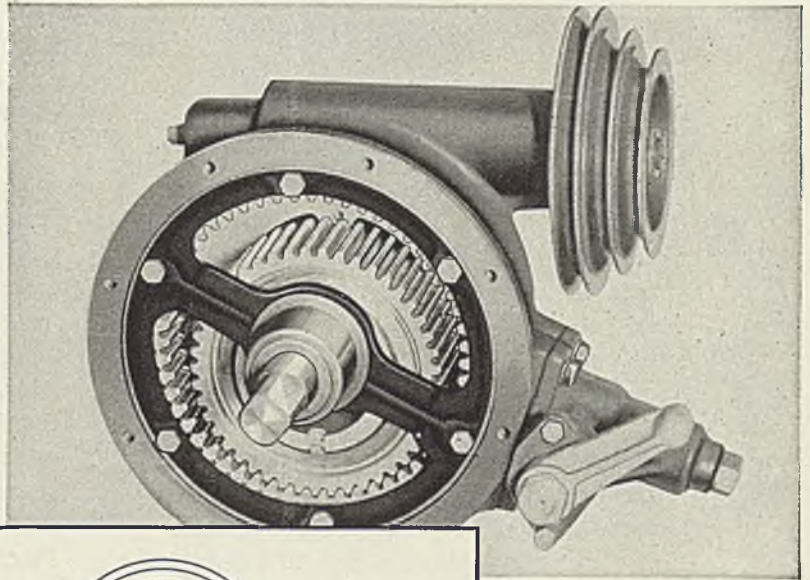
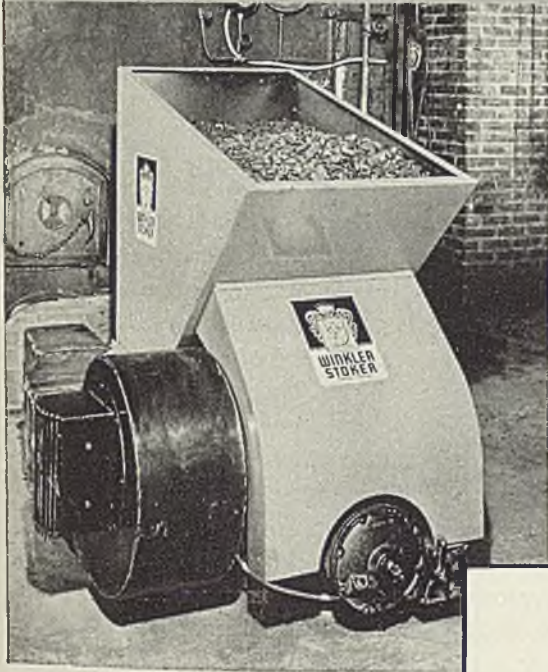
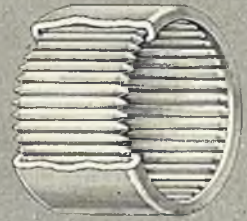
■ Structural steel for Electric Boat Co.'s 142,000 square foot addition to its Elco Works, Bayonne, N. J., has been erected in record time of seven weeks, according to the Austin Co., Cleveland, designer and builder. Project called for 475 tons of steel.

Plant is scheduled for completion March 12, and will be used in construction of 12 Elco submarine chasers and 11 motor torpedo boats, to be built under a \$5,000,000 navy contract.

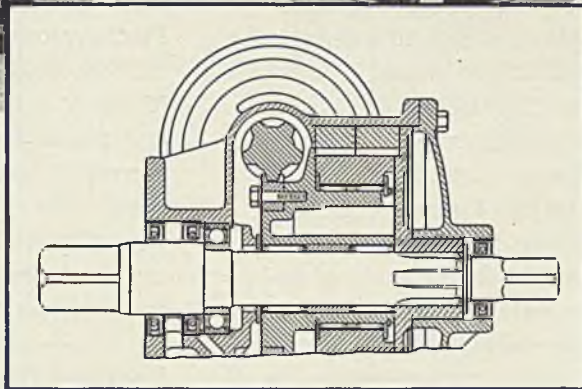
General shop area will be 240 x 420 feet, with a mezzanine 80 x 240 feet, a boat shed 100 x 120 feet and a 2-story office building 50 x 100 feet. Principal boat-building operations will be carried on in two monitor aisles with 70-foot clear span and equipped with monorails.

WINKLER STOKERS

USE TORRINGTON NEEDLE BEARINGS
FOR HIGH CAPACITY IN SMALL SPACE



(Above) Heart of the stoker is the Winkler Automatic Transmission, in which Torrington Needle Bearings are used under heavy loading conditions.



(Left) Cross-section view of the transmission. Design requires extremely high speed reduction ratio.

Winkler Stokers are built throughout for lasting service under severe conditions.

UNUSUALLY high bearing loads—an extremely large speed reduction ratio—these are inherent problems in the design of stoker transmissions. And U. S. Machine Corporation, manufacturer of the powerful, rugged Winkler Stoker, solved them by using the Torrington Needle Bearing on its exclusive "INTER-PLAN" drive.

"The advantages of the Needle Bearing, with its tremendous load carrying capacities and very minimum of diametral requirements, make this type of bearing ideally adapted in the Winkler Stoker Drive," says Herman Winkler, Chief Engineer of U. S. Machine Corporation. "The ease with which lubrication problems may be handled with Needle Bearings also contributed substantially to the reasons for their selection in the 'INTER-PLAN' drive."

To test the performance of Winkler Stokers, a stoker transmission was run continuously for a full year, carrying a Prony brake load of 600% above normal—the equivalent of 30 years' operation under ordinary conditions. At the end of the test, there was no noticeable wear

on a single part—convincing evidence of long life of the Torrington Needle Bearing under severe loads.

Perhaps you, too, can profitably employ these advantages of this Needle Bearing in your own product. Let the Torrington Engineering Department show you how you can avail yourself of the bearing's high capacity, small size, ease of lubrication. For further information, write for Catalog No.10. For Needle

Bearings to be used in heavier service, request Booklet No. 103X from our associate, Bantam Bearings Corporation, South Bend, Indiana.

The Torrington Company
ESTABLISHED 1866
Torrington, Conn., U.S.A.

Makers of Ball and Needle Bearings

New York Boston Philadelphia Detroit
Cleveland Chicago London, England

TORRINGTON NEEDLE BEARING

More About Scratching the Surface

❑ STEEL has received many interesting comments on the editorial in its issue of Feb. 5, discussing under the title "The Surface Has Only Been Scratched" the ineffectiveness of the manufacturer in taking a part in formulating governmental policies. It appears from these letters that most manufacturers believe the job of public relations is one for the National Association of Manufacturers, the United States Chamber of Commerce and similar bodies.

The United States Chamber of Commerce and the National Association of Manufacturers are organizations which fill a definite need. But no manufacturer should be misled into expecting the impossible from them. From the standpoint of practical politics, these bodies are regarded in Washington as representative of pressure groups, actually ranking below AFL, CIO and the farm bloc, for example, in the scale of influence. While the National Association of Manufacturers, for example, is doing a good job of spreading the doctrines in which businessmen believe, it should be clear that these efforts are wholly inadequate to obtain desired results.

Wide Diversity of Opinion Held By Rank and File, Who Actually Rule

This matter of public relations may be understood best by concentrating on two fundamental facts. One is that governmental policies always eventually are decided in accordance with the will of the majority of the voters. The other is that the majority of the voters comprises industrial workers, farmers, housewives and workers in various service fields.

The manufacturer does not need to study polls of public opinion to learn what the

average voter thinks. All around him are people who hold views of one kind or another as to what is best for the country. If he takes the trouble, he finds the average voter is a patriotic American, earnestly concerned with his country's welfare. But he also finds alarming confusion of mind among his employes, his barber, his minister, his son's schoolteacher, his grocery storekeeper, the traffic officer at the nearest intersection, as to what is needed to speed up the wheels of business and provide greater security and employment. Furthermore, he will find many serious misconceptions, such as the sincere belief of many misguided people that ham and egg plans would increase the purchasing power of the nation and stimulate business. He should remember that these wrong ideas have largely been inculcated by clever propagandists working directly upon the people.

Healthful Business Sentiment Must Be Formed Among People at Home

The manufacturer will do best if he, too, realizes that his job of public relations is one that begins at home, right with the people he contacts personally. He will be smart if—thinking always in terms of the general welfare—he immediately gets busy informing his employes and others with whom he has personal contacts as to what is really good and bad for his business and consequently, what really is good or bad for the employe, the community and the United States.

Let no manufacturer or other businessman be misled into thinking that there can be any substitute for this kind of effort right down among the grass roots!

The BUSINESS TREND

Renewed Buying Fails To Sustain Business Pace



THE downward tendency of industrial activity appears to have gathered increased momentum. Despite the moderate decline in the pace of business in recent weeks, order backlogs are shrinking rapidly. New demand in many industrial lines is reported less than 50 per cent of capacity.

STEEL's weekly index of activity in the iron, steel and metalworking industries declined further during

the week ended Feb. 3, bringing the average for January to 114.7, compared with 118.9 in December. In January, 1939, the index average was 91.1, in 1938 at 73.3, and in 1937 at 102.9.

The weekly index declined 3.8 points to 111.6 in the latest period ended Feb. 3, compared with 115.4 in the previous week. For the corresponding period last year the index stood at 90.7. The current level

of industrial activity as recorded by STEEL's index has now receded to slightly below the level reported during the first week of October last year.

Steelmaking operations, automobile production and electric power consumption declined further during the week ended Feb. 3, while revenue freight carloadings recorded a less than seasonal rise to 657,004 cars.



STEEL'S index of activity declined 3.8 points to 111.6 in the week ended Feb. 3:

| Week Ended | 1939 | 1938 | Mo. Data | 1940 | 1939 | 1938 | 1937 | 1936 | 1935 | 1934 | 1933 | 1932 | 1931 | 1930 | 1929 |
|------------|-------|-------|----------|-------|-------|------|-------|-------|------|------|------|------|------|-------|-------|
| Dec. 2 | 117.9 | 100.1 | Jan. | 114.7 | 91.1 | 73.3 | 102.9 | 85.9 | 74.2 | 58.8 | 48.6 | 54.6 | 69.1 | 87.6 | 104.1 |
| Dec. 9 | 123.9 | 100.7 | Feb. | ..... | 90.8 | 71.1 | 106.8 | 84.3 | 82.0 | 73.9 | 48.2 | 55.3 | 75.5 | 99.2 | 111.2 |
| Dec. 16 | 124.2 | 99.8 | March | ..... | 92.6 | 71.2 | 114.4 | 88.7 | 83.1 | 78.9 | 44.5 | 54.2 | 80.4 | 98.6 | 114.0 |
| Dec. 23 | 123.4 | 94.8 | April | ..... | 89.8 | 70.8 | 116.6 | 100.8 | 85.0 | 83.6 | 52.4 | 52.8 | 81.0 | 101.7 | 122.5 |
| Dec. 30 | 104.0 | 79.9 | May | ..... | 83.4 | 67.4 | 121.7 | 101.8 | 81.8 | 83.7 | 63.5 | 54.8 | 78.6 | 101.2 | 122.9 |
| Week Ended | 1940 | 1939 | June | ..... | 90.9 | 63.4 | 109.9 | 100.3 | 77.4 | 80.6 | 70.3 | 51.4 | 72.1 | 95.8 | 120.3 |
| Jan. 6 | 110.3 | 86.5 | July | ..... | 83.5 | 66.2 | 110.4 | 100.1 | 75.3 | 63.7 | 77.1 | 47.1 | 67.3 | 79.9 | 115.2 |
| Jan. 13 | 119.2 | 91.9 | Aug. | ..... | 83.9 | 68.7 | 110.0 | 97.1 | 76.7 | 63.0 | 74.1 | 45.0 | 67.4 | 85.4 | 116.9 |
| Jan. 20 | 117.3 | 93.0 | Sept. | ..... | 98.0 | 72.5 | 96.8 | 86.7 | 69.7 | 56.9 | 68.0 | 46.5 | 64.3 | 83.7 | 110.8 |
| Jan. 27 | 115.4 | 92.9 | Oct. | ..... | 114.0 | 83.6 | 98.1 | 94.8 | 77.0 | 56.4 | 63.1 | 48.4 | 59.2 | 78.8 | 107.1 |
| Feb. 3 | 111.6 | 90.7 | Nov. | ..... | 116.2 | 95.9 | 84.1 | 106.4 | 88.1 | 54.9 | 52.8 | 47.5 | 54.4 | 71.0 | 92.2 |
| | | | Dec. | ..... | 118.9 | 95.1 | 74.7 | 107.6 | 88.2 | 58.9 | 54.0 | 46.2 | 51.3 | 64.3 | 78.3 |

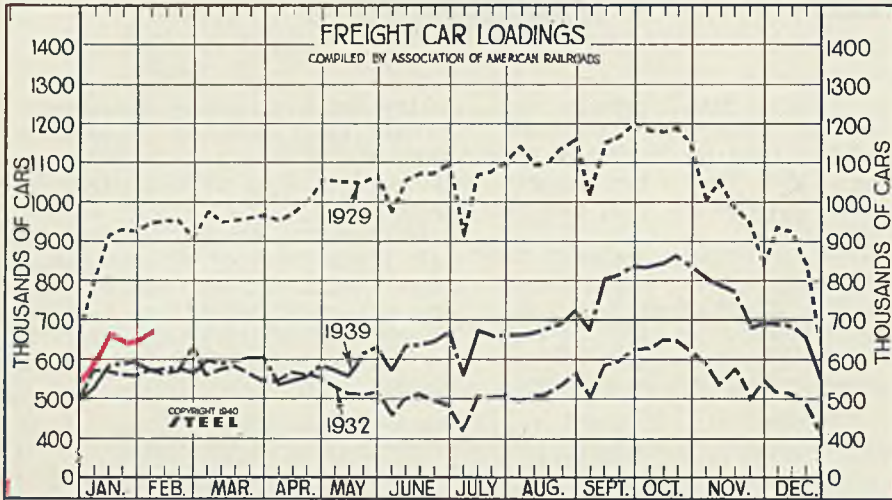
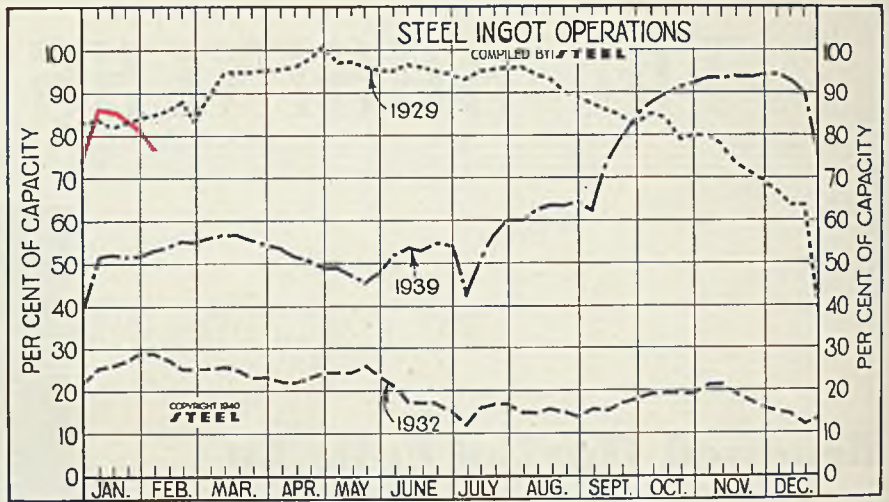
February 12, 1940

Steel Ingot Operations

(Per Cent)

| Week ended | 1939 | 1938 | 1937 |
|------------|------|------|------|
| Nov. 4 | 93.0 | 57.5 | 47.0 |
| Nov. 11 | 93.0 | 61.5 | 39.0 |
| Nov. 18 | 93.5 | 63.0 | 35.0 |
| Nov. 25 | 93.5 | 62.0 | 31.5 |
| Dec. 2 | 94.0 | 61.0 | 30.5 |
| Dec. 9 | 94.0 | 61.0 | 27.0 |
| Dec. 16 | 92.5 | 58.0 | 27.0 |
| Dec. 23 | 90.5 | 52.0 | 23.0 |
| Dec. 30 | 75.5 | 40.0 | 21.0 |

| Week ended | 1940 | 1939 | 1938 | 1937 |
|------------|------|------|------|------|
| Jan. 6 | 86.5 | 51.5 | 26.0 | 79.5 |
| Jan. 13 | 86.0 | 52.0 | 29.0 | 79.0 |
| Jan. 20 | 84.5 | 51.5 | 30.5 | 80.0 |
| Jan. 27 | 81.5 | 51.5 | 33.0 | 76.0 |
| Feb. 3 | 76.5 | 53.0 | 31.0 | 79.5 |



Freight Car Loadings

(1000 Cars)

| Week ended | 1939 | 1938 | 1937 |
|------------|------|------|------|
| Nov. 4 | 806 | 673 | 732 |
| Nov. 11 | 786 | 637 | 690 |
| Nov. 18 | 771 | 657 | 647 |
| Nov. 25 | 677 | 562 | 559 |
| Dec. 2 | 689 | 649 | 623 |
| Dec. 9 | 687 | 619 | 622 |
| Dec. 16 | 681 | 606 | 608 |
| Dec. 23 | 655 | 574 | 460 |
| Dec. 30 | 550 | 500 | 457 |

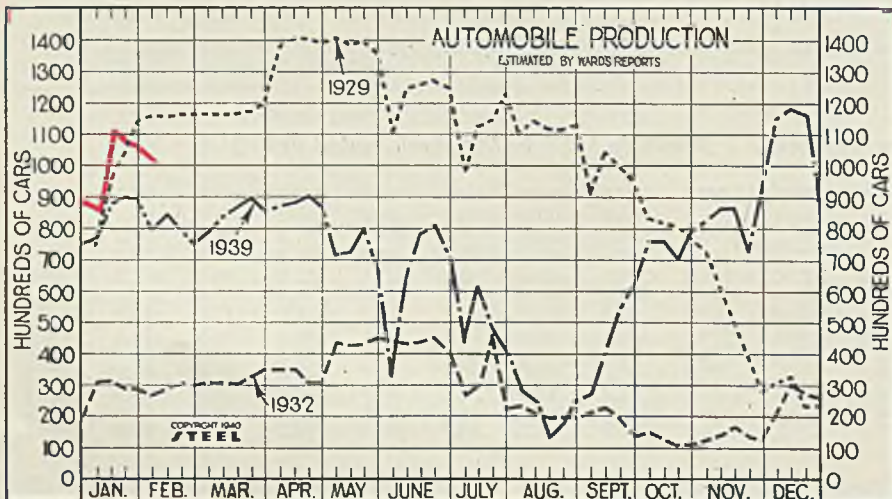
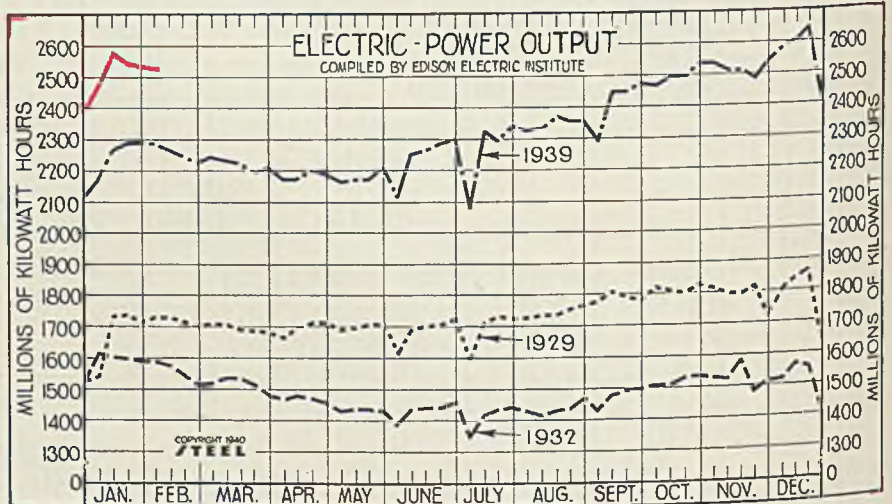
| Week ended | 1940 | 1939 | 1938 | 1937 |
|------------|------|------|------|------|
| Jan. 6 | 592 | 531 | 552 | 699 |
| Jan. 13 | 668 | 587 | 581 | 700 |
| Jan. 20 | 646 | 590 | 570 | 670 |
| Jan. 27 | 650 | 594 | 553 | 660 |
| Feb. 3 | 553 | 577 | 565 | 675 |

Electric Power Output

(Million KWH)

| Week ended | 1939 | 1938 | 1937 |
|------------|-------|-------|-------|
| Nov. 4 | 2,537 | 2,207 | 2,202 |
| Nov. 11 | 2,514 | 2,209 | 2,176 |
| Nov. 18 | 2,514 | 2,270 | 2,224 |
| Nov. 25 | 2,482 | 2,184 | 2,065 |
| Dec. 2 | 2,539 | 2,286 | 2,153 |
| Dec. 9 | 2,586 | 2,319 | 2,196 |
| Dec. 16 | 2,605 | 2,333 | 2,202 |
| Dec. 23 | 2,641 | 2,363 | 2,085 |
| Dec. 30 | 2,404 | 2,121 | 1,998 |

| Week ended | 1940 | 1939 | 1938 | 1937 |
|------------|-------|-------|-------|-------|
| Jan. 6 | 2,473 | 2,169 | 2,140 | 2,244 |
| Jan. 13 | 2,593 | 2,270 | 2,115 | 2,264 |
| Jan. 20 | 2,572 | 2,290 | 2,109 | 2,257 |
| Jan. 27 | 2,566 | 2,293 | 2,099 | 2,215 |
| Feb. 3 | 2,541 | 2,287 | 2,082 | 2,201 |

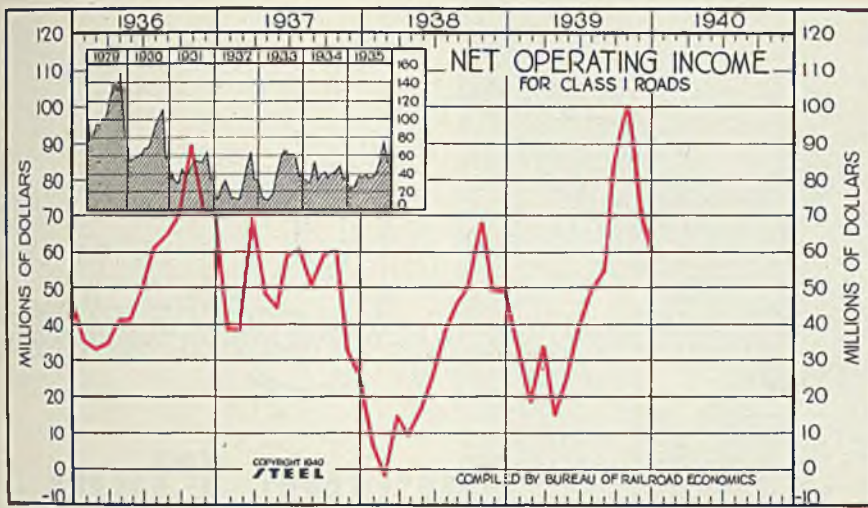


Auto Production

(1000 Units)

| Week ended | 1939 | 1938 | 1937 |
|------------|-------|-------|------|
| Nov. 4 | 82.7 | 80.0 | 89.8 |
| Nov. 11 | 86.2 | 86.3 | 85.3 |
| Nov. 18 | 86.7 | 96.7 | 85.8 |
| Nov. 25 | 72.5 | 84.9 | 59.0 |
| Dec. 2 | 93.6 | 97.8 | 86.2 |
| Dec. 9 | 115.5 | 100.7 | 85.5 |
| Dec. 16 | 118.4 | 102.9 | 82.0 |
| Dec. 23 | 117.7 | 92.9 | 67.2 |
| Dec. 30 | 89.4 | 75.2 | 49.6 |

| Week ended | 1940 | 1939 | 1938 | 1937 |
|------------|-------|------|------|------|
| Jan. 6 | 87.5 | 76.7 | 54.1 | 96.8 |
| Jan. 13 | 111.3 | 86.9 | 65.7 | 91.7 |
| Jan. 20 | 108.5 | 90.2 | 65.4 | 81.4 |
| Jan. 27 | 106.4 | 89.2 | 59.4 | 74.1 |
| Feb. 3 | 101.2 | 79.4 | 51.4 | 72.3 |



**Class I Railroads
Net Operating Income**

(Unit: \$1,000,000)

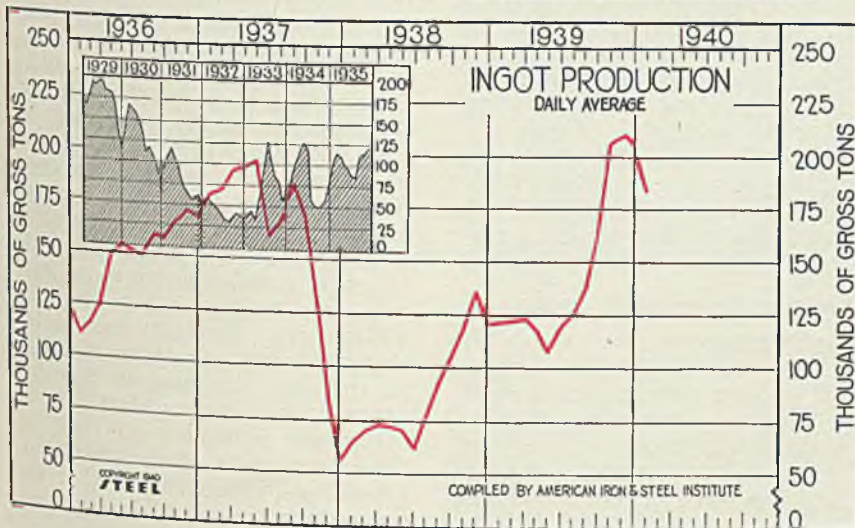
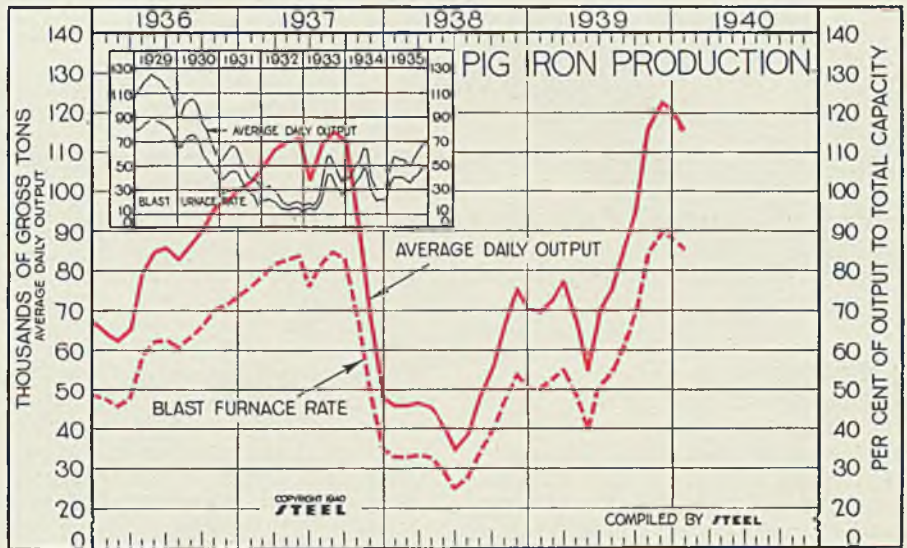
| | 1939 | 1938 | 1937 | 1936 |
|------------|---------|--------|---------|---------|
| Jan. | \$32.89 | \$7.14 | \$38.87 | \$35.73 |
| Feb. | 18.59 | 1.91* | 38.78 | 33.56 |
| Mar. | 34.32 | 14.73 | 69.88 | 35.15 |
| April | 15.26 | 9.40 | 48.36 | 41.49 |
| May | 25.10 | 16.67 | 44.24 | 41.80 |
| June | 39.10 | 25.16 | 59.35 | 50.26 |
| July | 49.01 | 38.43 | 60.99 | 61.72 |
| Aug. | 54.59 | 45.42 | 50.76 | 64.64 |
| Sept. | 86.43 | 50.36 | 59.62 | 70.10 |
| Oct. | 101.62 | 68.57 | 60.86 | 89.81 |
| Nov. | 70.35 | 49.67 | 32.44 | 72.33 |
| Dec. | 60.95 | 49.37 | 25.99 | 70.52 |

Average \$49.02 \$31.02 \$49.18 \$55.63

* Indicates deficit.

Pig Iron Production

| | Daily average gross tons | | Blast furnace Rate (%) | |
|------------|--------------------------|--------|------------------------|------|
| | 1940 | 1939 | 1940 | 1939 |
| Jan. | 115,983 | 70,175 | 46,608 | 87.1 |
| Feb. | 73,578 | 46,655 | 53.5 | 33.6 |
| Mar. | 77,201 | 47,426 | 56.1 | 34.2 |
| Apr. | 68,511 | 46,267 | 49.8 | 33.4 |
| May | 55,404 | 40,675 | 40.2 | 29.4 |
| June | 70,647 | 35,358 | 51.4 | 25.5 |
| July | 76,001 | 39,131 | 55.0 | 28.2 |
| Aug. | 85,823 | 48,242 | 62.4 | 34.8 |
| Sept. | 95,802 | 56,103 | 69.7 | 40.5 |
| Oct. | 117,012 | 66,694 | 85.2 | 48.0 |
| Nov. | 124,003 | 76,222 | 90.3 | 55.0 |
| Dec. | 121,535 | 71,378 | 88.5 | 51.4 |
| Av. | 86,375 | 51,752 | 62.6 | 37.3 |



**Steel Ingot Production
Daily Average**

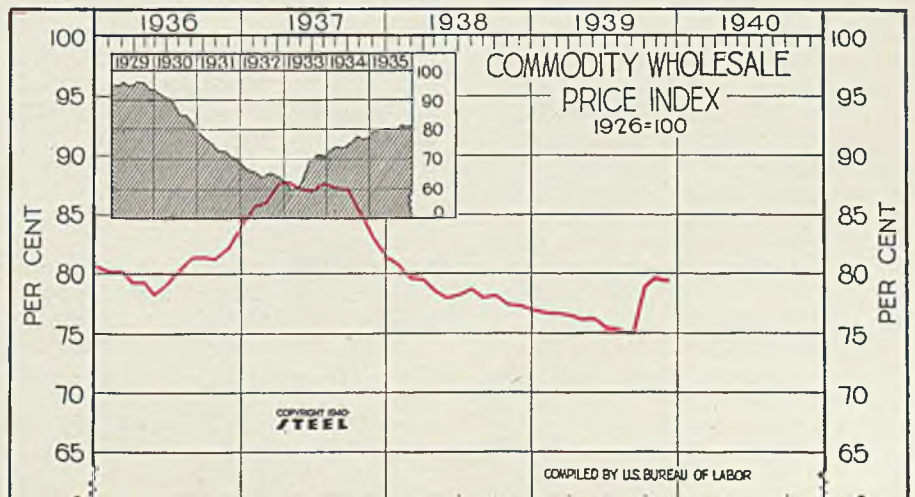
(Hundreds of Tons)

| | 1940 | 1939 | 1938 | 1937 | 1936 |
|-------------|-------|-------|-------|-------|-------|
| Jan. | 185.8 | 122.6 | 66.6 | 182.2 | 112.8 |
| Feb. | 123.1 | 71.0 | 184.4 | 118.6 | |
| March. | 124.6 | 74.5 | 193.5 | 128.6 | |
| April. | 119.5 | 74.0 | 195.1 | 151.6 | |
| May. | 108.1 | 72.3 | 198.2 | 155.6 | |
| June. | 120.4 | 63.0 | 160.9 | 153.3 | |
| July. | 126.5 | 79.3 | 168.8 | 150.9 | |
| Aug. | 139.4 | 94.3 | 187.0 | 161.4 | |
| Sept. | 169.2 | 106.3 | 172.1 | 160.0 | |
| Oct. | 207.5 | 119.9 | 130.5 | 168.3 | |
| Nov. | 210.1 | 137.4 | 86.2 | 173.5 | |
| Dec. | 206.6 | 120.9 | 56.6 | 170.4 | |
| Ave. | 148.1 | 90.4 | 159.6 | 150.4 | |

**All Commodity
Wholesale Price Index**
U. S. Bureau of Labor

(1926 = 100)

| | 1939 | 1938 | 1937 | 1936 |
|-------------|------|------|------|------|
| Jan. | 76.9 | 80.9 | 85.9 | 80.6 |
| Feb. | 76.9 | 79.8 | 86.3 | 80.6 |
| March. | 76.7 | 79.7 | 87.8 | 79.6 |
| April. | 76.2 | 78.7 | 88.0 | 79.7 |
| May. | 75.6 | 78.1 | 87.4 | 78.6 |
| June. | 75.4 | 78.3 | 87.2 | 79.2 |
| July. | 75.0 | 78.8 | 87.9 | 80.5 |
| Aug. | 79.1 | 78.1 | 87.5 | 81.6 |
| Sept. | 79.4 | 78.3 | 87.4 | 81.6 |
| Oct. | 79.2 | 77.6 | 85.4 | 81.5 |
| Nov. | 79.1 | 77.5 | 83.3 | 82.4 |
| Dec. | 79.1 | 77.0 | 81.7 | 84.2 |
| Average .. | 77.1 | 78.6 | 86.3 | 80.8 |





Feature New Aircraft Engine Plant

Low-wattage fluorescent lighting cuts air-conditioning load, aids complete control of working conditions at new low in power consumption. Special tooling affords precision work at high output rates

■ NEWEST version of a completely air conditioned and artificially lighted, windowless plant will soon be put into full operation at Indianapolis by the Allison division of General Motors Corp. Featured are: Natural well water, freon refrigerant, natural air and auxiliary oil burners form a new combination in the air conditioning scheme. First application of a new type of fluorescent lighting on a large scale definitely duplicates mid-day north light 24 hours a day.

The unique combination of heat insulation, air conditioning and artificial lighting requires less power to create ideal working conditions than in any previous attempt. Paralleling of a diesel power plant with utility electric lines provides an adequate uninterrupted source of power with unusual economy. Unusual architectural effect is obtained by absence of windows and use of glass brick panels. An unusual tooling setup affords precision.

Manufacture of aircraft engines for the United States army calls for a high degree of precision and careful handling of materials. Temperature changes affect the micrometric gages and precision machines. Perspiration may cause etching on a highly polished metal surface. Unusually good lighting is required for accurate reading of gages and observance of work by operators. Comfort of workmen is unusually important because of the concentration and skill required.

Maintenance of a steady comfortable temperature, proper humidity and dust count means use of air conditioning and artificial lighting.

This permits windows and monitor roofs to be eliminated. A manufacturing building, adjoining office building, a test building and a gate house on 53 acres of land comprise the new plant, designed by Austin Co., 16112 Euclid avenue, Cleveland. Construction is of brick, steel, concrete, glass brick and Indiana limestone trim. Steel columns and trusses are welded throughout.

The windowless manufacturing building is painted aluminum throughout the interior. It has a 6-inch concrete floor. Eight large perpendicular glass-block panels on the north front wall have been provided purely for architectural effect.

Lockers Arranged in Squares

A large receiving room and other entrances, not air conditioned, serve as air locks so outside air does not rush into the air-conditioned area when doors are opened. Convenient locker rooms are provided by arranging groups of lockers in squares at three points in the plant. A completely insulated, electrically operated, heat-treating department is housed in this building which also has separate provisions for plant maintenance, a modern underground diesel power plant, anodizing facilities, dichromating and plating room, paint room and shipping room.

The 3-story office building also is completely air conditioned.

Test building is a series of rooms with large open, sound-proofed stacks. Propellers of engines on test pull the air in through one stack and push it out through another. A small structure where propellers are balanced adjoins.

Small gate house matches the rest of the plant architecturally.

Air-conditioning equipment heats or cools, controls humidity and cleanses the air to maintain best working conditions automatically. It is housed in four penthouses on the roof of the manufacturing building and is designed so it will be possible to use outside air which is near required temperature and humidity in Indianapolis much of the year. A large portion of the cooling will be done with water at a temperature of 54 degrees Fahr. pumped from deep wells on the property the year around. When this natural coolant is not sufficient, a freon refrigerating system will supplement it. Any necessary heating will be done by oil burners. Humidity control includes removing or adding moisture to the air. Cleaning is done by filters. To guard against failure, equipment is divided into eight independent units, each capable of providing 52,000 cubic feet of air per minute and affording ample reserve.

The new fluorescent lighting units recently developed by Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., are suspended from the ceiling and are equipped with three 40-watt fluorescent bulbs, 48 inches long, 1½ inches in diameter.

Each lamp bulb is housed in a separate Alzac reflector, three to each complete unit, or luminaire. Color of light produced is so close to daylight that it is practically impossible to detect any difference. Its glareless quality is not only more beneficial to workmen's eyes but also a distinct aid in production. At

Conditions

intervals throughout the plant are regular 200-watt mazda bulbs in standard reflectors which are turned on for patrolmen when the plant is not running.

To reduce flicker or stroboscopic effect, the fluorescent lights are supplied current from a 3-phase circuit, each of the three lamps being connected to separate phases. Resultant overlapping eliminates flicker.

Entire electric power requirements can be supplied by the diesel plant or direct from a local utility's lines or part by both. The power plant comprises two 16-cylinder and two 6-cylinder V-type 2-cycle General Motors diesel engines.

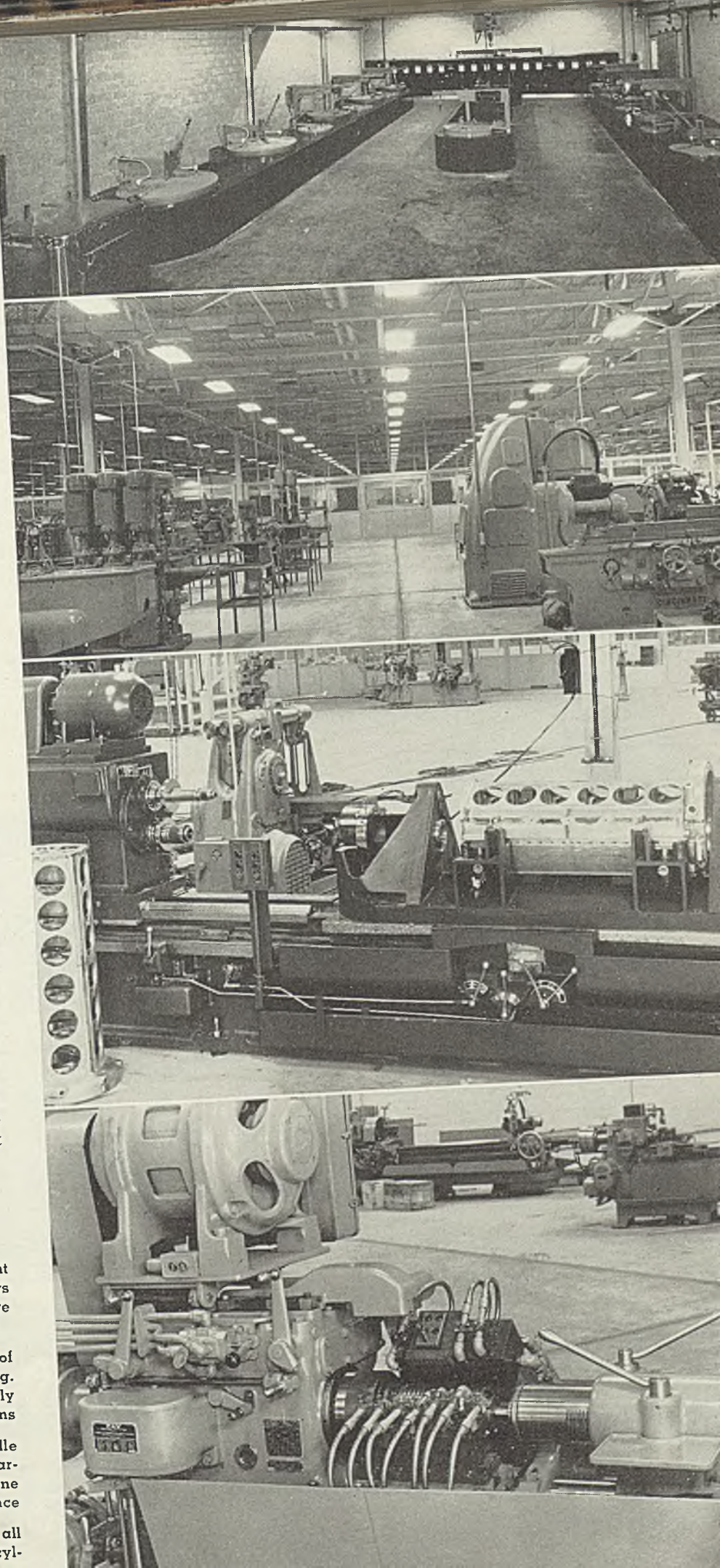
Modern tooling utilizes many machines and fixtures specially designed for the operations they perform. Quantity production of engines requires the highest type of precision manufacture. A typical unit is a large, especially designed drill which bores out a hole approximately 3 inches in diameter and 20 inches deep in an alloy steel forging in production of propellor shafts. Wall thickness tolerances are held to thousandths of an inch limits. The new setup here does the job in about

Top, heat-treat department at new plant of Allison division of General Motors Corp. Furnaces and quench tanks are sunk in floor for convenient access

Next to top, general interior view of new plant showing fluorescent lighting. It gives five times the light with only 0.7 the power required by older systems

Next to bottom, a special 2-spindle boring mill for finishing inside of bearing surfaces of engine blocks. Machine performs two difficult operations at once

Bottom, automatic lathe machines all fins and shoulders on outside of a cylinder barrel



18 minutes compared with several hours on the usual machine. This machine has a 10-inch hydraulic cylinder with work chucked in the vertical position and rotated around a drill $4\frac{1}{2}$ inches in diameter and 44 inches long. Drill mounted vertically is stationary on the base of the machine and will drill to a depth of 22 inches.

Heat-treating furnaces normally are set on the floor. With furnaces usually about 5 feet high, workmen must either reach up to insert or withdraw parts being treated or stand on a platform. In this plant, all heat-treating units are half sunken in recesses in the floor so top of the furnace is within easy reach of the workmen. A basement room underneath provides easy access for servicing lower part of the furnace.

Work Placed on Tables

For greater comfort and better precision, forging and casting cleaning is done with workmen sitting at long metal tables upon which the work is placed. A slot along front edge of table is connected to a central blower which sucks all small particles across the table surface down into tubes to a central exhaust pipe from which the dust is expelled at a point where it can do no harm.

An ingenious arrangement prevents dust from reaching the breathing area of workmen. Conditioned air enters at top of room. Since table slots are directly below the workman's face and at waist level, the suction not only takes particles off the table and from grinding machines but also draws fresh clean air down across the face of the workman.

To produce various models of Allison aircraft engines in large quantities involves much precision work on aluminum and steel alloys. It is necessary for machines to handle many of the precision operations previously done by hand. Also the machines must do the work rapidly

to permit the desired production. Even higher standards of quality than before have to be maintained because the fast production schedule permits little time for correction of errors. These aims have been accomplished by adapting existing machines, developing new fixtures for them and by use of entirely new machines.

Milling machines include hydro-tels, hydraulically operated with latest controls for maintaining mechanical dimensions both for diameters, irregular shapes and contours. A finish can be produced to profilometer measurements.

Boring mills are horizontal and are designed to machine the intricate shapes and sections characteristic of modern aircraft engines.

Small sensitive drills for drilling and tapping small light parts are equipped with hydraulic attachments for deep-hole drilling. These are better known as step drillers. Tapping attachments have hardened and ground lead screws for tapping all holes. All radials are especially designed for tapping holes and are similarly equipped with hardened and ground lead screws.

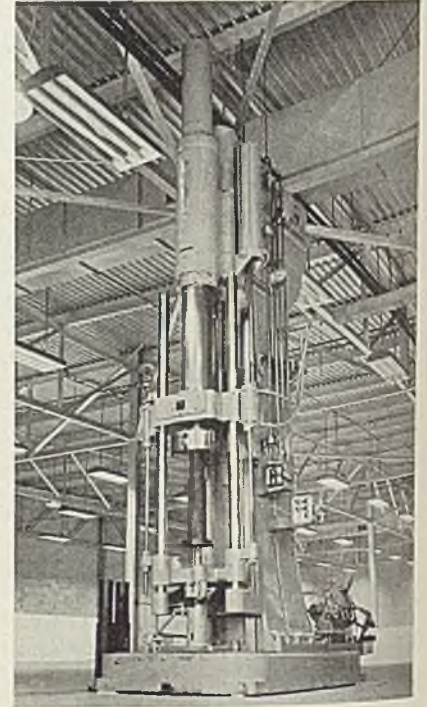
Screw machines are used for straight boring and turning, straight and contour facing. All have tool holders and tool blocks which accommodate large numbers of individual tools accurately set and spaced to produce high finish and accuracy. All boring operations employ piloted boring bars with bar bearing in headstock of the machine.

Grinding equipment includes internal and external thread grinders. All have either forced feed or light oil lubrication so small clearances may be obtained between spindle and bearing to produce ground surfaces with a high finish. Certain internal grinding machines are the result of several years of experimental development and are first of this type for production work.

Machines in gear-cutting depart-

ment consist of vertical shapers, hobbing machines and gear grinders. Gear-cutting machines are equipped with special fixtures and cutters. All gear teeth are ground in this department. Included in the department also are a number of broaching machines for splines.

A number of large machines for multiple-spindle drilling work as many as 57 holes in one operation.



This unique machine drills a hole over 4 inches in diameter and 22 inches deep in a hardened steel shaft in only 18 minutes' time

Holes vary in diameters and depths to be drilled. Large multiple-spindle tapping machines are equipped with hardened and ground lead screws.

Heat-treat section is located in the center of the building. Furnaces are electrically heated and atmospherically controlled to produce scale-free parts in carburizing, hardening, annealing and tempering. A panel board containing all instruments for controlling the furnaces is at one end of the room and so is visible from any spot in the department.

Heat-treat department is illuminated by fluorescent lamps and is completely air conditioned. High efficiency and a high standard of quality are maintained by giving the operators the best working conditions.

Anodizing, plating and dichromating equipment is provided. There

At three points in new plant are service units for men. Lockers are arranged on three sides of a square around wash basins with toilets on mezzanine floor above



IT'S surprising how easily you can find added capacity right in your present production set-up.

Check the amount of time your machines and presses stand idle while tools which have fallen down on the job are being re-ground or replaced.

Frequent shut-downs caused by poor tool performance upset crowded production schedules and act as a drag on output.

Improve your tool performance and you immediately convert expensive shut-down time into profitable production capacity that speeds output. Carpenter Matched Tool Steels can help you make this improvement. Send for the Carpenter booklet that shows how to insure better tool performance—how to make tools more adequate to the job—how to apply modern methods to keep production moving faster.

THE CARPENTER STEEL CO., READING, PA.



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to find Extra

Plant Capacity



TIME TO CHECK UP!

The Carpenter Steel Company,
139 W. Bern St., Reading, Pa.

Without obligation, send me your 60-page booklet that shows how to improve tool and die performance to get higher output.

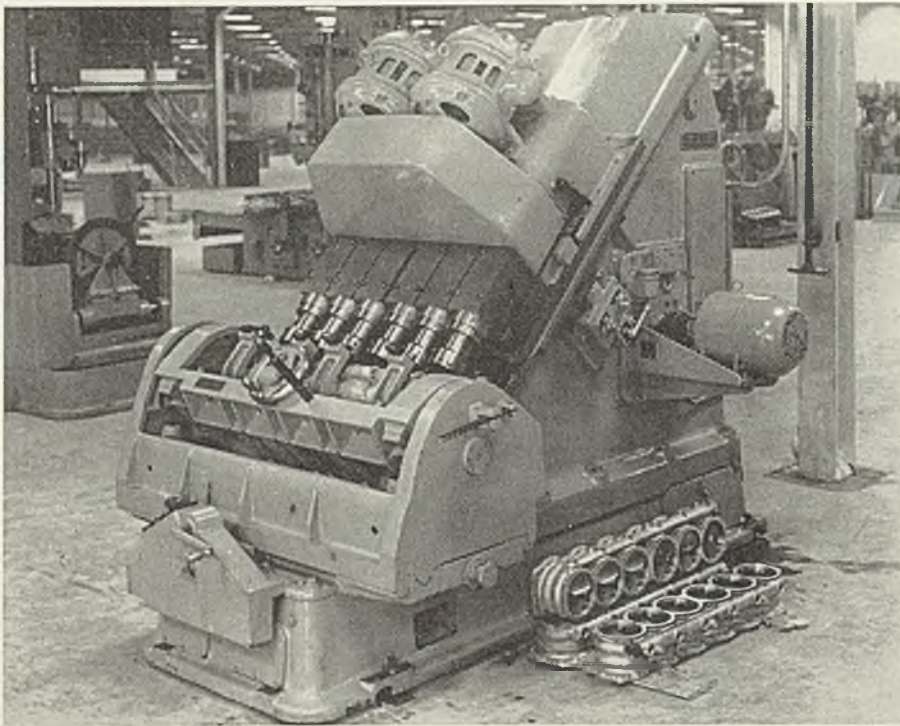
Name _____ Title _____

Firm _____
(Firm name must be given)

Address _____

City _____ State _____

Carpenter MATCHED TOOL STEELS



A new hydraulic angular-type boring machine finishes inside surface of cylinder neck of crankcase in one operation with greater accuracy and less time than heretofore possible

also is a complete installation for bright cadmium, nickel, copper and chromium plating.

The painting department includes latest equipment for mixing and spraying. Bake oven is circulating air type. Temperature is maintained to plus or minus 2½ degrees throughout, automatically controlled. A conveyor system carries work through the oven.

Burring and cleaning benches and hot blast have exhaust systems to remove all fine particles of dirt or material.

Assembly floor is preceded by a sub-assembly department located at the end of the finish store stocks. Layout of plant is for progressive operations in sequence with minimum of lost motion between operations. Parts enter at one end and progress through machining department into a final inspection, to finish stores and through to sub-assembly. Next they are picked off for the assembly line along the departments and made into a completed engine. Thence the engine goes to the test stands.

Castings Handbook in Second, Revised Edition

■ *Cast Metals Handbook*, 1940 edition; cloth, 636 pages, 6 x 9 inches; published by American Foundrymen's Association, Chicago; supplied by STEEL, Cleveland, for \$5.

The first edition of this work was

published in 1935, the present volume bringing its data up to date and recording progress of the past four years in the field of castings.

The association's aim is to present to engineers, designers, users of castings, editors of engineering handbooks and engineering students a condensed authoritative statement of data on cast metals. Data have been selected with the purpose of enabling the user to select material best suited to his purpose and to promote co-operation with foundries to produce castings fitted for best results. It contains a large fund of information for all foundrymen, available for ready reference.

The first section is devoted to recommendations to castings designers, dealing with design of pattern equipment, points to be considered in casting design and selection of best material for the application. The second section, on recommendations to buyers of castings, deals with data required for estimation of castings cost and information which should be included in inquiries from buyers. The next section discusses the significance of strength and ductility tests of metals.

The next four sections deal with properties and applications of cast steel, malleable iron, nonferrous alloys and cast irons. A wide variety of data, such as methods of manufacture, metallurgy, designing, properties, applications, heat treatment and specifications, are included under each heading. Effect of various alloys on the physical properties also is discussed.

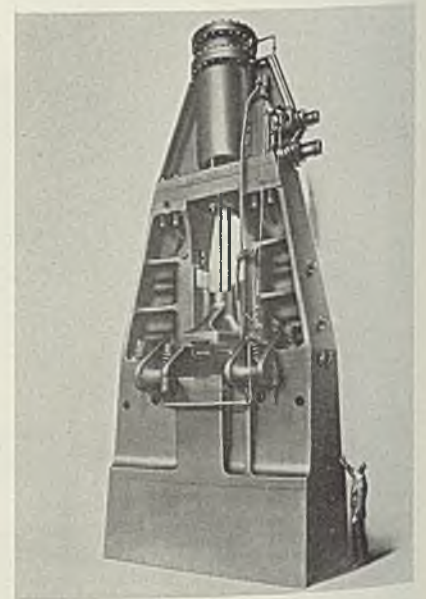
The association and the various groups, companies and individuals contributing to the original edition and to revisions and additions in-

cluded in the new edition, have performed a valuable service in furthering the application of castings in engineering construction. The new edition, as was the old, is recommended to both makers and users of castings.

Steam Drop Hammer

■ A 20,000-pound drop hammer has been installed in plant of Ambrose Shardlow Ltd., Sheffield, England, for forging crankshafts. Hammer was built by Chambersburg Engineering Co., Chambersburg, Pa., and has a large ratio between anvil and falling weights. Anvil weighs about 50,000 pounds; total weight of hammer is close to 700,000 pounds.

Because of operating valve construction and steam cylinder with unbalanced porting, little energy is required to accelerate falling ram to proper forging velocity as back pressure under piston is avoided. Due to large lower cylinder inlet, return of ram is fast. Building up of back pressure above piston is said to assure strong subsequent blows and protect cylinder cover. Leak-



Large lower cylinder inlet of this 20,000-pound drop hammer speeds ram return

age losses are said to be avoided because wear is nearly eliminated.

Sensitive control on hammer is gained by precise steam balance and freedom from appreciable friction, thus permitting unrestricted fall of valve unit. As valve chamber contains only exhaust pressure, it is readily kept tight. Slide valve distributes steam or air to the cylinder internally. Valve chamber covers may be removed and valve observed in action. Forming of the cylinder into an A-shape greatly increased strength of cylinder.

TOWNSEND presents:

"THINGS AND STUFF"

from a coil of wire



Generations of *property men* have been gainfully employed since 1816—setting the “props” for THINGS and STUFF—Townsend’s modern day version of industrial specialties.

The cast of characters is great and each plays a dramatic role in the *support* of some ingenious device. So versatile are the characters that we give them numbers rather than names and their fashionings of steel, alloys, copper, brass, bronze and aluminum—plus a wardrobe of scintillating finishes, takes on a *Wizard of Oz* fantasy . . . They come to you headed, threaded, collared, shouldered, knurled, drilled, grooved, or combinations thereof. Their accuracy and finish possessive of the guise of a screw machine product.

Enroll your problem child now for immediate individual attention. It will graduate with fine *mettle* and with a tolerance identical to your wishes.

NOTE—Our folder pictures 200 *different* “gadgets” selected to show our range of production possibilities. It is yours for the asking.

TOWNSEND COMPANY

MANUFACTURERS OF RIVETS — SPECIAL WIRE NAILS — HEADED METAL PRODUCTS — AND WIRE SPECIALTIES IN ALL METALS

NEW BRIGHTON

(Pittsburgh District)

PENNSYLVANIA

New Die Steel Developed For Short-Run Work

■ ALTHOUGH development of die steels has been quite rapid during the past few years, there is one class of die application that seems to have been overlooked, the comparatively short-run production of cold-formed or stamped parts. In

| Steel | A per cent | B per cent | C per cent |
|----------------------|---------------|---------------|---------------|
| Carbon | 1.03 | 1.00 | 0.97 |
| Chromium | 4.89 | 4.94 | 5.05 |
| Vanadium | 0.20 | 0.20 | 0.18 |
| Molybdenum | 0.48 | 0.48 | 1.07 |

such work, requirements as to accuracy and resistance to wear or breakage are just as important as they are for long-run production. Die cost, including material and machining costs, are even more important in short-run work.

Until recently, users of dies for such work had only two alternatives from which to choose, neither of which was entirely satisfactory. The choice lay between oil-hardening die steels, of the manganese type for example, and the air-hardening high-carbon high-chromium steels. The first meet the requirement of low cost but tend to distort and break when quenched. And they are not inexpensive to

machine. The second class has the requisite resistance to wear and freedom from distortion but are expensive. Also, their machinability leaves much to be desired.

The ideal steel for the purpose suggested above is one that combines the advantages of high-carbon high-chromium steels and oil-hardening steels yet eliminates their disadvantages. In other words, such a steel should have good wear resistance, minimum susceptibility to distortion, and the faculty of retaining its hardness after a mild quench. In addition it should be relatively inexpensive to buy and should keep machining costs.

Being convinced that a real field for such a die steel existed, Univer-

| Air Hardening Temp. °F. | Rockwell C Hardness | | |
|-------------------------------|---------------------|------|------|
| | A | B | C |
| 1700 | 39.0 | 46.0 | 64.5 |
| 1750 | 49.0 | 51.0 | 65.0 |
| 1800 | 54.0 | 64.0 | 65.0 |
| 1850 | 54.0 | 64.0 | 63.0 |

sal-Cyclops Steel Corp., Titusville and Bridgeville, Pa., and Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., recently started a series of investigations to develop

one. The die steel which finally emerged is known as Sparta. It is a modification of the 1 per cent carbon, 5 per cent chromium, air-hardening steel known for some time. It is modified by addition of 0.20 per cent vanadium to insure a wide heat-treating range and to protect against excessive grain growth. Then 1 per cent molybdenum is added to insure high hardness. The presence of molybdenum also has a beneficial effect on the hardness after drawing.

The effect of molybdenum on the

| Draw. Temp. °F. | Rockwell C Hardness | | |
|--------------------|---------------------|------|------|
| | A | B | C |
| As quenched | 54.0 | 64.0 | 65.0 |
| 300 | 50.0 | 62.0 | 62.0 |
| 400 | 50.0 | 60.0 | 60.0 |
| 500 | 50.0 | 60.0 | 60.0 |
| 900 | 49.0 | 56.0 | 58.0 |
| 950 | 49.0 | 54.0 | 59.0 |
| 1000 | ... | ... | 58.0 |

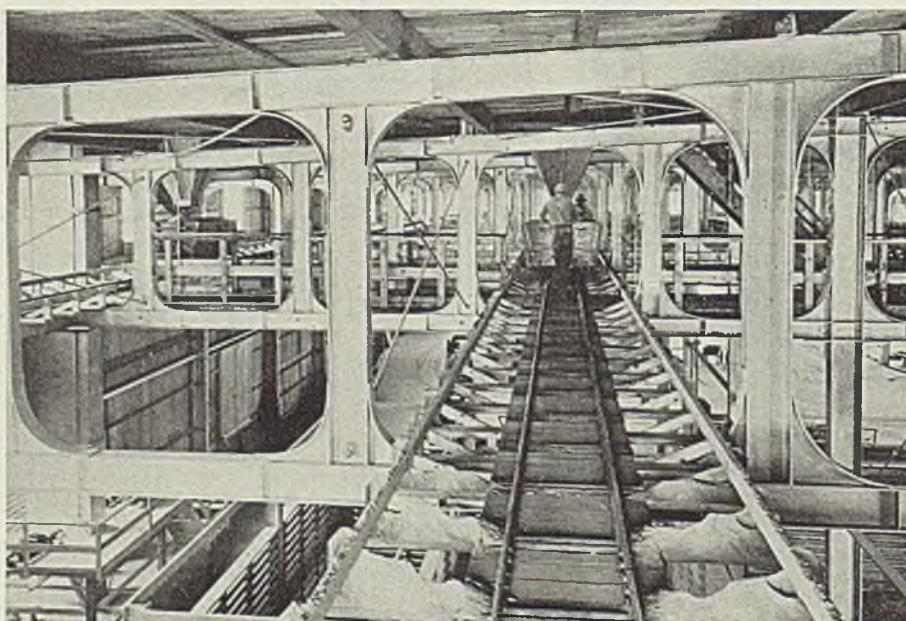
hardness of 1 per cent carbon, 5 per cent chromium steel after air hardening, quenching and drawing is shown in Tables II and III. The analyses of the three steels concerned are given in Table I. Table III shows the comparative effect of different drawing temperatures on the steels after quenching from 1800 degrees Fahr.

These tables bring out some interesting facts concerning the hardness characteristics of the 5 per cent chromium, 1 per cent molybdenum steel. First, full air hardening can be obtained at a comparatively low temperature, 1700 degrees Fahr., in smaller sections, say up to 1 inch thick. Higher temperatures, up to 1800 degrees Fahr., are required on larger sections. Second, there is a substantial secondary hardening effect at drawing temperatures between 900 and 1000 degrees Fahr., particularly at 950 degrees Fahr., when the steel is quenched at 1750 or 1800 degrees Fahr. This secondary hardness is important because it is accompanied by improvements in strength and toughness. Finally, the steel retains its hardness to remarkably low drawing temperatures.

Both laboratory tests and experience with dies in actual production show how little the steel distorts as a result of either air hardening or quenching followed by drawing at mild temperatures. Table IV shows results of two tests made on so-called navy rings. Each figure in the table is an average of two observations.

The dies shown in accompanying illustration furnish evidence as to the steel's lack of tendency to distort from heat treatment. These dies were pack hardened and air quenched from 1800 degrees Fahr., and afterward drawn at 400 degrees Fahr. for three hours. The ultimate

Portal Truss Aids Material Handling



■ These portal-type all-welded roof trusses in the fertilizer plant of International Agricultural Corp., Chicago Heights, Ill., support a narrow gage railway for hand-pushed cars. Photo courtesy Austin Co., 16112 Euclid avenue, Cleveland



America's Hospitality

... IS CAPPED WITH STEEL

Millions of times every day someone flips the top off a cool, refreshing bottled drink. That top, which protects the purity of the drink, is made of tin plate.

From refreshment to furnaces, cans to clothing, matches to movies, our lives depend on steel. We sleep on steel springs, bathe in a steel tub, cook on a steel range, use food out of steel cans plated with tin, drive a steel car, work in a steel building at steel machines, and live securely because steel guards our nation's borders. To make all the modern steels for these many uses requires modern

equipment, and Youngstown has spent \$94,000,000 in the past ten years to keep its mills up-to-the-minute. However, men are more important than machinery in the making of steel, and Youngstown is more proud of its experienced men than of all the equipment in the world. We in the sales department know how these workmen operate.... we've watched them in the mills and we know they won't allow a pound of steel to carry their name that isn't the finest that can be made. You can't blame us for being proud to offer the output of a bunch like that.



Cold Reduced Coke Tin Plate - Sheets - Plates - Pipe and Tubular Products - Conduit - Bars - Rods - Wire Nails - Tie Plates and Spikes. 25-17B



**THE
YOUNGSTOWN
SHEET AND TUBE COMPANY**

Manufacturers of Carbon and Alloy Steels
General Offices - YOUNGSTOWN, OHIO

Table IV

| Condition | Dimensions in Inches | | | |
|-----------------------------|----------------------|---------|---------|---------|
| | A | D | T | S |
| | Test Ring A | | | |
| Before heat treatment | 2.8988 | 5.0004 | 1.0012 | 0.4996 |
| Change after hardening | +0.0005 | +0.0033 | +0.0006 | +0.0011 |
| Change after draw at 300°F. | -0.0009 | +0.0016 | +0.0002 | +0.0013 |
| Change after draw at 400°F. | -0.0015 | +0.0010 | Nil | +0.0013 |
| | Test Ring B | | | |
| Before heat treatment | 2.8981 | 5.0006 | 1.0010 | 0.4995 |
| Change after hardening | +0.0011 | +0.0017 | +0.0007 | +0.0001 |
| Change after draw at 300°F. | +0.0005 | -0.0004 | +0.0004 | +0.0002 |
| Change after draw at 400°F. | +0.0005 | -0.0018 | +0.0002 | Nil |

hardness was 61 Rockwell C. Before hardening, dimensions of the embossing die were 8.545 x 10.607 inches. Those of the perforating die were 8.880 x 10.548 inches. After hardening, dimensions of the former were 8.547 x 10.609 and those of the latter 8.886 x 10.553 inches. Maximum change in any direction was extremely small, considering the size and complicated nature of the dies.

The economic aspects are equally interesting. The first cost, as compared to that of high-carbon high-chromium dies is moderate to say the least. Machining costs are quite reasonable. In some cases grinding after hardening has been eliminated because after heat treating the dies were so close to original dimensions.

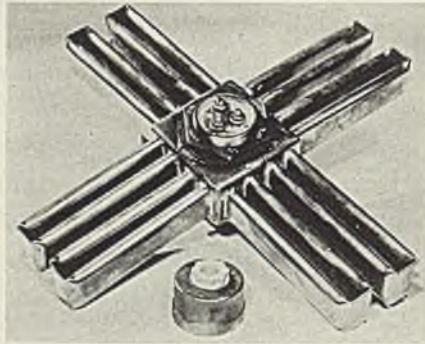
These economies have resulted in some instances in a total saving of 40 per cent in die cost compared to high-carbon high-chromium dies. In addition, dies made from the 5 per cent chromium, 1 per cent molybdenum steel have made excellent records in service. In fact, although the steel was originally intended for die service, its excellent performance has expanded its field to include many applications such as

These are heater door dies of Sparta steel, pack hardened and air quenched from 1800 degrees Fahr., drawn at 400 degrees Fahr. for three hours giving hardness of 61 Rockwell C. Changes in dimensions amounted to only a few ten-thousandths of an inch. Photo courtesy Climax Molybdenum Co., 500 Fifth avenue, New York

cams, clutch parts, bearing ways on lathes and grinders, wearing hot work dies, rolled thread dies, strips or inserts of various sorts, plugs and gages.

Joining Thin Tubing To Cast Brass

■ In making an immersion-type urn heater, Harold E. Trent Co., Fifty-fourth and Poplar streets, Philadelphia, joins eight flat copper tubes



These thin tubes brazed to a cast brass center withstand pressures up to 100 pounds per square inch. Photo courtesy Handy & Harmon, 82 Fulton street, New York

to a cast brass center. To meet other heater conditions, a steel alloy tube sometimes is used. These 16 joints normally have to withstand pressures up to 100 pounds per square inch and stay leak-tight un-

der conditions of repeated heating and cooling.

Before joint is made, an electric heating unit must be assembled inside tubes. After fluxing of brass center and tubes, unit is assembled on a frame or jig and heat is applied with a torch. Thin section of tubing makes it desirable to keep heat for making joints as low as possible. By concentrating heat on the heavier cast brass center, joints are made without damage to the thin metal tubing. As center section reaches a dull red heat, brazing alloy is applied to joint and heat is shifted momentarily to tubing for a uniform brazing heat. The brazing alloy, Easy-Flo, contains silver and has a flow point at 1175 degrees Fahr.

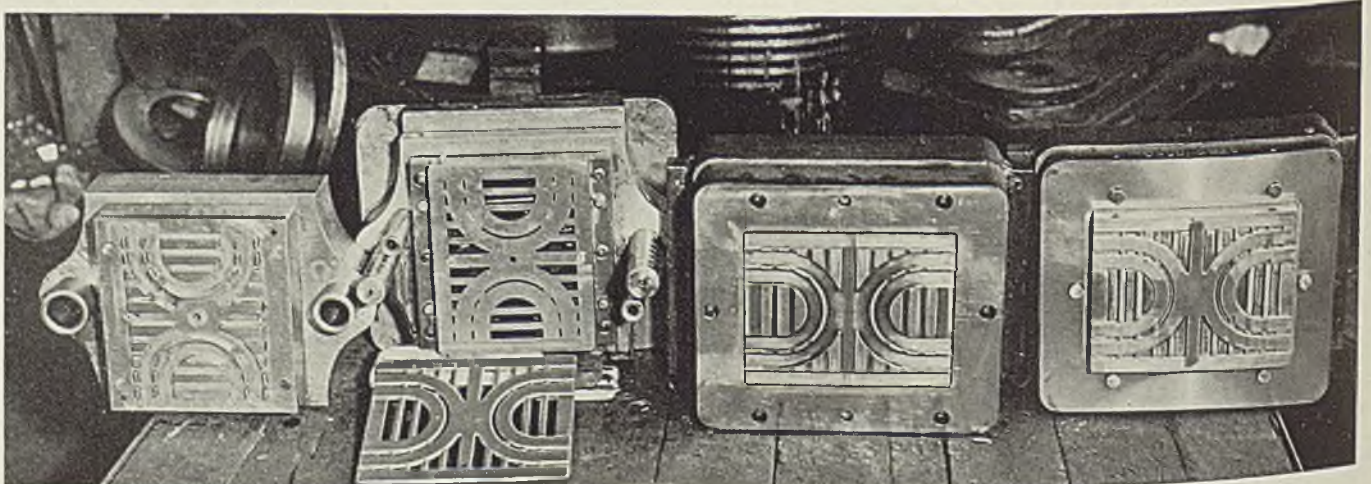
Core Oil Has Uniform, High Bonding Strength

■ A new core oil, distinguished by its uniform high tensile core strength regardless of baking temperature, has been introduced by E. F. Houghton Co., 240 Somerset street, Philadelphia. Called Hy-Ten, it is a compound of nonoxidizing oils that polymerize under heat. Oil is composed chiefly of petroleum derivatives. It has green-black color, flash point of 245 degrees Fahr., viscosity of 250 Saybolt seconds at 100 degrees Fahr. and cold test of minus 10 degrees Fahr.

Helps In Welding

■ "Welding Hints," a service recently inaugurated by Harnischfeger Corp., 4400 West National avenue, Milwaukee, consists of printed cards dealing with welding problems and their solutions. Each problem and its solution is complete on one card.

Problems include: Rebuilding worn parts such as dipper teeth, side cutters; building up cutting tools; making welded gears; rebuilding sprocket teeth and welding pipe structures.



STEEL

Closer Process Control



To level the inspection curve in one-cover-coat porcelain enameling, pickle and neutralizer tanks are dumped on basis of amount, type of ware. Age, set control help offset production variations

■ RAPID changes have taken place in inspection standards of one-coat porcelain enamelware in the past few years. In some instances, inspection departments have advanced slightly faster than production. Transition from two-cover-coat ware to one-cover-coat ware of equal quality has only been made possible by closer process control. In fact, most shops today have advanced to a point where the objective is not to get out of an epidemic of some sort of trouble, but rather to level off the curve on the inspection chart. Usually this involves elimination of recurring days of small brushing tears, one or two isolated blisters on a percentage of the ware, or perhaps a hairline at some point of poor ground coat drain.

Trouble Difficult to Locate

In such a shop, it is difficult to pin the trouble down to any one cause as usually there is very little possibility of such occurrences as a large variation of water content of the ground coat dip tank. Usually the trouble that gives rise to the fluctuations in results is a combination of small and sometimes remote variations.

Obviously, if there were no variations in production, it would be easy to see clearly the results of minor mill addition and process changes. However, since changes in amount of ware handled are inevitable, it is apparent that control must become more exact and may involve practice changes and perhaps some additional control tests.

Pickle rooms always have been somewhat of a problem due to the many complex chemical problems

By G. I. BRUTON
Ferro Enamel Corp.
4150 East Fifty-sixth street
Cleveland

involved. Titrations for strength certainly have paid good dividends in the past and are an essential part of good control. While undoubtedly further chemical control of pickle rooms would produce good results, it would involve prohibitive costs in the average plant.

For this reason, added refinements in control may necessarily revert back to practices used before technical control became popular. In fact, it is possible that the control man is depending too much on cleaner activity and iron content tests of acid in determining the point where the acid should be discarded. A good example is one case where it was never possible to avoid completely fluctuations and blisters or boil rejection until a rigid rule had been installed that cleaner and acid tanks be dumped on the basis of amount and type of ware run. In this case, type of ware happened to be extremely important due to variation in carry-over of the several types of ware run. It should be observed that this was not the cause of all blisters but definitely proved to be a contributing factor and a valuable step toward obtaining a level inspection curve.

A daily fluctuation due to type of ware run through the pickle tank also has been found to necessitate dumping the neutralizer tank at an odd hour. Such control as this necessarily must come through close vigilance and logical planning by both the control and production departments.

Control of ground coat milling

and dip tank practice is probably understood as thoroughly as any. With a more nearly chemically clean pickled ware coming through the dip tank daily, finer tests and more logical conclusions can be made in that department. For instance, it is possible now to see more clearly the results of such a substitution as $\frac{1}{2}$ -ounce of bentonite for $\frac{1}{2}$ -ounce of magnesium carbonate. This particular change in a tub plant ground coat made a material difference in one cover coat result. Yet if the ground coat had not been controlled rigidly in regard to age and water content, this result probably never would have been observed. It is apparent that results depend upon close contact of the control or mill room man with production, combined with a thorough knowledge of every characteristic of the ground coat. It is necessary to know more than the wet and dry weight of the enamel on the day in question.

Advisable To Set Minimum Age

Regarding age of ground coat and white enamel, it appears advisable to set a minimum age on both. While it is probably true that enamel can be set properly to operate satisfactorily when it is fresh, adopting a minimum age may partially offset results of production variations. Since greatest change in set due to age takes place in the first 24 to 36 hours, it would seem logical to set enamels for correct operation after that age is reached. Then a sudden production change could not disrupt efforts toward obtaining unvarying conditions.

Besides age control of white enamel, there usually exists less control of set than in working ground coats. This is probably be-

cause it is almost impossible to take a dip sheet weight of white at the specific gravity that it is sprayed. In this case a daily or weekly test of the pickup or set of the white at a specific gravity that will permit draining certainly should be introduced. This test should consist of a dip sheet or cylinder pickup made on a small quantity of white which has been cut down to a definite specific gravity of perhaps 1.70. This would catch a variation in set which might result from change in season, the heating of a mill or perhaps a variation in the floating power or clay or other electrolyte.

The above recommendations involve no practice changes which would obviously affect one-coat operation and results. However, the points discussed are those which have been found to make the difference between plants running continuously in the high percentages of one-coat wear and those running spasmodically good or bad. It definitely requires the man responsible for process control be in contact personally with all phases of his plant. Also, it presupposes he has authority to act on all matters concerning the pickle room, milling and delivering to production of all enamels.

minute, he said. In addition, these coatings have the added qualities of durability, resistance to water and chemicals and flexibility. In discussing rusting of iron and steel, he said that inhibitors must be present in the pigment since no film is 100 per cent waterproof and moisture may be present on the surface of the metal. Several well-known pigments have no inhibiting effect and should be augmented with satisfactory quantities of zinc chromate as an inhibitor.

Archie J. Weith, director, research and development, Bakelite Corp., discussed improved heat-hardenable coatings and new methods of applying them. He said that the heat-hardenable phenolic resins available today provide hard, continuous, uniform protective coatings when applied to metal; are excellent electrical insulators; from a mechanical standpoint provide tenacious, durable bonds; remain unaffected by extremes of climate, temperature or humidity; do not deteriorate and are unaffected by water, alcohol, acetone, benzene or other common solvents; and once converted to their final state, will not melt at any temperature or char at temperatures below 300 degrees Fahr.

Application of Heat Simple

These coatings must be baked on the surfaces to which they are applied. The application of heat to small articles such as builders' hardware, textile spinning spools and small coils and armatures is relatively simple. Application to large surfaces has been simplified by development of portable equipment. In lining large tanks, for instance, the heat-reactive coating is applied by spraying or brushing and baked on by blowing heated air into them. Temperatures range between 265 and 300 degrees Fahr. Each coat is air-dried first to remove solvents.

Mr. Weith said that baking temperatures already have been reduced 25 per cent through improvements in the coatings and that, shortly, even newer coatings will be offered which will lower the critical heat-hardening range again by some 25 per cent. Laboratory materials are already under test which are converted at 160 degrees Fahr.

Arthur K. Doolittle, director of surface coating research, Carbide & Carbon Chemicals Corp., New York, of which the Bakelite Corp. is a unit, discussed Vinylite resins for can and container coatings. The particular member of the vinyl group of resins showing most promise for such surface coatings is a copolymer of vinyl chloride and vinyl acetate sold under the name of Vinylite VYHF. These resins are applied from solution in volatile solvents. Usually it is desirable to

(Please turn to Page 80)

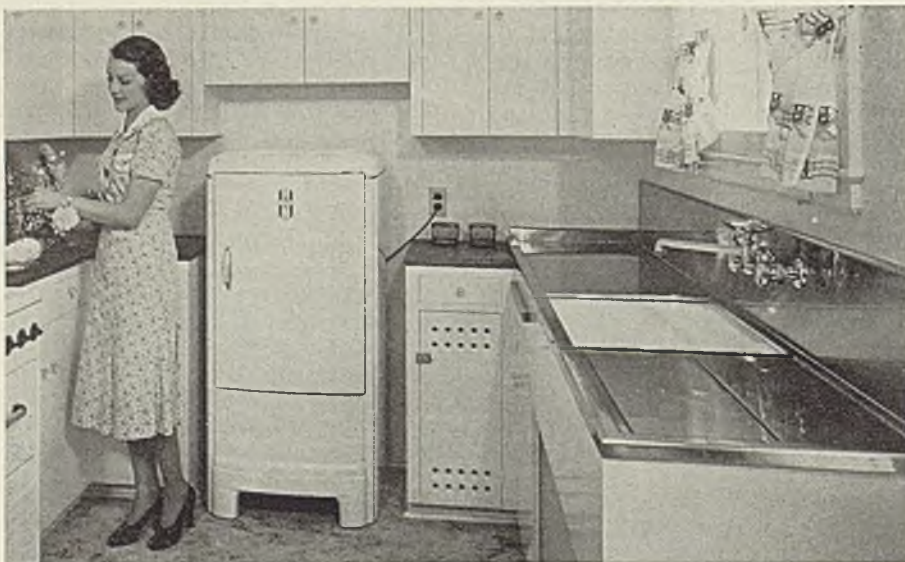
Review Recent Developments in Protective Coatings for Metals

■ AN estimated 24,000,000 tons of steel are lost each year by preventable corrosion, declared Dr. Robert J. Moore, manager, varnish resin development department, Bakelite Corp., New York, at a meeting on new developments in protective coatings held at Franklin Institute, Philadelphia, Jan. 30. This staggering figure is increased by the weakening of structures and equipment because of metal failure, he added. The petroleum industry alone estimates its annual corrosion loss at \$125,000,000 in refineries and approximately \$50,000,000 in pipe

lines. Tracing the course of the varnish industry, Dr. Moore pointed out that its raw materials up to 10 or 15 years ago were substantially the same since antiquity. Demand for speed in finishing and greater durability resulted in development of nitrocellulose lacquers and phenol-formaldehyde resins. New coatings based on synthetic resins, have, in the past 10 years, shown much greater protection as metal paints than paints based on linseed oil, he said.

With these new synthetic resin coatings, anticorrosive primers can be made to air dry as quickly as one

Pre-Fabricated Stainless Sheet for Drainboards



■ Kitchen sinks in Wyvernwood housing projects, Los Angeles, are built with Enduro stainless steel drainboards fabricated by Tile Seal Mfg. Co., 813 North LaBrea avenue, Los Angeles. Sink proper is cast or enameled iron fitted with drainboards for any size installation. Metal lath is nailed to rough top and cement applied. Stainless steel sheet then is locked in place with a patented cap. Photo courtesy Republic Steel Corp., Republic building, Cleveland

Stressproof News

T. M. REG. U. S. PAT. OFF.

Presenting News of a New Cold Finished Steel Bar

EXTRA! Several manufacturers report that slight changes in design of parts to permit use of STRESSPROOF No. 2 have made possible replacement of more expensive heat treated alloys formerly used. Large savings in costs reported.

By LA SALLE STEEL COMPANY

Chicago, Illinois



STARTER SHAFT
STRESSPROOF Replaces SAE 1045

**UPS MACHINING RATES ON
STARTER SHAFTS 38%**

**Maker Reduces Production Costs
on Shafts Over 5c Per Part**

A prominent manufacturer of shafts some time ago surveyed the field for a steel bar that could be machined into quality parts at higher speeds than the SAE 1045 then being used in the plant. Test runs on STRESSPROOF No. 2 Cold Finished Steel Bars, he says, gave ample proof that this steel was equal to his demands. Its superior machinability was responsible for an increase of 38% in machining speeds, and similar increases in tool life—advantages that alone indicated a welcome cut in production costs.

A check on other required qualities for the use in question resulted in further evidence that STRESSPROOF No. 2 was the ideal steel for the part. Tests on the finished parts showed the STRESSPROOF shaft to have higher torque values than the shaft made from SAE 1045 and heat treated after machining to equivalent hardness.

In addition, the use of STRESSPROOF No. 2 eliminated all necessity for heat treating; the excessive warpage experienced with SAE 1045 was reduced to a minimum; straightening was eliminated, and rejections were considerably reduced. All in all, costs were reduced over 5 cents per shaft.

User Defines New Bar Steel As One With All Desired Qualities

**Contrasts STRESSPROOF With Steel Offering Perfection
In One Quality but Sacrificing All Others**

At a recent small get-together of men identified in one way or another with the manufacture of various types of steel parts, the conversation naturally revolved about a discussion of the various grades of steel bars available to industry today. Out of that discussion came a particularly apt definition of STRESSPROOF No. 2, one of the newest of the cold finished steel bars. The man who offered the definition spoke out of personal experience with this and a great many other grades of steel bars. What he said may be summed as follows:

"In the main, there are four distinct qualities in steel, all of them highly desirable. They are (1) strength, (2) freedom from warpage, (3) machinability, and, (4) wearability.

"I would describe STRESSPROOF as a

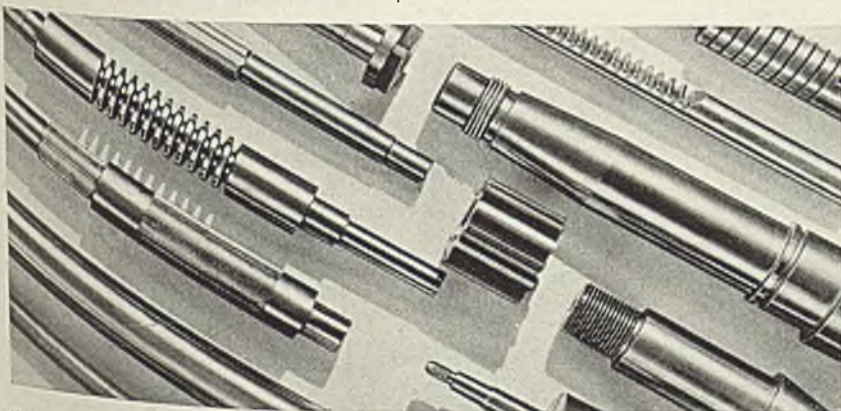
When Not to Use STRESSPROOF No. 2

STRESSPROOF No. 2 by reason of its unique wearing qualities can be substituted for case carburized steel in many applications. It should be noted, however, that STRESSPROOF No. 2 has a Yield Strength of 100,000 lbs. p.s.i. minimum, and, therefore, is not suitable for parts case carburized and subjected to higher unit pressures and severe Brinelling action.

steel in which all these desirable qualities have been retained. Although there has been a slight sacrifice in maximums, not one of the desirable qualities has been eliminated. Other steels may offer perfection in one quality, but at a complete sacrifice of one or more of the other desirable qualities."

That definition is one which finds the metallurgists of the La Salle Steel Company in complete agreement. For it describes their sole aim during the many years spent in developing the exclusive STRESSPROOFING process. This is a process which imparts to cold finished steel bars sufficient strength and wearability to meet the requirements of a vast range of applications, in combination with a high degree of machinability and minimum warpage. No longer is it necessary to suffer the poor machinability and constant warpage of heat treating or carburizing steels in order to obtain strength or wearability necessary for many applications; or to lose satisfactory carburizing and heat treating properties in order to gain free machinability through the use of a screw steel; or to use annealing treatments in an attempt to solve the warpage problem. With STRESSPROOF, qualities formerly sought by heat treating, carburizing, or annealing; or by using heat treated bars; or by using free machining steels are now obtainable in a single grade of steel in sufficient proportions to satisfy hundreds of applications.

The practical result has been to lower materially the cost of finished parts through elimination of various processing stages formerly necessary, and to simplify greatly the purchase and stocking of cold finished steel bars. For STRESSPROOF No. 2 has replaced such steels as Case Carburized SAE X-1315, X-1020, and 4615; Heat Treated SAE 1045, 3135, 3140 and 4140, and other analyses with complete success from the standpoint of reliable service in use as well as economy of production costs.



Above is a grouping of a few of the hundreds of parts being produced at lower costs with STRESSPROOF No. 2. Among the manufacturers currently using this new cold finished steel bar are makers of machine tools, automotive parts, farm equipment, miscellaneous machinery, washing machines, stokers, pumps, speed reducers, motors, engines, and scores of others.



La Salle

**STEEL
COMPANY**

Manufacturers of the Most Complete Line
of Cold Finished Steel Bars in America

Address: Dept. 2-A, Box 6800-A
CHICAGO, ILLINOIS



Plural Melting Process

New process produces composite ingots with stainless or tool steel on one or both sides of mild steel base. Many other combinations possible. Triple or more layers are made of any desired thickness.

By HILAND G. BATCHELLER
President
Allegheny Ludlum Steel Corp.
Pittsburgh

■ NEW STEELMAKING process classified as Pluramelt differs from the monomelts, single composition ingots produced by bessemer, open hearth and electric furnace process by making possible more than one composition or analysis in a single final ingot. Pressure vessels made of Pluramelt have been in actual service for over two years in the oil refining industry.

New process started out to be a development of stainless steel cladding. In the production of stainless clad materials already considerable progress has been made and many difficulties overcome. Several producers use the old process of heating slabs of the two metals in contact and then rolling or forging the combination. A second method is that of pouring the liquid melt of carbon steel on a section of stainless steel.

More Success by Spot Welding

In a third method, a series of thick overlapping beads of stainless steel weld rod are deposited on a carbon steel backing, the surface machined and the combination rolled out to finished size. More success has been achieved by spot welding a thin sheet of stainless upon a steel plate of proper thickness.

Robert K. Hopkins, director of metallurgical research, M. W. Kellogg Co., Jersey City, N. J., made an investigation into methods of producing clad material which would meet the requirements of the petroleum industry for pressure vessels such as his company manufactures. He found ingots produced by present-day steelmaking processes

have certain characteristics in common. Each ingot is formed from the freezing of a melt of single composition, final ingot being of relatively uniform composition throughout. In properly deoxidized steels, no dependence is placed upon the hot rolling or mechanical working for the bonding or joining of the particles in any portion of the metal. Because of the singleness of composition of such ingots, the processes could be termed "monomelt."

In producing clad materials by the new process both component analyses are at least partly molten at the same time to secure absolute

under the various Hopkins patents. Pluramelt in its numerous analyses is the product of an electric furnace melting technique, a result of which all of the special composition materials and a small part of the low-cost materials are melted and integrally joined during this operation. The furnace process is radically different from the conventional type of electric furnace in that the functions of steelmaking and of the mold are combined. In this way special steels are melted and joined to low-cost steels in ingot form, thus producing Pluramelt ingots.

TABLE I—Ingot Analyses

| Depth Below Surface | % Cr |
|---------------------|------|
| At Surface | 18.3 |
| ¼ in. | 17.9 |
| ½ in. | 17.8 |
| ¾ in. | 18.1 |
| 1 in. | 18.0 |
| 1¼ in. | 18.1 |
| 1½ in. | 18.1 |
| 1¾ in. | 18.2 |

Composition of the special steel is controlled simply and within the ranges specified in present commercial practice. The process produces single ingots of two or more compositions, integrally bonded together. It is possible to change the composition, within limits, during the melting operation.

metallic continuity. The words "plural melting" or simply "Pluramelt" aptly describe this process. It is accomplished in a special type of electric arc melting furnace designed so the final product of melting can be intermelted with any other metal part and allowed to solidify as an inseparable portion of the unit mass.

Long association with Allegheny Ludlum Steel Corp., 2319 Oliver building, Pittsburgh and recognition of its experience in producing stainless steels prompted Mr. Hopkins to discuss the problem with the Allegheny Ludlum research staff. As a result the steel company is participating in the development. A plant at Brackenridge, Pa., is now in commercial operation under exclusive license from M. W. Kellogg Co.

Experience so far has been limited to Pluramelts of stainless alloys on soft or medium steel, and tool steel types on soft steel bases. It seems likely that the commercial success with these materials may be duplicated with any other alloy that can be melted in an arc furnace. High carbon steel can be added to mild steel, or vice versa. Low-alloy SAE steels may be used in any desired combination. Hard alloys or tool steels for wear resistance can be put on slabs, rails, roll cylinders or wheel treads. Likewise the high-nickel alloys can be so treated. The base metal can be covered on both sides and triple or more layers made of any desired thickness.

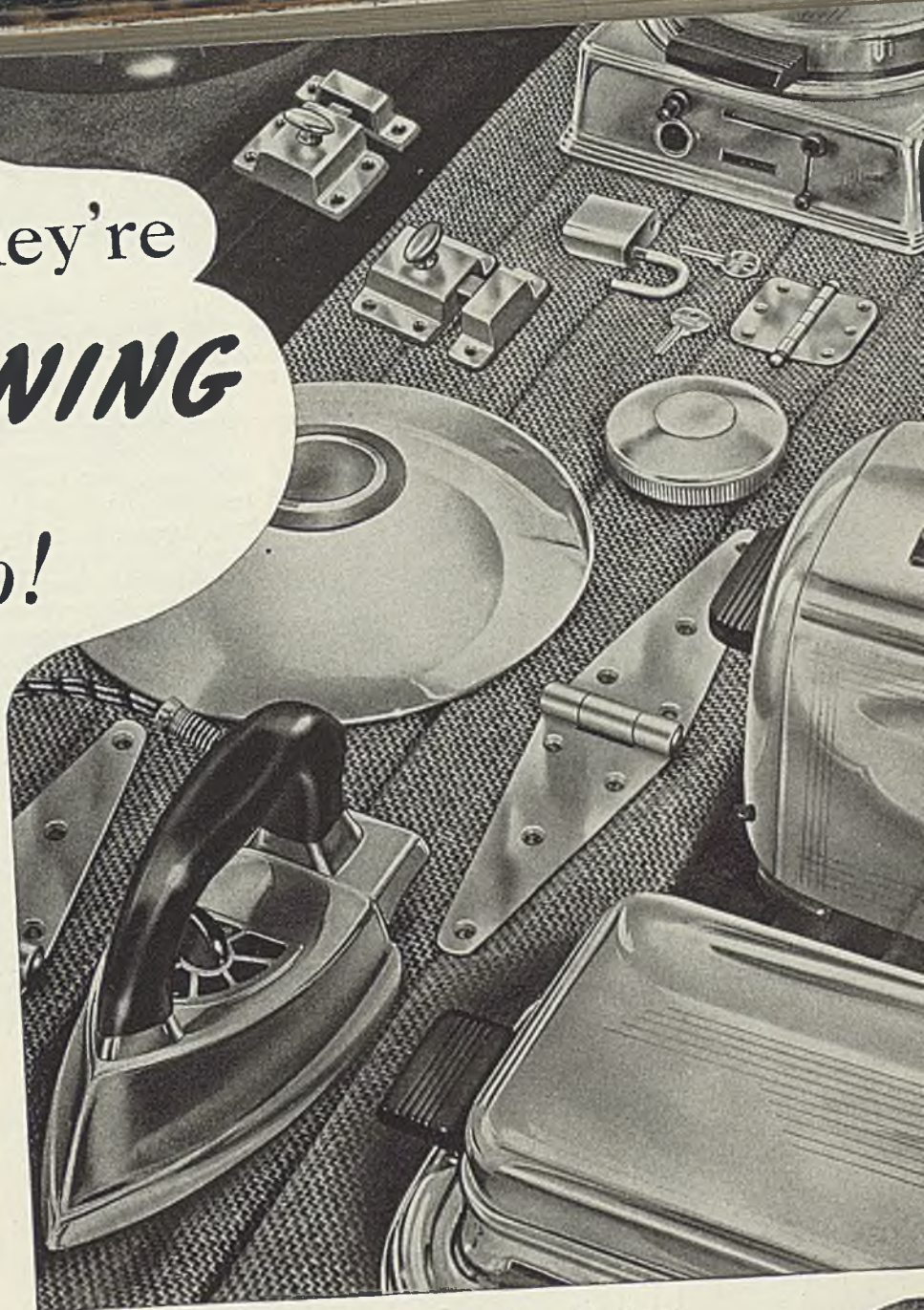
Cladding materials successfully used include 18-8 stainless steel; the same with columbium, molybdenum or both; low-carbon 13 per cent chromium steel; various tool steel

Nowadays They're **STREAMLINING** *COSTS, too!*

TODAY, industry is looking for new ways to turn out better products at a lower cost. More and more manufacturers are discovering that material and fabrication costs can be reduced through the application of American Quality Cold Rolled Strip Steel. Worthwhile savings can be made all along the line from small parts to, in many cases, the entire finished product.

American Quality Cold Rolled Strip Steel comes in a complete range of finishes, edges, tempers and widths. The smooth, eye-appealing finish that is characteristic of parts or products fabricated from Cold Rolled Strip Steel is pleasing to customers who seek beauty and utility at a reasonable price.

Our engineering and metallurgical departments will be glad to demonstrate to you how American Quality Cold Rolled Strip Steel can be used in turning out parts that are accurate in size, light in weight and attractive in appearance. They can show you, too, how this product can be used to streamline costs wherever high-speed, continuous fabricating problems are involved.



HERE IS A representative group of low-cost parts and products fabricated from American Quality Cold Rolled Strip Steel. Notice what an excellent appearance they make. See how frequently Cold Rolled Strip Steel is called upon where deep draws are required. Check your own products. American Quality Cold Rolled Strip Steel may help you streamline your costs.


AMERICAN *Quality*
COLD ROLLED
STRIP STEEL

AMERICAN STEEL & WIRE COMPANY

Cleveland, Chicago and New York

Columbus, St. Louis, San Francisco, Pacific Coast Distributors • United States Steel Export Company, New York

compositions. Low carbon and carbon-molybdenum steels have formed the massive portion or base. Ingots of three compositions integrally joined also have been produced and processed into plates and sheets down to 24 gage.

Pluramelt wire has also been made.

Satisfactory cladding requires a flawless joint between base compositions, and surface layer. Metal structure in both base and surface layers must be uniform and correct. Fabrication must be easy.

Physical tests reveal an extremely good bond. Accompanying sketches show types of free bend tests made. These are self-explanatory except possibly No. 4 which was made from a piece with a thick layer of alloys. It may be considered a radial bend. In No. 5 a short length of alloy was machined away, leaving sharp re-entrant corners at its base. In all the tests the sections are bent cold until ends of the test bars meet. Elongation of outer fibers is about 45 per cent with no sign of parting of the special material away from the massive backing portion in any case. Neither is there fissuring or other failure. While the first two bend tests perhaps are not unusually

Analysis

| Analysis | Commercial | Pluramelt |
|-----------------------|------------|-----------|
| Carbon | 0.06% | 0.06% |
| Chromium | 18.0 | 19.0 |
| Nickel | 10.9 | 11.0 |
| Molybdenum | 3.2 | 3.1 |
| Columbium | None | 0.43 |
| Penetration: 2000° F. | 0.139 in. | 0.116 |
| 1600° F. | 0.127 in. | 0.101 |

drastic, the side bend, radial bend and notched bend, Nos. 3, 4 and 5, stress the bond severely. Many repetitions of these tests for several compositions show Pluramelt steels are integral and behave similarly to sections of monometal steels. Sections with alloy on both sides act similarly under test.

Specimen No. 6, cut from a plate and pulled in a tension machine, shows both base and cladding material deform together, necking down without parting. When the two compositions have a different yield point, two separate "drops of the beam" will occur. Special materials add to the tensile strength of the base by an amount equivalent to the strength of the actual mass of the special material.

Tensile data are similar to those

for a test piece of the base metal. For instance pieces were cut from manway trim from a pressure vessel in shop fabrication. The plate was 1 1/4-inch thick with 1/16-inch alloy facing of 13 per cent chromium, 0.10 per cent carbon maximum. The vessel and test pieces had been annealed two hours at 1450 degrees Fahr., furnace cooled, stress relieved two hours at 1225 degrees Fahr., and furnace cooled. Four test pieces showed from 69,200 to 71,500 per square inch ultimate strength and from 23 to 25 per cent elongation in 8 inches.

Many tests like No. 7 show failure in such a bar takes place some distance from the junction of the two steels in the weaker material. In No. 8 an attempt was made to measure the strength in shear along the junction line. The exact value is uncertain owing to the eccentric loading, but failure occurs in section *a* rather than in shear, until dimension *b* approaches the thickness of the overlay. When failure occurs at *b*, it invariably does so along the 45 degree shear plane in the base metal and not at the junction.

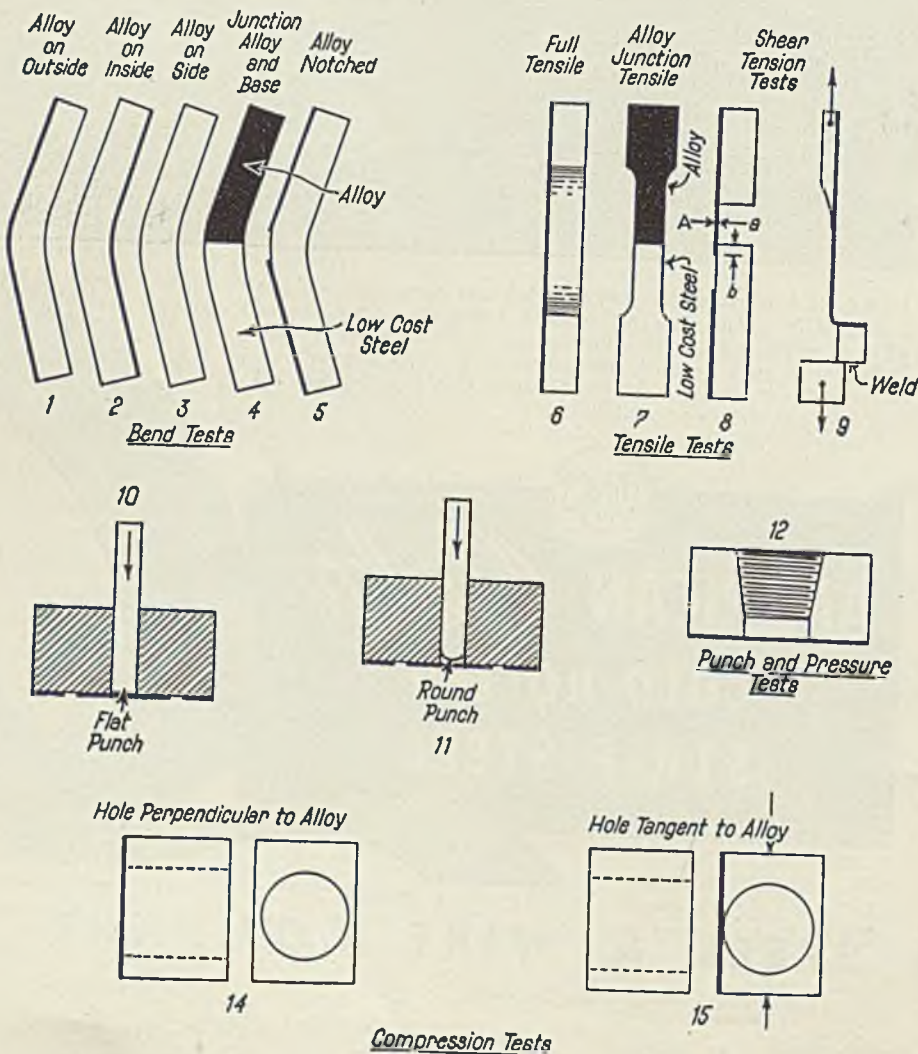
Bent 90 Degrees

Test No. 9 also was designed to test the bond. The original piece selected is a rectangular section of Pluramelt with the alloy steel on one side only. The massive material is machined away at the center of the bar after which the specimen is bent 90 degrees at the bottom and an attachment welded on so the junction line is tested directly in tension. Many such tests on different compositions show that failure takes place in the thin alloy section with no peeling away of the alloy from the carbon steel.

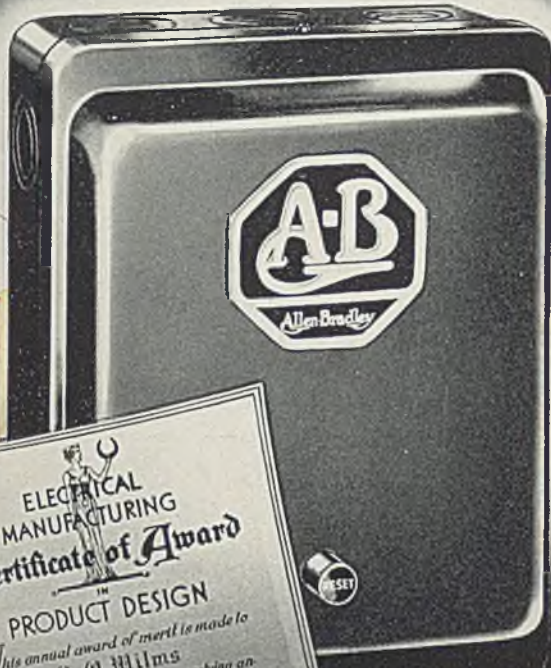
Punch tests Nos. 10 to 12 were prepared by drilling through the massive carbon steel, laying bare the underside of the alloy cladding. Using either a sharp punch, a cupping punch or hydraulic pressure, the alloy diaphragm bulges or shears without lifting any of the

(Please turn to Page 71)

Group of specimens which were given many different tests, showing strength of bond, tensile strength and other characteristics of the composite metals produced by the new method



A Prize-Winning Combination!



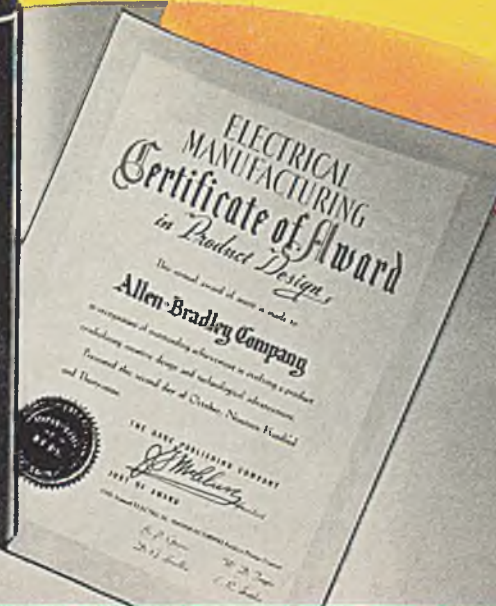
Bulletin 709 Solenoid Starter
A PRIZE-WINNER in 1935

One of the five prize-winners in the first Electrical Manufacturing Product Design Contest was a paper on the then new Allen-Bradley Solenoid Starter. This starter has since proved its merit under all operating conditions.



The New Bulletin 800 Push-Button Station
A PRIZE-WINNER in 1939

Now an Allen-Bradley product has again won one of these coveted awards—in the Fifth Annual Electrical Manufacturing Product Design Contest—with a paper describing the new Bulletin 800, Type 2SA, Push-Button Station. To provide the utmost in ease of installation and trouble-free performance, team up this prize-winning combination on all your machines.



ALLEN-BRADLEY

SOLENOID MOTOR CONTROL

QUALITY

A New Line of **CONTROL STATIONS**



—restyled for new beauty

—redesigned for longer life and more convenient installation

Bulletin 800

Here is a revolutionary new line of push-button control stations—new in exterior appearance and new in interior design. With their molded bakelite covers and polished diecast bases, these stations will add to the appearance of any job. And the mechanism is of the unit construction, to make installation easier. Double break, cadmium silver alloy contacts assure trouble-free life. Investigate these new type standard-duty control stations.

Allen-Bradley Company
1320 S. Second Street, Milwaukee, Wis.

Mechanism is exposed on front and sides for easy wiring



No danger of grounds with molded plastic cover



Dust is kept out by tongue and groove

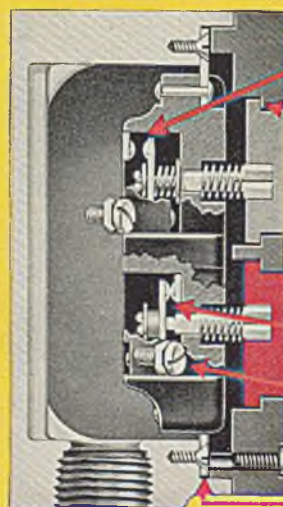
Mechanism can be removed as a self-contained unit

Buttons can be turned 90° for horizontal mounting

A WINNER in Fifth Annual Electrical Manufacturing PRODUCT DESIGN CONTEST

A paper describing the development of the new Bulletin 800 Push-Button Station was given one of the four awards in the Fifth Annual Electrical Manufacturing Product Design Contest. Only a design that represented an entirely new approach could have attained this coveted honor.

Send for Reprint of AWARD PAPER



Double break, silver alloy contacts assure reliable operation

Button has flange seal

"Start" button is flush and cannot be operated accidentally

Large 1" buttons for easy operation

No danger of shorting contacts

Terminals conveniently located

Easy to mount in machine bases
Requires no backing plate

ALLEN-BRADLEY

MOTOR CONTROL

QUALITY



Industrial Illumination

Office lighting utilizes all available reflecting surfaces. Color of reflecting surfaces important. Parabolic ceilings available. Light meter helps set maintenance schedule



Part IV

This is the last of a series of articles on industrial illumination. The first appeared in STEEL of Jan. 22, 1940, p. 36, the second Jan. 29, p. 51, the third, Feb. 5, p. 49

OFFICE lighting is distinguished from general shop lighting in that the ceiling is used as the main source of light. Consider first the lighting of the drafting room. The most common error in drafting-room lighting has been in selection of the luminaire. Draftsmen and office workers often suffer because many existing fixtures do not give maximum eye comfort. In many instances, white enclosing globes have

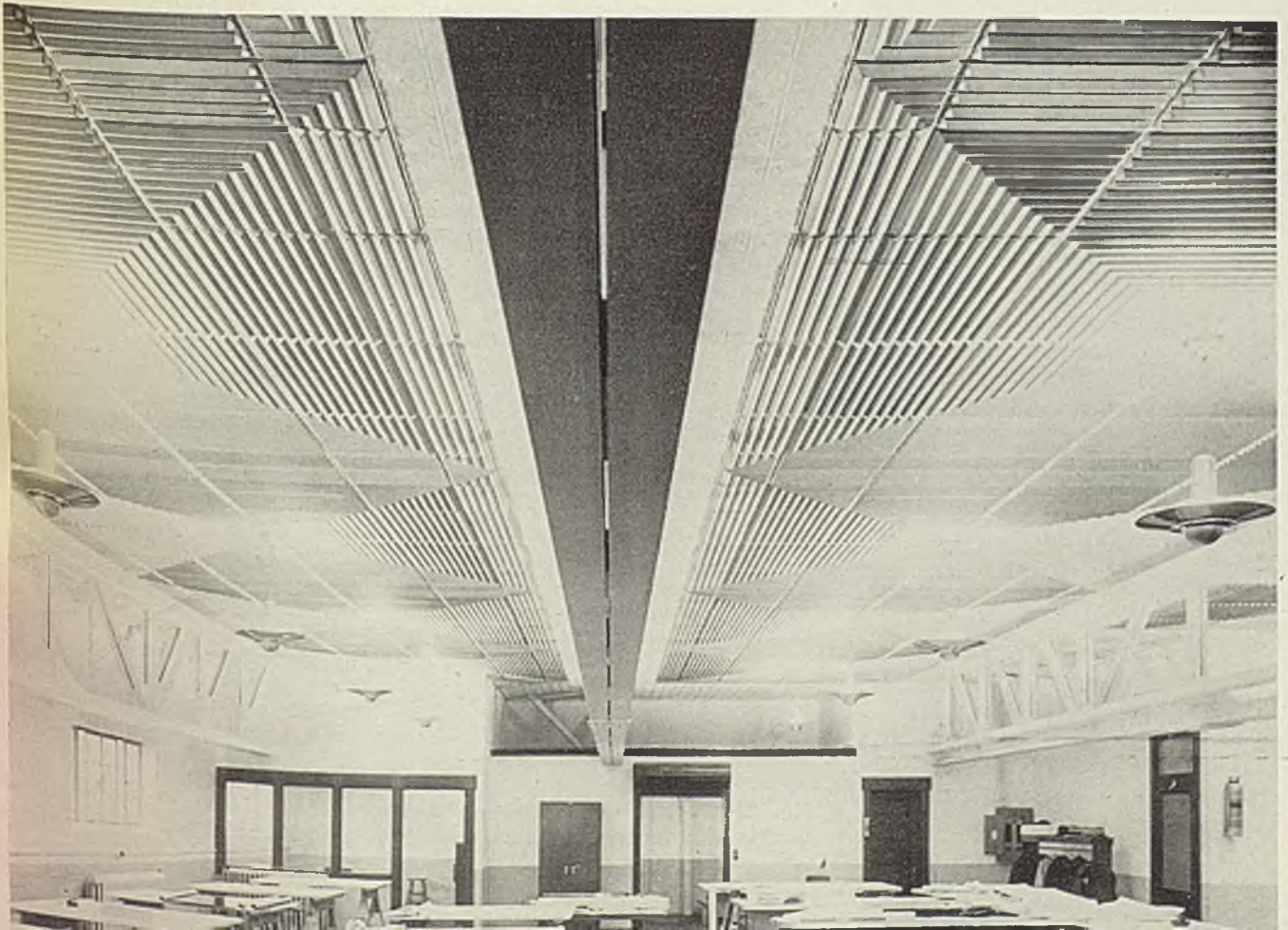
been installed and the lighting result has been unsatisfactory. The comparatively high brightness of these units causes uncomfortable glare and poor diffusion with bothersome shadows. These shadows are dense and sharp and extremely annoying in the drafting room, es-

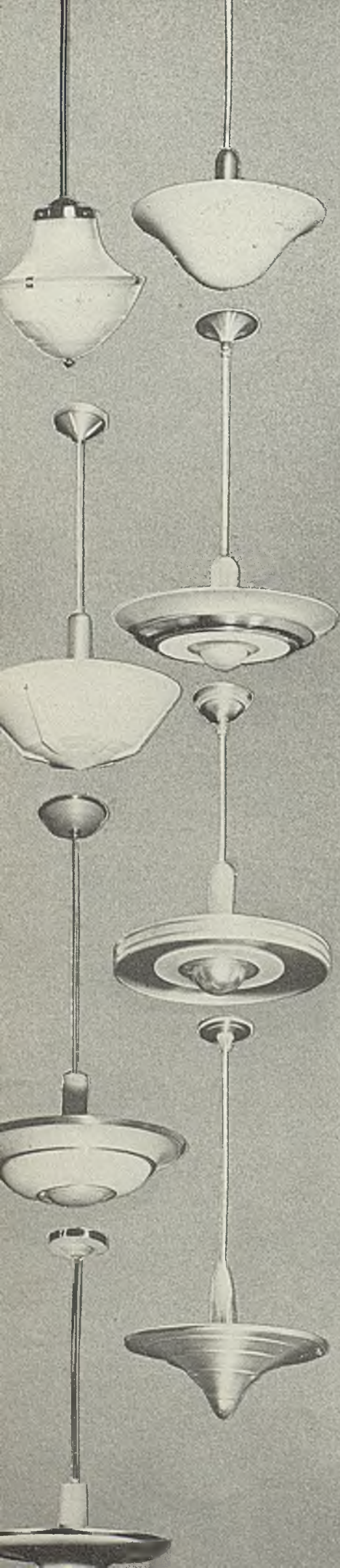
pecially those cast by the edge of a T-square or triangle, or by the hand of the draftsman.

The most acceptable practice for drafting-room lighting is to use a matte-white ceiling and totally indirect equipment to provide comfortable shadow-free illumination with a minimum of reflected glare. Totally indirect units are those which direct all or nearly all of the light to the ceiling, where it is diffused and directed back to the working surfaces. Some totally indirect as well as semi-indirect fixtures may be seen in Fig. 24.

For large offices holding many machines, the lighting system should

Fig. 23—Parabolome ceiling, being a parabola laid on a flat surface, reflects light straight downward on working surfaces. This enables obtaining a higher level of lighting without uncomfortable brightness





provide at least 30 footcandles of illumination. Both indirect and semi-indirect types of equipment are recommended. They may be either open or closed at the top with a glass cover, the latter type having some advantage from the maintenance point of view.

As for light sources employed in these installations, regular Mazda lamps are the most common. These are available with inside frosted bulbs or clear bulbs. The inside frosted type is usually preferred because of the added diffusion which results in elimination of light streaks on ceiling.

The silvered bowl lamp also is widely used as an office illuminant, and many lighting fixtures have been designed around this light source. An advantage of this type of lamp is that the highly efficient reflecting surface is hermetically sealed to the bulb and thus not subjected to depreciation.

Combination Brings Out Colors

Because of their higher efficiency, mercury lamps are also being used in offices in conjunction with incandescent filament lamps on an equal lumen basis such as, for example, one 250-watt 7500-lumen mercury lamp and two 200-watt Mazda lamps of 3700 lumens each. This combination has been found satisfactory in maintaining an approximate natural appearance of colors. This color combination also is psychologically cool because it brings out the blues and greens.

Another method of illuminating offices is the coffer treatment shown in Fig. 26. A room crisscrossed with thick, deep beams approximates this construction. Coffered construction can be used in individual offices.

An interesting development in office lighting, shown in Fig. 23, is the Parabolome ceiling—a broken up parabola laid out on the ceiling above and around the light source. All light rays striking ceiling from source are deflected straight downward to working surfaces. A higher level of illumination is secured from a totally indirect source and the ceiling brightness is not objectionable. This down-light type of office lighting is becoming popular because it enables one to obtain high illumination without uncomfortable ceiling brightness.

Color of paint on a reflecting surface, whether in shop or office, is important and has a direct relation to percentage of light reflected. In the office because of the larger number of indirect fixtures used, this is even more important. Obviously, the ceiling should always be of

light color with as high a reflection factor as possible. Pure white, ivory or cream are usually preferred because of their high reflection factor. White has a reflection factor of 85 per cent or better, ivory 77 per cent, cream 66 per cent, buff 56 per cent, silvery-gray 50 per cent and light blue 50 per cent.

A glossy surface is not recommended since it results in high brightness at some points, causing eye strain. A flat or matte finish is the ideal. An inspection should be made with a light meter periodically to determine when ceiling should be repainted and fixtures cleaned. It is often desirable to stipple the walls in order to minimize effect of smears, small blemishes, finger prints, etc.

Researches indicate the level of illumination must be varied in geometric increments in order to obtain a significant improvement in seeing. This geometric relationship of quantity of light to seeing may conveniently be termed the "foot-candle scale of effectiveness". Although it is indeterminate as an absolute scale, it is exact as a relative scale. The following approximate scale of footcandle effectiveness has been proposed and is gaining acceptance: 1, 2, 5, 10, 20, 50, 100, 200, 500, 1000. Footcandle steps of this scale represent approximately equal contributions to improvement in seeing. The interval between any two successive steps represents the minimum difference in level of illumination which can be justified upon the basis of an observable improvement in seeing. For example, a recommendation for an increase in the amount of light from 10 to 100 footcandles is interpretable, on this scale, as an increase in seeing of three minimum steps. In general, it is practicable and permissible to state that the level of illumination must be doubled in order to obtain an obvious and significant improvement in seeing. This does not mean that no benefit would be obtained if, for instance, the illumination were increased from 10 to 15 footcandles. Obviously, every footcandle contributes to easier seeing and more comfortable working conditions although it would be difficult actually to measure the effect.

Maintenance Essential

This usually means keeping lighting units clean. However, it must be recognized that surfaces adjacent to lighting units also influence amount of light and hence also must be kept clean. As an example, in an average size machine shop illuminated with Glassteel Diffusers, having a ceiling and side walls with reflection factors of 30 and 10 per cent, respectively (a condition which is quite common), repainting the

Fig. 24—Typical totally indirect and semi-indirect fixtures for office lighting

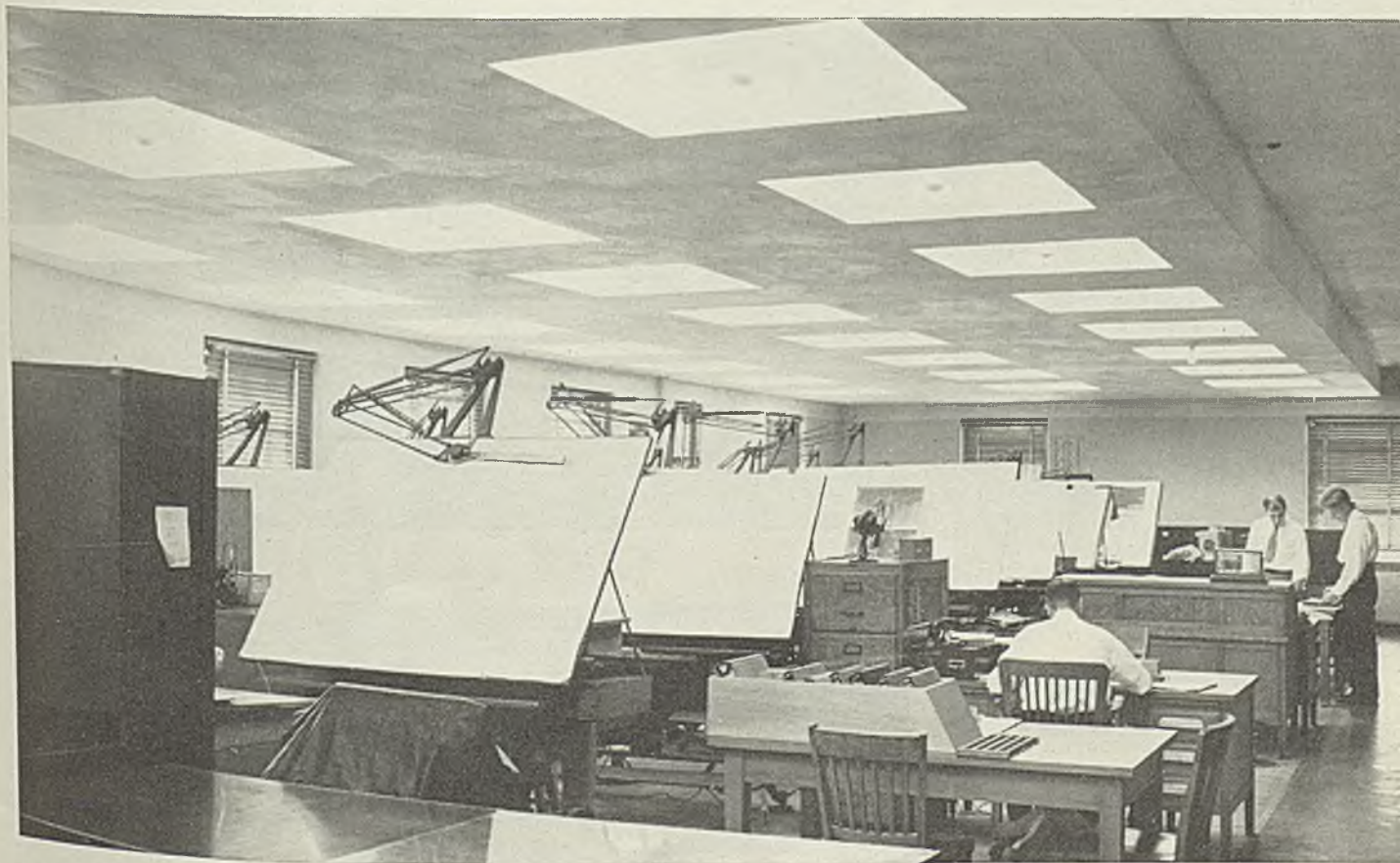
ceiling so that it will reflect 80 per cent of the light striking it and side walls to a soft shade to reflect 50 per cent of light, will increase illumination on work about 15 per cent. In a drafting room, for instance, with indirect lighting where similar conditions might exist, painting to secure 80 and 50 per cent reflection from the ceiling and walls will often triple illumination.

Repainting every few years can be justified from an economic point of view. Painting, however, cannot be placed entirely on a dollars and cents basis; environment plays such an important part in morale and productivity of employe that its effect cannot be directly measured. Clean, painted surfaces both in offices and shops should not be underestimated in maintaining employe morale.

In addition to painting, don't forget to maintain the lighting units. The reflecting surfaces of indirect units collect dust and dirt and should be cleaned at regular intervals if the user is to obtain a maximum return for his lighting dollar.

In the shop, lighting units both general and supplementary should be checked regularly with a light meter. Frequently a group replacement plan of relamping, particularly in high-bay installations, can be established to coincide with the cleaning period, with a resultant saving

Fig. 26—Coffer treatment of office and drafting room ceilings



February 12, 1940

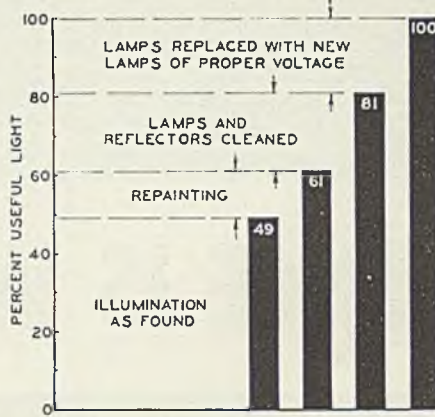


Fig. 25—Showing how proper maintenance increases light output

in maintenance cost. It may be stated here that illumination requirements in the tables that appeared in the second article of this series apply to lighting equipment under average operating conditions, not simply when new and clean as when first installed. Fig. 25 serves to emphasize the improvements obtained by repainting and cleaning lamps and reflectors. These data were obtained in a plant where conditions were unfavorable to maintenance.

To insure that a given level of illumination will be maintained even where conditions are unfavorable, it is necessary to design the system to give initially at least 25 per cent more light than the required minimum. In locations where dirt col-

lects rapidly and where adequate maintenance is not provided, the initial value should be at least 50 per cent above minimum requirements.

Pipe, Tubes Under High Temperature, Pressure

■ *A.S.T.M. Specifications for Pipe and Piping Materials for High-Temperature and High-Pressure Services*; heavy paperboard, 142 pages, 6 x 9 inches; published by American Society for Testing Materials, Philadelphia; supplied by STEEL, Cleveland, for \$1.25.

This compilation provides in convenient form a selected group of A.S.T.M. specifications of interest in the field of power and piping installations. It has been in widespread service, especially in the utilities field, in connection with high-temperature and high-pressure work.

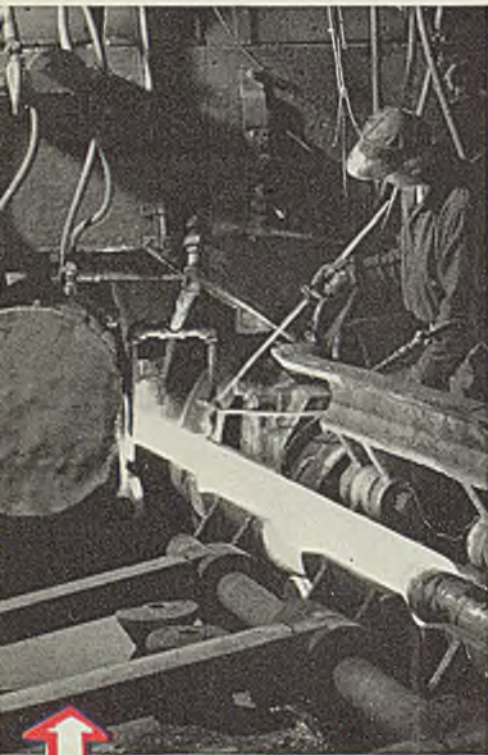
Twelve of the 23 specifications cover various types of carbon and alloy steel pipe, boiler tubes, etc., including specifications for classification and dimensions of wrought iron and wrought steel pipe. Carbon and alloy steel castings for valves, flanges and fittings are covered in four specifications and forged or rolled alloy steel pipe flanges in three others. Alloy steel bolting materials and carbon and alloy steel nuts in three. Standard on classification of austenite grain size in steel and two grain-size charts are included.



YOUR CONFIDENCE IS WELL PLACED



NOT CONTENT with all the safeguards previously employed, skilled inspectors give each tube a final once-over, inside and out. These men, who must undergo frequent eye examinations, have perfected their vision to the point where they can, at a glance, spot even a tiny flaw that might later cause trouble.



THE TOUGHEST TEST steel must pass before it becomes NATIONAL Seamless takes place here, in the piercing process, where the white-hot billet of selected steel is forced over a pointed mandrel. As you can readily appreciate, steel must be virtually perfect to pass this test, for the slightest flaw is certain to reveal itself here.



AFTER SUCCESSIVE rolling and finishing operations bring the tube to size, (which may be anything from 3/16-in. pressure tubing to 28-in. pipe) the hydrostatic test is applied. Here, the ability of the tube to withstand pressures far above those it will encounter



IN "Walls without Welds"

Every foot of National Seamless must prove itself many times before it leaves the mill

RAILROADS and power plants rely on NATIONAL Seamless to control high-pressure steam more safely, more dependably. In chemical and process plants, NATIONAL Seamless operates at temperatures and pressures that might be disastrous to other products. In the vital parts of airplanes and automobiles, Seamless Tubing reduces machining costs, provides the necessary uniformity to make mass production successful.

In northern New Jersey, NATIONAL Seamless protects a telephone cable through which pass a million messages a day. In New York harbor a fireboat defends shipping with greater effectiveness than ever before because of the higher pressures made possible by NATIONAL Seamless. In California, NATIONAL Seamless drives drill bits nearly three miles into the earth in quest of oil.

It would indeed be difficult to name an industry which does not depend in some way on the integrity of NATIONAL Seamless Pipe or Tubing.

A big responsibility? It most certainly is. That's why the production of NATIONAL Seamless, all the way from ore to finished product, is surrounded with every known safeguard. Not one stone is left unturned to make NATIONAL Seamless stand for, and keep on standing for, the product to use for jobs which must not fail. Never for an instant have the men who make and test NATIONAL Seamless dared to relax their vigilance. And today finds more and more industries assigning their toughest pipe and tubing jobs to NATIONAL Seamless—recognizing it as the finest tubular product that is commercially possible to produce.

Are you taking full advantage of the proved superiority of NATIONAL Seamless—"Walls Without Welds?"

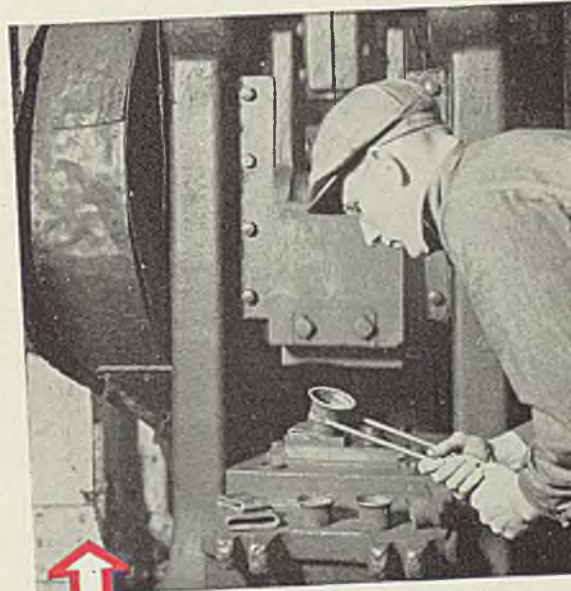
NATIONAL TUBE COMPANY

PITTSBURGH, PA.



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

UNITED STATES STEEL



THE WORKABILITY test is applied to the crop ends or coup of pressure tubes to assure their ability to withstand the form operations employed during installation. Samples are here flattened, crushed, flanged, and otherwise deformed to eliminate any speculation as to their performance during installation or in service.



THESE TUBES will soon be speeding over the highways of tubes of a well-known motor car. To prevent vibration essential that they must be as straight as science can make. This test automatically rejects any tube which does not meet strictest tolerances of straightness.

Profitable Fly-Ash Handling

Suitably activated and sufficiently carbon-free fly ash is reclaimed and sold at a profit by use of airtight conveying system which permits the vacuum on the electrostatic precipitator units to be maintained

■ THE CONVEYING of fly ash at the State Line plant of the Chicago District Electric Generating Corp. is unusual for several reasons:

First, since this fly ash is bagged and sold at a profit, instead of being wet down and gotten rid of at some expense.

Second, because to be salable it must be handled dry from the electrostatic precipitators, substantially without breaking their vacuum.

Third, because this 300-mesh-and-under fly ash is hot and has a high angle of repose when the air is out of it, yet runs like water when aerated, making a difficult handling problem.

Fourth, the action is intermittent, the conveyors working only part of one shift, while the electrostatic precipitators collect the ash 24 hours a day, thus making it necessary for the conveyors to handle the material in all stages of aeration as mentioned in item three.

Plan view, Fig. 1, shows one unit of 24 Cottrell hoppers, served by six small 5-inch 2-way Redler conveyors each feeding itself with a

By N. W. ELMER
Redler Engineer
Stephens-Adamson Mfg. Co.
Chicago

choked feed simultaneously from two hoppers. The inlets are at the ends, and the combined discharge at the center of these conveyors. The other 12 hoppers are served simultaneously by the larger collecting Redler conveyors, after the first 12 are empty. When empty, the seal on the precipitators is maintained by closing the 12-inch air-tight ground cylindrical gate between each hopper and its respective conveyor. Fig. 4 is a view of the conveyors shown in Fig. 1, taken from the direction indicated by the arrow. All the Redler conveyors are totally enclosed, dust tight, and feed themselves with a choked feed. The Cottrell hopper vacuum therefore is not affected until the hopper is empty, when the closing of the cylindrical gate seals it again.

The electrostatic precipitators used are of the graded-resistance

concrete-plate type. The shell is a steel plate riveted and welded to be practically gas tight. Within this are a series of vertically suspended reinforced concrete plate collecting electrodes, between which are vertical wires forming the negative or discharge electrodes.

With this graded-resistance type of precipitator, the apparatus has proved to be practically self-cleaning, but chain scrapers are provided for the collecting plates when and if this operation may be needed. This is done in an automatically timed operation by an air cylinder.

The concrete precipitator plates are 8 inches apart. The wires are half-way between them, 4 inches from each, and carry 75,000 volts. Power consumption is nominal, about 5 kilowatt hours per million cubic feet of gas cleaned, and the resistance to gas flow is also small, of the order of magnitude of 0.2-inch of water.

We now come to the most interesting part of the story, which involves the use of this fly ash, the collection of which in a dustless manner by

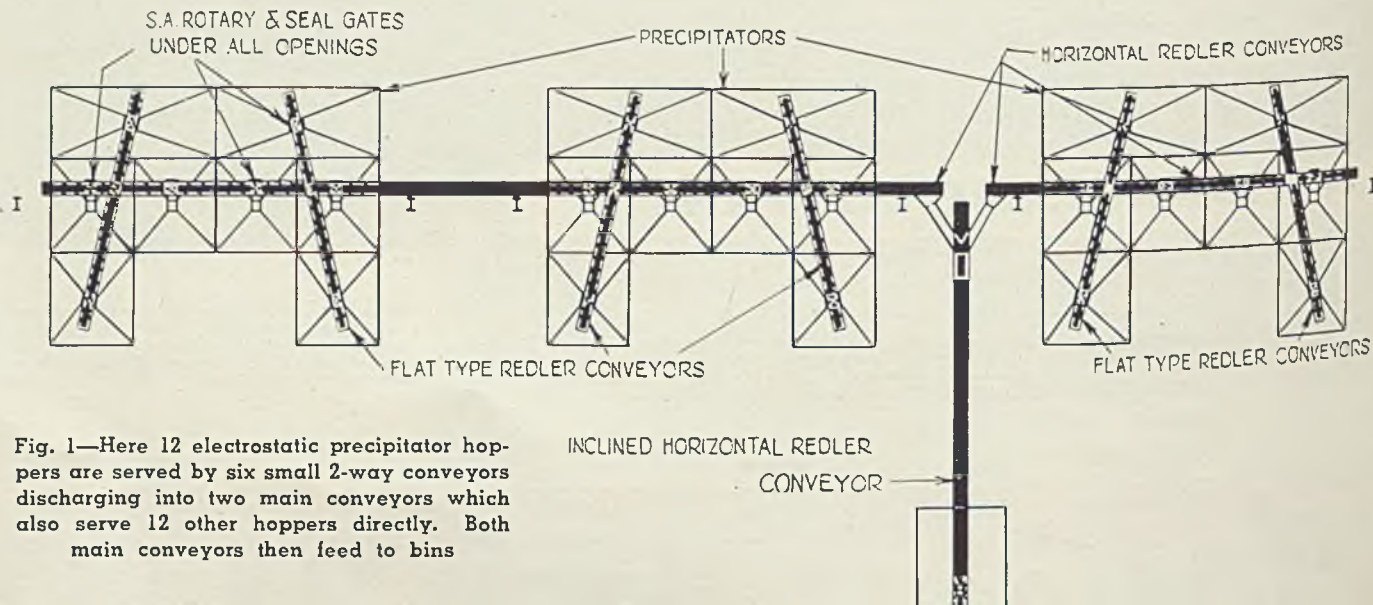


Fig. 1—Here 12 electrostatic precipitator hoppers are served by six small 2-way conveyors discharging into two main conveyors which also serve 12 other hoppers directly. Both main conveyors then feed to bins

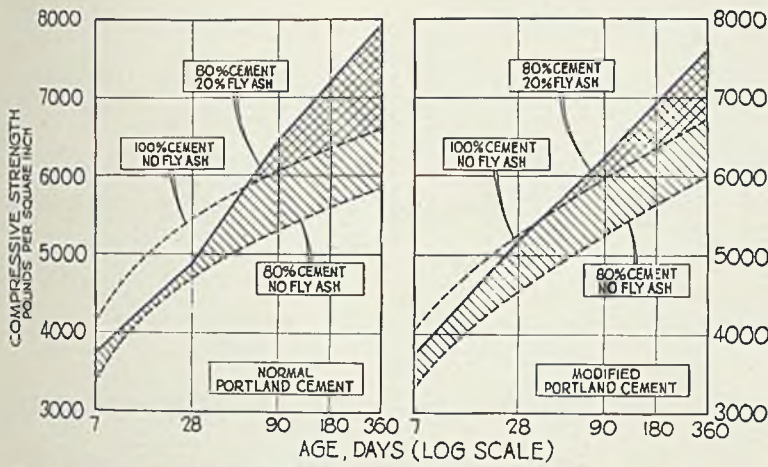


Fig. 2—Concrete age-strength relations with State Line fly ash replacing 20 per cent of two standard Portland cements

the Redler conveyors from the electrostatic precipitators has just been described.

When Portland cement concrete hardens, free lime is liberated. This contributes little to the strength of the cement, and being somewhat soluble in water, tends to leach away slowly. Also, since it is the most chemically active material in the concrete, it is susceptible to attack by aggressive agents in the water. It is this free lime that the fly ash chemically combines with to form additional cementitious material, adding strength and holding the lime in the form of a stable insoluble compound, presumably a silicate.

Lime Action Slow

Fig. 24, taken from C. F. Ramseyer's article in *Electric Light & Power* of February, 1939, and based on Raymond E. Davis' and Roy W. Carlson's paper, presented at the annual convention of the American Concrete Institute, New York, in February, 1937, shows the relative strength relations of the same concrete mixed with 100 per cent normal Portland cement and also with modified Portland cement as against 80 per cent of the same cement and 20 per cent fly ash in each case. Note that it takes a little over a month for this lime action to reach a point where the strength of the concrete is equal, for 100 per cent cement and the 80 per cent concrete, but after that, the 80 per cent concretes are considerably stronger. Chart, Fig. 3, illustrates the comparative permeability in the

two cases. This latter was to be expected, as the free lime is soluble in water, and once the free lime is turned into silicate, it is no longer soluble.

Commercially this type of mixture of substantially carbon free fly ash, and Portland cement is a form of Portland Pozzolan cement, and Portland Pozzolan cements are used extensively in the west coast, particularly where the concrete is subject of attack by sea water or other

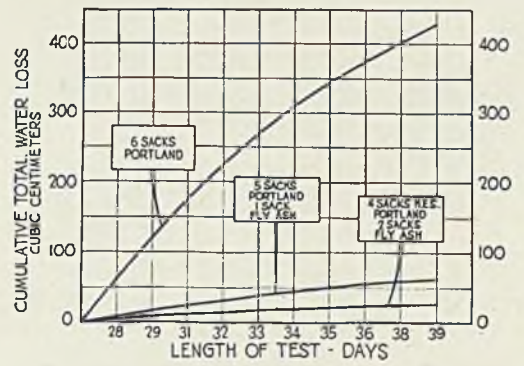


Fig. 3—Comparative concrete permeability with fly ash replacing one and two sacks of Portland cement in a 6-sack per cubic yard mix. Test was shut down on 30th and 37th days

aggressive aqueous solutions. The Bonneville dam was constructed using Portland Pozzolan cement, and it is said to be as free from cracks as Boulder dam which was built with a special low-heat cement.

One of the reasons for using fly ash, of course, is that a saving may be made in the cost of cement. In the Chicago area, at present, the

(Please turn to Page 79)

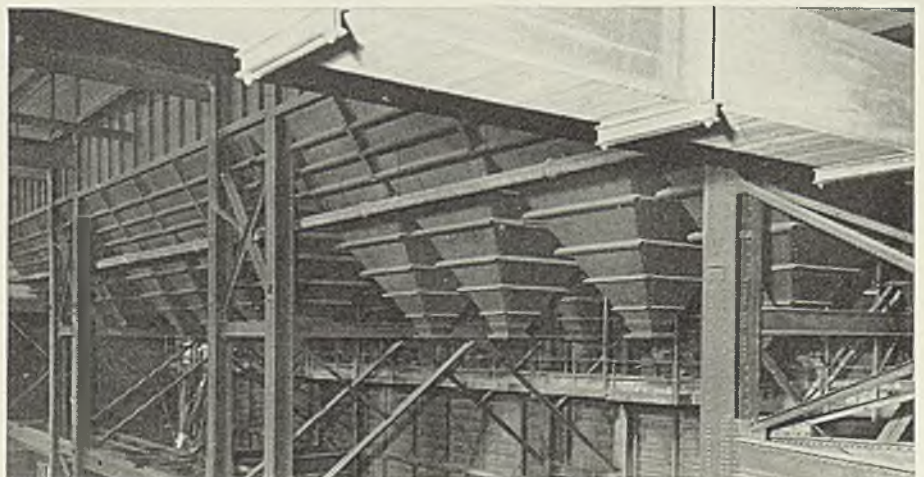
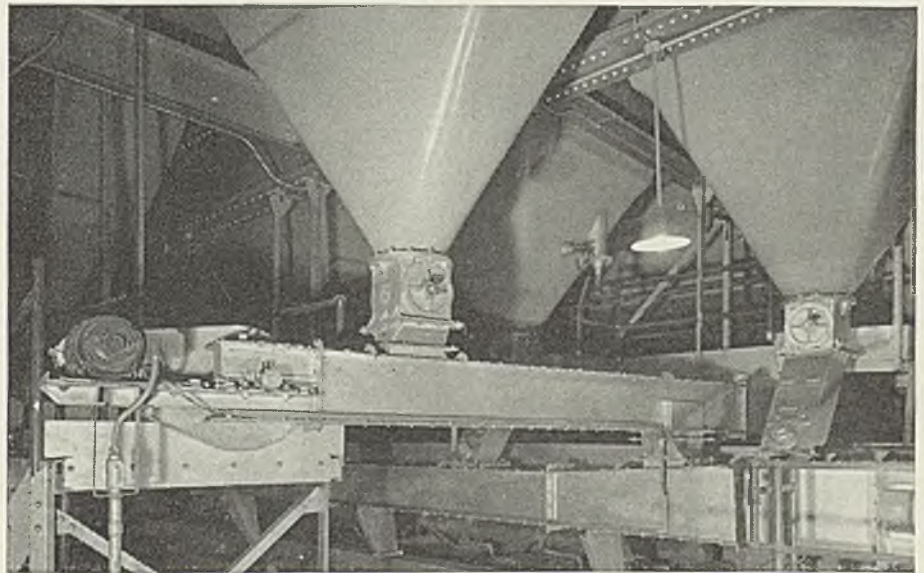


Fig. 4. (Upper)—View showing a small 2-way conveyor, main conveyor below, cylindrical gate beneath each hopper

Fig. 5. (Lower)—Bunkers now used for storing fly ash. They are fed from bin in Fig. 1 by a pumping unit. Bagging equipment is at extreme lower left



Joining Fine Wire Screen

Use of heavy steel-plate jigs is essential part of silver-soldering technique recommended for joining wire screen. Soldering is done with a mix of silver-solder filings and flux, carefully brushed in place

By C. C. NOTEBAERT

The Linde Air Products Co.
New York

■ **STRONG** joints in wire screen with mesh as fine as 76 to the inch can be made consistently by means of the oxyacetylene flame. When the proper silver-soldering technique is employed, such joints are hardly apparent to the naked eye.

One of the first requirements for satisfactory soldering of wire screen is a suitably designed jig. Basically, as shown in the accompanying sketch, this consists of three pieces of steel plate, two of which are beveled along one edge. One large plate serves as a supporting base for the two pieces of screen which are to be joined. When the edges of the wire mesh have been lined up, the beveled plates are placed in position as shown and serve to hold the screen securely during the silver-soldering operation.

For production work of this na-

Abstract from *Welding Journal*, published by American Welding society, 33 West Thirty-ninth street, New York.

ture, quick-acting clamps should be permanently installed so as to speed positioning of the wire mesh and beveled clamping plates. Some jigs of this type, which have already performed satisfactorily over a period of several years, measure only 10 x 18 inches overall. Actual size of the jig is, of course, determined by the work to be done.

As for all silver soldering, the edges to be joined should be thoroughly cleaned first, either by mechanical or chemical means. While it is possible to use emery cloth for this purpose on the coarser screens, it will be of advantage to swab the finer meshes with an acid solution followed by a rinse. It is necessary to clean only the immediate area of the bond—never more than one inch on either side of the joint. If there is any question regarding the desirability of cleaning, make a test with a small piece of scrap wire mesh. Obviously, if the silver solder adheres and flows properly, there is no need for further cleaning.

Once cleaned, the edges to be joined should be fluxed thoroughly

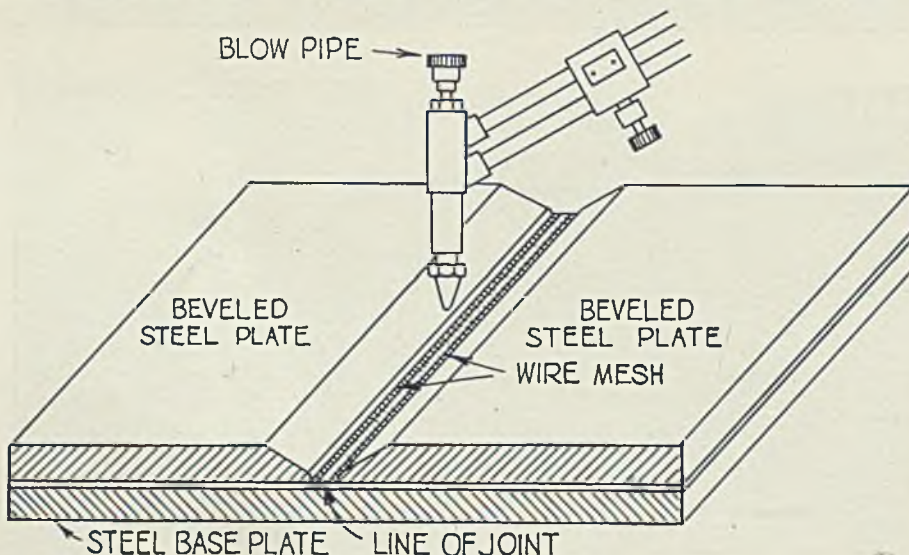
on both the bottom and top surfaces of the screen as well as around the circumferences of the individual wires. A solution is prepared by dissolving the flux in boiling water. It is difficult to recommend the exact proportions for this mixture because the strength of the flux solution is dependent upon the composition and condition of the wire gauze which is to be joined. It is a good general plan to start with a mixture consisting of one can of flux to one quart of water. Actual experiment then will determine whether a stronger or weaker solution is preferable. Proper additions of flux or water can then be made as needed.

Flux Applied with Brush

In actually joining the wire mesh, the silver solder cannot be used in strip or rod form if strong, neat joints of consistently high quality are desired. Instead, solid stock should be finely divided by filing with a fine or smooth file. The silver solder filings are then added, in proper amount, to the water-mixed solution of flux, and the whole is mixed thoroughly together. Application of the metal-containing flux to the joint is accomplished by means of a fine camel hair brush. Only a narrow band is applied along the area to be joined.

When the screen or wire mesh has been carefully cleaned, fluxed and lined up in the jig, the joint is completed by application of the oxyacetylene flame. Because the screen wire is fine gage metal, it is essen-

This is the manner in which steel plates are used in making a suitable jig. They not only clamp screen in position but also conduct excessive heat away to prevent burning the fine wire mesh. Distance from end of flame to wire mesh should be about 3/16-inch





*Write for Your
Personal Copy
of this
Helpful New Book*

DRUM MAKING MACHINES

This new book contains material to help manufacturers of steel drums, containers and pails, in working out their production set-up. It is completely illustrated with production flow charts and photographs of machines for performing each operation. It shows each step from the first flat steel sheet to the finished product. The book is divided into three thumb-indexed sections, covering Heavy Gage Drums, Light Gage Drums and Pails.

Machines are shown for a wide range of production requirements. They range from manually operated to power driven machines and semi- and full-automatic types.

This new book gives in condensed form the results of long experience in designing, building and applying Niagara equipment for drum and pail making. It is offered as a service to manufacturers—write for your personal copy.

NIAGARA MACHINE & TOOL WORKS. BUFFALO, N. Y.

tial that the flame used be very small and highly concentrated. Small air-acetylene torches, airplane or sheet metal welding or lead-burning blowpipes with No. 0 welding heads or tips provide highly satisfactory flames for this type of service.

Short joints can be made by hand, but the best method of producing an even joint of any considerable length is to fix the oxyacetylene blowpipe or air-acetylene torch in a traveling jig. When the flame is adjusted properly and mechanically operated, a uniform speed can be obtained which will insure proper bonding of the parts without melting or burning the wire base metal. This burning tendency can be controlled to a great extent by constantly maintaining the tip of the flame close

to the work. Best results are obtained at a distance of about 3/16-inch.

Only the heat of the soft, concentrated flame is utilized in making the bond. Care should be exercised to prevent actual contact of the flame with the silver solder since such contact, as well as application of an excessive amount of heat, will cause the joint to be weak and porous.

Some operators find it desirable to hold the blowpipe or air-acetylene torch at an angle to the work. This, however, must be determined experimentally by the individual. In any event, if it is at all possible, it is advisable to complete each joint without removing the heat of the blowpipe flame from the work once the bond has been started.

Process Cleans Zinc Die Castings without Peeling

■ Two methods of cleaning zinc and aluminum-base die castings by means of the Dyclene process, development of MacDermid Inc., Waterbury, Conn., are said to prevent plated deposit from peeling or blistering even when heated to temperatures as high as 300 degrees Fahr. for 1 hour.

Concentrations of Dyclene compounds are governed entirely by interval elapsing between buffing and cleaning operation, nature of composition used, size and shape of article cleaned.

First method involves a 2-tank cleaning cycle. First step here, employing Dyclene S compound, is a soaking operation which loosens or removes a large percentage of impacted buffing compound. Usual water rinse may be omitted, work going direct from soak operation into reverse Dyclene E solution, which is said to remove all compounds, oils, greases and inorganic substances. Following this, work is given usual water rinses and a 1 per cent muriatic acid dip. Anodic cleaning is strongly recommended, but Dyclene E may be used cathodically.

Second method is for plants employing degreasing or pressure alkali machines. If cleaning in these machines is properly carried out, a 30 to 60-second immersion in Dyclene E electric reverse cleaner gives a chemically and metallurgically clean surface.

New England Industry Covered by Directory

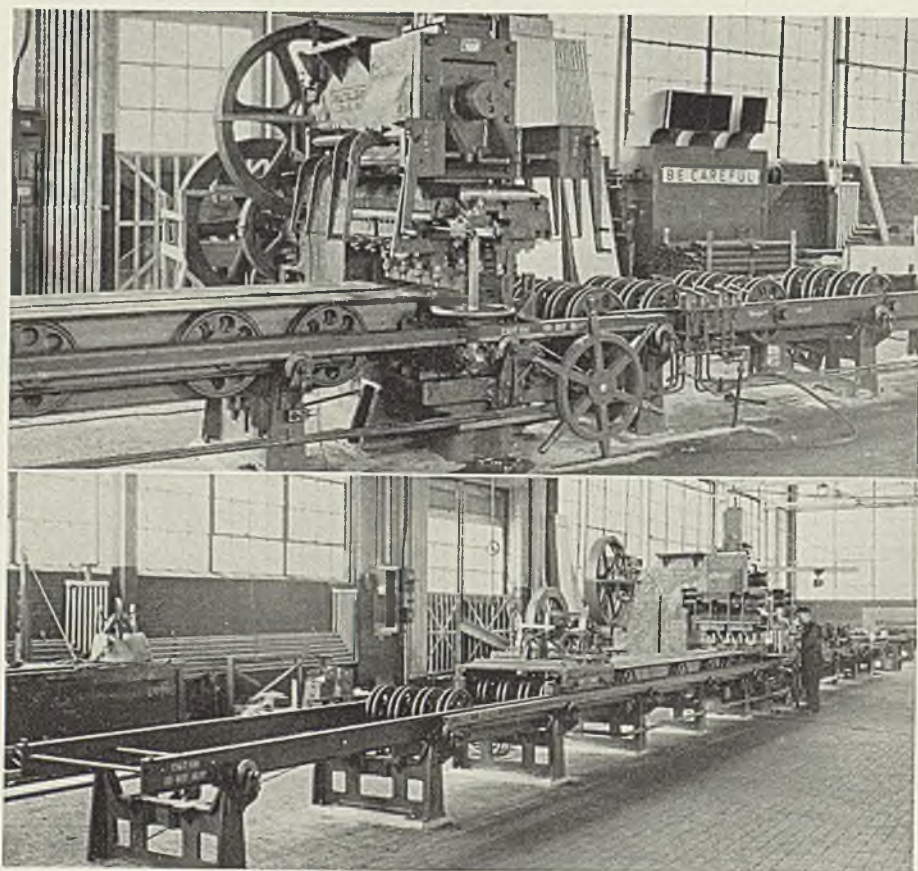
■ *Directory of New England Manufacturers*, 1940, 732 pages, cloth, 7 1/2 x 10 1/2 inches; published by George D. Hall Inc., 30 Kilby street, Boston, with editorial co-operation of the New England Council; supplied by STEEL, Cleveland, for \$20.

This is the fifth annual edition, covering manufacturing industries of New England. It lists manufacturers regardless of size, tells what products are made in New England, size and personnel of the companies and locates sources of supply geographically as well as by product.

Since the 1939 edition, 18,400 changes have been made, including 800 firms out of business, 1700 new listings, 8700 changes of executive personnel, 2400 companies expanded or curtailed and 2100 products added or eliminated.

As a birdseye survey of New England it contains full information on the industrial organization in great detail, providing accurate data for all desiring to buy or sell in that area.

Beam Punch and Spacing Table



■ A beam punch and spacing table installed by Williams, White & Co., Moline Ill., for high production of punched angles and plates has a capacity from 4 x 4-inch angles to 8 x 8 x 3/4-inch, four at one pass. Speed and accuracy are insured by two carriages moved by a rack and pinion. One pushes work through tools at start, second pulls work through to finish. Upper view is a close-up of tools and operating mechanism. All punching tools are gaged, permitting one leg of angles to be punched on two front sets of

tools and opposite leg on rear tools. In this manner, two angles are completed at one pass after first two legs are finished. Operator spaces angles by moving a set of sliding tools on table from front to back. A rack on table on front side of machine supports templet 3 inches wide which can be of wood with marked guide lines or steel with drilled holes. All controls for clamping material, punching, operating gages and spacing are within easy reach of operator. Lower view shows full length of machine with carriage.

Iron Alloys Research a Decade Old; Program Near Completion

■ ALLOYS of Iron Research, organized late in 1929 by the Engineering Foundation, New York, and undertaking its program Feb. 1, 1930, has just issued a ten-year progress report. This report details the tremendous volume of work completed thus far and states that practically all the original program will be finished by early 1943.

Purpose for which the Alloys of Iron Research was established, it is to be recalled, was two-fold: "1. To review critically all research work on iron and its alloys, with special attention to recent developments in carbon and alloy steels and plain and alloy cast irons, as reported in the technical literature of the world from 1890 to date, and to assemble the data thus collected in a form convenient for reference," and 2. "To arrange, correlate and summarize the information thus collected, supplement where possible with unpublished data and publish it in a series of monographs, in which errors and conflicts in existing data are pointed out and in which the gaps now present in our knowledge of steel and cast iron are clearly indicated, thus encouraging research to fill these gaps."

The work "was planned broadly so that by publication of the monograph series metallurgists and other research workers would be spared the labor and time necessary to search the literature in many languages to discover what had already been done in their chosen fields, and so that costly research work that duplicated work already completed, but reported in other languages or in obscure journals, could be prevented. In addition, it was planned that these monographs should supply in compact and readily usable form all important data on the properties of present-day ferrous materials, to engineers and others making or using steel and cast iron."

Important Publications Abstracted

The report states that there are nearly 2000 publications in 10 languages which contain frequent or occasional articles on ferrous metallurgy. Of these, approximately 150 contain important reports of metallurgical progress and research. All of these 150 journals have been searched completely from 1890 to date and have been abstracted in as much detail as necessary for preparation of the monographs. This review of the literature includes data on the alloys of 40 elements with iron, in 20 classifications cov-

ering all phases of the manufacture, constitution and properties of high-purity iron and plain and alloy steels and cast irons.

Since the review of the world's literature began on Feb. 1, 1930, approximately 10,000 papers have been read, and from these about 20,000 abstracts have been prepared and filed, the report continues. Of this mass of material, 6218 papers have been considered of sufficient importance so that the data contained therein have been used in the first 10 monographs.

Tabulation of the source of these papers reveals interestingly that 43.5 per cent are from the United States, 25.5 from Germany, 19.1 from England, 6.5 from France, 3.2 from Japan, 1.1 from Sweden, 0.4 from Russia, 0.4 from Italy, 0.2 from Netherlands, and 0.1 per cent from others.

Special Volume Aids Readers

Ten regular monographs and one special volume on phase diagrams, prepared to assist the reader of the other volumes in understanding ternary systems, have been published. These 11 volumes contain 5635 pages, 2½ million words, 1957 illustrations and 1175 tables. Four more are in preparation.

Monographs published are: *Alloys of Iron and Molybdenum*, 1932; *Alloys of Iron and Silicon*, 1933; *Alloys of Iron and Tungsten*, 1934; *Alloys of Iron and Copper*, 1934; *Principles of Phase Diagrams*, 1935; *The Metal Iron*, 1935; *Alloys of Iron and Carbon, Vol. I, Constitution*, 1936; *Alloys of Iron and Carbon, Vol. II, Properties*, 1937; *Alloys of Iron and Chromium, Vol. I, Low-Chromium Alloys*, 1937; *Alloys of Iron and Nickel, Vol. I, Special-Purpose Alloys*, 1938; and *Alloys of Iron and Chromium, Vol. II, High-Chromium Alloys*, 1940.

Monographs in preparation are: *Alloys of Iron and Nickel, Vol. II, Steels and Cast Irons*, to be published in 1941; *Alloys of Iron and Manganese*, to be published in 1941 or 1942; *Alloys of Iron and Vanadium*; and *Alloys of Iron and Sulphur and Phosphorus*.

As originally established and financed, Alloys of Iron Research was to complete its work in five or six years. Because of the depression, income was scaled down and the program curtailed accordingly. In 1936, additional subscriptions were obtained to extend the work for a 3-year period.

The original plans were based on

publication of the literature survey in two series of small volumes; one for scientists and researchers, and one for engineers and other users of steel and cast iron. Each series was to be made up of 8 volumes, on the common alloy steels and cast irons. This has proved impracticable and plans were changed to publication of one series of 10 larger monographs, on the metal iron, carbon steel and cast iron, and on steels and cast irons containing nickel, chromium, vanadium, molybdenum, tungsten, silicon, manganese and copper, with the possible later addition of others on sulphur, phosphorus and the more uncommon alloying metals. This program of 10 monographs undoubtedly would have been completed in 1936 as planned, it is stated, had income not been reduced drastically in 1933.

The delay in completing the original program had unfortunate consequences, as the amount of published data on carbon and alloy steels which had to be considered for the monographs approximately doubled between 1933 and 1936, and had about tripled between 1936 and 1939. The important data on the alloys of iron and carbon, iron and chromium, and iron and nickel, which could have been summarized adequately in one volume of 400 to 500 pages in 1934 or 1935, required two volumes of 500 to 800 pages each by 1938 or 1939.

At the present rate of progress, the report says, the manuscripts for three of the last four monographs should be completed, reviewed and ready for publication before the end of 1942; possibly the final one also will be completed by that time. In any event, all of the original program will be finished by 1943.

Hope for Frequent Revision

Hope has been expressed repeatedly, the report explains, that the published volumes would be revised and brought up to date at regular intervals. The first monograph was published in 1932; to bring this and subsequent monographs up to date would be readily possible by publishing new editions or small supplementary volumes which would include the published data accumulated over a 10-year period for each class of alloy steels or cast irons.

Such a plan is recommended in the report and would require approximately \$15,000 per year, beginning with 1943. This cost spread equitably among some 50 large producers and users of alloy steels and cast irons would be of small moment compared with the benefits and savings accruing to industry and large, especially to research workers, engineers and others who must know the state of the art in their respective fields.

Tool Engineers' Annual Meeting

■ ANNUAL meeting of American Society of Tool Engineers will be held at Hotel New Yorker, New York, March 7-9, and will have "Economics of Tooling" as its principal theme.

Numerous technical sessions, papers and addresses will tie in with this topic. A large attendance is anticipated.

Among the subjects for technical

sessions are: Precision small gears; tooling for plastics; screw machine tooling; punches and dies; tool engineering education and cutting tools and materials.

Progress reports, installation of officers and the third and final report of the society's fact-finding committee will feature the annual dinner meeting.

Thursday, March 7

AFTERNOON

Economics of Tooling

"Introduction of Symposium," by B. G. Tang, general superintendent, General Electric Co., Schenectady, N. Y.

"Tooling Large Products—Large and Small Quantities," by W. T. Stegemer-

ten, superintendent of equipment methods, Westinghouse Electric & Mfg. Co., Philadelphia.

"Tooling Small Products—Large and Small Quantities," by F. E. Darling, wage standards department, camera works, Eastman Kodak Co., Rochester, N. Y.

EVENING

Precision Small Gears

"Industrial Requirements of Precision Small Gears," by Thomas Turner, manager, meter division, Westinghouse Electric & Mfg. Co., Newark, N. J.

"Discussion on Shaping Method of Producing Precision Small Gears," by George H. Sanborn, Michigan representative, Fellows Gear Shaper Co., Springfield, Vt.

"Hobbing Methods of Producing Precision Small Gears," by representative of Barber-Colman Co., Rockford, Ill.

"Generating Precision Small Gears," by Arnold Thompson, chief tooling engineer, Canadian Acme Screw & Gear Co. Ltd., Toronto, Ont.

Tooling for Plastics

"Tooling for Plastics," by Joe Stewart, general foreman, plastic department, Ford Motor Co., Dearborn, Mich.

"Molding Processes for Resin Plastics," by W. B. Ross, Diemolding Corp., Canastota, N. Y.

"Injection Molding of Cellulose Plastics," by F. W. McIntyre, Reed-Prentice Corp., Worcester, Mass.

Friday, March 8

MORNING

Screw Machine Tooling

"Need for Top Rake on Form Tools," by Harold P. Berry, editor, *Screw Machine Engineering*, and senior tool and gage designer, naval gun factory, Washington.

"Screw Machine Tooling on Unusual Materials," by M. W. Taylor, foreman screw machine department, Wright Aeronautical Corp., Paterson, N. J.

"Tooling of Multiple Spindle Automatics," by C. G. Stevens, mechanical superintendent, New Departure division, General Motors Corp., Bristol, Conn.

Punches and Dies

"Punches and Dies for Small Products," by W. T. Forde, manufacturing supervisor, International Business Machines Corp., Endicott, N. Y.

"Punches and Dies for Large Products," by Gordon L. Reed, chief engineer, York Corrugating Co., York, Pa.

AFTERNOON

Tool Engineering Education

"Industrial Requirements in Tool Engineering Education," by Clifford S. Stilwell, vice president, Warner & Swasey Co., Cleveland.

"University Viewpoint of Tool Engineering Education," by J. W. Baker, dean, college of engineering, Columbia university, New York.

"High School Viewpoint of Tool Engineering Education," by E. L. Bowsher, superintendent of schools, Toledo, O.

"Vocational Viewpoint of Tool Engineering Education," by Thomas P. Orchard, instructor, technical evening classes, Paterson, N. J.

EVENING

Annual Dinner-Meeting

Introduction and installation of new officers.

"Final Report of Fact Finding Committee on Causes of Unemployment," by John M. Younger, professor of engineering, Ohio State university, Columbus, O., and chairman of the committee.

"Economic Aspects of Unemployment," by Howard Coonley, president, Walworth Mfg. Co., Boston, and past presi-



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Imagine cutting-off 1½" round cold rolled steel stock in 2½ seconds! That's what Abrasive Company Cut-Off Wheels are doing regularly on high speed abrasive cut-off machines. And on production work that means important savings in time and money; to say nothing of improved quality of cut. Resinoid (synthetic resin) bonded for high speed operation up to 16,000 S.F.P.M., they cut practically all materials encountered in modern industry, including all types of steel, alloy steel, cast iron, brass, bronze,

aluminum, forgings, wrought iron, stone, marble, granite, brick, tile, terra cotta, hard rubber, plastics, hard carbon, porcelain, etc.

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Saturday, March 9

MORNING

Cutting Tools and Material

"Industry's Requirements in Cutting Tools and Materials," by E. S. Chapman, general works manager, Plymouth division, Chrysler Corp., Detroit.

"High Speed Steel Group of Cutting Tools and Materials," by L. C. Gorham, president, Gorham Tool Co., Detroit.

"Carbide Group of Cutting Tools and Materials," by W. G. Robbins, president, Carboloy Co. Inc., Detroit.

"High Speed Cutting Tools, Their Selection, Use and Care," by A. H. d'Arcambal, consulting metallurgist, Pratt & Whitney division, Niles-Bement-Pond Co., Hartford, Conn.

eral hundred such corrosion tests have been made of the alloy portion of Pluramelt in a great many corrosion media in the laboratory. Alloy portions show corrosion rates practically identical to similar alloy compositions made by conventional electric furnace processes, indicating no segregation.

One test in 75 per cent "food grade" orthophosphoric acid is illuminating. A sheet made by conventional methods was compared with the stainless layer removed from a Pluramelt plate. Inches penetration per 1000 hours were computed on samples, one air cooled from 2000

degrees Fahr. and the other air cooled from 1600 degrees Fahr., both stress relieved at 1150 degrees Fahr. The Pluramelt was more resistant as shown in Table II.

Minor segregation can also be checked by microscopic examination. However, thorough search indicates that Pluramelt structures are similar to those from conventional electric furnaces after equivalent heat treatments.

Ample shop experience with Pluramelt indicates that it lends itself well to shop practices as it can be fabricated in any of the common methods.

Plural Melting Process

(Concluded from Page 56)

alloy from the base metal. In the punch tests Nos. 10 and 11 a circular channel was cut through the layer of special composition at about three times the diameter of the punch; thus the punch thrust was resisted by an annular area of junction surface.

Compression tests were prepared by drilling square blocks as shown in Nos. 14 and 15, squeezed vertically until the sides collapsed. No parting could be observed in these pieces.

Square bars have been twisted cold more than 720 degrees without failure. Blocks and heavy plates have been quenched 20 times from 1200 degrees Fahr. by a water spray striking the alloy face only. Considerable distortion was observed in the form of permanent growth in some directions and shrinkage in others but no cracking or separation took place.

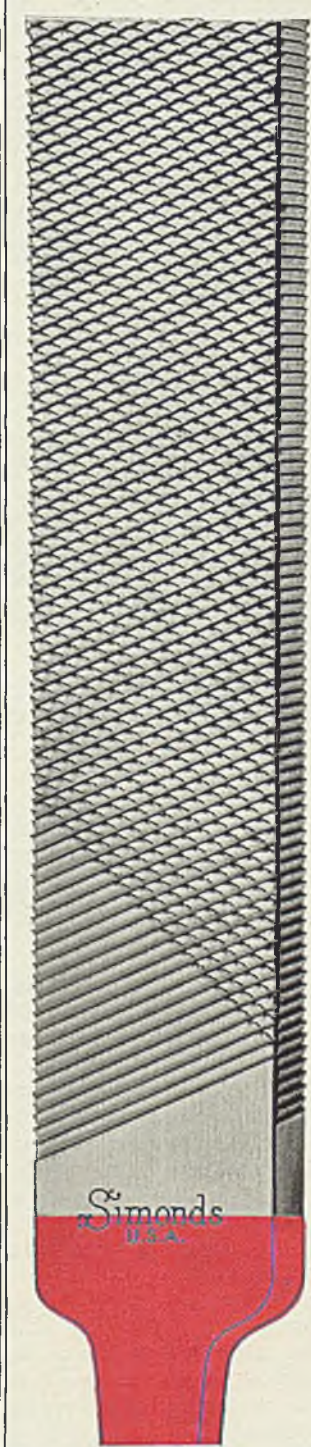
Tests Indicate Perfect Bond

Such repeated tests on varieties of stainless steels on carbon and low alloy steel backings indicate a perfect bond is produced at the joint.

Uniformity of composition obviously is a matter of extreme importance. The noble surface must not only have the intended composition on the average but there must be no segregation or major variation from point to point.

That this is obtained is demonstrated by studies of a low-carbon 18 per cent chromium steel intermelted with a plain low-carbon steel base. Base material melted was completely dissolved in the low-carbon alloy layer. Samplings taken at different locations, top to bottom and point to point, show no more than incidental variations in analysis as illustrated in Table I.

Minor segregation is disclosed effectively by drastic corrosion tests where microsegregates are attacked more readily and result in frosted, pitted or depressed surfaces. Sev-



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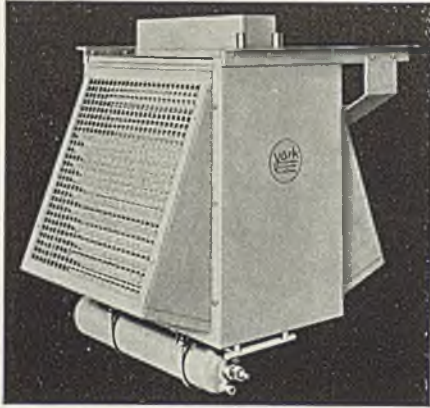
Red Color on the Tang of a file is a registered trademark.

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SIMONDS SAW AND STEEL CO.
FITCHBURG, MASS.

NEW METAL PRODUCTS

■ The commercial-sized economizer units of York Ice Machinery Corp., York, Pa., form a flexible line of combination indoor cooling towers and water-cooled condensers, whose capacity range covers almost the entire field of commercial applications. These economizers are designed to produce more capacity for the same

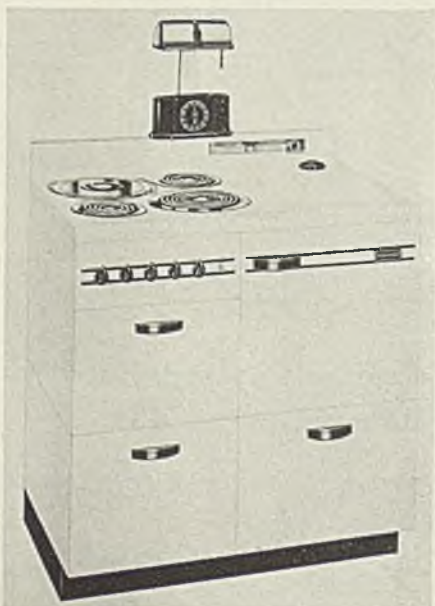


initial cost and to permit operation with more than one compressor.

The largest size can operate with up to four separate refrigerating circuits working simultaneously. Separate coil sections within the units may be connected in parallel or separately.

Models E-211, E-212 and E-222 are for smaller applications; models EV-39F2 and EV-39F4 are for larger.

■ Edison General Electric Appliance Co. Inc., 5600 West Taylor street, Chicago, offers the Hotpoint Exposition range 36 inches wide for small kitchens. Cooking surface has one Select-A-Heat Calrod unit, two Hi-Speed Calrod units and a 6-quart Thrift cooker. The full-size directional heat oven is fully auto-



matic. Oven door, switch panel, drawer panel and cabinet panels are finished in white porcelain enamel; cooking top is finished in acid-resistant porcelain enamel, and the remainder of the range, interior and exterior (except oven) is finished in white Calgloss baked enamel. Switch buttons, door and drawer handles are of molded black Textolite.

■ Link-Belt Speeder Corp., 307 North Michigan avenue, Chicago, offers Series "300" crawler shovels of 1½ to 2 cubic yards capacity and equipped with Speed-o-Matic hydraulic (oil) power control and diesel, gasoline, oil or electric motor drive. Power control is claimed to result in 25 per cent or more increase in output over manual control. Controls of travel, steering and locking brakes at operator's position in cab are said to be safe and fool-proof. Automatic locking arrangement prevents movement of machine when out of travel gear. Travel, steering and locking ma-



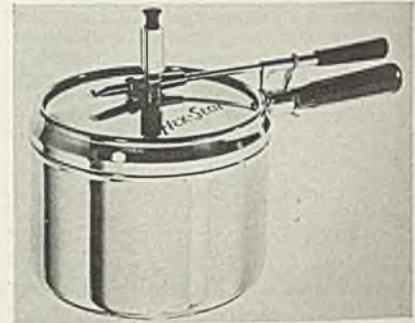
chinery are enclosed. There are no protruding housings or parts, and ground clearance is 14½ to 18 inches clear.

■ An electric, rotating-type forced-air humidifier capable of evaporating up to 36 gallons of water daily has been added to the Vaporator humidifier line by Rudy Furnace Co., Dowagiac, Mich. Humidifier is placed in the bonnet of a furnace where it utilizes the motion of air, rather than temperature, to impell transfer of water into the air. A screen cylinder is rotated at from 3 to 6 revolutions per minute so that it picks up water from a pan and permits the moving air to sponge it up. Rate of evaporation may be controlled by adjustments on the unit itself or by means of a humidistat.

This company also announces a fulcrum-type, floatless humidifier for gravity furnaces, a feature of which is its teeter-totter action which settles sediment to the bottom of the pan to prevent formation of evaporation-restricting crusts on the water's surface. An evaporating pan

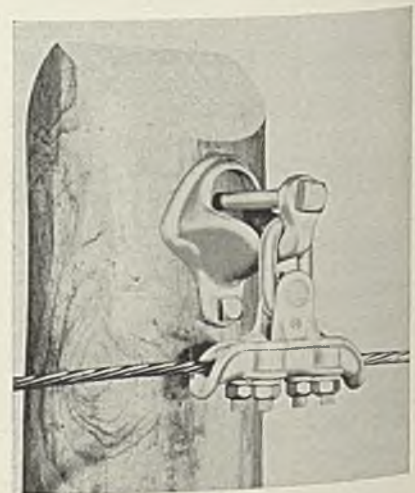
is suspended from a fulcrum, one end of the pan being hooked to a valve outside the unit. When full of water, pan tips one way on its fulcrum to close valve. When water level falls to lighten pan, pan tips the opposite way and opens valve.

■ Vischer Products Co., 412 New Orleans street, Chicago, has developed Flex-Seal cooker of Armco stainless steel with special Sorb-



heat bottom claimed to permit high heat without danger of "hotspotting" when little or no water is used. Patented flexible stainless-steel lid fitting inside cooker is locked in place by steam pressure so cooker cannot be opened till all pressure is released.

■ Swing-Link bracket for ground wires, offered by Ohio Brass Co., Mansfield, O., has flexible support with high slip strength. Main body castings has a groove on outer side holding a link 3 inches from pole. Link supports a suspension clamp for holding ground wire. Bracket allows ground wire to swing through a wide arc laterally since

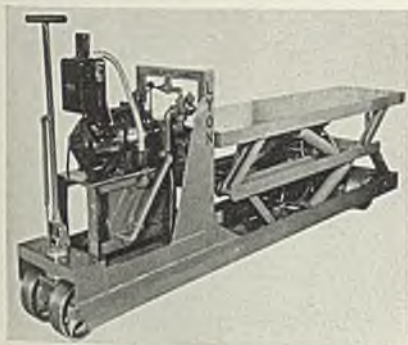


link is free to swing on bracket proper and there is a flexible connection between link and suspension clamp. Bracket is attached to pole by a through bolt, and is kept from turning by a lag screw. All parts are smoothly hot-dipped galvanized.

STEEL

Platform Truck

■ To keep steel sheet at convenient heights for operators feeding sheet metal machines such as shears, presses, etc., Lyon Iron Works, Greene, N. Y., has developed a sheet handling truck with a hydraulic elevating table. Table is elevated by four hydraulic rams or hoists powered by a hydraulic pump and a 2-horsepower motor. Lowering of table is facilitated, particularly when empty, by a separate hydraulic ram. Truck also is built with a hand operated single or 2-speed hydraulic pump. Table may



be inched up or down, elevated and lowered at any speed within its range. Truck in illustration is toggle lever type rated 6000 pounds. Table size is 20 x 84 inches, lowered height 22 inches, elevated height 40 inches.

Compressed-Air Cleaner

■ Logan Engineering Co., 4912 Lawrence avenue, Chicago, announces its line of Aridifiers for removing moisture, dirt and oil from air and gas lines now is complete in all sizes from $\frac{3}{8}$ to 10 inches.

Devices are suitable for all compressed air lines such as used on



sand blast equipment, jolt machines, strip, draw and rollover equipment, shake-outs, air-driven chippers, hammers and grinders. Foreign matter which impinges on a multiplicity of propeller blades revolving in opposite directions and propelled by flow of air and gas, is collected in lower housing from where it is drawn off.

Coil Winder Drive

■ Model 210 coil-winder drive of Ideal Commutator Dresser Co., Sycamore, Ill., has V-belt drive variable-speed transmission with sealed ball bearings which makes possible infinite number of driving speeds between 120 and 650 revolutions per minute. Maximum speed is obtained quickly by adjustment of transmission control knob. Starting speed up to maximum setting is entirely controlled by foot pedal, spring actuated brake automatically stopping machine as operator's foot is removed from pedal. Neutral position secured through foot pedal allows for hand turning of coils by wheel mounted on shaft.

Revolution counter records by addition or subtraction total of turns.



Pilot light indicates when motor is running. Drive is completely enclosed in heavy-gage steel cabinet. One-third horsepower motor is standard equipment. Winder measures 48 x 24 x 18 inches. Height from floor to shaft, 39 $\frac{1}{2}$ inches.

Radiation-Type Vacuum Thermocouple

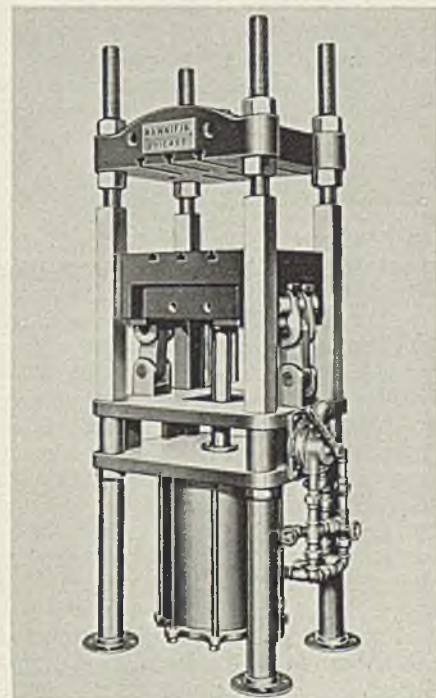
■ General Electric Co., Schenectady, N. Y., has developed a radiation-type vacuum thermocouple for use on controlled protective-atmosphere furnaces in processing materials at high temperatures. Thermocouple, said to have high sensitivity and rapid response, consists of a thin filament of two different metals, blackened on one side. Radiant energy acting upon thermocouple produces an electromotive force which is transmitted to a millivoltmeter or potentiometer which can be calibrated in degrees. Device may be mounted either



temporarily or permanently upon a furnace, only accessory required is a closed-end tube in the furnace to prevent fogging of lens and to form a target upon which to sight thermocouple. Since device has no physical contact with high-temperature furnace parts, it is not damaged by high temperatures. Temperatures from 300 to 1500 degrees Cent. can be read on a millivoltmeter or potentiometer. Higher temperatures can be handled by addition of protective screens or filters between the thermocouple and heat source.

Plastic Molding Press

■ Hannifin Mfg. Co., 621 South Kolmar avenue, Chicago, has developed a new air-operated 50-ton capacity plastic molding press requiring about 80 pounds unit pressure to develop 50 tons. Higher air pressures can be used to increase capacity to 70 tons. Overall height is approximately 7 feet, and distance from floor to lower platen when open is 46 inches. Press occupies less than 5 square feet of floor space. Distance between columns is 22 inches

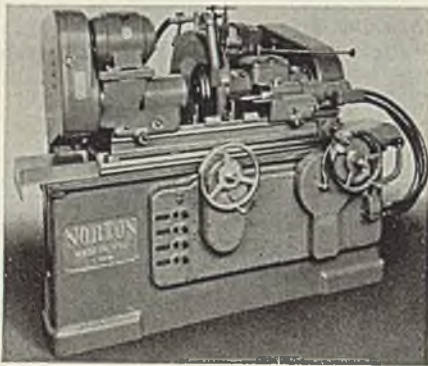


and clearance between platen and top strain head is 17½ inches.

To accommodate dies of various sizes, strain head is adjustable for 12 inches, permitting a maximum daylight space of 29½ inches. Platen stroke is 8 inches. Ejector pins or a separate ejector cylinder can be used. Pressure is developed through a combination lever and toggle mechanism. Platen advances rapidly but decelerates when dies begin to close, allowing time for compound to soften. Full tonnage is applied to break mold when reversing cylinder. This press also is available with completely self-contained hydraulic power unit.

Cylindrical Grinder

■ Type C 10 x 18-inch cylindrical grinder of Norton Co., Worcester, Mass., is available with hand, hydraulic or mechanical traverse of table. Semiautomatic model can be arranged for either hand or hydraulic table traverse and has hydraulic



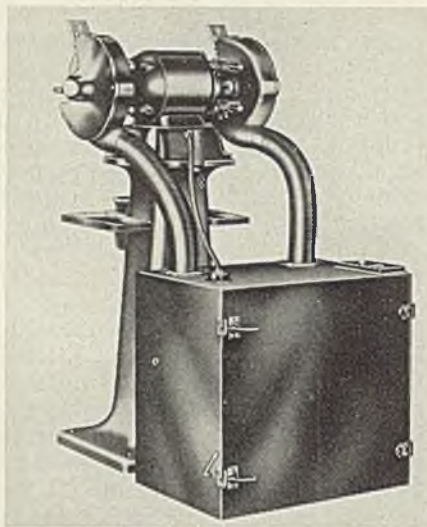
footstock and headstock. Hydraulic steadyrest can be supplied.

Grinder is a plunge-cut machine, and parts are ground when operator places work between centers and moves lever. Lever withdraws footstock center and operator removes work from machine. One man can operate two machines. Machine can be converted from automatic to manual control merely by turning a switch.

Dust Collector

■ Cincinnati Electrical Tool Co., 2684 Madison road, Cincinnati, has developed "Air Master" self-contained dust collector for use with all makes of grinders and buffers having exhaust outlets. Dust-laden air is filtered through a series of closely woven fabric and steel wool filter bags and exhausted through opening in top of cabinet. Heavier particles fall immediately into a large, removable tray in bottom of cabinet, and foot lever shakes lighter ones from filter bags into tray.

Fan motor is regularly connected into same switch which controls grinder or buffer and starts simul-



aneously with the machine. Fully enclosed motor, suction fan and filter bags are completely enclosed in compact, lacquered-finished, insulated cabinet mounted on rubber feet for quiet operation.

Self-Locking Nuts

■ Nine new types of nuts introduced by Elastic Stop Nut Corp., Elizabeth, N. J., embody basic elastic stop self-locking element, a resilient nonmetallic collar built into head of nut. Collar, in resisting entrance of bolt or screw, forces thread faces into a pressure-contact maintained after nut is tightened and eliminating thread play so nut cannot work loose under vibration, operating stresses or wear of surrounding parts. New types include;



thin hexagonal, spline, (illustrated) internal wrenching, countersunk and counterbored one-lug anchor, countersunk and counterbored two-lug anchor, countersunk corner anchor, bracket anchor, floating right-angle anchor and floating basket anchor. With variations in sizes, thread systems and materials, 160 new standard items are offered.

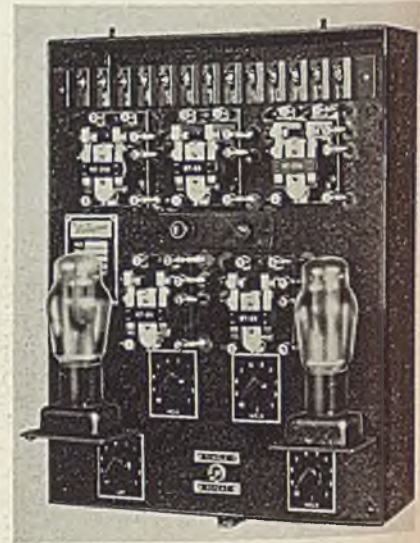
Crude Oil System

■ Caterpillar Tractor Co., Peoria, Ill., has developed a fuel system for burning crude oil in its 5¼ and 5½-inch diesel engines. Crude oil passes from settling tanks through heat exchanger to fuel transfer pump on engine and then through gross filter up to standard engine fine filter.

From there it passes through fuel injection pumps into fuel injection valves and into cylinders of engine. Settling tanks lessen filtering required of gross filter.

Dual Welding Timer

■ Weltronic Corp., 2834 East Grand boulevard, Detroit, has developed Model 58-B Dual-Time single welding timer controlling two spot welding guns at the same time through a single transformer and permitting four separate welding operations without changing timer setting. Of electronic tube type, timer has separate time control dial for each gun. After timer has been set, operator can select proper time by pressing one of two control buttons on each gun. Thus, each gun may be used alternately for two different



materials without further change, and a dual-purpose welding gun set-up can be made with a single gun. Timer is available for 110, 220 or 440-volt operation and has frequency range of 1 to 30 cycles in even 1-cycle steps.

Combination Motor And Air Compressor

■ Schramm Inc., West Chester, Pa., has developed a combination air compressor and gasoline motor to fit in space of Ford V-8 engines in trucks or other similar applications.



STEEL

Have You Seen This HELPFUL LITERATURE?

Here are the latest industrial publications reviewed for your benefit. They are yours for the asking. There is no charge or obligation. Simply fill in the convenient coupon and return.

(1)—Magnesite Refractory

Basic Dolomite Inc.—6-page illustrated folder describing "Ramix," a new high-magnesia cold-ramming refractory for open hearth, electric, copper, lead, brass, nickel and other furnaces. "Ramix" resists 3650 degrees F. temperature. Uses are discussed.

(2)—Bronze Bearings

Johnson Bronze Co.—22-page illustrated catalog No. L-2, covering a new size listing of "Ledaloyl" self-lubricating bearings. More than 850 stock sizes are available. Included are technical and application data, part numbers and prices.

(3)—Industrial Materials

The Philip Carey Co.—16-page illustrated booklet "Proved Protection," briefly describes industrial insulations, roofs, roof coatings, air conditioning ducts, corrugated siding, floors and other building and maintenance materials. Installation pictures and descriptions are given.

(4)—Glass Pump

Nash Engineering Co.—8-page illustrated bulletin No. 313, describing the new glass centrifugal pump which is made of "Pyrex" brand heat, shock and acid resistant glass. Pump impeller and casing withstand temperatures up to 150 degrees F. in standard design and 200 degrees F. in special design. The glass is free from leakage, fully transparent and easily cleaned.

(5)—Metal Specialties

Townsend Co.—6-page illustrated folder showing full size pictures of rivets, special wire nails and wire products, screw machine products and "gadgets," which are available in all metals. Studs, clamps and special products are also shown.

(6)—Rotary Machines

Niagara Machine & Tool Works—26-page illustrated bulletin No. 75-A, covering a wide range of hand and power operated rotary machines for performing the varied operations in sheet metal shops and production requirements in the manufacture of metal barrels, containers and other metal products. Specifications are given.

(7)—Drives and Motors

Allis-Chalmers Mfg. Co.—28-page illustrated booklet No. B-6029. Contains new buyers' data on "Lo-Maintenance" motors and "Texrope" drives. This booklet gives information that will help specifiers and buyers in estimating costs, types and sizes of drive equipment and motors to be used under various operating conditions.

(8)—Unit Heaters

Reznor Mfg. Co.—8-page illustrated catalog No. U-40, covering various types of gas fired suspended unit heaters, their operation and controls. Features include plymetal construction, simplified interchangeable controls, easy installation and appearance.

(9)—Turret Lathes

Jones & Lamson Machine Co.—24-page illustrated bulletin No. 39-174. Ram type universal turret lathes, Nos. 3, 4 and 5 are described and general specifications are given. Features include single lever "pre-selector" dial, extra rigidity in headstock mounting and built-in coolant system.

(10)—Conveyor Belts

Audubon Wire Cloth Corp.—44-page illustrated catalog No. 50-58, showing many types of conveyor and processing belts available in any ductile metal most resistant to operating conditions. Engineering and operating hints, specifications and applications are included.

(11)—Conveyors and Feeders

Ajax Flexible Coupling Co.—4-page illustrated bulletin No. 29. The vibrating conveyor and its advantages in handling bulk materials, is described. It speeds up drying and cooling, is corrosion proof, safe and easy to clean. Many uses are given. The angleplane conveyor, tube conveyor and feeder are discussed.

(12)—Alloy Castings

Standard Alloy Co.—18-page illustrated reference catalog No. 39. General information on the machining and welding of castings, and the analyses and uses of some widely-used alloys is given. Contains specific problems which were solved with castings designed to do the job.

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(13)—Cleanser

Quigley Co. Inc. — 8-page illustrated folder No. AN-129. "Annite" all-purpose cleanser is effective in any water, whether hard, soft, salt, hot or cold. "Annite" Red Label detergent is a vegetable compound manufactured in powder form, containing no caustic, lye or acid and is non-inflammable. Other types are also described.

(14)—Mercury Switches

Durakool Inc.—8-page illustrated bulletin No. 503, describing mercury switches, their operation and applications. These switches have metal containers which allow the roughest handling, shipping and installation without damage. The liquid fill, which stabilizes the mercury by surrounding it with a viscous medium, is featured.

(15)—Locomotive Cranes

American Hoist & Derrick Co.—16-page illustrated catalog No. 600-L describing new models 408 40-ton and 508 50-ton locomotive cranes, which are built for continuous operation. Features include clutches of large diameter, anti-friction bearings, three-speed transmission, etc. Specifications and lifting capacity are given.

(16)—Welding Electrodes

McKay Co. — 24-page illustrated catalog No. E-16, giving tentative specifications of the A. S. T. M. and American Welding society for iron and steel arc-welding electrodes. Proper discrimination among different mild-steel electrodes, according to nature and conditions of work covered.

(17)—Power Unit

Ready-Power Co. — 4-page illustrated bulletin No. 94, describing Model "FC" gas electric power unit. Uses, applications and features, including "Syncotrol" automatic idling governor, low pressure oil filter and front end air cleaner, are discussed.

(18)—Materials Handling

Coffing Hoist Co.—20-page illustrated catalog No. G-1. "Safety-Pull" ratchet lever hoist, which cannot slip or drop load, is fully discussed and applications are given. Spur gear gravity hoists, electric hoists, load binders, utility maintenance tools, etc., are described and illustrated. Prices and specifications are included.

(19)—Fire Extinguishers

Pyrene Mfg. Co.—16-page illustrated folder No. AD-237. This circular is referred to as "a short course in first-aid fire protection" and describes various types of hand and wheeled fire extinguishers. Contains buying-guide chart outlining essential characteristics, advantages and limitations of various types of extinguishers.

(20)—Washroom Fixtures

Scott Paper Co.—12-page illustrated booklet, "Scientific Washroom Service," discussing the economy and convenience obtained by scientific planning of washroom fixtures. Special adhesive eliminates holes for dispensing fixture installation leaving walls unmarred.

(21)—Acetylene Generators

Sight Feed Generator Co.—4-page illustrated bulletin No. 55. A complete range of sizes is offered in portable acetylene generators and generator trucks. Features include economy, visible carbide supply, rapid re-charging and adjustable, even pressure.

(22)—Stock List

Wrought Washer Mfg. Co.—New stock list No. 55-C, which lists thousands of washer specifications in various materials, including steel, brass, copper, aluminum, fiber, etc. Stock sizes are listed.

(23)—Ball Bearing Tables

New Departure, Div. General Motors Sales Corp.—Booklet No. R-10. The 1940 edition of ball bearing interchangeability tables in booklet form.

(24)—Thermal Insulation

Ehret Magnesia Mfg. Co.—280-page illustrated "Thermal Insulation Manual," covering heat insulations, cold insulations, insulation accessories and fireproofing materials, refractory cements, packings, building insulations and materials, asbestos fibers and textiles, etc. Technical information on insulations are included.

(25)—Ventilating Equipment

DeBothezat Ventilating Equipment Div., American Machine and Metals Inc.—12-page illustrated bulletin No. DB-111, covering the "Bifurcator," a new ventilating unit designed to remove corrosive, toxic, high temperature and hazardous fumes. Applications, specifications and capacity tables are given.

(26)—Wire Rope Clamp

National Production Co.—4-page illustrated bulletin describing the "Safe-Line" wire rope clamp which is guaranteed to outpull the strongest wire rope. Features include simple construction and easy assembly. It eliminates splicing and serving, and prevents injury to workmen.

(27)—Dry Pans

Toronto Foundry & Machine Co.—4-page illustrated bulletin No. D-5, covering type "B" dry grinding pan which is built in the 9 and 10-foot sizes, each size having three models. Features include high grinding efficiency, simple design and rugged construction.

(28)—Thread Grinder

Ex-Cell-O Corp. — 4-page illustrated bulletin No. 14191, describing Style No. 50 precision thread grinder, which accurately grinds long threaded parts. Features include large capacity, automatic backlash compensator, automatic feed, spindle drive, etc.

(29)—Die Heads

Eastern Machine Screw Corp.—4-page illustrated bulletin No. 10. Illustrates briefly the different styles of heads that are available for different classes of work and describes the savings accomplished by the insert chaser die head.

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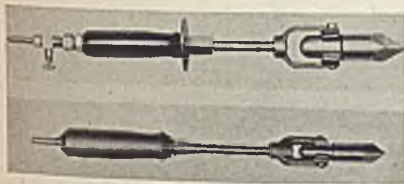
Penton Building
CLEVELAND, OHIO

This permits truck to use same engine from propulsion and for driving air compressor.

Basically the unit is a 4-cylinder engine and a 4-cylinder air compressor encased in an 8-cylinder block. Power cylinders are Nos. 1 and 4 on one bank and 2 and 3 on the other to give equal power and equal load. When operating as a truck, four power cylinders drive truck through standard Ford clutch and transmission and the four compressor cylinders are shut off so no power is consumed and no air compressed. By manipulating several controls in cab of truck, unit is converted from truck to compressor and vice versa without stopping engine. Compressor delivers 55 cubic feet of air per minute at 100 pounds pressure.

Soldering Iron

■ The Linde Air Products Co., 30 East Forty-second street, New York, announces two soldering irons of open-flame type said to feature: Stable flame provided by separate tube, within standard iron, which carries air-acetylene mixture to copper tip; copper tips permitting maximum heat transfer from flame to tip; tips held securely in each iron by Everdur bolt and nut which permits copper to be changed quickly; new soldering coppers which can be



heated and reformed without loss of heating efficiency; handles of molded bakelite, heat-resistant and durable.

Iron is suitable for automotive, electrical, telephone switchboard and radio work. Both small and standard size of the soldering irons are furnished with pointed-type coppers, but chisel-type coppers for small iron, and chisel and hatchet-type coppers for standard iron can be supplied with a needle valve in handle to permit exact regulation of flame for outdoor work in cold weather.

Marking Device

■ New Method Steel Stamps Inc., 143 Jos. Campau street, Detroit, offers a marking device for parts having annular flat faces such as gears, bushings, bearing races, etc. Holder in which type retainers are carried has pilot guide to center device. Type retainers are carried in holder in T-slots and have elongated slots on their inner faces into which fit balls under spring pressure located

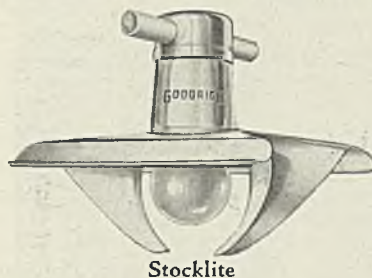


in bottom of T-slots in holder. Thus type retainers cannot drop out of holder but can be removed by a sharp pull, compressing the spring.

Holder may be used for either solid type blocks or individual type, set screws being provided for locking type in place. It is not necessary to remove retainers to change type.

Stock Bin Light

■ Goodrich Electric Co., 2935 North Oakley avenue, Chicago, offers its improved Stocklite for illuminating

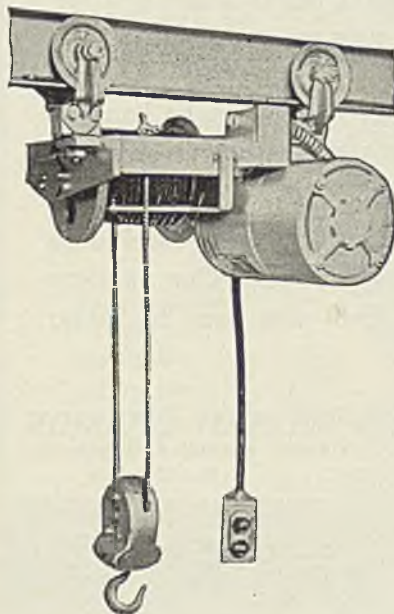


Stocklite

shelves and bins in narrow aisles. Curved V-shaped flanges are claimed to prevent aisle glare and to direct light in stock bins so proper illumination is obtained from top to bottom shelf and in bin interiors. Properly spaced, these fixtures are said to provide uniform illumination throughout.

Aluminum Hoist

■ Electro Lift Inc., 30 Church street, New York, offers lightweight



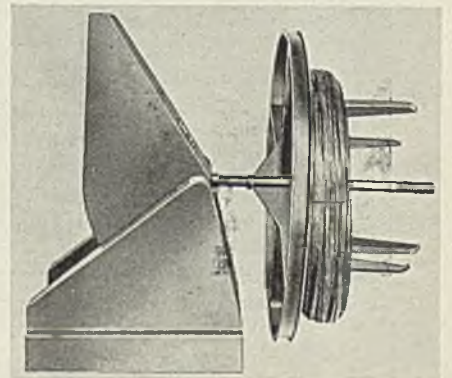
high-speed cable-type electric hoist with all castings of corrosion-resist-

ant aluminum alloy suitable for use in steam and acid fumes. Hoist is built in capacities from 1/8 to 3 tons and may be equipped with traveling rope guide to eliminate crossed or piled up cables where loads are pulled at an angle from the vertical.

Worm and wheel of worm drive run on Timken tapered roller bearings fully enclosed within gear case and running in a bath of oil. Motor has ball bearings and is directly attached to hoist frame. Close headroom allows hook to reach within minimum distance of overhead track. Control may be either rope or push button type. Top and bottom limit switches may be provided to stop load in each direction of travel.

Tilting Wire Reel

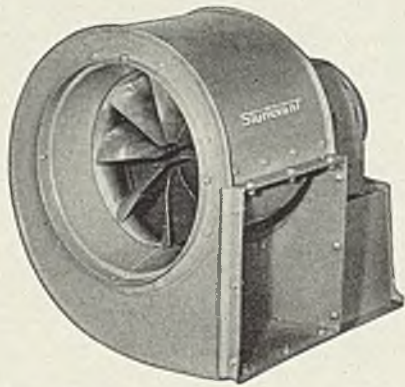
■ Moslo Machinery Inc., 5005 Euclid avenue, Cleveland, has developed Shiftweight counterbalanced tilting wire reel featuring shifting counterweight. It is said always to be at maximum efficiency regardless of position of wire coil. One man can place a 300-pound coil on reel and swing it into position. Foot pedals are absent and locking latch is controlled through knurled spindle through center of reel. After



loading, operator releases locking mechanism, places coil in feeding position, and shifting weight completes operation. Reel, capable of handling coils of minimum inside diameter of 10 inches, weighs 500 pounds with ballast. Reel arms are adjustable to outside diameter of ring, 42 inches.

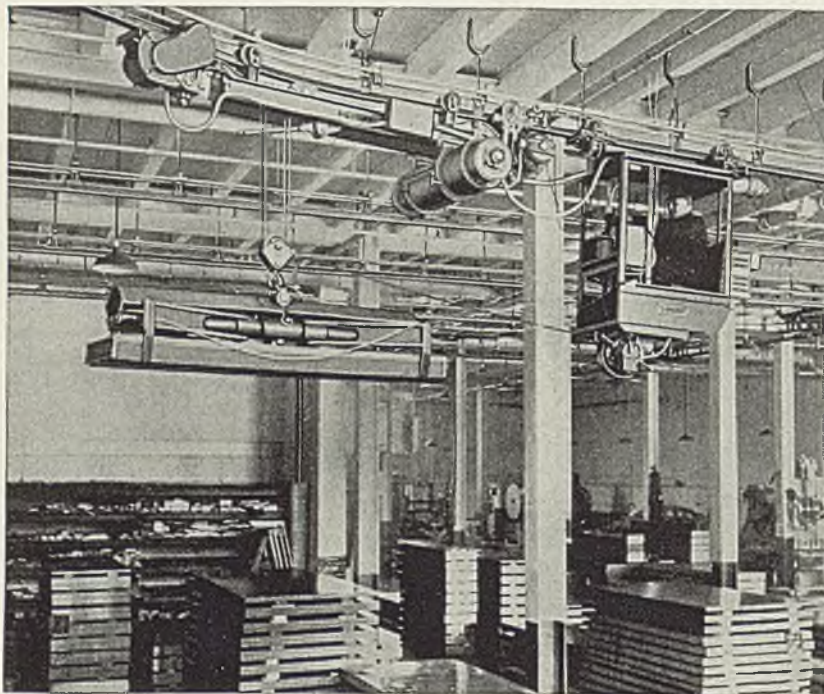
Ventilating Blower

■ B. F. Sturtevant Co., Hyde Park, Boston, has developed Rexvane vent sets for ventilating, air conditioning and fume exhaust. Fans are centrifugal type with direct-connected motor. Radial blade fan rotor permits higher rotative speeds, lower outlet velocities and more dependable balance when handling air which contains grease or solid particles. Cone-shaped inlets guide entering air to rotor with minimum of turbulence, with noise greatly reduced.



The rotor consists of eight blades, each curved into inlet in direction

of rotation. Design is claimed to increase volume of air handled. Curved portions of blades are banded together by a broad hoop which strengthens rotor and also streamlines path of entering air. Blades are assembled on drive side to steel backplate and cast iron hub. Rotors are balanced both statically and dynamically to eliminate vibration. Rotor also is mounted on motor shaft, eliminating need for intermediate bearings. Nine sizes of vent sets are available with rotors ranging from 6 to 24 inches in diameter. Capacities run from 250 to 6000 cubic feet per minute.



Low headroom carrier with power to climb grades. Sheet grab is motor operated.

THIS SYSTEM CUTS SHEET-HANDLING COSTS

With a Cleveland Tramrail System sheets can be handled at a sizeable saving over former methods and in addition other advantages may be secured.

Aisle space can be reduced, sheets piled higher and more tonnage stored per square foot of floor area. One operator can manipulate all operations from the cab, including pick-up and delivery.



CLEVELAND TRAMRAIL DIVISION
THE CLEVELAND CRANE & ENGINEERING CO.
1125 Depot Street Wickliffe, Ohio

CLEVELAND TRAMRAIL

OVERHEAD MATERIALS HANDLING EQUIPMENT

Other products: CLEVELAND CRANES and STEELWELD MACHINERY

Marking Pliers

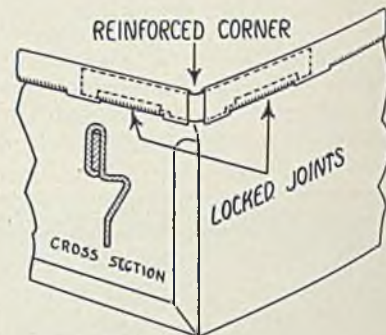
■ H. O. Bates, Elizabeth, N. J. offers a single-wheel hand machine for stamping or impressing numbers or letters into tubes, rings, bar shanks, small cylinders or parts by plier action. Device marks steel



brass, plastics, fiber, wood, etc., and stamps sizes and product numbers. Number wheel can be engraved to order with letters or figures from 1/32 to 1/4-inch.

Stacking Box Corners

■ Pollard Bros. Mfg. Co., 5504 Northwest highway, Chicago, announces stacking and open-end boxes with reinforced corners claimed to



eliminate need for spot welding of angle brace. Five standard sizes of both stacking and open-end box are said to be in stock.

Sprayer Outfit

■ Binks Mfg. Co., 3114 Carroll avenue, Chicago, offers Roche single-diaphragm paint spray outfit with compressor delivering 2.2 cubic feet per minute at 26 pounds working pressure to a new Roche "J" gun.



This gun handles all kinds of average viscosity paints, enamels, lacquers, calcimines, varnishes, insecticides, etc. Outfit costs \$19.95 less motor.

New Roche piston-type compressor spray outfit costs \$27.95 less motor.

Fly-Ash Handling

(Concluded from Page 65)

cost of fly ash delivered in paper bags to the job is about one-third the cost of Portland cement. Furthermore, in actual practice there is found to be greater workability in the fly ash concrete than in the 100 per cent Portland cement concrete.

Fig. 5 shows a line of bunkers for a future unit of boilers built now and used to store the puzzolanic fly ash at the State Line plant. Under the light at the lower left hand corner is the bagging unit which has to work more than one shift a day when big orders are received.

The greater ultimate strength obtained by substituting 20 or 25 per cent of fly ash for Portland cement in the concrete, the greater resistance of the resulting concrete to corrosive waters, the decrease in permeability of the resulting concrete, and the saving in cost and improvement in workability insure a market for this fly ash where it is available in a suitably activated and sufficiently carbon-free form.

Alnico Magnet Assembly Has Great Lifting Power

■ A new permanent magnet assembly of unusual power permits a piece of sintered alnico to lift and hold 4450 times its own weight, according to research laboratory, General Electric Co., Schenectady, N. Y.

An alloy of aluminum, nickel and iron as the basic or essential ingredients, the new magnet is made by pressing together powdered metal and heating almost to melting point.

New mounting of brass and iron in which magnetic flux passes through many air gaps, in bridging from pole to pole, is responsible for increased power. This assembly is not a commercial development, and largest turned out to date contains but three cubic centimeters of alnico.

Brazing Powder

■ A brazing alloy in powder form containing copper and phosphorus, Powder-Braze, has been developed by Charles Hardy Inc., 415 Lexington avenue, New York, for brazing of copper, brass, bronze and other copper-base alloys. It needs no flux on copper as the phosphorus serves as a deoxidizing agent. On brass, bronze and other copper base alloys a flux is desirable.

Powder-Braze melts at 1400 degrees Fahr. and, due to its low melting point and high fluidity, is said to penetrate quickly the tightest joint. In the finished joint it has an electrical conductivity of more than 98 per cent of rolled copper. The

alloy is packed in spouted cans from which powder may be fed directly to the joint.

This alloy also is available in many different compressed shapes such as rings, washers, squares and irregular shapes. Such shapes are placed between pieces to be joined, and pieces then clamped together and heated. Rings are made in sizes to fit standard copper tubing.

Outlines Procedure in Steel Price Research

■ *Price Research in the Steel and Petroleum Industries*; cloth, 170 pages, 5 1/2 x 9 1/4 inches; published by National Bureau of Economic Research, New York; supplied by STEEL, Cleveland, for \$2.

Third in the series of books arising from activities of the conference on price research, this volume deals with price problems of the steel and petroleum industries as representatives of modern business enterprise.

These industries occupy positions of high strategic importance in modern economy, the preface states, supplying a substantial proportion of the power, lubricants and material instruments of modern industrial life.

The bureau regards them as laboratories of special interest to students of prices, in which the attributes of the contemporary price system may be examined in the markets to which these two industries cater.

The committees have been concerned with the definition of prob-

lems and outlining of promising investigations rather than with substantive research. These opportunities invite investigations of interest to industrialists and economists. An examination of the competitive repercussions of the elimination of inter-basing point price differentials and establishment of new basing points in the steel industry, the committee states, would illuminate a score of vexing issues centering about distribution of products of the heavy industries.

Not all troubles of modern industrialism are rooted in prices, says the committee, but study of price policies, pricing procedures and cost-price relations provides an approach to some of the most critical issues of the day. The two reports in this volume constitute guides to such study.

A similar study of possible lines of research in the textile industry has been published by the bureau and is available at \$3 per copy.

Welding Symbols

■ "Welding Symbols and Instructions for Their Use" is a 26-page pamphlet prepared by the symbols committee of the American Welding society, 33 West Thirty-ninth street, New York. The symbols and instructions contained therein were recently approved by the executive committee of the society and recommended to the American Standards association for adoption as American standards.

Symbols are essentially those published in the 1938 Welding handbook; but use of the system has been greatly simplified.

It Pays to Use Dependable Wire Rope

When a wire rope fails, the equipment on which it is used is temporarily out of business, production stops, time is lost and labor is wasted... The best recommendation for "HERCULES" (Red-Strand) Wire Rope is its performance record, by which it continues to make and hold friends — year after year... In order to



be suitable for all purposes, "HERCULES" is made in a wide range of both Round Strand and Flattened Strand constructions — all of which are available in either the Standard or Preformed type... If you will tell us how you use Wire Rope, we shall be glad to suggest the construction and type we consider best for your conditions.

Made of Acid Open-Hearth Steel Wire

A. LESCHEN & SONS ROPE CO.

WIRE ROPE MAKERS
5909 KENNERLY AVENUE

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SAN FRANCISCO 520 Fourth Street
PORTLAND 914 N. W. 14th Avenue
SEATTLE 3410 First Avenue South

Closer Process Control

(Concluded from Page 52)

bake the coatings to improve adherence and expel residual solvents.

Copolymer vinyl chloride-acetate resin has been found ideal for use in food containers, Mr. Doolittle said, since it is nontoxic, odorless, tasteless and resistant to grease, alcohol and water, and immune from bacterial or enzymic attack. It is also tough and flexible and its thermoplastic character gives it heat-sealing properties, he said. First large-scale application was for beer cans.

In making beer cans, the sheets first are primed on one side, an unprimed strip being left where the solder must flow when the side seam is closed. Lithographed decorations next are applied on the reverse side of the sheet. Can body blanks then are stamped out and formed into cylindrical shell of the can which is both crimped and lapped to make an especially strong seam.

The can bodies then are ready for lining with vinyl resin film. This is a spraying operation whereby a continuous film is applied which covers inside of the can body completely. Bodies then are baked to remove any trace of retained solvent and the bottom ends seamed.

The coating also has other applications in the food container field for metal beer barrels, pails for soft drink concentrates, tank cars for wine, fruit juices and the like. Blanks for caps and closures may be finished flat and punched, drawn or spun without rupturing the coating.

Widening Field Seen For Manganese Alloys

■ According to Report of Investigations 3477 on manganese and its alloys, published by bureau of mines, Washington, the classes of manganese alloys which seem certain to find industrial use are as follows:

Those alloys combining high strength and high vibration damping capacity to provide a new combination of properties for machine elements subject to vibratory stresses.

Stainless Steel hardenable alloys of the iron-chromium-manganese group for bearings and tools.

Alloys of the copper-nickel-manganese series which have many properties of brass and nickel silver.

Alloys containing about 65 per cent zinc, 20 per cent manganese and 15 per cent copper for strong tough castings.

Alloys of manganese and aluminum.

The report further states that

problems in production of electrolytic manganese on a commercial scale have been solved to the extent of permitting some commercial production and that further advances in the art should make electrolytic manganese a commercial article in the near future.

Paper on Wastes in Iron, Steel Industry Available

■ Copies of a paper, "Wastes Problems of the Iron and Steel Industries," presented by Prof. W. W. Hodge, department of chemical engineering, West Virginia university, Morgantown, W. Va., at the general symposium on industrial wastes held in connection with the ninety-eighth national meeting of the American Chemical society in Boston last fall, are available from Mellon institute, 4400 Fifth avenue, Pittsburgh.

Mill Pinion Housing Is Thermit and Arc Welded

■ Andrews Steel Co., Newport, Ky., recently evolved a new type of housing fabricated from rolled steel plate by means of thermit and electric arc welding. The fabricated housing, 7

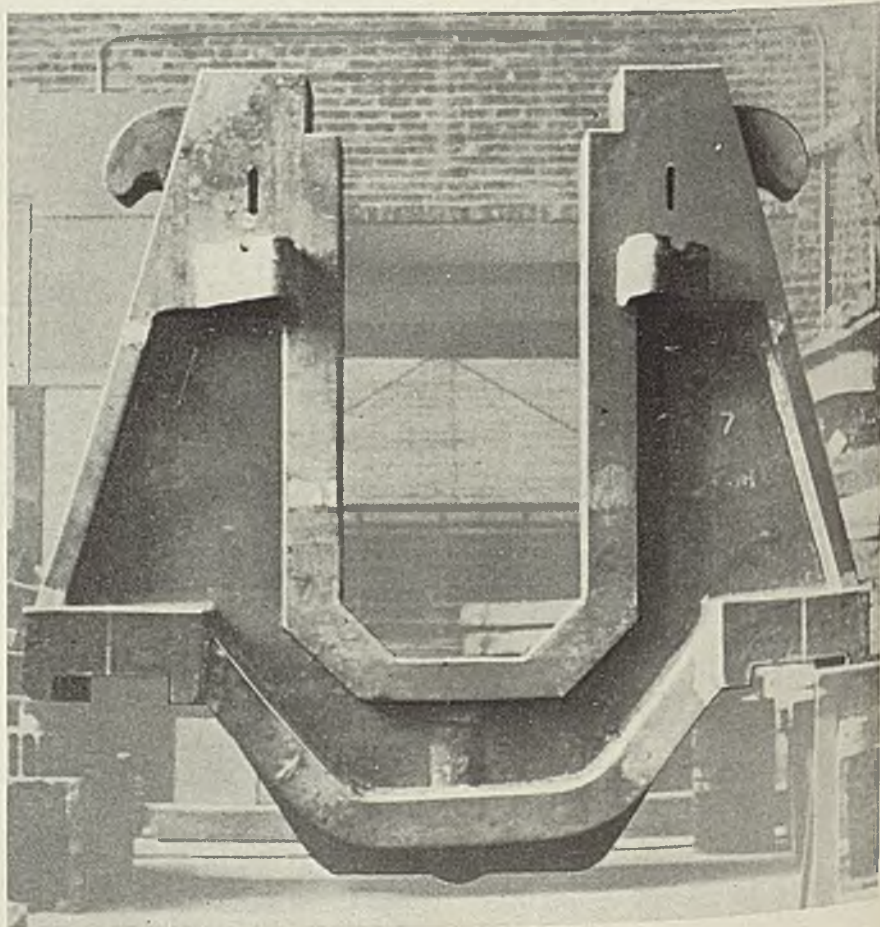
Blooming mill pinion housing fabricated from plate by means of thermit and arc welding. Photo courtesy Metal & Thermit Corp., 120 Broadway, New York

feet 10 inches high and 8 feet 9 inches wide, weighed 22,500 pounds including caps and bases. Central members were flame-cut from 8-inch plate in two J-shaped pieces which then were thermit welded together to make a large U-shaped piece 8 x 27 inches in cross section at weld. All other members, flame-cut from plate ranging in thickness from 1½ to 8 inches, were arc welded to the U-shaped central section.

All of the work was preheated before electric welding and entire assembly was kept at 250 to 300 degrees Fahr. during welding. Welding was done continuously with two to four welders working in three shifts so welding of each joint, once started, could be finished without interruption. Electric arc welding part of operations took 140 hours.

Heavy mineral-coated electrodes, depositing weld metal containing 0.50 per cent molybdenum and having a tensile strength of 68,000 to 73,000 pounds per square inch when stress relieved, were used for electric welding. Joint design included double beveling of all plate edges. Working was positioned so that, with exception of a few short passes, all welding was downhand.

Prior to machining, entire structure was annealed at 1200 degree Fahr. Warping was held to a minimum, and inspection after heat treatment showed misalignment in most cases was less than 1/16-inch.



Steel Backlogs, Output Drop; Buying Retarded

Structural shapes and reinforcing bars more active. Sheet prices hold on auto buying. Scrap lowest since September

■ IN THE absence of improved buying, steel producers continue to reduce ingot production. Output last week was lowered 5½ points to 71 per cent, and there is little evidence that bottom has been reached.

Sharpness of recent retrenchment in operations suggests a more gradual descent within a few weeks, if not a level trend. New business represents somewhat less than 50 per cent of capacity, but finished steel deliveries are supplemented by tonnage moving against previous contracts as well as by material taken from users' inventories. Actual consumption, consequently, is estimated well above 50 per cent of producing capacity.

Whether or not consumption will be sustained until mill backlogs and excess inventories are absorbed is difficult to determine. Buyers have done a complete about-face since last fall, placing only small lots for early needs and in some cases being intent on reducing stocks.

Favorable market developments include an increase in structural shape and concrete reinforcing bar inquiries and more activity in automotive steel buying. Base prices have withstood the test of a purchase of 25,000 tons of steel, mostly sheets, by Ford Motor Co. The business was divided among several producers. Additional automobile companies are expected in the market this month for substantial tonnages covering spring requirements.

Prices are steady on finished steel products, except for irregularities frequently present in secondary markets on certain items. However, the absence of strengthening factors in the market partly is reflected in buyers' disposition to refrain from forward coverage.

Declining operations of the automotive industry are affecting steel needs of motor plants and parts suppliers. Last week's assemblies of 95,985 units showed another drop of about 5000 units, with Ford largely responsible for the reduction. Output the past three weeks has shrunk more rapidly than a year ago, but the descent started from a considerably higher level and production continues the heaviest for this period in three years.

Steel producers are giving increased attention to

export markets. Foreign demand is fairly brisk and is more active than a month ago. Pig iron, sheets, tin plate, wire products and bars are experiencing the best business. Inadequacy of shipping facilities still is hampering trade in pig iron and scrap. Canada's shipbuilding program is bringing orders for moderate tonnages of plates to this country.

Fabricated structural shape awards last week were up sharply from the average for the year to date, both in number of orders and total tonnage, but still are below the pace a year ago. Among the largest of recent bookings are 3800 tons for a Chicago viaduct, 1800 tons for a government wind tunnel testing building, Dayton, O., and 1500 tons for a New York apartment building.

Railroad equipment building is helping to support releases for various steel products but is furnishing little new business. January freight car awards totaled only 360, and few inquiries are active. Quiet in rail buying reflects heavy coverage late in 1939, a large portion of which tonnage remains to be rolled.

Tin plate production holds at 65 per cent. Domestic buying is light, with little appreciable change looked for until March. Recent crop damage from the cold wave is expected to curtail early container needs, but this may be offset by increases in later crops.

Pig iron shipments continue to moderate, principally as a result of reduced consumption by nonintegrated steelworks. Foundry operations are holding well, except for a seasonal slackening in some directions. Slow buying results from previous contracting, but prices are steady.

Scrap has weakened further in a dull market. Prices are lower in leading centers, reducing the composite 30 cents to \$17.08. This is the lowest since the second week of last September.

Sharpest curtailments in steelmaking last week were 11 points to 74½ per cent at Chicago and 10 points to 68 in eastern Pennsylvania. Pittsburgh was off 4 points to 69, with Youngstown down 7 points to 44. Other reductions were 5 points to 70 at Cleveland, 3½ points to 61 at Cincinnati and 3 points to 63 in New England. Wheeling was up 4 points to 86, and unchanged areas were Birmingham at 90, Buffalo at 60½, Detroit at 93 and St. Louis at 70.

Demand

Spotty, slightly lower in some instances.

Prices

Steady except in certain secondary markets.

Production

Down 5½ points to 71 per cent.

COMPOSITE MARKET AVERAGES

| | Feb. 10 | Feb. 3 | Jan. 27 | One Month Ago Jan., 1940 | Three Months Ago Nov., 1939 | One Year Ago Feb., 1939 | Five Years Ago Feb., 1935 |
|------------------------|---------|---------|---------|-----------------------------|--------------------------------|----------------------------|------------------------------|
| Iron and Steel | \$37.01 | \$37.03 | \$37.09 | \$37.09 | \$37.50 | \$36.37 | \$32.54 |
| Finished Steel | 56.10 | 56.10 | 56.10 | 56.10 | 55.90 | 56.50 | 54.00 |
| Steelworks Scrap . . . | 17.08 | 17.38 | 17.59 | 17.48 | 20.06 | 14.87 | 11.66 |

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 | Feb. 10, 1940 | Jan. 1940 | Nov. 1939 | Feb. 1939 | Pig Iron | Feb. 10, 1940 | Jan. 1940 | Nov. 1939 | Feb. 1939 |
|--------------------------------------|---------------|-----------|-----------|-----------|-------------------------------------|---------------|-----------|-----------|-----------|
| Steel bars, Pittsburg | 2.15c | 2.15c | 2.15c | 2.25c | Bessemer, del. Pittsburg | \$24.34 | \$24.34 | \$24.34 | \$22.34 |
| Steel bars, Chicago | 2.15 | 2.15 | 2.15 | 2.25 | Basic, Valley | 22.50 | 22.50 | 22.50 | 20.50 |
| Steel bars, Philadelphia | 2.47 | 2.47 | 2.47 | 2.57 | Basic, eastern, del. Philadelphia | 24.34 | 24.34 | 24.34 | 22.34 |
| Iron bars, Terre Haute, Ind. | 2.15 | 2.15 | 2.15 | 2.15 | No. 2 foundry, Pittsburg | 24.21 | 24.21 | 24.21 | 22.21 |
| Shapes, Pittsburg | 2.10 | 2.10 | 2.10 | 2.10 | No. 2 foundry, Chicago | 23.00 | 23.00 | 23.00 | 21.00 |
| Shapes, Philadelphia | 2.215 | 2.215 | 2.215 | 2.215 | Southern No. 2, Birmingham | 19.38 | 19.38 | 19.38 | 17.38 |
| Shapes, Chicago | 2.10 | 2.10 | 2.10 | 2.10 | Southern No. 2, del. Cincinnati | 22.89 | 22.89 | 22.89 | 20.89 |
| Plates, Pittsburg | 2.10 | 2.10 | 2.10 | 2.10 | No. 2X, del. Phila. (differ. av.) | 25.215 | 25.215 | 25.215 | 23.215 |
| Plates, Philadelphia | 2.15 | 2.15 | 2.275 | 2.15 | Malleable, Valley | 23.00 | 23.00 | 23.00 | 21.00 |
| Plates, Chicago | 2.10 | 2.10 | 2.10 | 2.10 | Malleable, Chicago | 23.00 | 23.00 | 23.00 | 21.00 |
| Sheets, hot-rolled, Pittsburg | 2.10 | 2.10 | 2.00 | 2.15 | Lake Sup., charcoal, del. Chicago | 30.34 | 30.34 | 30.34 | 28.34 |
| Sheets, cold-rolled, Pittsburg | 3.05 | 3.05 | 3.05 | 3.20 | Gray forge, del. Pittsburg | 23.17 | 23.17 | 23.17 | 21.17 |
| Sheets, No. 24 galv., Pittsburg | 3.50 | 3.50 | 3.50 | 3.50 | Ferromanganese, del. Pittsburg | 105.33 | 105.33 | 105.33 | 85.27 |
| Sheets, hot-rolled, Gary | 2.10 | 2.10 | 2.00 | 2.15 | | | | | |
| Sheets, cold-rolled, Gary | 3.05 | 3.05 | 3.05 | 3.20 | Scrap | | | | |
| Sheets, No. 24 galv., Gary | 3.50 | 3.50 | 3.50 | 3.50 | Heavy melting steel, Pittsburg | \$17.75 | \$18.15 | \$21.90 | \$15.65 |
| Bright bess., basic wire, Pitts. | 2.60 | 2.60 | 2.60 | 2.60 | Heavy melt. steel, No. 2, E. Pa. | 16.50 | 16.80 | 19.25 | 13.25 |
| Tin plate, per base box, Pitts. | \$5.00 | \$5.00 | \$5.00 | \$5.00 | Heavy melting steel, Chicago | 15.75 | 16.45 | 17.45 | 14.00 |
| Wire nails, Pittsburg | 2.55 | 2.55 | 2.55 | 2.45 | Rails for rolling, Chicago | 18.25 | 19.05 | 20.50 | 17.25 |
| | | | | | Railroad steel specialties, Chicago | 18.50 | 18.50 | 20.50 | 16.00 |
| Semifinished Material | | | | | Coke | | | | |
| Sheet bars, Pittsburg, Chicago | \$34.00 | \$34.00 | \$34.00 | \$34.00 | Connellsville, furnace, ovens | \$4.75 | \$4.75 | \$5.00 | \$3.75 |
| Slabs, Pittsburg, Chicago | 34.00 | 34.00 | 34.00 | 34.00 | Connellsville, foundry, ovens | 5.75 | 5.75 | 6.00 | 5.00 |
| Rerolling billets, Pittsburg | 34.00 | 34.00 | 34.00 | 34.00 | Chicago, by-product fdry., del. | 11.25 | 11.25 | 11.25 | 10.50 |
| Wire rods, No. 5 to 3/8-inch, Pitts. | 2.00 | 2.00 | 1.92 | 1.92 | | | | | |

STEEL, IRON, RAW MATERIAL, FUEL AND METALS PRICES

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

| | | | | | | |
|--------------------------------|--|-------------------------|--------------------------------|-------------------------|-----------------------------------|--------|
| Sheet Steel | Granite City, Ill. | 3.60c | Plates | 21.50 22.00 25.50 30.50 | Buffalo | 2.10c |
| Hot Rolled | Middletown, O. | 3.50c | Sheets | 26.50 29.00 32.50 36.50 | Gulf ports | 2.45c |
| Pittsburg | Youngstown, O. | 3.50c | Hot strip | 17.00 17.50 24.00 35.00 | Birmingham | 2.10c |
| Chicago, Gary | Pacific Coast points | 4.00c | Cold stp. | 22.00 22.50 32.00 52.00 | St. Louis, del. | 2.34c |
| Cleveland | Black Plate, No. 29 and Lighter | | | | Pacific Coast points | 2.70c |
| Detroit, del. | Pittsburg | 3.05c | Steel Plate | | | |
| Buffalo | Chicago, Gary | 3.05c | Pittsburg | 2.10c | Tin and Terne Plate | |
| Sparrows Point, Md. | Granite City, Ill. | 3.15c | New York, del. | 2.29c | Tin Plate, Coke (base box) | |
| New York, del. | Long Terns No. 24 Unassorted | | Philadelphia, del. | 2.15c | Pittsburg, Gary, Chicago | \$5.00 |
| Philadelphia, del. | Pittsburg, Gary | 3.80c | Boston, delivered | 2.46c | Granite City, Ill. | 5.10 |
| Granite City, Ill. | Pacific Coast | 4.50c | Buffalo, delivered | 2.33c | Mfg. Terne Plate (base box) | |
| Middletown, O. | Enameling Sheets | | Chicago or Gary | 2.10c | Pittsburg, Gary, Chicago | \$4.30 |
| Youngstown, O. | No. 10 | No. 20 | Cleveland | 2.10c | Granite City, Ill. | 4.40 |
| Birmingham | Pittsburg | 2.75c | Birmingham | 2.10c | | |
| Pacific Coast points | Chicago, Gary | 2.75c | Coatesville, Pa. | 2.10c | Bars | |
| Cold Rolled | Granite City, Ill. | 2.85c | Sparrows Point, Md. | 2.10c | Soft Steel | |
| Pittsburg | Youngstown, O. | 2.75c | Claymont, Del. | 2.10c | (Base, 20 tons or over) | |
| Chicago, Gary | Middletown, O. | 2.75c | Youngstown | 2.10c | Pittsburg | 2.15c |
| Buffalo | Pacific Coast | 3.35c | Gulf ports | 2.45c | Chicago or Gary | 2.15c |
| Cleveland | Corrosion and Heat-Resistant Alloys | | Pacific Coast points | 2.60c | Duluth | 2.15c |
| Detroit, delivered | Pittsburg base, cents per lb. | | Steel Floor Plates | | Birmingham | 2.15c |
| Philadelphia, del. | Chrome-Nickel | | Pittsburg | 3.35c | Cleveland | 2.15c |
| New York, del. | No. 302 | No. 304 | Chicago | 3.35c | Buffalo | 2.25c |
| Granite City, Ill. | Bars | 24.00 25.00 | Gulf ports | 3.70c | Detroit, delivered | 2.47c |
| Middletown, O. | Plates | 27.00 29.00 | Pacific Coast ports | 3.95c | Philadelphia, del. | 2.52c |
| Youngstown, O. | Sheets | 34.00 36.00 | Structural Shapes | | Boston, delivered | 2.49c |
| Pacific Coast points | Hot strip | 21.50 23.50 | Pittsburg | 2.10c | New York, del. | 2.50c |
| Galvanized No. 24 | Cold strip | 28.00 30.00 | Philadelphia, del. | 2.21 1/2 c | Gulf ports | 2.50c |
| Pittsburg | Straight Chromes | | New York, del. | 2.27c | Pacific Coast points | 2.75c |
| Chicago, Gary | No. | No. | Boston, delivered | 2.41c | Rail Steel | |
| Buffalo | No. 410 | No. 442 446 | Bethlehem | 2.10c | (Base, 5 tons or over) | |
| Sparrows Point, Md. | Bars | 18.50 19.00 22.50 27.50 | Chicago | 2.10c | Pittsburg | 2.15c |
| Philadelphia, del. | | | Cleveland, del. | 2.30c | Chicago or Gary | 2.15c |
| New York, delivered | | | | | Detroit, delivered | 2.25c |
| Birmingham | | | | | Cleveland | 2.15c |

| | |
|----------------------------|-------|
| Buffalo | 2.15c |
| Birmingham | 2.15c |
| Gulf ports | 2.50c |
| Pacific Coast points | 2.75c |

Iron

| | |
|----------------------------|------------|
| Chicago, Terre Haute | 2.15c |
| Philadelphia | 2.37c |
| Pittsburgh, refined | 3.50-8.00c |

Reinforcing

| | |
|--|-------|
| New Billet Bars, Base* | |
| Chicago, Gary, Buffalo, Cleve., Birm., Young., Sparrows Pt., Pitts. | 2.15c |
| Gulf ports | 2.50c |
| Pacific Coast ports | 2.60c |

Rail Steel Bars, Base*

| | |
|--|-------|
| Pittsburgh, Gary Chicago, Buffalo, Cleveland, Birm. | 2.15c |
| Gulf ports | 2.50c |
| Pacific Coast ports | 2.60c |

*Subject to a deduction of 25 cents per 100 lbs. in lots of 20 tons or over of one size, in lengths of 30 feet or over, for shipment at one time to one destination.

Wire Products

| | |
|---|--------|
| Pitts.-Cleve.-Chicago-Birm. base per 100 lb. keg in carloads | |
| Standard and cement coated wire nails | \$2.55 |
| (Per pound) | |
| Polished fence staples | 2.55c |
| Galv. barbed wire, standard 1 1/2 gage two-point hog, 80-rod spool \$2.88; two-point cattle, 80-rod spool | \$2.70 |
| Annealed fence wire | 3.05c |
| Galv. fence wire | 3.30c |
| Woven wire fencing (base C. L. column) | |
| Single loop bale tier. (base C. L. column) | 56.00 |
| To Manufacturing Trade | |
| Base, Pitts. - Cleve. - Chicago-Birmingham (except spring wire) | |
| Bright bess., basic wire | 2.60c |
| Galvanized wire | 2.65c |
| Spring wire | 3.20c |
| Worcester, Mass., \$2 higher on bright basic and spring wire. | |

Cut Nails

| | |
|---------------------------|--------|
| Carload, Pittsburgh | \$3.85 |
|---------------------------|--------|

Cold-Finished Bars

| | | |
|------------------|---------------|--------------|
| | Carbon | Alloy |
| Pittsburgh | 2.65c | 3.35c |
| Chicago | 2.65c | 3.35c |
| Gary, Ind. | 2.65c | 3.35c |
| Detroit | 2.70c | *3.45c |
| Cleveland | 2.65c | 3.35c |
| Buffalo | 2.65c | 3.35c |
| * Delivered. | | |

Alloy Bars (Hot)

| | | | |
|--|-------|------------|-------|
| (Base, 20 tons or over) | | | |
| Pittsburgh, Buffalo, Chicago, Massillon, Canton, Bethlehem | | | |
| Detroit, delivered | | | |
| S.A.E. Alloy | | | |
| 2000 | Diff. | S.A.E. | Alloy |
| 2100 | 0.35 | 3100 | 0.70 |
| 2300 | 0.75 | 3200 | 1.35 |
| 2500 | 1.55 | 3300 | 3.30 |
| 4100 0.15 to 0.25 Mo. | 2.25 | 3400 | 3.20 |
| 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 flats | | | 0.15 |
| 6100 bars | | | 1.20 |
| 6100 spring flats | | | 0.85 |
| Cr. N., Van. | | | 1.50 |
| Carbon Van. | | | 0.85 |
| 9200 spring flats | | | 0.15 |
| 9200 spring rounds, squares | | | 0.40 |
| Electric furnace up 50 cents. | | | |

Strip and Hoops

(Base, hot strip, 1 ton or over; cold, 3 tons or over)

| | |
|--|-------|
| Hot Strip, 12-inch and less | |
| Pittsburgh, Chicago, Gary, Cleveland, Youngstown, Middletown, Birmingham. | 2.10c |
| Detroit, del. | 2.20c |
| Philadelphia, del. | 2.42c |
| New York, del. | 2.46c |
| Pacific Coast points | 2.70c |

Cooperage hoop, Youngs., Pitts.; Chicago, Birm. 2.20c

| | |
|---|--------------|
| Cold strip, 0.25 carbon and under, Pittsburgh, Cleveland, Youngstown | |
| Chicago | 2.80c |
| Chicago | 2.90c |
| Detroit, del. | 2.90c |
| Worcester, Mass. | 3.00c |
| Carbon | Pitts. 2.80c |
| 0.26—0.50 | 2.80c |
| 0.51—0.75 | 4.30c |
| 0.76—1.00 | 6.15c |
| Over 1.00 | 8.35c |
| Worcester, Mass. \$4 higher. | |

Commodity Cold-Rolled Strip

| | |
|--------------------------------|-------|
| Pitts.-Cleve.-Youngstown | 2.95c |
| Chicago | 3.05c |
| Detroit, del. | 3.05c |
| Worcester, Mass. | 3.35c |
| Lamp stock up 10 cents. | |

Rails, Fastenings

| | |
|---|-------------|
| (Gross Tons) | |
| Standard rails, mill. | \$40.00 |
| Relay rails, Pittsburgh 20—100 lbs. | 32.50-35.50 |
| Light rails, billet qual., Pitts., Chicago, B'ham. | \$40.00 |
| Do., rerolling quality .. | 39.00 |
| Cents per pound | |
| Angle bars, billet, mills. | 2.70c |
| Do., axle steel | 2.35c |
| Spikes, R. R. base | 3.00c |
| Track bolts, base | 4.15c |
| Car axles forged, Pitts., Chicago, Birmingham. | 3.15c |
| Tie plates, base | 2.15c |
| 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 plates 20 tons. | |

Bolts and Nuts

F.o.b. Pittsburgh, Cleveland, Birmingham, Chicago. Discounts for carloads additional 5%, for full containers additional 10%.

| | |
|-----------------------------|----------|
| Carriage and Machine | |
| 1/2 x 6 and smaller | 68.5 off |
| Do. larger, to 1-in. | 66 off |
| Do. 1 1/2 and larger | 64 off |
| Tire bolts | 52.5 off |

Stove Bolts
In packages with nuts separate 72.5 off; with nuts attached add 15%; bulk 83.5 off on 15,000 of 3-inch and shorter, or 5000 over 3-in.

| | |
|------------------|----------|
| Step bolts | 60 off |
| Plow bolts | 68.5 off |

| | | | |
|---|----|----|--|
| Nuts | | | |
| Semifinished hex. U.S.S. S.A.E. 6-inch and less | 67 | 70 | |
| 1/2-1-inch | 64 | 65 | |
| 1 1/2 and larger | 62 | 62 | |

Hexagon Cap Screws
Upset, 1-in., smaller 70.0 off |

Square Head Set Screws
Upset, 1-in., smaller 75.0 off |

Headless set screws 64.0 off |

Piling

| | |
|------------------------------|-------|
| Pitts., Chgo., Buffalo. | 2.40c |
| Gulf ports | 2.85c |
| Pacific coast ports | 2.90c |

Rivets, Washers

| | |
|--|-------|
| Structural, Pittsburgh, Cleveland, Chicago | 3.40c |
| 1/8-inch and smaller, | |

Pitts., Chi., Cleve. .65-10 off
Wrought washers, Pitts., Chi., Phila., to jobbers and large nut, bolt mfrs. i.c.l. \$5.40; c.l. \$5.75 off

Welded Iron, Steel Pipe

Base discounts on steel pipe. Pitts., Lorain, O., to consumers in carloads. Gary, Ind., 2 points less on lap weld, 1 point less on butt weld. Chicago delivery 2 1/2 and 1 1/2 less, respectively. Wrought pipe, Pittsburgh base.

| | | | |
|------------------------|--------|--------|--|
| Butt Weld Steel | | | |
| In. | Blk. | Galv. | |
| 1/2 | 63 1/2 | 54 | |
| 3/4 | 66 1/2 | 58 | |
| 1-3 | 68 1/2 | 60 1/2 | |

| | | | |
|---------------|--------|--------|--|
| Iron | | | |
| 1/2 | 30 | 13 | |
| 1-1 1/4 | 34 | 19 | |
| 1 1/2 | 38 | 21 1/2 | |
| 2 | 37 1/2 | 21 | |

| | | | |
|-----------------------|--------|--------|--|
| Lap Weld Steel | | | |
| 2 | 61 | 52 1/2 | |
| 2 1/2-3 | 64 | 55 1/2 | |
| 3 1/2-6 | 66 | 57 1/2 | |
| 7 and 8 | 65 | 55 1/2 | |
| 9 and 10 | 64 1/2 | 55 | |
| 11 and 12 | 63 1/2 | 54 | |

| | | | |
|-------------------|--------|--------|--|
| Iron | | | |
| 2 | 30 1/2 | 15 | |
| 2 1/2-3 1/2 | 31 1/2 | 17 1/2 | |
| 4 | 33 1/2 | 21 | |
| 4 1/2-8 | 32 1/2 | 20 | |
| 9-12 | 28 1/2 | 15 | |

| | | | |
|----------------------------|--------|--|--|
| Line Pipe. Steel | | | |
| 1 to 3, butt weld | 67 1/2 | | |
| 2, lap weld | 60 | | |
| 2 1/2 to 3, lap weld | 63 | | |
| 3 1/2 to 6, lap weld | 65 | | |
| 7 and 8, lap weld | 64 | | |
| 10-inch lap weld | 63 1/2 | | |
| 12-inch, lap weld | 62 1/2 | | |

| | | | |
|-------------------------------|--------|--------|--|
| Iron | | | |
| 1/2 butt weld | 25 | 7 | |
| 1 and 1 1/2 butt weld | 29 | 13 | |
| 1 1/2 butt weld | 33 | 15 1/2 | |
| 2 butt weld | 32 1/2 | 15 | |
| 1 1/2 lap weld | 23 1/2 | 7 | |
| 2 lap weld | 25 1/2 | 9 | |
| 2 1/2 to 3 1/2 lap weld | 26 1/2 | 11 1/2 | |
| 4 lap weld | 28 1/2 | 15 | |
| 4 1/2 to 8 lap weld | 27 1/2 | 14 | |
| 9 to 12 lap weld | 23 1/2 | 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 Welded | | | |
| Sizes | Gage | Steel | Char-coal |
| 1 1/2" O.D. | 13 | \$ 9.72 | \$23.71 |
| 1 3/4" O.D. | 13 | 11.06 | 22.93 |
| 2" O.D. | 13 | 12.38 | 19.35 |
| 2 1/4" O.D. | 13 | 13.79 | 21.68 |
| 2 1/2" O.D. | 12 | 15.16 | ..... |
| 2 3/4" O.D. | 12 | 16.58 | 26.57 |
| 3" O.D. | 12 | 17.54 | 29.00 |
| 3 1/2" O.D. | 12 | 18.35 | 31.36 |
| 4" O.D. | 11 | 23.15 | 39.81 |
| 4 1/2" O.D. | 10 | 28.66 | 49.90 |
| 5" O.D. | 9 | 44.25 | 73.93 |
| 6" O.D. | 7 | 68.14 | ..... |

| | | | |
|------------------|------|------------|------------|
| Seamless | | | |
| Sizes | Gage | Hot Rolled | Cold Drawn |
| 1" O.D. | 13 | \$ 7.82 | \$ 9.01 |
| 1 1/4" O.D. | 13 | 9.26 | 10.67 |
| 1 1/2" O.D. | 13 | 10.23 | 11.79 |
| 1 3/4" O.D. | 13 | 11.64 | 13.42 |

| | | | |
|------------------|----|-------|-------|
| 2" O.D. | 13 | 13.04 | 15.03 |
| 2 1/4" O.D. | 13 | 14.54 | 16.76 |
| 2 1/2" O.D. | 12 | 16.01 | 18.45 |
| 2 3/4" O.D. | 12 | 17.54 | 20.21 |
| 3" O.D. | 12 | 18.59 | 21.42 |
| 3 1/2" O.D. | 12 | 19.50 | 22.48 |
| 3 3/4" O.D. | 11 | 24.62 | 28.37 |
| 4" O.D. | 10 | 30.54 | 35.20 |
| 4 1/2" O.D. | 10 | 37.35 | 43.04 |
| 5" O.D. | 9 | 46.87 | 54.01 |
| 6" O.D. | 7 | 71.96 | 82.93 |

Cast Iron Pipe

| | |
|---------------------------------|---------------|
| Class B Pipe—Per Net Ton | |
| 6-in., & over, Birm. | \$45.00-46.00 |
| 4-in., Birmingham .. | 48.00-49.00 |
| 4-in., Chicago | 56.80-57.80 |
| 6-in. & over, Chicago .. | 53.80-54.80 |
| 6-in. & over, east fdy. | 49.00 |
| Do., 4-in. | 52.00 |

Class A Pipe \$3 over Class B Std. ftgs., Birm., base \$100.00

Semifinished Steel

| | |
|---|---------|
| Rerolling Billets, Slabs (Gross Tons) | |
| Pittsburgh, Chicago, Gary, Cleve., Buffalo, Young., Birm., Sparrows Point. | \$34.00 |
| Duluth (billets) | 36.00 |
| Detroit, delivered | 36.00 |
| Forging Quality Billets | |
| Pitts., Chi., Gary, Cleve., Young., Buffalo, Birm. | 40.00 |
| Duluth | 42.00 |

| | |
|---|-------|
| Sheet Bars | |
| Pitts., Cleveland, Young., Sparrows Point, Buffalo, Canton, Chicago. | 34.00 |
| Detroit, delivered | 36.00 |

| | |
|--|--------|
| Wire Rods | |
| Pitts., Cleveland, Chicago, Birmingham No. 5 to 3/8-inch incl. (per 100 lbs.) .. | \$2.00 |
| Do., over 3/8 to 1 1/4-in. incl. | 2.15 |
| Worcester up \$0.10; Galveston up \$0.25; Pacific Coast up \$0.45. | |

| | |
|--|-------|
| Skelp | |
| Pitts., Chi., Youngstown, Coatesville, Sparrows Pt. | 1.90c |

Coke

| | |
|---------------------------|--------------|
| Price Per Net Ton | |
| Beehive Ovens | |
| Connellsville, fur. | \$4.50- 4.75 |
| Connellsville, fdry. | 5.00- 5.75 |
| Connell prem. fdry. | 5.75- 6.25 |
| New River fdry. | 6.25- 6.50 |
| Wise county fdry. | 5.50- 6.50 |
| Wise county fur. | 5.00- 5.25 |

| | |
|----------------------------|-------------|
| By-Product Foundry | |
| Newark, N. J., del. | 11.38-11.85 |
| Chicago, outside del. | 10.50 |
| Chicago, delivered. | 11.25 |
| Terre Haute, del. | 10.75 |
| Milwaukee, ovens. | 11.25 |
| New England, del. | 12.50 |
| St. Louis, del. | 11.75 |
| Birmingham, ovens. | 7.50 |
| Indianapolis, del. | 10.75 |
| Cincinnati, del. | 10.50 |
| Cleveland, del. | 11.05 |
| Buffalo, del. | 11.25 |
| Detroit, del. | 11.00 |
| Philadelphia, del. | 11.15 |

Coke By-Products

| | |
|---|---------|
| Spot, gal., freight allowed east of Omaha | |
| Pure and 90% benzol. | 16.00c |
| Toluol, two degree | 25.00c |
| Solvent naphtha | 27.00c |
| Industrial xylol | 27.00c |
| Per lb. f.o.b. Frankford and St. Louis | |
| Phenol (less than 1000 lbs.) | 14.75c |
| Do. (1000 lbs. or over) .. | 13.75c |
| Eastern Plants, per lb. | |
| Naphthalene flakes, balls, bbls. to jobbers | 6.75c |
| Per ton, bulk, f.o.b. port | |
| Sulphate of ammonia. | \$28.00 |

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 sil.; 50c diff. below 1.75 sil. Gross tons.

| Basing Points: | No. 2 Fdry. | Malle-able | Basic | Besse-mer |
|----------------------|-------------|------------|---------|-----------|
| Bethlehem, Pa. | \$24.00 | \$24.50 | \$23.50 | \$25.00 |
| Birdsboro, Pa. | 24.00 | 24.50 | 23.50 | 25.00 |
| Birmingham, Ala. | 19.38 | 19.38 | 18.38 | 24.00 |
| Buffalo | 23.00 | 23.50 | 22.00 | 24.00 |
| Chicago | 23.00 | 23.00 | 22.50 | 23.50 |
| Cleveland | 23.00 | 23.00 | 22.50 | 23.50 |
| Detroit | 23.00 | 23.00 | 22.50 | 23.50 |
| Duluth | 23.50 | 23.50 | 22.50 | 24.00 |
| Erie, Pa. | 23.00 | 23.50 | 22.50 | 24.00 |
| Everett, Mass. | 24.00 | 24.50 | 23.50 | 25.00 |
| Granite City, Ill. | 23.00 | 23.00 | 22.50 | 23.50 |
| Hamilton, O. | 23.00 | 23.00 | 22.50 | 23.50 |
| Neville Island, Pa. | 23.00 | 23.00 | 22.50 | 23.50 |
| Provo, Utah | 21.00 | 21.00 | 20.00 | 21.00 |
| Sharpsville, Pa. | 23.00 | 23.00 | 22.50 | 23.50 |
| Sparrow's Point, Md. | 24.00 | 24.00 | 23.50 | 24.50 |
| Swedeland, Pa. | 24.00 | 24.50 | 23.50 | 25.00 |
| Toledo, O. | 23.00 | 23.00 | 22.50 | 23.50 |
| Youngstown, O. | 23.00 | 23.00 | 22.50 | 23.50 |

†Subject to 38 cents deduction for 0.70 per cent phosphorus or higher.

Delivered from Basing Points:

| | | | | |
|--|-------|-------|-------|-------|
| Akron, O., from Cleveland | 24.39 | 24.39 | 23.89 | 24.89 |
| Baltimore from Birmingham | 24.78 | 24.78 | 23.66 | 24.66 |
| Boston from Birmingham | 24.12 | 24.12 | 23.00 | 23.00 |
| Boston from Everett, Mass. | 24.50 | 25.00 | 24.00 | 25.50 |
| Boston from Buffalo | 24.50 | 25.00 | 24.00 | 25.50 |
| Brooklyn, N. Y., from Bethlehem | 26.50 | 27.00 | 26.00 | 26.50 |
| Canton, O., from Cleveland | 24.39 | 24.39 | 23.89 | 24.89 |
| Chicago from Birmingham | 23.22 | 23.22 | 22.00 | 22.00 |
| Cincinnati from Hamilton, O. | 23.24 | 24.11 | 23.61 | 24.48 |
| Cincinnati from Birmingham | 23.06 | 23.06 | 22.06 | 22.06 |
| Cleveland from Birmingham | 23.32 | 23.32 | 22.82 | 23.32 |
| Mansfield, O., from Toledo, O. | 24.94 | 24.94 | 24.44 | 24.44 |
| Milwaukee from Chicago | 24.10 | 24.10 | 23.60 | 24.60 |
| Muskegon, Mich., from Chicago, Toledo or Detroit | 26.19 | 26.19 | 25.69 | 26.69 |
| Newark, N. J., from Birmingham | 25.15 | 25.15 | 24.00 | 24.00 |
| Newark, N. J., from Bethlehem | 25.53 | 26.03 | 25.00 | 25.00 |
| Philadelphia from Birmingham | 24.46 | 24.46 | 23.96 | 24.46 |
| Philadelphia from Swedeland, Pa. | 24.84 | 25.34 | 24.34 | 24.84 |
| Pittsburgh district from Neville Island | 25.31 | 25.31 | 24.81 | 25.81 |
| Saginaw, Mich., from Detroit | 25.31 | 25.31 | 24.81 | 25.81 |

| | No. 2 Fdry. | Malle-able | Basic | Besse-mer |
|---------------------------|-------------|------------|-------|-----------|
| St. Louis, northern | 23.50 | 23.50 | 23.00 | 23.00 |
| St. Louis from Birmingham | 23.12 | 23.12 | 22.62 | 22.62 |
| St. Paul from Duluth | 25.63 | 25.63 | 25.13 | 25.13 |

†Over 0.70 phos.

Low Phos.

Basing Points: Birdsboro and Steelton, Pa., and Buffalo, N. Y., \$28.50, base; \$29.74 delivered Philadelphia.

Gray Forge

| | | | |
|-------------------|---------|--------------------|---------|
| Valley furnace | \$22.50 | Lake Superior fur. | \$27.00 |
| Pitts. dist. fur. | 22.50 | do., del. Chicago | 30.34 |
| | | 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 | Ladle Brick (Pa., O., W. Va., Mo.) | |
|-----------------------------------|--|-----------------|
| Fire Clay Brick | Dry press | \$28.00 |
| Super Quality | Wire cut | \$26.00 |
| Pa., Mo., Ky. | Magnesite | |
| First Quality | Domestic dead - burned grains, net ton f.o.b. Chewelah, Wash., net ton, bulk | 22.00 |
| Pa., Ill., Md., Mo., Ky. | net ton, bags | 26.00 |
| Alabama, Georgia | Basic Brick | |
| New Jersey | Net ton, f.o.b. Baltimore, Plymouth Meeting, Chester, Pa. | |
| Second Quality | Chrome brick | \$50.00 |
| Pa., Ill., Ky., Md., Mo. | Chem. bonded chrome | 50.00 |
| Georgia, Alabama | Magnesite brick | 72.00 |
| New Jersey | Chem. bonded magnesite | 61.00 |
| Ohio | Fluorspar | |
| First quality | Washed gravel, duty pd., tide, net ton | \$25.00-\$26.00 |
| Intermediate | Washed gravel, f.o.b. Ill., Ky., net ton, carloads, all rail | 22.00 |
| Second quality | Do. barge | 22.00 |
| Malleable Bung Brick | No. 2 lump | 22.00 |
| All bases | | |
| \$56.05 | | |
| Silica Brick | | |
| Pennsylvania | | \$47.50 |
| Joliet, E. Chicago | | 55.10 |
| Birmingham, Ala. | | 47.50 |

Ferroalloy Prices

| | | | | | | | |
|--|----------------|--|--------|--|--------|--|---------|
| Ferromanganese, 78-82%, lump and bulk, carlots tide, duty pd. | \$100.00 | carlots | 11.00c | Do, spot | 145.00 | ¼-in., lb. | 14.00c |
| Ton lots | 110.00 | Do., ton lots | 11.75c | Do, contract, ton lots | 145.00 | Do., 2% | 12.50c |
| Less ton lots | 113.50 | Do., less-ton lots | 12.00c | Do, spot, ton lots | 150.00 | Spot ¼c higher | |
| Less 200 lb. lots | 118.00 | 67-72% low carbon: | | 15-18% ti., 3-5% carbon, carlots, contr., net ton | 157.50 | Silicon Briquets, contract carloads, bulk, freight allowed, ton | \$69.50 |
| Do., carlots del. Pitts. | 105.33 | Car-loads | | Do, spot | 160.00 | Ton lots | 79.50 |
| Spiegelisen, 19-21% dom. Palmerton, Pa., spot | 32.00 | 1% carb. | 18.50c | Do, contract, ton lots | 160.00 | Less-ton lots, lb. | 3.75c |
| Do., 26-28% | 39.50 | 0.10% carb. | 20.50c | Do, spot, ton lots | 165.00 | Less 200 lb. lots, lb. | 4.00c |
| Ferrosilicon, 50% freight allowed, c.l. | 69.50 | 0.20% carb. | 21.25c | Alsiifer, contract carlots, f.o.b. Niagara Falls, lb. | 7.50c | Spot ¼-cent higher. | |
| Do., ton lot | 82.00 | Spot ¼c higher | 20.75c | Do, ton lots | 8.00c | Manganese Briquets, contract carloads, bulk freight allowed, lb. | 5.00c |
| Do., 75 per cent. | 126.00 | Ferromolybdenum, 55-65% molyb. cont., f.o.b. mill, lb. | 0.95 | Do, less-ton lots | 8.50c | Do, ton lots | 5.50c |
| Do. ton lots | 142.00 | Calcium molybdate, lb. molyb. cont., f.o.b. mill | 0.80 | Spot ¼c higher | | Less-ton lots | 5.75c |
| Spot, \$5 a ton higher. | | Ferrotitanium, 40-45%, lb., con. ti., f.o.b. Niagara Falls, ton lots | \$1.23 | Chromium Briquets, contract, freight allowed, lb. spot carlots, bulk | 7.00c | Spot ¼c higher | |
| Silicomanganese, c.l., 2½ per cent carbon | 103.00 | Do., less-ton lots | 1.25 | Do., ton lots | 7.50c | Tungsten Metal Powder, according to grade, spot shipment, 200-lb. drum lots, lb. | \$2.50 |
| 2% carbon, 108.00; 1% carbon, contract ton price \$12.50 higher; spot \$5 over contract. | 118.00 | 20-25% carbon, 0.10 max., ton lots, lb. | 1.35 | Do., smaller lots | 2.60 | Vanadium Pentoxide, contract, lb. contained | \$1.10 |
| Ferrotungsten, stand., lb. con. del. cars | 2.00-2.10 | Do, less-ton lots | 1.40 | Do, spot | 1.15 | Do, spot | 1.15 |
| Ferrovandium, 35 to 40%, lb., cont. | 2.70-2.80-2.90 | Spot 5c higher | | Chromium Metal, 98% cr., 0.50 carbon max., contract, lb. con. | 84.00c | Chromium Metal, 98% cr., 0.50 carbon max., contract, lb. con. | 84.00c |
| Ferrophosphorus, gr. ton, c.l., 17-18% Rockdale, Tenn., basis, 18%, \$3 unitage, 58.50; electrolytic, per ton, c. l., 23-26% f.o.b. Monsanto, Tenn., 24% \$3 unitage | 75.00 | Technical molybdenum trioxide, 53 to 60% molybdenum, lb. molyb. cont., f.o.b. mill | 0.80 | Do., spot | 89.00c | 88% chrome, contract | 83.00c |
| Ferrocolumbium, 50-60%, contract, lb. con. col., f.o.b. Niagara Falls | \$2.25 | Ferrocolumbium, 50-60%, contract, lb. con. col., f.o.b. Niagara Falls | \$2.25 | Do, spot | 88.00c | Silicon Metal, 1% iron, contract, carlots, 2 x | |
| Do., less-ton lots | 2.30 | Spot is 10c higher | | | | | |
| Spot is 10c higher | | | | | | | |

WAREHOUSE STEEL PRICES

Base Prices in Cents Per Pound, Delivered Locally, Subject to Prevailing Differentials

| | Soft | | | Plates ¼-in. & Over | Structural Shapes | Floor Plates | Sheets | | | Cold Rolled Strip | Cold Drawn Bars | | |
|-----------------|------|-------|-------|---------------------------|----------------------|-----------------|---------------|----------------|-----------------|-------------------------|-----------------|-------------|-------------|
| | Bars | Bands | Hoops | | | | Hot Rolled | Cold Rolled | Galv. No. 24 | | Carbon | SAE 2300 | SAE 3100 |
| Boston | 3.98 | 4.16 | 5.16 | 3.85 | 3.85 | 5.66 | 3.81 | 4.78 | 4.86 | 3.46 | 4.13 | 8.63 | 7.23 |
| New York (Met.) | 3.84 | 3.96 | 3.96 | 3.76 | 3.75 | 5.56 | 3.58 | 4.60 | 5.23 | 3.51 | 4.09 | 8.59 | 7.19 |
| Philadelphia | 3.85 | 3.85 | 4.35 | 3.55 | 3.55 | 5.25 | 3.55 | 4.55 | 4.75 | 3.51 | 4.06 | 8.56 | 7.16 |
| Baltimore | 3.95 | 4.05 | 4.45 | 3.70 | 3.70 | 5.25 | 3.55 | ... | 5.05 | ... | 4.05 | ... | ... |
| Norfolk, Va. | 4.15 | 4.25 | ... | 3.90 | 3.90 | 5.45 | 3.75 | ... | 5.40 | ... | 4.15 | ... | ... |
| Buffalo | 3.35 | 3.82 | 3.82 | 3.62 | 3.40 | 6.40 | 4.20 | 4.40 | 4.50 | 3.42 | 3.75 | 8.15 | 6.75 |
| Pittsburgh | 3.35 | 3.60 | 3.60 | 3.40 | 3.40 | 5.00 | 3.35 | ... | 4.75 | 3.35 | 3.65 | 8.35 | 6.95 |
| Cleveland | 3.25 | 3.50 | 3.50 | 3.40 | 3.58 | 5.18 | 3.35 | 4.05 | 4.72 | 3.20 | 3.75 | 8.15 | 6.75 |
| Detroit | 3.43 | 3.43 | 3.68 | 3.60 | 3.65 | 5.27 | 3.43 | 4.50 | 4.84 | 3.40 | 3.80 | 8.45 | 7.05 |
| Cincinnati | 3.60 | 3.67 | 3.67 | 3.65 | 3.68 | 5.28 | 3.42 | 4.37 | 4.67 | 3.45 | 4.00 | 8.50 | 7.10 |
| Chicago | 3.50 | 3.60 | 3.60 | 3.55 | 3.55 | 5.15 | 3.35 | 4.30 | 4.85 | 3.50 | 3.75 | 8.15 | 6.75 |
| Twin Cities | 3.75 | 3.85 | 3.85 | 3.80 | 3.80 | 5.40 | 3.60 | 4.95 | 5.00 | 3.83 | 4.34 | 8.84 | 7.44 |
| Milwaukee | 3.63 | 3.73 | 3.73 | 3.68 | 3.68 | 5.28 | 3.48 | 4.43 | 4.98 | 3.54 | 3.88 | 8.38 | 6.98 |
| St. Louis | 3.62 | 3.72 | 3.72 | 3.47 | 3.47 | 5.07 | 3.38 | 4.32 | 4.95 | 3.61 | 4.02 | 8.52 | 7.12 |
| Kansas City | 4.05 | 4.15 | 4.15 | 4.00 | 4.00 | 5.60 | 3.90 | ... | 5.00 | ... | 4.30 | ... | ... |
| Memphis | 3.90 | 4.10 | 4.10 | 3.95 | 3.95 | 5.71 | 3.85 | ... | 5.25 | ... | 4.31 | ... | ... |
| Chattanooga | 3.80 | 3.90 | 3.90 | 3.85 | 3.85 | 5.68 | 3.65 | ... | 4.40 | ... | 4.39 | ... | ... |
| Tulsa, Okla. | 4.44 | 4.54 | 4.54 | 4.33 | 4.33 | 5.93 | 4.24 | ... | 5.71 | ... | 4.69 | ... | ... |
| Birmingham | 3.50 | 3.70 | 3.70 | 3.55 | 3.55 | 5.88 | 3.45 | ... | 4.75 | ... | 4.43 | ... | ... |
| New Orleans | 4.00 | 4.10 | 4.10 | 3.80 | 3.80 | 5.75 | 3.85 | ... | 4.80 | 5.00 | 4.60 | ... | ... |
| Houston, Tex. | 4.05 | 6.20 | 6.20 | 4.05 | 4.05 | 5.75 | 4.20 | ... | 5.25 | ... | ... | ... | ... |
| Seattle | 4.00 | 4.00 | 5.35 | 3.40 | 3.50 | 5.75 | 3.95 | 6.50 | 4.75 | ... | 5.75 | ... | ... |
| Portland, Oreg. | 4.25 | 4.50 | 6.10 | 4.00 | 4.00 | 5.75 | 3.95 | 6.50 | 4.75 | ... | 5.75 | ... | ... |
| Los Angeles | 4.15 | 4.65 | 6.45 | 4.00 | 4.00 | 6.40 | 4.30 | 6.50 | 5.25 | ... | 6.60 | 10.65 | 9.80 |
| San Francisco | 3.50 | 4.00 | 6.00 | 3.35 | 3.35 | 5.60 | 3.40 | 6.40 | 5.15 | ... | 6.80 | 10.65 | 9.80 |

| | —SAE Hot-rolled Bars (Unannealed)— | | | | |
|-----------------|------------------------------------|-------------|-------------|-------------|-------------|
| | 1035-1050 Series | 2300 Series | 3100 Series | 4100 Series | 6100 Series |
| Boston | 4.18 | 7.50 | 6.05 | 5.80 | 7.90 |
| New York (Met.) | 4.04 | 7.35 | 5.90 | 5.65 | ... |
| Philadelphia | 4.10 | 7.31 | 5.86 | 5.61 | 8.56 |
| Baltimore | 4.10 | ... | ... | ... | ... |
| Norfolk, Va. | ... | ... | ... | ... | ... |
| Buffalo | 3.55 | 7.10 | 5.65 | 5.40 | 7.50 |
| Pittsburgh | 3.40 | 7.35 | 5.95 | 5.50 | 7.60 |
| Cleveland | 3.30 | 7.30 | 5.85 | 5.85 | 7.70 |
| Detroit | 3.48 | 7.42 | 5.97 | 5.72 | 7.19 |
| Cincinnati | 3.65 | 7.44 | 5.99 | 5.74 | 7.84 |
| Chicago | 3.70 | 7.10 | 5.65 | 5.40 | 7.50 |
| Twin Cities | 3.95 | 7.45 | 6.00 | 6.09 | 8.19 |
| Milwaukee | 3.83 | 7.33 | 5.88 | 5.63 | 7.73 |
| St. Louis | 3.82 | 7.47 | 6.02 | 5.77 | 7.87 |
| Seattle | 5.85 | ... | 8.00 | 7.85 | 8.65 |
| Portland, Oreg. | 5.70 | 8.85 | 8.00 | 7.85 | 8.65 |
| Los Angeles | 4.80 | 9.40 | 8.55 | 8.40 | 9.05 |
| San Francisco | 5.00 | 9.65 | 8.30 | 8.65 | 9.30 |

BASE QUANTITIES

Soft Bars, Bands, Hoops, Plates, Shapes, Floor Plates, Hot Rolled Sheets and SAE 1035-1050 Bars: Base, 400-1999 pounds, except 0-1999 pounds (hot rolled sheets only) in New York; 300-1999 pounds in Los Angeles; 400-39,999 (hoops, 0-299) in San Francisco; 300-4999 pounds in Portland, Seattle; 400-14,999 pounds in Twin Cities; 400-3999 pounds in Birmingham.

Cold Rolled Sheets: Base, 400-1499 pounds in Chicago, Cincinnati, Cleveland, Detroit, New York, Kansas City and St. Louis; 450-3749 in Boston; 500-1499 in Buffalo; 1000-1999 in Philadelphia, Baltimore; 300-4999 in San Francisco, Portland; any quantity in Twin Cities; 300-1999 in Los Angeles.

Galvanized Sheets: Base, 0-1499 pounds in New York, 150-1499 pounds in Cleveland, Milwaukee, Pittsburgh, Baltimore, Norfolk; 150-1049 in Los Angeles; 300-4999 in Portland, Seattle, San Francisco; 450-3749 in Boston; 500-1499 in Birmingham, Buffalo, Chicago, Cincinnati, Detroit, St. Louis, Tulsa; 1500 and over in Chattanooga, Philadelphia; any quantity in Twin Cities; 750-1500 in Kansas City; 150 and over in Memphis.

Cold Rolled Strip: No base quantity; extras apply on lots of all size.

Cold Finished Bars: Base, 1500 pounds and over on carbon, except 0-299 in San Francisco, 1000 and over in Portland, Seattle; 1000 pounds and over on alloy, except 0-4999 in San Francisco.

SAE Hot Rolled Alloy Bars: Base, 1000 pounds and over, except 0-4999, San Francisco; 0-1999, Portland, Seattle.

CURRENT IRON AND STEEL PRICES OF EUROPE

Dollars at Rates of Exchange, Feb. 8

Export Prices f.o.b. Port of Dispatch—

Domestic Prices at Works or Furnace—

By Cable or Radio

Last Reported

| | British gross tons U. K. ports | | Continental Channel or North Sea ports, gross tons | | French Francs | Belgian Francs | Reich \$Mark | | | | | | |
|-----------------------------------|--------------------------------|------------------------------------|--|----------------------------------|---|----------------|--------------|-------|---------|-------|---------|----------|------|
| | £ s d | Quoted in dollars at current value | £ s d | **Quoted in fold pounds sterling | | | | | | | | | |
| Foundry, 2.50-3.00 Si. | \$23.94 | 6 0 0 | \$30.67 | 3 12 0 | \$21.54 | 5 8 0(a) | \$17.81 | 788 | \$28.65 | 850 | \$25.33 | 63 | |
| Basic bessemer. | | | 19.59 | 2 6 0 | 20.25 | 5 1 6(a) | ... | ... | 26.95 | 800 | 27.94 | (b)69.50 | |
| Hematite, Phos. 03-05 | 24.94 | 6 5 0 | ... | ... | 5.84 | 1 9 2 | 5.09 | 225 | 10.45 | 310 | 7.64 | 19 | |
| Billets. | \$29.43 | 7 7 6 | \$31.95 | 3 15 0 | 33.42 | 8 7 6 | 26.28 | 1,163 | 40.44 | 1,200 | 38.79 | 96.50 | |
| Wire rods, No. 5 gage. | 45.39 | 11 7 6 | 59.64 | 7 0 0 | Furnace coke. | 1.81c | 10 3 0 | 1.46c | 1,455 | 2.06c | 1,375 | 2.38c | 132 |
| Standard rails. | \$37.90 | 9 10 0 | \$48.99 | 5 15 0 | Standard rails. | 2.28c | 12 16 0†† | 1.45c | 1,454 | 2.06c | 1,375 | 1.98c | 110 |
| Merchant bars. | 2.18c | 12 5 0 | 2.77c | 7 6 0 | Merchant bars. | 2.03c | 11 8 0†† | 1.41c | 1,414 | 2.06c | 1,375 | 1.93c | 107 |
| Structural shapes. | 1.98c | 11 2 6 | 2.85c | 7 10 0 | Plates, ¼-in. or 5 mm. | 2.05c | 11 10 6†† | 1.85c | 1,848 | 2.42c | 1,610 | 2.29c | 127 |
| Plates, ¼ in. or 5 mm. | 2.11c | 11 17 6 | 3.37c | 8 17 6 | Sheets, black. | 2.87c | 16 2 6‡ | 2.19c | 2,193‡ | 2.85c | 1,900‡ | 2.59c | 144‡ |
| Sheets, black, 24 gage or 0.5 mm. | 2.78c | 15 12 6 | 3.14c | 8 5 0° | Sheets, galv., corr., 24 ga. or 0.5 mm. | 3.32c | 18 12 6 | 2.85c | 2,850 | 4.58c | 3,050 | 6.66c | 370 |
| Sheets, galv., 24 ga., corr. | 3.23c | 18 2 6 | 4.46c | 11 15 0 | Plain wire. | 3.20c | 18 0 0 | 2.25c | 2,250 | 3.00c | 2,000 | 3.11c | 173 |
| Bands and strips. | 2.18c | 12 5 0 | 2.74c | 7 4 0 | Bands and strips. | 2.41c | 13 11 0†† | 1.63c | 1,632 | 2.18c | 1,450 | 2.29c | 127 |
| Plain wire, base. | 3.47c | 19 10 0 | 3.04c | 8 0 0 | | | | | | | | | |
| Galvanized wire, base. | 4.14c | 23 5 0 | 3.63c | 9 11 3 | | | | | | | | | |
| Wire nails, base. | | | 3.52c | 9 5 0 | | | | | | | | | |
| Tin plate, box 108 lbs. | \$ 6.48 | 1 12 6 | ... | ... | | | | | | | | | |

†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. 5s rebate to approved customers. (b) hematite. °Close annealed. ††Rebate of 15s on certain conditions. **Gold pound sterling not quoted. \$\$\$Last prices, no current quotations.

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 | 16.00-16.50 |
| Bos. dock No. 1 exp. | 15.00-15.50 |
| New Eng. del. No. 1 | 15.00 |
| Buffalo, No. 1 | 16.00-16.50 |
| Buffalo, No. 2 | 14.00-14.50 |
| Chicago, No. 1 | 15.50-16.00 |
| Chicago, auto. no alloy | 14.50-15.00 |
| Chicago, No. 2 auto | 12.50-13.00 |
| Cincinnati dealers | 13.50-14.00 |
| Cleveland, No. 1 | 16.50-17.00 |
| Cleveland, No. 2 | 15.50-16.00 |
| Detroit, No. 1 | †13.00-13.50 |
| Detroit, No. 2 | †12.00-12.50 |
| Eastern Pa., No. 1 | 17.50-18.00 |
| Eastern Pa., No. 2 | 16.50 |
| Federal, Ill. | 14.00-14.50 |
| Granite City, R. R. | 15.00-15.50 |
| Granite City, No. 2 | 14.00-14.50 |
| Los Angeles, No. 1 | 14.50-15.50 |
| Los Angeles, No. 2 | 13.50-14.50 |
| L. A., No. 1 f.a.s. | 16.00-17.00 |
| L. A., No. 2 f.a.s. | 15.00-16.00 |
| N. Y. dock No. 1 exp. | 14.50 |
| Pitts., No. 1 (R. R.) | 18.25-18.75 |
| Pittsburgh, No. 1 | 17.50-18.00 |
| Pittsburgh, No. 2 | 16.00-16.50 |
| St. Louis, R. R. | †14.75-15.25 |
| St. Louis, No. 2 | †14.00-14.50 |
| San Francisco, No. 1 | 14.50-15.50 |
| San Francisco, No. 2 | 13.00-14.50 |
| Seattle, No. 1 | 14.50-15.50 |
| Toronto, dtrs., No. 1 | 11.00 |
| Valleys, No. 1 | 17.50-18.00 |

COMPRESSED SHEETS

| | |
|---------------------|--------------|
| Buffalo, new | 14.50-15.00 |
| Chicago, factory | 15.25-15.75 |
| Chicago, dealers | 13.75-14.25 |
| Cincinnati, dealers | 12.75-13.25 |
| Cleveland | 16.00-16.50 |
| Detroit | †13.50-14.00 |
| E. Pa., new mat. | 18.00 |
| E. Pa., old mat. | 14.00-14.50 |
| Los Angeles | 12.00-13.00 |
| Pittsburgh | 17.50-18.00 |
| St. Louis | †11.50-12.00 |
| San Francisco | 13.50-14.00 |
| Valleys | 17.00-17.50 |

BUNDLED SHEETS

| | |
|------------------|--------------|
| Buffalo, No. 1 | 14.00-14.50 |
| Buffalo, No. 2 | 12.50-13.00 |
| Cleveland | 12.50-13.00 |
| Pittsburgh | 16.00-16.50 |
| St. Louis | †11.50-12.00 |
| Toronto, dealers | 9.75 |

SHEET CLIPPINGS, LOOSE

| | |
|---------------------|-------------|
| Chicago | 10.25-10.75 |
| Cincinnati, dealers | 8.75- 9.25 |
| Detroit | †9.25- 9.75 |
| St. Louis | †9.50-10.00 |
| Toronto, dealers | 9.00 |

BUSHELING

| | |
|-----------------------|--------------|
| Birmingham, No. 1 | 13.00 |
| Buffalo, No. 1 | 14.00-14.50 |
| Chicago, No. 1 | 14.75-15.25 |
| Cincin., No. 1, deal. | 10.00-10.50 |
| Cincin., No. 2, deal. | 3.25- 3.75 |
| Cleveland, No. 2 | 10.50-11.00 |
| Detroit, No. 1, new | †12.50-13.00 |
| Valleys, new, No. 1 | 16.00-16.50 |
| Toronto, dealers | 5.00- 5.50 |

MACHINE TURNINGS (Long)

| | |
|------------|------|
| Birmingham | 5.00 |
|------------|------|

| | |
|---------------------|-------------|
| Buffalo | 10.00-10.50 |
| Chicago | 9.50-10.00 |
| Cincinnati, dealers | 5.25- 5.75 |
| Cleveland, no alloy | 9.50-10.00 |
| Detroit | †7.50- 8.00 |
| Eastern Pa. | 11.50-12.00 |
| Los Angeles | 4.00- 5.00 |
| New York | †7.00- 7.25 |
| Pittsburgh | 11.00-11.50 |
| St. Louis | †7.50- 8.00 |
| San Francisco | 5.00 |
| Toronto, dealers | 6.50 |
| Valleys | 11.50-12.00 |

SHOVELING TURNINGS

| | |
|----------------------|-------------|
| Buffalo | 13.00-13.50 |
| Cleveland | 10.50-11.00 |
| Chicago | 10.00-10.50 |
| Chicago, spec. anal. | 12.50-13.00 |
| Detroit | †9.50-10.00 |
| Pitts., alloy-free | 13.00-13.50 |

BORINGS AND TURNINGS

| | |
|------------------------------|-------------|
| <i>For Blast Furnace Use</i> | |
| Boston district | †5.00- 5.25 |
| Buffalo | 10.50-11.00 |
| Cincinnati, dealers | 4.25- 4.75 |
| Cleveland | 10.50-11.00 |
| Eastern Pa. | 10.50-11.00 |
| Detroit | †7.50- 8.00 |
| New York | †7.00- 7.50 |
| Pittsburgh | Nominal |
| Toronto, dealers | 6.00 |

AXLE TURNINGS

| | |
|----------------------|--------------|
| Buffalo | 16.50-17.00 |
| Boston district | †9.50-10.00 |
| Chicago, elec. fur. | 16.00-16.50 |
| East. Pa. elec. fur. | 16.50-17.00 |
| St. Louis | †10.50-11.00 |
| Toronto | 6.00- 6.50 |

CAST IRON BORINGS

| | |
|---------------------|-------------|
| Birmingham | 7.50 |
| Boston dist. chem. | †8.00- 8.50 |
| Buffalo | 10.50-11.00 |
| Chicago | 9.50-10.00 |
| Cincinnati, dealers | 4.25- 4.75 |
| Cleveland | 10.50-11.00 |
| Detroit | †7.50- 8.00 |
| E. Pa., chemical | 14.50-15.00 |
| New York | †7.00- 7.50 |
| St. Louis | †6.50- 7.00 |
| Toronto, dealers | 6.00 |

RAILROAD SPECIALTIES

| | |
|---------|-------------|
| Chicago | 18.25-18.75 |
|---------|-------------|

ANGLE BARS—STEEL

| | |
|-----------|--------------|
| Chicago | 18.00-18.50 |
| St. Louis | †16.00-16.50 |

SPRINGS

| | |
|---------------|--------------|
| Buffalo | 19.50-20.00 |
| Chicago, coil | 19.00-19.50 |
| Chicago, leaf | 18.00-18.50 |
| Eastern Pa. | 21.00-21.50 |
| Pittsburgh | 21.50-22.00 |
| St. Louis | †17.50-18.00 |

STEEL RAILS, SHORT

| | |
|-------------------------|--------------|
| Birmingham | 16.00-16.50 |
| Buffalo | 21.50-22.00 |
| Chicago (3 ft.) | 18.50-19.00 |
| Chicago (2 ft.) | 18.75-19.25 |
| Cincinnati, dealers | 20.00-20.50 |
| Detroit | †19.50-20.00 |
| Pitts., 3 ft. and less | 21.50-22.00 |
| St. Louis, 2 ft. & less | †19.00-19.50 |

STEEL RAILS, SCRAP

| | |
|-----------------|--------------|
| Birmingham | 15.50 |
| Boston district | †14.00-14.50 |

| | |
|------------|--------------|
| Buffalo | 17.00-17.50 |
| Chicago | 16.00-16.50 |
| Cleveland | 19.00-19.50 |
| Pittsburgh | 19.50-20.00 |
| St. Louis | †15.50-16.00 |
| Seattle | 18.00-18.50 |

PROGS. SWITCHES

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

ARCH BARS, TRANSOMS

| | |
|-----------|--------------|
| St. Louis | †14.50-15.00 |
|-----------|--------------|

PIPE AND FLUES

| | |
|---------------------|-------------|
| Chicago, net | 10.00-10.50 |
| Cincinnati, dealers | 10.25-10.75 |

RAILROAD GRATE BARS

| | |
|---------------------|--------------|
| Buffalo | 11.50-12.00 |
| Chicago, net | 10.00-10.50 |
| Cincinnati, dealers | 8.75- 9.25 |
| Eastern Pa. | 15.00 |
| New York | †11.50-12.00 |
| St. Louis | †11.00-11.50 |

RAILROAD WROUGHT

| | |
|--------------------|--------------|
| Birmingham | 14.00 |
| Boston district | †9.50-10.00 |
| Eastern Pa., No. 1 | 18.00-18.50 |
| St. Louis, No. 1 | †10.75-11.25 |
| St. Louis, No. 2 | †14.50-15.00 |

FORGE FLASHINGS

| | |
|-----------------|--------------|
| Boston district | †10.75-11.00 |
| Buffalo | 14.00-14.50 |
| Cleveland | 15.00-15.50 |
| Detroit | †12.00-12.50 |
| Pittsburgh | 16.00-16.50 |

FORGE SCRAP

| | |
|-----------------|-------------|
| Boston district | †7.00 |
| Chicago, heavy | 18.50-19.00 |

LOW PHOSPHORUS

| | |
|-----------------------------------|-------------|
| Cleveland, crops | 21.50-22.00 |
| Eastern Pa. crops | 21.00-21.50 |
| Pitts., billet, bloom, slab crops | 22.50-23.00 |

LOW PHOS. PUNCHINGS

| | |
|-------------|--------------|
| Buffalo | 19.50-20.00 |
| Chicago | 18.50-19.00 |
| Cleveland | 17.50-18.00 |
| Eastern Pa. | 21.50-22.00 |
| Pittsburgh | 20.50-21.00 |
| Seattle | 15.00 |
| Detroit | †13.75-14.25 |

RAILS FOR ROLLING

| | |
|------------------------|--------------|
| <i>5 feet and over</i> | |
| Birmingham | 16.50 |
| Boston | †15.75-16.00 |
| Chicago | 18.00-18.50 |
| New York | †17.50-18.00 |
| Eastern Pa. | 20.00-21.00 |
| St. Louis | †18.00-18.50 |

STEEL CAR AXLES

| | |
|-----------------|--------------|
| Birmingham | 19.00-20.00 |
| Boston district | †16.00-16.50 |
| Chicago, net | 20.50-21.00 |
| Eastern Pa. | 22.00 |
| St. Louis | †18.50-19.00 |

LOCOMOTIVE TIRES

| | |
|------------------|--------------|
| Chicago (cut) | 18.50-19.00 |
| St. Louis, No. 1 | †15.75-16.25 |

SHAFTING

| | |
|-----------------|--------------|
| Boston district | †18.50-18.75 |
| New York | †18.00-18.50 |

| | |
|-------------------------|-------------|
| Eastern Pa. | 23.00-23.50 |
| St. Louis, 1 1/4-3 3/4" | 17.50-18.00 |

CAR WHEELS

| | |
|-----------------------|--------------|
| Birmingham, iron | 16.00 |
| Boston dist., iron | †13.00-13.25 |
| Buffalo, steel | 21.00-21.50 |
| Chicago, iron | 16.50-17.00 |
| Chicago, rolled steel | 18.00-18.50 |
| Cincin., iron, deal. | 16.50-17.00 |
| Eastern Pa., iron | 20.00-20.50 |
| Eastern Pa., steel | 21.00-21.50 |
| Pittsburgh, iron | 19.50-20.00 |
| Pittsburgh, steel | 21.50-22.00 |
| St. Louis, iron | †17.00-17.50 |
| St. Louis, steel | 17.00-17.50 |

NO. 1 CAST SCRAP

| | |
|-----------------------------------|--------------|
| Birmingham | 15.00 |
| Boston, No. 1 mach. | †15.00-15.25 |
| N. Eng. del. No. 2 | 14.00-14.50 |
| N. Eng. del. textile | 18.25-18.75 |
| Buffalo, cupola | 16.50-17.00 |
| Buffalo, mach. | 17.50-18.00 |
| Chicago, agri. net. | 13.00-13.50 |
| Chicago, auto net. | 15.00-15.50 |
| Chicago, railroad net | 14.00-14.50 |
| Chicago, mach. net | 14.50-15.00 |
| Cincin., mach. deal. | 15.75-16.25 |
| Cleveland, mach. | 20.00-21.00 |
| Detroit, cupola, net. | †14.50-15.00 |
| Eastern Pa., cupola | 19.50-20.00 |
| E. Pa., No. 2 yard. | 15.50-16.00 |
| E. Pa., yard fdry. | 16.50-17.00 |
| Los Angeles | 16.50-17.00 |
| Pittsburgh, cupola | 18.50-19.00 |
| San Francisco | 15.50-16.00 |
| Seattle | 16.00-16.50 |
| St. Louis, breakable | †14.00-14.50 |
| St. Louis agri. mach. | †17.00-17.50 |
| St. L., No. 1 mach. | †17.75-18.25 |
| San Francisco | 16.00-17.00 |
| Toronto, No. 1 mach., net dealers | 15.50 |

HEAVY CAST

| | |
|-----------------------|--------------|
| Boston dist. break. | †12.25-12.50 |
| New England, del. | 15.00-15.50 |
| Buffalo, break | 14.50-15.00 |
| Cleveland, break, net | 15.25-15.75 |
| Detroit, auto net. | †15.50-16.00 |
| Detroit, break | †11.00-11.50 |
| Eastern Pa. | 17.50-18.00 |
| Los Ang., auto, net. | 13.00-14.00 |
| New York break. | †14.00-14.50 |
| Pittsburgh, break | 16.00-16.50 |

STOVE PLATE

| | |
|----------------------|--------------|
| Birmingham | 10.00 |
| Boston district | †10.50-11.00 |
| Buffalo | 13.00-13.50 |
| Chicago, net | 9.00- 9.50 |
| Cincinnati, dealers | 8.25- 8.75 |
| Detroit, net | †9.00- 9.50 |
| Eastern Pa. | 15.00 |
| New York, fdy. | 12.00 |
| St. Louis | †11.50-12.00 |
| Toronto dealers, net | 11.50 |

MALLEABLE

| | |
|----------------------|--------------|
| New England, del. | 20.00-21.00 |
| Buffalo | 16.50-17.00 |
| Chicago, R. R. | 18.50-19.00 |
| Cincin., agri. deal. | 13.25-13.75 |
| Cleveland, rail | 21.50-22.00 |
| Eastern Pa., R. R. | 21.50-22.00 |
| Los Angeles | 12.50 |
| Pittsburgh, rail | 21.00-21.50 |
| St. Louis, R. R. | †16.50-17.00 |

Ores

Lake Superior Iron Ore

| | |
|----------------------------|--------|
| <i>Gross ton, 51 1/2 %</i> | |
| <i>Lower Lake Ports</i> | |
| Old range bessemer | \$5.25 |
| Mesabi nonbessemer | 4.95 |
| High phosphorus | 4.85 |
| Mesabi bessemer | 5.10 |
| Old range nonbessemer | 5.10 |

Eastern Local Ore

| | |
|---------------------------------|------------------------------|
| <i>Cents, unit, del. E. Pa.</i> | |
| Foundry and basic | 56-63%, contract. 9.00-10.00 |

| | |
|--|-------------|
| <i>Foreign Ore (Prices nominal)</i> | |
| <i>Cents per unit, c.i.f. Atlantic</i> | |
| Manganiferous ore, 45-55% Fe., 6-10% Mn. | 14.00-15.00 |

| | |
|---------------------------------------|-------|
| Swedish low phos. | 14.00 |
| North African low phos. | 14.00 |
| Spanish, No. African basic, 50 to 60% | 14.00 |

| | |
|--|---------------|
| <i>Chinese wolframite, short ton unit, duty paid</i> | |
| Scheelite, imp. | \$23.75-24.00 |
| Chrome ore, 48% gross ton, c.i.f. | \$26.00-28.00 |

| | |
|--|-------------|
| <i>Manganese Ore Including war risk but not duty, cents per unit cargo lots.</i> | |
| Caucasian, 50-52% | 48.00-50.00 |
| So. African, 50-52% | 48.00-50.00 |
| Indian, 49-50% | nom. |
| Brazilian, 48-52% | 46.00-48.00 |
| Cuban, 50-51%, duty free | 61.20 |
| <i>Molybdenum</i> | |
| Sulphide conc., per lb., Mo. cont., mines | \$0.75 |

Sheets, Strip

Sheet & Strip Prices, Pages 82, 83

Detroit—Ford Motor Co. is reported to have placed 25,000 tons of steel, principally sheets, to cover March production requirements for about 100,000 cars. Ford mills will supply the balance of steel needed. The \$2 coiling extra on cold-rolled stock is understood to have been paid on this tonnage. Other large automotive buyers are expected in the market this month to cover spring requirements.

Cleveland—Most orders are small. A moderate sized tonnage of automotive business has been placed, but the aggregate otherwise is little changed. Buying is better sustained in number of purchases than in tonnage. Full base prices have prevailed on recent orders. Backlogs are fairly heavy in some grades and sizes but are light in others. Little business is coming from warehouses, with galvanized orders from consumers likewise slow.

Chicago—Sheet and strip sales are unchanged. Deliveries are improved further, although some mills are curtailing production. Automotive buying, recently quiet, is counted on for heavier volume soon. Requirements of farm equipment and household appliance manufacturers continue active.

Boston—Mill backlogs of narrow cold strip have been lowered to an extent warranting moderate curtailment in production schedules, and unless heavier buying develops the next three weeks, further reductions will be made. Incoming business is slightly under 50 per cent of shipments, small fill-in orders predominating. Fabricators are drawing on stocks liberally. While strip consumption is under the rate of last quarter, inventories are declining more rapidly. Specifications are still substantial and no cancellations have appeared. Sheet buying is dull, scattered fill-in buying accounting for most orders.

New York—Sheet specifications are steady or slightly heavier. Expanding operations of refrigerator manufacturers are reflected in better sheet orders, demand from that direction being better than expected. Sheet deliveries are improving, heavy gages of hot-rolled material being available in two to three weeks and lighter gages in three to four. Similar schedules apply to cold-rolled sheets. Galvanized can be had in three to four weeks, if not present in stock, although a few sellers ask five weeks. Deliveries on specialties are approaching normal, stainless, for

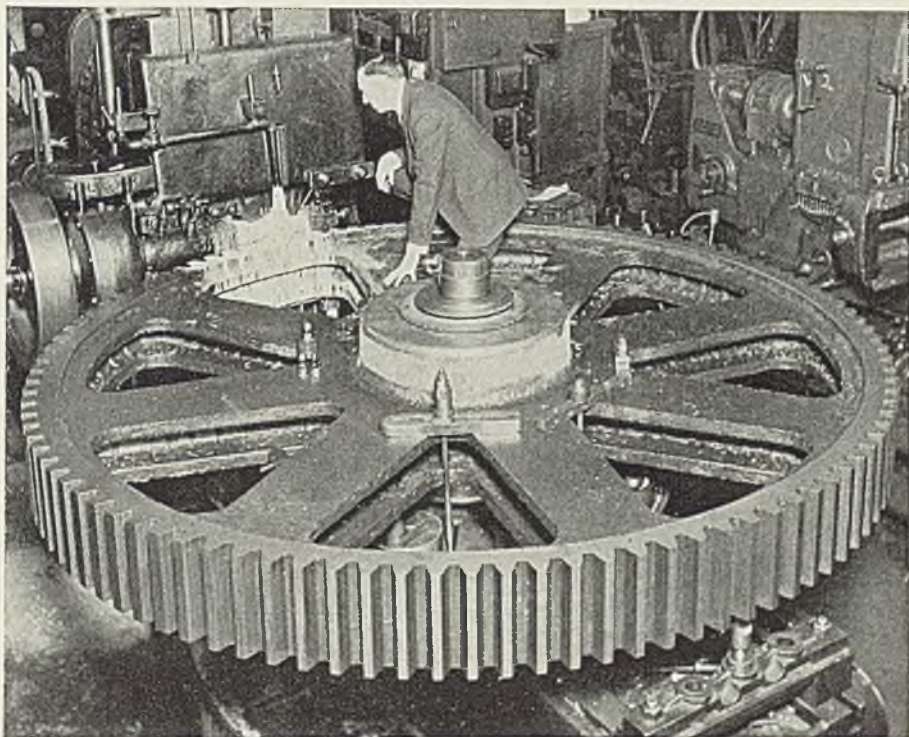
instance, being offered in four to five weeks or less.

Narrow cold strip buying is confined mostly to small orders to fill gaps in consumer stocks. Mill backlogs are down to a point where production is being reduced. Buying is estimated at approximately 45 per cent of shipments. Consumption in several industries is slightly heavier than last month and sellers look for an improvement in buying the next few weeks.

Philadelphia—Heintz Mfg. Co.

has booked 20,000 cabinets for beverage coolers to be fabricated from galvanized and specially zinc-coated sheets. The company is operating near capacity on ship fittings and stampings for trucks and domestic washers. Sheets generally are slow, but some improvement is noted in galvanized demand for roofing products. The 10-cent coiling extra will undergo a test this week when an important consumer enters the market.

Buffalo—Releases are fairly heavy



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and production has declined less than new orders. Automotive material provides the leading outlet for current output, with additional buying looked for soon.

Cincinnati — Small improvement in demand has appeared from automotive and refrigerator interests. Warehouses generally are out of the market, partly influenced by adverse effect of the weather on galvanized business. Mills report no unusual pressure on prices.

Birmingham, Ala.—Production of sheets remains at 85 per cent or better. Current orders are satisfactory, although off somewhat from last year's peak. Strip remains exceptionally quiet.

Plates

Plate Prices, Page 82

Cleveland—Specifications are relatively active, aided by releases for freight car building and repairs and pipe fabrication. Possibility is seen that local mills may share in plate business involved in the extensive shipbuilding program planned by Canada to be carried out at Great Lakes yards. Plate backlogs are being reduced by quiet in new business.

Boston—While buying of heavy steel products lags, plates are duller. Except for shipbuilding, no sustained demand appears likely in the near future with specified work small. Railroad specifications are spotty and the district car builder has covered on current needs. Prompt delivery is asked on all small-lot orders and Pennsylvania mills are now in position to fill such demand.

New York—Domestic business is unchanged, with inquiry spotty. Foreign demand is confined principally to ship steel for Holland and Scandinavian countries and is slower than for most other products.

Philadelphia—Two eastern independent mills have booked about 1000 tons of plates, including hull steel, for torpedo boats placed recently with Canadian builders. It is also understood Canadian Vickers Ltd. has placed tonnages with two other producers in this country, the material being for rush shipment. Domestic business is spotty and in miscellaneous lots. Pusey & Jones still has 4000 tons of ship plates to place. Bid on two cruisers taking 6000 tons each have been postponed to Feb. 16.

San Francisco — Movement of plates is confined to small lots of less than 100 tons and the only inquiry of size, up for bids Feb. 14, calls for 580 tons for tunnel outlet

No. 2 for the Fort Peck dam, Montana. To date this year 14,467 tons have been placed, compared with 11,448 tons for the same period last year.

Birmingham, Ala.—Plates continue in good demand. Bookings are largely from tank manufacturers and shipbuilding interests.

Toronto, Ont.—Placing of ship contracts, totaling upwards of \$25,000,000 the past week, is reflected in increased interest in plates. Inquiries have been more numerous with large tonnages involved. Canadian output is booked solidly for months ahead and large supplies will have to be imported to meet immediate needs.

Plate Contracts Placed

2200 tons, wind tunnel, Moffett Field, Calif., to Consolidated Steel Corp., Los Angeles.

145 tons, stack, Dresser Power Corp., Terre Haute, Ind., to Vincennes Bridge Co., Vincennes, Ind.

Unstated tonnage, 200,000-gallon elevated tank, Kelly Field, Texas, to the Darby Corp., Kansas City, Kans., \$21,438; bids Jan. 10 to constructing quartermaster, San Antonio, Tex.

Plate Contracts Pending

580 tons, tunnel outlet No. 2, Fort Peck dam, Mont.; bids Feb. 14.

Unstated tonnage, 100,000-gallon tank, crude coal tar storage, Brockton Gas Light Co., Brockton, Mass.

Tin Plate

Tin Plate Prices, Page 82

Tin plate operations hold at 65 per cent, with new business unchanged but light. Little appreciable change in demand or production is looked for the remainder of February. Early requirements for sanitary cans may be curtailed by recent crop damage through cold weather, but later crops are expected to be increased to offset such losses. Sustained export demand for tin plate is accompanied by stronger competition and lower quotations on recent placements.

Carnegie-Illinois Steel Corp. has been awarded 104 tons of terne plate for the Picatinny, New Jersey, arsenal at \$10,342, delivered, proposal 928, bids Jan. 17.

Error in Extra Changes

An article in the Feb. 5 issue on revisions in stainless steel extras referred to changes in quantity extras on 4 to 6 per cent chromium material as a 50 per cent reduction from the former list. Actually the changes represented an advance of 100 per cent over the old schedule.

Bars

Bar Prices, Page 82

Cleveland—Bar orders are fairly numerous, but small tonnages involved indicate buyers are limiting purchases to early needs and in some cases are intent on reducing inventories. Shipments continue in excess of orders, with deliveries ranging up to three to four weeks on certain sizes.

Chicago—Bar demand is little changed except for an increase in buying of alloy grades. Carbon bars, if anything, are quieter. Tractor and automotive needs continue high, although requirements of miscellaneous users have moderated.

Boston—Carbon steel bar demand is slack, users working off inventories or specifying against mill tonnage, although the latter is now light with deliveries much improved. Buying is limited mostly to alloys with machine tool, shipyard and miscellaneous consumers generally maintaining consumption. While deliveries on alloys are improving, pressure for reduced time continues for heat treated stock. Inventories, except for alloy material, are fairly substantial, notably with jobbers.

New York—Deliveries are easier, but shipments are sustained better than in most major products. On an average, mills need a minimum of three weeks for plain carbon bars and five weeks on alloy material. Cold-drawn shipments average three to four weeks. Specifications are in fair volume but show little change.

Philadelphia—Deliveries are improving but remain more extended than on most other products. Consumption is well maintained among equipment builders and makers of screw machine products. Some tapering is indicated in demand for high speed steel for cutting tools. Prices are firm.

Buffalo—Bar mill schedules have slackened further as buying and backlogs have been unable to sustain production. A substantial tonnage of unfilled business remains, but buyers are not pressing for delivery.

Birmingham, Ala.—Bar production is estimated unofficially at close to 90 per cent of capacity, due largely to demand for concrete reinforcing and merchant bars.

Bolts, Nuts, Rivets

Bolt, Nut, Rivet Prices, Page 83

Bolt and nut production is around 50 per cent, against close to 75 per cent last November. Light demand

from jobbers, who stocked heavily several weeks ago, continues the principal depressing factor. Specifications from freight car builders and automotive and farm equipment interests continue relatively active. Building construction needs are expected to continue quiet until March. Shipbuilding releases are steady.

Pipe

Pipe Prices, Page 83

Pittsburgh—Standard pipe demand has been retarded by the weather, and resale prices have weakened at several eastern points. The weather also curtailed well drilling, but oil country goods business is sustained and may result in better booking this month than in January. Slow specifications for pressure and mechanical tubing are not expected to improve much for another 30 days. Shipments against old pipe line orders are fairly good, but most inquiries are for short lines.

Boston—Buying of alloy steel tubing by airplane builders and government shops features otherwise dull demand for tubular goods. Small diameter steel pipe is spotty, with resale prices shaded in some districts. The outlook is enhanced by several government building projects, including housing and air base station buildings. Wrought pipe moves in small lots. Little demand has developed for cast pipe and the trend in town meetings, now being held, is toward economy, paring water department appropriations.

New York—Merchant pipe demand is slow, adversely affected by winter weather. However, there is no important stock accumulation and mill shipments should pick up promptly when building operations have opportunity to expand. Little line pipe work is being figured.

Birmingham, Ala.—Current bookings are somewhat below expectations but pipe manufacturers anticipate a relatively satisfactory quarter, due to some carryover from last year and miscellaneous buying, mostly in small lots. Operations vary from four to five days a week.

San Francisco—Activity in cast iron pipe is more pronounced and several fair sized inquiries are pending. Awards aggregated only 568 tons bringing the total to date to 1595 tons, compared with 4500 tons for the corresponding period in 1939. The general contract for a 320-mile pipe line between Spokane, Wash., and Cut Bank, Mont., calling for

6-inch pipe, is reported awarded to Williams Bros. Corp., Tulsa, Okla., and W. A. Bechtel Co., San Francisco. Actually, the contract still is pending and construction is not in immediate prospect.

Seattle—Inquiry is increasing in seasonal volume and important jobs will be up for figures soon. Bids are in at Spokane for 200 tons of 36-inch and at Pasco, Wash., for 100 tons, where H. G. Purcell, Seattle, is low. Crane Co. will supply Seattle with 135 tons of 16-inch Class 200.

Cast Pipe Placed

437 tons, 6 and 8-inch, Inglewood, Calif., to National Cast Iron Pipe Co., Birmingham, Ala.

135 tons, 16-inch, Class 200, for Seattle, to Crane Co., Chicago.

Cast Pipe Pending

450 tons, 16-inch, Los Angeles; bids opened.

125 tons, 6 and 8-inch, Lewiston, Idaho; bids Feb. 12.

100 tons, various sizes, for Pasco, Wash.; H. G. Purcell, Seattle, low for U. S. Pipe & Foundry Co.,

Unstated, 4300 ft. of 12-inch for Auburn,

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Wash., pending WPA approval. Unstated, 1755 ft. of 4 to 10-inch for Bonneville project; bids in at Portland.

Steel Pipe Placed

275 tons, for C-3 cargo vessels, United States maritime commission, Pascagoula, Miss., to National Tube Co., Pittsburgh.

Steel Pipe Pending

1150 tons, 55 miles, 6%-inch welded gas pipe line for Dow Chemical Co., Midland, Mich.; general contract to Gentry Engineering Co., Jackson, Mich.

Rails, Cars

Track Material Prices, Page 83

Car buying continues slow, although steel sellers continue in receipt of substantial specifications from car builders against orders placed last fall. Little new business appears for immediate closing.

Domestic freight car awards in January involved 360 units, against 35 in December, 2650 in November and three in January, 1939. Further comparisons follow:

| | 1940 | 1939 | 1938 | 1937 |
|------------|--------|--------|--------|--------|
| Jan..... | 360 | 3 | 25 | 17,806 |
| Feb..... | | 2,259 | 109 | 4,972 |
| March..... | | 800 | 680 | 8,155 |
| April..... | | 3,095 | 15 | 9,772 |
| May..... | | 2,051 | 6,014 | 4,732 |
| June..... | | 1,324 | 1,178 | 548 |
| July..... | | 110 | 0 | 1,030 |
| Aug..... | | 2,814 | 182 | 1,475 |
| Sept..... | | 23,000 | 1,750 | 1,216 |
| Oct..... | | 19,634 | 2,537 | 1,355 |
| Nov..... | | 2,650 | 1,232 | 275 |
| Dec..... | | 35 | 2,581 | 275 |
| Total... | 57,775 | 16,303 | 51,611 | |

Locomotives Placed

Wabash, two diesel electric switchers; one to American Locomotive Co., New York, and one to Electro-Motive Corp. La Grange, Ill.

Car Orders Pending

Nickel Plate, ten 100-ton container cars, also 110 containners.

Tennessee Copper Co., eight 50-ton dump cars; bids asked.

Utah Copper Co., ten air-dump cars; bids asked.

Wire

Wire Prices, Page 83

Pittsburgh—Sales of wire products are lighter, although inquiries are heavier and better demand from jobbers is in prospect with the probable beginning of farm buying within the next 30 days. Manufacturer's wire is slower, with shipments still well ahead of orders. Inquiries are light. Mill prices are reported firm,

but secondary markets for merchant products are irregular.

Cleveland—Business is slow to improve and backlogs continue to moderate. Unfilled orders in wire rods remain fairly heavy, but additional buying is required to support shipments. Jobber demand is quiet, partly ascribable to unfavorable weather, although nail buying is influenced by previous stock additions.

Boston—With consumers drawing heavily on inventories, buying has receded further to 40 to 45 per cent of shipments which are also declining. Finishing operations are beginning to be curtailed but production of specialties is generally maintained. Consumption is considerably above incoming business. Heavy purchases of electrical and power cable, also weatherproof and other wire are made by the government, notably the navy. Bids on this material are mostly uniform. Several hundred tons of steel welding rods are also being bought for work on ships under construction at eastern navy yards.

New York—Wire buying continues to decline and orders are not better than 40 per cent of shipments with most producers. Shipments are also lighter and will be well below the January total this month. Consumption is well above the rate of incoming business, with consumers drawing steadily on inventories.

Birmingham, Ala.—Wire production continues to reflect the influence of heavy buying during fourth quarter. Production is close to capacity. This is due, in part, to tonnage carried over and to consistent buying, even though in smaller lots this quarter.

Shapes

Structural Shape Prices, Page 82

Pittsburgh—Inquiries are fairly active, including a good number of private projects, with awards also comparatively heavy. Prices are fairly steady, although some shading has been reported. With the decline in backlogs of other products, additional capacity is available to structural departments.

Chicago—Structural shape orders continue light, with inquiries generally small. Inclement weather partly is blamed for recent quiet in building construction. Largest award of fabricated material is 3800 tons for the Central avenue viaduct here.

Boston—Except for a small increase in inquiry for public works,

included mostly in the national defense program at naval air base posts, structural steel projects are colorless. Bids are being on two small postoffice projects, Augusta, Me., and Millbury, Mass. railroad bridges, Fairfield, Conn., 200 tons, but the aggregate tonnage being figured is below normal for this period.

New York—Although rising slightly, structural steel inquiry is sluggish and below expectations. Public work, which largely supports volume a year ago, is practically absent. Plain material prices reasonably steady, but chronic weakness in fabricated and erected quotations continues.

Philadelphia—Additional work for the Philadelphia navy yard up for bids, and local fabricator will bid on the South Boston job Feb. 27, taking 3500 tons. Additional work is coming out from Sun Oil Co. Plain shape production tends downward.

Buffalo—The lull in structural shapes shows no signs of lifting with few jobs of size in prospect.

Seattle—Public works projects are furnishing most tonnages. Several important jobs are pending. Bethlehem Steel Co. is low for furnishing 337 tons for the Bonneville power house roof.

San Francisco—Bookings of structural steel last week did not exceed 2000 tons. Pending business, however, is extremely heavy, exceeding 50,000 tons.

Birmingham, Ala.—Due to improvement in public and private construction shapes have reacted favorably with an increase in output over the past two weeks. While no large individual tonnage is reported, the aggregate is sufficient to maintain output at close to 75 per cent.

Shape Contracts Placed

3800 tons, viaduct, Central avenue, Chicago; general contract from Cook county board to Thomas McQueen Co., Chicago; steel to Bethlehem Steel Co., Bethlehem, Pa., through McQueen company.

1800 tons, wind tunnel test building and

Shape Awards Compared

| | Tons |
|-------------------------------|---------|
| Week ended Feb. 10 | 18,917 |
| Week ended Feb. 3 | 7,415 |
| Week ended Jan. 27 | 15,880 |
| This week, 1939 | 10,385 |
| Weekly average, year, 1940 .. | 13,681 |
| Weekly average, 1939 | 22,411 |
| Weekly average, January | 13,988 |
| Total, to date, 1939 | 161,479 |
| Total, to date, 1940 | 82,084 |

Includes awards of 100 tons or more.

—The Market Week—

powerhouse, Wright Field, Dayton, O., to R. C. Mahon Co., Detroit, through National Concrete Fireproofing Co., Cleveland, contractor.

1500 tons, apartment house, for 737 Park Avenue Corp., New York, to American Bridge Co., Pittsburgh.

1500 tons, hangar No. 2, Lowry Field, Colo., to Bethlehem Steel Co., Bethlehem, Pa.

1500 tons, piling, Sound View park project, New York, to National Steel Corp. subsidiary, Pittsburgh; Stock Construction Co., New York, contractor.

840 tons, aeronautical laboratory and office building, Philadelphia navy yard, to Bethlehem Steel Co., Bethlehem, Pa.

710 tons, power station, Dresser Power Corp., Terre Haute, Ind., to Vincennes Steel Co., Vincennes, Ind.

540 tons, Smith river bridge, Del Norte county, California, for state, to Judson-Pacific Co., San Francisco.

525 tons, filter plant, Toledo, O., for city, to Bethlehem Steel Co., Bethlehem, Pa.

420 tons, extension to building, for Celanese Corp. of America, Amecle, Md., to Bethlehem Steel Co., Bethlehem, Pa.

315 tons, storage building, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., to Ingalls Iron Works, Birmingham, Ala.

300 tons, stop log guides, 1303-D, Coram, Calif., for bureau of reclamation, to A. J. O'Leary & Sons, Chicago.

300 tons, loading plant, ordnance department, Savanna, Ill., to Bethlehem Steel Co., Bethlehem, Pa., through Sjostrom & Sons, Rockford, Ill.; 60 tons reinforcing bars to Calumet Steel Co., Chicago.

299 tons, including 150 tons H columns, viaduct near Los Gatos, Santa Clara county, Calif., for state, to Columbia Steel Co., San Francisco.

270 tons steel sheet piling for quay, Puget Sound navy yard, to Bethlehem Steel Co., Seattle; General Construction Co., Seattle, general contractor.

255 tons, bridge 54-37-Fa-393 (b) 12, Greenwood, Kans., to Kansas City Structural Steel Co., Kansas City, Mo.

240 tons, bridge FAGH-10 (4), Williamson county, Texas, 150 tons to Virginia Bridge Co., Roanoke, Va., 90 tons to North Texas Iron & Steel Co., Fort Worth, Tex.

235 tons, plant 3 addition, E. I. du Pont de Nemours & Co., Richmond, Va., to Belmont Iron Works, Eddystone, Pa.

225 tons, building, Bell Telephone Co., Steubenville, O., to Ingalls Iron Works, Birmingham, Ala.

220 tons, H columns and sheet piling, seaplane ramps, naval air base, Alameda, Calif., to unnamed interests.

213 tons, H columns, Smith river bridge, Del Norte county, California, for state, to Bethlehem Steel Co., San Francisco.

200 tons, beam spans, bridge No. 410-5, Chicago & North Western railroad, Tama, Iowa, to Clinton Bridge Works, Clinton, Iowa.

200 tons, steel sheet piling, sewage disposal plant, Conev Island, N. Y., to Bethlehem Steel Co., Bethlehem, Pa.; Stock Construction Co., New York, contractor.

180 tons, bridge 135, New Paltz, N. Y., for Ulster county, to Bethlehem Steel Co., Bethlehem, Pa.

180 tons, store building, East End, Pittsburgh, to Keystone Engineering Co., Pittsburgh.

180 tons, bridge 1333, Lockport, La., to Bayou-LaFourche Bridge Co., New Orleans.

175 tons, anchor truss, State street bridge, Chicago, to American Bridge Co., Pittsburgh.

160 tons, undercrossing, Northern Pacific railroad, Seattle, for state of Washington, to Bethlehem Steel Co., Bethlehem, Pa.

150 tons, underpass FAGH-16-D, Rigby, Idaho, for state, to American Bridge Co., Pittsburgh.

150 tons, manufacturing building, for American Sales Book Co., Niagara Falls, N. Y., to unstated fabricator.

150 tons, grandstand, Wilmington Park association, Wilmington, Del., to Bethlehem Fabricators Inc., Bethlehem, Pa., through Robert F. Fegler, Wilmington.

140 tons, state bridges, route 35, section 14-B, Woodbridge, N. J., to American Bridge Co., Pittsburgh.

135 tons, bridge repairs, Chicago, Milwaukee, St. Paul & Pacific railroad, Milwaukee, to Worden Allen Co., Milwaukee.

130 tons, bridge 415, Montour, Iowa, for Chicago & North Western railroad, to Bethlehem Steel Co., Bethlehem, Pa.

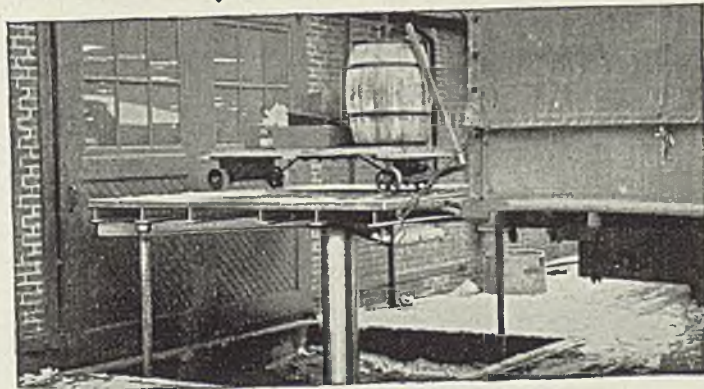
125 tons, stop log guides, specification 1303-D, Shasta dam, Coram, Calif., to unstated interest.

125 tons, two bridges over Victory bridge circle, route 35, section 14B, Woodbridge-Sayreville, N. J., to American Bridge Co., Pittsburgh; Jannarone Contracting Co., Belleville, N. J., contractor.

120 tons, telephone building, Bakersfield, Calif., to Golden Gate Iron Works, San Francisco.

110 tons, bridge FA GH 53-ABC, Okmulgee county, Okla., to Patterson Steel

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Behind the Scenes with STEEL

Yntema

■ Jim Powell, STEEL's Chicago editor, speaking: At great personal sacrifice and expense, I have undertaken to track down the correct pronunciation of the last name of Dr. Theodore O. Yntema, University of Chicago professor, who has been testifying on the steel industry before TNEC. When I could stand the strain no longer I called the U. of C.'s p. r. dept. The correct pronunciation is — (time out while I try to spell it again)—INE -temmuh, with the accent on the first syllable. This, I trust, will settle the matter, and do away with such ill-begotten attempts as Yinn-teema, Winn-tayma, Yine-timma and Whine-tuhma.

Hallucination Harry

■ God help us for mentioning that the Little Man Who Wasn't There keeps his car in a *mirage*. Now we find his parents were *transparent*; that he lives above a *vacant* lot; puts *vanishing* cream in his coffee; eats *ghost* toasties and doughnut holes for breakfast and was raised on *evaporated* milk. Oh, how we wish he'd go away!

Suicide Sale

■ Maybe the same Little Man was responsible for the notice posted on the Orange County (Fla.) Court House bulletin board. As reported in the *Orlando Morning Sentinel* the notice read: "The undersigned, intending to commit suicide, will sell at public auction at Bungville, one mile north of the wart factory on the Bulltoad road east of Appendicitis farm, within ten days, the following property: One Hampshire ram with detachable rims, 5 billy goats with red whiskers, two calves with pink stockings and high military heels; one man-eating jackass, shod with giant grip horseshoes; 7 brown leohorn pigs with their golden hair hang-

ing down their backs; one pedigreed holstein stallion, sired by night, and damned by everybody; 7 dung forks, 8 of which are equipped with fly net attachments; twin beds, one as good as new; one poland china bull, good as new; one Plymouth rock calf, will have pups by day of sale — weather permitting; 14 Rhode Island sows with milking attachments; one Republican rooster, has pep; and one Democratic rooster, has pip." Cold lunch will be served at midnight, consisting of snow balls and pickled frost and terms are cash with balance 6 months in county jail.

Le Nom Est La Chose

■ Meaning no offense, but if the Flush, Fill & Vent Co. on S. Juniper St., Philly, shouldn't win some kind of a prize for names-what-are-different, forget that we mentioned it.

The Class Flunks

■ With all this other chatter we're cramped for puzzle space. Walter Cronenwett's toughie last week drew a complete blank of correct answers, which is, according to him, 49.04 pounds. How he gets it, the Lawd only knows. Aftermath of previous toughies finds J. E. Winkelmann (Lockwin & Co.) insisting Mr. Cohen was outraded and J. Lawson (Dayton) still tearing his hair out and frothing at the mouth over the houses and hoses stickler of last November.

War Problem

■ A. M. Woodall (Chicago Bridge & Iron) insists this is a snap. A pile of cannon balls, made in the conventional manner, has 5160 balls in the lowest course and 27 in the top row. How many (you guessed it) cannon balls are there in the pile?

SHRDLU

—The Market Week—

Co., Tulsa, Okla.
100 tons, tunnel bracing, Marshall C. dam, United States engineer, Kan City, Mo., to Kansas City Structural Steel Co., Kansas City, Mo.
100 tons or more, 57-inch valves drum gate controls, Coulee dam Commercial Iron Works, Portland, Oreg.
100 tons or more, angles, plates miscellaneous, for Puget Sound navy yard, to Columbia Steel Co., Seattle.
Unstated tonnage, six steel towers derricks, Karksdale Field, Shreveport, La., to J. B. Beard Corp., Shreveport, La. bids Jan. 3, Pro. 894-46.

Shape Contracts Pending

9800 tons, first section, grade crossing elimination, Long Island railroad, Rockaway, N. Y.; bids Feb. 28.
5000 tons, Rainbow bridge, Buffalo, N. Y.; bids March 20.
3500 tons, ship building No. 16, specification 0669, South Boston navy yard; bids Feb. 27.
1600 tons, overcrossing, First and E. St., Los Angeles, for city; bids Feb. 27.
1350 tons, Dutch Kills bridge, Queens, New York, for city; Harris Structural Steel Co., New York, low, bids Feb. 27.
1260 tons, Eel river bridge, Humboldt county, California, for state; Engineering Ltd., Standard Oil building, San Francisco, low at \$455,580.
850 tons, apartment house, for Manhattan, Brand, New York.
770 tons, bridge over Little Elk river, Elkton, Md., for state.
575 tons, upper and lower lock gate, structural steel and castings, Wabash Bar dam, Tennessee valley authority, Knoxville, Tenn.; bids Feb. 21.
520 tons, kitchen and dining units, school for mental defectives, White Brook, Staten Island, New York; Andrews & Andrews, New York, low.
529 tons, substation materials for Bonville project; bids to Portland, Ore. Feb. 19; Spec. 769.
500 tons, aeronautical materials laboratory, Philadelphia navy yard; bids Feb. 20.
440 tons, office building, for Atlas Building Inc., Charleston, W. Va.
350 tons, bomb dunnage units, Proving Ground, Ill., for United States government.
337 tons, Bonneville power house roof, Bethlehem Steel Co., low.
300 tons, store, S. S. Kresge Co., 9 Market street, Philadelphia; new bids Feb. 16.
300 tons, platform for cracking tower, Sun Oil Co., Marcus Hook, Pa.; bids Feb. 15.
300 tons, bottling plant for Seagram distillery, Louisville, Ky.
293 tons, under-crossing, Fremont street, South Pasadena, Calif., for state; bids Feb. 23.
288 tons highway bridges state of Missouri; bids Feb. 6.
250 tons, nurses' residence, for Shadyside hospital, Pittsburgh.
250 tons, steel truss bridge, Lackawanna county, Pennsylvania; bids to state highway department, Harrisburg, Pa. Feb. 16.
239 three bridges state of Illinois; bids Feb. 16.
225 tons, beam span bridges, Wawarsing, Neversink, N. Y.; bids Feb. 28, board of water supply, New York, contract 343.
225 tons, industrial building, South Gate, Calif.; bids in.
220 tons, Benedictine school, for S.

- Andrews Abbey, Cleveland.
- 200 tons, theater building, for Schine Circuit Inc., Oswego, N. Y.
- 200 tons, bridges, Fairfield, Conn., for New York, New Haven & Hartford railroad.
- 200 tons, school, Elmhurst, N. Y.
- 180 tons, power house buildings, for Galr Cartons Inc., Plermont, N. Y.
- 175 tons, superstructure for gold dredge, San Francisco; bids in.
- 165 tons, Lincoln dial exchange, for Bell Telephone Co., Washington.
- 160 tons, store, Honolulu, T. H.; bids opened.
- 150 tons, navy ammunition building, Oahu, T. H.; bids opened.
- 140 tons, bridge, Erie county, Pennsylvania; bids Feb. 10.
- 135 tons, two I-beam bridges, Conneaut township, Erie county, Pennsylvania; bids to state highway department, Harrisburg, Pa., Feb. 16.
- 125 tons, reconstruction of bridge, Sixtieth street, Bronx, New York, for state.
- 120 tons, reconstruction of bridge, East 163rd street, Bronx, New York, for state.
- 110 tons, garage and laundry building, for Fred Sanders, Highland Park, Mich.
- 100 tons, high school, Columbia, Pa.; bids Feb. 27.
- 100 tons, factory building, Red-Head Brand Co., Chicago.
- 100 tons, bridge over diversion channel, Chickamauga dam, Tennessee valley authority, Knoxville, Tenn.; bids Feb. 15.
- 100 tons, I-beam bridge, Amity township, Erie county, Pennsylvania; bids to state highway department, Harrisburg, Pa., Feb. 16.
- Unstated, power plant, Vlenna, Md., bids through Utility Managements Corp., Reading, Pa.

elevator, South Chicago, a Peoria, Ill., hospital building and a local warehouse for Bunte Bros. Candy Co.

Boston—Bolstered by two housing contracts totaling close to 800 tons, reinforcing bar buying is up slightly. Most housing projects in New England are now under contract and prospective volume from that source is smaller, but is partially made up by needs for air-field structures. Price weakness in reinforcing bars is current.

New York—Two government contracts involving 2585 tons bring reinforcing bar purchases to the highest point of the year, buying having improved in other directions also. Inquiry is gradually mounting and bids are in on the Thomas A. Edison bridge, Raritan river, Woodbridge-Sayreville, N. J., taking 560 tons, bars and reinforcement trusses. Volume of highway mesh pending is small. Concrete bar prices continue to weaken.

Philadelphia—Inquiries are slack, but a fair amount of work is expected up for bids the next 60 days. American Steel Engineering Co. has booked 550 tons for the long-pending store and garage building here for the board of city trusts.

Seattle — The week brought no

improved inquiry for reinforcing bars although several projects are soon to develop. Reclamation bureau has called bids at Yakima, Wash., March 1 for a unit of the Roza diversion dam project involving 425 tons reinforcing and 12 tons gates and hoists.

San Francisco—Awards of reinforcing bars last week were the largest for any steel products and totaled 3647 tons. This brought the year's aggregate to 11,831 tons, compared with 20,104 tons for the same period a year ago. Pending business is heavy and involves close to 22,000 tons.

Reinforcing Steel Awards

- 1365 tons, delivery to quartermaster depot, Brooklyn, for shipment to Panama, to Bethlehem Steel Co., Bethlehem, Pa.; bids Feb. 6.
- 1100 tons, Potrero Hills housing project, San Francisco, to Bethlehem Steel Co., San Francisco.
- 1000 tons, Delaware hospital, unit 2, Wilmington, Del., to Bethlehem Steel Co., Bethlehem, Pa.; Turner Construction Co., contractor.
- 550 tons, store building and garage, board of city trusts, Philadelphia, to American Steel Engineering Co., Philadelphia, through McCloskey & Co., Philadelphia.
- 500 tons, housing project, Hartford, Conn., to Bethlehem Steel Co., Beth-

Reinforcing

Reinforcing Bar Prices, Page 83

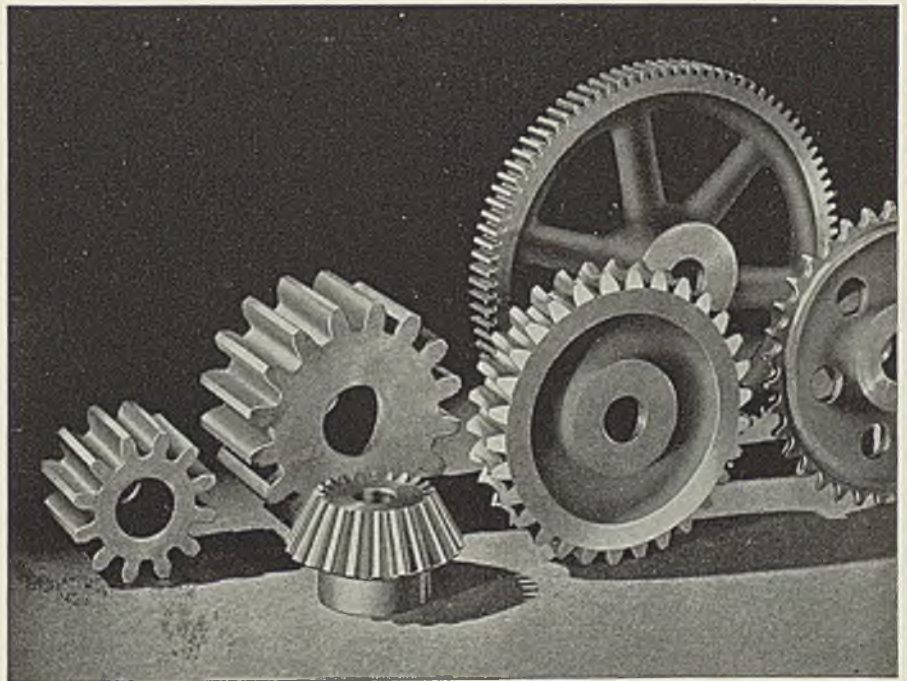
Pittsburgh—Prices are spotty in many sections, although some recent contracts have taken the full price. Inquiries and awards are numerous, with government work predominating.

Chicago—Inquiries are more active, with pending tonnage heavier. Largest of new jobs include a grain

Concrete Bars Compared

| | Tons |
|-------------------------------|--------|
| Week ended Feb. 10 | 7,320 |
| Week ended Feb. 3 | 16,530 |
| Week ended Jan. 27 | 3,331 |
| This week, 1939 | 10,132 |
| Weekly average, year, 1940.. | 8,898 |
| Weekly average, 1939 | 9,197 |
| Weekly average, January | 7,410 |
| Total to date, 1939 | 80,301 |
| Total to date, 1940 | 53,391 |

Includes awards of 100 tons or more.



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lehem, Pa.; Edmund J. Rappoll, Boston, contractor.

440 tons, state prison buildings, Greenhaven, N. Y., to Concrete Steel Co., New York; W. A. Berbusse Jr. Inc., Portchester, N. Y., contractor.

410 tons, Indian Rock dam, York, Pa., to Bethlehem Steel Co., Bethlehem, Pa.; Benjamin Foster, contractor.

350 tons, highway project, route S41, from route 38 to Kresson, Burlington county, New Jersey, to Truscon Steel Co., Youngstown, O., through S. J. Groves & Sons Co., Ridgefield, N. J.

320 tons, Smith river bridge, Humboldt county, California, for state, to Bethlehem Steel Co., San Francisco.

300 tons, bins, Lehigh Portland Cement Co., Fogelsville, Pa., to Bethlehem Steel Co., Bethlehem, Pa.; James Stewart Co., contractor.

275 tons, housing project, Holyoke, Mass., to Truscon Steel Co., Youngstown, O.; Casper-Ranger Co., Holyoke, contractor.

225 tons, state highway project 274, Licking county, Ohio, to Pollak Steel Co., Cincinnati; through O. W. Merrill; Purdy Construction Co., contractor.

175 tons, power house, University of Illinois, Champaign, Ill., to Joseph T. Ryerson & Son Inc., Chicago.

110 tons, plant, Hudepohl Brewing Co., Cincinnati, to Republic Steel Corp., Cleveland, through Truscon Steel Co., Youngstown, O.; J. & F. Harig Co., contractors.

100 tons, hangar No. 2 and annexes, Lowry Field, Colorado, to Colorado Builders' Supply Co., Denver, through Manhattan Construction Co., Muskogee, Okla.

100 tons, highway project, route 35, section 37, traffic circle, Asbury avenue, New Jersey, to Igoe Bros., New York, through Jannarone Contracting Co., Belleville, N. J.

Reinforcing Steel Pending

6000 tons, army barracks, Panama Canal zone; bids Feb. 15.

1365 tons, quartermaster supply invita-

tion QMSO-626-40-227, Brooklyn; bids Feb. 6.

1260 tons, procurement division, treasury department, New York, for delivery Long Island City, N. Y., several bidders tied for low, contract to be awarded by lot; bids Feb. 8.

810 tons, Tobey Creek pressure culvert and outlet works, Edwardsville, Pa.; bids Feb. 12.

545 tons, Eel river bridge, Humboldt county, California, for state; Engineers Ltd., Standard Oil Bldg., San Francisco, low on general contract.

425 tons, Roza diversion dam; bids at Yakima, Wash., March 1; materials by reclamation bureau.

340 tons, Eel River bridge, Scotia, Humboldt county, Calif., for state; bids Feb. 14.

300 tons, building No. 2, state school for mental defectives, Willowbrook, N. Y.

250 tons, pumping station, contracts 10 and 11, Hammond, Ind.

250 tons, addition to teachers' college, Santa Barbara, Calif.; Azevedo Construction Co., S and V streets, Sacramento, Calif., low on general contract.

250 tons, subway section S-8-A, Clybourn avenue station entrance, Chicago; bids in.

243 tons, crossing in Washington county, Oreg., for state; bids Feb. 16.

200 tons, road work, Chester county, Pennsylvania; bids Feb. 16.

170 tons, state highway and bridge, Peabody-Danvers, Mass.; bids Feb. 13.

148 tons, naval ammunition building, Oahu, T. H.; bids opened.

120 tons, paving, Washington and Allegheny counties, Pennsylvania; bids to state highway department, Harrisburg, Pa., Feb. 16.

100 tons, machine shop foundation, improvements and addition Pier No. 2, Philadelphia navy yard; bids Feb. 14.

100 tons, wood and concrete extension, shipway No. 2, Philadelphia navy yard; bids Feb. 20.

100 tons, aeronautical materials laboratory, Philadelphia navy yard; bids Feb. 20.

Unstated, 343-foot concrete viaduct, Washington county, Oregon; bids to highway department, Portland, Feb. 15.

Unstated tonnage, hospital ward, type E, Peoria, Ill.

Unstated tonnage, barley elevator, Albert Schwill & Co., South Chicago, Ill., bids in.

Unstated tonnage, addition to warehouse, Bunte Brothers Candy Co., Chicago; bids Feb. 14.

Unstated tonnage, quartermaster's warehouse, garage and shop, Ogden air depot, Ogden, Utah.

Pig Iron

Pig Iron Prices, Page 84

Pittsburgh—Buying is light, with little additional business expected this month. Shipments are tending downward, this being reflected in production. Curtailment in blast furnace operations leaves 40 stacks out of 50 in the district active. Prices are firm.

Cleveland—Shipments of foundry iron are holding well, tapering in the total movement so far this year resulting principally from reduced needs of steelworks. A seasonal letdown is noted in schedules of some foundries, although the melt generally remains relatively heavy. Production of machinery castings is particularly active. Pig iron buying continues slow, but sellers still have a substantial tonnage of unfilled business. Closing on the sizable volume of export inquiries is hampered by inadequacy of shipping facilities.

Chicago—Shipments have declined further and may ease more in the near future. So far this month, deliveries are off about 30 per cent from January. Buying is slow, but prices are reported firm.

Boston—Pig iron buying is slack, in small lots for prompt delivery. Shipments are somewhat lighter and foundry melt is easing, due in part to smaller order backlogs and less active demand for castings. Those meeting demands of the machine tool trade continue active. Mystic Iron Works furnace, Everett, Mass., is out of blast probably until April at least, having accumulated substantial stocks.

New York—Active demand for machining tool castings account for some pig iron buying as well as for major movement of iron against contracts. Foundries have sufficient tonnage on hand and on order for several weeks, and sellers look for little change in buying until March. Foreign inquiry is expanding appreciably and is coming from widely scattered countries. A considerable portion is for standard grades and, with a few exceptions,

1940 PRODUCTION SCHEDULES



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individual inquiries involve less than 1000 tons.

Philadelphia—Sellers expect little buying before late March. Only a comparatively small tonnage has been purchased at the \$2 advance of last year. The melt is fairly steady. Sweden and Belgium are reported still interested in a few thousand tons each.

Buffalo—Shipments to foundries are holding well, so far this month comparing favorably with the January rate. Releases are appearing from some plants for the first time in several weeks, pointing to reduced inventories. The average melt is at least four days weekly.

Cincinnati—Pig iron consumption is declining, although local casting demand is maintained by machine tool activity. Stove production is light. Foundry coke specifications are spotty and the trend so far this month indicates a lighter movement than in January.

Birmingham, Ala.—Except Sloss-
Sheffield's No. 4 furnace at North Birmingham, which is down for relining, all the district's blast furnaces are pouring iron. No large stocks are evident on local yards, and some increase in shipping instructions is noted.

Toronto, Ont.—Merchant pig iron sales continue light, with sales reported only to the smaller melters in lots of one or two cars. Deliveries are being made and most larger melters have stocks sufficient for needs, at current consumption, to the end of this quarter. Producers, however, are not holding large stocks of merchant iron. Production continues at 85 per cent, with eight stacks blowing.

er, including a 50-cent reduction on No. 1 steel. Tone of the market is weak, no signs of strength being evidenced in the face of declining consumption and absence of buying interest. Railroad items are affected by latest price weakness, lower prices prevailing on steel specialties, rerolling and short rails, brake shoes, grate bars and pipes and flues.

Boston—Iron and steel scrap buying is light and domestic prices have a downward tendency, although hardly enough tonnage is moving to establish a test. District foundries are resisting current quotations on cast grades, with No. 1 machinery \$16 to \$17 f.o.b. shipping point. Movement of material to eastern Pennsylvania is also limited. Prospect of more shipping with more cargo space to fill export orders, has resulted in slightly better buying for dock delivery, with heavy melting steel grades bringing \$15 and \$14, respectively.

Philadelphia—Further price reductions are noted in steel specialties on moderate sales. Machine shop turnings also are off 50 cents. Additional breakable cast has changed hands at \$18. Heavy steel grades are unchanged in the absence of consequential business but are in line with broker buying prices. At least one mill is expected in the market shortly.

Buffalo—Steelmaking grades are off 50 cents on two small sales. This reduces No. 1 steel to \$16 to \$16.50, although the market is somewhat confused since broker bids have been maintained at 25 cents above

this range on what might be called a selected grade of No. 1 heavy melting. Offerings are light, and except for new sales little scrap is on order.

Detroit—Sentiment continues depressed, with further price reductions seen this week. Test of current levels is looked for with bids on Fisher Body lists Feb. 15. Brokers expect no improvement for six to eight weeks but feel that steel-making nationally may dip as low as 60 per cent without undue pressure on scrap prices.

Cincinnati—Most scrap prices have declined an addition 25 cents, heavy melting steel and rails being exceptions. Demand for most grades, other than melting steel, is inactive, either on dealer account or on consumer requirements. Ohio river shipments still are suspended by ice, but this has had little effect in the quiet market.

St. Louis—The market continues weak, with prices down further. A west side mill has bought 5000 tons of No. 2 steel at \$14, or 50 cents below last week's market. Mills generally are well situated regarding scrap supplies, and in a number of instances stocks should last into April. Shipments from the country are slightly heavier on moderation in the weather.

Birmingham, Ala.—The approximately \$1 decline in major items in scrap recently, indicates a decided weakening of the market. Republic Steel Corp., largest consumer of scrap, has not announced its buying policy, with the result that the mar-

Scrap

Scrap Prices, Page 86

Pittsburgh — Prices have weakened in nearly all grades, led by new railroad list closings at lower figures. Higher priced grades are off \$1, and open-hearth grades dropped 50 cents, with No. 1 steel now \$17.50 to \$18. All prices can be considered nominal until new buying appears. Blast furnace material is expected to drop several dollars since it has been held at artificial levels by a large previous sale at a high price, shipment of which is now complete.

Cleveland — Buying and shipment of scrap continue restricted, dealers preferring to await developments rather than buy or sell more than small lots. Weather has interfered with collection and preparation. Prices are nominally steady.

Chicago—Several grades are low-

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2—1500 KW, 250 volt, compound wound 514 RPM, 3 phase,
60 cycle Synchronous Westinghouse Motor Generator
Sets.

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60 cycle General Electric Type MCF Generators driven
by Type ATI Synchronous Motors.

Each set complete with starting equipment and generator
control panels.

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4519 Hamilton Ave., Cleveland, O.

ket is more or less in an unsettled state and tending downward.

New York—Buying by steelworks and foundries is light, although most of the latter are taking moderate shipments against old orders. Lack of shipping again is retarding buying for export, and accumulations on barges are heavy. Prices still tend downward, several grades being off 50 cents or more. Export prices are unchanged.

Seattle—Export houses are marking hime. A few scattered orders for small tonnages are coming from Japan but the market is hesitant and unsettled, no firm quotations being made publicly. Rolling mills are not buying and foundry demand is nominal.

The latest full cargo charter to Japan was done at \$11.50, free in and out. Ship owners are firm at \$12 and space is scarce. Berth lines are asking \$11 for rails and \$13 for loose melting, the highest freights on these items in many years.

Toronto, Ont.—Business is quiet, but prices of heavy melting steel and low phos grades are strong. Consumers of cast scrap are well stocked and are buying only small lots, but stove plate is in strong demand. Dealers report sufficient forward bookings to assure steady deliveries to the end of the quarter.

San Francisco — Domestic purchasers are not interested and are buying only for immediate requirements, while stocks are large. No commitments have been made on new material for shipment to the orient. Present prices, f.o.b. metropolitan areas, Los Angeles and San Francisco, for No. 1 heavy prepared scrap hold at \$14.50 to \$15.50 with No. 2 quoted at \$13.50 to \$14.50. Compressed sheets are quoted at \$12 to \$13 a gross ton, metropolitan areas, with borings and turnings at \$6 to \$6.50 per gross ton.

Warehouse

Warehouse Prices, Page 85

Cleveland—Sales hold near the January rate which was off materially from that of December. Demand is relatively active for this period but is not expected to improve before March.

Chicago—A 5 to 10 per cent increase over January is expected for February sales. Unfavorable weather and excessive stocks of some consumers hampered last month's business.

New York—Volume generally is holding to last month's rate, with a slight upturn noted by some warehouses. Business from aircraft part makers and government shops

is increasing. As usual some concessions are noted on galvanized sheets, but on the whole prices are well maintained.

Philadelphia—Volume still is well under December levels but has shown mild improvement lately. Prices apparently are maintained.

Buffalo—Business is below the fourth quarter peak but most of the decline has been seasonal, and most distributors report a satisfactory turnover.

Cincinnati—Sales are less active than in January and show a marked drop from December. All items are affected, particularly those on which mill deliveries were slowest last quarter.

Seattle—Sheets show good volume with bars and plates also in demand. Jobbing houses report sales seasonally normal with a larger turnover expected next month. The price situation is unchanged but several items are lower.

Steel in Europe

Foreign Steel Prices, Page 85

London—(By Cable)—British iron and steel prices were increased Feb. 1 to cover increased cost of raw materials and freight charges. The increase on pig iron was 3 shillings; on semifinished and heavy products £1; light products £1 4s to £1 7s 6d. Output continues full pressure in all lines. Supply of semifinished steel has improved and strong efforts are being made to expand steel exports.

Report comes from Belgium and Luxemburg that export demand is quieter and that prices have weakened.

Ferroalloys

Ferroalloy Prices, Page 84

New York—Standard ferromanganese continues \$100, duty paid, eastern seaboard, with prices of other leading ferroalloys also steady. Chrome alloy shipments continue to lag because of substantial buying in December, prior to the price advance. Ferromanganese deliveries also are somewhat sluggish and will probably show a decline this month. Domestic spiegeleisen, 19 to 21 per cent, is steady at \$32, Palmerton, Pa., and 26 to 28 per cent, at \$39.50.

■ World production of platinum metals last year approximated 500,000 ounces, according to Charles Engelhard, president, Baker & Co. Inc., Newark, N. J. Imports exceeded 250,000 ounces. Great Britain, Russia and Colombia furnished the major portion.

New President Named By British Institute

■ British Iron and Steel institute has nominated John Craig, chairman and managing director of Colvilles Ltd., Glasgow, Scotland, as president of the institute for two years. Mr. Craig is to take office at the annual general meeting in London May 2 and 3, 1940.

The following alterations in the membership of the council have taken place during 1939: To be honorary vice presidents, Sir Edward George, deputy chairman and general manager of Consett Iron Co., Consett, County Durham, and John E. James, chairman of Lancashire Steel Corp. Ltd., Warrington, Lancashire; to be members of council, J. Sinclair Kerr, assistant manager, Lancashire Steel Corp. Ltd., and C. J. Walsh, managing director of Appleby-Frodingham Steel Co. Ltd., Scunthorpe, Lincolnshire.

Nonferrous Metals

New York—Keen competition for business in copper disrupted the domestic market last week and resulted in a downward revision in prices. Lead sellers also lowered their quotations and received the largest volume of business since the first week in December. Both zinc and tin prices remained steady in quiet markets.

Copper—In an effort to check under-cover price cutting by some custom smelters and sellers on the outside market, Kennecott Copper Corp. and Anaconda Copper Mining Co. lowered their prices to the basis of 11.25c, Connecticut, on Wednesday. Phelps Dodge Corp. continued to quote, however, on the basis of 11.62½c. Custom smelters adopted a policy of not posting any official price in order to be in a position to meet all competition. After selling as low as 11.12½c on the outside market, the price tone firmed on Friday at 11.25c. All rolled and drawn product prices and red metal scrap bids declined to the new price basis.

Tin—Straits spot fluctuated within the narrow range of 45.00c to 45.25c. Consumers bought only light tonnages.

Lead—Although lead sellers drew heavily on their reserve stocks in order to fill orders in excess of their daily intakes, substantial tonnages were placed on waiting lists for booking on Tuesday. The sharp increase in demand followed the 4-cent reduction in prices on Wednesday to the basis of 4.85c, East St.

Louis, and 5.00c, New York. At the close the price tone was described as firm.

Zinc—No new developments were noted in the domestic slab zinc market. Buying interest remained light while prices held steady on the basis of 5.50c, East St. Louis, for prime western. Sellers continued confident, however, that consumers would enter the market soon for increasingly large tonnages. It was pointed out that unfilled orders continue to decline, indicating that consumption is holding up well.

Antimony—Only routine business was booked on the unchanged basis of 14.00, New York, for American spot and nominally 16.50c, duty paid New York, for Chinese spot.

switches and 1410 bus insulators. General Electric Co. is low at \$17,987 for switchboard equipment for the Wapato, Wash., power project, Indian irrigation service. United States engineer, Bonneville, will open bids Feb. 21 for four circuit

breakers, 15,000 volts. Wallace & Tiernan, Seattle, have the award from Bellingham, Wash., for a chlorinating plant. Alaska purchasing agent, Seattle, has received bids for furnishing an automatic light plant for Yakutat, Alaska.

Nonferrous Metal Prices

| Feb. | Copper | | Casting, refinery | Strait's Tin | | Lead N. Y. | Lead East St. L. | Zinc St. L. | Aluminum 99% | Anti-mony Amer. Spot, N.Y. | Nickel Cathodes |
|------|---------------------|--------------------|-------------------|--------------|-----------|------------|------------------|-------------|--------------|----------------------------|-----------------|
| | Electro, del. Conn. | Lake, del. Midwest | | New York | Futures | | | | | | |
| 3 | 11.62 1/2 | 11.62 1/2 | 11.25 | 45.12 1/2 | 44.62 1/2 | 5.25 | 5.10 | 5.50 | 20.00 | 14.00 | 35.00 |
| 5 | 11.62 1/2 | 11.62 1/2 | 11.25 | 45.25 | 44.75 | 5.25 | 5.10 | 5.50 | 20.00 | 14.00 | 35.00 |
| 6 | 11.62 1/2 | 11.62 1/2 | 11.25 | 45.12 1/2 | 44.75 | 5.25 | 5.10 | 5.50 | 20.00 | 14.00 | 35.00 |
| 7 | 11.25 | 11.25 | 10.87 1/2 | 45.12 1/2 | 44.87 1/2 | 5.00 | 4.85 | 5.50 | 20.00 | 14.00 | 35.00 |
| 8 | 11.25 | 11.25 | 10.87 1/2 | 45.12 1/2 | 44.87 1/2 | 5.00 | 4.85 | 5.50 | 20.00 | 14.00 | 35.00 |
| 9 | 11.25 | 11.25 | 10.87 1/2 | 45.25 | 45.00 | 5.00 | 4.85 | 5.50 | 20.00 | 14.00 | 35.00 |

*Nominal.

MILL PRODUCTS

F.o.b. mill base, cents per lb., except as specified. Copper brass products based on 11.25c Conn. copper

| Sheets | |
|----------------------|-------|
| Yellow brass (high) | 18.15 |
| Copper, hot rolled | 19.87 |
| Lead, cut to jobbers | 8.25 |
| Zinc, 100 lb. base | 11.00 |
| Tubes | |
| High yellow brass | 20.90 |
| Seamless copper | 20.37 |
| Rods | |
| High yellow brass | 14.11 |
| Copper, hot rolled | 16.37 |
| Anodes | |
| Copper, untrimmed | 17.12 |
| Wire | |
| Yellow brass (high) | 18.40 |

OLD METALS

Nom. Dealers' Buying Prices

| No. 1 Composition Red Brass | |
|-----------------------------|-----------|
| New York | 7.00-7.25 |
| Cleveland | 7.50-7.75 |
| Chicago | 7.50-7.75 |
| St. Louis | 7.75-8.00 |
| Heavy Copper and Wire | |
| New York, No. 1 | 8.75-9.00 |
| Cleveland, No. 1 | 8.75-9.00 |

| Chicago, No. 1 | 8.75-9.00 |
|----------------------------|----------------|
| St. Louis | 8.75-9.25 |
| Composition Brass Turnings | |
| New York | 6.75-7.00 |
| Light Copper | |
| New York | 6.75-7.00 |
| Cleveland | 6.75-7.00 |
| Chicago | 6.75-7.00 |
| St. Louis | 6.75-7.00 |
| Light Brass | |
| Cleveland | 3.50-3.75 |
| Chicago | 4.25-4.50 |
| St. Louis | 4.50-4.75 |
| Lead | |
| New York | 4.25-4.50 |
| Cleveland | 4.37 1/2 -4.50 |
| Chicago | 4.25-4.50 |
| St. Louis | 4.00-4.25 |
| Zinc | |
| New York | 3.00-3.25 |
| Cleveland | 3.00-3.25 |
| St. Louis | 3.25-3.50 |

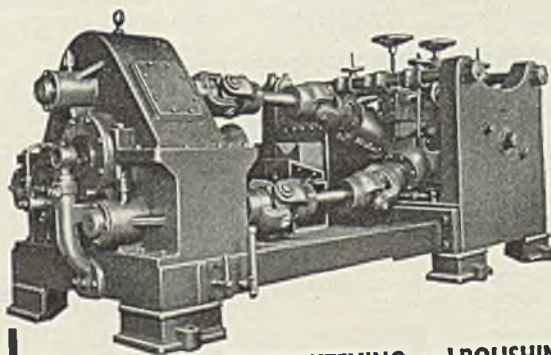
| Aluminum | |
|--------------------------------------|-------------|
| Mixed, cast, Cleveland | 10.25-10.50 |
| Borings, Cleveland | 7.25-7.50 |
| Clips, soft, Cleveland | 15.75-16.00 |
| Misc. cast, St. Louis | 8.75-9.00 |
| SECONDARY METALS | |
| Brass ingot, 85-5-5-5, less carloads | 11.75 |
| Standard No. 12 aluminum | 14.50-15.00 |

Equipment

Chicago—Machinery and machine tool bookings the past week have been a bit slower, but inquiries have increased and in general business continues on a high level. Country buying has been more prominent than city recently, a reversal compared with December and January. Several railroad lists are of interest. Illinois Central has a sizable list out and closing is expected soon. Milwaukee railroad may close soon or re-advertise. Inquiries from St. Louis roads are reported but said to be mostly for budget purposes. There also is noted an increase in heavy machinery sales, contrasting with an easing in demand for the smaller tools.

New York—Shepard-Niles Crane & Hoist Corp., Montour Falls, N. Y., at \$157,560, has been awarded the contract for 50-ton bridge cranes for shipways at the Brooklyn navy yard, bids Jan. 17. Additional crane contracts include an electric bridge unit, Watervliet, N. Y., arsenal, to Harnischfeger Corp., Milwaukee, at \$29,710, while Morgan Engineering Co., Alliance, O., has award for the completion of erection of two bridge cranes, Philadelphia navy yard, at \$18,000, bids Jan. 24.

Seattle—Mining and other industries are placing seasonal requirements and volume of sales is increasing. Public works jobs predominate. Bonneville project has called bids Feb. 26, Spec. 760, for furnishing seven 12,500-kva transformers. Fuller Co., Chattanooga, Tenn., is low at \$20,597 to the Portland port commission for a bulk grain unloading system. United States engineer, Bonneville, opens bids Feb. 16 for six disconnecting



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December Imports Down; Year Shows Increase

Steel and iron imports into the United States registered a third consecutive decline in December, according to figures by the metals and minerals division, department of commerce.

December imports, excluding

U. S. FOREIGN TRADE IN IRON AND STEEL, INCLUDING SCRAP

| | 1939 | | 1938 | |
|-------|-----------|---------|-----------|---------|
| | Exports | Imports | Exports | Imports |
| Jan. | 362,672 | 27,664 | 586,294 | 29,631 |
| Feb. | 359,690 | 19,149 | 460,640 | 19,589 |
| March | 474,360 | 25,369 | 526,883 | 11,827 |
| April | 394,008 | 44,083 | 489,202 | 21,237 |
| May | 532,641 | 28,142 | 540,639 | 20,814 |
| June | 588,856 | 32,587 | 312,021 | 15,887 |
| July | 513,664 | 30,851 | 263,699 | 14,728 |
| Aug. | 477,078 | 28,328 | 242,139 | 20,041 |
| Sept. | 575,613 | 29,874 | 346,068 | 27,958 |
| Oct. | 591,856 | 19,189 | 425,431 | 26,445 |
| Nov. | 605,555 | 15,216 | 469,596 | 27,627 |
| Dec. | 600,437 | 14,709 | 490,095 | 28,767 |
| Total | 6,076,429 | 315,161 | 5,152,707 | 264,551 |

scrap, totaled 13,442 gross tons valued at \$1,099,177, compared with November total of 14,379 tons valued at \$1,005,774, and 22,248 tons valued

UNITED STATES IMPORTS FOR CONSUMPTION OF IRON AND STEEL PRODUCTS

| Articles | 1939 | | 1938 | |
|--|--------|--------|---------|---------|
| | Dec. | Nov. | Dec. | Nov. |
| Pig iron | 1,318 | 2,774 | 38,592 | 38,592 |
| Sponge iron | 176 | 172 | 1,879 | 1,879 |
| Ferromanganese (1) | 1,285 | 2,465 | 33,415 | 33,415 |
| Spiegeleisen | 5,767 | 3,233 | 38,562 | 38,562 |
| Ferrochrome (2) | ..... | ..... | 129 | 129 |
| Ferrosilicon (3) | 108 | 96 | 1,602 | 1,602 |
| Other ferroalloys (4) | 77 | 3 | 358 | 358 |
| Steel ingots, blooms, etc. | 4 | ..... | 16 | 16 |
| Billets, solid or hollow | 139 | 154 | 727 | 727 |
| Concrete reinforc. bars | ..... | 15 | 2,365 | 2,365 |
| Hollow bar and drill steel | 100 | 71 | 1,356 | 1,356 |
| Bars, solid or hollow | 504 | 582 | 17,061 | 17,061 |
| Iron slabs | ..... | ..... | ..... | ..... |
| Iron bars | 180 | 92 | 932 | 932 |
| Wire rods | 1,058 | 917 | 10,692 | 10,692 |
| Boiler and other plate (including skelp) | 1 | 3 | 28 | 28 |
| Sheets, skelp, saw plate | 2 | 18 | 1,406 | 1,406 |
| Die blocks or blanks, etc. | 1 | 6 | 89 | 89 |
| Tin plate, taggers' tin and ternplate | 19 | 15 | 99 | 99 |
| Structural shapes | 667 | 530 | 39,065 | 39,065 |
| Sashes and frames | ..... | ..... | 5 | 5 |
| Sheet piling | ..... | ..... | 462 | 462 |
| Rails and track material | 16 | 1,480 | 7,785 | 7,785 |
| Cast-iron pipe, fittings | 115 | 104 | 1,697 | 1,697 |
| Mall. iron pipe fittings | ..... | ..... | 144 | 144 |
| Welded pipe | ..... | ..... | 4,462 | 4,462 |
| Other pipe | 363 | 320 | 26,104 | 26,104 |
| Cotton ties | ..... | ..... | 7,126 | 7,126 |
| Other hoops and bands | 265 | 363 | 16,545 | 16,545 |
| Barbed wire | 325 | 174 | 15,249 | 15,249 |
| Round iron and steel wire | 269 | 166 | 2,510 | 2,510 |
| Teleg. and telephone wire | 1 | ..... | 8 | 8 |
| Flat wire and steel strips | 335 | 226 | 3,153 | 3,153 |
| Wire rope and strand | 106 | 121 | 1,664 | 1,664 |
| Other wire | 8 | 45 | 1,481 | 1,481 |
| Nails, tacks, and staples | 171 | 162 | 7,310 | 7,310 |
| Bolts, nuts, and rivets | 13 | 9 | 118 | 118 |
| Horse and mule shoes | ..... | ..... | 324 | 324 |
| Castings and forgings | 49 | 63 | 1,149 | 1,149 |
| Total | 13,442 | 14,379 | 285,669 | 285,669 |
| Iron and steel scrap | 1,267 | 837 | 29,492 | 29,492 |
| GRAND TOTAL | 14,709 | 15,216 | 315,161 | 315,161 |

(1) Manganese content; (2) chrome content; (3) silicon content; (4) alloy content.

ORIGIN OF DECEMBER IMPORTS

| | Gross Tons | | | |
|----------------|----------------------------|------------------|----------------|-------------------------|
| | Iron ore | Pig iron | Man-ganese ore | Ferro-ganese man-ganese |
| Norway | 4,331 | ..... | ..... | 1,285 |
| Sweden | 43,964 | ..... | ..... | ..... |
| United Kingdom | 210 | ..... | ..... | ..... |
| Canada | 60 | 133 | ..... | ..... |
| Mexico | 97 | ..... | 24 | ..... |
| Cuba | 10,500 | ..... | 8,463 | ..... |
| Chile | 97,300 | ..... | ..... | ..... |
| West Africa | 6,520 | ..... | ..... | ..... |
| British India | ..... | 1,185 | 7,804 | ..... |
| Philippine Is. | ..... | ..... | 3,483 | ..... |
| France | ..... | ..... | 5 | ..... |
| Brazil | ..... | ..... | 4,760 | ..... |
| South Africa | ..... | ..... | 1,688 | ..... |
| Soviet Russia | ..... | ..... | 10,447 | ..... |
| Gold Coast | ..... | ..... | 13,694 | ..... |
| Total | 162,982 | 1,318 | 50,368 | 1,285 |
| | Sheets, skelp and sawplate | Structural steel | Steel bars | Hoops and bands |
| Belgium | 1 | 667 | 267 | 263 |
| United Kingdom | 1 | ..... | 3 | ..... |
| Canada | ..... | ..... | 1 | 1 |
| Germany | ..... | ..... | 4 | ..... |
| Sweden | ..... | ..... | 229 | 1 |
| Total | 2 | 667 | 504 | 265 |

at \$1,405,704 in December, 1938.

For the entire year, 1939, steel and iron imports totaled 285,669 tons valued at \$17,364,761, up 19 per cent in quantity and 15.8 per cent in value from 240,099 tons valued at \$15,000,483 in 1938.

Scrap imports in December, 1267 tons valued at \$15,473 showed a material increase over 837 tons

valued at \$4817 in November, but was far short of 6519 tons valued at \$76,649 in December, 1938. Canada supplied 1217 tons of the December scrap imports.

Scrap imports for all 1939 totaled 29,492 tons valued at \$301,513, compared with 24,451 tons valued at \$281,240 in 1938. Canada supplied the major part of the year's scrap imports, 27,208 tons.

December's Farm Tool Exports Up; Year's Down

Totaling \$4,780,500, United States exports of farm equipment in December were 21 per cent greater than the corresponding trade in December, 1938, valued at \$3,935,028, according to the machinery division, department of commerce. All major types except tillage implements and carburetor-type tracklaying tractors figured in the increased trade.

Figures for the entire year, 1939, however, showed 9 per cent reduction from 1938, totaling \$68,506,716, compared with \$75,435,305. Practically all principal types were shipped in reduced volume, the main exceptions being tracklaying tractors of fuel injection type, tractor parts and accessories, windmills and spraying equipment.

Construction and Enterprise

Ohio

CARROLLTON, O.—Carroll electric cooperative is planning 258 miles of transmission lines. Frank W. Fishel, is president.

DAYTON, O.—Wright Field, contracting officer will take bids to Feb. 21 on 62 aircraft wheel assemblies. Circular 40-1009.

DAYTON, O.—Wright Field, contracting officer, will take bids to Feb. 20 for 33 electric furnaces and ovens. Circular 40-1040.

EATON, O.—Village, E. M. Bristow, mayor, plans to expand sewage disposal plant at cost of \$40,000.

FOSTORIA, O.—Atlas Crankshaft Co., incorporated at \$50,000, for crankshaft manufacture. Incorporators are Theodore E. Clark, E. A. Harper, Geo. E. Schroth.

KINGSTON, O.—Village, Fred C. Leasure, clerk, plans waterworks to cost \$76,191.

MARBLEHEAD, O.—Village, Anthony Turinsky, mayor, is planning a complete waterworks and filtration system to cost \$137,000. Rollin F. McDowell, Chester-Twelfth building, Cleveland, is engineer.

MINERAL RIDGE, O.—Village, is planning water supply and sewage disposal system to cost \$1,316,173. Harry Dittmer, county engineer.

Michigan

DETROIT, MICH.—Vickers Inc. is reported to be planning a plant expansion.

DETROIT, MICH.—Strate-Coil Inc. incorporated at \$100,000 to manufacture

heating units; Arthur N. Happe, 6010 Woodward avenue, Detroit.

DETROIT, MICH.—Industrial Metal Fabricators Inc., 810 Ford building, incorporated for \$25,000 to deal in metal products; Harold E. Meyer 18411 Santa Rosa drive.

JACKSON, MICH.—Hayes Industries Inc. is understood to be considering plans for plant expansion.

MIDLAND, MICH.—Dow Chemical Co. has awarded contract for 55 miles of welded gas pipeline to Gentry Engineering Co., Jackson, Mich.

Connecticut

HARTFORD, CONN.—Connecticut Power Co. plans installation of a 25,000-kilowatt generator in its Stamford division to cost \$3,500,000 and transmission and substation work to cost \$1,000,000.

Pennsylvania

OIL CITY, PA.—Keystone Public Service Co., plans boiler and turbine additions to power plant to cost \$250,000.

Alabama

TROY, ALA.—Fire damage to W. L. Thompson & Sons warehouse is estimated at \$75,000.

District of Columbia

WASHINGTON—Navy department will receive bids till Feb. 20 for 63,320 steel packing boxes for smokeless powder, schedule 676.

WASHINGTON—Bureau of yards and docks, navy department, opens bids Feb.

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14 for three electric passenger and two electric freight elevators, hoistway entrances and manually and power-operated hoistway and car doors at Washington navy yard; Spec. 9688.

WASHINGTON, D. C.—The Panama Canal, general purchasing officer, will take bids to Feb. 23 on following steel household furniture: 608 dressers, 608 single beds, 144 chiffoniers, 144 couches, 16 library tables, 114 dining tables, 114 side tables, 114 kitchen tables. Schedule No. 3893.

Kentucky

LOUISVILLE, KY.—Reynolds Metal Co., Alfred C. Lindloff, superintendent, is reported to propose establishing aluminum rolling mill; has site 355 x 1541 feet.

Florida

JACKSONVILLE, FLA.—Naval air station, public works officer, will take bids in April or May for \$1,000,000 repair shop.

JACKSONVILLE, FLA.—Contract awarded to Hillyer & Lovan, 111 West Ashley street, Jacksonville, at \$654,564, for three storehouses at naval air station.

Georgia

ATLANTA, GA.—City is planning incinerator to cost \$538,000. It will be several months before this work is ready for bids. Robert & Co. Inc., Atlanta, are engineers.

ATLANTA, GA.—Ralph Didschuneit, Candler building, will probably receive contract for warehouse for Tudor Inc., Dr. T. P. Goven, president, Sewanee, Tenn.; Seaboard Supply Co., lessee; T. T. Tucker, engineer, 250 Peachtree street northeast; project will include sprinkler system and air conditioning; cost \$16,000.

LOUISVILLE, GA.—Edward S. Moore, Times building, St. Petersburg, Fla., has contract at \$203,797 for 383 miles of electric line for Jefferson county electric membership co-operative.

North Carolina

CLARKTON, N. C.—Tide Water Power Co., Wilmington, plans 110,000-volt station.

DENTON, N. C.—City, C. Bishop, mayor, let contract to J. B. McCrary Co., 22 Marietta Street building, Atlanta, Ga., for filtration plant.

FORREST CITY, N. C.—Day & Zimmerman Inc., 111 South Fifteenth street, Philadelphia, has \$156,014 contract for 273 miles of power lines.

JACKSONVILLE, N. C.—Miller-Baxter Co., Indianapolis, has contract at \$179,592 for 291 miles of power lines.

PINEVILLE, N. C.—Federal Works Agency, WPA division, approves construction of water and sewer system to cost \$99,000 including well, tower and tank and distribution system. J. B. McCrary Co. Inc., Atlanta, Ga., is engineer.

SANFORD, N. C.—City, Warren R. Williams, mayor, plans \$68,000 improvements to water and sewer system.

SHALLOTTE, N. C.—REA approved award of contract at \$80,223 with Miller Baxter Co., Indianapolis, for 123 miles of transmission line for Brunswick Electric Membership Corp.

WILSON, N. C.—City voted \$300,000 electric turbine bonds.

Mississippi

COLUMBUS, MISS.—Johnston Furni-

ture Mfg. Co. and Pepsi-Cola Bottling Co., will rebuild burned plants.

JACKSON, MISS.—Rural housing projects costing \$9,000,000 are proposed to Mississippi state planning commission.

JACKSON, MISS.—Knex Glass Bottling Co., Chester Underwood, president, will build metal bottle cap plant.

NATCHEZ, MISS.—Mayor and board of aldermen voted \$55,000 mill bonds.

South Carolina

ABBEVILLE, S. C.—E. C. Bridges, Heath Springs, was low at \$29,880 for transmission lines on Rocky River hydroelectric project; R. H. Boulligny Inc., 433 West Morehead street at \$18,017 for substations; Wiedeman & Singleton, engineers, Atlanta, Ga.

COLUMBIA, S. C.—Pacific Mills, (Hampton division) will modernize Olympia Mills and install new machinery.

KINGSTREE, S. C.—Santee electric co-operative awarded \$78,050 contract to Ivey H. Smith, Barnett building Jacksonville, Fla., for 134 miles of transmission lines in Williamsburg, Florence and Clarendon counties.

Tennessee

CHATTANOOGA, TENN.—Southern Bell Telephone & Telegraph Co., Atlanta, Ga., will start work soon on \$124,000 expansion program.

CHATTANOOGA, TENN.—Silver Fleet Motor Express Co. will erect warehouse, terminal and office on Central avenue to cost \$25,000.

CHATTANOOGA, TENN.—J. J. McDevitt Co., Charlotte, N. C., was low at \$279,500 for building and warehouse for Chattanooga power board; R. H. Hunt & Co., architects, Chattanooga Bank building.

KNOXVILLE, TENN.—Tennessee Valley Paper Mills Inc. plans paper mill at Savannah, Tenn., to cost \$4,000,000.

KNOXVILLE, TENN.—Melvin F. Burgess Co., Mercantile Trust building, Baltimore, was low at \$214,216 for 220 miles of transmission lines in five counties for 2000 consumers, for electric power and water board; Burns & McDonnell Engineering Co., Kansas City, Mo., is engineer.

PARIS, TENN.—Forcum-James Co., Dyersburg, Tenn., was low at \$70,721 for 100 miles of power lines using copper wiring and at \$68,231 using aluminum wiring, for board of public utilities.

Louisiana

BATON ROUGE, LA.—Standard Oil Co. of Louisiana, New Orleans, let contract to W. Horace Williams Corp., New Orleans for steel and concrete dock 50 x 1000 feet to cost \$900,000 for refinery here.

LAFAYETTE, LA.—Stuart C. Irby, Jackson, Miss., was low for 124 miles of transmission line for Southwest Electric Membership Corp.

West Virginia

BLUEFIELD, W. VA.—Pocahontas Fuel Co., W. A. Bishop, plans rebuilding burned tippie.

HUNTINGTON, W. VA.—Appalachian Electric Power Co., Roanoke, Va., will construct \$100,000 substation in Huntington and a \$40,000 power plant at Milton.

MALLORY, W. VA.—Fire damage to tippie of Mallory Coal Co., Garnett J. Stollings, general manager, was \$200,000.

MORGANTOWN, W. VA.—Monongahela

Rail & River Coal Corp., Howard W. Showalter, president, proposes to rebuild burned tippie of Emily mine near here; steel and fireproof.

WEIRTON, W. VA.—Fire damage to storage house and carpenter shops of Phelps Can Works was \$35,000.

Virginia

ALEXANDRIA, VA.—City council approved application of Virginia Service Generating Co. for permit to build \$2,000,000 steam power plant.

FREDRICKSBURG, VA.—Fire damage to building of Bell Brothers Furniture Co. was \$25,000.

Missouri

ROCKPORT, MO.—Vasak & Wright, Hebron, Nebr., were low at \$43,360 for 72½ miles of power lines for Atchison Holt electric co-operative, W. C. Scamman, president, H. H. Henningson, 730 Service Life building, Omaha, Nebr., is engineer.

ST. CHARLES, MO.—City, Adolph Thro, mayor, has received plans from Burns & McDonnell Engineering Co., 107 West Linwood boulevard, Kansas City, for street lighting and power distribution system.

FLORISSANT, MO.—City, Arthur F. Banger, mayor, has WPA grant of \$139,627 for sewage system and disposal plant to cost \$186,171.

JEFFERSON CITY, MO.—Contract for waterworks system awarded to Joseph O'Neil Construction Co., Leavenworth, Kans., at \$31,500. Keene & Simpson, 15 West Tenth street, Kansas City, Mo., are architects.

WEBB CITY, MO.—City council, Dr. S. M. Slaughter, mayor, is considering building a power plant.

ST. CHARLES, MO.—City is planning improvement of waterworks plant, to cost about \$15,000. Burns & McDonnell Engineering Co., 107 West Linwood boulevard, Kansas City, Mo., is consulting engineer.

Oklahoma

CHILOCCO, OKLA.—Fred R. Comb Co., 2113 Chicago avenue, Minneapolis, has been awarded \$128,584 contract for power plant and laundry at Chilocco school here.

SEMINOLE, OKLA.—City voted \$35,000 bonds for improvements to water works.

Texas

DALLAS, TEX.—International Harvester Co., Chicago, plans \$350,000 distribution plant at South Lamar, Austin.

FORT WORTH, TEX.—City, S. H. Bothwell, plans waterworks improvements to cost \$30,000. W. O. Jones is engineer.

HOUSTON, TEX.—Houston Island Transportation Co., C. L. Muirhead, 2905 McKinney street, plans warehouse and terminal.

SAN AUGUSTINE, TEX.—Fairbanks Morse & Co., 1713 North Market street, Dallas, has contract for power plant improvements at \$40,447 for city. H. B. Gleb & Co., 1109 Mercantile building, Dallas, Tex., are engineers.

VERNON, TEX.—Vernon Meat Co. plans meat packing plant. Carl Schloemann, 6329 San Bonita avenue, St. Louis, Mo., is architect.

North Dakota

HILLSBORO, N. DAK.—Red River valley electric co-operative, Ralph Diehl,

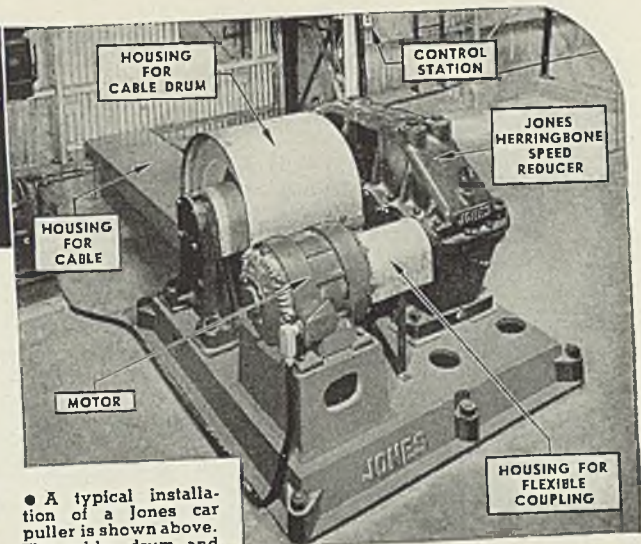
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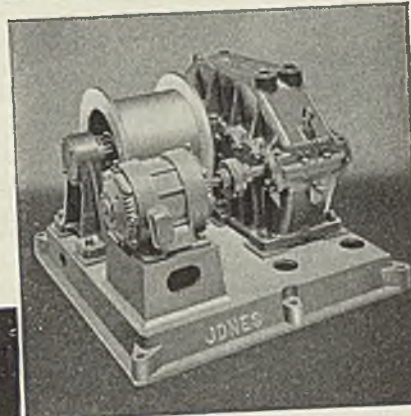
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Cleveland, O.

chairman, plans 240 miles of power lines. M. S. Hyland, 1114 Eighth avenue north, Fargo, N. Dak., is engineer.

Nebraska

DAKOTA CITY, NEBR.—Village, Raymond H. Ream, clerk, will vote Feb. 27 on \$10,000 bond issue to aid waterworks system.

HASTINGS, NEBR.—City, L. T. Waterman, mayor, is planning improvements of waterworks plant, consisting of turbine room extension, cost \$36,300; plant piping, \$14,240; crane, \$8800; switchgear, \$54,180; changes for 4160-volt operation, \$18,375; 3500-kilowatt turbo-generator, \$125,000; miscellaneous, \$23,100. Black & Veatch, 4706 Broadway, Kansas City, Mo., are consulting engineers.

WYMORE, NEBR.—City, H. Janke, commissioner, is planning a power plant, and is considering methods of financing. Bid date is not set. E. H. Dunmire, 1802 B street, Lincoln, Nebr., is engineer.

SALEM, NEBR.—City is planning a waterworks to cost \$15,000. E. H. Dunmire, 1802 B street, Lincoln, Nebr., engineer.

TEKAMAH, NEBR.—State railway commission granted authority to Burt county rural public power district to build 76 1/2 miles of power lines. H. H. Henningson, 730 Service Life building, Omaha, is engineer.

Iowa

JANESVILLE, IOWA.—City, C. H. Howe, city clerk, is planning a sewer system and disposal plant to cost \$30,000. Ernest E. Schenk, 214 Waterloo building, Waterloo, Iowa, is engineer.

NEVADA, IOWA.—City, R. A. Davis, city clerk, is planning a sewage disposal plant to cost \$30,000. Buell & Winter Engineering Co., 508 Insurance Exchange building, Slouxc City, Iowa, is engineer.

PETERSON, IOWA.—City, Maudie Richard, city clerk, is applying to WPA for aid in financing a sewage disposal plant to cost \$15,000. Buell & Winter Engineering Co., 508 Insurance Exchange

building, Slouxc City, Iowa, is consulting engineer.

WAVERLY, IOWA.—City, I. H. McDaniel, mayor, is considering expansion of light plant. R. E. Doonan is city engineer.

CALMAR, IOWA.—City has employed Hubbard Engineering Co., Chicago, as engineer to make a survey for a new electric light plant to cost about \$45,000.

Colorado

WALSENBURG, COLO.—City, Dr. S. Julian Lamme, mayor, has plans for water filtration plant. A \$15,000 bond issue has been approved and sold. This is a WPA project to cost \$50,000. Burton Lowther, Colorado building, Denver, is engineer.

CREEDE, COLO.—City will take bids for a waterworks system to cost \$20,000.

Idaho

BOISE, IDAHO.—Survey studies for sewage disposal plant are being made by Greeley & Hanson, Chicago. Bond issue will be submitted.

Pacific Coast

BURBANK, CALIF.—Zierold Metals Corp., Herman A. Zierold, president, plans plant addition.

LOS ANGELES, CALIF.—Consolidated Steel Corp. has purchased Orange Car & Steel Co. plant at Orange, Tex. Plant includes steel fabricating shop and will be operated by a subsidiary, Consolidated Steel Co. of Texas.

PILOT ROCK, OREG.—Pilot Rock Lumber Co., E. C. Kerns, president, has been incorporated and plans plant.

ANACORTES, WASH.—Anacortes Lumber Co., T. D. McCormack, manager, will rebuild plant destroyed two years ago with \$75,000 loss.

GRAND COULEE, WASH.—L. E. Jarvis, superintendent, has made a survey of distribution system of Three Engineers Inc. which city proposes to buy for \$40,

000. It is planned to buy power from Coulee dam.

KELSO, WASH.—Puget Sound Power & Light Co. has asked a 25-year franchise from Cowlitz county for power distribution; hearing Feb. 13.

LONGVIEW, WASH.—Big Horn Canning Co., Thad Pound, manager, plans vegetable processing plant with \$10,000 special equipment.

NEWPORT, WASH.—Bennett & Laylor, Los Angeles, are low at \$110,000 to transmission lines.

SEATTLE, WASH.—Puget Sound Power & Light Co., Frank McLaughlin, president, plans power plant improvements to cost \$182,968; transmission and distributing lines, substations, etc., \$1,812,564; bus properties, \$315,864; general equipment, tools, etc., \$115,702.

SPOKANE, WASH.—It is reported Great Northern railway will move terminal, roundhouse and other equipment from Marcus to Newport, Wash.

VANCOUVER, WASH.—Stebco Lumber Co. is building plant, including saw and planing mills, operated by electricity and compressed air.

VANCOUVER, WASH.—T. B. Parsons, assistant purchasing agent Aluminum Co. of American, is purchasing materials for \$3,000,000 plant here.

VANCOUVER, WASH.—Great Western Maltng Co., William Einzlg, manager, plans \$500,000 malt storage elevator. Bids are to be called in 60 days. E. F. Carter, Vancouver, B. C., is engineer.

Canada

MAPLE RIDGE, B. C.—Water system for Maple Ridge and Pitt Meadows is planned, to cost \$170,000.

VANCOUVER, B. C.—Pacific Mills Ltd. has awarded contract to Archie Sullivan, 736 Granville street, for \$20,000 plant addition.

WINNIPEG, MAN.—War supply board, Ottawa, W. R. Campbell, chairman, plans \$300,000 air training buildings and equipment at Stevenson Air field.

YELLOWKNIFE, NORTHWEST TERRITORIES.—Consolidated Mining & Smelting Co. Ltd., Trail, B. C., has asked permission to construct 4000-horsepower hydroelectric power plant.

RESERVE, N. S.—Dominion department of national defence, Ottawa, awarded contract to Standard Paving Maritime Ltd., Capitol building, Halifax, N. S., and Stewart Construction Co. Ltd., 7 Dufferin street, Sherbrooke, Que., for airport and training center to cost \$500,000.

PORT ARTHUR, ONT.—Canada Creosoting Co., Montreal, L. L. Brown, general manager, plans wood treating plant, tar plant and sawmill near McIntyre river.

TORONTO, ONT.—Consumers Gas Co. is planning 33 x 100-foot addition to machine shop.

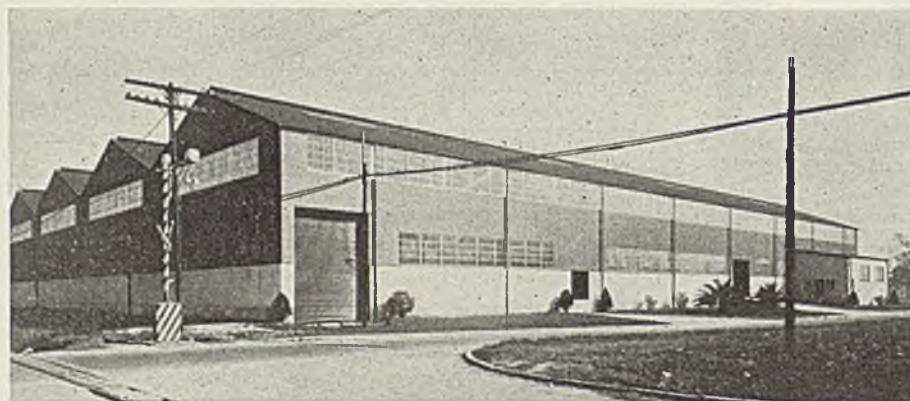
JOLIETTE, QUE.—Work is beginning on \$20,000 plant addition for Joliette Steel Ltd. Corinthian Construction Co. Ltd., Montreal, has contract.

MALARTIC, QUE.—Malartic Goldfields Ltd., Joseph R. Norrie mine manager, will start work in early summer on addition to mill.

THREE RIVERS, QUE.—Waste Paper Products Ltd. will erect wall-paper factory.

ROSETOWN, SASK.—Town plans waterworks pumping plant and 13,240 feet of water mains to cost \$65,000.

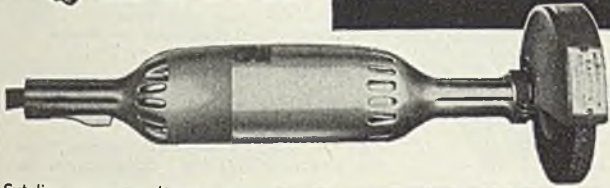
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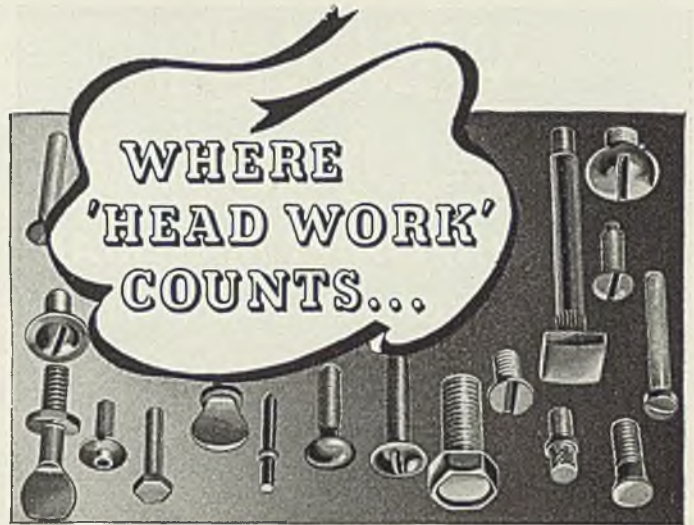
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Federal Works Agency, Public Buildings Administration, Washington, D. C., Jan. 31, 1940.—Sealed proposals in duplicate will be publicly opened in this office at 1 P.M., Standard Time, Mar. 6, 1940, for construction of the U.S.P.O. at Bronson, Mich. Upon application, one set of drawings and specifications will be supplied free to each general contractor interested in submitting a proposal. The above drawings and specifications MUST be returned to this office. Contractors requiring additional sets may obtain them by purchase from this office at a cost of \$5 per set, which will not be returned. Checks offered as payment for drawings and specifications must be made payable to the order of the Treasurer, U. S. Drawings and specifications will not be furnished to contractors who have consistently failed to submit proposals. One set upon request, and when considered in the interests of the Government, will be furnished, in the discretion of the Commissioner, to builders' exchanges, chambers of commerce or other organizations who will guarantee to make them available for any sub-contractor or material firm interested, and to quantity surveyors, but this privilege will be withdrawn if the sets are not returned after they have accomplished their purpose. W. E. Reynolds, Commissioner of Public Buildings, Federal Works Agency.

Bids Wanted

Federal Works Agency, Public Buildings Administration, Washington, D. C., Feb. 1, 1940.—Sealed proposals in duplicate will be publicly opened in this office at 1 P.M., Standard Time, Feb. 21, 1940, for construction of Farm Buildings at the Federal Penitentiary, Terre Haute, Ind. Upon application, two sets of drawings and specifications will be supplied free to each general contractor interested in submitting a proposal. The above drawings and specifications MUST be returned to this office. Contractors requiring additional sets may obtain them by purchase from this office at a cost of \$5 per set, which will not be returned. Checks offered as payment for drawings and specifications must be made payable to the order of the Treasurer, U. S. Drawings and specifications will not be furnished to contractors who have consistently failed to submit proposals. One set upon request, and when considered in the interest of the Government, will be furnished, in the discretion of the Commissioner, to builders' exchanges, chambers of commerce or other organizations who will guarantee to make them available for any sub-contractor or material firm interested, and to quantity surveyors, but this privilege will be withdrawn if the sets are not returned after they have accomplished their purpose. W. E. Reynolds, Commissioner of Public Buildings, Federal Works Agency.

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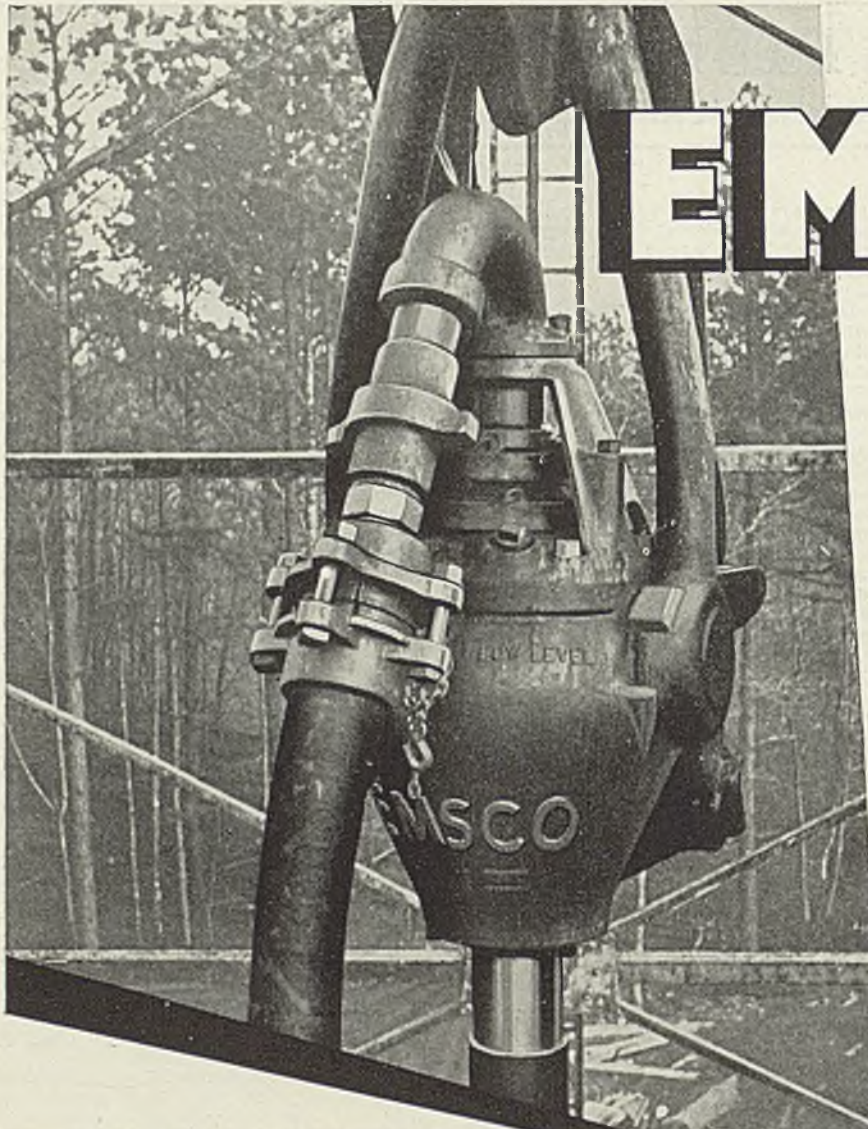
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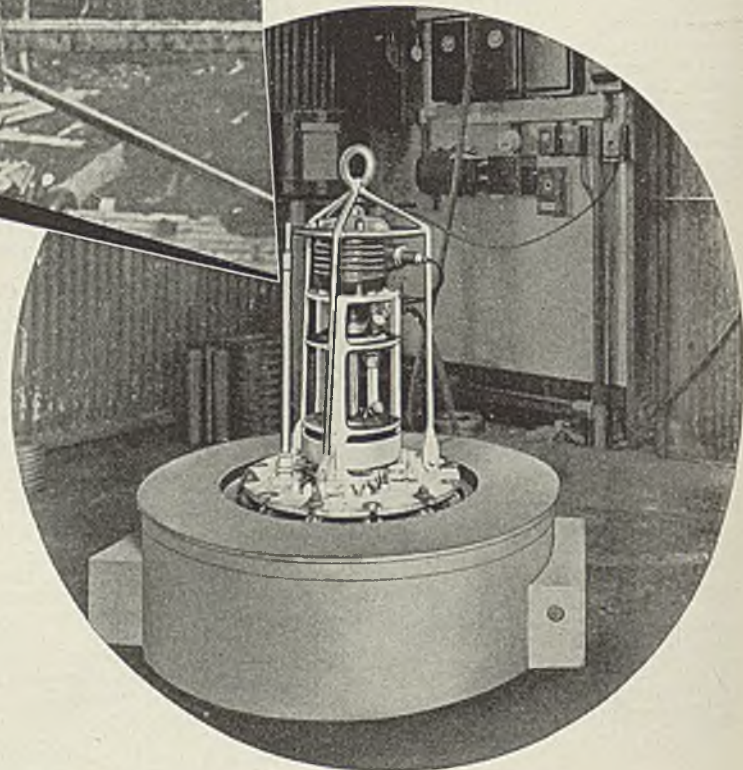


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