STEEL
ESTABLISHED 1882

Contents

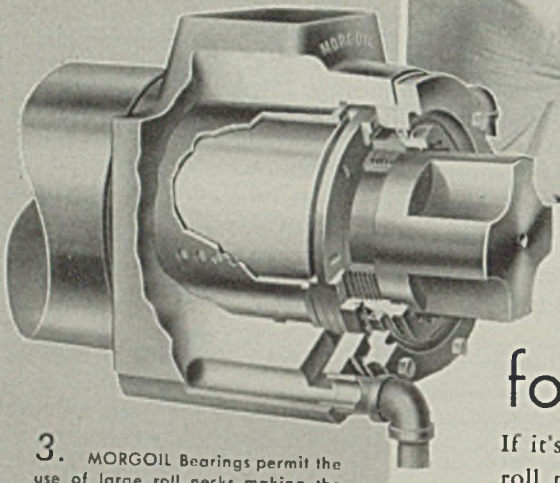
Volume 107—No. 9 August 26, 1940

Advantages of MORGOIL ROLL NECK BEARINGS

The Morgoil Bearing employs an oil film under pressure between two highly polished surfaces.

1. Load is distributed over a large area, and load carrying capacity does not decrease with increased speed of rotation.

2. Load capacity far in excess of any other roll neck bearings.

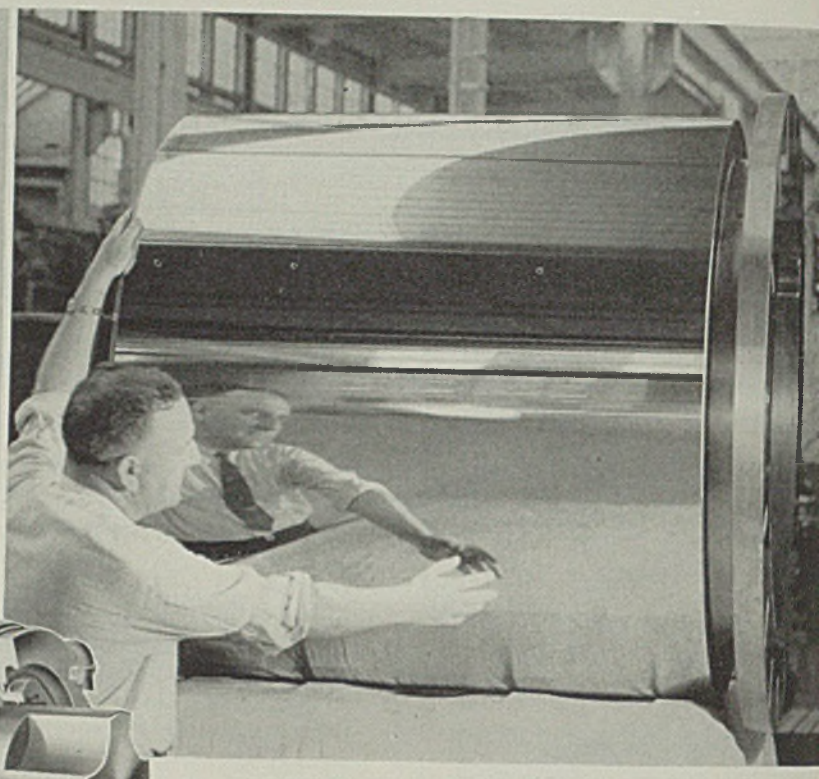


3. MORGOIL Bearings permit the use of large roll necks making the mill much stiffer and permitting more difficult sections to be readily rolled, as well as eliminating breakage.

4. Freedom from wear and compressive fatigue insures remarkably long bearing life and low maintenance cost.

5. Positive maintenance of roll setting permits utmost precision in finished product, resulting in increased yield through reduction of off-gauge material.

6. Power savings equal to and in many cases greater than can be obtained with antifriction bearings.



Look into your Bearings for that *Better* Production

If it's your job to "get it out of that mill," let's start with the roll neck bearings. The coefficient of friction of a MORGOIL Bearing varies, of course, with speed, load and oil viscosity, but in most cases is slightly lower than that obtainable with anti-friction bearings. Compared with old type babbitt and bronze bearings, Morgoils have shown a reduction in kilowatt hours per ton of product as much as 50%.

One hot strip mill, by installing Morgoils, increased the width rolled from 10" to 22½" with no changes in power, equipment or drives, and without changing the reduction per pass.

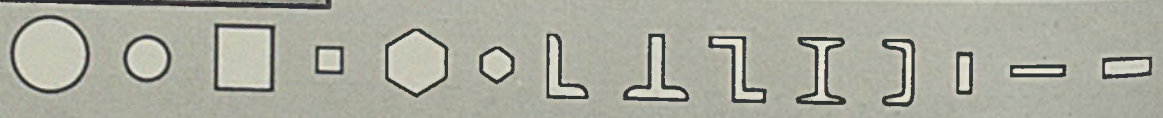
Look at the advantages shown here, and remember—Morgoil Roll Neck Bearings are being installed successfully in *old* machines. Our engineers will be glad to discuss the problem with you.

MORGAN CONSTRUCTION COMPANY
WORCESTER, MASSACHUSETTS, U. S. A.

R-75

MORGAN
WORCESTER
ENGINEERS AND MANUFACTURERS

CONTINUOUS ROLLING MILLS
ROD · STRIP · SKELP · MERCHANT SHAPES



STEEL
PRODUCTION • PROCESSING • DISTRIBUTION • USE

HIGHLIGHTING THIS ISSUE

■ A MORE important job than indicated by the brief item on page 14 is that assigned by the Steel institute to a committee of metallurgists. They are to "co-operate with government departments in formulating and interpreting specifications for steel products"—technical contact men, diplomats, trained to stand headaches, keeping both industry and government satisfied. Men of the industry know what that means. Government in a crisis must be satisfied, or government might speak harshly to industry . . . Dr. Yntema, U. S. Steel's economist in TNEC hearings, is trying to determine for the defense commission (p. 24) just how much steel its plans will require . . . With production (p. 15) near practical ceiling, it would be interesting to hear from those steel plant engineers who in 1937 said actual capacity is insufficient for normal needs.

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Reconstruction Finance Corp. has loaned $409,532,250 to private industry (p. 13) to build plants for national defense, may increase the amount to a billion dollars this year . . . while a squabble in the house ways and means committee (p. 24) further delays action on the excess profits tax and amortization bill, a measure which might be constructed to help industry finance itself. That this financing is becoming complicated is indicated by a brand new proposal before the defense commission (p. 14), assuring contractors against loss on new construction. . . . Closer economic co-operation with Canada is reported to be contemplated (p. 13) coincident with the military program. U. S. may finance American-owned plant expansions.

How To Finance

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The house passed the bill providing $500,000,000 for the Export-Import bank (p. 23) to loan to South American countries . . . and in view of the presence of a delegation from Brazil seeking to borrow upward of $20,000,000 to build a steel plant in that country, a survey of the industry and resources there (p. 30) is timely . . . United States exports (p. 23) in the first ten months of the war were valued at $3,273,000,000, or 35 per cent more than in the comparable 1938-1939 months . . . Automobile production (p. 28) again advanced. Retail sales of passenger cars and trucks in the first seven months this year were 28 per cent higher than in the corresponding period last year.

Money for S. America

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Further exploration into the structure of chromium plate has been made available by X-ray diffraction technique. J. T. Wilson (p. 38) explains how it is possible to determine the conditions of deposited metal as well as the structure of the base metal. . . . No intermediate welding by plugs or strips is involved in a new method of surface cladding carbon steel base plate with corrosion-resistant steel (p. 44). Costs are low and the amount of welding minimized. . . . Cleaning, enameling and baking over 3000 steel wheel disks per turn is accomplished at an Ohio plant by the use of an automatic unit (p. 48). Complete installation occupies small floor area and requires the services of only one operator who does the loading and unloading.

Structure of Base Metal

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Protection against sabotage and espionage at industrial plants is discussed by J. A. Summers and D. M. Warren (p. 60) and certain basic principles of exterior illumination recommended. . . . new zinc-base alloy (p. 52) developed for aircraft but useful for other industries for stamping sheet metal affords high production speeds and sharp contours. . . . Efficient soaking pit installation in Pittsburgh district is traceable to automatic control (p. 54). . . . Servicing locomotive crankpins (p. 54) accomplished by portable grinder without removal of parts. . . . Arrangement of conveyors and automatic chain transfer tables (p. 56) facilitates handling of sheets as they emerge from large normalizing furnace. Electric controls operate automatically.

Illuminating Mill Yards

Fan scrolls for home-heating hot air fans are easily spun with age to 4-3/4 in. depth from Inland 16 ga. cold rolled deep draw

You, Too, Can Gain by the Splendid Spinning Qualities of Inland Cold Rolled Sheets

MANY leading manufacturers, who spin steel, know that Inland Sheets, processed for the job, help cut production costs, and assure products that have the right appeal to loosen purse strings and push sales upward.

You, too, can take advantage of Inland Sheets specially made to fit your fabrication methods and products. If you are having trouble, or if you are planning production of a new product, call for an Inland Metallurgist. He will visit your plant, and study your problems. Based on long years of experience and study of your needs, he will prepare a sheet specification. Other Inland Metallurgists will follow the processing of the sheets that will be delivered to you.

This Inland way of meeting your requirements assures sheets of the correct temper and exact surface needed for your job. They will be uniform from shipment to shipment, and from year to year. You will find Inland Sheets help lower production costs and make better products.

Why not ask your nearest Inland office to send a metallurgist to study your sheet problems? He can help you as he has helped others—and, there is no obligation.

SHEETS • STRIP • TIN PLATE • BARS • PLATES • FLOOR PLATES • STRUCTURALS • PILING • RAILS • TRACK ACCESSORIES • REINFORCING BARS

INLAND STEEL CO.

Chicago

United States May Assist Canada In Expanding Defense Industries

Economic Co-operation To Follow Defense Agreement.

RFC Lends More Than $400,000,000 for New Plants.

Industrial Contract Plan May Speed Rearmament Orders.

Contractors Assured Against Loss on New Construction.

WASHINGTON

■ CLOSER economic and trade co-operation between the United States and Canada may follow the new defense agreement. Fiscal and trade experts of the two countries are expected to confer after the military experts iron out details of the defense arrangements. There is a good possibility, it is reported here, that more money can go into Canada through the making of loans to American firms who have branch factories in the Dominion.

If this device is declared legal, it was learned officially, then the United States would undertake to help expand Canada's heavy industries and those light industries that lend themselves to continental defense.

Funds could come from the Reconstruction Finance Corp., which now has a bill in congress for $1,500,000,000 more loan authority, of which $500,000,000 is to go to the Export-Import bank. Unless congress restricts these loans to Latin American republics, it is thought that some of the funds could be used to develop Canada's defense industries.

Further, there are plans to gear Canadian and American industry more closely to eliminate unnecessary duplication in defense plants. Experts predicted that the defense commission would begin a study of the possibilities of standardizing tanks, trucks and other defense *materiel* produced on both sides of the border.

Outright loans to the Canadian government, which are illegal anyhow, are not necessary now, officials say.

The Canadian dollar is in a strong position, obviating the need for intercession by America's $2,000,000,000 stabilization fund.

Industrially, Canada is booming this month, having just established in July a new high employment record, in such industries as lumber, paper, chemical, electrical apparatus, steel and canning.

United States export loans to Canada would send to unprecedented figures a now large export trade.

American shipments to Canada for the first ten months of the European war, ended with June, were $496,000,000, which compared with $332,000,000 for the same period last year and $401,000,000 for the same ten months in 1937-38.

Who Will Own Plants When Emergency Is Past?

■ WHEN the present emergency is over the government will be holding a large stake in factories built to supply national defense materials. This will arise from Reconstruction Finance Corp. loans to private industry, from direct investment by the government in munitions plants, and from various contractual agreements between the government and industry.

The Reconstruction Finance Corp. already has made loans for construction of plants to manufacture defense materials amounting to $409,532,250 and some Washington observers believe more than $1,000,000,000 will be advanced before the year ends.

The war department has been authorized to spend $244,000,000 for new plants and already has expended $70,000,000. The navy department has been authorized to spend $250,000,000 in the next three years, but is silent on the amount already expended.

Government ownership of arsenals for the production of munitions solely is traditional. The government's interest in plants which are capable of production of peace-time goods, however, is expected to raise complications when the emergency passes—comparable to the Muscle Shoals problem resulting from World war I.

The various arrangements for the construction of plants to build defense materials illustrate the complications that may arise. For examples:

The government will build and operate a $10,000,000 shell-loading plant in northern Ohio.

The government will build and E. I. du Pont de Nemours & Co. will operate a large powder plant in southern Indiana.

Chrysler Corp. will build and turn over to the government a $20,-

000,000 plant for manufacturing tanks.

Reynolds Metals Co. will build with Reconstruction Finance Corp. loans a $15,800,000 aluminum plant in Alabama.

Glenn L. Martin Co. will build a $24,000,000 aircraft plant with government allowing an accelerated amortization.

British government will build and American industry will operate 15 airplane factories.

And, of course, industry is expanding and building new plants without any special arrangements with the government.

The variety of strings attached to many of the new defense factories is causing speculation as to their eventual ownership.

RFC AUTHORIZES LARGE LOAN TO CURTISS-WRIGHT

Reconstruction Finance Corp. has authorized a loan up to $34,000,000 to the Curtiss-Wright Corp., New York, to acquire plant sites and erect and equip plants for the manufacture of airplanes at Buffalo, Columbus, O., and St. Louis.

RFC also has agreed to lend the Curtiss-Wright Corp. up to $15,000,000 for labor and materials and other necessary expenses.

RFC further agreed to lend to responsible co-operating companies up to $2,160,000 for the purchase of machinery and equipment and other facilities to produce necessary aircraft parts.

These commitments were authorized in contemplation of the Curtiss-Wright Corp. providing additional plant capacity and facilities satisfactory to the war and navy departments and securing orders from the United States government for at least 3791 airplanes, with an option running to the government for a like number of additional planes.

RFC ESTABLISHES TWO NEW DEFENSE SUBSIDIARIES

Reconstruction Finance Corp. is creating two additional corporations, the Defense Plant Corp. and the Defense Supplies Corp., each with a capital of $5,000,000, to aid the defense commission and the war and navy departments.

Defense Plant Corp. is necessary, it is said, in some instances in connection with plants, equipment and machinery, particularly for the manufacture of airplanes, airplane engines and airplane parts.

Defense Supplies Corp. will acquire for storage at strategic points throughout the country a substantial supply of high-test gasoline for the war and navy air services. Fifty million dollars has been allocated by the RFC for the purchase of this gasoline.

"Bankable Contract" in New Procurement Plan

■ A PLAN of co-operation between the government and private industry for construction of new plants and additions needed to speed production of defense materials was announced last week by John D. Biggers, chairman of the taxation and finance committee of the national defense advisory commission.

In substance, the plan offers private manufacturers what might be called a bankable contract. It will permit contractors to finance expansions with their own funds or other private capital.

The plan was prepared by the defense commission and adopted after consultation with the war and navy departments and the comptroller general.

Specifically, Mr. Biggers said, the plan has two purposes: "First, to expedite signing of supplies contracts by assuring the contractor against loss on construction undertaken for military purposes; second, it safeguards the government's interest in such facilities on termination or completion of the contract.

The government's residual interest upon such termination is to be evaluated by the usual board of three appraisers, one appointed by the government, one by the contractor and the third by the senior judge of circuit court of appeals of that circuit wherein the facilities are located."

Under this plan, he said, it is further provided that the government reimburse the contractor, not in additions to the unit price of the product purchased as heretofore, but in five equal annual installments covering the amount of his capital expansion costs as audited by approved certified accountants. Thus, cost of supplies and amortization by the government of construction cost would be separated.

Upon passage of the defense appropriation bill, tax and amortization legislation now being considered by congress, contracts involving the major procurement program can be placed with all the speed consistent with systematic and orderly purchasing.

Adoption of this plan, Mr. Biggers stated, assures that neither the private manufacturers nor the government would assume in advance all the risk, nor subsequently reap as a profit the residual value.

"Should the manufacturer be unable to use the property at the final determined valuation," he said, "the government would then take title, use the property for its own needs, hold it for emergency reserve capacity, sell it, or dismantle and salvage."

It is expected the plan will conserve government funds and stimulate investment of private capital in the defense construction program. At the same time, private manufacturers would provide management and operation and assume all the ordinary risks of the business. Government participation would be limited to actual expansion costs. Final adjustment of fair value would reimburse the government to the extent of the residual value of the property.

Institute Names Metallurgists To Co-operate with Government

■ A SPECIAL committee on government specifications to co-operate with governmental departments and agencies in formulating and interpreting specifications for steel products, has been appointed by the board of directors of the American Iron and Steel institute.

Chairman of the committee is E. C. Smith, chief metallurgist, Republic Steel Corp., Cleveland. Other members are V. H. Lawrence, assistant to vice president, Alan Wood Steel Co., Conshohocken, Pa.; P. E. McKinney, metallurgical engineer, Bethlehem Steel Co., Bethlehem, Pa.; J. S. Richards, manager, metallurgical department, American Steel & Wire Co., Cleveland; and E. C. Wright, chief metallurgist, National Tube Co., Pittsburgh.

The committee was appointed to furnish information which will enable government officials to align their specifications more closely with commercial specifications to expedite production for national defense.

Many government specifications have not been brought up to date to include the industry's best current practice.

Inquiries relative to technical features of government specifications may be addressed to the committee's chairman or to American Iron and Steel institute, 350 Fifth avenue, New York.

District Steel Rates

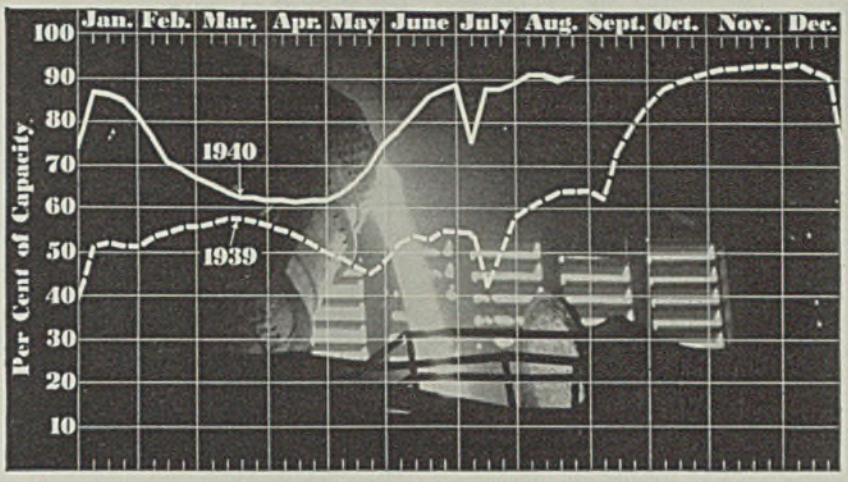
Percentage of Ingot Capacity Engaged In Leading Districts

	Week ended Aug. 24	Change	Same week 1939	Same week 1938
Pittsburgh	83	+ 3	56	33
Chicago	98	+ 0.5	56	37.5
Eastern Pa.	89	None	44	30
Youngstown	83	— 3	55	45
Wheeling	99	None	86	54
Cleveland	86.5	+ 0.5	80	41
Buffalo	90.5	+ 2	60.5	46.5
Birmingham	88	None	75	53
New England	85	+ 5	70	50
Cincinnati	78	None	63	65
St. Louis	77.5	None	57	33
Detroit	92	+ 3	82	60
Average	90.5	+ 0.5	63.5	43.5

Bethlehem Orders 76 Coke Ovens for Buffalo

BUFFALO

■ Bethlehem Steel Co. has contracted with Semet-Solvay Co., New York, for 76 Wilputte coke ovens, with a capacity of 32,000 tons of coke per month. It is understood contract exceeds $3,000,000. This addition to Bethlehem's facilities here will make Buffalo second largest coke-producing area in the country, exceeded only by the Clairton, Pa., district where Carnegie-Illinois Steel Corp.'s ovens are centralized. Buffalo will have 628 ovens, 307 operatel by Bethlehem. The 307 ovens will have annual capacity of 1,679,449 net tons of coke.



PRODUCTION . . . Up

■ STEELWORKS operations last week rose ½-point, to 90½ per cent, the level of the preceding week. Gains were made in six districts, a decline in one and the remaining five were unchangd. A year ago the rate was 63½ per cent; two years ago it was 43½ per cent.

Birmingham, Ala. — Steady at 88 per cent for the fourth consecutive week, to be increased as soon as furnace repairs are completed.

Detroit — Addition of one open hearth caused a gain of 3 points to 92 per cent, 24 of 26 furnaces being active.

St. Louis — Continued at 77½ per cent. Two more open hearths are scheduled to be added soon.

Cincinnati — Unchanged at 78 per cent with backlogs indicating continuation or increase.

New England — Gained 5 points to 85 per cent, the same schedule indicated for this week.

Central eastern seaboard — Held at 89 per cent for the third week, with no indication of change in the near future.

Buffalo — One additional open hearth in production caused the rate to rise 2 points to 90½, with possibility of a further increase this week.

Chicago — Advanced ½-point to 98 per cent, representing the largest tonnage output on record. Four producers exceed 100 per cent of rated capacity.

Wheeling — Held at 99 per cent, some plants operating above theoretical capacity.

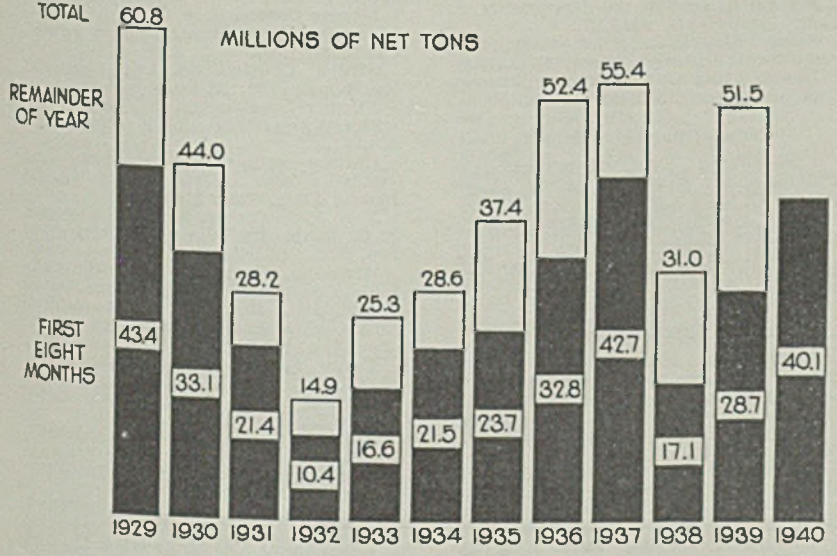
Pittsburgh — Resumption by one plant after vacation raised the rate 3 points to 83 per cent.

Cleveland — Higher production by two interests and repairs by others gave a net increase of ½-point to 86½ per cent, which is expected to be maintained this week.

Youngstown, O. — Production dropped 3 points to 83 per cent, with two bessemers and 65 open hearths in production. Youngstown Steel & Tube Co. took off its bessemer and added one open hearth. Republic Steel Corp. cooled two open hearths for repairs and one because of changes in its mill structure. Gain of 1 or 2 points is indicated for this week.

■ By-products valued at approximately $125,000,000 were produced by the steel industry in 1939 from the manufacture of coke for blast furnace fuel, American Iron and Steel institute reports.

Eight Significant Months in Steel



■ Chart shows the tonnage of steel ingots produced in the full years 1929 to 1939, inclusive; output in the first eight months in each of those years, and in eight months of 1940. The latter includes an estimate of 5,800,000 net tons for August. In 1929 production declined rapidly toward the end of the year. Total ingot output was 60,829,752 tons. To equal this record in 1940 the industry must produce 20,706,558 tons in the remaining four months. At the August rate the figure would be 23,200,000, making the year's total 63,523,000.

Contracts for $56,617,189 Placed By Army and Navy in Week

■ United States war department last week awarded the following contracts:

Ordnance Department Awards

Budd Wheel Co., Detroit, ammunition components, $309,282.68.

Bethlehem Steel Co., Bethlehem, Pa., ammunition components, $26,344.50.

Waterbury Farrel Foundry & Machine Co., Waterbury, Conn., gaging machines, $30,000

Brown & Sharpe Mfg. Co., Providence, R. I., milling machines, $32,879.20.

Westclox division of General Time Instruments Corp., LaSalle, Ill., ammunition components $189,813.70.

Seth Thomas Clocks, division of General Time Instrument Co., Thomaston, Conn., ammunition components, $103,347.

Peco Mfg. Co., Philadelphia, ammunition components, $234,000.

Newton Mfg. Co., Plainville, Conn., ammunition components, $3340.80.

Benrus Watch Co. Inc., New York, ammunition components, $33,000.

Waltham Watch Co., Waltham, Mass., ammunition components, $16,619.30.

N. J. Fulgent Co., Metuchen, N. J., ammunition components, $53,280.

S. C. Hollister, New York, ammunition components, $37,368.

Bohn Aluminum & Brass Corp., Detroit, ammunition components, $48,845.50.

Mack Molding Co. Inc., Wayne, N. J., ammunition components, $1400.

International Flare Signal division, Tippecanoe City, O., ammunition components, $106,400.

Harrisburg Steel Corp., Harrisburg, Pa., ammunition components, $265,000.

Charles J. Dickgiesser & Co., Derby, Conn., platform assemblies, $36,852.60.

Eastman Kodak Co., Rochester, N. Y., fire control equipment, $18,438.44.

Weaver Mfg. Co., Springfield, Ill., trucks, $41,720.

Cleveland Tractor Co., Cleveland, light tractors, $39,672.

Lindberg Engineering Co., Chicago, electric furnaces, $2163.

Lloyd and Arms, Philadelphia, tapering presses, $15,130.

Greenerd Arbor Press Co., Nashua, N. H., arbor presses, $1096.

J. G. Blount Co., Everett, Mass., speed lathes, $1850.

Buss Machine Works, Holland, Mich., surfacers, $2357.50.

Cincinnati Milling Machine & Cincinnati Grinders Inc., Cincinnati, milling machines and tools, $51,312.92.

Warner & Swasey Co., Cleveland, turret lathes, $21,365.50.

Carrier Corp., New York, drying systems, $6458.

National Acme Co., New York, chucking machines, $9831.35.

L. F. Seyferts Sons Inc., Philadelphia, ripsaws, $1016.50.

Noble & Westbrook Mfg. Co., East Hartford, Conn., marking machines, $7467.

Pratt & Whitney Co., Philadelphia, gages, $5598.50.

Modern Tool & Die Co., Philadelphia, gages, $18,225.

Vinco Tool Co., Detroit, gages, $14,300.

Barwood & Co., Philadelphia, gages, $18,500.

Wiedemann Machine Co., Philadelphia, gages, $11,210.50.

Greenfield Tap & Die Corp., Greenfield, Mass., gages, $31,500.

Taft-Peirce Mfg. Co., Woonsocket, R. I., gages, $5700.

Precise Tool & Mfg. Co., Farmington, Mich., gages, $8518.50.

Bayar Schultz Corp., Chicago, gages, $10,547.85.

Peterson Bros. Tool Co., Milford, Mass., gages, $6645.

International Tool and Engineering Co., Chicago, gages, $2490.89.

Langlois Gage Co., Detroit, gages, $2633.

Henry Disston & Sons Inc., Philadelphia, armor plate, $89,586.87.

Transue & Williams Steel Forging Corp., Alliance, O., end connections, $221,373.

Columbus Bolt Works Co., Columbus, O., wedges, $32,480.

Union Spring & Mfg. Co., New Kensington, Pa., springs, $6086.75.

H. F. Allen Co. Inc., New York, shapers, hydraulic, $4990.

Hendey Machine Co., Torrington, Conn., shapers, high speed, $6660.

Hendey Machine Co., Torrington, Conn., lathes, $14,105.

Henry Prentiss & Co., Boston, radial drills, $76,134.

Arter Grinding Machine Co., Worcester, Mass., surface grinders, $3310.

Oliver Machinery Co., Grand Rapids, Mich., hand planers, jointers, $2183.60.

Cincinnati Milling Mach. & Cincinnati Grinders Inc., Cincinnati, grinding machines, $17,003.15.

Comtor Co., Waltham, Mass., gages, $1763.10.

Hannifin Mfg. Co., Chicago, artillery materiel, $244,061.35.

Neff, Kohlbusch & Bissell Inc., Chicago, shears, $13,811.

Marshall & Hushhart Mach. Co., Chicago, boring machines, $204,329.

Cincinnati Milling Machine & Cincinnati Grinders Inc., Cincinnati, grinders, universal tool and cutter, $7604.

E. L. Essley Machinery Co., Chicago, honing machines, $17,822.28.

Bullard Co., Bridgeport, Conn., boring mills, $136,614.18.

Peterson Bros. Tool Co., Milford, Mass., gages, $1967.

Signal Corps Awards

Federal Telegraph Co., Newark, N. J., radio components, $112,161.13.

General Electric Co., Schenectady, N. Y., radio transmitting equipment, $452,222.50.

David White Co., Milwaukee, theodolites and tripods, $39,650.

Corps of Engineers Awards

Consolidated Steel Warehouse Co., Philadelphia, structural steel beams, $22,008.77.

Wood Roadmixer Co., Cheyenne, Wyo., roadmixers, $9435.

Natural Asphalt Corp. of Va., Richmond, Va., distributor for road oils, $4355.70.

Chemical Warfare Service Awards

Singer Sewing Machine Co., New York, sewing machine tables, $6699.20.

Lloyd & Arms Inc., Philadelphia, drilling machines, $10,340.

American Tool Works Co., Cincinnati, lathes, $4749.50.

Lodge & Shipley Machine Tool Co., Cincinnati, lathes, $3662.

Larson Tool & Stamping Co., Attleboro, Mass., outlet valve guards, $4000.

Harrington & King Perforating Co., New York, perforated tinplate, $3360.

Cincinnati Milling & Cincinnati Grinders Inc., Cincinnati, tool, cutter grinders, $1827.50.

Kwick Mix Concrete Mixer Co., Port Wash., Wis., concrete mixers, $1514.

Clark & Freeland Inc., Baltimore, booms, $5422.

Caterpillar Tractor Co., Peoria, Ill., tractors, $5206.65.

Continental Electric Co. Inc., Baltimore, motors, $3904.

Young Engine Corp., Canton, O., generator sets, $2810.

Doehler Die Casting Co., Pottstown, Pa., elbow nozzles, $1825.

Peter A. Frasse & Co. Inc., Philadelphia, steel tubing, $1151.85.

E. W. Bliss Co., Brooklyn, N. Y., punch presses, $2625

Larson Tool & Stamping Co., Attleboro, Mass., angletubes, $6600.

Eastern Steel Tank Corp., Brooklyn, N. Y., storage tanks, $1320.

J. T. Roberts & Bro. Inc., Baltimore, plumbing supplies, $1481.81.

Baltimore Electric Supply Co. Inc., Baltimore, steel conduit, $1050.

Virginia Rubatex Corp., Bedford, Va., outlet valves, $3000.

Air Corps Awards

Allis-Chalmers Mfg. Co., Milwaukee, laboratory equipment, $78,239.

McCauley Steel Propeller Co., Dayton, O., propeller blade assemblies, $82,350.

Electrenic Laboratories Inc., Indianapolis, vibrator inverters, $50,500.

United Aircraft Corp., Hamilton Standard Propellers division, East Hartford, Conn., propeller and control assemblies, $145,952.80.

F. E. Mallery & Co. Inc., Indianapolis, bomb shackle releases, $340,020.

Walter Kidde & Co. Inc., New York, fire extinguishers, $105,435.

Square D Co., Elmhurst, N. Y., altimeter assemblies, $108,735.

Curtiss Wright Corp., Curtiss Propeller division, Clifton, N. J., propeller assemblies, $128,685.

Fairchild Aircraft division, Fairchild Engine and Airplane Corp., Hagerstown, Md., 100 training airplanes, $1,038,300.

Consolidated Aircraft Corp., San Diego, Calif., 56 four-engine bombing airplanes, $14,861,342.66.

Beech Aircraft Corp., Wichita, Kans., 67 training airplanes, $3,410,746.92.

Stearman Aircraft division, Boeing Airplane Co., Wichita, Kans., 337 training airplanes, $2,041,947.97.

North American Aviation Inc., Inglewood, Calif., 700 airplanes, $11,335,631.11.

Quartermaster Corps Awards

Sam Bergerson, Tacoma, Wash., temporary buildings for recruit reception center at Fort Lewis, Wash., $104,500.

Meyers Construction Co., San Francisco, temporary housing, Stockton Airport, Calif., $364,756.

Struck Construction Co., Louisville, Ky., housing, $1,159,000.

Fincher Construction Co., Dallas, Tex., Officers' quarters, Kelly Field, Tex., $24,277.

Christy and Baskett, San Antonio, Tex., barracks and recreation buildings at Brooks Field, Tex., $140,600.

J. A. Jones Construction Co., Charlotte, N. C., temporary housing at Camp Jackson, S. C., $2,193,000.

Whitman, Requardt & Smith; Cummins Construction Corp.; Riggs Distler & Co. Inc., Baltimore, plant facilities Edgewood arsenal and Aberdeen proving ground, $5,898,391.

Fargo Motor Corp., Detroit, trucks, $814,628.

General Motors Corp., Detroit, trucks, $34,106.39.

Autocar Sales & Services, Ardmore, Pa., trucks, $21,963.

International Motor Truck Corp., Washington, trucks, $66,478.

Crosley Corp., Cincinnati, passenger car, $495.

Protectoseal Co. of America, Chicago, field range accessories, $13,999.86.

United States navy department, bureau of supplies and accounts, last week awarded the following contracts:

Carnegie-Illinois Steel Corp., Washington, steel, $11,038.84.

Jones and Laughlin Steel Corp., Pitts-

burgh, steel, $21,834.16.

Republic Steel Corp., Cleveland, steel, $6164.58.

Crucible Steel Co. of America, New York, steel, $65,950.03.

Patterson Foundry & Machine Co., East Liverpool, O., mill machines, $6410.

Vulcan Iron Works, Wilkes-Barre, Pa., locomotive, diesel-electric, $19,207.

Tidewater Supply Co. Inc., Norfolk, Va., machine, boring, drilling, milling, $19,806.

National Screw & Mfg. Co., Cleveland, cotter pins, $5032.34.

Shepherd Chemical Co., Cincinnati, manganese linoleate, $17,650.

McGean Chemical Co., Cleveland, manganese linoleate, $9000.

Benjamin Goldman, New York, hinges, $6984.08.

E. F. Hodgson Co., Boston, prefabricated portable buildings, $5172.

Aero Spark Plug Co. Inc., New York, sparkplugs, $7500.

Robert Jacob Inc., City Island, N. Y., six harbor tugs, $417,690.

Levingston Shipbuilding Co., Orange, Tex., 24 small boats, $118,824.

Luders Marine Construction Co., Stamford, Conn., five harbor tugs, $397,000.

Pennsylvania Forge Corp., Philadelphia, steel forgings, $88,730.

Struthers Wells-Titusville Corp., Titusville, Pa., steel forgings, $87,520.

G. E. Prentice Mfg. Co., New Britain, Conn., automatic fasteners, $9600.

W. P. Fuller & Co., San Francisco, white lead, $30,384.

Eagle-Picher Sales Co., Cincinnati, red lead, $30,292.75.

John A. Roebling's Sons Co., Trenton, N. J., wire cloth, $23,024.80.

Electric Storage Battery Co., Washington, storage batteries, $8352.

Lodge & Shipley Machine Tool Co., Cincinnati, precision lathes, $13,741.

United States Gauge Co., New York, check valves, $15,300.

Joseph T. Ryerson & Son Inc., Chicago, plain steel angles, $15,105.15.

American Brass Co., Waterbury, Conn., manganese bronze, $32,157.75.

Collyer Insulated Wire Co., Pawtucket, R. I., electric cable, $281,857.45.

Wheeling Corrugating Co., Wheeling, W. Va., iron or steel buckets, $22,616.01.

Reeves Steel & Mfg. Co., Dover, O., iron or steel buckets, $12,649.88.

Walworth Co., New York, valves and cocks, $21,116.20.

Westinghouse Electric & Mfg. Co., Washington, arc welding sets, $44,261.

Dorsey C. Anderson, Philadelphia, arc welding sets, $5750.

Gisholt Machine Co., Madison, Wis., turret lathes, $7196.45.

Warner & Swasey Co., Cleveland, turret lathes, $45,945.

Reed-Prentice Corp., Worcester, Mass., lathes, $15,220.

Henry Prentiss & Co. Inc., New York, turret lathes, $35,133.

Atlas Tack Corp., Fairhaven, Mass., cut copper nails, $5341.

Ransome Concrete Machinery Co., Dunellen, N. J., welding positioners, $13,515.

American Brass Co., Waterbury, Conn., copper-nickel-alloy tubing, $9111.09.

Pioneer Instrument, division of Bendix Aviation Corp., Bendix, N. J., aircraft compasses, $154,250.

Brown & Sharpe Mfg. Co., Providence, R. I., milling machines, $16,868.

Okonite Co., Passaic, N. J., special cable, $13,921.

Buda Co., Washington, engines, spare parts, $150,402.24.

Landis Tool Co., Waynesboro, Pa., universal grinder, $18,500.

S. G. Taylor Chain Co., Hammond, Ind., coil chain, $7622.86.

James H. Rhodes & Co., Long Island City, N. Y., steel wool, $10,015.20.

American Steel Wool Mfg. Co. Inc., Long Island, N. Y., steel wool, $6755.12.

Lloyd & Arms Inc., Philadelphia, honing machine, $16,273.

American Cyanamid & Chemical Corp., New York, resinate, manganese, precipi-

(Please turn to Page 18)

Purchases Under Walsh-Healey Act

(In week ended August 10)

Iron and Steel Products

	Commodity	Amount
Bethlehem Steel Co., Bethlehem, Pa.	Rivets	$37,078.16
Cleveland File Co., Cleveland	Files, rasps	34,498.52
Delaware Tool Steel Corp., Wilmington, Del.	Chisels	13,610.95
Treadwell Construction Co., Midland, Pa.	Trash racks	10,133.00
Henry Vogt Machine Co., Louisville, Ky.	Machined shell	185,155.85
Bendix Aviation Corp., Bendix, N. J.	On-carriage parts	62,831.00
Illinois Range Co., Chicago	Tables	†12,090.00
Pacific Wire Rope Co., Los Angeles	Steel strand	11,761.30
Koppers Co., Bartlett Hayward division, Baltimore	Gate tracks	52,000.00
General Metals Corp., Oakland, Calif.	Castings	†46,197.06
Allis-Chalmers Mfg. Co., Milwaukee	Housing forgings	82,720.00
Struthers Wells-Titusville Corp., Titusville, Pa.	Forgings	204,004.73
National Forge & Ordnance Co., Irvine, Pa.	Gun forgings	504,309.75
Erie Forge Co., Erie, Pa.	Housing forgings	534,574.40
Camillus Cutlery Co., New York	Jack-knives	17,374.00
Capitol Steel Corp. of New York, New York	Reinforcement bars	32,125.19
Edgewater Steel Co., Pittsburgh	Breech ring forgings	39,307.31
National Pneumatic Co. Inc., Rahway, N. J.	Mortars, mounts	133,231.50
A. Finkl & Sons Co., Chicago	Forgings	65,000.00
Kilby Steel Co. Inc., Anniston, Ala.	Mosquito-bar rods	98,790.00
Moline Iron Works, Moline, Ill.	Buckles	54,747.00
American Safety Razor Corp., Brooklyn, N. Y.	Safety razors	28,476.00
Superior Sheet Steel Co., Philadelphia	Terne plate	*29,798.40
American Chain & Cable Co. Inc., Wilkesbarre, Pa.	Steel cable	12,202.00
Daniel Morris Co. Inc., New York	Pipe, sinks	21,746.75
Bethlehem Steel Co., Bethlehem, Pa.	Bridge, forgings	122,140.00
Sterling Steel Casting Co., East St. Louis, Ill.	Steel castings	16,971.50
Norris Stamping & Mfg. Co., Los Angeles	Cartridge cases	1,673,700.00
Crucible Steel Co. of America, New York	Shot	113,236.41
Motor Wheel Corp., Lansing, Mich.	Shell	67,108.20
Logan Electric Specialty Mfg. Co., Chicago	Rod clamps	22,035.00
Apollo Steel Co., Apollo, Pa.	Roofing	25,693.59
Emory Construction Co. Inc., Knoxville, Tenn.	Operation bldg.	57,700.00
American Bridge Co., Cincinnati	Structural steel	44,880.00
Budd Wheel Co., Detroit	Shells	1,737,000.00

Nonferrous Metals and Alloys

Maydwell & Hartzell Inc., Portland, Oreg.	Conductor	$17,635.10
Noland Co. Inc., Norfolk, Va.	Pig lead	17,438.00
International Nickel Co. Inc., New York	Nickel	16,080.00
Albert & J. M. Anderson Mfg. Co., Boston	Cartridge cases	116,040.00
Revere Copper & Brass Inc., Baltimore	Hard bands	*20,290.50
Harvard Lock Co. of New York Inc., New York	Weight	11,500.00
Reynolds Metals Co. Inc., Washington	Aluminum-alloy	13,978.50
Fairmont Aluminum Co., Fairmont, W. Va.	Al. alloy sheet	46,411.48
Aluminum Co. of America, Washington	Aluminum product	526,464.15
Aluminum Co. of America, Washington	Aluminum alloy	†600,000.00
Nathan Trotter & Co., Philadelphia	Pig lead	18,165.00
Magna Mfg. Co. Inc., Haskell, N. J.	Magnesium	54,720.00

Machinery and Other Equipment

General Machinery & Supply Co., San Francisco	Hoists, chain	$13,701.00
Austin-Hastings Co. Inc., Cambridge, Mass.	Shapers	12,561.80
Warner & Swasey Co., Cleveland	Turret lathes	21,943.50
DeVilbiss Co., Toledo, O.	Air compressors	19,440.96
Judson-Pacific Co., San Francisco	Traveling cranes	64,920.00
Diehl Mfg. Co., Elizabethport, N. J.	Ventilating fans	16,355.00
Perine Machinery & Supply Co., Seattle	Boring mill	22,957.00
Rockford Machine Tool Co., Rockford, Ill.	Planers	49,088.00
Lloyd & Arms Inc., Philadelphia	Radial drills	17,230.00
Waterbury Farrel Fdry. & Mach. Co., Waterbury, Conn.	Cartridge mach.	11,500.00
Brown & Sharpe Mfg. Co., Providence, R. I.	Milling machines	38,433.04
National Broach & Machine Co., Detroit	Milling machines	102,560.00
Kingsbury Machine Tool Corp., Keene, N. H.	Drilling machines	24,133.00
Lapointe Machine Tool Corp., Hudson, Mass.	Sharpening mach.	10,066.00
Henry Prentiss & Co. Inc., New York	Machine tools	55,537.00
Cinc. Milling Machine & Cinc. Grinders Inc., Cincinnati	Milling machines	34,200.00
Jones & Lamson Machine Co., Springfield, Vt.	Thread grinder	14,519.50
DeWalt Products Corp., Lancaster, Pa.	Woodworking mach.	13,402.50
Worthington Pump & Machinery Corp., Washington	Pumps	229,061.00
Iowa Mfg. Co., Cedar Rapids, Iowa	Crusher units	29,507.50
Cleveland Tractor Co., Cleveland	Tractors	76,462.25
Lloyd & Arms Inc., Philadelphia	Lathes	20,185.00
National Acme Co., Cleveland	Screw machines	56,524.05
Dorr Co. Inc., New York	Classifiers	17,860.00
Henry & Wright Mfg. Co., Hartford, Conn.	Assembly machines	17,637.00
Kearney & Trecker Corp., Milwaukee	Threading machine	37,450.00
Continental Motors Corp., Muskegon, Mich.	Engines	1,442,275.00
National Twist Drill & Tool Co., Detroit	Twist drills	71,053.26
Charles F. Elmes Engineering Works, Chicago	Accumulator	12,585.00
Pacific Marine Supply Co., Seattle	Pumps	33,285.15
Cargocaire Engineering Corp., New York	Dehumidifying units	35,848.98
Builders Iron Foundry, Providence, R. I.	Rifling machine	14,500.00
Universal Stamping Machine Co., Stamford, Conn.	Canceling machines	27,300.00
Ingersoll-Rand Co., Knoxville, Tenn.	Core drills	29,400.00
Roy Engineering & Iron Works Inc., Brooklyn, N. Y.	Disinfector	10,350.00
Grand Total		$10,386,682.80

*Estimated. †Purchases to be made when and if needed.

Government Contracts

(*Concluded from Page* 17)

tated, $9562.50.

Lidgerwood Mfg. Co., Elizabeth, N. J., anchor windlass, $64,753.

American Steel & Wire Co. of New Jersey, Washington, electric cable, $67,745.40.

Boston Insulated Wire & Cable Co., Boston, electric cable, $11,578.80.

Circle Wire & Cable Corp., Maspeth, L. I., N. Y., electric cable, $93,939.36.

Crescent Ins. Wire & Cable Co., Trenton, N. J., electric cable, $45,402.27.

Copeland Refrigeration Corp., Sidney, O., portable electric refrigerators, $8223.20.

Liquidometer Corp., Long Island City N. Y., tank gages, $10,888.

Graybar Electric Co. Inc., Washington, electric horns, $21,600.

Landis Tool Co., Waynesboro, Pa., universal grinder, $7115.88.

C. Hager & Sons Hinge Mfg. Co., St. Louis, hinges, $36,137.60.

Brown & Sharpe of New York, Inc., Providence, R. I., grinding machine, $5557.

Allegheny Ludlum Steel Corp., Watervliet, N. Y., tool steel, $10,960.73.

Vickers Inc., Waterbury Tool division, Waterbury, Conn., hydraulic pumps $39,193.25.

Carnegie-Illinois Steel Corp., Washington, steel forgings, $213,775.

Clark Cooper Co., Philadelphia, contact makers, $5569.20.

Vulcan Iron Works, Wilkes-Barre, Pa., diesel-electric locomotive, $42,714.

United States Gauge Co., New York, hydrostatic, gages, $18,500.

Tidewater Supply Co. Inc., Norfolk, Va., turret lathes, $17,071.60.

Brown & Sharpe Mfg. Co., Providence, R. I., milling machines, $25,866.

Consolidated Aircraft Corp., San Diego, Calif., airplane parts, $34,112.57.

Bendix Products division, Bendix Aviation Corp., South Bend, Ind., aircraft wheel and brake assemblies, $37,580.

Wm. Sellers & Co. Inc., Philadelphia, double housing planer, $32,405.

Cincinnati Milling Machine & Cincinnati Grinders Inc., Cincinnati, milling machines, $23,024.

Ordnance bureau, United States navy department, awarded these contracts:

Miehle Printing Press & Mfg. Co., Chicago, $4,100,000.

Blaw-Knox Co., Union Steel Castings division, Pittsburgh, $1,242,000.

Baldwin Locomotive Works, Philadelphia, $3,134,000.

United States navy department also awarded these contracts:

Improvement of power plant at naval training station, Great Lakes, Ill., to Gibbs & Hill Inc., Pennnsylvania station, New York, $450,000.

Elevator for extension to building at navy yard, Washington, by bureau of yards and docks to General Elevator Co. Inc., Baltimore, $18,595.

Elevated steel tank at Norfolk navy yard, Portsmouth, Va., to Chicago Bridge & Iron Co., Philadelphia, $12,940.

Strict About Walsh-Healey Law: "Mechanics" of U. S. Purchasing

WASHINGTON

■ THE GOVERNMENT is insisting on strict enforcement of the Walsh-Healey act and the wage rates and other conditions specified by the department of labor on contracts for national defense, as on all other contracts requiring the expenditure of $10,000 or more. This applies to negotiated contracts as well as those awarded in accordance with routine bidding.

A number of defense bills passed during the present session of congress state specifically that negotiated contracts are not to be exempt from the act—so insistent have been its sponsors for its enforcement.

The public contracts board which has jurisdiction over its administration reported that in the fiscal year July 1, 1938 to June 30, 1939, 40 per cent by value of all government contracts came under the act. This is the latest available estimate. The size of recent contracts for defense purposes suggests the percentage now may be well above 40 per cent.

With federal expenditures reaching up toward a rate of nearly a billion dollars a month, including defense, relief and other items, keen interest is manifest in general purchasing procedure.

There are really three major purchasing agencies in the government, supplemented by many minor ones. The major departments include war, navy and the procurement division of the treasury, the latter purchasing all of the commodities used by the various government departments in the District of Columbia. In addition to these agencies, all of the government departments buy more or less for their branches in various parts of the country.

Procurement division buys nothing for delivery outside the nation's capitol, except when it is specifically requested to do so, and buys nothing under $100.

Up to this time no one officer is charged with the buying for all departments. Purchasing is going along very much as it has in the past, except individual offices have been enlarged as to personnel and equipment.

Permits Negotiated Contracts

Government always has been committed to buying on specification from sealed bids. However, congress recently enacted legislation which permits purchasing by negotiated contracts, something which was not done since the World war.

Donald M. Nelson is co-ordinator of procurement attached to the national defense advisory commission. His job is purely one of co-ordination and he has nothing to do with the actual purchasing of commodities other than to advise when called upon to do so. Mr. Nelson believes government purchasing should proceed in its accustomed channels unless new experience shows otherwise.

Certain restrictions surround government purchases. For instance, contracts are awarded to regular dealers who are bona fide merchants, which assures compliance with the contract terms. Contracts are made based on specifications which set the standards of quality and are binding on all bidders. Government requirements also call for publicity at the opening of bids and when contracts are awarded. Bids are received on the basis of specifications. The bids are sealed when received by the government and are only opened when the hour arrives and then publicly when they are read and recorded. Bids received after the hour set by the government are returned unopened to the bidder, unless they have been delayed through no fault of the bidder.

Few industrial firms object to competitive bidding, but some find fault with that feature of it which permits quotations to be known publicly. Some purchasing experts insist lowest prices seldom are obtained when prices thus are "exposed." Under the law, all other things being equal, lowest bidder receives the award.

While there is a great deal of variation in procurement procedure pe-

Bethlehem Guarantees 62½-Cent Pay Minimum

■ Bethlehem Steel Co., Bethlehem, Pa., will guarantee employes an average minimum wage of 62½ cents an hour, effective Sept. 1. The action complies with requirements of the Walsh-Healey act and will apply to workers employed on commercial as well as government work.

Company officials said the action was taken to make its facilities fully available for the anticipated heavy demand for steel products for the national defense program.

Republic Steel Corp., Cleveland, announced similar action, which will affect only a few workers at its Buffalo plant.

Executives of the eastern independent companies were studying the wage situation following Bethlehem's announcement. Some indicated their companies could not raise their base rates to 62½ cents and that they would refrain from bidding on government work.

culiar to the individual purchasing agencies, just as there is a wide diversification of requirements and uses of commodities, certain features are employed by all government departments and establishments which are more or less identical.

Basic methods of procurement employed commonly in the government include purchasing of definite quantities for definite delivery, and indefinite quantity purchasing for indefinite delivery. It is estimated that about 75 per cent of the requirements of the government are met by purchases on bids which invite definite quotations for specific quantities to be delivered at designated places and times.

Navy department has always been one of the largest procurement agencies. Under the procedure of the navy department the solicitor of that department purchases and charters vessels; the bureau of yards and docks has charge of all that relates to the navy's public works, while the bureau of ordnance purchases arms, ammunitions, and gun forgings. The bureau of supplies and accounts is charged with the procurement of all other supplies for the navy.

Various divisions of the war department, including the quartermaster general, have charge of procurement for the army. The quartermaster general is charged with the procurement of all supplies of standard manufacture and common to two or more branches. Chief of the air corps of the army has charge of maintenance and operation and purchase of all aircraft, aircraft engines and appliances.

Specifications Set Standards

From time to time, government specifications for various products are changed and when this is done industry has co-operated with the government in preparing and revising the specifications. These standards are being constantly revised to bring them into agreement with changed conditions and modern practices. Because of the widespread use of government specifications and the influence on the commercial world, it is of great importance that the manufacturer of a standard commodity co-operate with the government in the preparation and revision of these specifications and this is done.

In an effort to unify various instructions to bidders previously issued by the several departments and establishments of the government, a set of standard instructions to bidders has been drawn up which is applicable to all purchasing organizations of the government. As these instructions are not incorporated in proposals, or contracts and are not generally furnished to prospective bidders, unless specifically requested, it is well that the firm interested in selling to the government be thoroughly familiar with these general conditions.

Government specifications are simply a statement of standard. The government departments in the procurement of commodities for official use invariably make use of written specifications which have been prepared in advance of call for bids. These specifications state the standard of quality required for the particular purpose and outline the methods of inspection and tests to determine compliance.

Opening Bids

Procedure incident to opening and recording bids varies in minor details with the several procurement agencies. However, the general routine is the same. At the hour fixed for formal opening, all bids are withdrawn from the locked receptacles by the purchasing official, or his authorized assistants. These receptacles remain open, while the bids pertaining to the schedule to be opened at that time are sorted out, and the bids pertaining to future openings are returned to the bid boxes which are again locked. The envelopes pertaining to the current opening are then opened under the supervision of authorized persons and the contents of each envelope examined. Proposals accompanied by letters, riders, or samples are stamped with the identifying data and the enclosures are fastened to the original and each copy of the bid. An examination is then made of each proposal to determine formality.

After bids have been read and recorded publicly, they are separated into schedules and all bids relating to a particular schedule number placed together.

Procedure in making awards varies with the several purchasing agencies. In general, however, it is the duty of the awarding officials to determine for each item or class the lowest responsible bidder and to make awards accordingly.

The several departments and establishments of the government maintain inspection facilities with qualified personnel to check deliveries with the requirements of the specifications in contracts. In addition the facilities of the bureau of standards, the bureau of chemistry and soils and other government laboratories for testing are available to any government agency.

■ Steel mills' safety record last year ranked with the best ever achieved by the industry. It was almost 50 per cent better than the average in 29 other representative industries, according to the American Iron and Steel institute, New York.

Died:

■ STANLEY P. ROCKWELL, noted metallurgist and inventor of the Rockwell hardness tester, Aug. 11, as result of an explosion on his yacht at Middletown, Conn. He was associated with New Departure, division of General Motors Sales Corp., Bristol, Conn., from 1912 to 1916, starting as a chemist in the metallurgical laboratory. With the establishment of the Elmwood plant, he was placed in charge of heat treating there April, 1913, until October, 1915, when he returned to Bristol. During the World war he was a captain in the ordnance department and at the close of the war joined Whitney Chain Co. He then organized New England Heat Treating Service Co., which later became the Stanley P. Rockwell Co., Hartford, Conn. In 1939 Mr. Rockwell was presented the Sauveur medal by the American Society for Metals for his achievements in metallurgy and in the development of the Rockwell hardness tester.

♦

Lynn J. Hammond, 76, chairman of the board, Strong, Carlisle & Hammond Co., Cleveland, Aug. 22, at his summer home in Chagrin Falls, O. His death came just eight days after that of Tyler W. Carlisle, president of the company, (STEEL, Aug. 19, p. 41). Born in Bedford, O., Mr. Hammond began his career with the former Cleveland Rolling Mill Co. in 1879 as a clerk. He remained there until April, 1887, when he joined the newly formed Strong, Carlisle & Turney Co., predecessor of Strong, Carlisle & Hammond. He served successively as bookkeeper, general office worker, sales manager, general manager, and president. He had been chairman about ten years. Mr. Hammond was also treasurer, Clark Mfg. Co., and Hammond Mfg. Co.

♦

Harry C. Ballard, 71, former general superintendent, Van Camp Hardware & Iron Co., Indianapolis, recently, in that city.

♦

Charles W. Matheson, 63, prominent in the automobile industry since 1913, in an automobile accident near Broadhead, Wis., Aug. 12. He was first associated with Dodge Bros. as New York district representative, and in 1920 became general sales manager. He then became associated with Oakland Motor Co. and Chrysler Corp. in various executive capacities. In 1932 he was made vice president and general sales manager of Graham-Paige Motors Corp., and was associated with that corporation at the time of his death.

MEN of INDUSTRY

■ DONALD G. MILLAR, president, Greenfield Tap & Die Corp., Greenfield, Mass., has been elected chairman of the board. He succeeds Col. Frederick H. Payne, who has resigned to devote his time to national defense work. Colonel Payne is chief of the Hartford ordnance district. He was assistant secretary of war 1930-33.

Howard M. Hubbard, the past ten years associated with Harris-Seybold-Potter Co., Cleveland, as secretary-treasurer and a director, succeeds Mr. Millar as president, effective Sept. 1. Mr. Hubbard was also managing director of the company's Seybold division and of its Canadian marketing division.

Francis A. Smith, vice president and general manager, and associated with the Greenfield corporation over 20 years, has resigned.

Mr. Millar has announced that the personnel change in no way will affect the operating and merchandising policies of the company.

♦

C. T. Cutting has resigned as general sales manager, Lamson Co. Inc., Syracuse, N. Y. He has been succeeded by R. I. Hicks.

♦

Christian Wilson Jr., sales representative, formerly with the New York office of Yarnall-Waring Co., Philadelphia, is now located in the Pittsburgh territory, with headquarters in the Wabash building.

♦

Edward L. Ryerson Jr., chairman of the board, Inland Steel Co., Chicago, and Mrs. Ryerson recently left for South America. They took a Pan American clipper ship from Miami and flew down the west coast, making stops at Cristobal, Guayaquil, Lima and Santiago. After

Elmer E. Legge

Howard M. Hubbard

spending some time in Buenos Aires and Rio de Janeiro, they will continue their journey up the east coast, returning to Miami early in September.

♦

J. A. Butler has been appointed comptroller, Falk Corp., Milwaukee. He has been associated with the company four years, previous to which he spent 15 years in public accounting practice.

♦

Carroll F. Brown has been named superintendent of industrial relations, Duquesne works, Carnegie-Illinois Steel Corp. He joined the industrial relations department at Farrell works in 1936, and since November, 1939, has been assistant to vice president in charge of industrial relations.

♦

Fred J. Ryan, who resigned as president of R-S Products Corp., Philadelphia, over a year ago, has formed Fred J. Ryan Co., 5244 Germantown avenue, Philadelphia, to render general furnace and industrial metallurgical service in the eastern area.

♦

Elmer E. Legge, district director of research for American Steel & Wire Co., and Leonard F. Peskin, engineer in charge of transmission, for American Steel & Wire Co. at Worcester, Mass., have been transferred to Cleveland. Mr. Legge is now assistant director of research, and Mr. Peskin, technical engineer.

Mr. Legge became associated with American Steel & Wire at Worcester in 1920 as an efficiency expert, shortly thereafter being appointed spring engineer. In 1928 he became head of the company's physical laboratories, and since January, 1939, had been district director of research. Mr. Peskin joined the Wire company in July, 1934, as a research laboratorian at Worcester, and in March, 1937, was placed in charge of the vibration department. A year later he was named research engineer and in November of the same year became engineer in charge of transmission.

♦

Edwin J. Thomas has been elected president, Goodyear Tire & Rubber Co., Akron, O., effective Sept. 1. He will succeed P. W. Litchfield, who will continue as chairman. Mr. Thomas joined the company 24 years ago, becoming executive vice president in 1938.

♦

Joseph E. Krug, formerly inspector and assistant manager, Berrien Springs branch plant of Clark Equipment Co., Buchanan, Mich., has been named factory manager. L. A. Bixby, the past six years manager of the transmission department, has been promoted to manager of automotive sales for the entire company.

♦

Don H. Potter has been elected secretary-treasurer, E. C. Atkins & Co., Indianapolis. He succeeds the late Fred C. Gardner. Mr. Potter has been associated with the Atkins company over 25 years. Major M. Poole, heretofore purchasing agent, has been elected to the board of directors.

♦

H. L. Nicholson, associated with Westinghouse Air Brake Co., Pittsburgh, 37 years, the past 21 years serving as works manager, has been promoted to director of factory operations. W. C. Landis, after 25 years service with the company and assistant works manager since 1930, succeeds Mr. Nicholson as works manager. A. B. Fox, who joined the company 35 years ago

Leonard F. Peskin

and has served as superintendent of the traction brake division since 1920, has been named assistant works manager, succeeding Mr. Landis.

♦

Robert G. Allen, for many years sales manager, Walworth Co., Greensburg, Pa., has been elected president and a director, Duff-Norton Mfg. Co., Pittsburgh, maker of lifting jacks.

♦

L. E. MacFadyen, associated with Taylor-Wharton Iron & Steel Co., High Bridge, N. J., since 1922, has been appointed superintendent of the High Bridge plant. He served many years in the sales engineering divisions at both Scranton and Philadelphia, and the past three years had been affiliated with the manufacturing division at High Bridge.

♦

R. Volbrecht has been appointed to the New York merchandising sales staff of Cutler-Hammer Inc., Milwaukee. He joined Cutler-Ham-

R. Volbrecht

mer upon graduation from the University of Wisconsin and spent a number of years at the company's main plant in Milwaukee in the engineering and merchandising sales departments. Recently he was with the motor control sales division, Philadelphia district office.

♦

Charles L. Larson, the past 24 years head of the rail bond department of American Steel & Wire Co., South works, Worcester, Mass., will retire Sept. 21, age 66. He has been associated with the company 40 years. Mr. Larson will be succeeded by Harry F. Clarke, now foreman of the rail bond department.

♦

Derick S. Hartshorn Jr., the past seven years associated as chemist with Westinghouse Electric & Mfg. Co., East Springfield, Mass., has become technical director of Enthone Co., New Haven, Conn. He will

Robert G. Allen

supervise development of new products and also do sales engineering work. Mr. Hartshorn is also director, New England Control Laboratories, facilities of which are now being merged with the Enthone Co.

♦

R. M. Pierce has been appointed New England district manager, automobile division, Crosley Corp., Cincinnati. He formerly was regional manager for American Bantam Car Co., with headquarters in Boston.

Dave Neill has been named factory service manager of Crosley's automobile division. Heretofore he had been associated with Studebaker Corp. in charge of sales for Kansas and Missouri.

♦

David H. O'Brien has been appointed assistant general sales manager, Graybar Electric Co. Inc., New York. He will assume charge of telephone and research products sales departments in addition to his former responsibilities as general merchandising manager.

♦

Elwood G. Stewart, since November, 1939, acting traffic manager of Lukens Steel Co., Coatesville, Pa., has been appointed traffic manager. He joined the traffic department of

Elwood G. Stewart

Lukens in June, 1931, and four years later was promoted to assistant traffic manager.

♦

Robert H. Perry, formerly with Brown Instrument Co., Philadelphia, is now sales engineer for Ajax Electric Co. Inc., Philadelphia, with headquarters in Buffalo.

♦

Harold R. LeBlond is president of the newly organized LeBlond Engineering Co., Norwood, O. Other officers are: Walter De Witt, vice-president; Frank Stenger, secretary, and Edward C. Schultz, treasurer.

135 Salaried Workers Per Thousand Wage Earners

■ For every thousand wage earners working in steel plants during 1939, there were about 135 salaried employes, according to the American Iron and Steel institute. Of that number, 55 were in administrative sales and general offices and 80 were in the plants as superintendents, foremen and other salaried workers.

During the year the number of wage earners employed in the steel industry averaged 425,100, the administrative, selling and general offices employed an average of 23,400, while 34,000 other salaried men were employed in operating divisions.

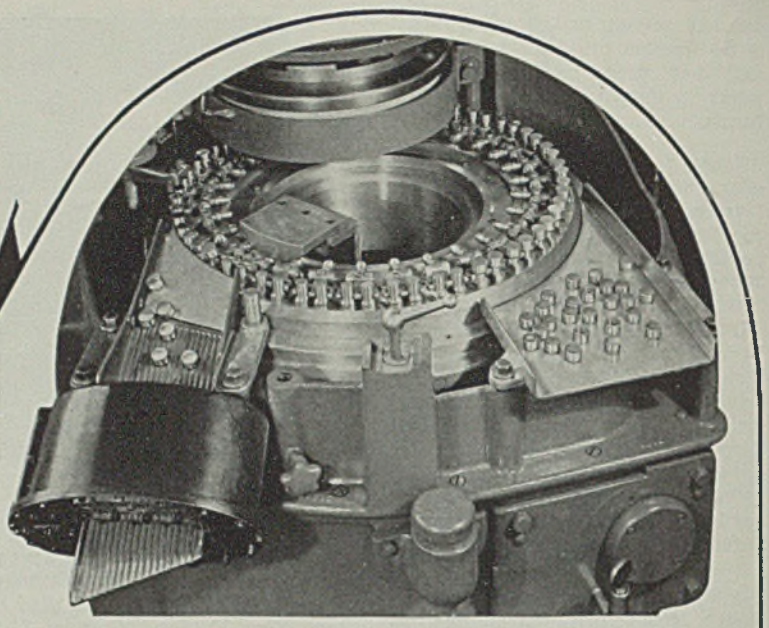
The ratio of salaried employes to wage earners in steel has increased nearly 30 per cent in recent years, largely because of two factors. One has been the expansion of accounting departments to handle the larger number of reports and questionnaires required by federal and state bureaus.

The other factor in the increase has been the transfer of many members of the supervisory forces from an hourly basis of pay to a salary basis. During the depth of the depression in 1932, economy requirements caused various groups of supervisory employes to be placed on an hourly basis, and in recent years these have been put back on salaries.

Leases Coal Mine

■ Republic Steel Corp., Cleveland, has leased the Clyde mines from W. J. Rainey Inc., Pittsburgh, for a period of 25 years. Lease covers about 5000 acres in Washington and Greene counties, south of Brownsville, Pa. Mines will be managed by E. B. Winning, manager of Republic's northern coal mines.

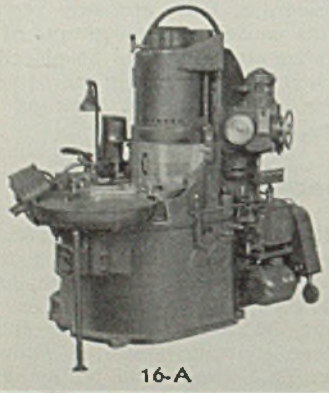
The Clyde mines produce about 6000 tons of coal daily with shipments by rail and water, and employ around 1600 men.



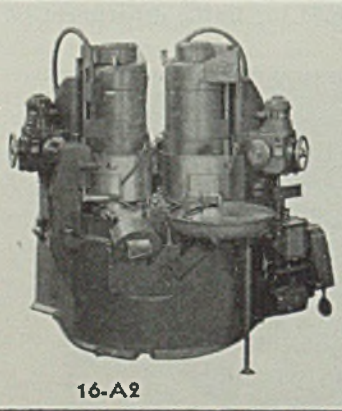
Continuous PROFITS

FROM CONTINUOUS OPERATIONS ON BLANCHARD AUTOMATIC SURFACE GRINDING MACHINES

The Blanchard line of Automatic Surface Grinders has established an enviable reputation for earning profits on flat surface work produced in quantity. The No. 16-A is equipped with one wheel, and performs the following operations automatically — chucking, grinding, sizing, measuring, unloading, demagnetizing, and cleaning the chuck face. The No. 16-A2 retains all the automatic features of the 16-A, but is furnished with two wheel heads — one for roughing and one for finishing. This allows the use of a different grade wheel on each head which results in greater accuracy and production, and finer finish. The No. 16-A Dual is actually two 16-A machines in one. Work is loaded and unloaded by two operators, one on each side of the machine. This saves floor space and fixture cost. Send Blanchard full information on your flat surface work — full information on how to cut your costs will be sent gratis.



16-A



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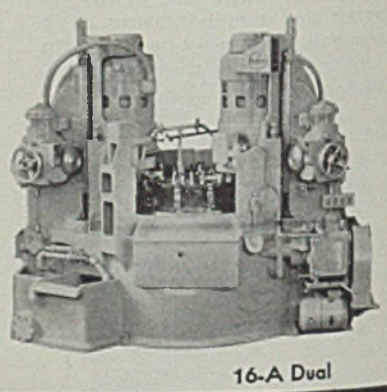


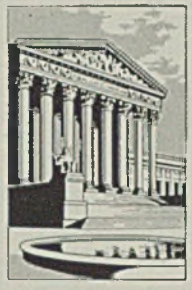
16-A Dual

BLANCHARD

THE BLANCHARD MACHINE COMPANY

64 STATE STREET, CAMBRIDGE, MASSACHUSETTS, U. S. A.

Windows of WASHINGTON



By L. M. LAMM
Washington Editor, STEEL

House Passes Bill Authorizing Loans to South America.

Yntema Estimating Defense Program's Steel Needs.

Exports Increased 35 Per Cent Since War Started.

Committee Dispute Further Delays Tax Measure.

WASHINGTON

■ AFTER two days' discussion last week, the house passed a bill providing $500,000,000 for the Export-Import bank to make loans to South American countries. The bill also contained a provision increasing Reconstruction Finance Corp.'s borrowing power by $1,000,000,000. This would be used by RFC for loans to domestic industries for plant expansion to meet defense orders. A similar bill has been reported in the senate.

Section 1 of the bill is in the form of an amendment to the provisions of section 5d of the Reconstruction Finance Corp. act, as amended, which authorized the corporation to give financial aid in connection with the national defense program.

Section 1 authorizes the Export-Import Bank of Washington to make loans to any governments, their central banks, or other acceptable banking institutions, or when guaranteed by any such government, central bank, or other banking institution, to the political subdivisions, agencies, or nationals of any such government, to assist in the development of the resources, the stabilizing of economies, and the orderly marketing of the products of the countries of the Western Hemisphere.

Such loans may be made only upon written request by the federal loan administrator with approval of the President and subject to such limitations and conditions as either may prescribe. The bill provides for a revolving fund of $500,000,000 to be made available to the bank from funds supplied by the RFC either through loans to the bank or through purchases of its preferred stock. Authority conferred by the bill may be exercised without regard to existing statutory restrictions on loans by the bank.

Section 2 provides for an increase in the note issue power of the RFC by $1,500,000,000, so that funds will be available for its participation in the national defense program.

Section 3 extends the bank's life as an agency of the United States, coextensive with succession of the RFC, increases its lending authority from $200,000,000 to $700,000,000, and eliminates existing limitations on aggregate amount of loans which can be made to any one country.

Tabulating Steel Requirements

Dr. Theodore Yntema and his corps of experts who are trying to estimate steel needs for the national defense program are reported to be progressing satisfactorily.

When the work will be completed is not known, but national defense advisory commission members believe that if these figures are available by Oct. 1 Dr. Yntema and his assistants will have done a good job.

Question has arisen as to whether it will be possible for the statisticians to tabulate the amount of steel to be needed for extension of plants and other facilities which are specifically for national defense work. As a typical example, defense commissioners would like to know how much steel will be needed by Chrysler Corp. in erecting its proposed new $20,000,000 tank plant.

So far, Dr. Yntema and those working with him are simply trying to tabulate the steel tonnage which will be needed by the army and navy for strictly defense purposes.

Exports Above 1937 Level

Exports from the United States increased sharply during the first ten months of the war despite the fact that the market for American goods has been closed or restricted in a growing number of European countries, according to the commerce department.

Shipments from September, 1939, to June, 1940, were valued at $3,273,000,000, or 35 per cent more than in the corresponding period of 1938-39. They were 16 per cent above the comparable 1937-38 total when export trade was at a relatively high level.

Principal commodities which have shown large increases in absolute values as well as in relative importance in the export trade during recent months are aircraft, steel mill products, and metalworking machinery. There was a marked expansion in shipment of these commodities during the first six months of the war as compared with the year before and the gains were maintained and extended during the succeeding four months. In June exports of firearms and ammunition reached significant size for the first time in the war period.

Shipments to Germany and the German-occupied areas in central Europe have been virtually nil since the outbreak of the war, and those

to the Northern countries and to Belgium and the Netherlands have fallen to small or negligible proportions since April and May, respectively. Another large area was practically closed to American exports during June as a consequence of the entrance of Italy into the war, the collapse of France, and the extension of the British blockade.

Decline in exports to a progressively larger German-controlled area was offset through June by an increase in shipments to the remaining European neutrals and to France, with the result that total exports to all European countries in June were higher in value than in the same month of 1939. For the first ten months of the war, exports to the Continent (excluding the British Isles but including the Mediterranean countries of Asia and Africa) advanced to $866,000,000, an increase of 39 per cent over their value in the corresponding period of 1938-39.

ADVERTISEMENTS EXPLAIN INDUSTRY'S DEFENSE ROLE

First of a series of full-page educational advertisements explaining industry's relationship to the national defense program was launched here last week by the American Chain & Cable Co., New York, in the *Washington Times-Herald*.

"The American Chain & Cable Co. extends its vast resources, its full complement of men and equipment, its technical skill and its exhaustive production experience to the government and to the people of the United States in their battle for preparedness," the advertisement stated in part.

Others in the series will be sponsored by leading steel companies, airlines, motor car manufacturers, railroads and other industrial organizations.

NETHERLANDS INDIES IMPOSE ADDITIONAL TIN EXPORT DUTY

Tin ore and tin exports from Netherlands Indies are subect to a 5 per cent ad valorem war export duty, in keeping with a new ordnance, according to the consulate general at Batavia, Java. This duty is in addition to already existing duties and taxes on tin exports.

SPLIT-BIDS NOT APPLICABLE TO IRON, STEEL PRODUCTS

New policy adopted by the army quartermaster general for making purchases will not apply to iron and steel and their products, it was reported last week.

This new policy, fully set forth in STEEL, Aug. 19, p. 25, applies only to commodities purchased by the army quartermaster general. Iron and steel and their products are not purchased through his office.

Don M. Nelson, co-ordinator of defense purchases, explained that while iron and steel are not included in this order it does not mean they will not be included later. He stated that if the new method is found advantageous the ordnance department, which purchases steel, will be able to follow the system.

SENATE COMMITTEE APPROVES NAVY APPROPRIATION BILL

Senate appropriations committee last week approved the $5,000,000,000 appropriation bill for a two-ocean navy. A bill authorizing construction was passed by congress some weeks ago. This appropriation bill has already passed the house.

Appropriations committee increased by $45,017,320 the direct appropriations and contract authority approved by the house in the $5,008,000,000 supplemental defense measure. Of this amount $34,507,320 was in cash outlays, including an item of $7,000,000 for armor equipment and ammunition for new aircraft. An additional $15,000,000 in contract authority was made available for plane armament.

DEFINE DEFENSE HOUSING CO-ORDINATOR'S FUNCTIONS

General functions of the defense housing co-ordinator, to which position Charles F. Palmer has been appointed, were outlined by the national defense advisory commission as follows:

1. The defense housing co-ordinator will be attached to the secretary's office and will exercise his authority under the general direction of the commission.

2. He will be responsible for planning the defense housing program and for its prosecution through private industry and appropriate federal agencies concerned with planning, construction, and financing of housing. It will be his responsibility to channelize and co-ordinate activities of federal agencies involved.

Among other matters, he will be expected to anticipate housing needs that may arise as a result of defense activities and to take whatever action necessary to avoid any housing shortages. He will determine, after survey, whether construction of necessary additional housing facilities should be undertaken by private enterprise or by public agencies.

3. Any information that will enable him to forecast the exact housing needs and make necessary preparations to see these needs supplied should be made available to him.

4. Where costs of housing construction or of remodeling to meet needs of the defense program are to be borne in whole or in part by a federal agency, need for such housing and standards of construction shall be certified by the commissioner responsible for labor and employment and by the commissioner responsible for consumer protection.

5. In working out plans for construction, arrangement shall be made with the commissioner on employment and labor toward insuring satisfactory terms of employment and availability of an adequate labor supply.

6. He will, as part of his duties, review legislation relating to or affecting defense housing activities with a view to determining direction of the program within limits of existing legislation and will recommend to the commission such additional legislation as may be required to insure an adequate program.

REQUISITION POWER GIVEN PRESIDENT IN HOUSE BILL

Authorizing the President to requisition certain materials for national defense, H.R. 10339 was passed by the house last week after little discussion.

It delegates to the President authority to requisition for United States' use any military equipment or munitions or component part thereof, or machinery, tools or supplies necessary for manufacture, service or operation thereof.

Specific reference is made to machine tools, materials or supplies destined for foreign governments for which export license has not been obtained, and which are needed in our program for national defense.

The bill does not apply to munitions, machine tools, materials or supplies which are not for export. A large part of the machine tools, materials or supplies included in the bill's provisions are now on the various wharves.

EXCESS PROFITS BILL SAID TO CALL FOR 25-40% LEVY

Tax experts of the house last week ran into unexpected trouble with the excess profits bill. House leaders had expected to discuss it on the floor last week, hoping to complete action. This was impossible, however, due to difference of opinion in the ways and means committee which prepared the bill.

Some members of the committee preparing the bill charged the measure discriminates in favor of big business. Story which has leaked out is that the levy on profits will be from 25 to 40 per cent.

In addition to the excess profits tax, the bill also repeals the Vinson-Trammell act, limiting defense contract profits, and permits manufacturers of defense items to amortize cost of new plants over a five-year period for tax purposes. The new bill is said to be 96 pages long.

Scrap Inventories Gain Moderately in Second Quarter

■ DOMESTIC stocks of iron and steel scrap at consumers' and suppliers' plants and in transit at the end of June were approximately 6,750,000 gross tons, a slight increase over the 6,669,000 reported on March 31, according to the bureau of mines.

Included in the total were 2,298,000 tons on hand at and in transit to suppliers' yards and an estimated 4,452,000 tons of purchased and home scrap on hand at and in transit to consumers' plants. This compares with 2,380,000 tons and 4,289,000 tons, respectively, on March 31.

Inventories held by the larger suppliers reporting in both canvasses decreased 3 per cent, while railroad stocks also decreased 3 per cent. Estimates of consumers' stocks are based on the assumption companies reporting their inventories held 95 per cent of the total.

Scrap consumption in June amounted to 3,845,000 tons, indicating that known stocks held by consumers and suppliers at the end of the second quarter were equivalent to an 8-weeks' supply, compared with a 10-weeks' supply as of March 31 at the rate of consumption of 2,906,000 tons in that month.

Although the amount of scrap used in June increased, the bureau notes supplies were equivalent to requirements for two months, about the same as shown in earlier surveys. In western Pennsylvania reported stocks of purchased and home scrap were equivalent to at least a 5-weeks' supply at the estimated June consumption rate. The district comprising Ohio and West Virginia had a 6-weeks' supply, and other principal scrap-consuming districts had from a 4 to 9-weeks' supply available. Inventories, at the June consumption rate, were equivalent to 32 weeks' requirements in New England; 10 weeks' in New York; 160 weeks' in the Southwest; and 20 weeks' in the West.

The accompanying summary of scrap and pig iron stocks was compiled from returns from 758 consumers who accounted for 95 per cent of the total scrap used in 1939; from 66 large railroads; and from 180 selected manufacturing plants. Also included are figures for 930 dealers and 845 auto wreckers who accounted for 90 per cent of the tonnage reported by these sources on Dec. 31, 1939.

Estimated consumers' stocks June 30 included 2,751,000 gross tons of purchased scrap, 1,701,000 tons of home scrap and 3,593,000 tons of pig iron. On March 31, such stocks included 2,555,000 tons of purchased scrap, 1,734,000 tons of home scrap and 3,407,000 tons of pig iron. The June figures represent an increase of 8 per cent in purchased scrap, a decrease of 2 per cent in home scrap, and an increase of 5 per cent in pig iron.

No estimate of stocks held by nonconsumers was possible as the coverage of the survey, insofar as suppliers are concerned, is unknown. The data, however, include virtually complete returns from the larger suppliers.

Stocks reported by dealers, auto wreckers, railroads and manufacturers declined from 2,380,000 tons on March 31 to 2,298,000 tons on June 30, a decrease of 3 per cent. Although suppliers' stocks declined in the United States as a whole, increases of 1, 24 and 29 per cent were noted in western Pennsylvania, eastern Ohio and Alabama, respectively. In Illinois, Indiana and Maryland, suppliers' stocks declined 3, 2 and 27 per cent, respectively.

Scrap and Pig Iron Stocks June 30

Gross Tons

	Suppliers' stocks				
	Scrap iron dealers	Automobile wreckers	Railroads	Manufacturers	Total*
Prepared scrap:					
No. 1 heavy-melting steel	330,378	11,868	74,786	4,558	421,590
No. 2 heavy-melting steel	389,782	39,152	3,185	1,994	434,113
Bundles	132,466	1,393	76	3,643	137,578
Cupola grades	212,278	4,715	14,518	2,042	233,553
All other	264,223	13,200	153,092	10,418	440,933
Total	1,329,127	70,328	245,657	22,655	1,667,767
Unprepared or partially prepared scrap	366,313	90,711	82,260	7,737	547,021
Scrap in transit to yards or for export and at docks	76,295	2,730	4,497	3	83,525
Total scrap	1,771,735	163,769	332,414	30,395	2,298,313

*As reported. Actual total of suppliers' stocks cannot be estimated due to unknown coverage.

	Consumers' stocks		
	At plants	In transit to plants	Total*
Purchased scrap:			
No. 1 heavy-melting steel	766,280	49,336	815,616
No. 2 heavy-melting steel	453,610	41,212	494,822
Bundles	153,492	9,482	162,974
Cupola grades	438,326	23,520	461,846
All other	636,347	39,781	676,128
Total	2,448,055	163,331	2,611,386
Home scrap:			
Open-hearth grades	1,276,625	176	1,276,801
All other	338,235	274	338,509
Total	1,614,860	450	1,615,310
Total scrap	4,062,915	163,781	4,226,696
Pig iron	3,436,987	37,719	3,474,706

*As reported. Total consumers' stocks estimated as follows: purchased scrap 2,751,000 tons, home scrap 1,701,000 tons, total scrap 4,452,000 tons, and pig iron 3,593,000 tons.

35,900,000 TONS SCRAP USED, EXPORTED IN 1939

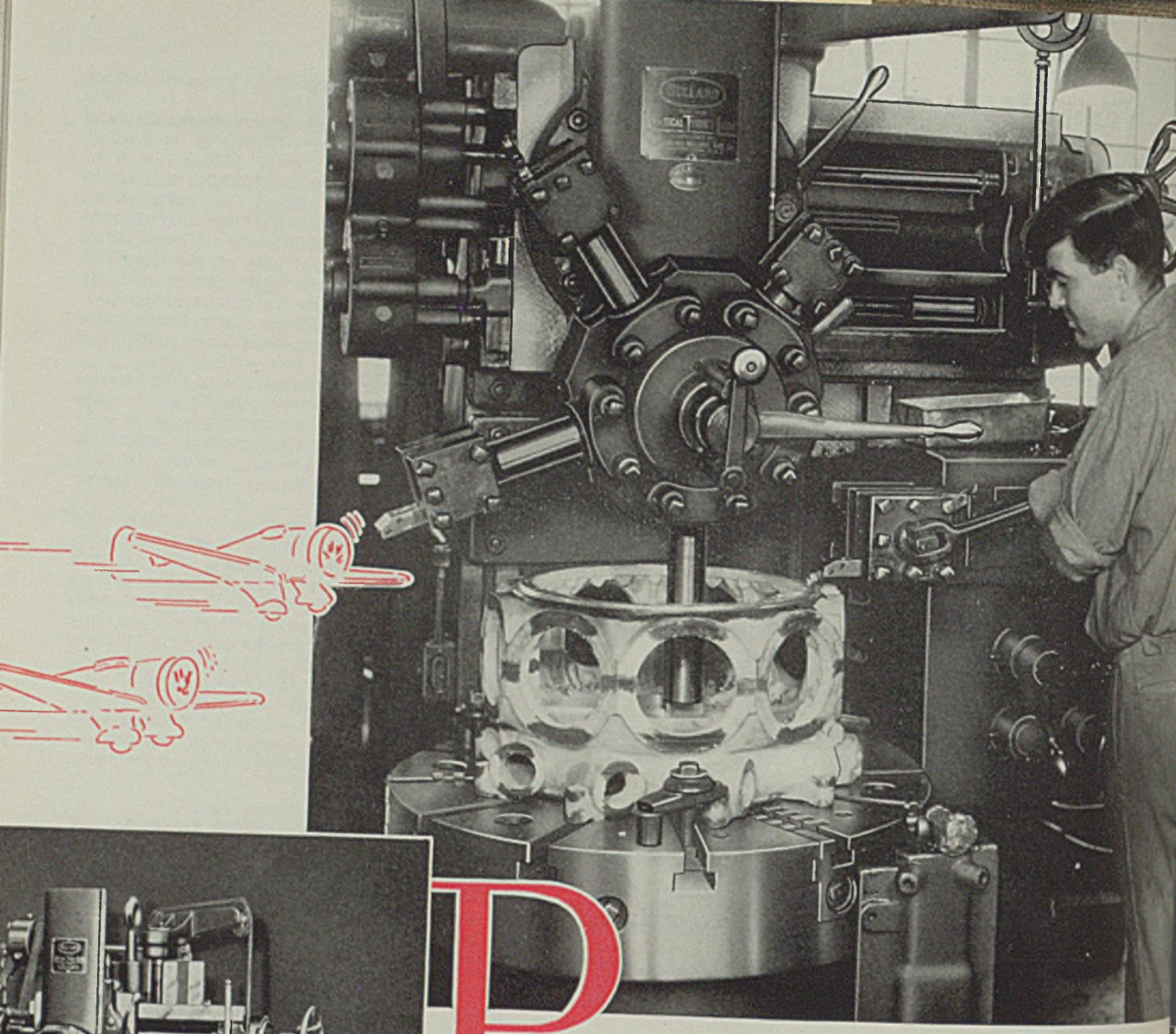
Domestic scrap consumption in 1939 amounted to 32,400,000 gross tons, according to the Institute of Scrap Iron & Steel Inc.'s Yearbook. Exports were 3,500,000 tons, making a grand total of 35,900,000 tons.

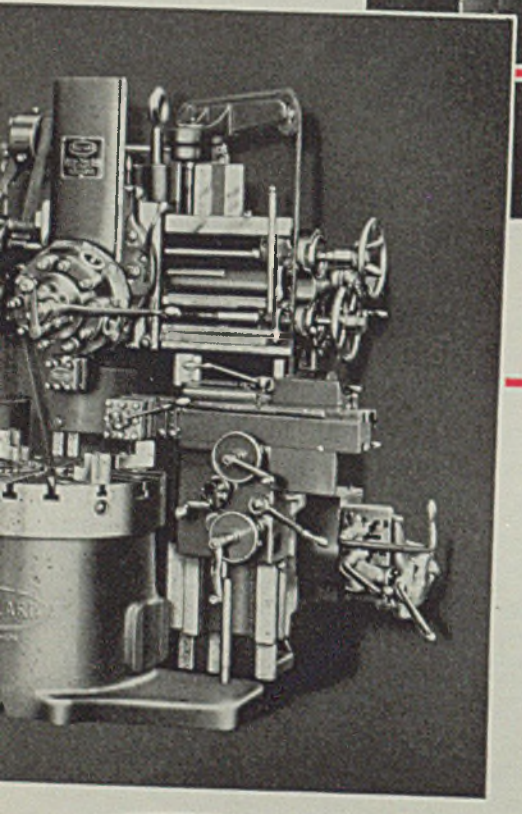
Next to "home scrap"—produced by the steel and foundry industry in manufacturing operations and immediately remelted—the greatest source of scrap resulted from obsolescence. "Home scrap," which never reaches the open market, is estimated at 18,400,000 tons. From the dismantling of old equipment, the replacing of rails, and ordinary wear and tear, the railroads marketed 3,500,000 tons.

In the process of converting finished steel into automobiles, refrigerators, ships, railroad equipment, and other consumer goods, the production of scrap in metalworking plants is estimated at 3,250,000 tons. Junking of old automobiles yielded about 2,675,000 tons. Public utilities sold about 300,000 tons and ship breakers 75,000 tons.

Approximately 7,700,000 tons originated in miscellaneous collections, both in country and city. Total value of all scrap in 1939 was slightly over $600,000,000.

■ Iron ore mine employes in the United States in 1939 numbered 19,769, an increase of 1763 over the total in 1938.





Precision with Profit

Aeroplane engine manufacturers are among the largest users of Bullard Vertical Turret Lathes. Why? Because Bullard sturdiness, rigidity and precision manufacture give sustained accuracy. Because ease of chucking, simple tool change-over and simultaneous cutting by main and side heads gives speed in operation.

Let a Bullard Engineer show you how Vertical Turret Lathes and Mult-Au-Matics are being used in this most exacting aviation industry—and how they can make money for any manufacturer with work within their capacity.

BULLARD

THE BULLARD COMPANY

· BRIDGEPORT, CONNECTICUT ·

Mirrors of MOTORDOM

By A. H. ALLEN
Detroit Editor, STEEL

More Team Work Than Rugged Individualism.

Ford May Build Pratt & Whitney Aircraft Engines.

Introducing New Car Ideas Quietly.

Seven-Months 1940 Sales 28 Per Cent Over 1939.

One Way of Getting Quick Delivery.

DETROIT

■ PASSING of Walter P. Chrysler, one of motordom's few remaining great, marks the end of a hectic era in motor car manufacture. Only 65, he had been inactive in Chrysler Corp. affairs for two years but his spirit and genius permeated most all doings of the corporation. At the recent opening of new engineering laboratories a large portrait of Mr. Chrysler beamed down on the assembled crowd and at the conclusion of a stirring speech Fred M. Zeder's voice choked in paying tribute to "the boss."

Chrysler, like W. C. Durant, C. W. Nash and other executives of their day, played with millions as though they were poker chips, but withal they played a winning game. Perhaps the most significant reason for Chrysler's greatness was his uncanny ability to associate himself and surround himself with able personalities who could work miracles in manufacturing and financing. Zeder, Hutchinson, Skelton, Breer, Kettering, Bassett, Keller, Sloan, Downey—their names are a blue-book of automotive experts.

It is a remarkable combination of heredity, environment, ambition and good fortune which produces men like Chrysler who, starting from less than the scratch, reach the pinnacle in less than four decades. Undeniably the pace is terrific, cutting men down in their prime, but doubtless such shining personalities pack several ordinary lifetimes of experience into their brief careers.

Today teamwork is the watchword. No individual pulls at all the strings which build and sell automobiles. Personalities are subdued in the interests of co-operative effort. Thus it is with any great industry as it comes of age. The great names in steel, the dominant figure in railroading, nearly have passed into the limbo of near-forgotten industrial adventuring and pioneering.

1941 Models Delayed

Labor pains attending the birth of some of the 1941 models have been the most severe ever experienced by some of the materials and parts suppliers here. While Buick, Pontiac, Packard, Olds, Hudson and Studebaker have made a fair start on new model assemblies, there have been innumerable delays in the Chrysler program. New Plymouths were shown to newspaper men last Thursday, but it is understood some parts on these cars were virtually handbuilt. Difficulties have been encountered in certain assembly operations, keeping early output below the anticipated level. Dodge, DeSoto and Chrysler have yet to make a good start, and as late as last week suppliers were being besieged for parts which had been redesigned or otherwise altered from original specifications. Naturally volume production on such parts must be several weeks away.

Explanations for this last-minute confusion are varied. One supposition is that a late decision was reached to proceed with a number of design innovations which originally had been tabled for 1942 models. Reason for this might be centered around fears that the requirements of the national defense program will interfere with any large-scale program of model change in 1942 and that it may be wise to make these changes at once to avoid later conflict.

Another interpretation is that Dodge, DeSoto and Chrysler will have two lines of cars for 1941, a conventional line and a completely restyled line as well. Present delays are said to be in connection with these new models which may not come off assembly lines in any quantity until the latter part of next month, if then.

In any event, the Plymouth line for 1941 seems to be set with three series of models, a standard, deluxe and special deluxe. Already the flags are flying on billboards proclaiming that "Plymouth's the One for '41." Details of the line have not yet been released, but it can be stated that no revolutionary changes have been effected. Sales effort will be concentrated on luxury of appointments and beauty of finishes. Mechanical changes are minor in character.

Buick sloganeers say, "Give 'er the Gun for '41" which is peculiarly appropriate considering what the new compound carburetion does for acceleration qualities.

This being the season for rhythmical slogans, we offer the following without charge to Nash—"You'll do Tricks with Our Little Six." George W. Mason, Nash president, speaking to press representatives last week at the Nash preview, said he expects auto sales in the next year to be at least 10 per cent ahead of the 1940 model year, and that he feels Nash sales will be doubled as a result of the introduction of the low-priced Ambassador 600, which incidentally is not a small car in any sense of the word, having overall length of 194 inches and seats about 5 feet in width. The com-

pany has increased newspaper advertising appropriations 58 per cent over last year and will feature the new car in 1500 papers throughout the country.

Last week saw acceleration of preliminary activity in connection with the Rolls-Royce engine contract which Packard still has not signed, and the Hispano-Suiza aircraft engine which Ford is proposing to manufacture. The latter is a V-type liquid cooled engine of about 1200 horsepower which the company at one time was going to build in its French plant. Now it appears the engine will be built here, although how many and how soon are questions still to be answered.

Mr. Ford also released the startling information the other day that his company would build 4000 Pratt & Whitney aircraft engines. To a person familiar in only a general way with this engine and the detailed machining and finishing operations involved in its construction it is difficult to perceive how Ford can launch such a program in the near future. Plant space may be available in plenitude, but what of the vast amount of equipment, tooling, gages and the like to produce these complicated power plants?

Ford's Quiet Introductions

Although manufacturing operations are proceeding on the Ford 6-cylinder engine, now being assembled at somewhere near the rate of 10 per day, those close to the Ford sales organization are expressing doubt that it will be introduced this fall at the automobile show. It is suggested Ford may introduce this new car and engine quietly without public fanfare to determine its popularity; then later on will make official announcement if the car lives up to advance expectations.

Ford lately has been pursuing a policy of introducing new ideas quietly and without any merchandising furore, apparently preferring to "prove" innovations with the driving public before promoting them. Cylinder liners are one example of this technique. Another is a new line of trucks using the 4-cylinder tractor engine as the power plant.

Change has been made in the Ford torsion bar stabilizer which is claimed to improve greatly its smooth functioning and to overcome complaints of noise and rough operation. Chief difference in the new setup is the substitution of an oilless bushing of the type used in spring shackles for the former rubber and fabric bushing.

■ AN AMUSING story is told here by a supplier who furnishes material to most of the large automobile companies. Recently a pack of releases came through from one company, each release being rubber stamped in large red letters—DEFENSE PROGRAM, PRIORITY REQUESTED. This company is producing a number of units for the government, but the fact that every release was so stamped seemed peculiar to the supplier so he contacted the purchasing department which relayed the information that only those releases for parts going into defense units were supposed to bear the stamp, but that occasionally "a man's arm slipped."

Automobile Production

Passenger Cars and Trucks—United States and Canada

By Department of Commerce

	1938	1939	1940
Jan.	226,952	356,692	449,492
Feb.	202,597	317,520	422,225
March	238,447	389,495	440,232
April	237,929	354,266	452,433
May	210,174	313,248	412,492
June	189,402	324,253	362,566
6 mos.	1,305,501	2,055,744	2,539,440
July	150,450	218,494	.....
Aug.	96,946	103,343	.....
Sept.	89,623	192,678	.....
Oct.	215,286	324,688	.....
Nov.	390,405	368,541	.....
Dec.	406,960	469,120	.....
Year	2,655,171	3,732,608	.....

Estimated by Ward's Reports

Week ended:	1940	1939†
July 27	34,822	40,595
Aug. 3	17,373	28,250
Aug. 10	11,635	26,125
Aug. 17	20,475	15,105
Aug. 24	23,732	18,365

†Comparable week.

This is a good way to speed up deliveries if you can get away with it.

Packard preview has been deferred until the middle of September, but new cars are rolling from assembly lines now. They feature improved exteriors, with a large number of two-tone paint jobs scheduled, also refined treatment of upholstery and interior trim. General lines are retained, some of the chrome trim on the hood sides has been removed. A new development in clutches will be introduced later in the season.

Some changes are in store for the Hydra-Matic transmission, available on Olds models for the 1941 season. Later in the year it is understood the transmission will be available on Cadillac and LaSalle models.

Plymouth is pioneering a new method of automobile assembly this year. Instead of assembling fenders and hoods into units on merry-go-round conveyor systems, then transferring them to chassis on the assembly line, and finally lowering the finished body shell onto the chassis, all sheet metal parts are assembled into a complete unit—front and rear fenders, hood, body, etc.—which is spotted by overhead conveyor above the proper chassis and then lowered into position. The change called for a fairly complete rearrangement of conveyor systems and carriers in the Plymouth plant and is regarded as an important step forward by Plymouth officials.

Said to have been recommended to war department officials as a new Blitzkrieg method is the proposal to fabricate bodies of armor plate for installation on American Bantam cars, then load a fleet of these small-size vehicles into a large bomber. The armored bantams could be disgorged in enemy territory and with a crew of two in each could spread havoc in a hurry, with fewer fatalities than might be the case with infantry or motorcycle squads.

Fluid drive to be featured on the new Dodge model will be used in conjunction with a transmission giving three forward speeds and reverse gear, according to official announcement, dispelling rumors that a two-speed transmission had been developed for use with this hydraulic coupling unit.

Retail sales of passenger cars and trucks in July totaled 357,939, an increase of 27.5 per cent over last year, according to the Automobile Manufacturers association. This brought seven-month sales totals to 2,524,841, or 28 per cent ahead of the same period in 1939. July was the twenty-first consecutive month in which sales exceeded the same month of the previous year.

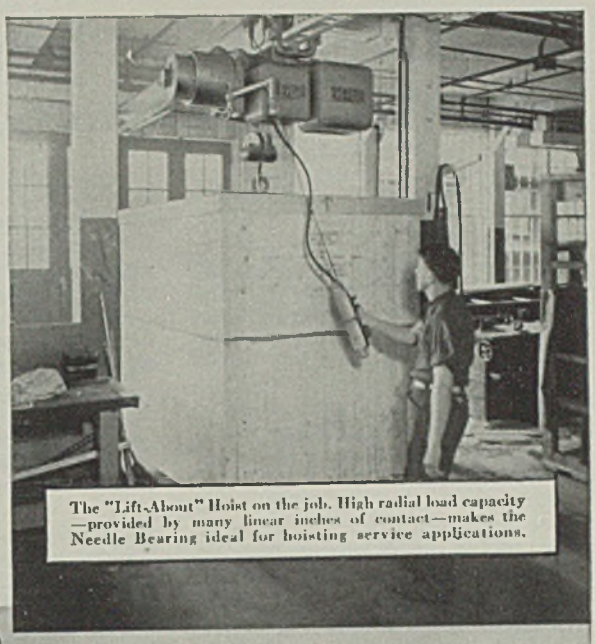
Sees 13 Per Cent Gain in Domestic Oil Burners

■ Home-heating oil burners in use next winter may increase 13 per cent to 2,150,000, according to Fred Van Covern, director, department of statistics, American Petroleum Institute, New York. Domestic demand for gas and oil may increase 12 to 17 per cent, although lowered exports may make the net increase in total demand only 6 per cent.

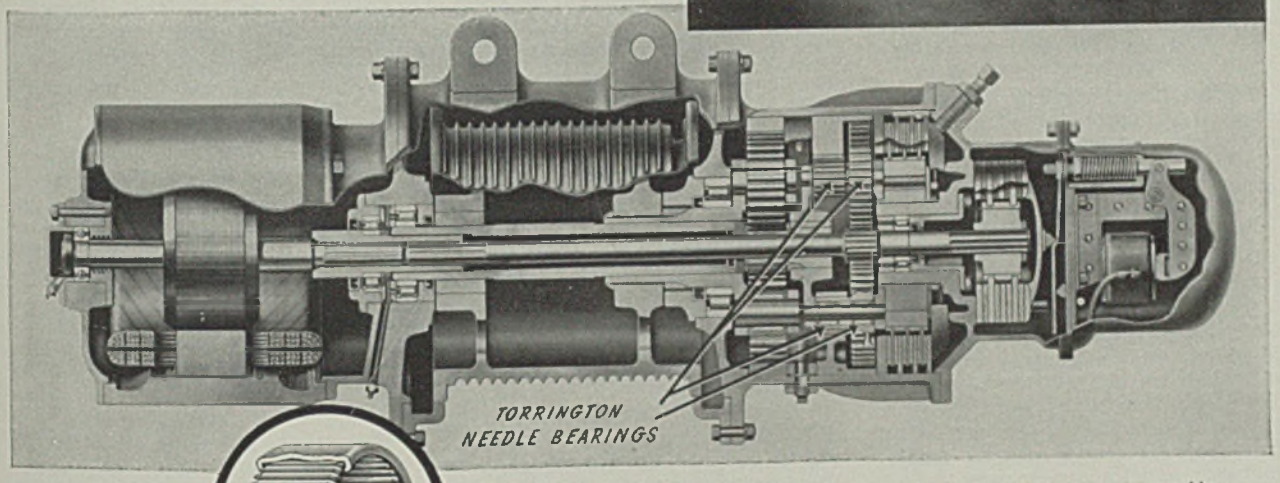
Pre-winter inventories of fuel oils are at improved levels with respect to winter demand. Crude oil production reached peaks of 3,800,000 barrels daily in March and April, dropping to 3,600,000 barrels July 6 and 3,475,000 barrels August 10.

Exports in the first six months this year show: crude oil, down 25 per cent; gasoline, down 44 per cent; kerosene, down 38.5 per cent; light and heavy fuel oil, down 28.8 and 17.8 per cent respectively; lubricants up 28.5 per cent.

SHEPARD NILES *LIFT-ABOUT* HOIST adopts TORRINGTON NEEDLE BEARINGS on ALL counts



The "Lift-About" Hoist on the job. High radial load capacity—provided by many linear inches of contact—makes the Needle Bearing ideal for hoisting service applications.



Cross-section showing how Torrington Needle Bearings are mounted in gear train assembly.

"For our Shepard Niles Electric Hoists," say the Company's engineers, "Torrington Needle Bearings were selected because of their small size, high load carrying capacity, ease of installation and low cost." So, like many other manufacturers, Shepard Niles Crane & Hoist Corporation found in Torrington Needle Bearings exactly the features they required.

Perhaps you, too, can incorporate the many advantages of this unique bearing in *your* product. Consider these features:

SMALL SIZE: Because the Torrington Needle Bearing is small radially and long axially, it requires only the simplest type of housing structure—no more space than a simple bushing.

HIGH LOAD CAPACITY: The Needle Bearing's full complement of small diameter needles gives many inches of linear contact, resulting in high radial load capacity.

EASY INSTALLATION: The design of the bearing—long axis and small diameter—permits the use of an extremely simple form of bore housing. And being a single unit, the bearing can be pressed into position with an ordinary arbor press.

EASE OF LUBRICATION: Lubrication is extremely simple, efficient and thorough. The turned-in lips of the retaining race form a natural reservoir for grease or oil—holding ample quantities for long periods of operation without renewal.

LOW COST: Because of its simple design, the Torrington Needle Bearing, compared to other types of anti-friction bearings, is surprisingly low in cost.

All these factors become tangible values in the cost accounting of the production line. And perhaps only a minor change in the design of your product will enable you to take advantage of these important cost savings. Further information is given in our Catalog No. 10 which will be sent on request. For Needle Bearings to be used in heavier service, ask for Booklet 103X from our associate, Bantam Bearings Corporation, South Bend, Ind.

The Torrington Company
ESTABLISHED 1866
Torrington, Conn., U.S.A.
Makers of Needle and Ball Bearings

New York Boston Philadelphia Detroit
Cleveland Chicago London, England

TORRINGTON
NEEDLE BEARING

Brazil's Iron, Steel Industry Expanding: New Plants Sought

■ BRAZIL'S iron and steel industry has made steady advances in recent years, although it still is insignificant in comparison with more highly industrialized countries. Pig iron production in 1939 was 160,016 metric tons, a 34 per cent gain over 1938.

Steel output was 111,834 tons, or 24 per cent more than in the year before, while rolled steel production was 98,649 tons, an increase of 25 per cent.

Total production in 1939 was 29 per cent over 1938. Increases in other recent years were: 15 per cent in 1938 over 1937; 14 per cent in 1937 over 1936; and 15 per cent in 1936 over 1935, according to a survey by the United States department of commerce.

Three blast furnace companies reached the production stage during the past year and three more are almost ready to start. Four steel producers and four rolling mills also started operation in 1939.

Under consideration by the Brazilian government are plans to double or treble steel capacity and a commission now is visiting the United States in an effort to obtain financial and technical assistance to construct the projected plants. The expansion plans were given a powerful stimulus by the closing of European sources for many manufactured articles due to war.

Financing such an expansion has so far been difficult. Although, as one member of the commission has pointed out, Brazil has enough money to build the plant, it lacks United States dollars to buy the necessary equipment in this country. It is for that reason the commission is angling for an Export-Import bank loan and possibly some private capital.

Has High-Grade Ore

One means by which Brazil might obtain the needed foreign exchange is by increased exports of iron and manganese ore. This, however, is made difficult by insufficient railroad rolling stock, high railroad freight rates, poor warehousing facilities at ports, high ocean freight rates and lack of ships.

Brazil has a known 15,000,000,000-ton reserve of surface and subsoil ore, some of which contains 62 per cent or more iron. It also has manganese ore, limestone, coal and recently has discovered evidences of petroleum.

If financing can be arranged, the Brazilian government hopes to be able to create a steel industry of importance, not only to supply its own needs but to export as well. A start was made in the latter direction last year when 23,000 tons of pig iron was sold abroad, principally to Argentina. Brazilians have been making a particular effort to cultivate Argentine market.

The government's plan calls for an increase of 450,000 tons in annual capacity for steel from which to produce rails, heavy plate for rolling stock and ships, rolled goods of various kinds, tin plate and wire.

At present the Brazilian industry produces various qualities of pig iron, rolled and cast steel, a fair range of rounds, flats, angles, squares, half rounds, soldering iron, copper steel, some cutting steel and other goods. No stainless steel is produced.

The steel industry itself, foundries and other metalworking plants convert basic steel into many large-

Brazil's Imports of Iron, Steel Products

Product	1938 Total Volume, Metric Tons	1938 U.S. Volume, Tons	1938 U. S. Participation (Volume) %	1939 Total Volume, Metric Tons	1939 U.S. Volume, Tons	1939 U. S. Participation (Volume) %
Iron, cast, pig, puddled	858	2	.3	358	3	.3
Iron, bars and rods	24,490	1,855	7.	13,177	3,680	27.
Iron in strips	10,043	595	6.	9,225	2,986	30.
Iron sheets, plates and disks	25,653	11,900	45.	33,106	22,633	68.
Steel, bar and rod	9,013	2,261	25	6,747	2,856	42
Steel strips	2,138	221	10	4,887	598	12
Steel sheets, plates and disks	6,641	4,886	74	9,788	9,257	94
Steel, special tool	1,506	398	26	956	253	26
Iron and steel, shapes	11,390	2,340	20	10,834	2,685	25
Barbed wire, galvanized	20,661	9,277	45	21,085	9,738	46
Other iron, steel wire	20,601	4,953	24	22,427	8,593	30
Tin plate, sheets	38,710	14,113	36	51,049	37,797	74
Iron and steel manufactures n.e.s. for buildings	6,649	1,559	23	6,200	1,942	31
Rails and accessories	40,329	17,382	43	74,584	23,317	31
Pipes and tubes	27,132	3,221	12	31,855	8,171	26
Cylinders and drums	2,888	2,103	73	3,158	2,364	81
Totals	248,702	77,066	31	305,436	137,073	44

Output of Pig Iron, Steel and Rolled Products

(Metric Tons)

PIG IRON

Companies	1938	1939
Cia. Siderurgica Belgo-Mineira S/A	53,271	72,452
Cia. Brasileira de Usinas Metallurgicas	23,443	27,405
Usina Queiroz Junior Ltda.	15,541	15,395
Cia. Ferro Brasileiro	11,997	19,235
Usina de Gage	5,217	3,864
S. A. Metallurgica Santo Antonio	1,310	2,816
Cia. Metallurgica Barbara	4,801	8,140
Cia. Siderurgica Barra Mansa	3,000	4,672
Cia. Industrial de Ferro	.....	2,436
Cia. I. Souza Noschese S/A	.....	2,457
Pirie Villares & Cia. Ltda.	.....	1,144
Totals	118,580	160,016

ROLLED PRODUCTS

Cia. Siderurgica Belgo-Mineira S/A	35,125	40,787
Cia. Brasileira de Usinas Metallurgicas	19,035	19,487
Cia. Brasileira de Mineracao e Metallurgia	18,989	20,907
Usina Santa Olympia, Ltda.	5,615	7,167
Usina Siderurgica e Laminadora N.S. Apparecida	.....	4,712
Empresa Metallurgica Nostor de Goes, Ltda.	.....	2,291
Usina Metallurgica Italte	.....	829
Siderurgica Riograndense, Ltda.	.....	2,469
Totals	78,764	98,649

STEEL

Cia. Siderurgica Belgo-Mineira S/A	40,653	59,155
Cia. Brasileira de Usinas Metallurgicas	22,425	21,923
Cia. Brasileira de Mineracao e Metallurgica	26,576	28,204
Cia. Navegacao Costeira	.....	597
Fabrica de Aco Paulista	.....	1,633
Usina Santa Luzia	.....	122
Cia. Electro Aco Altona	.....	200
Totals	89,654	111,834

RESUME

Product	1938	1939
Pig iron	118,580	160,016
Rolled products	78,764	98,649
Steel	89,654	111,834
Totals	286,998	370,499

Brazil's 1939 Exports

(Metric Tons)

IRON ORE

Countries	Tons	*Milreis
Belgium	9,150	432,954
United States	9,550	669,567
Great Britain	7,112	337,460
Holland	11,176	572,805
Canada	21,793	904,661
France	20,787	1,037,753
Germany	151,613	7,329,341
Poland	23,520	1,153,788
Danzig	137,665	6,230,730
Czechoslovakia	4,572	234,547
Total	396,938	18,903,606

MANGANESE ORE

United States	134,963	14,461,174
Holland	4,572	454,261
Belgium	3,658	367,151
Czechoslovakia	5,964	680,888
Danzig	2,540	342,727
Germany	37,306	4,333,854
Total	189,003	20,640,055

CAST, PIG OR PUDDLED IRON

Argentina	17,863	7,156,912
United States	105	33,593
Sweden	1,550	443,607
Belgium	3,596	948,737
Norway	100	127,439
Total	23,414	8,739,556

*Milreis last week were quoted at $5.05 per 100.

size finished manufactures, such as cast iron pipe, tubes and accessories for water, gas and sewers, steel bridge parts, large sliding airplane hangar doors, steel drums, boilers, storage tanks, plain wire for nails, agricultural implements and some industrial machinery.

Despite its gains in production Brazil still must import a considerable quantity of iron and steel products, as shown in an accompanying table. Last year's imports were 23 per cent greater than in 1938 and the United States' share increased from 31 per cent of the 1938 total to 44 per cent in 1939. United States' gains were largely at the expense of Germany. Until the outbreak of hostilities last September, American producers had been gaining noticeably on other suppliers. After the war started Germany was closed as a source of supply and other European suppliers soon followed suit.

During the last quarter of 1939, United States companies were swamped with orders and there was a tremendous rush in Brazil to obtain distribution franchises of such organizations. Many of the Brazilian firms which suddenly became interested in representing American producers were German in ownership and sympathy, and had never previously had any dealings whatever involving sale of American goods. American companies at times found it necessary to ration old customers in Brazil to maintain good will.

Rio de Janeiro and Sao Paulo are the leading steel distribution centers in Brazil, although a considerable quantity is distributed through Porto Alegre, Sao Salvador, Belem, Recife and Bello Horizonto.

Extra Pay for Employes Attending Plant School

■ Employes of A. O. Smith Corp., Milwaukee, who take advantage of an opportunity to improve their craftsmanship by attending a plant school after working hours will receive pay for time spent in training. In addition to developing new skilled workers, a primary purpose of the school will be to enable older workers to keep up with changes in industrial methods.

The training plan is reported to have resulted from an understanding between the management and the plant's American Federation of Labor unions.

Foundry Equipment Indexes Higher in July

■ July index of foundry equipment orders stands at 209.8 for new equipment and 147.8 for repairs, with total sales 194.4. These compare with 174.2, 138.3 and 164.9 in June, according to the Foundry Equipment Manufacturers' association, Cleveland.

The indexes are percentages of the monthly averages of reported sales to metalworking industries during 1937-39. Comparison with the old base, 1922-24, may be determined by multiplying the new base figures by 1.328.

MEETINGS

ARRANGING PROGRAM FOR PORCELAIN ENAMEL FORUM

■ TWO motion pictures, one giving the story of steel and the other illustrating work which the national bureau of standards is doing for the institute in testing architectural porcelain enamels will feature the fifth annual forum of the Porcelain Enamel institute at the University of Illinois, Urbana, Ill., Oct. 16-18.

Among topics scheduled for various sessions are infra-red drying, design of dryer equipment and control of humidity, iron oxide in enamel, stretch testing of steel, a new test for sagging of sheets, and other current shop problems.

A.S.M.E. GROUPS TO STUDY NATIONAL DEFENSE PROBLEMS

Starting in September, each of the 71 local sections of the American Society of Mechanical Engineers, located in the principal industrial areas of the nation, will sponsor several meetings on the engineering problems of national defense and invite participants to make recommendations for their solution. It is believed that solutions to various problems can be found through discussion by groups of engineers.

In addition to the local meetings, a series of national regional meetings planned by the society will bring together engineers and manufacturing executives to discuss technical phases of defense.

REINFORCING STEEL GROUP TO MEET AT SKYTOP, PA.

Concrete Reinforcing Steel institute will hold its semi-annual meeting at Skytop Lodge, Skytop, Pa., Sept. 19-20.

Convention Calendar

Sept. 3-6—American Society of Mechanical Engineers. Fall meeting at Hotel Davenport, Spokane, Wash. C. E. Davies, 29 West Thirty-ninth street, New York, is secretary.

Sept. 9-13—American Chemical society. 100th national meeting in Detroit. Charles L. Parsons, 728 Mills building, Washington, is secretary.

Sept. 12—Gray Iron Founders' society. Annual meeting at Hotel Cleveland, Cleveland. W. W. Rose, 1010 Public Square building, Cleveland, is executive vice president.

Sept. 16-19—American Mining congress. Seventh annual metal mining convention and exposition, Colorado Springs, Colo. Julian D. Conover, 309 Munsey building, Washington, is secretary.

Sept. 18—University of Pennsylvania. Symposium on "Development of Metal as a Structural Element in Architecture," at the university, Philadelphia.

Sept. 18-20—National Industrial Advertisers association. Eighteenth annual conference at Hotel Statler, Detroit. Mildred R. Webster, 100 East Ohio street, Chicago, is secretary.

Sept. 19-20—Concrete Reinforcing Steel Institute. Semi-annual meeting at Skytop Lodge, Skytop, Pa. H. C. Delzell, 2257 Builders building, Chicago, is executive secretary.

Sept. 20—Chicago Section, American Ceramic society, and Department of Ceramic Engineering, University of Illinois. Symposium on acid, basic and neutral refractories at auditorium, Civic Opera building, Chicago.

Sept. 23-26—American Transit association. Fifty-ninth annual meeting at Greenbrier hotel, White Sulphur Springs, W. Va. Guy C. Hecker, 292 Madison avenue, New York, is general secretary.

Sept. 24-25—Society of Automotive Engineers. National tractor meeting at Schroeder hotel, Milwaukee. John A. C. Warner, 29 West Thirty-ninth street, New York, is general manager.

Sept. 24-27—Association of Iron and Steel Engineers. Thirty-sixth convention and exposition at Stevens hotel, Chicago. Brent Wiley, 1010 Empire building, Pittsburgh, is managing director.

Sept. 26-29—National Association of Foremen. Seventeenth annual convention at Hotel Gibson, Cincinnati. H. G. Evans, Goodyear Tire & Rubber Co., Akron, O., is secretary.

Sept. 30-Oct. 1—National Lubricating Grease Institute. Eighth annual convention at Stevens hotel, Chicago. George W. Miller, 498 Winspear avenue, Buffalo, is executive secretary.

Contracts Awarded in Canada:

G.E. To Make Precision Equipment

TORONTO

■ CANADIAN General Electric Co. Ltd., Peterborough, Ont., has a large contract for making artillery precision equipment, covering a type of product not heretofore made in Canada. Several millions of dollars for tools and machinery necessary at the Peterborough works will be financed by the government.

Department of munitions and supply last week awarded 1753 orders, totaling $9,990,620. Orders include:

Naval Supplies: British Admiralty, England, $1,611,480; Canadian Locomotive Works, Kingston, Ont., $39,136; Dominion Chain Co. Ltd., Niagara Falls, Ont., $24,-365.

Mechanical Transport: George W. Reed & Co. Ltd., Montreal, $33,885; Barry Steel Products Ltd., Lachine, Que., $9020; Crane Ltd., Ottawa, $72,190; W. D. Beath & Son Ltd., Toronto, $40,662; Massey-Harris Co. Ltd., Toronto, $33,885; Canadian Top & Body Corp. Ltd., Tilbury, Ont., $184,806; Brantford Coach & Body Ltd., Brantford, Ont., $33,885; Cockshutt Plow Co. Ltd., Brantford, $80,262; Truck Engineering Ltd., Woodstock, Ont., $18,600; Gotfredson Ltd., Walkerville, Ont., $38,-750; Gar Wood Industries of Canada Ltd., Windsor, Ont., $123,333.

Aircraft Supplies: Parmenter & Bulloch Co. Ltd., Gananoque, Ont., $17,800; De Havilland Aircraft of Canada Ltd., Toronto, $10,368; National Steel Car Corp. Ltd., Malton, Ont., $7335.

Machinery and Tools: Peerless Handcuff Co., Springfield, Mass., $13,480.

Munitions: Dominion Arsenal, Quebec, $239,650; Consolidated Mining & Smelting Co. of Canada Ltd., Montreal, $334,-500; Railway & Power Engineering Corp. Ltd., Toronto, $29,040; Beatty Bros. Ltd., Fergus, Ont., $16,136; Walker Metal Products Ltd., Walkerville $7830; Hugh Carson Co. Ltd., Ottawa, $27,500.

Construction: Poole Construction Co. (Saskatchewan) Ltd., Regina, Sask., $692,701; H. G. MacDonald & Co., Edmonton, Alta., $278,880; Bennett & White Construction Co. Ltd., Calgary, Alta., $99,985; W. C. Brennan Contracting Co., Hamilton, Ont., $443,987; McLaughlin Brothers, Ottawa, $35,000; Johnson Brothers Co. Ltd., Brantford, Ont., $272,000; Schultz Construction Co., Brantford, $62,000; Bennett & White Construction Co., Calgary, Alta., $773,000; M. A. Condon & Son, Kentville, N. S., $419,000; Acme Construction Co. Ltd., St. John, N. B., $386,000; Tope Construction Co., Hamilton, $119,-000; Northern Construction Co., and J. W. Stewart Ltd., Vancouver, B. C., $63,800.

In the week ended Aug. 14, Canadian government awarded 31 construction projects. The more important awards included:

W. C. Wells, Wilkie, Sask., $302,000; Shoquist Construction Co., Saskatoon, Sask., $447,000; E. G. M. Cape & Co. Ltd., Montreal, $640,000; Smith Bros. & Wilson, Saskatoon, $121,000; Schurman Construction Co. Ltd., Summerside, P. E. I., $780,-000; Sutherland Construction Co. Ltd., Montreal, $227,000; Tomlinson Construction Co. Ltd., Winnipeg, Man., $461,000; Assiniboia Engineering Co. Ltd., and Dutton Bros. Ltd., Winnipeg, Man., $337,-000.

A. W. Robertson Ltd., Toronto, $920,-000; Alex I. Garvock, Ottawa, $108,000; Laviolette Construction Co., Three Rivers, Que., $101,000; Carter-Halls-Aldinger Co. Ltd., Vancouver, B. C., $920,000; Poole Construction Co. Ltd., Edmonton, Alta., $920,000; Carter-Halls-Aldinger Co. Ltd., Winnipeg, Man., $920,000; Ontario Construction Co., St. Catharines, Ont., $117,-000.

Anglin Norcross Ltd., Montreal, $277,-000; J. P. Porter & Sons Ltd., Montreal, $171,050; Redfern Construction Co. Ltd., Toronto, $267,400; Frid Construction Co. Ltd., Hamilton, Ont., $370,000; Ontario Construction Co. Ltd., St. Catharines, Ont., $240,000; Bird Construction Co. Ltd., Winnipeg, Man., $117,000; Claydon Co. Ltd., Winnipeg, Man., $211,600.

Department of munitions and supplies, Ottawa, in the week ended Aug. 14 awarded 1948 contracts totaling $8,337,246. Contracts follow:

Electrical Equipment: Canadian Marconi Co. Ltd., Montreal, $388,000; R. C. A. Victor Co., Montreal, $253,700; Canadian General Electric Co. Ltd., Ottawa, $5745; Northern Electric Co. Ltd., Ottawa, $311,-673; A. Sheppard, Ottawa, $8011; Burlec Ltd., Scarboro Junction, Ont., $20,000; Exide Batteries of Canada Ltd., Toronto, $5548.

Shipbuilding: Halifax Shipyards Ltd., Halifax, N. S. $15,312; Morton Engineering and Dry Dock Co. Ltd., Quebec, $6865; Montreal Dry Dock Ltd., Montreal, $5015; Peterboro Canoe Co. Ltd., Peterboro, $8105.

Munitions: British Metal Corp. (Canada) Ltd., Montreal, $478,766; Consolidated Mining & Smelting Co. of Canada Ltd., Montreal, $144,266; Canadian Locomotive Co. Ltd., Kingston, Ont., $29,512; Anaconda American Brass Ltd., New Toronto, Ont., $41,392; Flexible Shaft Co. Ltd., Toronto, $31,086; International Nickel Co. of Canada Ltd., Toronto, $162,-049.

Mechanical Transport: British air ministry, $10,762; James Robertson Co. Ltd., Montreal, $5300; Outboard Marine & Mfg. Co. of Canada Ltd., Peterborough, $21,-362; Gotfredson Ltd., Walkerville, Ont. $64,018.

Aircraft Supplies: Fairchild Aircraft Ltd., Longueuil, Quebec, $28,925; British air ministry, $6245; Aviation Electric Ltd., Montreal, $199,214; Canadian Wright Ltd., Montreal, $7738; Drummond McCall & Co., Montreal, $5779; Switlik Canadian Parachute Ltd., $23,490; MacDonald Bros. Aircraft Ltd., Ottawa, $5600; Robert Mulhall, Ottawa, $16,374; National Steel Car Corp. Ltd., Malton, Ont., $15,-580; Weaver Industries Ltd., Chatham, Ont., $34,871.

Machinery and Tools: Williams & Wilson Ltd., Montreal, $7419; Canadian Fairbanks-Morse Co. Ltd., Ottawa, $14,000; A. R. Williams Machinery Co. Ltd., Toronto, $5950.

Miscellaneous: J. A. Rodger Binks, Ottawa, $13,478; Standard Chemical Co. Ltd., Toronto, $7344; Paton Mfg. Co. Ltd., Sherbrooke, Que., $22,053; Canadian Converters Ltd., Montreal, $23,166; Dominion Brush Mfg. Co. Ltd., Montreal, $38,400; General Steel Wares Ltd., Ottawa, $30,-750; S. S. Holden Ltd., Ottawa, $87,560; Wood Mfg. Co. Ltd., Ottawa, $16,500; Stevens-Hepner Ltd., Port Elgin, Ont., $25,600; Canada Wire & Cable Co. Ltd., Montreal, $119,580.

■ Twenty-four hundred feet of welding went into the Pere Marquette railway bridge at Grand Blanc, Mich., recently completed by L. A. Davidson, Michigan contractor. Deck of the bridge, which is 300 feet long and 30 feet wide, was made of wrought iron plates welded with P&H Smootharc electrodes depositing ½-inch welds. Electrodes and welding generator were manufactured by Harnischfeger Corp., Milwaukee.

Farm Equipment Sales Approach 1937 High

CHICAGO

■ Farm equipment industry has in prospect one of the best years in its history. Agricultural implement and tractor sales are holding at a level which will make 1940 eclipse all years except possibly 1937.

Department of agriculture's most recent estimate is that farm income this year will aggregate between $8,200,000,000 and $8,300,000,000, about $750,000,000 more than in 1939.

Improved farm income is reflected in heavier purchases of modern equipment, particularly light tractors. Implement dealers appear well stocked. Buying habits, particularly in tractors, are becoming similar to those in the automotive field where the purchaser frequently has a used unit to trade in. However, resale of this unit often brings mechanization to some farmer who otherwise might be denied it because of the higher cost of a new machine.

Export business, amounting normally to 15 or 20 per cent of total, is seriously affected by the war. This applies not only to Europe, but South America as well.

Belief is current tractor manufacturers would share heavily in production of national defense goods, particularly tanks. So far, this business has been placed mostly with railroad car builders and automobile makers.

Trade Practice Rules For Resistance Welders

■ Trade practice rules for the resistance welder manufacturing industry have been promulgated by the federal trade commission, as of Aug. 16, 1940. The rules were formulated on application by the industry and after a conference between the commission and representatives of the industry rules were drafted, followed by a public hearing. The rules as announced were agreed on at this hearing.

Information furnished the commission is to the effect that annual sales volume of resistance welding machines and related parts or equipment is approximately $6,000,000.

FINANCIAL

WARNER & SWASEY PLAN FOR RECAPITALIZATION APPROVED

■ STOCKHOLDERS of Warner & Swasey Co., Cleveland, last week approved a recapitalization plan increasing the company's authorized common stock from 300,000 shares of $5 par value to 1,000,000 no par shares. Approved plan also changes each present par $5 share into three new no par shares.

Registration statement filed with the Securities and Exchange commission Aug. 8 declared 276,580 shares of the new common stock will be offered the public through underwriters.

VANADIUM CORP.'S FIRST HALF NET TOTALS $916,690

Vanadium Corp. of America, New York, reports net income for six months ended June 30 totaled $916,690, equal to $2.43 per share on capital stock. This compared with $380,095 net profit, equal to $1.01 per share, earned in the period last year.

First quarter net earnings were estimated at $1.30 per share, indicating net profit for the second period was equal to $1.13 per share or $426,167. For 1939 Vanadium's net income was equal to $3.25 per capital share.

INTERNATIONAL NICKEL'S NET EARNINGS SUSTAINED

International Nickel Co. of Canada Ltd., Copper Cliffs, Ont., earned $18,060,293 net profit in six months ended June 30. Equal to $1.17 per share on the company's no par common stock, this compared with net profit of $17,773,438 or $1.15 per share in the period last year. Net income in like period, 1938, was $16,732,251 or $1.08 per share.

Second quarter net profit was $8,240,179 or 53 cents per share, against $9,820,114 or 64 cents per share in the preceding quarter. In second quarter last year net income was $8,226,137, equal to 53 cents per common share.

Company's report states provision for income and franchise taxes in the first half totaled $9,246,823. This was equal to 63 cents per common share, and contrasted with $4,437,245 or 30 cents per share in the corresponding 1939 period.

Second quarter tax provision included also additional taxes on earnings for the first quarter arising from tax legislation enacted subsequent to the first quarter's close.

DIVIDENDS DECLARED

Republic Steel Corp., Cleveland, $1.50 per share on the company's 6 per cent cumulative convertible prior preference stock, series A. Also $1.50 per share on 6 per cent cumulative convertible preferred, both payable Oct. 1 to record of Sept. 12.

Keystone Steel & Wire Co., Peoria, Ill., 20 cents per share on common, payable Sept. 16 to record of Aug. 31. Twenty-five cents per share was paid June 15.

Continental Steel Corp., Kokomo, Ind., 25 cents per common share, payable Oct. 1 to record of Sept. 13. Similar payment was made July 1.

Rustless Iron & Steel Corp., Baltimore, 15 cents a share on common, payable Sept. 3 to record of Aug. 23. Same amount was paid June 12.

Youngstown Sheet & Tube Co., Youngstown, O., 25 cents per common share, payable Oct. 1 to record of Sept. 14. Like amount was paid July 1.

205 Consumers' First Half Net Income Up 93 Per Cent

■ STEEL'S tabulation of 205 iron and steel consumers' earnings in first half, 1940, shows their aggregate net profit for the six months was $182,423,883, compared with $94,158,780 earned by the same companies in the period last year. Increase in net income over last year was 93.7 per cent. Only 12 companies reported a net loss, against 41 that incurred deficits in first half, 1939. Prior tabulations in STEEL (July 22, p. 29; July 29, p. 14; Aug. 12, p. 41 and Aug. 19, p. 40) listed 165 companies; the following includes 40. All figures are net earnings except where asterisk denotes loss:

	Second 1940 Quarter	Second 1939 Quarter	First 1940 Half	First 1939 Half
American Chain & Cable Co. Inc., Bridgeport, Conn.	$	$	$1,169,112	$ 665,274
American Laundry Machinery Co., Cincinnati	.....	.....	304,104	122,507
American Locomotive Co., New York	.....	.....	1,178,470	931,710*
American Machine & Foundry Co., New York	.....	.....	580,625	315,084
Bath Iron Works Corp., Bath, Me.	.....	.....	783,419	206,146
Bendix Aviation Corp., South Bend, Ind.	2,361,539	1,144,214	4,295,419	2,168,210
Birtman Electric Co., Chicago	88,530†	57,762†	249,820†	190,668†
Briggs Mfg. Co., Detroit	1,845,187	1,078,742	4,240,389	2,036,789
Chicago Pneumatic Tool Co., New York	411,092	203,020	767,926	388,239
Coleman Lamp & Stove Co., Wichita, Kans.	.....	.....	113,667	155,511
Consolidated Steel Corp., Los Angeles	37,632	79,412*	85,619†	62,071‡
Curtiss-Wright Corp., New York	3,821,773	1,672,647	6,235,969	3,370,804
Evans Products Co., Detroit	27,810*‡	78,174*‡	15,389*	102,568*
Fairchild Aviation Corp., Jamaica, L. I.	109,934	84,866	318,946	141,121
Federal Motor Truck Co., Detroit	.....	.....	127,637*	124,826*
Hercules Motors Corp., Canton, O.	31,122	43,609	218,875	167,633
Hudson Motor Car Co., Detroit	965,954*	876,891*	1,820,199*	1,751,675*
Hupp Motor Car Co., Detroit	71,494*	284,978*	144,495*	479,207*
International Cigar Machinery Co., New York	.....	.....	682,049	638,607
Joslyn Mfg. & Supply Co., Chicago	157,888	244,773	356,481	376,853
Lamson & Sessions Co., Cleveland	.....	.....	66,901	99,574*
Link-Belt Co., Chicago	541,323‡	243,318‡	965,279	442,479
Mack Trucks Inc., Long Island City, N. Y.	702,847	257,628	814,296	162,756
Martin-Rockwell Corp., Jamestown, N. Y.	576,514	261,719	1,296,249	481,707
Michigan Steel Casting Co., Detroit	12,032*	5,161	8,714*	4,514*
Myers, F. E., & Bro., Co., Ashland, O.§	324,077	321,914	557,566‡	518,385‡
National Enameling & Stamping Co., Milwaukee	.....	.....	5,561	230,997*
Pullman Inc., New York	777,846	336,918	3,433,662	1,072,682
Reece Folding Machine Co., East Cambridge, Mass.	.....	.....	7,402	10,146
Servel Inc., Evansville, Ind.§	1,238,498	1,241,417	1,931,388‡	2,077,643‡
Soss Mfg. Co., Roselle, N. J.	.....	.....	111,140	73,131
Steel Products Engineering Co., Springfield, O.	190,831	175,257	245,923‡	247,426‡
Superheater Co., New York	222,152	82,201	510,638	264,173
Symington-Gould Corp., Rochester, N. Y.	103,313	3,621	603,284	22,387
Terre Haute Malleable & Mfg. Corp., Terre Haute, Ind.	6,756†	6,794†	15,438†	15,790†
Thompson Products Inc., Cleveland	525,734	320,900	1,047,902	646,055
Union Tank Car Co., Chicago	.....	.....	1,074,967	976,436
United Engineering & Foundry Co., Pittsburgh	.....	.....	1,805,221	951,813
Universal-Cyclops Steel Corp., Bridgeville, Pa.	236,301	76,213	628,101	247,736
Wood Industries Inc., Gar, Detroit	216,061‡	109,480‡	302,289	102,552

‡Indicated; †before federal taxes; §period ends July 31; *loss.

Orders 111 New Wright Aircraft Engines

■ Transcontinental & Western Air Inc., Kansas City, Mo., has ordered 111 engines of a new and more powerful type from Wright Aeronautical Corp., Paterson, N. J., as part of a $1,100,000 re-equipment program for its entire fleet.

Known as the Wright Cyclone G-202-A, the unit develops 1200 horsepower at takeoff, 100 horsepower more than present Wright engines, and will increase airplane payload by 800 pounds. Service ceiling of planes, single-motor performance, will be increased about 2000 feet.

Delivery of the engines will start in September and be completed in January 1941.

■ Orders for electrical goods booked during second quarter, 1940, were valued at $268,120,065 compared with $238,845,964 in first quarter and with $205,567,343 in second quarter last year, according to the bureau of the census. These figures include electrical motors, storage batteries, domestic appliances, industrial equipment and other supplies.

Guns Instead of Gaspipe!

■ NEWS photos showing American troops armed with gaspipe "guns" repelling "invasions" of pasteboard tanks, in maneuvers in New York state and elsewhere, do not have an unfamiliar appearance to those who recall training activities in 1898 or 1917-18. If the pictures were prophetic of 1941 or 1942, rather than reminiscent of 1898 or 1917, they would be tragic.

Use of dummy guns and tanks in field training is natural at this stage of the preparedness program of a great democracy whose traditional method in meeting national emergencies is to await the emergency before throwing itself into large-scale preparations for coping with it. This "stage property" armament is just as much a part of the American historical scene as the wooden muskets which with slabs of gingerbread and barrels of cider were in evidence around old-time "militia musters."

In those days Eli Whitney and his associates under sponsorship of Thomas Jefferson were working quietly behind the scenes perfecting ways and means whereby real muskets could be made in quantities at unprecedented speed.

American Industrial System, Built In Peace, Is Strong Shield in War

In the present era of uncertainty, when there is some concern as to what may happen to Jeffersonian political principles, it is reassuring to know that Eli Whitney's industrial principles not only have survived but have developed in this country to an extent far beyond the imagination of that great mechanic. Others have copied the American system of manufacturing, but Americans still excel in it, even though this supremacy has been attained through application to arts of peace rather than to those of war.

Fortunately the system is convertible, and so it is that behind a flimsy camouflage of gaspipe guns and cardboard tanks and through drifting clouds of political smoke it is possible to detect the beginning of a great metamorphosis in the machine shops of America.

From experience we know this means in due time there will be an outpouring of defense materiel from these shops, the like of which has never before been seen, either in quality or in quantity.

Preparedness for Defense Rests On Machine Tool Excellence

Time, toolmakers and tools are the elements most essential to this program. The first cannot be "made" and no man knows how much of it is to be allowed to us. However, this priceless time can be saved and its use may be made infinitely more effective by the other two elements. They in turn can be "made"—toolmakers, for specialized operations at least, through emergency training; and tools, by those toolmakers working hand-in-hand with America's machine tool industry, best in the world.

The rapid march of events in recent weeks has inspired many 20th century Paul Reveres to raise the cry, "To arms!" This is patriotic, but premature. The center of the stage in America's drama of defense just at this time belongs to the spiritual heirs of Eli Whitney.

The curtain is rising on Scene 1, entitled "Guns Instead of Gaspipe."

Guy Hubbard

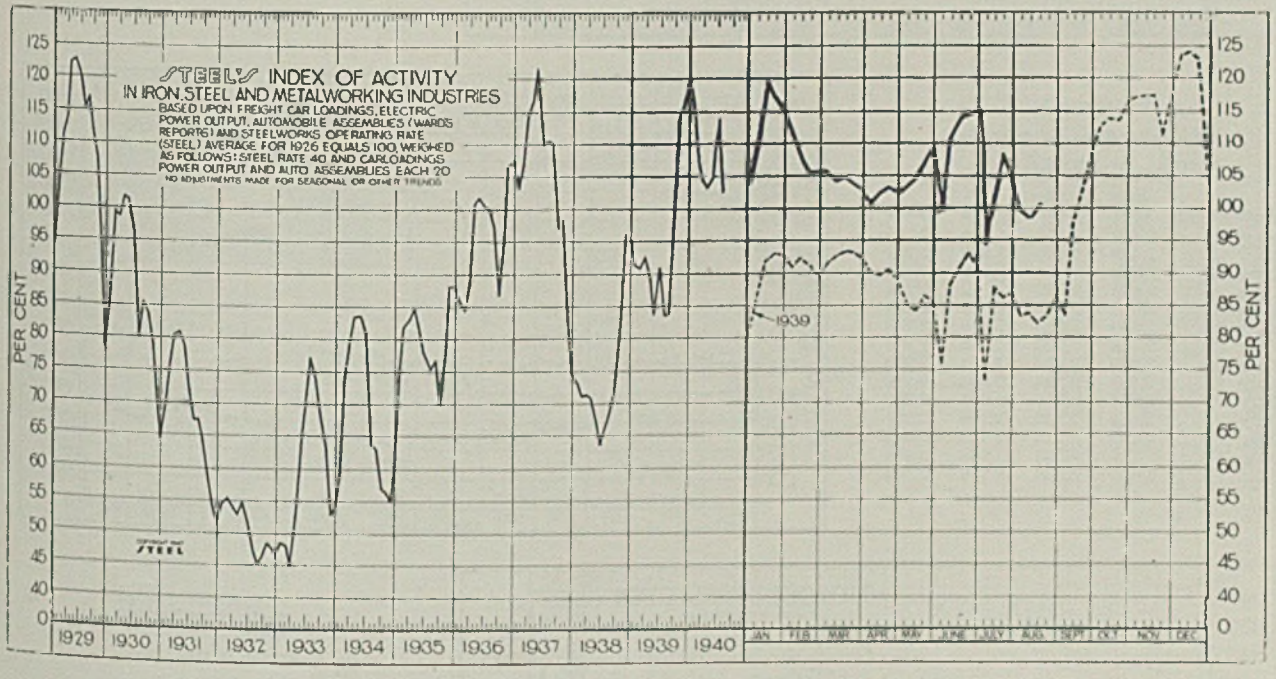
The BUSINESS TREND

Activity Index Reverses Recent Downtrend

■ REFLECTING the seasonal upturn in automobile production and encouraging gain in revenue freight carloadings and electric power consumption during the week ended Aug. 17, STEEL's activity index in the iron, steel and metalworking industries advanced 2.3 points to 100.8. The upturn recorded by the index during the latest period represents a reversal of the downward tendency of the previous four weeks. In the comparable period of 1939, 1938 and 1937 the index stood at 82.2, 70.5 and 110.3 respectively. The peak level recorded by the index this year of 115.3 occurred in the week ended June 29, while in the closing months of last year the index reached the 124.2 level.

Defense program continues to dominate the domestic business news, as our rearmament efforts gather increased momentum in the placing of contracts and expansion of industrial plants. Shipbuilding interests have been in the forefront in the amount of business received to-date, but sharp gains have also been recorded in the aircraft and construction lines in recent weeks.

Domestic demand for durable goods is well sustained, while exports are recording further gains. Some consumers' lines are still lagging.



STEEL'S index of activity gained 2.3 points to 100.8 in the week ended Aug. 17:

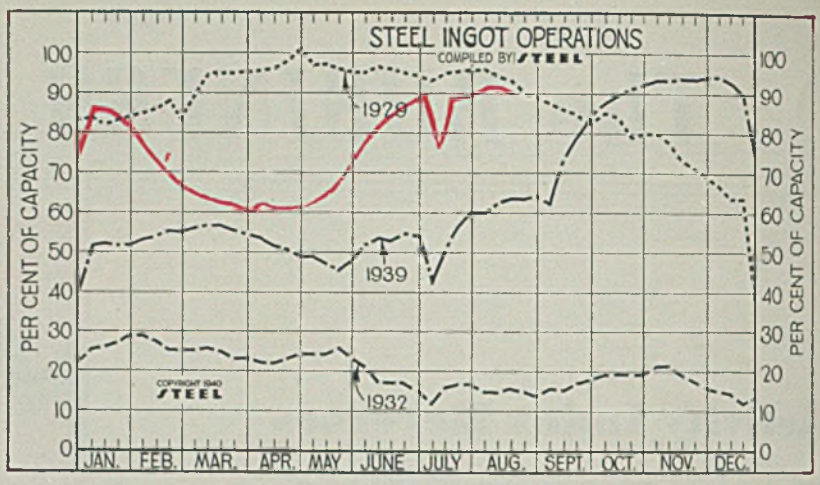
Week Ended	1940	1939
June 8	111.9	88.2
June 15	114.6	90.9
June 22	114.8	93.0
June 29	115.3	91.0
July 6	94.2	73.4
July 13	108.5	87.8
July 20	106.0	86.0
July 27	103.4	86.8
Aug. 3	99.7	83.5
Aug. 10	98.5	83.9
Aug. 17	100.8	82.2

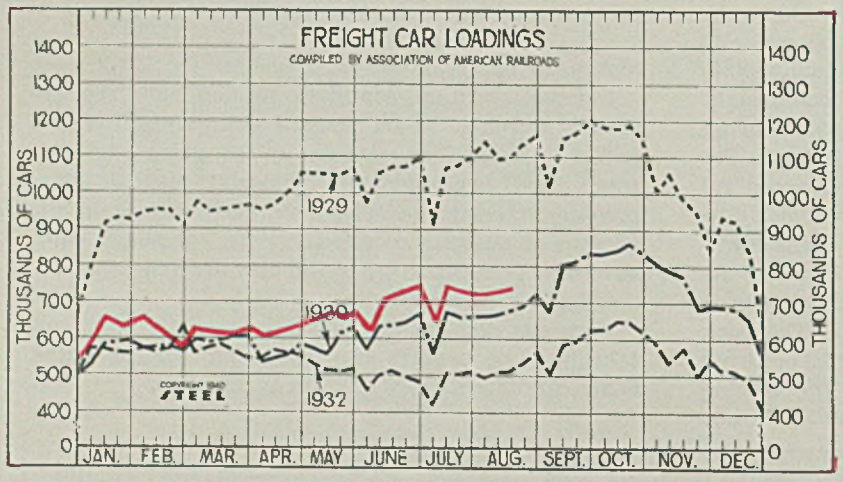
Mo. Data	1940	1939	1938	1937	1936	1935	1934	1933	1932	1931	1930	1929
Jan.	114.7	91.1	73.3	102.9	85.9	74.2	58.8	48.6	54.6	69.1	87.6	104.1
Feb.	105.8	90.8	71.1	106.8	84.3	82.0	73.9	48.2	55.3	73.5	99.2	111.2
March	104.1	92.6	71.2	114.4	88.7	83.1	78.9	44.5	54.2	80.4	98.6	114.0
April	102.7	89.5	70.8	116.6	100.8	85.0	83.6	52.4	52.8	81.0	101.7	122.5
May	104.6	83.4	67.4	121.7	101.8	81.8	83.7	63.5	54.8	78.6	101.2	122.9
June	114.2	90.9	63.4	109.9	100.3	77.4	80.6	70.3	51.4	72.1	95.8	120.3
July	102.4	83.5	66.2	110.4	100.1	75.3	63.7	77.1	47.1	67.3	79.9	115.2
Aug	.....	83.9	68.7	110.0	97.1	76.7	63.0	74.1	45.0	67.4	85.4	116.9
Sept.	.....	98.0	72.3	96.8	86.7	69.7	56.9	68.0	46.5	64.3	83.7	110.8
Oct.	....	114.0	83.6	98.1	94.8	77.0	56.4	63.1	48.4	59.2	78.8	107.1
Nov.	.....	116.2	95.9	84.1	106.4	88.1	54.9	52.8	47.3	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

Steel Ingot Operations

(Per Cent)

Week ended	1940	1939	1938	1937
May 18....	70.0	45.5	30.0	91.5
May 25....	75.0	48.0	28.5	75.0
June 1....	78.5	52.0	25.5	75.0
June 8....	81.5	53.5	25.5	74.0
June 15....	86.0	52.5	27.0	75.5
June 22....	88.0	54.5	28.0	74.0
June 29....	89.0	54.0	28.0	77.5
July 6....	75.0	42.0	24.0	74.0
July 13....	88.0	50.5	32.0	82.0
July 20....	88.0	56.5	36.0	81.0
July 27....	89.5	60.0	37.0	84.0
Aug. 3....	90.5	60.0	40.0	84.5
Aug. 10....	90.5	62.0	40.0	84.0
Aug. 17....	90.0	63.5	41.5	81.0





Freight Car Loadings

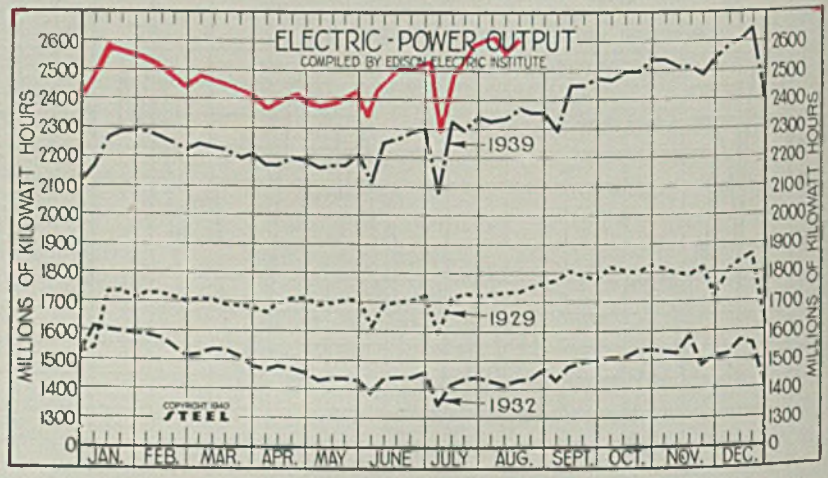
(1000 Cars)

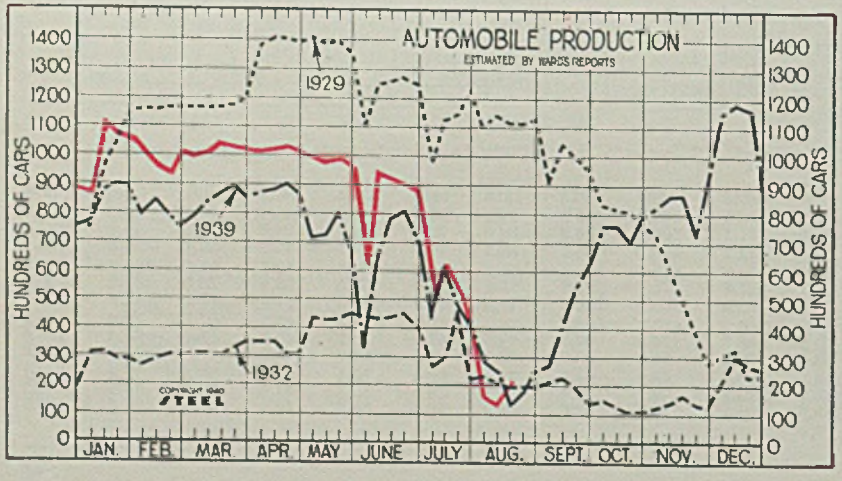
Week ended	1940	1939	1938	1937
May 18.....	679	616	546	779
May 25.....	687	628	562	795
June 1.....	639	568	503	692
June 8.....	703	635	554	754
June 15.....	712	638	556	756
June 22.....	728	643	559	774
June 29.....	752	666	589	806
July 6.....	637	559	501	682
July 13.....	740	674	602	770
July 20.....	730	656	581	772
July 27.....	718	660	589	783
Aug. 3.....	718	661	584	770
Aug. 10.....	727	665	590	777
Aug. 17.....	743	674	598	781

Electric Power Output

(Million KWH)

Week ended	1940	1939	1938	1937
May 18...	2,422	2,170	1,968	2,199
May 25...	2,449	2,205	1,973	2,207
June 1...	2,332	2,114	1,879	2,131
June 8...	2,453	2,257	1,992	2,214
June 15...	2,516	2,265	1,991	2,214
June 22...	2,509	2,285	2,019	2,238
June 29...	2,514	2,300	2,015	2,238
July 6...	2,265	2,088	1,881	2,096
July 13...	2,483	2,324	2,084	2,298
July 20...	2,524	2,295	2,085	2,259
July 27...	2,601	2,342	2,094	2,256
Aug. 3...	2,605	2,325	2,116	2,262
Aug. 10...	2,589	2,333	2,134	2,301
Aug. 17...	2,606	2,368	2,139	2,304

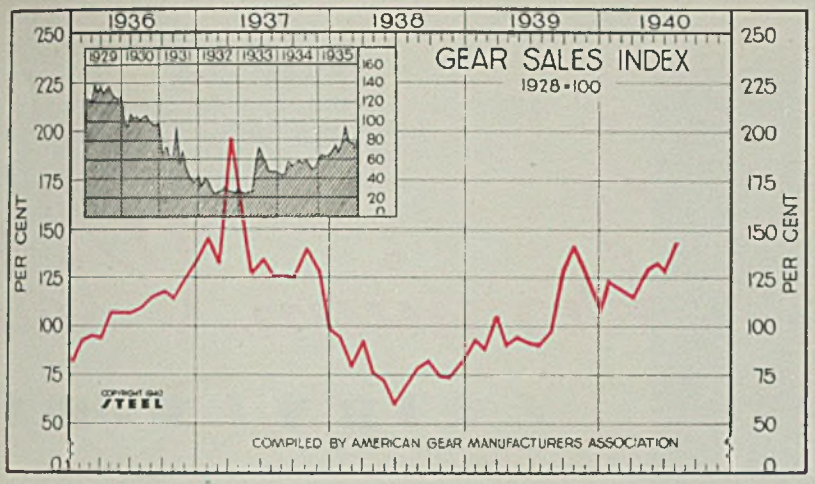




Auto Production

(1000 Units)

Week ended	1940	1939	1938	1937
May 18....	99.0	80.1	46.8	131.3
May 25....	96.8	67.7	45.1	131.4
June 1....	61.3	32.4	27.0	101.7
June 8....	95.6	65.3	40.2	118.8
June 15....	93.6	78.3	41.8	111.6
June 22....	90.1	81.1	40.9	121.0
June 29....	87.6	70.7	40.9	122.9
July 6....	52.0	42.8	25.4	101.0
July 13....	62.2	61.6	42.0	115.4
July 20....	53.0	47.4	32.1	88.1
July 27....	34.8	40.6	30.4	86.4
Aug. 3....	17.4	28.3	14.8	78.7
Aug. 10....	12.6	24.9	13.8	103.3
Aug. 17....	20.5	13.0	23.9	93.3



Gear Sales Index

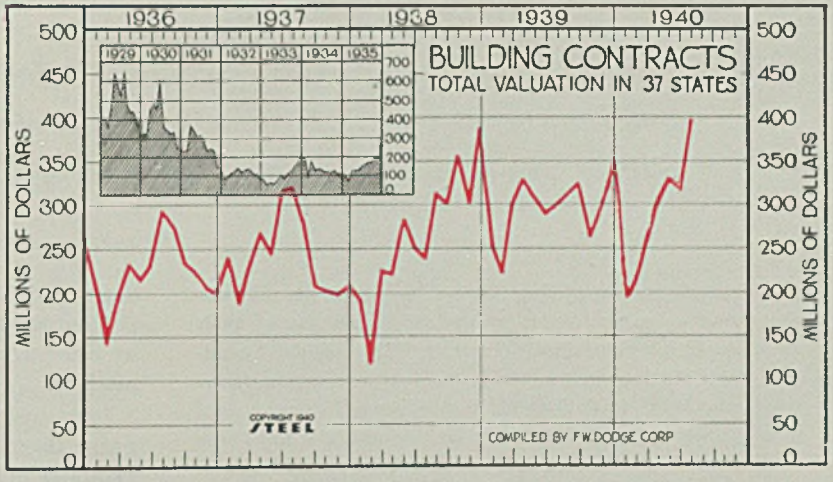
(1928 = 100)

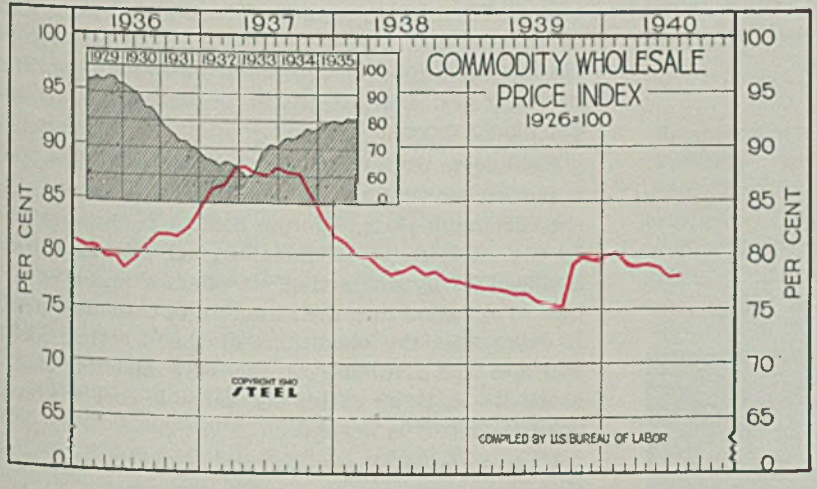
	1940	1939	1938	1937	1936
Jan.	123	91.0	93.0	144.0	90.5
Feb.	116	86.0	77.0	130.5	93.0
Mar.	114	104.0	91.0	195.0	92.0
April	128	88.0	74.0	164.0	105.0
May	133	93.0	70.0	125.5	105.0
June	129	90.0	58.0	134.0	105.0
July	141	89.0	67.0	124.0	107.5
Aug.	.....	96.0	76.5	125.0	113.0
Sept.	.....	126.0	80.5	123.0	115.5
Oct.	.....	141.0	72.5	139.5	112.5
Nov.	.....	126.0	72.0	127.5	122.5
Dec.	.....	111.0	81.0	97.0	132.5
Ave.	.....	103.5	76.0	135.5	107.5

Construction Total Valuation In 37 States

(Unit: $1,000,000)

	1940	1939	1938	1937	1930
Jan.	$196.2	$251.7	$192.2	$242.7	$204.8
Feb.	200.6	220.2	118.9	188.3	142.1
Mar.	272.2	300.7	226.6	231.2	199.0
April	300.5	330.0	222.0	269.5	234.8
May	328.9	308.5	283.2	243.7	216.1
June	324.7	288.3	251.0	317.7	232.7
July	398.7	299.9	239.8	321.6	294.7
Aug.	.....	312.3	313.1	281.2	275.3
Sept.	.....	323.2	300.9	207.1	234.3
Oct.	.....	261.8	357.7	202.1	225.8
Nov.	.....	299.8	301.7	198.4	208.2
Dec.	.....	354.1	389.4	209.5	199.7
Ave.	.....	$295.9	$266.4	$242.8	$222.3





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

(1926 = 100)

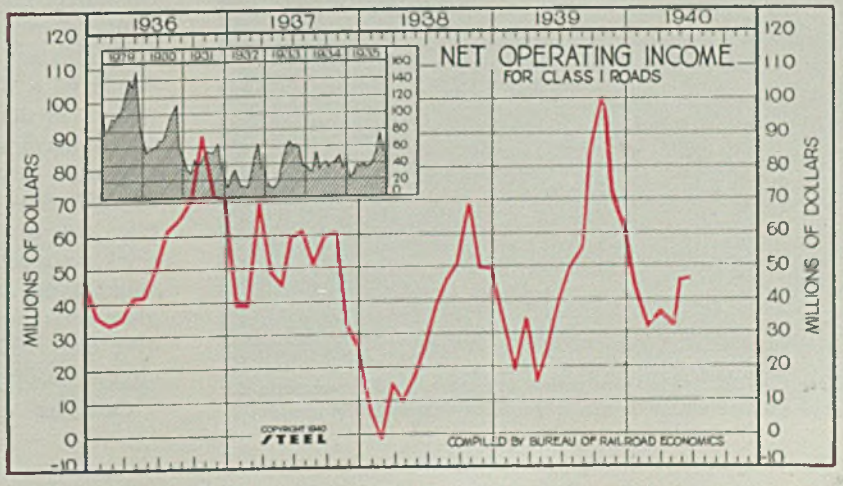
	1940	1939	1938	1937	1936
Jan.	79.4	76.9	80.9	85.9	80.6
Feb.	78.7	76.9	79.8	86.3	80.6
March	78.4	76.7	79.7	87.8	79.6
April	78.6	76.2	78.7	88.0	79.7
May	78.4	76.2	78.1	87.4	78.6
June	77.3	75.6	78.3	87.2	79.2
July	77.5	75.4	78.8	87.9	80.5
Aug.	....	75.0	78.1	87.5	81.6
Sept.	....	79.1	78.3	87.4	81.6
Oct.	....	79.4	77.6	85.4	81.5
Nov.	....	79.2	77.5	83.3	82.4
Dec.	....	79.2	77.0	81.7	84.2
Ave.	....	77.1	78.6	86.3	80.8

Class I Railroads Net Operating Income

(Unit: $1,000,000)

	1940	1939	1938	1937
Jan.	$45.57	$32.89	$7.14	$38.87
Feb.	32.62	18.59	1.91*	38.78
Mar.	36.73	34.32	14.73	69.88
April	33.82	15.32	9.40	48.36
May	47.08	25.10	16.67	44.24
June	47.42	39.10	25.16	59.35
July	.....	49.01	38.43	60.99
Aug.	.....	54.59	45.42	50.76
Sept.	.....	86.43	50.36	59.62
Oct.	.....	101.62	68.57	60.86
Nov.	.....	70.35	49.67	32.44
Dec.	.....	60.95	49.37	25.99
Average	.....	$49.02	$31.02	$49.18

*Indicates deficit.



Analyzing Chromium Plat

BY X-RA

Modern X-ray diffraction technique affords precise control of chromium plating. It reveals nature of the deposit and also allows accurate qualitative as well as quantitative analysis

Just as the direction of light is changed as it passes from one transmission medium to another, so X-rays change their direction in passing through metals. The regular repetition of identical groups of atoms throughout a crystal forms a 3-dimensional grating which affects X-rays like an optical grating affects a light beam. So by directing a small beam of X-rays at a small sample of a substance and photographing the rays diffracted in different directions and in different amounts, it is possible to learn much concerning the nature of the material

NATURE of a chromium plated surface is determined by a large number of variables. Hardness of the plate may range from 140 to 635 on the Vickers-Brinell scale (using diamond ball indenter). Measurements of 50 pieces of commercially plated parts have shown an average of 620 Vickers-Brinell. Certain pieces of this hardness have withstood heavy pressures and have served as wear-resistant surfaces under extreme conditions of friction and pressure such as are encountered by cylinder liners in steam locomotives.

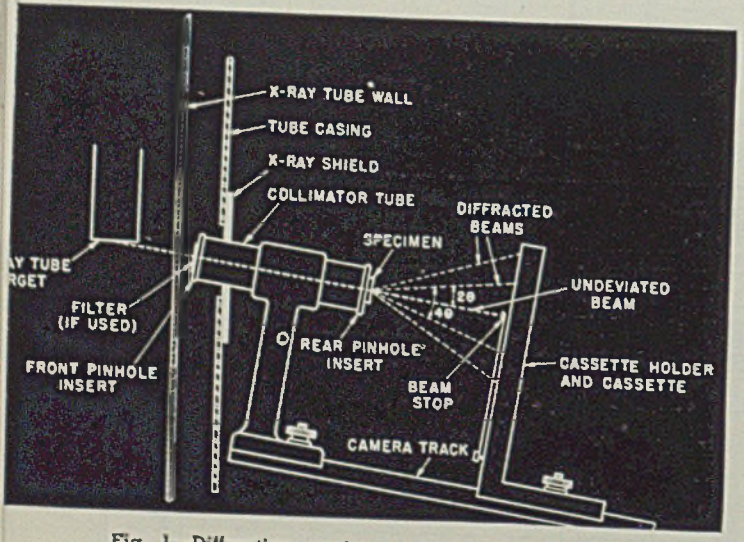


Fig. 1—Diffraction equipment set up with flat cassette for direct transmission to produce "through" pattern

It is well known, however, that chromium-plated parts from the same bath and plated under almost identical conditions will show great hardness variations. The increasing use of hard-plated parts, such as in aircraft, necessitates absolute control over all plating conditions if chromium surfaces of uniform hardness and texture are to be reproduced consistently on a production basis.

Holding to extremely close tolerances requires, too, a perfect understanding of all the factors affecting the chromium plate. To the control facilities offered by the chemistry and metallurgical laboratory now is added X-ray diffraction. It offers a means of further exploration into the structure of chromium plate. It determines the conditions of the deposited metal and also the structure of the base material underneath it—so is an extremely valuable tool wherever precise control is desired.

First series of X-ray diffraction experiments with chromium plate were devoted to the effect of various temperatures of the plating bath upon the resulting electroplate. The small experimental plating bath employed a 10-liter cylinder of pyrex glass, 25 centimeters in diameter and suspended in a water bath with thermostatically controlled electric heater to maintain a predetermined temperature within 0.3-degree. Sheet anodes were of high-purity lead, free from zinc and iron oxide. The lead sheets, 1/32-inch thick, were rolled to form six cylindrical anodes, placed equidistant around the inside wall of the circular glass vessel and supported by a bent glass rod hooked over the vessel rim. Each anode was clamped to a circular copper bus bar.

Cathodes consisted entirely of polished cast-iron

By J. T. WILSON
Head, Diffraction Laboratory
General Electric X-Ray Corp.
2010 Jackson Blvd., Chicago

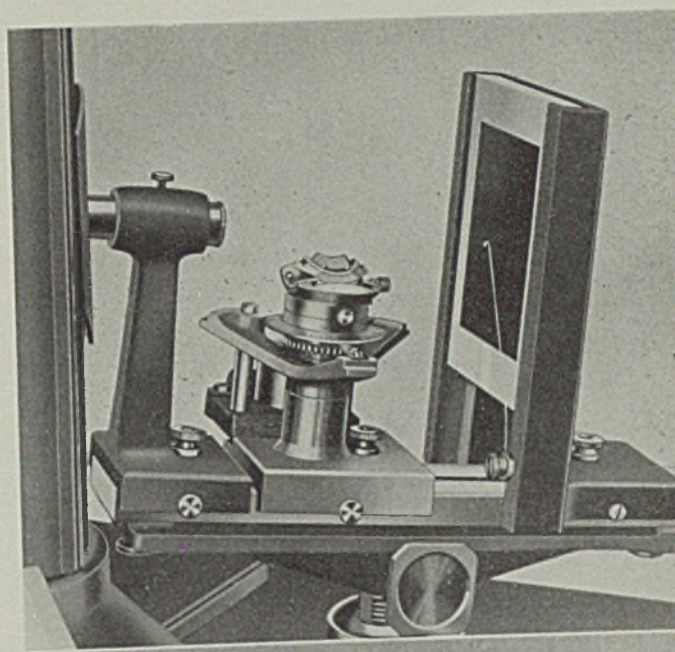
DIFFRACTION

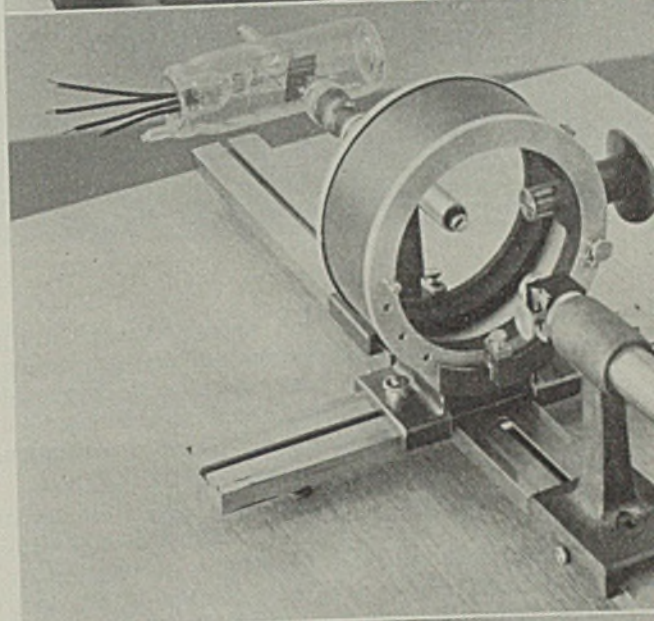
rods cut from a single rod of uniform structure. Each was examined with a microscope to be sure its structure was uniform and similar to all other sections because electrodeposited chromium appears influenced by nature of the underlying crystal structure. Clamped in a lathe chuck and rotated, the rods were highly polished with a cloth supplied with 320-grain carborundum and a mixture of alcohol and water. These samples were used singly under varying plating conditions, being supported in the exact center of the plating tank.

Power supply was from a high-wattage transformer with a set of bimetallic full-wave rectifiers using a 60-cycle 110-volt circuit. Ammeters and voltmeters continuously checked power supplied. Resistances and autotransformers gave control of current and voltage.

Plating bath solution contained 250 grams per liter of chromic anhydride and 1.25 grams per liter of sulfuric acid. Containing only the sulfate ion in the form of sulfuric acid, the solution gives best plating conditions over a wide range of temperature changes. Throwing power is excellent and a bright electrodeposit is laid down. Bath concentration was checked and corrected daily and also each time a new cathode was introduced.

Great care was taken to check the amounts of hexavalent and trivalent chromium. Concentration of trivalent chromium appeared directly dependent upon bath temperature and anode current density. Trivalent chromium is formed by a reduction process occurring at the cathode. As the trivalent form migrates to the anode, it is partially oxidized upon the anode surface. Experience here proved that trivalent chromium was most rapidly oxidized when the bath





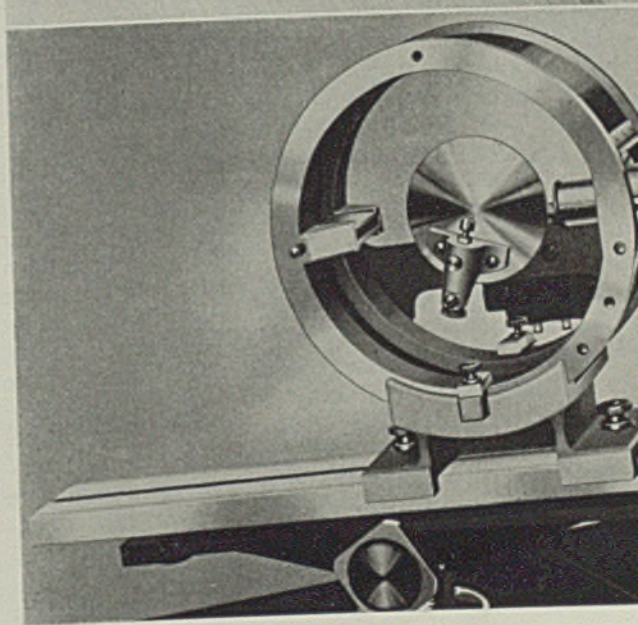


Fig. 2—Universal specimen mount—a system of cradles to hold a flat specimen within the incident beam regardless of the angle of setting. Pinhole system and flat cassette also used

Fig. 3—Microscope mounted on camera track checks specimen placement. This is the powder camera and special tube for studying effects of heat treatment in vacuum and in various gases

Fig. 6—Powder camera with specimen arranged at center on a cam system so it may be oscillated through a predetermined angle. Collimator tube and pinhole assembly at right

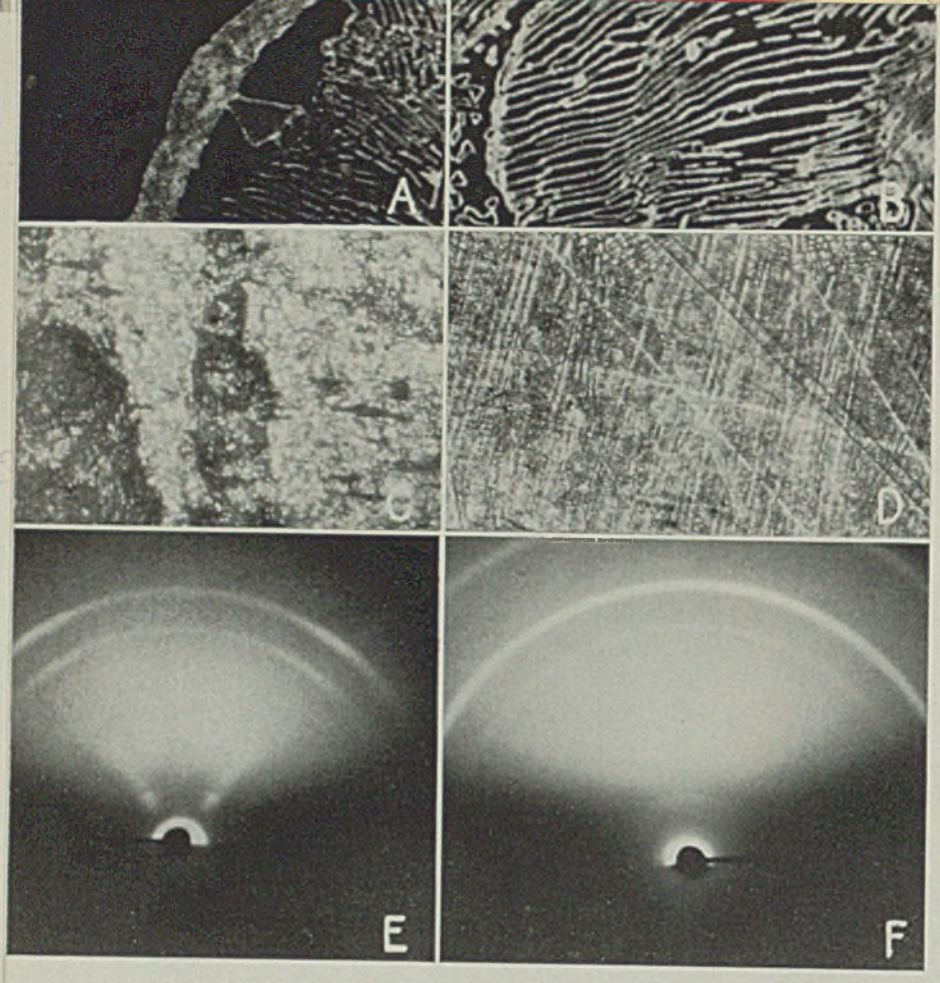


Fig. 4—Effect of underlying structure on the plate is shown here. A, C and E are respectively micrographs of degenerated pearlite steel structure, micrograph of chromium plate deposited on it and "through" diffraction pattern of that chromium. B, D and F on the right are respectively micrographs of true pearlitic steel surface, chromium deposited on it, and diffraction pattern of that chromium

temperature was high and anode current density low. Changes in the conductivity of the bath during all of the experimental work proved to be correlated with changes in trivalent chromium concentration. Bath conductivity decreases rapidly as concentration of trivalent chromium increased.

First experiment in temperature effects employed 35 amperes per square decimeter. Samples of chromium plate were produced by holding current density constant and maintaining concentration of the bath components. This allowed a study of chromium plate produced at various bath temperatures established by changing the thermostat control. Only those types of chromium plate of commercial importance were studied. A set of four samples was produced by employing four different temperatures—50, 52, 56 and 60 degrees Cent.

After plating, sample specimens were prepared for diffraction study by first thoroughly washing them in a solution of normal hydrocholoric acid to remove any chromium salts deposited and to give a slight etch. The rod-shaped specimens were then mounted on the diffraction assembly using a pinhole system and flat cassette, Fig. 1.

A set of two pinholes limits the X-ray tube target. Pinhole inserts are supported in a cylindrical stainless steel tube called the collimator. Each pinhole must be accurately constructed to reproduce consistent results. Both pinhole inserts consist of a lead pellet drilled accurately in the center and inserted in a stainless steel matrix. Diameter of the hole is 0.025-inch. Shields in the pinhole near the specimen eliminate any diffraction pattern caused by the crystal structure of the lead pellet which limits the beam.

The specimen is mounted directly in front of this pinhole assembly, Fig. 1, so the X-ray beam glances across the curved surface of the plated rod. Distance between the portion of the specimen being touched by the X-ray beam and the surface of the film is set accurately at 3½ centimeters by templets.

The X-ray beam coming from the tube is accurately defined by the pinhole system and glances across the top of the cylindrical surface of the rod to be diffracted by the chromium plate upon the surface. The diffraction pattern is reproduced upon the photographic film held in the cassette and cassette holder, Fig. 1. All specimens having curved surfaces were studied in this manner. Great care was taken to maintain exactly the same distance between the specimen and the film and accurate measurement was made to be sure the same amount of rod surface extended into the beam.

Radiation from a copper target tube was used and no filtration was employed to give monocromatic radiation. The spectrum of the tube was pure and contained no traces of iron or tungsten radiation. The K alpha and the K beta radiation of copper can be seen upon the resulting diffraction pattern.

Diffraction patterns of the four specimens of electroplated chromium were cut so they could be placed side by side and compared easily. Although quite similar, some differences were found in the four samples. The plate produced at 56 degrees Cent. was found to have the greatest wear resistance as shown by friction tests. Following registration of the diffraction pattern, each specimen was marked to show position where the pattern had been taken and hardness of that exact spot was measured. The hardness measurements were found to be 580, 610, 620 and 550 Vickers-Brinell for specimens produced at 50, 52, 56 and 60 degrees Cent. respectively.

Technic for study of thin films of chromium plate: It often becomes necessary to study articles of odd shape. If it is possible to cut the article and take a portion of metal having a flat smooth surface, the problem of mounting becomes simplified. Most successful practice has been to select a portion of the

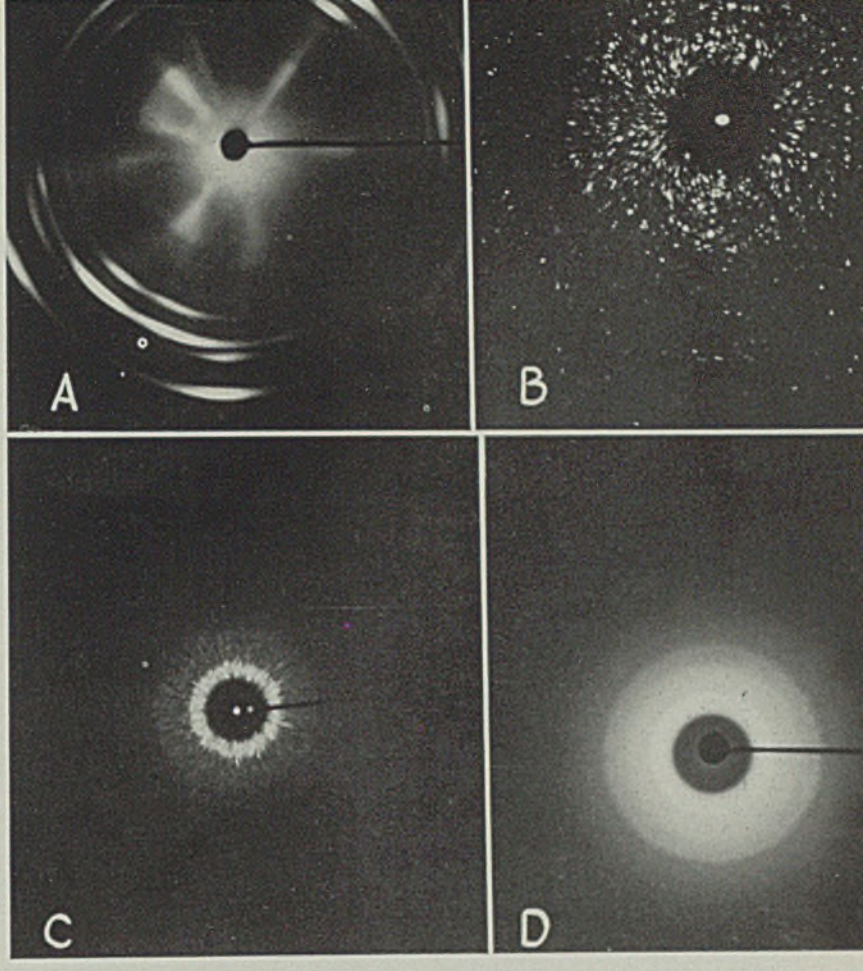


Fig. 5—Here A is "through" diffraction pattern of aluminum which was chromium plated and showed cracks after three weeks' aging. B is pattern of aluminum on which the plating showed no cracking after three months' aging. C is pattern of steel upon which chromium plate remained permanently. Suitable heat treatment has relieved the preferred orientation from cold working. D is pattern of chromium plated on this steel. With hardness of 630 Vickers-Brinell, it proved highly wear resistant

specimen which presents a perfectly flat surface and cut out a small section of this area, being careful not to heat the specimen during the cutting operation or in any way alter the surface.

Such a small section may be studied to advantage by mounting it upon the universal specimen mount illustrated in Fig. 2 with the pinhole system and flat cassette. This mount consists of a system of cradles rocking at right angles to each other and so designed that specimens may be held, regardless of the angle of setting, within the incident X-ray beam coming from the pinhole. Angle of mounting is determined by graduations upon the cradle. Cradles are moved by worm gears and rack-and-pinion motion. This mechanical system allows extremely accurate setting to any desired angle.

Mounting the specimen may be facilitated by a microscope with an optical system such as shown in Fig. 3. It is mounted so its axis is coincidental with the X-ray beam passing through the pinhole assembly. Microscope is moved along the camera track to check the placement of a specimen. The microscope eye piece has cross hairs, the intersection of which is coincidental with the X-ray beam. The flat cassette may be removed from the camera track and the microscope assembly substituted to allow perfect adjustment of the specimen. The specimen is mounted so that the flat surface is exactly in line and parallel with the incident X-ray beam. Cradle calibrations help adjust the angle of incidence of the X-ray beam.

The film-holding cassette is mounted so the perpendicular to the photographic film may be exactly twice the angle of incidence. This method, suggested by Clark, Brugmann and Kaufmann, has proved valuable in studying the condition of chromium plate at various depths from the surface. When the specimen is inclined to the axis of the X-ray beam with a small angle, the resulting pattern will indicate the nature of the surface structure of the plate. If the inclined angle is large and the photographic plate is arranged at exactly twice the incident angle, then the resulting diffraction pattern will show the nature of the chromium plate underlying the surface. This method of examination shows the surface condition is often changed by mechanical polishing.

On perfectly flat samples produced under the same plating conditions and on same base material, it often is possible to estimate plate thickness. It appears practical provided the deposit is not thicker than 0.025-inch. It is impossible to give general rules for determining plate thickness by X-ray diffraction as the nature of base material, thickness of and structure of the plate are all important variables.

Most successful thickness study has been on drawn brass specimens overlaid with decorative chromium plate 0.0075-inch thick. It is believed that the diffracted X-ray beam originates from the atomic structure which lies only a few atom layers below the surface of the chromium plate. Since the chromium plate consists of many atom layers, it would be impossible to take a diffraction pattern which would give evidence of the nature of the structure lying deep under the surface of the plate due to the absorption of the incident radiation by the chromium and the diffracted radiation as well.

The change in the diffraction pattern which occurs as the thicker plates of chromium are deposited is due to a change which occurs in the nature of the plate as the deposit becomes thicker. Thus certain specimens showed absolutely no correlation between the diffraction pattern and the thickness of the plate. On the other hand, specimens from another plate

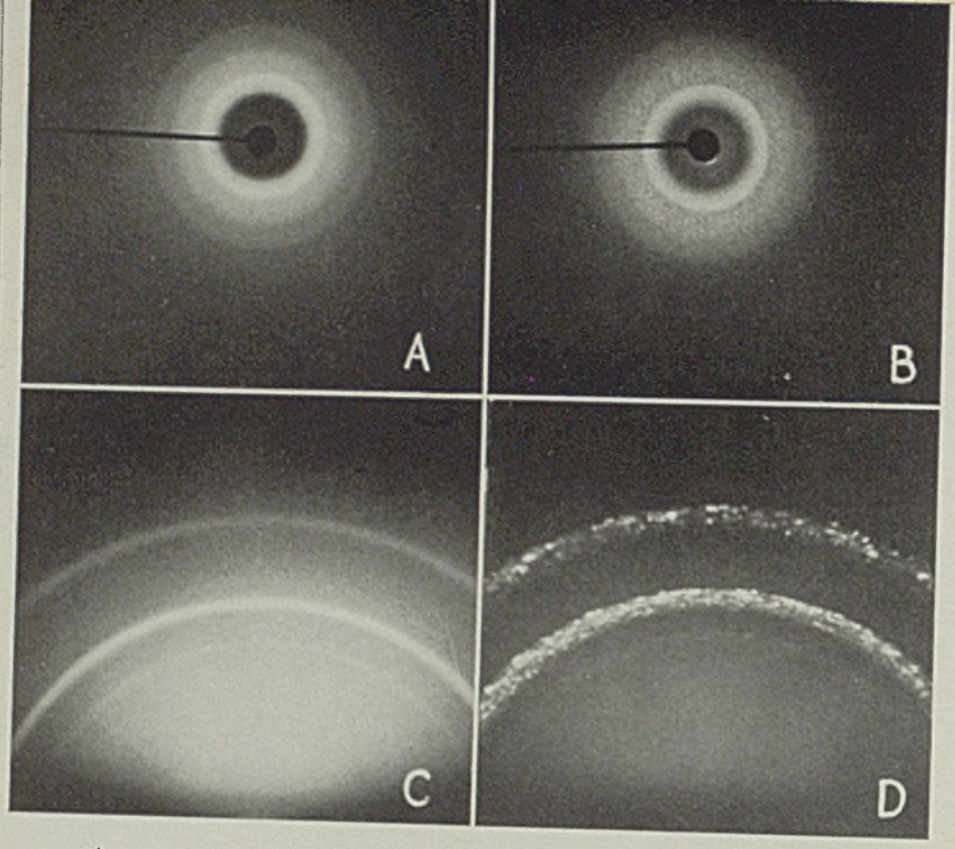


Fig. 7—Here A and C are "through" and "reflection" patterns respectively of chromium plate before heat treatment—hardness 620 Vickers-Brinell. Similar patterns after heat treatment are B and D respectively—hardness now 220

showed consistent correlation between thickness of the plated coat and the diffraction pattern. In each case, the pieces consisted of chromium plated brass with no underlying coat of nickel.

Effects of trivalent chromium: Mention has previously been made of the effects of trivalent chromium as it increases in concentration in the electroplating bath. A special setup to study this was made. To allow the trivalent ion to increase in concentration rapidly, a system of porcelain cups was introduced to surround each anode and to prevent the solution from allowing the trivalent chromium to come in contact with the anode and be oxidized to the hexavalent form. These cups were unglazed porcelain extraction thimbles supported by the glass rods supporting the anode structure. Each lead anode was inserted in an extraction thimble.

Concentration of trivalent chromium was found by determining the total quantity of chromium present, then determining the quantity of hexavalent chromium present and subtracting this percentage from the amount of total chromium.

Diffraction patterns obtained from samples plated at varying concentrations seemed similar and showed that high concentration of trivalent chromium had little if any effect upon the nature of the plate *so long as the current densities were maintained at the same value and temperatures were accurately controlled.* It would seem safe to conclude that the presence of trivalent chromium increases the bath resistance. So by changing current and temperature, it may affect the nature of the plate. If a system is used to control temperature and current accurately, the chromium plate laid down probably would remain unchanged as the concentration varied. Changes in the throwing power of the bath were observed to occur, however, as the percentage of trivalent chromium increased.

Effect of underlying structure upon chromium plate: It has been observed in many electroplating shops that the nature of the base material being plated has a great influence upon the nature of the plate produced. A striking example of this was observed. A circular piece of steel was to be coated with a deposit of electroplated chromium 0.005-inch thick. The piece had streaks of metal having a glazed appearance running across the entire surface of the sheet. Both sides exhibited the same streaky appearance. Cutting the specimen proved that the heterogeneous nature of the metal extended through the entire piece, the unlike constituents being unevenly distributed.

Microscopic examination showed certain locations were rich in pearlite while other areas showed decomposition of the pearlite with a predominance of ferrite surrounding large uneven areas of cementite. But after carefully machining and finishing with a surface grinder using fine abrasive wheels, no evidence of the heterogeneous nature of this structure could be seen, probably due to the smearing action of the grinder upon the surface structure. After the specimen had been electroplated, however, it was observed that the chromium plate had reproduced the same streaked appearance which characterized the unplated metal before the final grinding and polishing operation. Cleaning the steel plate had etched the surface to its original state and the electroplated deposit reproduced this condition to some extent. Photomicrographic examination of the nature of the chromium plate showed a fundamental difference in the structure of the chromium plate over the areas of the different phase mixtures of the steel. Micrographs of the steel structure and the resulting chromium plate are illustrated in Fig. 4.

Diffraction patterns of the chromium show great differences in the amount of strain. Chromium laid down upon the degenerated pearlite surface experienced a high degree of preferred orientation of the crystal structure. The chromium plate laid down upon the true pearlitic structure showed little prefered orientation, and grain size seemed consistently smaller.

Plate laid on the degenerated pearlite had a hardness of 610 on the Vickers-Brinell scale, probably caused by a slight warping which occurred in the steel structure tending to compress the chromium plate and produce a harder surface. A hardness of 580 was noted on the chromium plate laid directly over the true pearlite structure. Lack of warpage here would tend to prevent preferred orientation and thus account for the high-hardness found in the other areas.

Chromium Deposits Upon Brass and Aluminum: Specimens of drawn brass and cast brass were studied by means of direct transmission with the pinhole assembly and flat cassette. Certain specimens indicated great strain to be present within the brass. Other specimens indicated all strain was relieved. Specimens of aluminum sheets were also studied by means of direct transmission. The specimens of drawn brass, cast brass and aluminum sheet were subsequently electroplated under conditions most suited to the type of material. It is considered good practice to overlay cast brass and drawn brass with a thin deposite of nickel before applying chromium. This was also done to the aluminum specimen

(*Please turn to Page 66*)

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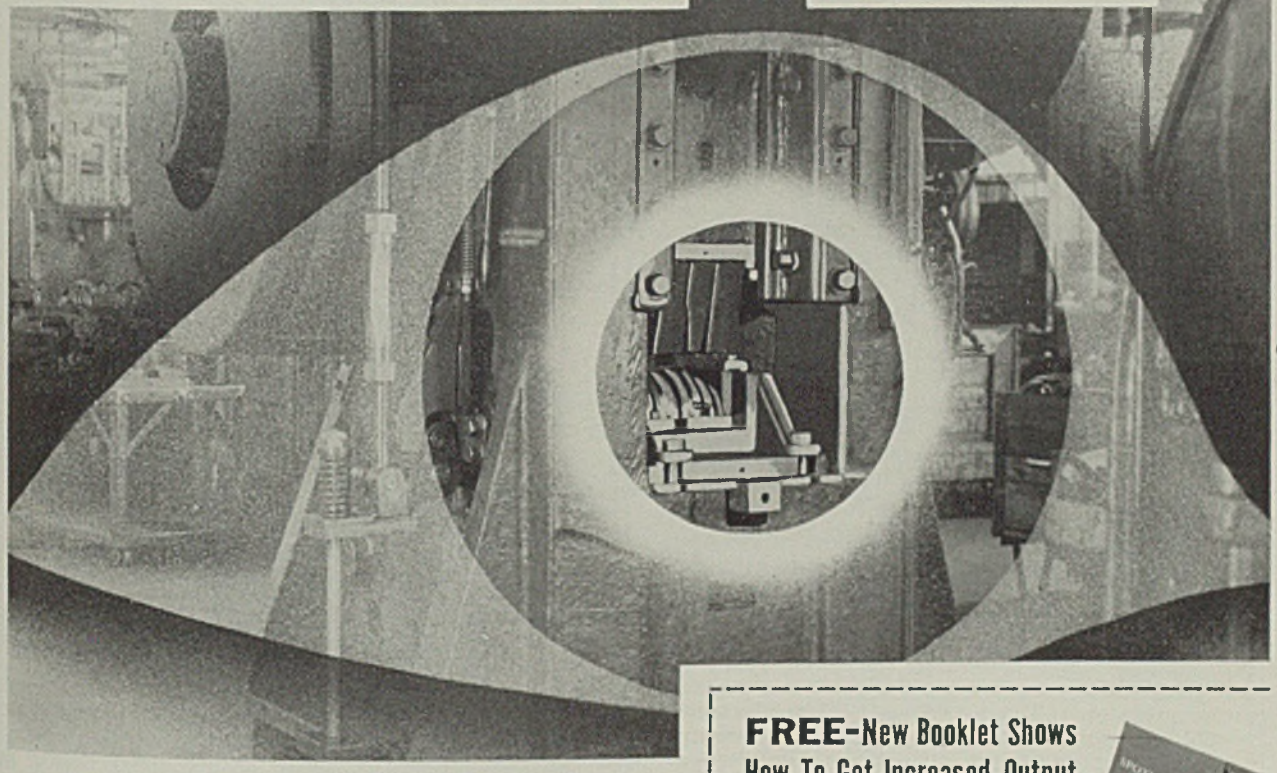

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Surface Cladding

New method applies cladding material in strips 4 to 6 inches wide and 3 feet or more in length to furnish permanent corrosion-resistant lining for processing vessels. Cost found low

By GEORGE E. GUDE JR.

Wyatt Metal & Boiler Works
Houston, Texas

■ WITH THE demand of the petroleum and chemical process industries for use of corrosion-resistant steel, much work is being undertaken to develop low-cost fabricating methods which will give long life.

Prior to the knowledge and use of corrosion-resistant steel, engineers responsible for the design of pressure vessels simply increased the wall thickness to take care of known corrosion rates. Today improved results are being obtained at lower cost by using clad fabrications—a thick plate of low-cost material being protected against corrosion by a thin highly resistant lining. Cost, of course, prevents making the entire vessel of solid corrosion-resistant material in most instances.

One of the first corrosion-resistant steel-lined pressure vessels built in Wyatt's Houston shops was fabricated by plug welding, the corrosion-resistant steel sheets used as liners being punched with holes ⅝-inch in diameter on 1½-inch triangular centers and arc welded to the inside of the vessel through these holes. The alloy sheets used were about 18 inches wide by 3 or 4 feet long. While satisfactory for much work, the cost was high.

A variation of this method was developed later. Here the holes were replaced by slots 3/16 to ¼-inch wide and ¾ to 1 inch long on 4-inch longitudinal centers and 3 to 4-inch crosswise centers, running a corrosion-resistant bead in a slot joined the corrosion-resistant steel to the carbon steel base plate. Various spacings were tried, but costs were still excessive.

The latest method of applying corrosion-resistant steel linings in this plant is to use strips about 4 to 6 inches wide and 3 feet or more in length. These strips are applied with a sufficient space between each strip to allow the welder to lay one bead of high-alloy welding rod in between, thereby joining the two parallel edges and simultaneously welding both of the edges to the carbon steel plate lying underneath.

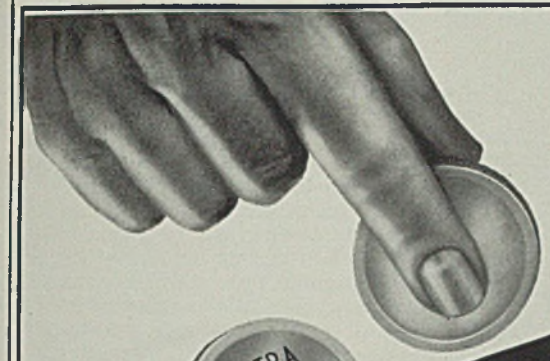
No intermediate welding by plugs or strips is required. The result is a smooth appearing surface with a minimum amount of welding. Manhole necks and large nozzles are lined with strips in a similar manner, and faces of flanges are coated with corrosion-resistant steel welding metal applied in three layers, subsequently machined.

Smaller openings are lined with corrosion-resistant steel tubing, welded to the flange with a continuous bead around the periphery at inside of the nozzle. Where these manhole and nozzle liners meet the inside lining of the vessel, the two linings are joined by welding.

Stress relieving such vessels after lining is necessary. Upon being heated to a temperature of 1200 degrees Fahr. for the necessary soaking period, about 1 hour per inch of thickness, no distortion of any consequence occurs except at times on tubing in the small nozzles.

This method of cladding appears to be highly successful.

Thicknesses of the lining used do not vary with the thickness of the



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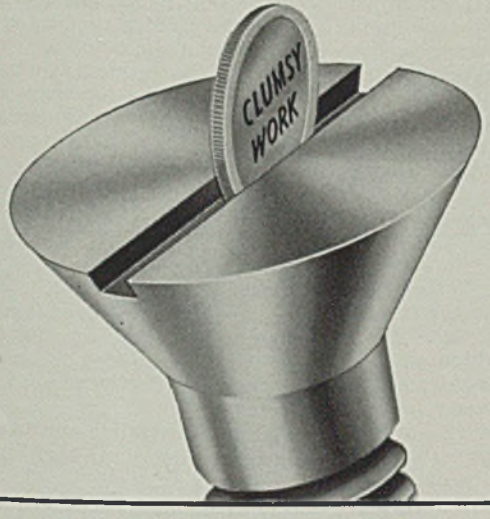

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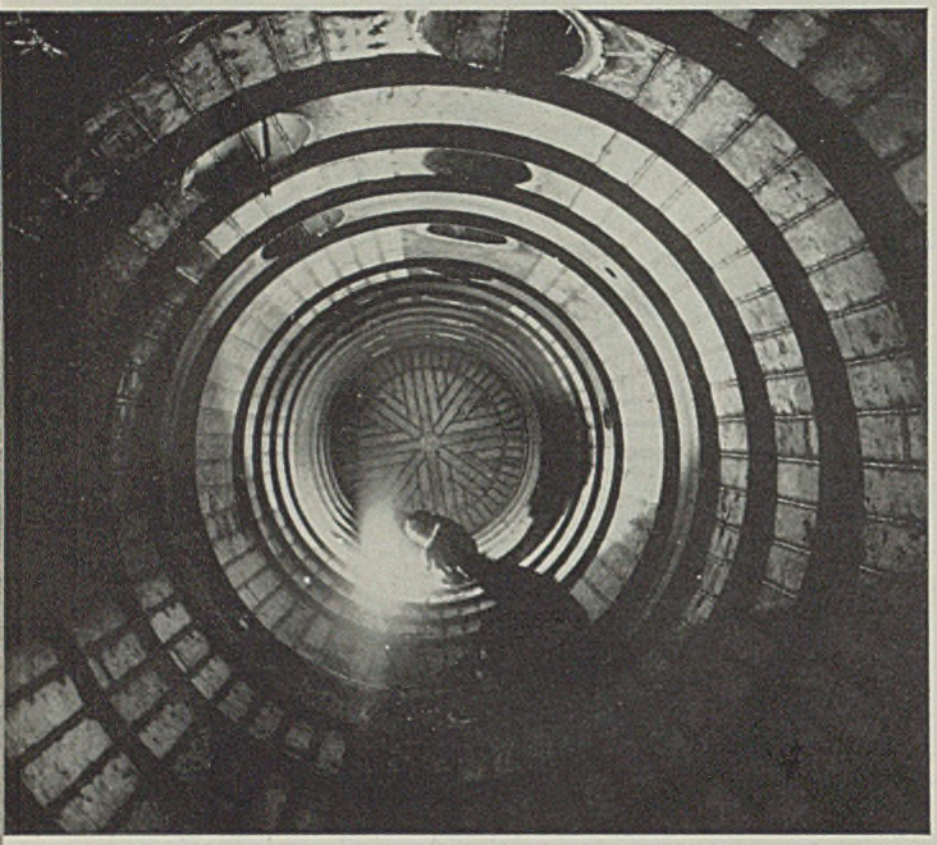


Interior of corrosion-resistant steel-lined still as lining is being applied

plate as a minimum thickness of lining is employed in practically all cases, depending upon fabricating ability and conditions of corrosive exposure. Thickness of the low-carbon plate used depends entirely upon the pressure to which the vessel is subjected as it must be thick enough to furnish the required physical strength.

Thus, thickness and chemical analysis of the cladding material depend entirely upon the contents of the vessel and so may be 18-8 stainless steel, monel, nickel or other resistant material. Ordinarily it is from 12 to 16-gage in thickness.

Similarly, the chemical analysis of the welding rod employed varies to correspond with the actual chemical analyses of the corrosion-resistant sheet. It is customary to use titanium or columbium as a stabilizing element to offset the possibility of intergranular corrosion from carbide precipitation when welding stainless. This titanium or columbium is supplied in the stainless sheets, in the welding rod, in the flux on the welding rod.

In fusing the alloy material to the carbon steel, it has been found that there is a certain amount of loss or diffusion of the alloying elements. To overcome this to some extent, 25-12 or similar analysis welding rod is used on 18-8 stainless sheet. Similarly, rod of higher alloy content is used in welding other alloy material.

The size of rod for welding is ordinarily about 5/32-inch in diameter, using a potential of 23 to 26 volts at the arc with a current from 80 to 135 amperes. The small rod is used to eliminate excessive heat in the welding which, if not guarded against, might result in distortion and bulging of the lining.

The carbon steel plate to which the corrosion-resistant material is welded is first prepared by sand blasting and all edges of the alloy sheets are sheared square. Then the alloy sheets are laid in place and tack welded to the carbon steel, after which one pass of the alloy welding rod completes the joint.

All joints are tested by placing a vacuum chamber over the welded portion of the lining after an application of soap suds. The vacuum chamber is made with a soft rubber base to give airtight contact with the plate. When vacuum is applied, any leakage may be observed through the inspection glass which is placed in the top surface of the vacuum chamber. Approximately 3 feet of seam may be inspected at one time in this manner.

Furnishes Navy with Two Special Cranes

■ Two special cranes of unusual construction have been furnished to the navy department, bureau of yards and docks, for the navy yard at Portsmouth, N. H., by Cleveland Crane & Engineering Co., Wickliffe, O.

These have a cantilever extension which makes it possible for the trolley to go beyond the crane runway, and convey loads into the adjacent bay. The crane bridge is underslung to permit the trolley, when traveling into the next bay, to clear under the runway girder. This makes it easy to transfer material from one bay to the other without in between handling.

Of all-welded steel throughout, the cranes are equipped with bearings of the antifriction type. Spring-type bumpers are provided for the trolley and one side of the bridge. Gear cases are oil tight. Bridge wheels, gears, and pinions are of tool steel.

Operated from a closed-type cab mounted on the end of the bridge opposite from the bridge extension, each crane has a capacity of 5 tons and span approximately 37 feet. The vertical travel of the hook is 86 feet.

The cranes also have trolley, hoisting and bridge speeds of 100, 40 and 350 feet per minute respectively.

Materials Strength and Practical Mechanics

■ *Practical Mechanics and Strength of Materials*, by Charles Wilbur Leigh; cloth, 495 pages, 5 x 7½ inches; published by McGraw-Hill Book Co. Inc., New York, for $3.

This is the third edition of this work and a large amount of material has been added to enlarge the scope and effectiveness of the entire text.

Many illustrative examples have been introduced and all the problems are new.

The material is arranged in logical order and fills the needs for a basic course. A list of answers to selected problems is given.

The book resulted from need for such a text for use in classes made up of men from offices, foundries, shops and construction companies in the night school of Armour Institute of Technology, Chicago. It is intended for night schools, vocational schools, colleges desiring a short course in mechanics and for a place in the libraries of men engaged in practical construction work.

Paints 400 Wheel Disks Hourly

Highly efficient and compact setup degreases, dip paints, drains, dries and bakes 3300 wheel disks per 8-hour shift, using a synthetic enamel. Only one operator is required

■ YEARS ago in the horse and buggy days, the product of the Geneva Metal Wheel Co., Geneva, O., consisted principally of steel wheels with cast iron hubs for various types of agricultural implements. These wheels were painted attractively by hand using a bright red, green or yellow, or dipped, generally in black. All that was necessary was plenty of paint, painters and floor space.

With the steady march of progress, however, pneumatic and solid rubber tires have largely replaced steel rims. While the pneumatic-tired wheelbarrow was unknown a few years ago, today it is accepted as a man-hour saving device in many industries. So now one of the chief products of the Geneva Metal Wheel Co. is rubber-tired wheels.

Side members of these wheels are substantial steel disks blanked and drawn under heavy presses. To finish attractively some 3300 disks per day in various sizes, some type of mechanized painting is essential. After much study, a compact and efficient automatic unit was installed for degreasing, dipping, draining, drying and baking the disks using synthetic enamel in aluminum, brown and green.

The completed installation, some 30 feet long, is shown diagrammatically in Fig. 1 where the route of the double chain conveyor is detailed. These chains are of the roller type, 1½-inch pitch with 1-inch rollers. The two chains are connected at intervals by bars on which the work is hung from hooks, as shown in Fig. 2 which shows the unloading and loading station.

Fig. 1 shows route of the parts from the loading through degreasing, dipping over drain board, through baking oven and cooling zone back to the unloading station.

Degreasing is important for no pigment will adhere to a greasy surface. The chlorinated organic degreasing compound has a boiling point of 188 degrees Fahr. and a low latent heat of vaporization of about 104 B.t.u. per pound. This solvent is heated to the boiling point by a 15-kilowatt electric unit. The vapor given off rises only part way in the degreasing tank as it is about four times as heavy as air.

To maintain a constant vapor level, a water jacket chills the tank

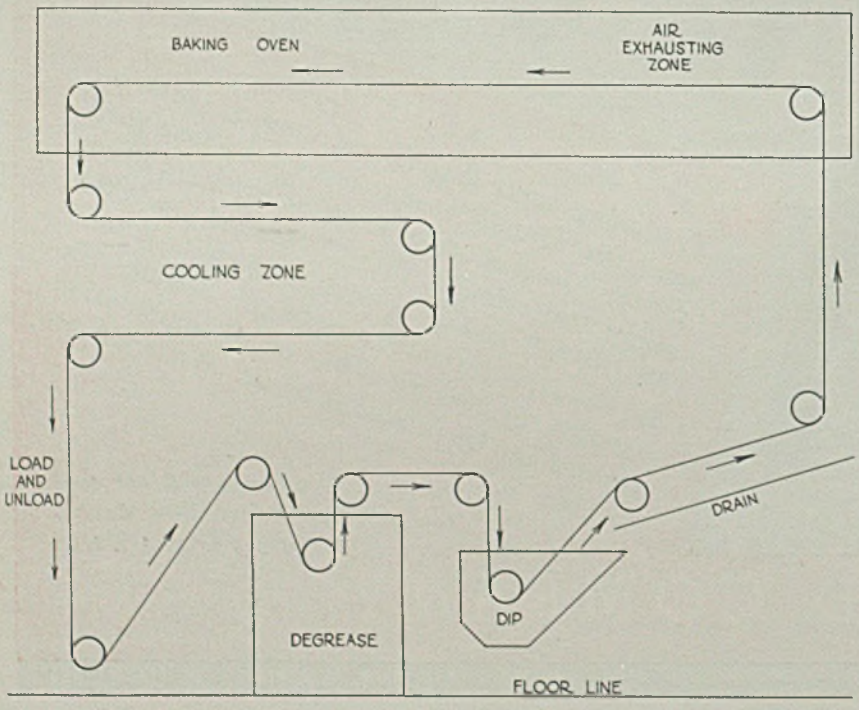
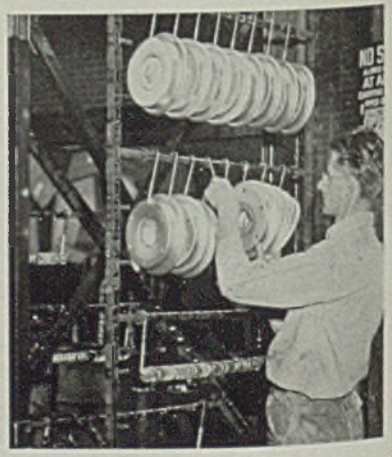
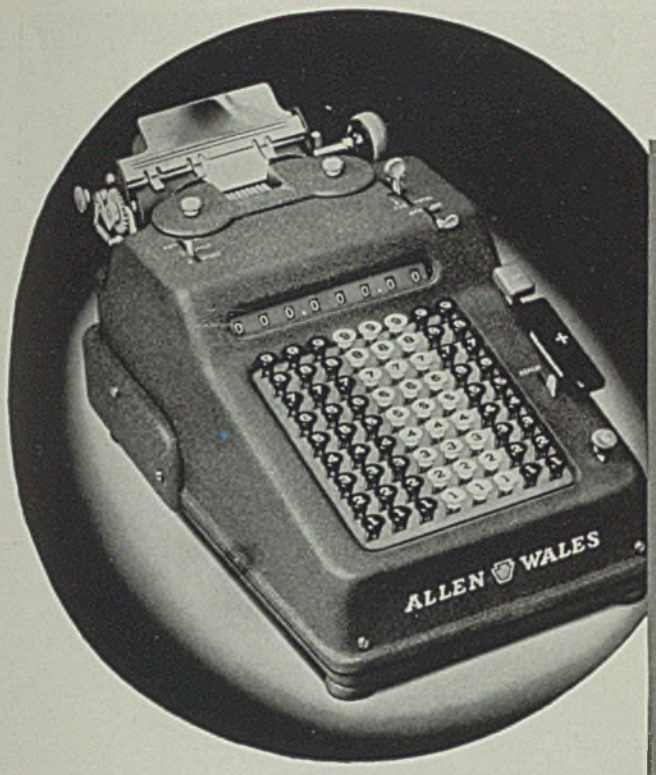


Fig. 1—(Left)—Diagram showing arrangement of automatic finishing equipment

Fig. 2. (Below)—Loading-unloading station





PENNSALT CLEANER

cuts metal cleaning cost 60% for Allen Wales Adding Machine Corporation

ALLEN WALES Adding Machines are precision instruments requiring extreme care and the highest standards of quality in their manufacture. The cleaning of metal parts, such as springs, bearings, key arms, and others must be perfectly done if accuracy and excellence of finish are to be maintained through the finishing operations.

For this reason one of the Pennsalt Cleaners was selected after thorough tests in which it proved its exceptional efficiency in removing grease and oil, and in preparing the surfaces for plating. Outstanding economies resulted. Not only is the cleaning time cut in half through the elimination of a pre-cleaning operation, but cleaning costs were reduced approximately 60%. The cleaning solution is dumped only about every 100 days, showing the long lasting power of Pennsalt Cleaners in *electrolytic* cleaning.

Orthosil—the original Pennsalt Cleaner—quickly made an important place for itself in heavy duty metal cleaning throughout industry generally. Companion cleaners, meeting every need with laboratory precision, have been developed for varied and extreme requirements. The entire line is known today as the Pennsalt Cleaners.

They all have unusual dissolving and emulsifying action, and enormous lasting power. Their action is fast and efficient. Why not let one or more of them start saving money in your processes? Write Dept. E and we will gladly supply full details. Pennsalt Cleaner Division, Pennsylvania Salt Mfg. Co., Phila., Pa.

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PENNSALT

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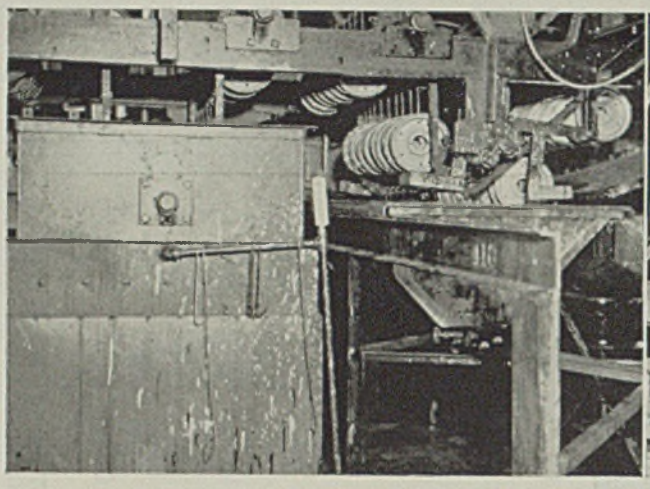
PENNSYLVANIA SALT MANUFACTURING COMPANY

Chemicals



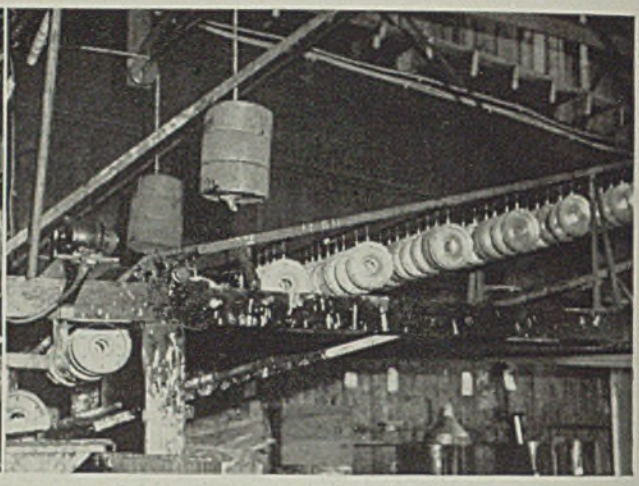


Fig. 3. (Left)—Here are both degreasing tank, left, and enamel tank, right

Fig. 4. (Right)—From dip tank, work passes over drain board. Excess enamel runs back into tank

walls upward from the level it is wished to maintain the vapor, cooling the vapor sufficiently to liquefy it so it returns to the bottom of the tank. The vapor condenses on the disks as they pass through it to wash off all traces of oil, leaving the disks clean, dry and slightly warm.

Degreased disks pass on to the enameling tank. In Fig. 3, the degreasing tank is at left, the enameling tank at right. The enamel is agitated mechanically to keep the solvent and pigment in the correct portions at all times. After dipping in the enamel, disks are allowed to drain before drying and baking when the parts pass over the draining station, Fig. 4. Superfluous enamel runs back down the inclined drain board into the enameling tank. Note in Fig. 4 that the conveyor chains run in guides to help support the load and to prevent the chains from sagging.

Oven Air Changed Six Times

From the draining zone, the chains move the work vertically to the air exhausting zone of the baking oven where the chain movement again becomes horizontal. Air is exhausted to help dry the enamel. If the chain is stopped for any accidental reason, the heat input fan stops automatically, but exhaust fans continue to operate, carrying off all fumes.

Next the load passes into a 75-kilowatt electrically heated oven. A temperature of approximately 260 degrees is maintained automatically by a thermostat. To assure proper exhaust of volatiles, air in the oven is changed completely six times per hour.

From the oven, work passes through the cooling zone, see Fig. 1. Here the parts cool sufficiently so they can be unloaded without inconvenience to the operator. Further, the cooling zone permits the enamel to harden to a certain extent so the parts can be handled without danger of marring the enameled surfaces. Now the work is unloaded in the station shown in Fig. 2.

Entire finishing operation requires 70 minutes. However, the speed of the conveyor can be increased or decreased to meet particular conditions.

An electric heating element in the degreaser permits the heat to be controlled automatically and allows the degreaser to be located immediately adjacent to the enameling tank. Floor space limitations also had to be considered in designing the installation. Heating the baking oven with electricity furnishes a safe heat, easily controlled.

This equipment has a rated capacity of about 3000 pounds of disks per 8-hour day. However, it is not uncommon to handle a load of 3800 pounds per day. This weight means an average of 3240 disks of various sizes and shapes are cleaned, enameled and baked in a day's run.

Degreaser and oven are quite flexible in operation and handle various sizes of disks readily. The unit saves considerable floor space which would be necessary if the installation were of the continuous straight-line type. Regarding the operating cost, it is obvious that the installation attended by one man who does the unloading and loading takes the place of several men whose services would be necessary if the disks were cleaned, enameled and baked by ordinary methods.

◆

Mining Data Handbook

■ *Mines Register*, 1940, Vol. 20; cloth, 942 pages, 6 x 9 inches; published by Atlas Publishing Co., 133 West Twenty-first street, New York, for $25.

This is the successor to *Mines Handbook and Copper Handbook*. It contains a description of more than 7000 active mining companies and lists more than 24,000 inactive mines, representing a total more than 30 per cent greater than in the 1937 edition.

It is divided into four sections: Description of active mining companies in the western hemisphere; description of some of the largest mining companies in various parts of the world; addenda in which is given information on mining companies which arrived too late for inclusion in the first section; inactive and dormant mines.

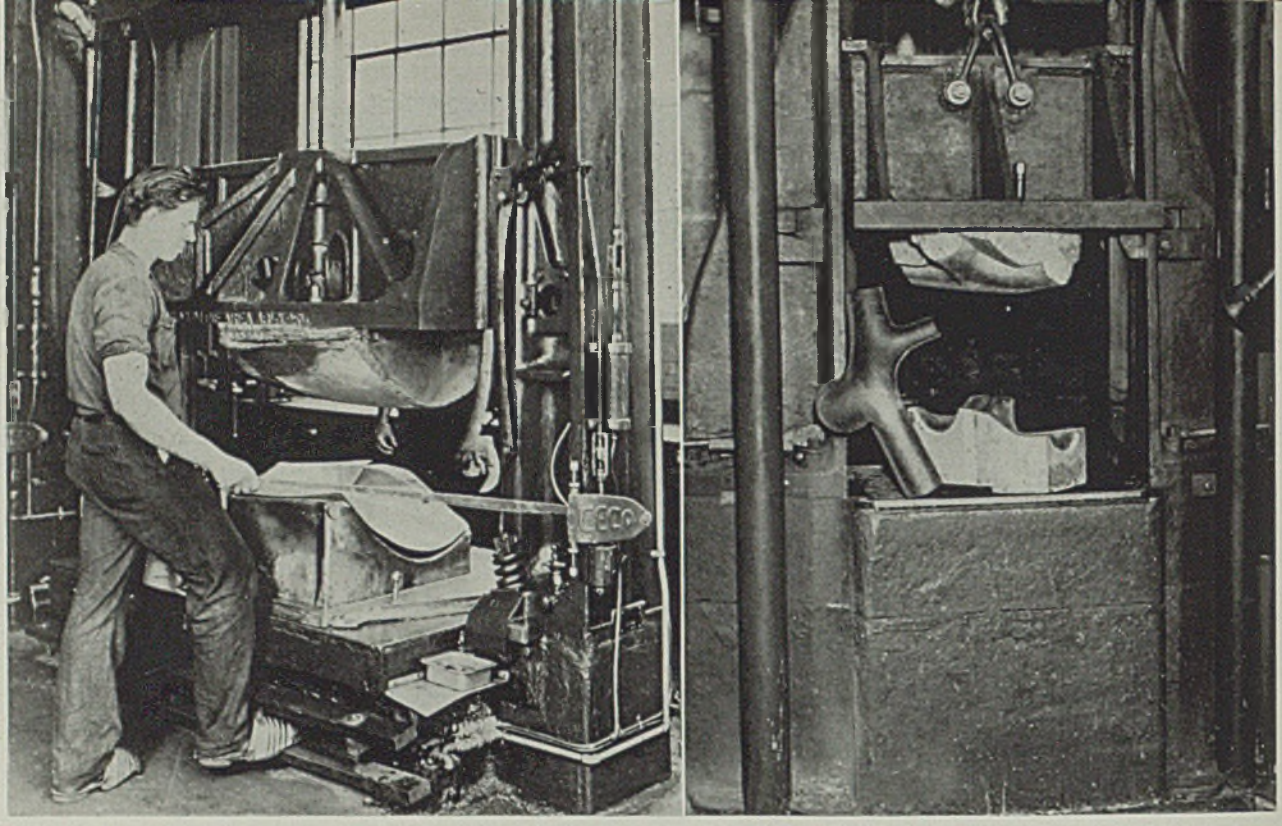
A statistical section deals with metal production, consumption, imports, exports, price trends and other tabular matter. A special section lists mining engineers, mine managers, superintendents and mine managers and another section is devoted to metal mining securities. A buyers' guide lists various types of mining machinery, equipment and supplies used in mining, with names and addresses of manufacturers or distributors.

Huge Vulcanizer Handles Large Units

■ One of the country's largest vulcanizers, measuring 15 feet in diameter and resembling a huge tunnel when open, was installed recently at the factory of Manhattan Rubber Mfg. division, Raybestos-Manhattan Inc., Passaic, N. J., for vulcanizing rubber-lined tanks and other equipment.

This huge assembly will enable the company to handle industrial equipment of great magnitude for rubber lining of almost every description.

In it can be accommodated practically any piece of equipment that can be shipped by rail.



Left, easily castable die alloy facilitates making shapes such as this. Right, punch and die of new alloy shown here have produced 2800 stainless steel exhaust manifold parts, 0.038-inch thick, and are still in good condition

New Alloy Aids Drop-Hammer Work

Containing zinc, aluminum, copper and magnesium, new hard die alloy produces at least 10 times the stampings usually obtained. More uniform product, greater speeds, sharper die contours also possible

By W. W. BROUGHTON

National Lead Co.
New York

■ NEW INDUSTRIES frequently make important contributions to production methods which later prove valuable in other applications. An example of a new material originally developed for aircraft manufacturers' operations but found useful in other industries is a zinc-base alloy developed by Morris P. Kirk & Son Inc., Los Angeles, a subsidiary of National Lead Co., 111 Broadway, New York.

For more than a decade, aircraft manufacturers have employed the familiar drop-hammer technique in stamping forms from sheet metal for use in wing and fuselage construction. This method is particularly well adapted to the needs of the aircraft industry where limited output and design obsolescence often do not permit use of steel dies and complicated and costly machines employed for such mass production work as in the auto industry.

Usual drop-hammer operation involves a male and a female die, the latter fastened to the bed of the machine and the former impacted onto it by being raised mechanically and allowed to drop by gravity. Female die usually is cast in sand from pure zinc, while the male die carried by the hammer is cast from antimonial lead, using the female die as the mold.

Such a setup is fairly satisfactory for many stamping requirements. But in those cases where draws are deep, heavy metal is worked or many stampings are required, the die has a relatively short life and quickly becomes stretched, cracked or battered out of shape. Maintenance costs, as a result, often are high.

To eliminate this difficulty, Kirk engineers began a search for a more durable metal to be used in casting the female die. Early tests showed that the strong, tough alloys developed for pressure die casting gave excellent results in many applications. However, investigation indicated that an alloy could be produced with still superior results, and eventually a die metal called Kirksite "A" was developed. This alloy is made from high-grade zinc (99.99 per cent pure) and contains aluminum, copper and magnesium as alloying ingredients and has extremely high tensile strength and hardness.

Table I compares prime western zinc with the alloy. It will be noted the new alloy has about seven times the tensile strength, about four times the impact strength and is considerably harder than the prime western zinc.

The greater hardness means that at least ten times as many stampings can be produced with the new alloy as with a pure zinc die. In addition, harder lead punches with

higher antimony content can be employed. Also its additional fluidity permits dies of sharper contours to be cast. Greater production speeds also can be maintained. Since the die does not expand or "flow" under the blows of the hammer, a greater uniformity of stampings is obtained.

The alloy is easier to cast than pure zinc and has a lower melting point, producing sounder dies relatively free from blow holes and other defects. Also the die as it comes from the sand is cleaner, smoother and requires less finishing.

Although developed primarily for aircraft work, it has proved a useful tool in other fields of metal stamping where number of pieces required makes steel dies too costly. The material is supplied in ingots weighing approximately 30 pounds each.

TABLE I—Physical Characteristics

	Prime Western Zinc	Kirksite "A"
Tensile strength p.s.i.	5300	37,800
Elongation (% in 2 in.)	X	3
Impact strength ft. lbs.	Less than 1	4
Compressive strength p.s.i.	X	75,000
Melting point °F.	787	717
Solidification shrinkage in. per ft.	0.125	0.14
Comparative weight per cu. in. lbs.	0.27	0.25
Brinell hardness	30-60	107

X—no figures available.

Valuable in Working Stainless

This new alloy has been found particularly valuable in the working of stainless steel.

The problems involved in forming and shaping stainless steel have been factors limiting use of this material in the drop-hammer shop because its extreme hardness and high tensile strength quickly wore out the punches and dies. Use of the new alloy in casting the female die has been found to improve this work greatly. Using such a female die with standard antimonial lead male punch, exhaust manifold rings of stainless steel have been produced up to a thickness of 0.05-inch without encountering rapid wear of the female die. In fact, in this application it soon became evident that the female die was not the weak link in the chain but that the life of the male punch was so short as to require recasting at frequent intervals.

Also wrinkles, which often form in stampings when any considerable deformation is required, resulted in the wrinkles becoming engraved on the punch immediately because of the great hardness of the stainless steel. Even when these wrinkles were hammered out of the stamping by hand, the next blow of the deformed punch caused them to reform.

This difficulty was eliminated by using both male and female dies cast from the new alloy. However, casting both the dies from the harder and tougher alloy created new problems. In relatively small sized dies, none of whose dimensions is greater than 1 foot, it is possible to follow present casting technique developed for producing antimonial lead punches. This consists of using the previously cast female die, building a form of asbestos-covered wood board around it and casting the punch directly into the cavity so produced.

However, the shrinkage upon solidification into a die of greater than 1-foot dimension in any direction results in a gap between punch and die of more than the thickness of the metal to be stamped. While this is also true of antimonial lead punches, the lead alloy will expand under blows of the hammer into the die cavity, thus closing this gap. However, when cast with the new alloy, no amount of hammering will expand the punch to a size sufficiently large.

As a result, new methods of casting were necessary. A satisfactory process consists of reversing the usual method of making a die and punch. Instead of using a plaster pattern for the die, casting it in sand and pouring the punch into the die, the new technique calls for the production of a plaster pattern for the punch which then is cast in a sand mold of Kirksite and over which is poured a die of the same alloy. The shrinkage of the metal then tends to bind the die close to the punch instead of allowing the punch to shrink away from the die.

The additional hardness and toughness of the alloy make it more difficult and expensive to "clear" a die—that is, remove metal to allow for sheet metal thickness. As a result, it was necessary to develop a means of reducing the amount of metal to be removed to make the punch fit the die as required. The method found most suitable is to spray a coating of a special liquid compound, consisting of a water solution of iron oxide, graphite and sodium silicate containing a binder or antisettling agent and a mold inhibitor. This coating is sprayed over and over again upon the hot punch until a thickness approximating that of the metal to be stamped is built up. This coating then not only provides the necessary clearance, but facilitates separation of the punch and die after the casting has been made. It also protects the surface of the punch against melting when the die is poured around it. It has been found that best results occur when punch is heated to about 500 degrees Fahr.

The success being experienced with this new alloy and die making technique in the aircraft industry in working stainless steel stampings leaves no doubt that it will shortly be employed in other industries confronted with relatively short runs of odd-shaped parts.

♦

Facilitates Welder's Job, Marks Electrodes

■ Because it is nearly impossible for a welder to distinguish one make of electrode from another, Champion Rivet Co., Harvard and East 108th street, Cleveland, has inaugurated the policy of imprinting its name on each of its electrodes.

Although some manufacturers have attempted to distinguish respective types of electrodes through the use of colors, this is said to be the first time the name of the manufacturer has been imprinted into the flux coating. The company also is considering marking each electrode as to type of polarity used and type of alloy it contains.

How To Avoid Trouble Under NLRA Procedure

■ *Handbook of Procedure and Practice Under NLRA*, 126 pages, 5½ x 8¼ inches; fabrikoid; published by Law Research Service, Cincinnati, for $7.50; additional copies for foremen, supervisors, etc., at $3.50.

This manual is prepared to instruct the employer how to avoid charges arising from alleged unfair labor practices. It is intended to be a medium through which the national labor relations act may be correctly interpreted and availed of successfully by attorneys to enable them to protect the constitutional rights of employers of labor against wrongful charges of labor unions and at the same time enable the employer to prepare his defense against the evidence supporting such charges.

The information in the book is based on actual experience with the NLRB and thus is of real value to the attorney in protecting his client against wrongful charges under the act.

Ingot Soaking Pits Feature Complete Automatic Control

■ THE HUGE new slabbing mill at Edgar Thompson Works of Carnegie-Illinois Steel Corp., Braddock, Pa., is fed from 16 recuperative pit furnaces arranged in a double row of 8 in a building 100 x 420 feet. Each pit is 15 feet wide, 16 feet long and 8½ feet deep when bottom is made.

Here an unusually complete fuel-air ratio control, temperature control and furnace pressure control system are provided for each pit. Operating automatically, these controls have much to do with the high quality work from these soaking pits.

Gas used to fire each of the 16 ingot-soaking pits is a mixture of coke-oven and natural gas. Depending upon the proportion of the gases, the heat content value will vary from 500 to 1000 B.t.u.'s per cubic foot. Many tests have shown that the specific gravity of the gas mixture always is directly proportional to the heat content of the gas mixture within the range of 500 to 1000 B.t.u.'s per cubic foot.

The gas mixture is introduced through a single burner located in the center of the furnace bottom and travels up through the center of the furnace, looping over the top of the ingots and back down the sides of the furnace to the flues.

Sixteen separate meter and control systems, each mounted and housed in an individual control room, automatically compensate for any variations in fuel gas composition.

One electric flow meter is set up as a master heat-content recorder, measuring the B.t.u. content per cubic foot of the gas from its specific gravity variation. An electric motor operates a blower at constant speed and a pressure regulator on the inlet side maintains a constant pressure to the blower. Rate of gas is limited to a determinable value by an orifice opening on the outlet side.

The tachometer blower, which is the heart of the system, was developed by engineers of the United States Steel Corp. It produces a differential pressure which is directly proportional to the specific gravity or B.t.u. content of the gas. The variations in this differential pressure are recorded with a standard electric meter and a record showing B.t.u. per cubic foot is obtained.

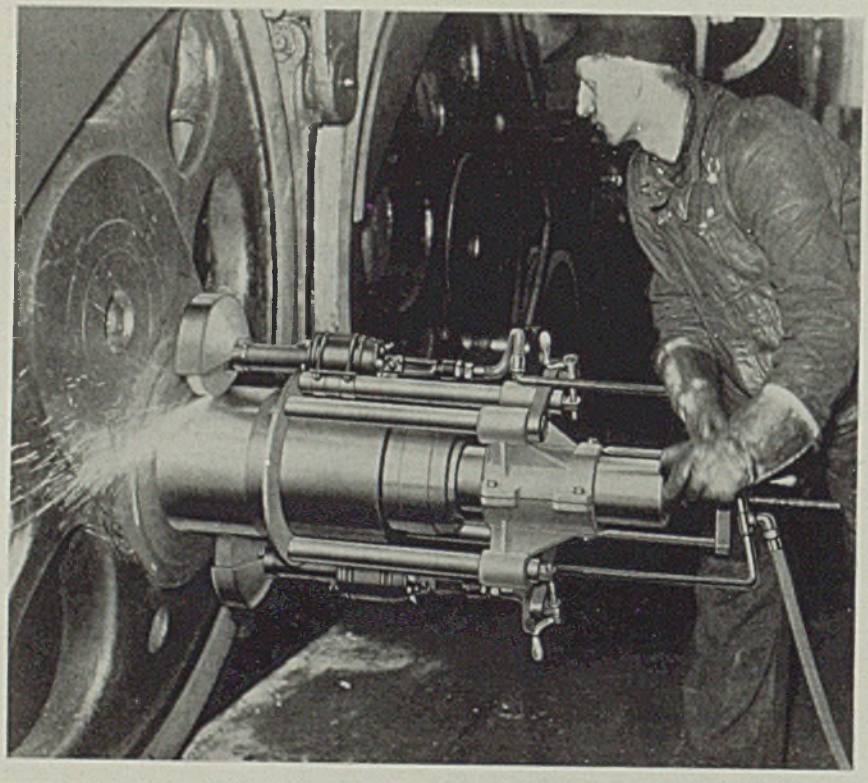
Orifice Plates Measure Gas Flow

Volumetric gas flow to each of the 16 soaking furnaces is measured in the usual manner by orifice plates and standard electric meters. Each of these is equipped with a mechanical compensating mechanism which is telemetrically actuated by the master B.t.u. recorder. This telemetric system is the same as that used in the remote indicator and consists essentially of a self-balancing Wheatstone bridge, the balancing being done by a reversible telechron motor. It was necessary to use an electric means of measurement since each meter is located adjacent to a soaking furnace and is separated from the next one by about 20 feet. A recorder supplies a record of gas pressure for every minute of operation. This is of the slack leather diaphragm type which makes possible the necessary accuracy under extreme operating conditions. An airflow indicator shows the air volume continuously. When this volume falls to 25 per cent of normal or lower, a warning signal is flashed and an alarm sounded. The pressure inside the furnace is indicated continuously by a pressure gage.

These instruments are mounted on a panel along with the flow meters to provide a continuous picture in the individual control rooms of just what is happening in each of the units under control.

This installation was made by the Amsler-Morton Co., Fulton building, Pittsburgh, and details are presented here through courtesy of J. L. Vergilio Co., Erie building, Cleveland.

The Machine Goes to the Locomotive



■ Since the introduction of the illustrated portable crankpin grinder, instead of a locomotive "going to the machine," the procedure is reversed. Here the operator is seen servicing the engine without dropping the wheel or removing any other parts. The grinder, developed by Goetz-Voss Corp., 6242 West State street, Milwaukee, is accurate in its work, and its feed may be regulated to any desired depth through the feed screw. Powered either electrically or pneumatically, it is merely attached to the crankpin or journal and locked. The grinding and polishing wheels do the rest without involving manual labor

STEEL QUALITY BEGINS IN THE MELT SHOP

The "Aristoloy" melt shop is equipped with top-charged electric furnaces of the latest design. Selected scrap is segregated in bins in the adjacent stock house and loaded into large charging buckets, handled by a transfer car and crane. Complete charging is accomplished in less than 15 minutes.

Relatively small furnaces simplify the accurate and uniform control of all phases of melting. These furnaces are equipped with the largest transformers (in rated capacity) which have so far been used on this type of furnace. High transformer capacity results in a very rapid melting of the charge. By thus saving time in charging and melting, a longer time is available for the all-important refining period.

"Aristoloy" steel quality begins in the modern "Aristoloy" melt shop.

ARISTOLOY STEELS

COPPERWELD STEEL CO.

Warren, Ohio

ARISTOLOY S.A.E. ALLOY BILLETS AND BARS, OXIDATION AND CORROSION RESISTING STEELS, TOOL AND SPECIAL STEELS, AIRCRAFT QUALITY STEELS, STAINLESS STEELS

Conveyor Tables

Extremely flexible setup of roller conveyors and automatic chain transfer tables solves intricate handling problem at a continuous furnace doing both normalizing and annealing

■ TYPICAL of the special handling problems being solved by unusual conveyor setups is the installation of automatic transfer tables recently made by Mathews Conveyor Co., Ellwood City, Pa., at Irvin works of Carnegie-Illinois Steel Corp., Pittsburgh. Here a continuous annealing furnace handles sheets to either of two destinations as the furnace operates as an annealing unit or a normalizing unit as desired.

To allow for either of these operations, a special arrangement was designed. After the sheets are normalized, a straight roller conveyor takes them to a smaller gravity type conveyor running at right angles where a workman stacks the sheets and places them in a position convenient for crane handling.

When the sheets are annealed, however, two levelling operations must follow so the sheets must be conveyed across a cooling table to a point beyond the charging end of the furnace, requiring a complete reversal of direction.

Principal problem involved in both these operations is one of time, since the complete cycle is a matter of a few seconds. For this reason, electric controls were especially designed to operate automatically.

To keep the furnace operating at its maximum efficiency, it is necessary to run the sheets through butted together. However, this continuous flow of material cannot be handled at the discharge end since a certain amount of clearance between the sheets is required for the levelling operations and for the necessary reversal of direction in the annealing operation. Also the continuous flow while normalizing does not give the operator time to catch the sheets and arrange them properly.

In order to give a clearer understanding of how this problem is solved by the equipment now installed, let us follow through the timing of a typical operation using sheets 6 feet in length. With a furnace speed of 40 feet per minute and with the sheets butted end to end when loaded into the furnace, the first speed change comes at the first roller leveller, located approximately 15 feet from the end of the

Sheets emerge from furnace, partially visible at left, and pass directly to catcher in foreground in the normalizing operation. Note the roller leveller has been removed from the line. Manual controls are operated from the pulpit at right

FOR BLOOMING AND SLABBING MILLS

MORE TONS

"Techni" PROCESS ROLLS

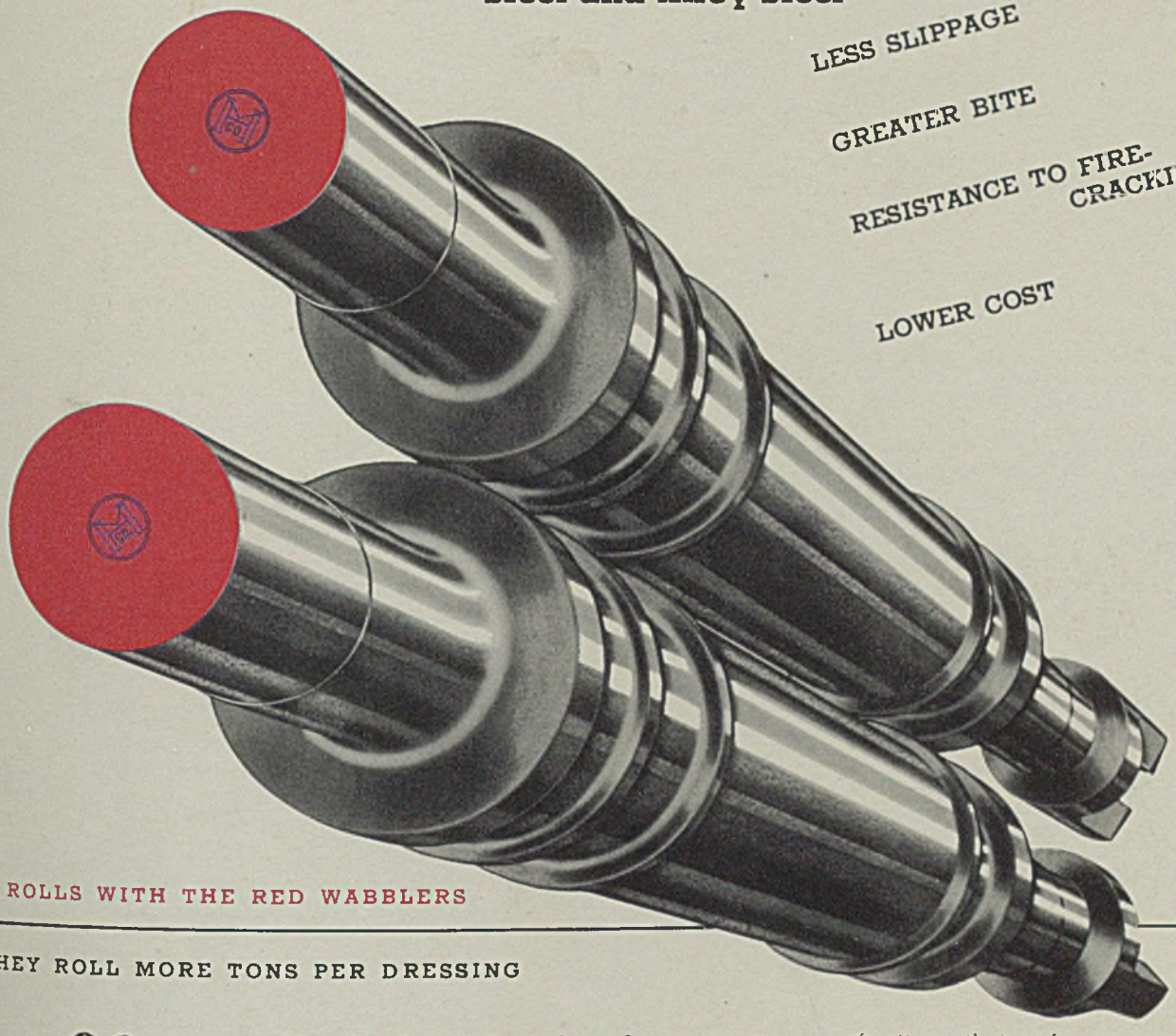
Steel and Alloy Steel

LESS SLIPPAGE

GREATER BITE

RESISTANCE TO FIRE-CRACKING

LOWER COST



THE ROLLS WITH THE RED WABBLERS

THEY ROLL MORE TONS PER DRESSING

We all realize, in these days of most exacting specifications, that surface of the finished product is of paramount importance. The grain structure of Mackintosh-Hemphill Company "Techni" Process Steel and Alloy Steel Blooming and Slabbing Mill Rolls, is further improved by special heat-treating and quenching methods developed in our own laboratories. "Techni" Process rolls will give you more tons of **better steel** per dressing. Our representative will be glad to explain. Ask for him to call—no obligation.

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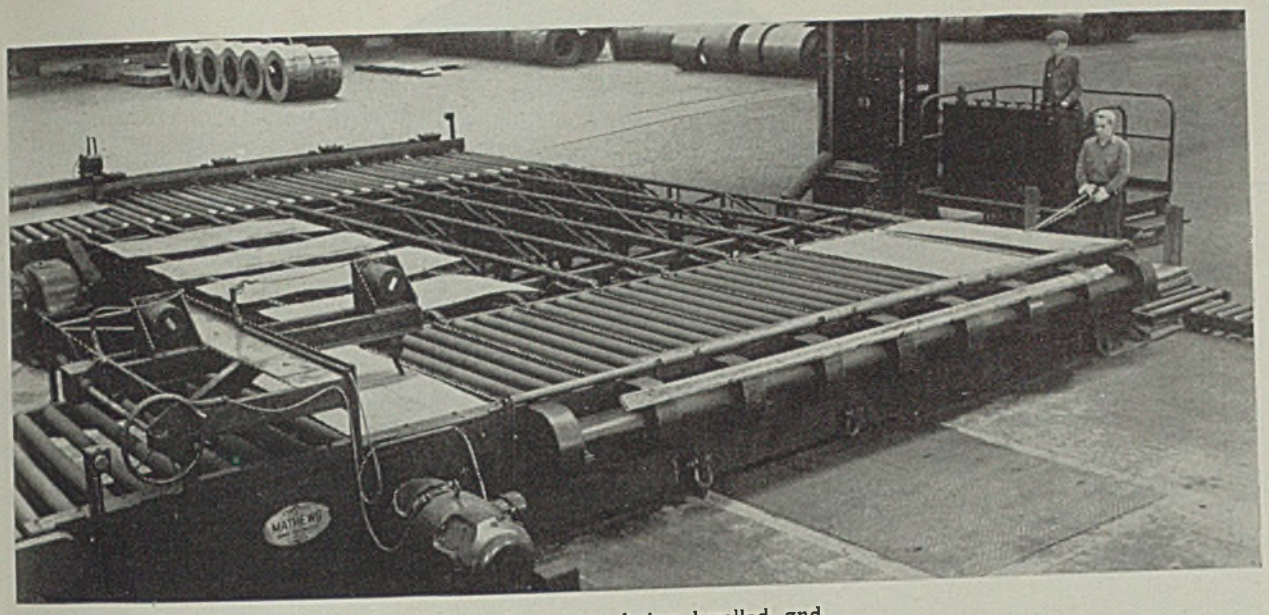
GRAINS THAT STICK
NORTON ABRASIVES
Give Polishing Wheels that Cut and Cut and Cut
THE ability of Alundum abrasive to stay on the wheel head until its job is done—even when conditions are severe—is a result of the special Norton treatments in manufacture, treatments that raise the grain's capillarity, that enable the glue or cement to function with maximum effectiveness. And other Norton treatments govern the shape of the grain thus assuring a wheel head that's fast cutting as well as long lived.
NORTON COMPANY, WORCESTER, MASS.
G-111



When sheets are being levelled and cooled, trigger on near side shown being actuated by a sheet on the conveyor starts a motor to raise the chain transfer from its normal position below the roller level. After the right angle transfer, sheets are deposited on the roller conveyor at the far side and given a final levelling pass and cooled on a disk conveyor. Note the trigger mechanism above the trailing end of sheet in the background. This trigger raises the section of the chain transfer table on the far roller conveyor to its normal position above the rollers

furnace. The conveyor carries the sheets to this point at furnace speed, 40 feet per minute, where they are taken by the leveller at 240 feet per minute. This produces a gap between the leading sheet and the first sheet following. While the second sheet is approaching the leveller, the leading sheet moves a distance of 36 feet at the 240-foot rate, which brings it to a right-angle chain transfer. See accompanying illustrations.

Trigger Controls Lifting Unit

As the first sheet approaches the transfer, it trips a trigger controlling a lifting mechanism which raises the chain transfer in time to catch the oncoming sheet and carry it to a second chain transfer lying in line and adjacent to the first. This second transfer operates continuously at a fixed level. The first chain transfer is normally embedded between the rollers of the conveyor. After the sheet reaches a certain point on the second transfer, another trigger is tripped which returns the first set of transfer chains to its normal position below level of the first roller table. This automatic control system, built by Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., is the secret of the rapid handling.

Because of the increase in speed at the roller leveller, there is a leeway of 7½ seconds between the 6-foot sheets. This 7½ seconds makes possible the right-angle transfer of the sheets. Sidewise movement of the chain conveyor is 240 feet per minute, which means sheets of 77 inches maximum width will require a distance of 8 feet to clear the transfer table, taking 2 seconds. It requires ½-second to raise the chains and another ½-second to lower them, making 3 seconds the total time required for operation of this first transfer. Since the clearance between sheets is 7½ seconds, this gives a 4.5-second leeway to take care of any slight time variations required.

The second chain transfer is stationary—does not move vertically. It carries the sheets to a third transfer which is a duplicate of the first but which operates on a reversed cycle; that is, the chains are normally in a raised position and are lowered by the sheet hitting a trigger as it comes into position over the second live roller conveyor table at the far side of the transfer bed and running in the opposite direction from the first. As the chains lower, the sheet is engaged by the rollers and delivered to a second roller leveller where the finish levelling operation is performed. At the same time a trigger is tripped returning the third set of transfer chains to its normally raised position.

After leveling, sheets are carried over a chain-driven disk-type conveyor which acts as a cooling table. At the discharge end of this conveyor is a piler unit, equipped with a 3-section piler bar mounted on three squaring guards having ¼-inch machine steel plates and full height supports, all adjustable for different width sheets. Also there is a retractable air-operated stop against which the sheets are piled. When the pile is complete, the stop is dropped below conveyor level. Then an air pusher gives the pile

(*Please turn to Page* 70)

X-Ray Manual Brings Subject Up to Date

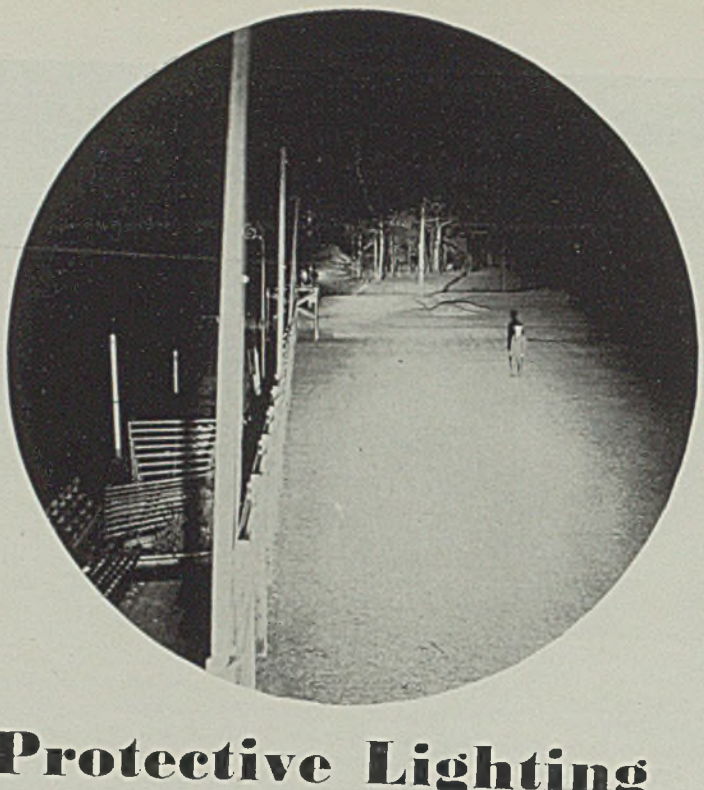
■ *Applied X-Rays*, by George L. Clark; third edition; cloth, 674 pages, 6 x 9 inches; published by McGraw-Hill Book Co. Inc., New York, for $6.

A number in the International Series in Physics, this edition comes out after an interval of eight years, —an interval filled with intense research activities, industrial and chemical achievement, widening interest in and acceptance of the truth as disclosed by the X-ray.

The 1940 edition retains no more than mere fragments of the 1932 version. Bringing the subject up to date has involved not only expansion but also a changing viewpoint. There is not now as much need for missionary work as for deepening interest to the point where the reader is eager to take for himself the steps toward the fundamental principles of interpretation of X-ray results.

The volume is profusely illustrated by halftones and charts and numerous tables present data in a way to make them most accessible. It is in two sections, the first devoted to general physics and applications of X-radiation and the second to X-ray analysis of the ultimate structure of materials.

The work is highly technical and carries the reader to the last outpost of current developments brought about by the Roentgen ray as applied to research.



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Protective Lighting For Industrial Plants

Adequate illumination of plant property has become of vital importance as an effective means of protection against sabotage and espionage. Floodlighting system recommended for yard lighting

By J. A. Summers
and
Dean M. Warren
Nela Park Engineering Dept.
General Electric Co.
Cleveland

■ WITH AMERICA gearing up to meet the production problems of the present, the subject of plant protection has become one of paramount importance. Europe's experiences with fifth columnists has shown what damage can result when organized effort from within is directed toward weakening a nation's defenses. Our federal bureau of investigation has already received thousands of complaints on sabotage and espionage at industrial plants filling government contracts, indicating that fifth columnists are already actively at work in an effort to curtail our production. Darkness is the sabateur's greatest ally and lighting is therefore industry's first defense.

Basic Considerations

Certain basic principles must be considered, regardless of the type of installation used.

1. Protective lighting should do two things—deter intruders from entering and make them readily visible and therefore easier to apprehend if they do enter.

2. Although lighting is essential to effective defense, it should always be employed with other measures, such as guards, either fixed or patrolling, fences and alarms.

3. The amount of light required depends upon the accessibility and vulnerability of the property. Particularly vulnerable locations are along highways, railroad tracks, near woods or underbrush which furnish concealment, dead-end streets at the property line, steep banks, either inside or outside the fence, entrances and behind stacked-up material.

4. The more liberally light is used, the fewer the number of guards required. Locations of vital importance, however, should always be both well guarded and well lighted.

5. Make every menace visible regardless of where it may be.

6. Avoid glare in the eyes of the guard. If there must be glare, it should blind the intruder.

While each case requires individual study before the best lighting prescription can be given, it is still possible to give general procedures to be followed in lighting the different areas.

Boundary Fences: These present a barrier to the intruder and they are doubly difficult to penetrate when properly lighted. One of the best ways to light boundary fences which do not border on occupied property is to place 1000-watt or 1500-watt narrow beam floodlighting projectors at each of the four corners and at 300-foot intervals between the corners. This equipment has a much longer throw than 300 feet, but at this spacing if one of the units is put out of commission there is still sufficient light to enable the guard to see anyone who may try to make an entrance at this spot. The units should be mounted not less than 10 feet high and preferably higher and they should be aimed in the direction in which the guard is patrolling so that the light does not shine in his eyes as he makes his rounds. In the event he remains at a fixed position then the projectors should point away from his station. There is some advantage to having the guard at a fixed point, and prefer-

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TENTATIVE LIST OF EXHIBITORS

Alemite, Division of Stewart-Warner Corporation
Alliance Machine Company
Allis-Chalmers Manufacturing Co.
Aluminum Company of America
American Air Filter Company
American Car and Foundry Company
Amsler-Morton Company
Askania Regulator Company
Automatic Transportation Company
Baker-Raulang Company
Bantam Bearings Corporation
Benjamin Electric Manufacturing Co.
Blaw-Knox Company
Bristol Company
Brown Instrument Company
Charles Bruning Company, Inc.
Bussmann Manufacturing Company
A. W. Cadman Manufacturing Co.
Clark Controller Company
Cleveland Crane and Engineering Co.
Cleveland Worm and Gear Company
Colt's Patent Fire Arms Manufacturing Company
Crouse-Hinds Company
Cuno Engineering Corporation
Cutler-Hammer, Inc.
Delta-Star Electric Company
Joseph Dixon Crucible Company
Edison Storage Battery Division, Thomas A. Edison, Inc.
Electrical Engineers Equipment Co.
Electric Controller and Manufacturing Company
Electric Service Supplies Company
Electric Storage Battery Company
Elwell-Parker Electric Company
Farrel-Birmingham Company
Farval Corporation
Garlock Packing Company
Gatke Corporation
General Electric Company
Gould Storage Battery Corporation
Graybar Electric Company, Inc.
Hagan Corporation
Hall Laboratories
Holophane Company, Inc.
Homestead Valve Manufacturing Co.
Hyatt Bearings Division, General Motors Sales Corporation
Hydro-Power Systems, Inc.
Iron Age
I-T-E Circuit Breaker Company
Jefferson Electric Company
Johns-Manville
Keystone Lubricating Company
Koppers Company
Le Carbone Company, Inc.
Leslie Company
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Mercury Manufacturing Company
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Morgan Construction Company
Morgan Engineering Company
Morganite Brush Company, Inc.
National Carbon Company, Inc.
National Electric Coil Company
Norma-Hoffmann Bearings Corp.
Okonite Company
Owens-Corning Fiberglas Corporation
Penton Publishing Company
Philco Corporation
Poole Foundry and Machine Company
Post-Glover Electric Company
Pyle-National Company
Railway and Industrial Engineering Company
Ready-Power Company
Reeves Pulley Company
Reliance Electric and Engineering Co.
Republic Flow Meters Company
Rockbestos Products Corporation
Rollway Bearing Company, Inc.
Rowan Controller Company
Joseph T. Ryerson and Son, Inc.
Salem Engineering Company
SKF Industries, Inc.
Socony-Vacuum Oil Company
Speer Carbon Company
Superior Carbon Products, Inc.
Thomas and Betts Company, Inc.
Tide Water Associated Oil Company
Timken Roller Bearing Company
Tool Steel Gear and Pinion Company
Trabon Engineering Corporation
Trumbull Electric Manufacturing Co.
United Engineering and Foundry Co.
Wagner Electric Corporation
John Waldron Corporation
Westinghouse Electric and Manufacturing Company
Edwin L. Wiegand Company
Yale and Towne Manufacturing Co.

Floodlighting projectors provide good lighting on this loading dock

ably elevated if it can be so located that he sees effectively, as this lessens the possibility of stealthy attack and in addition he has an unobstructed view of the entire area at all times. It is also well to paint the fence white or at least to white-wash it as the intruder is generally more visible against a light background.

If the fence is of wire netting, it should likewise be painted white, but since it can be seen through, advantage should be taken of this fact to increase the guard's area of view. This can be done by projecting the light outside the fence line so that the edge of the beam is along the fence. In some cases it may be desirable to light the outside area some distance from the fence and this will require a wider angle projector than generally recommended for lighting the fence line. A projector with the required spread can be selected and these should be spaced sufficiently close together so that even in the worst kind of weather there will be an overlapping of the light.

An alternate method of lighting the boundary fence is to employ equipments such as the RLM standard dome reflector, wide angle refractors, or street lighting units. These units may be equipped with 200, 300 or 500-watt lamps depending on the vulnerability of the area, and when mounted 25 feet high and spaced 75 feet apart provide good illumination along the fence line. In addition to these local units it is also suggested that some type of supplementary floodlighting be provided. These units should be placed at locations where they can command a large area and so mounted that they can be directed by the guard. They should also be supplied from the independent sources of supply.

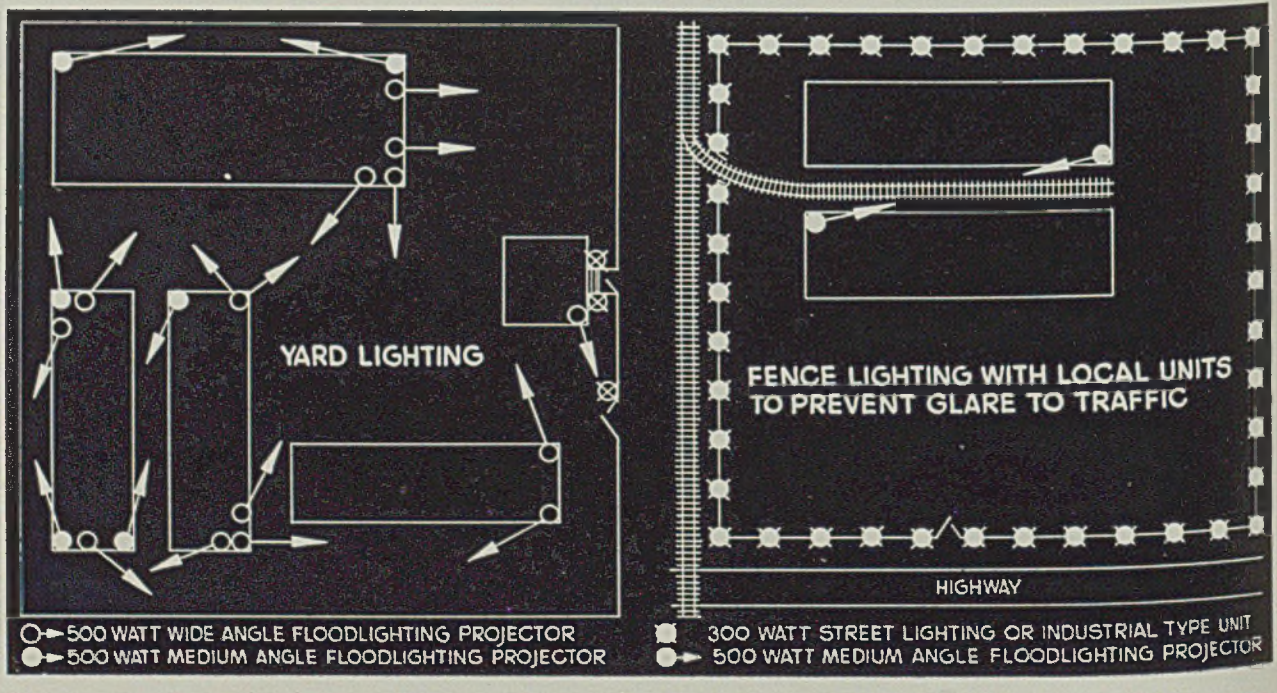
Yard Lighting: It is important that the yard be well lighted for it is in reality the second line of defense. The yard lighting may be in addition to the fence lighting, in place of it, or it may be a combination of the two. It depends entirely on the location of the property, the location of the buildings within the property lines, the vulnerability of attack, the number of guards and their method of operation, as to which type of lighting will best serve the purpose.

Floodlighting projectors placed on the roofs of buildings provide a convenient method of lighting the area in the vicinity of the buildings. If care is used in placing the projectors on the various buildings and properly directing the light from them, it may be possible to light the entire yard in this manner without leaving dangerous shadows near the boundary which would provide readily accessible hiding places.

Pole Lights Recommended

Where material is stored in outlying sections of the yard it may be difficult to locate the projectors on buildings and thus light around this stored material without having objectional shadows. In such cases it may be necessary to place units on a pole which is located at a strategic point. It may even be desirable to light a large section of the yard from such a pole, since it is often more economical to bring the wiring to one location rather than to distribute it around the roofs of the building. The pole should be placed so that any location where entrance may be gained easily, or any locations which may serve as places of concealment are well lighted. Care, of course, must be taken in directing the units so that they are not glaring to the guard. Lighting from more than one direction is in many instances desirable where there are obstructions, as it materially reduces the danger of shadows when stored material is moved to different places.

Because of the variety of locations of buildings in the yard, no specified method of lighting can be given that will cover all cases. Howeve.,



for small areas within 200 feet of the building, the 150-watt Par 38 flood or spot lamps, the type depending on the height of the building, offer an excellent means of floodlighting.

If the yard is more than 200 feet wide a standard floodlighting projector of the proper size and spread is recommended. If contrasts are good this equipment with 1000-watt lamps can be designed to be effective up to abont 800 feet in clear weather.

To determine the number of units required to provide the desired footcandles, which vary from 0.1 to 1 depending on the vulnerability and importance of the location, multiply the area to be lighted by the footcandles required and divide by the beam lumens of the equipment. This may be expressed as follows:

$$\text{Number} = \frac{\text{area} \times \text{footcandles}}{\text{beam lumens}}$$

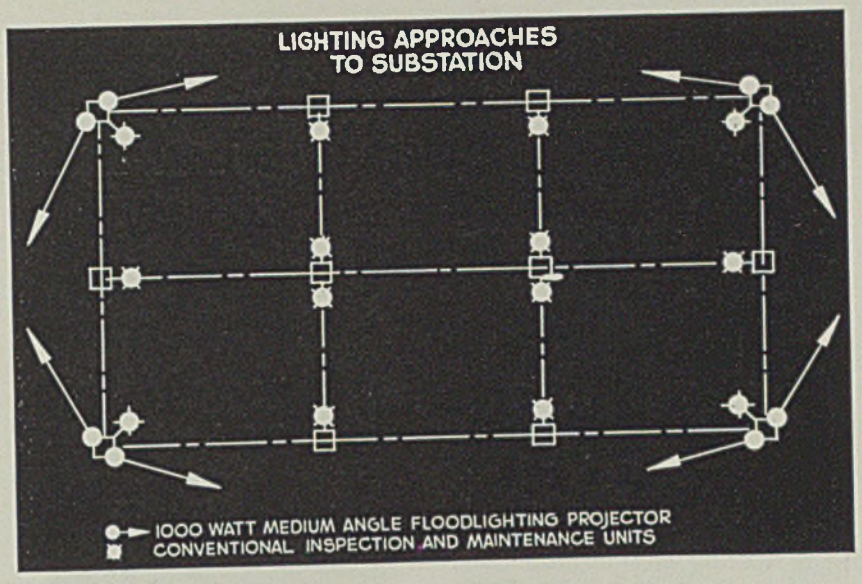
Having determined the number of reflectors required, select those that have a wide enough spread so that the overlap of the beams will insure reasonable uniformity.

Regardless of the system used, it should be supplemented by one or more adjustable floodlighting units or searchlights at the disposal of the guard, served by separate supply and available as an auxiliary system should an emergency arise. The size and number of these floodlights must be determined in each case, with due consideration to the size of the area to be covered and the nature of the materials and work performed in this area.

Entrances: All entrances should be lighted so that anyone approaching can be readily seen and scrutinized. It is also advisable to provide light for an appreciable distance around the entrances so that if an intruder should rush the guard and gain entrance he will not be immediately lost to the view of other guards. Floodlighting projectors on roofs of nearby buildings furnish good supplementary lighting around entrances provided they are mounted sufficiently high that they are not annoying to those who approach the entrances on legitimate errands.

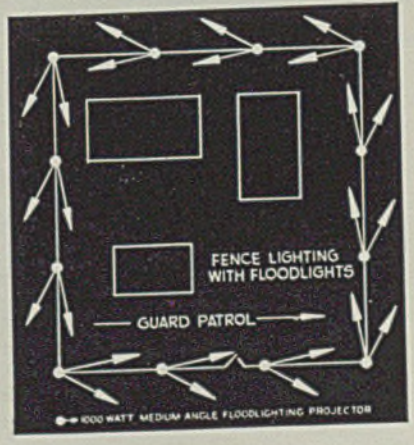
An alternative method is to employ some type of street lighting unit installed as in street lighting at the entrance and for a distance of at least 200 feet from the entrance.

Exteriors Near Boundaries: Industrial plants located in congested districts with residences adjacent have encountered complaints from the neighbors because the light necessary for protection shines into the bedroom windows. Because buildings and yards of these homes provide excellent places of concealment, it is important that the area around the plant be lighted so that approaching prowlers can be seen readily. An excellent solution to this problem is to use the new Mazda projector flood or spot lamps hung vertically from the roof or upper windows on about 20 to 30-foot centers and make a bright ring of light around the plant without much annoying stray light. Even the small amount of spill light from these lamps may be screened out by using the standard glare shields which are available for this purpose.



Where there are railroad tracks beside the building, local lighting is the best solution, although floodlighting projectors can be used providing the outer edge of the beam does not extend much beyond the boundary. It is difficult to control the beams to this extent unless the projectors are placed 40 or more feet high.

Substations: These as well as main generating stations supplying vital industries are particularly vulnerable to attack and surrounding areas and approaches should be well lighted. Around generating stations the feed water, cooling pond or tower, and coal handling machinery are the favorite points of attack and should be carefully lighted. Transformers are the most vital point in substations.



Most substations are well lighted inside the supporting structure to facilitate inspection and maintenance but the surrounding area outside the fence is usually dark and in outlying places these dark areas provide excellent places of concealment in the long grass and undergrowth. Floodlighting projectors located on the top of the steel structure and directed to light a considerable distance outside the fence will make it easy to detect approaching prowlers. Two 1000-watt projectors on each corner will usually light sufficient area but in large stations additional projectors may be necessary between corners.

Floodlighting projectors on the roof of a generating station can usually be placed so as to protect the surroundings of the coal handling machinery and feed water intake but the cooling pond or tower is frequently isolated and a pole placed at a strategic location is necessary to properly light the surroundings. If the plant is near a river the approaches from this direction should receive particular attention. The light should be directed across the river so as not to cause glare to navigation. The other surroundings of a generating station are lighted in the same general manner as industrial plants.

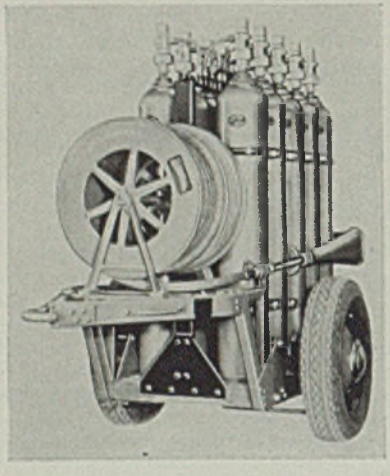
♦

Educates Stockholders

■ As part of its public relations program, Pittsburgh Coke & Iron Co., Grant building, Pittsburgh, is sending to its stockholders, along with each quarterly statement, a nontechnical description of one of its products. The article recently distributed to stockholders described ammonium sulphate. It outlined how this product was obtained and its various uses.

Fire Fighting Trailer

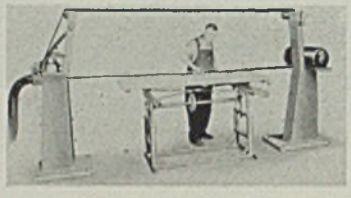
■ C-O-Two Fire Equipment Co., Newark, N. J., has developed 2 and 4-wheeled mobile C-O-Two hose reel trailer units for the protection of large or widely separated flammable liquid or electrical hazards. These wheeled units carrying as many as ten 50-pound cylinders of carbon dioxide gas or less, are equipped with one or two hose reels with 100, 150 or 200-feet of high pressure hose and discharge horns fitted with quick-opening valve for controlling



the discharge of gas. The unit shown is 109½ inches long and 48 inches wide. To facilitate easy movement it is mounted on standard size balloon-tired wheels and is so balanced that it will not tip over backward. When not attached to a mobile unit, it rests upon two short steel supports which fold under the front of the trailer frame when not in use.

Belt Sanding Machine

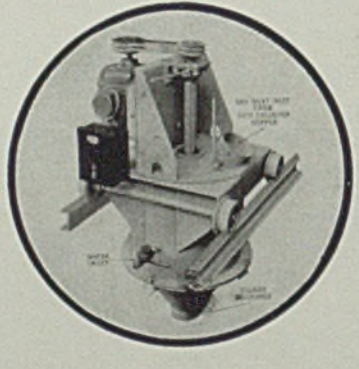
■ Jefferson Machine Tool Co., Fourth, Cutter and Sweeney streets, Cincinnati, announces an endless belt sander for sanding large flat surfaces, as well as concave, convex or any irregular work on wood or metal. Its flexible belt responds quickly to the operator's touch, and the table travels on ball bearing rollers, carrying the work back and forth while the operator applies pressure to the flexible belt with the block or pad. The overhead idlers keep the upper travel of the belt up and out of operator's way. Vertical adjustment of the table provides for work of exceptional thickness and the bolt standards may be set as far apart as desired to accommodate long work. An auxiliary bed also is available. The table stand may be readily moved to one side for special work. Table frame is of heavy 2-inch angle steel and has a vertical adjustment of



1 to 10 inches. The main sand belt pulleys are 12 x 8 inches and will accommodate belts up to 8 inches wide. The machine is driven by a 2-horsepower motor. For metal finishing the belt travels approximately 1800 surface feet per minute.

Wet Disposal Unit

■ American Foundry Equipment Co., Mishawaka, Ind., announces a wet disposal unit for wetting and mixing with water or other liquids, the collected dust discharged from the hoppers of cloth filters or other dry types of dust collectors. It is a self-contained mixer which receives dry dust from the collector hopper and deposits it near the center of a high speed mixing disk. The speed and shape of the disk cause an instantaneous mixing of the dust and liquid and the mixture flows from the sludge discharge at the bottom of the unit. The amounts of dust



and water are constantly under the control of the operator, allowing any mixture desired. The unit will handle dust approximately as fast as the hopper can be unloaded dry. In multiple hopper installations, the unit is mounted on a track, and is moved from hopper to hopper as required. A quick coupling allows rapid connections to the regular hopper valve through a flexible canvas spout. The water line also is provided with a quick coupling which allows return of the supply hose to the building during freezing weather. The disposal unit is powered by a 1½-horsepower motor, which drives the spinner disk through multiple V-belts. All parts are accessible for inspection and replacement.

Die Handling Lifter

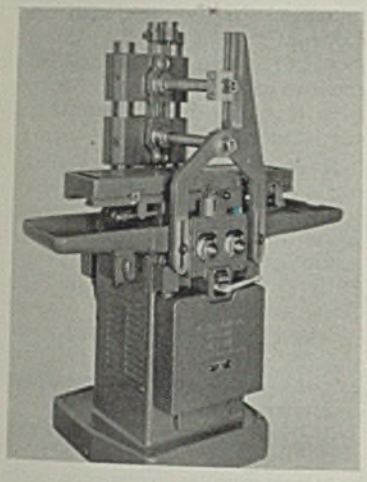
■ Service Caster & Truck Co., Albion, Mich., has placed on the market a portable lifter combining three die-handling operations in one. With it, dies can be taken from or replaced in the storage shelf, transported from storage to press, and placed in or removed from the punch press. The unit is powered with a hand-operated lifting unit with two lifting speeds. Lowering

is controlled by a heavy-duty flyball governor. Capacity of the machine is 4000 pounds, and its overall height is 8 feet. A worm-gear safety hinge permits folding over the top half of the machine to pass through doorways. Total lift is 5 feet 8 inches. Lowered height of the platform, 11 inches. The platform measures 36 inches out from the uprights by 30 inches wide on which the auxiliary 30 x 30-inch roller platform is placed. Base width of the machine is 30 inches.

Milling Machines

■ Kent-Owens Machine Co., Toledo, O., has introduced a new line of milling machines equipped with double spindles especially suited for splitting bushings, milling slots in pistons and other similar operations. The illustration shows double spin-

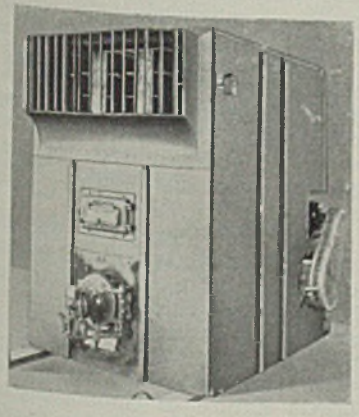
dles mounted on a No. 1-14 unit. This machine has 14-inch table travel and a 32 x 9-inch table. Two panel dials control the feed rate of the table from ½ to 80 inches per minute, the dial at the left being used for the fine feeds, while that at the right for coarse feeds. The



spindles are adjustable vertically and independently. The center distance between the two is 4¾ inches minimum and 11 inches maximum. The center of the lower spindle can be brought to within 1 inch of the table surface minimum and the center of the upper spindle can be raised to a maximum of 12 inches from the table surface. The spindle heads are supported on two cylindrical steel posts. The drive is from a foot-mounted ball-bearing motor mounted at the rear. The machine is furnished complete with spindle drive motor, hydraulic pump motor and all hydraulic and electrical equipment.

Unit Heaters

■ Airtherm Mfg. Co., 720 South Spring avenue, St. Louis, announces Directherm unit heaters equipped

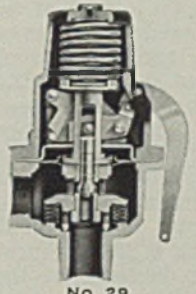


with oil burning units for use in airplane hangars and manufacturing plants, etc. These are available in six standard sizes with capacities ranging from 300,000 to 1,500,000 B.t.u. They can be set up for full automatic control both as to room temperature and as to delivery temperatures of the warm air at the unit. Each unit is a self-contained system. Its multiblade centrifugal fan distributes the warm air directly from the unit throughout the area to be heated.

Boiler Safety Valve

■ McDonnell & Miller, Wrigley building, Chicago, have announced a new type of relief valve for hot water boilers. It is known as the No. 29 safety valve and is named for its relief point of 29 pounds. Designed to snap open to its full orifice capacity at the precise moment the relief point of 29 pounds is reached, it stays open, discharging its full capacity until the boiler pressure is reduced to about 22 pounds.

This snap action was developed to avoid the condition of a valve merely cracking at the relief point, per-



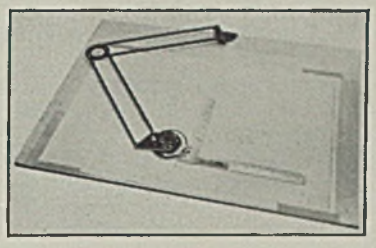
No. 29

mitting boiler pressure to build up to a dangerous level. A flexible metal bellows incorporated takes the place of the diaphragm ordinarily used in relief valves. Other features include metal-to-metal seal above the cone which protects working parts when valve is discharging and the factory adjustment which prevents tampering.

Drafting Machine

■ L. G. Wright Inc., 5209 Euclid avenue, Cleveland, announces a new adjustable ball-bearing Wrigraph Industro drafting machine for drawings up to 24 x 36 inches. It can be clamped on to any drawing board up to two inches thick and 36 inches wide.

A variety of extension clamps are available for mounting the machine on wider drawing boards. Because of a hinged mounting, the drafts can be raised clear of the board. A levelling screw is provided to adjust the machine to the plane of board. Each machine carries a written accuracy guarantee. Its arms, of rolled channel steel, provide great rigidity, the steel parts being finished in black baked wrinkle enamel. The protractor head is controlled with the left hand. A



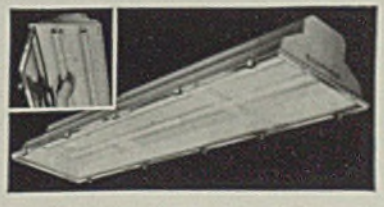
½-degree vernier equipped with a magnifier provides quick and accurate setting of all angles.

Bench Grinder

■ H. P. Preis Engraving Machine Co., Newark, N. J., announces a bench grinder for sharpening single-lip engraving and routing cutters. Designated as the Panto Model CG, it handles tapered-shank cutters and straight-shank cutters up to ¼-inch diameter. The cup type 2½-inch grinding wheel is attached directly to the shaft of an enclosed motor, operating at 8500 revolutions per minute. The cutter-holding spindle is mounted in a swivel arm which is graduated to facilitate cutting any angle or taper desired. Stop notches are provided for grinding 3 or 4-cornered cutters. Cutter is rotated with the operator's right hand and the carriage is fed to the grinding wheel by a feed-screw actuated with the left hand. The machine is 9½ inches long, 4½ inches wide and 6 inches high.

Sealed Covers for Fluorescent Lighting

■ Benjamin Electric Mfg. Co., Des Plaines, Ill., has introduced a Sealed-Flo fluorescent lighting unit which features a new sealed cover construction for protecting the lamps and reflecting surfaces from dust and dirt. The new protective



cover is constructed to provide for easy servicing. It is hinged to the lamp housing and locked in place by convenient hand-operated cover clamps.

When opened the cover hangs straight down. These units are available in arrangements for either two or three 48-inch fluorescent lamps.

Analyzing Chromium

(*Continued from Page 42*)

after suitable etching. All pieces were thoroughly washed and put aside to age.

In various periods of time, cracking of the chromium plate began to appear upon those specimens which had shown presence of strain. Some showed cracking at end of three weeks. All specimens showing no strain have revealed no cracks up to the present time.

This would seem to be of great importance to all industries using decorative chromium plate over cast or drawn brass fixtures or objects of aluminum. The actual shifting or creep which occurs in the crystalline structure of the underlying base metal seems sufficient to cause cracking of the chromium deposit. If the chromium plated specimen were subjected to corrosion tests, it is certain the peeling of the chromium plate would soon occur due to the electrolytic nature of solutions entering into the cracks of the chromium and setting up interfacial potentials between the chromium and underlying plate.

Matter of Removing Strain

Fig. 5 illustrates diffraction pattern of two samples of aluminum. Pattern A was obtained by direct transmission of the X-ray beam through a thin sheet of aluminum and indicates a high degree of preferred orientation of the crystal structure at the time the plating was laid down. The shifting then continued to occur slowly over a period of time during the aging of the specimen after plating. The shift in the crystalline structure caused the overlaying layer of plate to crack. Had all strain been removed from the aluminum before the plating process, the chromium layer would have remained intact and would have exhibited no tendency to crack.

Pattern B, Fig. 5, was obtained by direct transmission of the X-ray beam through a specimen of aluminum which had been given suitable heat treatment to relieve strain. Evidence of preferred orientation of the crystal structure is lacking. The spots which compose the pattern indicate that the grain size has grown considerably due to the heat treatment. With this growth, random orientation has occurred and most of the strain has been relieved. After plating this piece and aging for three months, it was closely examined with the microscope. No trace of cracking could be observed in the chromium plate.

Pattern C, Fig. 5, was obtained by direct transmission of the X-ray beam through a thin piece of cold-rolled steel. The pattern indicates that suitable heat treatment has relieved the high degree of preferred orientation which may result from cold working and that the steel contains little strain to cause a shifting of the grain structure during plating. This specimen, plated, was studied also by direct transmission of the X-ray beam. The resulting pattern, D Fig. 5, shows a typical series of diffused rings caused by the fine nature of the chromium plate. This plate exhibited a hardness of 630 Vickers-Brinell and proved to be extremely satisfactory as a wear-resistant coating.

Effects of Heat Treatment Upon Chromium Plate: Several specimens of heat-treated chromium plate were studied. The exact change which occurs in the nature of chromium plate when subjected to heat treatment can be best investigated by means of the X-ray diffraction assembly called the powder camera. Fig. 6 shows the specimen mount placed at the center of the camera and arranged on a cam system so it can be oscillated through a predetermined angle. The X-ray beam here passes through the collimator tube and pinhole assembly at right, Fig. 6, and strikes the specimen. The X-ray pattern is diffracted from the specimen at the center of the camera and is registered upon a film which is held securely around the outer diameter of the camera. The film is encased in thin light-proof paper housing which in turn is covered by the apron surrounding the camera rim. Camera diameter is accurately fixed so it will be possible to interpret easily the angle of X-ray diffraction by the position of diffracted lines on the film.

This camera is perhaps the most universal instrument used with X-ray diffraction equipment. It makes possible the qualitative analysis of a specimen and gives evidence as to the nature of the crystalline structure as well. If used in combination with the microphotometer, quantitative estimation may be made of the components of the given crystal system. The design of the camera has been so arranged that it may be used in combination with other pieces of equipment including the microscope and a specially constructed heat-treating chamber.

For studying the effect of heat treatment upon chromium plate, a special pyrex glass heat-treating chamber, Fig. 3, was constructed with a side arm which could be extended to the center of the camera. The portion of the arm at the camera center was constructed with a Lindemann glass window to permit the X-ray beam to penetrate easily and the diffracted X-ray beam to pass through with little absorption. Specimens of chromium plate sealed in the treating chamber are heated to any desired temperature by means of a tungsten filament. A thermocouple mounted in the heating chamber permits measurement of the temperature. The treated specimens can be delivered through the side arm to a position in the center of the camera.

It was possible by means of this enclosed system to treat the chromium either in high vacuum or in an inert atmosphere. This treating chamber was so constructed that it might be used either with the pinhole and flat cassette assembly or the circular powder camera. The powder camera with the heat-treating assembly and the microscope is shown in Fig. 3.

Film Dried in Moving Air

Microscope is mounted with the cross hairs of the eye piece marking the exact center of the camera. The specimen is moved through the side arm from the heating chamber until it comes to a suitable position in the exact center. The X-ray beam then comes from the collimator tube, strikes the specimen and gives the diffraction pattern upon the film. The film may be processed when the pattern has been completely registered with careful control of temperature. The film should be slowly dried in moving air which should be the same temperature as the bath to produce little change in film dimensions and to eliminate shrinkage.

From such a film, it is possible to make extremely accurate measurements of the diffraction pattern. A suitable film scale operating on the principle of a co-ordinate microscope serves best for this purpose. For most accurate results, a microphotometer may be used to determine the positions of the lines and their relative intensity. Relative width of the diffraction line is also of great importance in X-ray diffraction interpretation. Best results are obtained when both line position and line width are considered.

The theory has been held for many years that electrodeposited chromium is a solid solution of hydrogen and chromium, the hydrogen having its origin in the decomposition of the water of the plating bath at the cathode. The hard and brittle nature of chromium plate has been considered due to the solid solution condition and heat treatments have been introduced to break up this state and expell the hydrogen. Many metals which ex-

< < HELPFUL LITERATURE > > >

1. Stainless Steels

Carnegie-Illinois Steel Corp.—52-page illustrated, wire bound handbook on "U.S.S. Stainless and Heat Resisting Steels for the Petroleum Industry" discusses a wide range of hot and cold applications of various types. Laboratory and field experience is summarized. Technical data in tabular form is given for types of flat rolled stainless steels and tubular products.

2. Wire Rope Slings

Broderick & Bascom Rope Co.—96-page illustrated "Rigger's Handbook" is a guide for fitting, socketing and splicing wire rope. Included is engineering data on "Yellow Strand" wire rope slings, "Murray" plaited safety slings, splicing tools and fittings, and wire rope. Pictorial directions for wire rope rigging are given.

3. Brazing Alloys

Handy & Harman—4-page illustrated bulletin, "Sil-Fos and Easy-Flo," gives properties and application data on these relatively low cost low temperature silver brazing alloys. "Sil-Fos" is intended only for joining non-ferrous metals, while "Easy-Flo" joins either ferrous or nonferrous metals.

4. Welding Electrodes

Metal & Thermit Corp.—24-page illustrated booklet No. 4 gives complete data on physical properties, chemical analyses, qualifications, approvals and recommended procedures for all "Murex" mild steel arc welding electrodes, as well as brief information on alloy steel electrodes.

5. Adjustable Die Heads

Eastern Machine Screw Corp.—4-page illustrated bulletin No. 40 describes H&G solid adjustable die heads that use the same high speed insert chasers as are used in opening type die heads. Specifications, dimensions and typical applications are presented.

6. Plating Thickness

E. I. duPont de Nemours & Co.—Technical service manual shows application of the "Hull and Strausser" test of electro-deposit thickness to zinc, cadmium, tin and copper. Directions for operation of test and recommended solutions are given.

7. Iron Nickel Alloys

International Nickel Co.—40-page illustrated data book section IV, No. 2, describes commercial magnetic iron-nickel base alloys for permanent magnet applications. Characteristics of these various alloys are given.

8. Spring Washer Assemblies

Reliance Spring Washer Div., Eaton Manufacturing Co. — 6-page illustrated bulletin, "Presenting Eaton Spring Tite Assemblies," describes and gives features of preassembled "Springlock," "Gripit" tension washer, and "Knolink" spring washer assemblies with cap, machine and filister head screws.

9. Synchronous Motors

General Electric Co.—4-page illustrated bulletin No. GEA-3345 describes synchronous motors and control for part winding starting. Advantages of this design are stated as simplified control equipment, continuous circuit starting, low starting current and adaptability to multipoint increment control.

10. Speed Reducers

D. O. James Manufacturing Co.—16-page illustrated catalog No. 17-A and price list contains complete engineering specifications and selection tables on horizontal and vertical drive motorized speed reducers. Included are details and data on flexible and universal couplings.

11. Alloys For Cast Iron

Electro Metallurgical Co.—Illustrated bulletin No. F-4604 gives properties and analyses of "SMZ" and "CMSZ" alloys for ladle additions to cast iron. The first is for application wherein strong graphitizing action is desired and the second acts to harden iron moderately without increasing chilling tendency.

12. Fluorescent Lighting

Benjamin Electric Manufacturing Co. —46-page illustrated bulletin No. 40 gives facts and data needed to determine how and where to use fluorescent lighting. Installation data include instructions for mounting heights and spacing arrangements of special and general lighting. Questions on fluorescent lamps are answered.

13. Tanks and Cylinders

William B. Scaife & Sons Co.—4-page illustrated bulletin No. 308, using the case history method, shows how engineering service has helped reduce costs or improve machinery or equipment in which containers for water, air or gases are used.

14. Thermocouples

Wheelco Instruments Co.—16-page illustrated bulletin S2-2 describes complete line of thermocouples, thermocouple wire, lead wire, insulators, protecting tube and similar equipment for use with all standard types of pyrometers and temperature controllers.

15. Oilless Bronze Bearings

R. W. Rhoades Metaline Co.—4-page illustrated bulletin, "Rhoades Metaline Oilless Bronze," gives complete information on oilless bronze bearings, segments, washers, plates, blocks, shoes, discs and rings. Standard dimensions of bearings are given in tabular form.

16. Pyrometers

Leeds & Northrup Co.—40-page illustrated catalog No. N-33B covers "Micromax" and "Speedomax Rayotube" pyrometers, showing variety of applications for detecting temperatures of work in motion. Diagrams show various methods of applying these detectors for indicating, controlling or recording temperatures.

17. Zinc

St. Joseph Lead Co.—24-page illustrated booklet, "The Story of St. Joseph Electro Thermic Zinc," includes reprints of 12 advertisements which tell the story of zinc from ore to metal. Standard specifications of slab zinc, production statistics, cost, data on zinc oxide and plant views are presented.

18. Electric Furnaces

Ajax Electrothermic Corp.—8-page illustrated bulletin No. 13 describes "Ajax-Northrup" electric furnaces and equipment for inductive heating without melting. Principles of operation, details of equipment and application information are included.

19. Chart Recorders

The Bristol Co. — Illustrated bulletin No. 540 describes pressure-volume-temperature-time recorder which gives on a 12-inch chart a record of gas pressure, volume of gas passing through meter, temperature of gas, and time. Inside view of instrument is shown with parts explained. Available chart ranges are listed.

20. Spray Finishing

Binks Mfg. Co.—Illustrated catalog sheet No. 59 presents specifications, features, operating details, and applications of automatic reciprocating spray machine for finishing flat ware, of automatic rotary spindle finishing machine, and of various models of spray guns for industrial finishing. Prices are included.

21. Electrical Fittings

Pyle-National Co.—24-page illustrated catalog No. 1150 covers line of switch, fuse and circuit breaker "Pylet" fittings. Complete specifications, dimensions and list prices are included.

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22. Acid Proof Materials

Nukem Products Corp.—8-page illustrated bulletin, "Acid Proof Materials, Maintenance, Construction," presents characteristics of "Basolit" quick setting, acid proof and insulating cement in various forms; "Nu-mastic" asphalt cement; "Aspilt" self-hardening acid proof cement; and acid brick.

23. Sawing Machines

Armstrong-Blum Manufacturing Co.—60-page illustrated catalog gives full specifications on "Marvel" hack saw machines, automatic production saws, metal band sawing machines, hack saw and band saw blades, tapping machines, drill press vises, slitting shears, and rod cutters.

24. Quill Bearings

Bantam Bearings Corp.—4-page illustrated bulletin No. 103X presents complete specifications on "Bantam" quill roller bearings. In addition to engineering data and description, sectional drawings show typical applications in machines.

25. Vertical Milling Machine

Cincinnati Milling Machine Co.—16-page illustrated bulletin No. M-865 presents specifications on the "Cincinnati" 28-inch vertical "Hydro-Tel milling machine. Full details of machine and typical applications in manufacturing industries are shown.

26. Variable Speed Pulleys

Speedmaster Co.—4-page illustrated bulletin, "Speedmaster Variable Speed Pulleys," tells how stepless speed delivery may be obtained and illustrates applications. Special engineering service is offered for variable speed problems.

27. Loaders and Pilers

Stephens-Adamson Manufacturing Co.—4-page illustrated bulletin No. 240 shows design and application details of "S-A" normal duty loader and heavy duty loader and piler which are used for loading and trimming box cars and for piling and storing bulk materials.

28. Cold Rolled Steel

Crucible Steel Co. of America—12-page illustrated booklet No. CR100 contains engineering and application data on cold rolled and cold drawn specialty steels. Weight of cold rolled spring steel, hardness conversion numbers and decimal equivalents for various thickness gauges are included. Methods of manufacture are described briefly.

29. Nuts, Bolts and Rivets

Republic Steel Corp.—98-page illustrated handbook No. 307 is replete with data on standard and special "Upson" bolts, nuts and rivets. Each design is illustrated and complete specifications and engineering information are given.

30. Expansion Joints

Yarnall-Waring Co.—16-page illustrated bulletin No. EJ-1907 describes engineering features of "Yarway Gun-pakt" expansion joints for steam lines. Dimensions, prices and weights of all sizes are given for these all-wrought-steel, cylinder-guided joints.

31. Large Induction Motors

Westinghouse Electric & Manufacturing Co.—4-page illustrated bulletin No. 3705 gives complete engineering data on type CS squirrel cage induction motors, 250 horsepower and larger, designed for industrial applications as combined or individual equipment drives.

32. Hose Masks

Mine Safety Appliances Co.—8-page illustrated bulletin No. EB-4 deals with application of "All-Vision" facepiece to line of hose masks, including "M.S.A. Combination," "Utility," "Standard," and "Special Hose Mask" models. These masks are designed for safeguarding workmen where high concentrations of gas or low oxygen content exist.

33. Traveling Cranes

Detroit Hoist & Machine Co.—8-page illustrated bulletin No. 695 presents general specifications on traveling cranes which are built in capacities up to and including 15 tons, for all spans up to 50 feet. Double girder, single girder, and special cranes are illustrated, as are trolleys and typical installations.

34. Silver Nickel Contacts

Gibson Electric Co. — 4-page illustrated bulletin No. F-101 presents mechanical and electrical characteristics of silver nickel contacts made of a material of low, constant resistance and high conductivity. Typical applications and contact designs are also given.

35. Expanded Metal

United States Gypsum Co. — 48-page illustrated booklet, "Modern Expanded Metal Uses," lists and explains 29 out of an almost infinite number of uses for expanded metals in industry. In addition to applications and description of types of expanded metals, accessories for making partitions are shown.

36. Hydraulic Equipment

Blackhawk Manufacturing Co.—36-page illustrated, loose-leaf catalog No. 40H gives features, application and design data and list prices of hand and power operated hydraulic equipment including jacks, rams, maintenance attachments and pipe and conduit benders.

37. Cabinet Ovens

George Koch Sons, Inc.—8-page illustrated bulletin, "GKS Cabinet Ovens," describes standard design electric recirculating ovens for laboratory and industrial uses. Control methods are shown in detail, as is special equipment for use with these units.

38. Control Valves

W. H. Nicholson & Co.—16-page illustrated catalog No. 140 is descriptive of lever, foot, solenoid and motor operated three and four-way valves for use in operating air, water, steam and oil single and double acting cylinders and other hydraulic equipment.

39. Compressors

Sullivan Machinery Co. — 16-page illustrated bulletin No. A-18 describes line of air and gas compressors ranging in size from 378 to 1600 cubic feet per minute displacement for commercial pressures. Construction features and typical installations are shown.

40. Steel Unions

Rockwood Sprinkler Co.—6-page illustrated folder gives design and application features of standard unions with a cold forged steel body and choice of two silicon bronze seats, two stainless steel seats, or two molybdenum seats.

41. Gages

Brown Instrument Co.—8-page illustrated catalog No. 6705 describes complete line of circular case thermometers and pressure gages. Indicators, recorders and controllers, as well as self contained and portable models are covered.

42. Grinding

Sterling Grinding Wheel Co.—48-page illustrated booklet, "The Art and Science of Grinding," is a description of "Sterling" wheels and includes tables of data helpful to users of grinding wheels.

43. Bearings

Gwilliam Co.—16-page illustrated catalog describes line of roller thrust, ball thrust, step, journal roller, industrial roller and special bearings. Types are illustrated and standard sizes listed in tabular form for ready reference.

44. S. A. E. Steels

Babcock & Wilcox Tube Co.—Technical data card No. 8 lists chemical compositions of most S.A.E. steels. This card is available to those interested in these materials for all types of applications.

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hibit the tendency to form solid solution with gases or other metals usually expand the structure of the unit cell which composes the crystal and allow the solutes to enter into the unit cell structure.

This expansion may be determined easily by means of X-ray diffraction and proves a means for the study of alloys and solid solutions. In studying compounds such as clays as well as metals, the amount of expansion is found to be considerable in some instances. As the condition of the solid solution is changed, this expansion will begin to reduce and make the change evident by means of change of parameter characteristics as measured by the X-ray diffraction pattern.

It was desirable to study chromium before and after heat treatment to determine if change could be noted which would be due to the expulsion of the hydrogen from the unit cell. A series of diffraction patterns was taken from specimens of chromium plate which were treated by bringing them to 800 degrees Cent. and holding them at that temperature for a period of 30 minutes in a high vacuum. Pressure measurements by means of an ionization gage built into the heat-treating chamber showed the average pressure to be about 0.06-micron of mercury.

Hydrogen evoluted during heat treatment was pumped out by vacuum pumps and mercury vapor aspirators.

A careful check was made by means of X-ray diffraction to determine if a change occurred in the parameter characteristics of the chromium-plated layer due to this heat treatment. Measurements of the parameter characteristics of the chromium plate checked with each other to the fifth decimal place of an Angstrom unit and showed no apparent change in unit cell character due to the heat-treating process. The physical characteristics of the chromium plate, however, were greatly changed.

Flat cassette patterns, Fig. 7, show this change more graphically. These patterns indicate the condition of the chromium before and after the heat treatment and show a great growth of grainage has occurred in the plated layer. The chromium had been reduced in hardness from 620 Vickers-Brinell to 220.

The results with the powder camera, however, do not disprove the existence of a solid solution condition of hydrogen and chromium. It is quite possible that, due to small size of the hydrogen atom, it may easily be included in the chromium structure itself without causing an expansion of the cell characteristics.

Hydraulic Pressure Breaks Down Coal

■ Consolidated Coal Co., Herrin, Ill., is experimenting with a new non-explosive method of mining coal. The method, which is being developed by E. I. duPont de Nemours & Co. Inc., Wilmington, Del., uses expansible tubes under great hydraulic pressure to break up the coal, instead of high explosives. At the New Monarch mine of Consolidated company, one of these hydraulic units breaks down coal for two loading machines, each averaging 300 to 320 tons per shift.

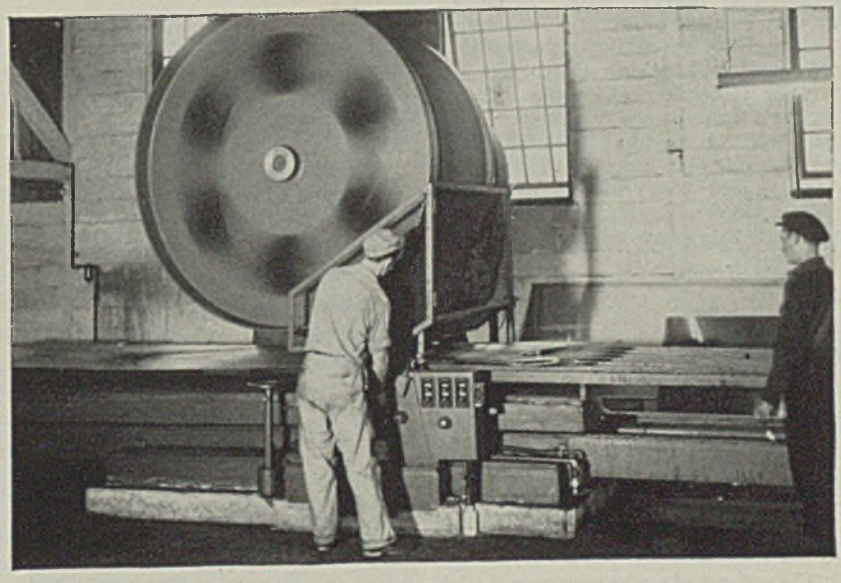
The unit, according to *Exide-Ironclad Topics*, the publication of Electric Storage Battery Co., Philadelphia, consists of three hydraulic tubes, two of which are 7 feet long, while the third, known as the "shorty," is 4 feet long and used for supplementary breaking.

Holes 5½ inches in diameter are drilled into the face to a depth of 8 feet and the tubes inserted. Then the oil, under a pressure of 2000 pounds per square inch, is forced into the tubes.

As the tube is expanded, pressure is exerted against the surrounding coal until, in the line of least resistance, the seam breaks downward to the cut which has been made at floor level, or toward the nearest of any other open face which may have been established. There is no shock or jar to make the coal fly or noticeably disturb the surrounding coal and strata. No flame or dust is produced.

The tubes themselves consist of a hollow core of abrasion and oil-resisting rubber, with a wall thickness of one inch. This rubber core is inclosed in a mesh cover which is braided from cables of high-tensile-strength steel wire. The outstanding feature of the expansible tube is the design of this braided cover which is fashioned so that, as the tube expands, the cables in the braid reach an angle at which they lock and thereby prevent further distention. This automatically prevents excessive distortion of the rubber core.

Drum-Type Machine Grinds and Polishes



■ Illustrated is the large drum-type grinding and polishing machine recently installed at the plant of Jessop Steel Co., Washington, Pa.

Employing abrasive belts up to and including 50 inches wide by 21 feet 5 inches long, the machine has an approximate production capacity of 100,000 pounds of 16-gage sheets 48 x 144 inches per month. The unit is smooth and powerful in operation providing uniform finishes and ability to remove considerable stock quickly. This latter feature is particularly advantageous in polishing plates which do not lend themselves easily to cold rolling.

Because the machine's hydraulically-driven table can be operated at a wide range of speeds, thin sheets can be moved under the polishing belt quickly in order to keep down heat input and thus reduce possible discoloration or warpage. On the other hand, heavy plate may be moved under the grinder at a slower speed. On finishing passes, the higher speeds enable work to be stepped up to a much faster pace. At present this equipment is engaged in finishing an order for 50,000 pounds of polished sheet material.

Conveyor Tables

(*Concluded from Page 59*)

its start toward the end of the conveyor, where a brake is provided. Here is another air-operated disappearing stop, located so finger-type ram trucks can pick up the piles directly off the end of the conveyor.

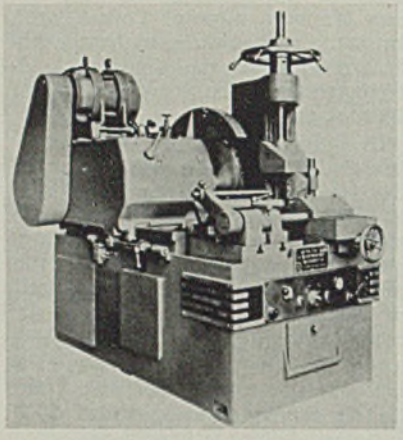
In normalizing, the handling operations are quite simple since neither cooling nor levelling is required. The first leveller is backed out of the line and its place filled with a section of chain-driven live roller conveyor. The sheets then pass directly from the furnace to the end of the conveyor. The trigger switches are disconnected since the transfer table is not required and must remain below the roller level. A workman catches the sheets as they reach the end of the conveyor and drops them to a small section of gravity roller conveyor, where they are picked up by a crane. See illustrations and captions.

Hydraulic Cold Sawing Unit Has Nine Speeds

■ Motch & Merryweather Machinery Co., Penton building, Cleveland, has placed on the market a hydraulic cold sawing machine featuring a carriage which embodies the entire driving mechanism for the circular saw blade. A built-in constant speed pump provides lubrication to all bearings and gears in this unit.

Main motor is adjustable-mounted on top of this carriage and connects through multiple V-belts. Saw is both started and stopped by a Twin Disc clutch and brake. Control is from the front through a lever mounted on a telescopic shaft—which when extended enables the operator to start and stop the machine conveniently.

Nine changes of speed in geometrical progression give cutting speeds ranging from 18 to 134 feet per minute at periphery of saw. The change gears are of spur type, sliding on hardened and ground multiple spline shafts mounted on Timken bearings. Final drive gears are wide face helicals. All gearing is mounted in a single plane, on short, heavy shafts with bearing support close to the gears.



Controls and instruments of this hydraulic saw are grouped on a single panel

Hydraulic feed to the saw carriage provides "stepless" variability and quick return. It is a low-pressure system which precludes leakage and undue maintenance. The direct motor-driven pump and the control valves are mounted on a bracket, as a unit. This is located in a reservoir in the bed.

Of the two adjustable valves, one can be set to limit total saw feed pressure, the other to insure proper clamping of the work. When the saw blade encounters a change in section or in hardness which overloads it, rate of feed is automatically decreased until overload is eliminated—normal feed being resumed automatically as soon as conditions permit.

The control panel at the front of the machine carries one handle to start and stop the saw carriage, and another to operate the vertical vise jaw. At the center is a dial for setting the feed rate of the saw carriage. To the right of this dial is the hydraulic pressure gage. This indicates whether or not the work is clamped securely. To the left is an ammeter which measures power input and warns operator when the blade needs resharpening. A stop-and-go push button controls all the electrical equipment.

Foundation of the whole machine is a heavy box bed. In addition to housing the hydraulic unit, this provides ample space for cutting compound and chips—chip removal being through a door at the front, below the control panel. Ample ways on which the saw carriage slides on this bed have taper gib adjustment, automatic oiling and are provided with chip wipers.

Original Enamel Color Restored by New Agent

■ Usually in re-enameling an enameled surface, the application of the extra coat darkens the original color.

In order to make this extra coat lighter to match the former color, Porcelain Enamel & Mfg. Co., Eastern and Pemco avenues, Baltimore, have developed a color matching or deopacifying agent called Univier A-1. It is used in white frit—either lead or leadless, sheet iron or cast iron, antimony-bearing or antimony-free.

When used in amounts of 2 to 8 ounces per hundred pounds of frit, the development covers the respray enamel so that it matches regular ware of normal application weight. The actual amount of Unifier A-1 which must be used will vary according to the application weight of the enamel which is to be matched, and the application weight of the respray. The color of the original coat also influences the amount of matching agent to be used.

Mills. Near Capacity. Seek To Meet Demand

Fourth quarter price announcement expected soon. Government buying is heavier. Ore consumption increases

MARKET IN TABLOID ★

Demand

Steady, with indications of early increase.

Prices

Steady; scrap advances further.

Production

Up ½-point to 90½ per cent.

■ WITH production close to the practical ceiling, some plants above theoretical capacity, the steel industry continues its effort to fill requirements of consumers, mindful of expected increase in demand as defense needs reach contract stage.

Despite the high rate of output, deliveries on some products continue to extend further, especially on steel requiring special treatment. Current shipments in general are close to rate of bookings and little progress is being made in reducing backlogs.

Somewhat larger production is expected when vacation interruptions are at an end, which will care for part of imminent increased buying in early fall. The margin of possible increase is small but every effort is being made to put equipment in condition to carry as much of the load as possible.

While no inkling has been given as to prices for fourth quarter the general feeling is that no important change will be made on steel products. Announcement for the final period may be made within a short time. Consumers show no concern and are not seeking protection on future deliveries, one factor in the quiet situation, in which buying is largely for specific needs instead of inventory. However, some effort is being made in a small way to accumulate moderate stocks against possible delay in deliveries in the next few months.

Some apprehension is developing over possible shortage of coke and pig iron. An important steelmaker recently bartered scrap for pig iron with two other interests. While no shortage has developed yet it is possible enlarged steelmaking and foundry operations, coupled with large domestic coke demand in the fall, may cause difficulties.

Government steel buying continues heavy. The navy will open bids Sept. 6 on more than 116,000 tons for various navy yards, to cover expected requirements for six months ending March 31. Frequently tonnage specified runs well ahead of quantities asked and this is expected to be the case in this instance. Requirements for ten seaplane tenders, which will be bid Sept. 25, will be over 10,000 tons, mainly plates.

Production last week rose ½-point, to 90.5 per cent, the rate of the preceding week. Youngstown, O., producers took off open hearths for repairs, causing a loss of 3 points to 83 per cent. Pittsburgh regained 3 points to 83 per cent as a plant idle for vacation resumed work. Detroit gained 3 points to 92 per cent, New England 5 points to 85, Buffalo 2 points to 90½, Chicago ½-point to 98 and Cleveland ½-point to 86½. Rates were unchanged at Wheeling, 99 per cent; Eastern Pennsylvania, 89; Cincinnati, 78; Birmingham, 88; St. Louis, 77.5.

Railroad buying is irregular, last week bringing no large inquiries or purchases. Chesapeake & Ohio is asking bids on ten heavy locomotives, the United States army 160 to 660 tank cars and the Virginian 10,000 tons of rails and accessories. Rail requirements are being figured by numerous roads and buying may be earlier than usual this fall.

Automobile output continues to gain, last week's production being 23,732 units, 3257 over the preceding period, following a previous increase of 8840. This movement is contra-seasonal, attributed to early sales of 1941 models. In the comparable week last year production was 18,365 cars.

While scrap buying is light much strength is apparent and higher prices are expected when melters enter the market. However, supplies are increasing as the price advances, which will moderate the rise. While steelmaking grades were little changed last week a stiffening in the East caused the composite to advance four cents to $18.87. The same influence raised the iron and steel composite one cent to $37.74.

Tin plate drags somewhat under burden of considerable stocks in hands of producers and consumers, production last week dropping to 62 per cent from the level of 70 per cent maintained for some time.

Iron ore consumption continues to increase, furnaces using 5,493,961 tons in July, the third successive month showing a gain. This was the highest July rate since 1929 and the best this year. Seven months' total was 32,826,627 tons, 63 per cent more than for the like period last year. The July total was 75 per cent above the same month in 1939. All but two Great Lakes bulk carriers were carrying ore Aug. 15, a gain of one from the preceding month. Ore on hand at docks and furnaces Aug. 1 totaled 28,128,054 tons, compared with 23,515,802 tons July 1. A year ago stocks were 28,507,243 tons.

COMPOSITE MARKET AVERAGES

	Aug. 24	Aug. 17	Aug. 10	One Month Ago July, 1940	Three Months Ago May, 1940	One Year Ago Aug., 1939	Five Years Ago Aug., 1935
Iron and Steel	$37.74	$37.73	$37.66	$37.63	$37.33	$35.95	$32.68
Finished Steel	56.60	56.60	56.60	56.60	56.60	55.60	54.02
Steelworks Scrap..	18.87	18.83	18.50	18.56	17.18	15.30	12.05

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

	Aug. 24, 1940	July 1940	May 1940	Aug. 1939
Steel bars, Pittsburgh	2.15c	2.15c	2.15c	2.15c
Steel bars, Chicago	2.15	2.15	2.15	2.15
Steel bars, Philadelphia	2.47	2.47	2.47	2.47
Iron bars, Chicago	2.25	2.25	2.25	2.05
Shapes, Pittsburgh	2.10	2.10	2.10	2.10
Shapes, Philadelphia	2.215	2.215	2.215	2.215
Shapes, Chicago	2.10	2.10	2.10	2.10
Plates, Pittsburgh	2.10	2.10	2.10	2.10
Plates, Philadelphia	2.15	2.15	2.15	2.15
Plates, Chicago	2.10	2.10	2.10	2.10
Sheets, hot-rolled, Pittsburgh	2.10	2.10	2.10	2.00
Sheets, cold-rolled, Pittsburgh	3.05	3.05	3.05	3.05
Sheets, No. 24 galv., Pittsburgh	3.50	3.50	3.50	3.50
Sheets, hot-rolled, Gary	2.10	2.10	2.10	2.00
Sheets, cold-rolled, Gary	3.05	3.05	3.05	3.05
Sheets, No. 24 galv., Gary	3.50	3.50	3.50	3.50
Bright bess., basic wire, Pitts.	2.60	2.60	2.60	2.60
Tin plate, per base box, Pitts.	$5.00	$5.00	$5.00	$5.00
Wire nails, Pittsburgh	2.55	2.55	2.55	2.40

Semifinished Material

Sheet bars, Pittsburgh, Chicago	$34.00	$34.00	$34.00	$34.00
Slabs, Pittsburgh, Chicago	34.00	34.00	34.00	34.00
Rerolling billets, Pittsburgh	34.00	34.00	34.00	34.00
Wire rods No. 5 to ⅜-inch, Pitts.	2.00	2.00	2.00	1.92

Pig Iron

	Aug. 24, 1940	July 1940	May 1940	Aug. 1939
Bessemer, del. Pittsburgh	$24.34	$24.34	$24.34	$22.34
Basic, Valley	22.50	22.50	22.50	20.50
Basic, eastern, del. Philadelphia	24.34	24.34	24.34	22.34
No. 2 foundry, Pittsburgh	24.21	24.21	24.21	22.21
No. 2 foundry, Chicago	23.00	23.00	23.00	21.00
Southern No. 2, Birmingham	19.38	19.38	19.38	17.38
Southern No. 2, del. Cincinnati	22.89	22.89	22.89	20.89
No. 2X, del. Phila. (differ av.)	25.215	25.215	25.215	23.215
Malleable, Valley	23.00	23.00	23.00	21.00
Malleable, Chicago	23.00	23.00	23.00	21.00
Lake Sup., charcoal, del. Chicago	30.34	30.34	30.34	28.34
Gray forge, del. Pittsburgh	23.17	23.17	23.17	21.17
Ferromanganese, del. Pittsburgh	125.33	125.33	105.33	85.33

Scrap

Heavy melt. steel, Pitts.	$18.75	$19.55	$18.00	$16.15
Heavy melt. steel, No. 2, E. Pa.	18.50	17.50	16.00	14.40
Heavy melting steel, Chicago	18.25	17.25	16.65	13.75
Rails for rolling, Chicago	22.25	21.25	20.45	17.75
Railroad steel specialties, Chicago	21.25	20.25	19.75	15.50

Coke

Connellsville, furnace, ovens	$4.75	$4.75	$4.75	$3.75
Connellsville, foundry, ovens	5.75	5.75	5.75	5.00
Chicago, by-product fdry., del.	11.25	11.25	11.25	10.50

STEEL, IRON, RAW MATERIAL, FUEL AND METALS PRICES

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

Sheet Steel

Hot Rolled

Pittsburgh	2.10c
Chicago, Gary	2.10c
Cleveland	2.10c
Detroit, del.	2.20c
Buffalo	2.10c
Sparrows Point, Md.	2.10c
New York, del.	2.34c
Philadelphia, del.	2.27c
Granite City, Ill.	2.20c
Middletown, O.	2.10c
Youngstown, O.	2.10c
Birmingham	2.10c
Pacific Coast ports	2.65c

Cold Rolled

Pittsburgh	3.05c
Chicago, Gary	3.05c
Buffalo	3.05c
Cleveland	3.05c
Detroit, delivered	3.15c
Philadelphia, del.	3.37c
New York, del.	3.39c
Granite City, Ill.	3.15c
Middletown, O.	3.05c
Youngstown, O.	3.05c
Pacific Coast ports	3.70c

Galvanized No. 24

Pittsburgh	3.50c
Chicago, Gary	3.50c
Buffalo	3.50c
Sparrows Point, Md.	3.50c
Philadelphia, del.	3.67c
New York, delivered	3.74c
Birmingham	3.50c
Granite City, Ill.	3.60c
Middletown, O.	3.50c
Youngstown, O.	3.50c
Pacific Coast ports	4.05c

Black Plate, No. 29 and Lighter

Pittsburgh	3.05c
Chicago, Gary	3.05c
Granite City, Ill.	3.15c

Long Ternes No. 24 Unassorted

Pittsburgh, Gary	3.80c
Pacific Coast	4.55c

Enameling Sheets

	No. 10	No. 20
Pittsburgh	2.75c	3.35c
Chicago, Gary	2.75c	3.35c
Granite City, Ill.	2.85c	3.45c
Youngstown, O.	2.75c	3.35c
Cleveland	2.75c	3.35c
Middletown, O.	2.75c	3.35c
Pacific Coast	3.40c	4.00c

Corrosion and Heat-Resistant Alloys

Pittsburgh base, cents per lb.

Chrome-Nickel

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

Straight Chromes

	No. 410	No. 430	No. 442	No. 446
Bars	18.50	19.00	22.50	27.50
Plates	21.50	22.00	25.50	30.50
Sheets	26.50	29.00	32.50	36.50
Hot strip	17.00	17.50	24.00	35.00
Cold stp.	22.00	22.50	32.00	52.00

Steel Plate

Pittsburgh	2.10c
New York, del.	2.29c
Philadelphia, del.	2.15c
Boston, delivered	2.46c
Buffalo, delivered	2.33c
Chicago or Gary	2.10c
Cleveland	2.10c
Birmingham	2.10c
Coatesville, Pa.	2.10c
Sparrows Point, Md.	2.10c
Claymont, Del.	2.10c
Youngstown	2.10c
Gulf ports	2.45c
Pacific Coast ports	2.65c

Steel Floor Plates

Pittsburgh	3.35c
Chicago	3.35c
Gulf ports	3.70c
Pacific Coast ports	4.00c

Structural Shapes

Pittsburgh	2.10c
Philadelphia, del.	2.21½c
New York, del.	2.27c
Boston, delivered	2.41c
Bethlehem	2.10c
Chicago	2.10c
Cleveland, del.	2.30c
Buffalo	2.10c
Gulf ports	2.45c
Birmingham	2.10c
St. Louis, del.	2.34c
Pacific Coast ports	2.75c

Tin and Terne Plate

Tin Plate, Coke (base box)

Pittsburgh, Gary, Chicago	$5.00
Granite City, Ill.	5.10

Mfg. Terne Plate (base box)

Pittsburgh, Gary, Chicago	$4.30
Granite City, Ill.	4.40

Bars

Soft Steel

(*Base, 20 tons or over*)

Pittsburgh	2.15c
Chicago or Gary	2.15c
Duluth	2.25c
Birmingham	2.15c
Cleveland	2.15c
Buffalo	2.15c
Detroit, delivered	2.25c
Philadelphia, del.	2.47c
Boston, delivered	2.52c
New York, del.	2.49c
Gulf ports	2.50c
Pacific Coast ports	2.80c

Rail Steel

(*Base, 5 tons or over*)

Pittsburgh	2.05c
Chicago or Gary	2.05c
Detroit, delivered	2.15c
Cleveland	2.05c

Buffalo	2.05c
Birmingham	2.05c
Gulf ports	2.40c
Pacific Coast ports	2.70c

Iron

Chicago	2.25c
Philadelphia, del.	2.37c
Pittsburgh, refined	3.50-8.00c
Terre Haute, Ind.	2.15c

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.	2.05c
Gulf ports	2.40c
Pacific Coast ports	2.50c

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
Annealed fence wire	3.05c
Galv. fence wire	3.40c
Woven wire fencing (base C. L. column)	67
Single loop bale ties, (base C.L. column)	56
Galv. barbed wire, 80-rod spools, base column	70
Twisted barbless wire, column	70

To Manufacturing Trade

Base, Pitts. - Cleve. - Chicago Birmingham (except spring wire)

Bright bess., basic wire	2.60c
Galvanized wire	2.60c
Spring wire	3.20c

Worcester, Mass., $2 higher on bright basic and spring wire.

Cut Nails

Carload, Pittsburgh, keg $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 2.70c
Detroit, delivered 2.80c

S.A.E.	Alloy Diff.	S.A.E.	Alloy Diff.
2000	0.35	3100	0.70
2100	0.75	3200	1.35
2300	1.55	3300	3.80
2500	2.25	3400	3.20

4100 0.15 to 0.25 Mo. 0.55
4800 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 ports	2.75c
Cooperage hoop, Young., Pitts.; Chicago, Birm.	2.20c
Cold strip, 0.25 carbon and under, Pittsburgh, Cleveland, Youngstown	2.80c
Chicago	2.90c
Detroit, del.	2.90c
Worcester, Mass.	3.00c

Carbon	Cleve.,	Pitts.
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%, full containers, add 10%.

Carriage and Machine

½ x 6 and smaller	68.5 off
Do. larger, to 1-in.	66 off
Do. 1⅛ 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

	U.S.S.	S.A.E.
Semifinished hex. ½-inch and less	67	70
⅝-1-inch	64	65
1⅛-1⅜-inch	62	62
1⅝ and larger	60	..

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	2.95c

Rivets, Washers

F.o.b. Pitts., Cleve., Chgo., Bham.

Structural	3.40c
⅞-inch and under	65-10 off

Wrought washers, Pitts., Chi., Phila., to jobbers and large nut, bolt mfrs. l.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 2½ and 1½ less, respectively. Wrought pipe, Pittsburgh base.

Butt Weld

Steel

In.	Blk.	Galv.
½	63½	54
¾	66½	58
1—3	68½	60½

Iron

¾	30	13
1—1¼	34	19
1½	38	21½
2	37½	21

Lap Weld

Steel

2	61	52½
2½—3	64	55½
3½—6	66	57½
7 and 8	65	55½
9 and 10	64½	55
11 and 12	63½	54

Iron

2	30½	15
2½—3½	31½	17½
4	33½	21
4½—8	32½	20
9—12	28½	15

Line Pipe

Steel

1 to 3, butt weld	67½
2, lap weld	60
2½ to 3, lap weld	63
3½ to 6, lap weld	65
7 and 8, lap weld	64
10-inch lap weld	63½
12-inch, lap weld	62½

Iron

	Blk.	Galv.
¾ butt weld	25	7
1 and 1¼ butt weld	29	13
1½ butt weld	33	15½
2 butt weld	32½	15
1½ lap weld	23½	7
2 lap weld	25½	9
2½ to 3½ lap weld	26½	11½
4 lap weld	28½	15
4½ to 8 lap weld	27½	14
9 to 12 lap weld	23½	9

Boiler Tubes

Carloads minimum wall seamless steel boiler tubes, cutlengths 4 to 24 feet; f.o.b. Pittsburgh, base price per 100 feet subject to usual extras.

Lap Welded

Sizes	Gage	Steel	Charcoal Iron
1½" O.D.	13	$ 9.72	$23.71
1¾" O.D.	13	11.06	22.93
2" O.D.	13	12.38	19.35
2¼" O.D.	13	13.79	21.68
2¼" O.D.	12	15.16	.....
2½" O.D.	12	16.58	26.57
2¾" O.D.	12	17.54	29.00
3" O.D.	12	18.35	31.36
3½" O.D.	11	23.15	39.81
4" 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
1¼" O.D.	13	9.26	10.67
1½" O.D.	13	10.23	11.79
1¾" O.D.	13	11.64	13.42
2" O.D.	13	13.04	15.03
2¼" O.D.	13	14.54	16.76
2½" O.D.	12	16.01	18.45
2½" O.D.	12	17.54	20.21
2¾" O.D.	12	18.59	21.42
3" O.D.	12	19.50	22.48
3½" O.D.	11	24.62	28.37
4" O.D.	10	30.54	35.20
4½" 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—Pet 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
Stnd. fittgs., Birm., base $100.00.

Semifinished Steel

Rerolling Billets, Slabs
(Gross Tons)

Pittsburgh, Chicago, Gary, Cleve., Buffalo, Youngs., 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 ⅝-inch incl. (per 100 lbs.) $2.00
Do., over ⅝ to 47/64-in. incl. 2.15
Worcester up $0.10; Galveston up $0.25; Pacific Coast up $0.50.

Skelp

Pitts., Chi., Youngstown, Coatesville, Sparrows Pt. 1.90c

Coke

Price Per Net Ton

Beehive Ovens

Connellsville, fur.	$4.35- 4.60
Connellsville, fdry.	5.25- 5.50
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	15.00c
Toluol, two degree	27.00c
Solvent naphtha	26.00c
Industrial xylol	26.00c

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	7.00c

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.	Malleable	Basic	Bessemer
Bethlehem, Pa.	$24.00	$24.50	$23.50	$25.00
Birmingham, Ala.‡	19.38	.	18.38	24.00
Birdsboro, Pa.	24.00	24.50	23.50	25.00
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	...	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	...
Neville Island, Pa.	23.00	23.00	22.50	23.50
Provo, Utah	22.00	....	....	.
Sharpsville, Pa.	23.00	23.00	22.50	23.50
Sparrow's Point, Md.	24.00	....	23.50	...
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	....	23.66	....
Boston from Birmingham	24.12	....	....	....
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	....	....
Canton, O., from Cleveland	24.39	24.39	23.89	24.89
Chicago from Birmingham	†23.22	....	....	....
Cincinnati from Hamilton, O.	23.24	24.11	23.61	....
Cincinnati from Birmingham	23.06	....	22.06	....
Cleveland from Birmingham	23.32	....	22.82	....
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	....	....	....
Newark, N. J., from Bethlehem	25.53	26.03	....	....
Philadelphia from Birmingham	24.46	....	23.96	....
Philadelphia from Swedeland, Pa.	24.84	25.34	24.34	....
Pittsburgh district from Neville Island	‡Neville base, plus 69c, 84c, and $1.24 freight.			
Saginaw, Mich., from Detroit	25.31	25.31	24.81	25.81
St. Louis, northern	23.50	23.50	23.00	....
St. Louis from Birmingham	†23.12	.	22.62	...
St. Paul from Duluth	25.63	25.63	....	26.13

†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		Charcoal	
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

Fire Clay Brick

Super Quality

Pa., Mo., Ky.	$60.80

First Quality

Pa., Ill., Md., Mo., Ky.	47.50
Alabama, Georgia	47.50
New Jersey	52.50

Second Quality

Pa., Ill., Ky., Md., Mo.	42.75
Georgia, Alabama	34.20
New Jersey	49.00

Ohio

First quality	39.90
Intermediate	36.10
Second quality	31.35

Malleable Bung Brick

All bases	$56.05

Silica Brick

Pennsylvania	$47.50
Joliet, E. Chicago	55.10
Birmingham, Ala.	47.50

Ladle Brick

(Pa., O., W. Va., Mo.)

Dry press	$28.00
Wire cut	26.00

Magnesite

Domestic dead-burned grains, net ton f.o.b. Chewelah, Wash., net ton, bulk	22.00
net ton, bags	26.00

Basic Brick

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

Chrome brick	$50.00
Chem. bonded chrome	50.00
Magnesite brick	72.00
Chem. bonded magnesite	61.00

Fluorspar

Washed gravel, duty pd., tide, net ton	$25.00-$26.00
Washed gravel, f.o.b. Ill., Ky., net ton, carloads, all rail	21.00
Do. barge	21.00
No. 2 lump	22.00

Ferroalloy Prices

Ferromanganese, 78-82%, carlots, duty pd. $120.00
Ton lots 130.00
Less ton lots 133.50
Less 200 lb. lots 138.00
Do., carlots del. Pitts. 125.33

Spiegeleisen, 19-21% dom.
Palmerton, Pa., spot 36.00
Do., 26-28% 49.50

Ferrosilicon, 50% freight allowed, c.l. 74.50
Do., ton lot 87.00
Do., 75 per cent 135.00
Do., ton lots 151.00
Spot, $5 a ton higher.

Silicomanganese, c.l., 2½ per cent carbon 118.00
2% carbon, 108.00; 1%, 133.00
Contract ton price $12.50 higher; spot $5 over contract.

Ferrotungsten, stand., lb. con. del. cars 1.90-2.00

Ferrovanadium, 35 to 40%, lb., cont. 2.70-2.80-2.90

Ferrophosphorus, gr. ton, c.l., 17-18% Rockdale, Tenn., basis, 18%, $3 unitage, 58.50; electric furn., per ton, c. l., 23-26% f.o.b. Mt. Pleasant, Tenn., 24% $3 unitage 75.00

Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb., contained cr., del. carlots 11.00c
Do., ton lots 11.75c
Do., less-ton lots 12.00c

67-72% low carbon:

	Carloads	Ton lots	Less ton
2% carb.	17.50c	18.25c	18.75c
1% carb.	18.50c	19.25c	19.75c
0.10% carb.	20.50c	21.25c	21.75c
0.20% carb.	19.50c	20.25c	20.75c

Spot ¼c higher

Ferromolybdenum, 55-65% molyb. cont., f.o.b. mill, lb. 0.95

Calcium molybdate, lb. molyb. cont., f.o.b. mill 0.80

Ferrotitanium, 40-45%, lb., con. tl., f.o.b. Niagara Falls, ton lots $1.23
Do., less-ton lots 1.25
20-25% carbon, 0.10 max., ton lots, lb. 1.35
Do., less-ton lots 1.40
Spot 5c higher

Ferrocolumbium, 50-60%, contract, lb. con. col., f.o.b. Niagara Falls $2.25
Do., less-ton lots 2.30
Spot is 10c higher

Technical molybdenum trioxide, 53 to 60% molybdenum, lb. molyb. cont., f.o.b. mill 0.80

Ferro-carbon-titanium, 15-18%, tl., 6-8% carb., carlots, contr., net ton $142.50
Do., spot 145.00
Do., contract, ton lots 145.00
Do., spot, ton lots 150.00

15-18% tl., 3-5% carbon, carlots, contr., net ton 157.50
Do., spot 160.00
Do., contract, ton lots 160.00
Do., spot, ton lots 165.00

Alsifer, contract carlots, f.o.b. Niagara Falls, lb. 7.50c
Do., ton lots 8.00c
Do., less-ton lots 8.50c
Spot ½c lb. higher

Chromium Briquets, contract, freight allowed, lb. spot carlots, bulk 7.00c
Do., ton lots 7.50c
Do., less-ton lots 7.75c
Do., less 200 lbs. 8.00c
Spot, ¼c higher.

Tungsten Metal Powder, according to grade, spot shipment, 200-lb. drum lots, lb. $2.50
Do., smaller lots 2.60

Vanadium Pentoxide, contract, lb. contained $1.10
Do., spot 1.15

Chromium Metal, 98% cr., 0.50 carbon max., contract, lb. con. chrome 84.00c
Do., spot 89.00c

88% chrome, contract 83.00c
Do., spot 88.00c

Silicon Metal, 1% iron, contract, carlots, 2 x ⅛-in., lb. 14.00c
Do., 2% 12.50c
Spot ¼c higher

Silicon Briquets, contract carloads, bulk, freight allowed, ton $69.50
Ton lots 79.50
Less-ton lots, lb. 3.75c
Less 200 lb. lots, lb. 4.00c
Spot ¼-cent higher.

Manganese Briquets, contract carloads, bulk freight allowed, lb. 5.00c
Ton lots 5.50c
Less-ton lots 5.75c
Spot ¼c higher

Zirconium Alloy, 12-15%, contract, carloads, bulk, gross ton 102.50
Do., spot 107.50

34-40%, contract, carloads, lb., alloy 14.00c
Do., ton lots 15.00c
Do., less-ton lots 16.00c
Spot ¼c higher

Molybdenum Powder, 99%, f.o.b. York, Pa. 200-lb. kegs, lb. $2.60
Do., 100-200 lb. lots 2.75
Do., under 100-lb. lots 3.00

Molybdenum Oxide Briquets, 48-52% molybdenum, per pound contained, f.o.b. producers' plant 80.00c

WAREHOUSE STEEL PRICES

Base Prices in Cents Per Pound, Delivered Locally, Subject to Prevailing Differentials

	Soft Bars	Bands	Hoops	Plates ¼-in. & Over	Structural Shapes	Floor Plates	Sheets: Hot Rolled	Sheets: Cold Rolled	Sheets: Galv. No. 24	Cold Rolled Strip	Cold Drawn Bars: Carbon	Cold Drawn Bars: S.A.E. 2300	Cold Drawn Bars: S.A.E. 3100
Boston	3.98	3.86	4.86	3.85	3.85	5.66	3.51	4.48	4.66	3.46	4.13	8.63	7.23
New York (Met.)	3.84	3.76	3.76	3.76	3.75	5.56	3.38	4.40	4.05	3.31	4.09	8.59	7.19
Philadelphia	3.85	3.75	4.25	3.55	3.55	5.25	3.35	4.05	4.00	3.31	4.06	8.56	7.16
Baltimore	3.85	4.00	4.35	3.70	3.70	5.25	3.50	....	5.05	....	4.05	....	....
Norfolk, Va.	4.00	4.10	....	4.05	4.05	5.45	3.85	....	5.40	....	4.15	....	....
Buffalo	3.35	3.62	3.62	3.62	3.40	5.25	3.05	4.30	4.00	3.22	3.75	8.15	6.75
Pittsburgh	3.35	3.40	3.40	3.40	3.40	5.00	3.15	....	4.45	....	3.65	8.15	6.75
Cleveland	3.25	3.30	3.30	3.40	3.58	5.18	3.15	4.05	4.42	3.20	3.75	8.15	6.75
Detroit	3.43	3.23	3.48	3.60	3.65	5.27	3.25	4.30	4.64	3.20	3.80	8.45	7.05
Omaha	3.90	3.80	3.80	3.95	3.95	5.55	3.45	....	5.00	....	4.42	....	....
Cincinnati	3.60	3.47	3.47	3.65	3.68	5.28	3.22	4.00	4.67	3.47	4.00	8.50	7.10
Chicago	3.50	3.40	3.40	3.55	3.55	5.15	3.05	4.10	4.60	3.30	3.75	8.15	6.75
Twin Cities	3.75	3.65	3.65	3.80	3.80	5.40	3.30	4.35	4.75	3.83	4.34	8.84	7.44
Milwaukee	3.63	3.53	3.53	3.68	3.68	5.28	3.18	4.23	4.73	3.54	3.88	8.38	6.98
St. Louis	3.62	3.52	3.52	3.47	3.47	5.07	3.18	4.12	4.87	3.41	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	....	....
Indianapolis	3.60	3.55	3.55	3.70	3.70	5.30	3.25	....	4.76	....	3.97	....	....
Memphis	3.90	4.10	4.10	3.95	3.95	5.71	3.85	....	5.25	....	4.31	....	....
Chattanooga	3.80	4.00	4.00	3.85	3.85	5.68	3.70	....	4.40	....	4.39	....	....
Tulsa, Okla.	4.44	4.34	4.34	4.33	4.33	5.93	3.99	....	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	3.85	5.20	3.65	3.75	5.75	3.70	6.50	5.00	....	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	4.60	4.45	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

	S.A.E. Hot-rolled Bars (Unannealed): 1035-1050	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	4.45	....	....	....	....
Norfolk, Va.	....	....	....	....	....
Buffalo	3.55	7.10	5.65	5.40	7.50
Pittsburgh	3.40	7.20	5.75	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	8.63
Los Angeles	4.80	9.40	8.55	8.40	9.05
San Francisco	5.00	9.65	8.80	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; 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, 1500-3499 pounds, New York; 150-1499 in Cleveland, 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, Indianapolis, Milwaukee, Omaha, St. Louis, Tulsa; 1500 and over in Chattanooga; any quantity in Twin Cities; 750-1500 in Kansas City; 150 and over in Memphis; 25 to 49 bundles in Philadelphia.

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 Official Rates of Exchange

Export Prices f.o.b. Port of Dispatch—

By Cable or Radio

	British gross tons U. K. ports: £ s d	Quoted in dollars at current value	Continental Channel or North Sea ports, gross tons‡‡: **Quoted in gold pounds sterling: £ s d
Foundry, 2.50-3.00 Si.	.....	$33.23	3 18 0
Basic bessemer	.....	.....	.....
Hematite, Phos. .03-.05	.....	.....	.....
Billets	.....	$31.95	3 15 0
Wire rods, No. 5 gage	.....	60.71	7 2 6
Standard rails	.....	$48.99	5 15 0
Merchant bars	2.66c 14 15 0	2.77c	7 6 0
Structural shapes	2.48c 13 15 0	2.83c	7 9 0
Plates, ¼ in. or 5 mm.	2.68c 14 17 6	3.53c	9 6 0
Sheets, black, 24 gage or 0.5 mm	3.40c 18 17 6	2.98c	7 17 0*
Sheets, gal., 24 ga., corr.	3.98c 22 2 6	3.94c	10 7 6
Bands and strips	.....	2.76c	7 5 0
Plain wire, base	.....	3.15c	8 6 3
Galvanized wire, base	.....	3.75c	9 17 6
Wire nails, base	.....	3.56c	9 7 6
Tin plate, box 108 lbs.	£ 5 5.61 1 7 9	.....	.....

British ferromanganese $120.00 delivered Atlantic seaboard duty-paid.

Domestic Prices at Works or Furnace—

Last Reported

	£ s d	French ‡‡Francs		Belgian ‡‡Francs		Reich ‡‡Mar
Fdy. pig iron, Si. 2.5	$24.24 6 0 0(a)	$17.18	788	$31.44	950	$25.33	63
Basic bess. pig iron	22.83 5 13 0(a)	.....	.....	29.79	900	27.94	(b) 69.50
Furnace coke	6.77 1 13 5	4.91	225	10.92	320	7.64	19
Billets	42.42 10 10 0	26.62	1,221	42.20	1,275	38.79	96
Standard rails	2.30c 12 15 6	1.69c	1,692	2.06c	1,375	2.38c	132
Merchant bars	2.78c 15 8 6††	1.53c	1,530	2.06c	1,375	1.98c	110
Structural shapes	2.46c 13 13 0††	1.49c	1,487	2.06c	1,375	1.93c	107
Plates, ¼-in. or 5 mm.	2.55c 14 3 0††	1.95c	1,951	2.42c	1,610	2.29c	127
Sheets, black	3.49c 19 17 6§	2.30c	2,295‡	2.85c	1,900‡	2.59c	144‡
Sheets, galv., corr., 24 ga. or 0.5 mm.	4.07c 22 12 6	3.59c	3,589	4.80c	3,200	6.66c	370
Plain wire	3.83c 21 5 0	2.34c	2,340	3.00c	2,000	3.11c	173
Bands and strips	2.91c 16 3 6††	1.71c	1,713	2.48c	1,650	2.29c	127

†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. ‡‡No 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.	15.00
Bos. dock No. 1 exp.	16.00-16.25
New Eng. del. No. 1	15.50-16.00
Buffalo, No. 1	18.00-18.50
Buffalo, No. 2	16.00-16.50
Chicago, No. 1	18.00-18.50
Chicago, auto, no alloy	17.00-17.50
Cincinnati, dealers.	15.25-15.75
Cleveland, No. 1	18.00-18.50
Cleveland, No. 2	17.00-17.50
Detroit, No. 1	†15.50-16.00
Detroit, No. 2	†14.50-15.00
Eastern Pa., No. 1	20.00
Eastern Pa., No. 2	18.50
Federal, Ill., No. 2	14.75-15.25
Granite City, R. R. No. 1	15.75-16.25
Granite City No. 2.	14.50-15.00
Los Ang., No. 1, net	13.00-13.50
Los Ang., No. 2, net	12.00-12.50
N.Y. dock No. 1 exp.	15.00-15.50
Pitts., No. 1 (R.R.)	20.50-21.00
Pittsburgh, No. 1	18.50-19.00
Pittsburgh, No. 2	17.50-18.00
St. Louis, No. 1	16.00-16.50
St. Louis, No. 2	14.50-15.00
San Fran., No. 1, net	13.00-13.50
San Fran., No. 2, net	12.00-12.50
Seattle, No. 1	15.00
Toronto, dirs., No. 1	11.00
Valleys, No. 1	18.00-18.50

COMPRESSED SHEETS

Buffalo, new	17.00-17.50
Chicago, factory	17.50-18.00
Chicago, dealers	16.00-16.50
Cincinnati, dealers.	14.25-14.75
Cleveland	17.50-18.00
Detroit	†17.50-18.00
E. Pa., new mat.	19.50-20.00
E. Pa., old mat.	16.50-17.00
Los Angeles, net	10.00-10.50
Pittsburgh	18.50-19.00
St. Louis	12.00-12.50
San Francisco, net.	10.00-10.50
Valleys	17.50-18.00

BUNDLED SHEETS

Buffalo, No. 1	16.00-16.50
Buffalo, No. 2	14.50-15.00
Cleveland	14.00-14.50
Pittsburgh	17.50-18.00
St. Louis	11.50-12.00
Toronto, dealers	9.75

SHEET CLIPPINGS, LOOSE

Chicago	13.00-13.50
Cincinnati, dealers.	9.75-10.25
Detroit	†14.00-14.50
St. Louis	10.50-11.00
Toronto, dealers	9.00

BUSHELING

Birmingham, No. 1.	13.00
Buffalo, No. 1	16.00-16.50
Chicago, No. 1	17.00-17.50
Cincin., No. 1 deal.	11.00-11.50
Cincin., No. 2 deal.	6.25- 6.75
Cleveland, No. 2	12.00-12.50
Detroit, No. 1 new.	†16.00-16.50
Valleys, new, No. 1	17.50-18.00
Toronto, dealers	5.50- 6.00

MACHINE TURNINGS (Long)

Birmingham	5.00
Buffalo	12.00-12.50
Chicago	12.00-12.50
Cincinnati, dealers.	7.75- 8.25
Cleveland, no alloy.	11.50-12.00
Detroit	†10.00-10.50
Eastern Pa.	14.00-14.50
Los Angeles	4.00- 5.00
New York	†9.00- 9.50
Pittsburgh	14.50-15.00
St. Louis	8.50- 9.00
San Francisco	5.00
Toronto, dealers	7.00- 7.25
Valleys	11.50-12.00

SHOVELING TURNINGS

Buffalo	13.00-13.50
Cleveland	12.00-12.50
Chicago	12.50-13.00
Chicago, spcl, anal.	14.50-15.00
Detroit	†11.50-12.00
Pitts., alloy-free	15.50-16.00

BORINGS AND TURNINGS

For Blast Furnace Use

Boston district	†6.75- 7.00
Buffalo	12.00-12.50
Cincinnati, dealers.	6.25- 6.75
Cleveland	12.00-12.50
Eastern Pa.	12.00-12.50
Detroit	†11.00-11.50
New York	†8.00
Pittsburgh	12.50-13.00
Toronto, dealers	6.75

AXLE TURNINGS

Buffalo	16.00-16.50
Boston district	†9.50-10.00
Chicago, elec. fur.	18.00-18.50
East. Pa. elec. fur.	17.50-18.00
St. Louis	11.25-11.75
Toronto	6.00- 6.50

CAST IRON BORINGS

Birmingham	8.00
Boston dist. chem.	†8.50- 8.75
Buffalo	12.00-12.50
Chicago	11.50-12.00
Cincinnati, dealers.	6.25- 6.75
Cleveland	12.00-12.50
Detroit	†11.25-11.75
E. Pa., chemical	14.50-15.00
New York	†8.00- 8.50
St. Louis	8.00- 8.50
Toronto, dealers	6.75

RAILROAD SPECIALTIES

Chicago	21.00-21.50

ANGLE BARS—STEEL

Chicago	21.00-21.50
St. Louis	18.00-18.50

SPRINGS

Buffalo	22.00-22.50
Chicago, coil	22.50-23.00
Chicago, leaf	21.00-21.50
Eastern Pa.	24.50-25.00
Pittsburgh	25.50-26.00
St. Louis	20.00-20.50

STEEL RAILS, SHORT

Birmingham	17.00
Buffalo	22.50-23.00
Chicago (3 ft.)	21.00-21.50
Chicago (2 ft)	21.50-22.00
Cincinnati, dealers.	21.50-22.00
Detroit	†21.50-22.00
Pitts., 3 ft. and less	25.00-25.50
St. L. 2 ft. & less	20.50-21.00

STEEL RAILS, SCRAP

Birmingham	15.00
Boston district	†14.50-15.00
Buffalo	21.00-21.50
Chicago	18.00-18.50
Cleveland	23.00-23.50
Pittsburgh	22.50-23.00
St. Louis	18.50-19.00
Seattle	18.00-18.50

PIPE AND FLUES

Chicago, net	12.50-13.00
Cincinnati, dealers.	11.75-12.25

RAILROAD GRATE BARS

Buffalo	13.00-13.50
Chicago, net	13.50-14.00
Cincinnati, dealers.	10.75-11.25
Eastern Pa.	16.50-17.00
New York	†11.50-12.00
St. Louis	12.00-12.50

RAILROAD WROUGHT

Birmingham	14.00
Boston district	†9.50-10.00
Eastern Pa., No. 1	20.00-20.50
St. Louis, No. 1	12.00-12.50
St. Louis, No. 2	15.50-16.00

FORGE FLASHINGS

Boston district	†11.00-11.50
Buffalo	16.00-16.50
Cleveland	16.50-17.00
Detroit	†15.50-16.00
Pittsburgh	16.50-17.00

FORGE SCRAP

Boston district	†7.00
Chicago, heavy	22.00-22.50

LOW PHOSPHORUS

Cleveland, crops	23.00-23.50
Eastern Pa., crops	25.00-25.50
Pitts., billet, bloom, slab crops	25.00-25.50

LOW PHOS. PUNCHINGS

Buffalo	21.00-21.50
Chicago	21.50-22.00
Cleveland	20.00-20.50
Eastern Pa.	25.00-25.50
Pittsburgh	24.50-25.00
Seattle	15.00
Detroit	†17.50-18.00

RAILS FOR ROLLING

5 feet and over

Birmingham	16.50
Boston	†15.75-16.00
Chicago	22.00-22.50
New York	†17.50-18.00
Eastern Pa.	23.00-23.50
St. Louis	20.00-20.50

STEEL CAR AXLES

Birmingham	18.00
Boston district	†18.00-18.50
Chicago, net	22.50-23.00
Eastern Pa.	24.50
St. Louis	21.00-21.50

LOCOMOTIVE TIRES

Chicago (cut)	22.00-22.50
St. Louis, No. 1	17.50-18.00

SHAFTING

Boston district	†19.00-19.25
New York	†19.00-19.50
Eastern Pa.	25.00-25.50
St. Louis, 1¼-3¾"	18.00-18.50

CAR WHEELS

Birmingham, iron	13.00
Boston dist., iron	†14.75-15.00
Buffalo, steel	22.00-22.50
Chicago, iron	19.00-19.50
Chicago, rolled steel	21.00-21.50
Cincin., iron, deal.	18.50-19.00
Eastern Pa., iron	21.50
Eastern Pa., steel	24.50-25.00
Pittsburgh, iron	20.50-21.00
Pittsburgh, steel	25.50-26.00
St. Louis, iron	18.25-18.75
St. Louis, steel	19.50-20.00

NO. 1 CAST SCRAP

Birmingham	15.50
Boston, No. 1 mach.	†15.50-16.00
N. Eng. del. No. 2	14.50-14.75
N. Eng. del. textile	18.75-20.00
Buffalo, cupola	17.50-18.00
Buffalo, mach.	19.00-19.50
Chicago, agri. net.	15.00-15.50
Chicago, auto net.	17.00-17.50
Chicago, railroad net	16.00-16.50
Chicago, mach. net.	16.50-17.00
Cincin., mach. deal.	19.00-19.50
Cleveland, mach.	21.25-21.75
Detroit, cupola, net.	†17.00-17.50
Eastern Pa., cupola.	21.50-22.00
E. Pa., No. 2 yard	18.00-18.50
E. Pa., yard fdry.	18.50-19.00
Los Angeles	16.50-17.00
Pittsburgh, cupola.	19.00-19.50
San Francisco	14.50-15.00
Seattle	14.50-16.00
St. L., agri. mach.	18.00-18.50
St. L., No. 1 mach.	18.75-19.25
Toronto, No. 1 mach., net dealers	18.00-18.50

HEAVY CAST

Boston dist. break.	†14.50-14.75
New England, del.	15.50-16.00
Buffalo, break	16.50-17.00
Cleveland, break, net	16.50-17.00
Detroit, auto net.	†17.25-17.75
Detroit, break.	†15.00-15.50
Eastern Pa.	20.00-20.50
Los Ang., auto, net.	13.00-14.00
New York break.	†16.00-16.50
Pittsburgh, break.	16.00-16.50

STOVE PLATE

Birmingham	10.00-11.00
Boston district	†11.00-11.50
Buffalo	15.00-15.50
Chicago, net	11.50-12.00
Cincinnati, dealers.	11.25-11.75
Detroit, net	†11.00-11.50
Eastern Pa.	16.50-17.00
New York fdry	†12.50
St. Louis	†11.50-12.00
Toronto dealers, net	12.00

MALLEABLE

New England, del.	21.50-22.00
Buffalo	21.50-22.00
Chicago, R. R.	22.00-22.50
Cincin. agri., deal.	16.25-16.75
Cleveland, rail	21.50-22.00
Eastern Pa., R. R.	22.50-23.00
Los Angeles	12.50
Pittsburgh, rail	23.50-24.00
St. Louis, R. R.	19.00-19.50

Ores

Lake Superior Iron Ore

Gross ton, 51½ %

Lower Lake Ports

Old range bessemer	$4.75
Mesabi nonbessemer	4.45
High phosphorus	4.35
Mesabi bessemer	4.60
Old range nonbessemer	4.60

Eastern Local Ore

Cents, unit, del. E. Pa.

Foundry and basic 56-63%, contract	10.00

Foreign Ore

Cents per unit, c.i.f. Atlantic ports

Manganiferous ore, 43-35% Fe., 6-10% Mang.	Nom.
N. African low phos	nom.
Spanish, No. African basic, 50 to 60%	nom.
Chinese wolframite, net ton, duty pd.	$23.50-24.00
Brazil iron ore, 68-69%, ord.	7.50c
Low phos. (.02 max.)	8.00c
F.O.B. Rio Janeiro.	
Scheelite, Imp.	$25.00
Chrome ore, Indian, 48% gross ton, cif.	$28.00-30.00

Manganese Ore

Including war risk but not duty, cents per unit cargo lots.

Caucasian, 50-52%	60.00
So. African, 50-52%	58.00-59.00
Indian, 49-50%	56.00
Brazilian, 46%	50.00-53.00
Cuban, 50-51%, duty free	71.00-73.00

Molybdenum

Sulphide conc., lb., Mo. cont., mines	$0.75

—The Market Week—

Sheets, Strip

Sheet & Strip Prices, Pages 72, 73

Pittsburgh—Sheet specifications from automotive sources are coming in at a much better rate and August bookings are now considerably ahead of July, principally from this source. Miscellaneous buying has shown slight increases and the export market is active. All new business is being placed at the full market price. Mills anticipate a rising production rate through fourth quarter. Reaffirmation of prices is expected shortly for fourth-quarter delivery.

Chicago—Flat-rolled steel demand is well sustained, aided by heavier automotive releases. Buying is relatively lighter than in some other products, but mill backlogs recede little. Fairly early deliveries are available on commoner grades. Heavier gages of hot-rolled sheets are offered by some producers in two to three weeks, with three to four weeks required on lighter gages.

New York—Sheet buying is sluggish, consumers operating with low-priced material, and secondary prices are easy. Demand for narrow cold strip, notably specialties, has improved slightly, mostly from the automotive trade. Considerable cold strip volume is being taken by mills for fourth quarter delivery at open prices, although few if any changes are expected in quotations for that period. Re-rolling operations average close to 90 per cent and incoming tonnage is large enough to hold backlogs to the current level with deliveries averaging around four weeks. Strip consumption is increasing.

Philadelphia—Navy department takes bids Sept. 6 on 7284 tons of black and galvanized sheets and 527 tons of hot strip for various yards for six months ending March 31. Automotive trade has placed more than 20,000 tons of sheets for frame and body work in the East. Buying otherwise is comparatively dull but consumption holds at a high level. Deliveries average three to four weeks.

Buffalo—Even though buying is slow covering of releases against large third quarter bookings holds sheet and strip steel output close to record proportions. An increase is noted in small diversified industrial orders. Motor specifications are expanding gradually.

Cincinnati—Expanding automotive needs are reflected in sheet specifications. Other needs are steady with the exception of the summer tapering in seasonal lines. Buying is only fair, below the 75 per cent

rolling schedules. Tonnage inquiries for British needs are current.

Birmingham, Ala. — Demand for sheets and strip continue at their recent fairly good level, and at Birmingham and Gadsden continue near capacity.

Toronto, Ont.—New business is holding steady in sheets and strip and increasing backlogs are increasing. While the automotive industry is preparing specifications no large tonnage booking has yet been done for 1941 models, although buying has been in good volume for war vehicles. A substantial surplus tonnage is being placed in the United States for early delivery and imports are holding at the former high level.

St. Louis — Sheet manufacturers report demand shows steady expansion, with requirements more diversified. Stove and accessory makers have taken substantial tonnages, both of black and enameling stock. Jobber purchasing is irregular, but in fair aggregate volume. Movement of galvanized sheets to the country still is delayed.

Ohio Gear Co., Cleveland, has been appointed national distributor for the products of the Browning Mfg. Co., Maysville, Ky. A complete line of V belts and multiple pulleys will be maintained in stock.

Plates

Plate Prices, Page 72

Pittsburgh — Buying is brisk. Backlogs are mounting and deliveries now run from 60 to 90 days on most items, higher in some cases. Shipments in August are approximately equal to July, although bookings thus far are somewhat less.

Chicago — Demand continues heavy, causing delivery complications on certain sizes. Lighter gage plates, however, are available on relatively short delivery. Railroad requirements are increasing and the outlook for active demand from this direction is favorable.

Boston—Continued improvement in plate buying is well distributed as to consumers, but most releases are for prompt delivery and on wider widths and special finishes these are somewhat further extended. Warehouse coverage is light but miscellaneous industrial orders are more active. Shipyards and most large fabricators are working up more material, but are not stocking much tonnage beyond immediate needs.

New York—Buying has leveled but shipments are active. Delivery of wider sizes is slightly further extended.

Philadelphia — The navy takes bids Sept. 6 on 49,010 tons of plates, including 25,425 tons of medium black and galvanized, 23,305 tons high-tensile black and galvanized, 220 tons medium black and 60 tons high-tensile, covering estimated requirements for fourth and first quarters. Considerably larger tonnage may be specified. Plate deliveries are slowing on heavier gages but universal mills can make prompt delivery. Railroad buying is quieter but shipments for car and repair work are heavy. Miscellaneous demand is fair.

Seattle—Plate specifications are coming out more freely and several important jobs are pending or soon to be up for figures. Bellingham, Wash., is planning an industrial water supply line and will soon ask bids for 15,000 feet of 48-inch and 5000 feet of 36-inch steel pipe. Bonneville project will open bids Aug. 29 for six 10,000 gal. oil storage tanks at Vernita substation.

San Francisco—Interest continues to center around outcome of bids on six 3-C type cargo vessels for the United States maritime commission calling for over 19,000 tons of plates.

Awards aggregated 610 tons and brought the total to date to 54,907 tons as compared with 34,239 tons for the corresponding period in 1939.

Toronto, Ont.—Plate demand is gaining in volume as war contracts are awarded for vehicles and ships. Some buying has been done recently for plate for light tank construction. Boiler and tank builders also have been more prominent buyers. Most plate business is going to United States producers and is expected to for the remainder of the year.

Washington—Approximately 10,200 tons of bars, plates and shapes will be required for 10 seaplane tenders on which the navy department will take bids Sept. 25. The contracts will be placed in lots of two, four or six.

For the protection of pilots, bureau of ordnance, navy department, is placing an order for 150 tons of special armor plate for airplane seats, low bidders being Diebold Safe & Lock Co., Canton, O., and York Safe & Lock Co., York, Pa.

Plate Contracts Placed

500 tons, tanks for city, Long Beach, Calif., to Western Pipe & Steel Co., San Francisco.

417 tons, bureau of reclamation No. 912, Colorado Big Thompson project, Grand Lake, Colo., to Commercial Shearing & Stamping Co., Youngstown, O.; Platt Rogers Inc., Denver, Colo., contractor; bids June 20.

110 tons, 31-inch welded steel pipe, specification 340, metropolitan water district, Los Angeles, to Eastern Pipe & Steel Co., San Francisco.

Plate Contracts Pending

2560 tons, 36 and 48-inch welded pipe, Bellingham, Wash.; bids soon.

2240 tons, sixteen lighters, schedule 2575, navy department, Washington, Dravo Contracting Co., Pittsburgh, and Western Pipe & Steel Co., San Francisco, low on eight lighters each.

293 tons, schedule 41, specification 340, metropolitan water district, Los Angeles; bids rejected and new bids will be taken.

Unstated, six oil storage tanks, Vernita, Wash., for Bonneville project; bids at Portland, Aug. 29; spec. 1259.

Unstated, six water, oil and pressure tanks, Coulee dam; bids to Denver Aug. 29; spec. 1414-D.

Unstated, welded steel pipe, rearing ponds Winthrop, Wash.; bids Aug. 23 at Coulee, Wash.; materials by reclamation bureau.

Bars

Bar Prices, Page 72

Pittsburgh — Automotive releases have spurred the bar market somewhat and tonnage now moving is fairly good. It is expected August will surpass July both in bookings and shipments. Backlogs are

beginning to increase after a slight downward curve. Export market is active and may complicate domestic deliveries somewhat during September. However, mill policy here is to satisfy domestic customers first. Cold-finished producers report good automobile business and fair releases from miscellaneous manufacturers.

Chicago—Bar orders are keeping pace with heavy shipments, and no moderation in backlogs is in early prospect. Heavier demand soon from the farm equipment industry is indicated, operations recently having been seasonally low in some directions but are scheduled for early revival. Railroad requirements for equipment repairs are increasing, and alloy bar shipments are being stimulated by automotive needs. Bar deliveries vary widely, dependent on sizes wanted and arrangement of rolling schedules. As much as six weeks may be required in some instances.

New York—Demand for alloy bars is well maintained, with consumption heavier. Machine tools, shipbuilding and miscellaneous needs are heavy, with government shops inquiring for more material.

Philadelphia — The navy will take bids Sept. 6 on 6615 tons of plain and galvanized bars. Government arsenal demand continues in heavy volume and machine tool makers and forging shops are also active. Prices are firm.

Birmingham, Ala.—Bar production continues above 85 per cent of capacity, with reinforcing the leading specification.

Buffalo—Demand for steel bars is heavy and mills are unable to catch up on deliveries, which are delayed a month or more. Specialty orders are even further behind. Demand is diversified, with consumers endeavoring to build up inventories.

Toronto, Ont. — Merchant bar sales are well sustained, with continuous flow of orders from tool makers. Alloy steel bars have special call and additional large orders are pending for delivery to the end of the year. The new government-owned companies are active in purchase of bars and it is stated that some large tonnage contracts are coming from this source. Demand generally is increasing.

Wire

Wire Prices, Page 73

Pittsburgh—Merchant wire buying is increasing and this, coupled with continued export demand, maintains operations at a good rate. Releases on merchant wire specifications are more active, particularly from automotive builders. Miscellaneous buying is somewhat better and it is noticeable that many manufacturers are buying for stock. Prices are fairly steady and buyers await reaffirmation without much anticipation.

New York—Incoming orders for wire and wire products continue about even with shipments, which are heavy, with finishing operations high. Buying is well distributed as to products, with spring wire and rope showing further gains.

Birmingham, Ala.—Manufacturers' wire continues in steady demand with diversified products moving at a fairly consistent rate.

Pipe

Pipe Prices, Page 73

Pittsburgh — Oil country goods have shown a slight decline and it is doubtful if August tonnage will improve much upon July figures. Standard pipe continues to move at about the same pace, with consigned stocks up slightly. Job-

bers report heavy demand, however, and this is expected to continue. Releases on mechanical tubing are better and deliveries are delayed on some items. Demand for pressure tubing is also up slightly.

Birmingham, Ala.—Government orders based on specifications for naval bases continue the biggest item in pipe movement, although scattered private construction orders are still coming in.

Seattle—The market is quiet, no large projects being out. Business pending exceeds 1000 tons, including tonnages at Spokane, Fort Lewis, Bonneville project and Estacada, Oreg., bids in.

San Francisco—Cast iron pipe lettings totaled less than 600 tons, bringing the year's aggregate to 36,998 tons, compared with 21,793 tons for the same period a year ago. Bids were rejected on 140 tons of 6-inch pipe for San Francisco.

Semifinished Steel

Semifinished Prices, Page 73

Pittsburgh—Nonintegrated mills are releasing semifinished tonnages at a little better pace. Increase is principally in sheet bars as mills start rolling steel for 1941 automobiles. Wire rod demand continues good and there are heavy export orders to be had for the taking.

Rails, Cars

Track Material Prices, Page 73

Railroad buying last week was light after recent heavy replacements. Chicago, Rock Island & Pacific has been given permission to buy 800 box cars, 200 automobile cars and to rebuild 300 flat and 100 coal cars in its own shops. It has placed the 800 box cars with Pressed Steel Car Co., Pittsburgh. Chesapeake & Ohio is inquiring for ten heavy locomotives and the Virginian has asked bids on 10,000 tons of rails.

Rail requirements are being figured by a number of important roads earlier than usual to give mills an idea of tonnages in advance of heavy fall schedule.

Locomotives Placed

Duluth, Missabe & Iron Range, eight freight locomotives to Baldwin Locomotive Works, Philadelphia.

Locomotives Pending

Chesapeake & Ohio, ten Mallet type, 2-6-6-6 locomotives; bids Sept. 16.

Rail Orders Placed

Wheeling and Lake Erie, 500 tons, to Carnegie-Illinois Steel Corp., Pittsburgh.

Rail Orders Pending

Virginian, 10,000 tons rails and accessories, bids asked.

Car Orders Placed

Chicago, Rock Island & Pacific, 800 box cars, to Pressed Steel Car Co., Pittsburgh.

Car Orders Pending

Bureau of supplies and accounts, navy department, six covered steel cars and four flat cars, schedule 2669, delivered Ostrich Bay, Wash.; bids in.

Chief United States engineers, Washington, 160 to 660 tank cars, 10,000-gallons capacity; bids Sept. 5.

Raritan arsenal, N. J., one diesel-powered rail work car; bids in.

Buses Booked

A.c.f. Motors Co., New York: Three 35-37-passenger for Northern Trails of Illinois Inc., Chicago; three 31-passenger for Citizens Rapid Transit Corp., Hampton, Va.; two 28-passenger for Conestoga Transportation Co.,

Lancaster, Pa.; two 37-passenger for Union Bus Co., Jacksonville, Fla.

Twin Coach Co., Kent, O.: Nineteen 41-passenger and one 27-passenger for Nashville Coach Co., Nashville, Tenn.; twenty-six 41-passenger for Seattle Transit System, Seattle; eight 27-passenger for Southern Indiana Gas & Electric Co., Evansville, Ind.; seven 27-passenger for Carolina Power & Light Co., Raleigh, N. C.; seven 33-passenger for Bluebird Coach Lines Inc., Chicago; five 29-passenger for Westchester Street Transportation Co., New York; four 41-passenger for Omaha & Council Bluffs Street Railway Co., Omaha; four 25-passenger for Peoples Transport Corp., Muskegon, Mich.; two 31-passenger and one 23-passenger for Lincoln Traction Co., Lincoln, Nebr.

Shapes

Structural Shape Prices, Page ..

Pittsburgh — Construction, principally industrial, accounts for an increase in inquiries this week. Placements are heavier than previously, and it now appears August may equal July tonnage. Deliveries are falling further behind as backlogs mount.

Chicago — Fabricated shape inquiry is increasing, following heavier business in outside districts which already has provided good operations for local fabricators. A fairly large portion of prospective work is related in some manner to the defense program. An additional 600 tons is pending for ammunition magazines for the army near Savanna, Ill., 3500 tons previously having been awarded for similar construction there.

Philadelphia — Bids will be taken by the navy Sept. 6 on 14,530 tons of structural material, including 9880 tons of medium channels and beams, 3750 tons of medium angles, 900 tons high-tensile angles. Plant expansion work in connection with the defense program is more active and is expected to gain momentum.

Buffalo — An increasing number of private undertakings are appearing, with major interest centered in a tentative new bomber plant for the Curtiss-Wright Corp., costing $8,000,000 to $10,000,000.

Seattle—While no important projects are up for consideration prospects for increased volume are promising. Fabricators have 60-day backlogs and public works jobs will call for important tonnages soon. One of the largest is in navy expansion, general contract to Austin Co., quantities not yet known.

San Francisco — The structural market was active and 7192 tons were booked, bringing the aggregate for the year to 162,053 tons, compared with 85,220 tons for the corresponding period a year ago. Columbia Steel Co. took 4000 tons for naval buildings at Midway Island and the Hawaiian Islands and 1500 tons for an addition to Bank of America, San Francisco.

Birmingham, Ala.—Public projects still are taking most of the tonnage from here, and demand is holding up well.

Toronto, Ont.—With continued wide activity in building and new contracts being placed in connection with war projects and plant additions, business is at a high level in structural steel. Despite the fact that awards now run about 8000 tons per week, prospective business continues to increase. However, as

Shape Awards Compared

	Tons
Week ended Aug. 24	23,819
Week ended Aug. 17	19,467
Week ended Aug. 10	24,101
This week, 1939	25,873
Weekly average, year, 1940	21,326
Weekly average, 1939	22,411
Weekly average, July	33,958
Total to date, 1939	752,648
Total to date, 1940	725,081

Includes awards of 100 tons or more.

government jobs call for rush construction and most of the air training buildings will be completed within the next few months, a falling off in structural awards is expected toward the end of the year.

Shape Contracts Placed

4000 tons, naval buildings, Midway island and Hawaiian islands, to Columbia Steel Co., San Francisco.

1500 tons, addition, Bank of America, San Francisco, to Columbia Steel Co., San Francisco.

1400 tons, bridge, route 14, Bradford county, Pennsylvania, to Bethlehem Steel Co., Bethlehem, Pa., through H. R. Dickens, Philadelphia.

1200 tons, piling, seaplane hangar, Annapolis, Md., to Bethlehem Steel Co., Bethlehem, Pa., through McCloskey & Co., Philadelphia.

977 tons, bridge, Beaumont, Tex., Kansas City Southern railroad, to Kansas City Structural Steel Co., Kansas City, Kans.; bids July 27.

795 tons, addition to service parts building, Chevrolet Motor Co., Saginaw, Mich., to Fort Pitt Bridge Works, Pittsburgh.

750 tons, addition to powerhouse, West Penn Power Co., Power, W. Va., to Fort Pitt Bridge Works, Pittsburgh.

700 tons, Brooklyn shaft, Battery-Brooklyn tunnel, to American Bridge Co., Pittsburgh.

650 tons, manufacturing building, for Triangle Conduit & Cable Co., New Brunswick, N. J., to Ingalls Iron Works, Birmingham, Ala.

600 tons, warehouse, Alton, Ill., to Mississippi Valley Structural Steel Co., Decatur, Ill.

600 tons, H and Z sheet piling, naval base, Tongue Point, Oreg., to Bethlehem Steel Co., San Francisco.

575 tons, warehouse, Owens-Illinois Glass Co., Alton, Ill., to Mississippi Valley Structural Steel Co., Decatur, Ill.

550 tons, bridge, Plattsburg-Au Sable, New York, project, RC-40-66, to American Bridge Co., Pittsburgh, through Louis Longhi & Son, Torrington, Conn.

496 tons, steel superstructures over navigation lock, Kentucky dam project, req. 239316, Tennessee valley authority, Knoxville, to Bethlehem Steel Co., Bethlehem, Pa.

475 tons, buffing shop, for navy, Washington, to Barber & Ross Co. Inc., Washington.

434 tons, Texas state highway bridges, 228 tons at Wichita Falls to Panhandle Steel Products Co., Wichita Falls, and to Austin Bros., Dallas, Tex.; 206 tons at Laredo to Bethlehem Steel Co., Bethlehem, Pa.

395 tons, plant addition, Parish Pressed Steel Co., Reading, Pa., to Belmont Iron Works, Philadelphia.

394 tons, piling, dock repairs, United States Gypsum Co., East Chicago, Ind., to Inland Steel Co., Chicago.

385 tons, highway bridge 1997, Jackson county, Indiana, to Vincennes Steel Corp., Vincennes, Ind.

350 tons, addition to building, Yellow Truck & Coach Mfg. Co., Pontiac, Mich., to Whitehead & Kales Co., Detroit.

346 tons, state highway bridge, Boone county, Missouri, to Illinois Steel Bridge Co., Jacksonville, Ill.

333 tons, alterations and shop additions, Hamilton Standard propeller division, United Aircraft Corp., Hartford, Conn., to R. C. Mahon Co., Detroit.

330 tons, plant, Chicago, Wilmington & Franklin Coal Co., Frankfort, Ill., to Vincennes Steel Corp., Vincennes, Ind.

320 tons, 200-foot through truss span, Great Northern railroad, Havre, Mont., to American Bridge Co., Pittsburgh.

310 tons, bridge, section 28-1VF, Centerville, Ill., to Missouri Bridge & Iron Co., St. Louis.

300 tons, air corps school, war department, Denver; 200 tons to Minneapolis-Moline Power Implement Co., Minneapolis, 100 tons to Denver Steel & Iron Works, Denver; bids July 12.

290 tons, state bridge 415, Ladysmith, Wis., to American Bridge Co., Pittsburgh.

280 tons, prison buildings 11 and 12, Green Haven, N. Y., to Belmont Iron Works, Eddystone, Pa.

280 tons, bulkhead wall, East 30th-36th streets, New York, contract 32, to American Bridge Co., Pittsburgh.

275 tons, airplane hangar, Memphis, Tenn., to Wisconsin Bridge & Iron Co., Milwaukee; bids Aug. 13.

250 tons, three Chicago park district bridges in Lincoln Park, to Bethlehem Steel Co., Bethlehem, Pa.

240 tons, state highway bridge, Galenville-Sand Hill, Ulster county, New York, project FAS-SS-40-10, to American Bridge Co., Pittsburgh; William Van Kleeck, New Paltz, N. Y., contractor, $73,731, bids Aug. 7, Albany.

230 tons, factory building, for Borden Milk Co., Bainbridge, N. Y., to Ameri-

can Bridge Co., Pittsburgh.

222 tons, factory addition, Modine Mfg. Co., Racine, Wis., to Wisconsin Bridge & Iron Co., Milwaukee.

210 tons, mill buildings, Globe Steel Tubes Co., Milwaukee, to Milwaukee Bridge Co., Milwaukee.

205 tons, store, Sears, Roebuck & Co., Wheeling, W. Va., for Hazelett estate, to Riverside Steel Co., Wheeling, W. Va.

200 tons, underpass, Gravois avenue, St. Louis, to Mississippi Valley Structural Steel Co., Decatur, Ill. G. L. Tarlton Inc., St. Louis, contractor; bids June 7.

190 tons, state bridges, Lowell, Mass., to Bethlehem Steel Co., Bethlehem, Pa.

170 tons, warehouse, for Jackson & Perkins, Newark, N. J., to Bethlehem Steel Co., Bethlehem, Pa.

160 tons, boiler plant and addition, to Rohm & Haas, Bristol, Pa., to Belmont Iron Works, Philadelphia.

160 tons, state bridge over Stillwater river, Covington, O., to Burger Iron Co., Akron, O.

147 tons, piling, Illinois Light Co., East Peoria, Ill., to Inland Steel Co., Chicago; Herlihy Mid Continent Co., Chicago, contractor.

140 tons, state bridges, Brattleboro, Vt., to Bethlehem Steel Co., Bethlehem, Pa.

125 tons, 120-foot turntable, Union Pacific railroad, Cheyenne, Wyo., to R. W. Young Co., Cheyenne, Wyo.

120 tons, state bridge, Avilla, Ind., to Elkhart Bridge & Iron Co., Elkhart, Ind.

118 tons, fabricated structural steel, draft tube gates, Wilson power plant, units 9 and 10, req. 258077, Tennessee valley authority, Knoxville, Tenn., to Treadwell Construction Co., Midland, Pa.

115 tons, Clearfield county Pennsylvania, to American Bridge Co., Pittsburgh.

115 tons, state bridge 259, Caledonia, Wis., to Wisconsin Bridge & Iron Co., Milwaukee.

110 tons, turbine supports, power plant, Seward, Pa., to Lehigh Structural Steel Co., Allentown, Pa., through Utility Management Corp., Reading, Pa.

100 tons, highway bridge, Newstead, N. Y., to Lackawanna Steel Construction Co., Buffalo; William J. Gallagher, Medina, N. Y., low on general contract.

100 tons, extension, crane runway, Pittsburgh & Lake Erie railroad, Pittsburgh, to Pittsburgh-Des Moines Steel Co., Pittsburgh.

100 tons, repairs, Sixteenth street bridge, Omaha, Union Pacific railroad, to Paxton & Vierling Iron Works, Omaha.

Shape Contracts Pending

11,500 tons, shapes, piling and bars, bridge, Hartford, Conn.; bids Sept. 17.

8400 tons, superstructure, St. Georges highway bridge, contract 2, St. Georges, Del., for war department.

3000 tons, trestle for crane, Cherokee dam, Jefferson City, Tenn., for Tennessee valley authority, Knoxville, Tenn.

3000 tons, various structures, navy yard, Brooklyn, N. Y.

2800 tons, four landplane hangars, Quonset Point, R. I.; bids in.

1650 tons, ten storage warehouses, Jeffersonville, Ind., for United States government.

950 tons, viaduct, Huntingdon county, Pennsylvania; L. M. Hutchinson, Mt. Union, Pa., low.

600 tons, additions to erecting and testing buildings, McCook, Ill., for GMC-Electro Motive Corp.

600 tons, 19 ammunition magazine buildings, Proving Ground, Ill.; bids to army quartermaster there, Aug. 27.

450 tons, post office, Enid, Okla.; bids Sept. 10.

410 tons, three bridges, Erie county Pennsylvania; bids to state highway department, Harrisburg, Pa.; bids Aug. 30.

400 tons, service shop and warehouse, for General Electric Co., Pittsburgh.

400 tons, factory building, Geneva Forge Co., Geneva, N. Y.; bids Sept. 3.

330 tons, welding shop, Manitowoc Shipbuilding Co., Manitowoc, Wis.

288 tons, Indiana state highway bridges, Franklin and Machanicsburg; bids Aug. 27.

255 tons, storage building, office and boiler room, for Steel Sales Corp., Detroit.

250 tons, factory building, Goodman Mfg. Co., Chicago; bids in.

235 tons, viaduct, Elm street, Hastings, Nebr., for state.

225 tons, stadium, Brookfield high school, Riverside, Ill.

220 tons, school building, Victor, N. Y., for city.

220 tons, addition to electrical engineering building, for Purdue university.

West Lafayette, Ind.

220 tons, hangars, Salt Lake City.

195 tons, alterations to bleach room, for Penobscot Chemical Fibre Co., Great Works, Me.

190 tons, Ak-Sar-Ben viaduct Omaha, Nebr., for state.

180 tons, bridges 7.69 and 7.85, Baychester, N. Y., for New York, New Haven & Hartford railroad.

165 tons, medical-surgical building, state hospital, Concord, N. H.

165 tons, warehouse and office building, for Sprague, Warner & Co., Chicago.

145 tons, beam bridge, Westport, Conn., for New York, New Haven & Hartford railroad.

140 tons, I-beam overpass bridge, Beaver county, Pennsylvania; bids to state highway department, Harrisburg, Pa., Aug. 30.

140 tons, bridge 35.50, Green Farms, Conn., for New York, New Haven & Hartford railroad.

140 tons, sewage treatment works, New York, for city.

135 tons, warehouse, for Amalgamated Sugar Co., Nyssa, Oreg.

135 tons, state bridge over Little Miami river, Greene county, Ohio.

135 tons, sheet piling, United States Indian irrigation service, Bishop, Calif.; bids Aug. 30.

123 tons, crane beams, for Newport News Shipbuilding & Dry Dock Co., Newport News, Va.

115 tons, bridge, East Norwalk, Conn., for New York, New Haven, & Hartford railroad.

115 tons, state bridge over Brule river, Stager, Mich.

110 tons, branch bank building, for Chemical Bank & Trust Co., New York.

110 tons, Valentine hall, for Amherst college, Amherst, Mass.

110 tons, nitrating house, for Hercules Powder Co., Parlin, N. J.

110 tons, garage building, for Public Service Electric & Gas Co., Jersey City, N. J.

105 tons, nine highway bridges, Wyoming.

100 tons or more, tidewater substation, Tacoma, Wash.; Western Ornamental Iron Works, Tacoma, low.

100 tons, addition to plant No. 2 Remington Rand Inc., Ilion, N. Y.; Charles R. Blackstone, Utica, N. Y., low on general contract.

100 tons, New theatre, Lovejoy and Gold streets, Buffalo; Henry L. Spann, Buffalo, low on general contract.

Unstated, 27-ton capacity gantry crane for Coulee dam; Star Iron & Steel Co., Tacoma, Wash., low, at $105,380.

Unstated, 284-foot state bridge, Gallatin county, Mont.; bids opened at Helena, Aug. 23.

Unstated, superstructure for three bridges Kettle Falls, Wash.; bids to reclamation bureau, Denver, Aug. 19.

Reinforcing

Reinforcing Bar Prices, Page 73

Pittsburgh — Inquiry is fairly large, principally from highway work, which is at its peak. Industrial construction is also active and accounts for fair tonnages. Some new tonnages from public works have appeared. Producers do not anticipate congestion although deliveries may fall slightly behind during the fall.

Chicago — Awards and inquiries continue numerous, although only a few large jobs are active. Another section of the local subway will be bid next month, involving 275 tons of bars. The completed subway will have taken approximately 35,000 tons of bars, in addition to more than 80,000 tons of other products. Work is about 80 per cent completed.

New York—Buying of reinforcing bars has improved for government contract work and close to 10,000 tons of piling has been placed in the East. Highway mesh is also slightly more active, New York state closing Sept. 4 on contracts taking 1000 tons.

Philadelphia — Buying is somewhat more active with bridge and housing projects leading. Only small concessions are obtainable on tonnage lots.

Seattle—Inquiry is slow, although there is a fair volume of lots under 50 tons each. Rolling mill backlogs are not heavy. Bids were opened

Behind the Scenes with STEEL

Two Buck Boners

■ There is a radio station in the Detroit area which is going broke paying its listeners $1 for every legitimate boner which they detect made by the station's announcers during the day. Seems like a swell idea and just to show how cocky we are we'll raise the ante to two bucks for every real slip you can find in this week's issue of STEEL. We would have lost last week because right on the "Highlighting" page was this stumble: *Multiple spot welds at the rate of 100 per cent are made in a new machine.* Nice, fresh, lovely spot welds, made in a machine—damnedest thing y' ever saw. Who'll buy 'em? One hundred for a penny. Nice fresh spot welds, lady?

Preview Review

■ If you've never been to an automobile press review, maybe you'd like to know what happens, so here goes from the little brown notebook of Detroit Editor A. H. Allen, on the Buick preview at Flint, Mich., Aug. 13:

—"Three Blue Goose buses picked up 111 newspaper men at the door of the Book-Cadillac at 9:45 a. m. Set sail out Woodward Ave. for Flint, stopping at Old Mill roadhouse at 11:15 to see men about dogs and Coca-Cola. Several intrepid souls pour quick ones and shudder in the bright sunlight. Arrive at I. M. A. auditorium in Flint at 12:15. Everyone gets lapel buttons reading, "Buick Fireball 8—Give 'er the Gun for Forty-One." Parade to circus tent for Martinis and barbecue lunch of chicken, corn, baked Idahos and apple pie. Ten-piece band plays not so good but loud. Seventy-pound torch singer competes with band in *Just My Bill* reminding boys what their expense accounts will look like. Crowd adjourns to auditorium again to hear H. H. Curtice, G.M., and W. F. Hufstader, S.M., in unveiling ceremonies of 1941 models. Curtains part, the band plays and the crowd cheers as the glistening new sedan revolves silently in the spot light. Then some special movies, after which the crowd moves to the rear of the auditorium to climb all over a dozen of the new cars, inspecting every detail. A trumpet blast reconvenes the meeting to hear Chas. A. Chayne, C. E., hurriedly run through engineering features of the new line. Buses then move the gang out in the country where a line of 1941's awaits test by the newspaper men. We pick a Roadmaster and whistle 'round the 4-mile course. From 50 to 90 without a murmur. She hits bumps with hardly a bounce. Zigs as easily as it zags. Buses again and to the Durant hotel for cocktails and steak dinner with all the trimmings. Brief talks by Buick officials. Rex Cleveland of the *New York Times* echoes the guests' gratitude. Then a prize drawing for two completely equipped Special models, one for editors, one for advertising reps. Came close. Ceremonies over about 10 p. m. and as the boys file out each is handed a Schick electric shaver as a souvenir. Into the buses, each thoughtfully provided with Scotch. Another stop at the Old Mill. The lights of Detroit. All out."

Fore!

■ Striking employes of the Triangle Conduit & Cable Co. have been picketing their boss's home for two weeks but now according to the N. Y. *Times* they've extended their demonstration to his country club out on Long Island, because they claim he induced caddies to take up jobs as "strike-breakers" in his plant. Flatly denying this, the boss, J. E. McAuliffe, is going to get pretty sore if they don't stand still and be quiet while he's putting for that 89. And with an 8 on 7.

Be Seein' Ya

■ We're going to sneak another week off and do a few things around home the little woman has had on her mind for some time now, so we'll see you after Labor Day.

SHRDLU

at Coulee, Wash. Aug. 23 by the reclamation bureau for rearing ponds and water system at Winthrop, Wash., involving 167 tons reinforcing and 88 tons miscellaneous metal items.

San Francisco — Awards of reinforcing bars were not large although more than 13,500 tons are up for figures. Awards aggregated 2845 tons, bringing the total to date to 117,192 tons as compared with 106,204 tons for the corresponding period in 1939.

Reinforcing Steel Awards

1800 tons, fort supply dam, United States engineers, Wolf Creek, Okla., to Colorado Fuel & Iron Corp., Denver; Leo Sander Co., contractor.

1500 tons, riverfront dike, United States engineers, Hartford, Conn., to Truscon Steel Co., Youngstown, O.; A. I. Savin, contractor.

920 tons, bureau of reclamation, invitation B-42,493-A, Friant, Calif., to Judson Steel Corp., San Francisco.

611 tons, bureau of reclamation, invitation 24,749-A, Fortuna, Calif., to Bethlehem Steel Co., San Francisco.

500 tons, dike and pumping station, Chicopee, Mass., to Joseph T. Ryerson & Son Inc., Chicago; B. A. Gardetto Inc., contractor.

400 tons, seaplane hangar, Annapolis, Md., to Bethlehem Steel Co., Bethlehem, Pa., through McCloskey & Co., Philadelphia.

400 tons, Mt. Pleasant housing project, New Britain, Conn., to Republic Steel Corp., Cleveland, through Scherer Steel Co.; South New England Construction Co., contractor.

277 tons, two bridges, Rockford, Ind., to Truscon Steel Co., Youngstown, O.

270 tons, Morrell & Co., manufacturing building, Ottumwa, Iowa, to Laclede Steel Co., St. Louis; Stark Building Co., contractor.

250 tons, route 14, Bradford county, Pennsylvania, to Bethlehem Steel Co., Bethlehem, Pa., through H. R. Dickens, Philadelphia.

180 tons, central heating plant, northeast airbase, Chicopee, Mass., to Bethlehem Steel Co., Bethlehem, Pa.; Bass Engineering & Construction Co., contractor.

152 tons, bureau of reclamation, invitation A-38,403-A, Kettle Falls, Wash., to Colorado Fuel & Iron Corp., Pueblo, Colo.

150 tons, Rahr Malting Co., elevator, Minneapolis, to Laclede Steel Co., St. Louis.

150 tons, General Motors Corp., Aero

Concrete Bars Compared

	Tons
Week ended Aug. 24	8,509
Week ended Aug. 17	9,147
Week ended Aug. 10	10,935
This week, 1939	6,205
Weekly average, year, 1940	8,811
Weekly average, 1939	9,197
Weekly average, July	8,543
Total to date, 1939	336,177
Total to date, 1940	299,681

Includes awards of 100 tons or more.

Products division building, Vandalia, O., to Bethlehem Steel Co., Bethlehem, Pa.; F. Messer & Son, contractor.

150 tons, United States engineers' project, Syracuse, N. Y., to Truscon Steel Co., Youngstown, O.; Universal Concrete Pipe Co., contractor.

140 tons, factory building, Allen-Bradley Co., Milwaukee, to Joseph T. Ryerson & Son Inc., Chicago.

130 tons, sub base building, and quay wall, Groton, Conn., to Bethlehem Steel Co., Bethlehem, Pa.; F. H. McGraw & Co., contractor.

115 tons, bridge, Plainfield, Ind., to Truscon Steel Co., Youngstown, O.

114 tons, school and church, Columbus, Ind., to Truscon Steel Co., Youngstown, O.

100 tons, plant, Consolidated Cement Corp., Cement City, Mich., to Calumet Steel Co., Chicago.

100 tons, Illinois Meat Co. warehouse, Chicago, to Inland Steel Co., Chicago.

100 tons, Lady Queen of Heaven school, Detroit, to Great Lakes Steel Corp., Detroit, through Taylor-Gaskin.

Reinforcing Steel Pending

500 tons, quartermaster depot warehouses, Jeffersonville, Ind.; bids Aug. 23.

430 tons, naval academy buildings, Annapolis, Md.; McCloskey & Co., contractor.

400 tons, Sears, Roebuck & Co. store, Washington; bids Aug. 26.

360 tons, Ivanhoe and Duneland housing projects, Gary, Ind.; Superior Construction Co., low.

275 tons, Chicago subway, contract D-2C; bids to commissioner of subways Sept. 12; also 90 tons of shapes.

250 tons, Mt. Calvary Housing, Columbus, O.; bids Aug. 23.

250 tons, highway bridge near Fredericksburg, Va.; bids Aug. 29.

200 tons, highway projects Washington state; bids in at Olympia.

167 tons, (also 88 tons miscellaneous), rearing ponds, Winthrop, Wash., bids in at Coulee, Wash.; materials by reclamation bureau.

165 tons, addition, Roosevelt school, Fresno, Calif.; bids opened.

130 tons, building for state college, Fresno, Calif.; bids opened.

Unstated, Roza irrigation project, Washington state; Bethlehem Steel Co., Seattle, low to reclamation bureau.

Pig Iron

Pig Iron Prices, Page 74

Pittsburgh—Production continues steady. Merchant markets are active, although foundry buying is relatively light. Steel mill demand is quite brisk, and of particular interest over the past week was a deal which brought pig iron to Jones & Laughlin from two other producers. The amount involved was large, although the exact total was not verified. Prices are firm. Export demand is heavy.

Chicago—Shipments are better than last month and movement of merchant iron during August has prospects of being the best so far this year. Producers are able to make early shipment and consumers are not inclined to stock iron extensively. However, inventories have tended to increase with expansion in operations, and buying lately has shown moderate gains. Possibility is seen of a tight situation in pig iron and coke this fall should steelworks maintain their near-capacity pace and the foundry melt increase markedly. Foundry coke shipments currently are at the year's best rate and substantially heavier than a year ago.

New York—Shipments show further slight gains, notably by merchant furnaces, as foundries have taken more orders than expected, forcing revision of expected needs. buying is slow, with most current specifications against contracts.

Philadelphia — Buying is slow although some consumers evidence interest in fourth quarter requirements. The foundry melt is close to 75 per cent. Export inquiry includes 15,000 tons for Africa.

Buffalo—Active demand continues to absorb output as production holds at 92 per cent. Increase in foundry melt is attributed to the national defense program. National Steel Corp. is considering a long range modernization program for its subsidiary plant here, which may mean rebuilding of a blast furnace out of production for years.

St. Louis — Movement of pig iron to melters has increased further. Releases indicate no diminution in shipments during the next six weeks.

The melt has also continued to move upward, with improvement quite general through all classes of users. Stove foundry schedules have

been seasonally advanced, several important plants operating five days per week.

Cincinnati — Pig iron shipments are steady with the melt near 70 per cent. Some expansion in automotive melt has served to offset seasonal tapering on several specialties. Jobbing and machine tool foundries are on good schedules. Previous covering precludes anything but light buying now, for fill-ins.

Toronto, Ont.—Merchant pig iron sales are holding at an even rate. Small melters are ordering in lots up to 200 or 300 tons, but no special effort is being made to build up inventories. Larger melters are covered for third quarter and future booking has slackened. Special grade iron is being imported from the United States, although Canadian furnace operators are fully supplying the merchant market.

Scrap

Scrap Prices, Page 76

Pittsburgh — Strong undertone prevails, although buying is light in open-hearth grades. Railroad specialties are strong. Scrap rail prices are moving up, and demand is brisk for blast furnace scrap. Heavy tonnages of premium grade No. 1 steel have been sold by a mill here in a barter arrangement to other mills in return for pig iron. Quotation on No. 1 steel remains the same at $18.50 to $19 for dealer grade.

Cleveland—Firmness continues in the scrap market, with small buying but shipments on contract going forward steadily. Receipts from upper lake ports have lessened recently. Attention is fixed on September automotive scrap lists and railroad offerings, both due this week.

Chicago—Scrap prices continue strong, evidenced by the fact brokers are paying as much as or more than was obtained on recent mill purchases of some grades. The trade does not expect a rapidly advancing market, despite the fact steelmaking is at a record pace, as it is expected scrap offerings will increase materially at higher prices. Fairly heavy tonnages are being shipped from here and nearby areas to Hamilton, Ont.

Boston — At stronger prices, domestic buying of scrap by steel works and foundries is slightly more active. Shipments to eastern Pennsylvania and district consumers are heavier, but export buying is less active outside the immediate Boston district.

Philadelphia — Steel and iron scrap continues to display strength and while quotations may hold for a week or two a further rise is regarded as inevitable. Considerable interest is shown in the scrap from the Ninth avenue elevated structure in New York estimated at 60,000 to 75,000 tons, for which demolition bids will be taken Sept. 6.

Buffalo — A firmer tone is becoming evident despite absence of buying. No. 1 heavy melting remains at $18 to $18.50 a ton, but dealers are almost unanimous in ignoring bids of consumers within this range. Cast iron borings advanced 50 cents a ton to $12 to $12.50 a ton.

Detroit—Scrap shows exceptional strength, bulwarked by Ford coming in for some tonnage to tide over the current low point in manufacturing schedules. This caused a flurry among dealers and brokers and gave sentiment a boost. Prices are unchanged except for a 50-cent increase in short shoveling turnings to $11.50 to $12.00.

Cincinnati—Prices of iron and steel scrap are up 75 cents, reflecting in part the better bids recently attracted by railroad lists and optimistic sentiment among dealers. Mill interest in future needs continues absent, despite the high steelmaking rate. Some items are being attracted to nearby districts.

St Louis — Scrap continues to display considerable strength, with upward revision of 25 cents to $1 per ton, affecting nearly all grades. This reflects continued scarcity of offerings and increase in inquiries from other consuming points.

The movement from the country has fallen to small proportions, dealers being disposed to hold accumulations for higher prices.

Birmingham, Ala.—The recent reduction in scrap prices has had little effect in increasing demand, and although scattered orders are coming in, there is nothing to indicate an immediate upturn.

Seattle—Japan continues to place orders, mostly for No. 2 steel, not affected by embargo rules, although licenses for some No. 1 material have been granted. Rolling mills are in the market but are not buying heavily, paying around $13 and $14 per gross ton, export prices being $1.50 to $2 higher. Tidewater stocks are only fair and receipts light. Trans-Pacific space is not difficult to obtain, freights running from $13 for full cargo lots to $14.50 for parcel lots.

Toronto, Ont.—Special activity features iron and steel scrap. Consumers are taking all offerings and endeavoring to build inventories, with little success. Electric furnace operators also are heavy buyers. Dealers report good offerings and large tonnages are moving through

yards. Cast and stove plate are in limited supply. Prices generally are firm and unchanged.

San Francisco—Indications point to further reductions in price for No. 1 and No. 2 heavy melting steel, due to the fact that export licenses for shipment to the Orient may not be given on this class of material. No change is noted in present quotations which continue firm at $13 to $13.50 a net ton, f.o.b. cars, metropolitan area, San Francisco and Los Angeles for No. 1 and at $12 to $12.50 a net ton for No. 2.

Warehouse

Warehouse Prices, Page 75

Pittsburgh — Local jobbers report brisk business and slight decline in stocks because of difficulty in obtaining deliveries from mills. Structural and plate items are the most active, with bars moving well.

Chicago — Sales are increasing more rapidly, showing fair gains compared with July. An upturn for August as a whole appears assured but it will be narrowed somewhat by the lag in buying at the opening of this month. Orders are widely diversified.

New York—Orders to steel warehouses are widely diversified and volume booked by most jobbers thus far this month is the highest of the year. Except for sheets, prices are firm as a rule, although resale pipe quotations are subject to scattered weakness. Demand for mechanical and aircraft tubing is brisk and general alloy business is improving. On the more standard alloy products mill deliveries range from six to eight weeks with heat-treated stock averaging close to 12 weeks.

Philadelphia — August warehouse business is larger than in July but has not reached the active volume of a year ago. Orders are well diversified.

Buffalo—Sales volume shows a slight increase over July. Prices are steady to firm for most items. The galvanized sheet market is showing a better tone at the low level of 4.00c.

Cincinnati—An expected upturn in warehouse sales has not yet developed, volume being held to previous levels, or slightly lower, by vacations and other summer influences. Industrial demand has been maintained unusually well. Prices are unchanged and firm.

Seattle—Volume of sales is slightly less than a month ago but business generally is satisfactory. Dealers expect improved turnover after Sept. 1 as public works projects get under way. Prices are firm. Portland dealers continue to maintain higher prices than in effect here.

St. Louis — Warehouse interests report increasing volume, more attributed to defense requirements than has so far been the case. Merchant wire has developed distinct betterment during the past four weeks.

Tin Plate

Tin Plate Prices, Page 72

Pittsburgh — New business has dropped off considerably with the normal seasonal decline now well under way. Operations this week are estimated at 62 per cent, off 8 points from last week, reflecting the decline in new business. Tonnage shipments compare favorably with a year ago, although stocks now held by consumers and producers are higher than at this time last year. Export business is off somewhat but is expected to return shortly.

Chicago — Tin plate orders are lighter, business being quiet in comparison with activity experienced in most other steel products. Shipments are fairly heavy, with the lag in buying attributed by producers to the more than ample stocks in hands of consumers. Mills also have comfortable inventories. Relatively good outlook for tin plate consumption in manufacture of sanitary and general line cans still is seen for coming weeks.

Steel in Europe

Foreign Steel Prices, Page 75

London — (*By Cable*) — War requirements for hematite iron in Great Britain necessitate severe limitations on ordinary and export users. In ore, coke, scrap and semi-finished steel the situation is satisfactory at present. Steel tonnage available for export is closely limited. Shipbuilding absorbs substantial quantities of plates and other constructional forms. The situation is improving in tin plate exports and some sheet tonnages are also available for export.

Iron Ore

Iron Ore Prices, Page 76

Cleveland—All but two of the 297 Great Lakes bulk carriers were engaged in iron ore transportation Aug. 15, according to a compilation

by C. C. Lindeman, M. A. Hanna Co. This represents 99.33 per cent of the total trip capacity of 2,717,040 tons. July 15, 294 boats were active, 98.99 per cent of total capacity. Aug. 15, 1939, 230 ships were in commission, 76.16 per cent, and of this total only 206 were in the ore trade. Inactive boats Aug. 15 were two, of the Columbia Transportation Co.

Consumption of Lake Superior iron ore in July totaled 5,493,961 tons, third successive month in which iron ore use has gained over the preceding month, highest for any July since 1929 and highest for any month since December, 1939, according to the Lake Superior Iron Ore association. This compared with 5,212,699 tons in June and was a gain of 75 per cent over 3,143,337 tons in July, 1939. Seven months' consumption totaled 32,826,627 tons, an increase of 63 per cent over 20,114,223 tons in the corresponding 1939 period and the highest seven-month total since 1937.

Iron ore on hand at furnaces and docks Aug. 1 totaled 28,128,054 tons, compared with 23,515,802 tons July 1 and 28,507,243 tons Aug. 1, 1939.

Coke Oven By-Products

Coke By-Product Prices, Page 73

New York—Demand for distillates is steady, and while production is heavy, notably in benzol, most current output is moving directly into consumption, mainly against contracts. Toluol needs for explosives are mounting. Xylol is moving in fair volume with some lull in demand from the coating industries. Substantial shipments of phenol are being made to the plastics trade, but naphthalene is affected by the usual seasonal lull. Coke oven by-product prices are unchanged.

Nonferrous Metals

New York—Improvement in actual consumption of copper, lead and zinc bolstered price sentiment in the markets last week. Prices advanced ¼-cent a pound on copper and 15 points on lead while undertone of the zinc market was firm to strong.

Copper—Copper and brass mills have a large backlog of orders and their holdings of excess stocks have dropped considerably. Japan has been an active buyer, removing additional supplies from the market. Custom smelters and resellers moved their prices to the mine producers' level of 11.00c, Connecticut.

Lead—Sellers generally balanced their intakes last week and a few exceeded them. Indications were that bookings exceeded production. Refined stocks dropped 7983 tons

Nonferrous Metal Prices

	Copper			Straits Tin, New York							
Aug.	Electro, del. Conn.	Lake, del. Midwest	Casting, refinery	Spot	Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 99%	Antimony Amer. Spot, N.Y.	Nickel Cathodes
17	*10.75	11.00	10.50	50.75	50.30	4.75	4.60	6.50	18.00	14.00	35.00
19	*10.87½	11.00	10.62½	50.75	50.25	4.75	4.60	6.50	18.00	14.00	35.00
20	11.00	11.00	10.62½	50.75	50.25	4.75	4.60	6.50	18.00	14.00	35.00
21	11.00	11.00	10.62½	50.75	50.25	4.90	4.75	6.50	18.00	14.00	35.00
22	11.00	11.00	10.62½	50.62½	50.15	4.90	4.75	6.50	18.00	14.00	35.00
23	11.00	11.00	10.62½	50.55	50.05	4.90	4.75	6.50	18.00	14.00	35.00

*Based on sales by custom smelters.

MILL PRODUCTS
F.o.b. mill base, cents per lb., except as specified. Copper brass products based on 11.00c Conn. copper

Sheets
Yellow brass (high) 18.23
Copper, hot rolled 19.62
Lead, cut to jobbers 7.15
Zinc, 100 lb. base 11.50

Tubes
High yellow brass 20.98
Seamless copper 20.12

Rods
High yellow brass 13.26
Copper, hot rolled 17.12

Anodes
Copper, untrimmed 16.87

Wire
Yellow brass (high) 18.48

OLD METALS
Nom. Dealers' Buying Prices

No. 1 Composition Red Brass
New York 6.87½-7.12½
Cleveland 7.25-7.50
Chicago 7.00-7.25
St. Louis 7.75

Heavy Copper and Wire
New York, No. 1 8.50-8.75
Cleveland, No. 1 8.25-8.50
Chicago, No. 1 8.25-8.50
St. Louis 8.75

Composition Brass Turnings
New York 6.50-6.75

Light Copper
New York 6.50-6.75
Cleveland 6.25-6.50
Chicago 6.25-6.50
St. Louis 6.75

Light Brass
Cleveland 3.50-3.75
Chicago 4.25-4.37½
St. Louis 4.25

Lead
New York 4.25-4.35
Cleveland 3.60-3.75
Chicago 3.50-3.75
St. Louis 3.50-3.75

Zinc
New York 3.75-4.00
Cleveland 3.25-3.50
St. Louis 3.50-3.75

Aluminum
Misc., cast, Cleveland 8.50
Borings, Cleveland 6.50
Clips, soft, Cleveland 14.00
Misc. cast, St. Louis 7.75-8.00

SECONDARY METALS
Brass ingot, 83-5-5-5, less carloads 11.75
Standard No. 12 aluminum 14.00

in July to only 47,360 tons, the lowest level in 10 years. Heavy shipments relieved pressure of Mexican metal offerings and prices rose to the basis of 4.75c, East St. Louis.

Zinc—Supplies available for delivery over the balance of the year are very tight, giving the present 6.50-cent level strong support. Actual consumption is high with the galvanizing rate at 74 per cent, brass mill operations gaining, and with automotive demands increasing. Consumption is estimated in excess of production.

Tin—Prices tended slightly lower toward the close of the week with Straits at 50.55c on spot and 50.05c on futures. These levels are close to the Metals Reserve Co.'s standing bid of 50.00c and may forecast an early pickup in bookings.

Aluminum—Demand for aluminum continues heavy. The airplane industry will require substantially heavier tonnages while other outlets are expected to expand due to the lower price levels, established as of Aug. 1.

Brown Iron & Steel Co. Ends Bankruptcy Period

■ Brown Sheet Iron & Steel Co., 964 Berry avenue, St. Paul, manufacturer of steel oil barrels, tanks, stainless steel products, furnaces and other sheet steel products, has been discharged from bankruptcy under section 77B and has been completely reorganized. P. W. Casey is president and general manager; H. C. Klages, vice president; W. A. Morse, secretary-treasurer. These three compose the board of directors. Mr. Casey has been with the company since 1919, as sales manager, and as general manager through the bankruptcy period.

The company has 110 employes and after installing new equipment will expand production.

Reserve Tin Purchase Being Made Slowly

Washington—Metals Reserve Co. has bought only 3000 tons of 75,000 tons of tin called for under the contract with the tin committee and only 510 tons has been delivered. Manganese ore under contract totals 770,000 tons, of which 240,000 tons is domestic ore.

■ Malleable iron castings production in June was 34,700 net tons and shipments 33,323 tons, compared with 37,511 tons produced and 40,919 tons shipped in May, the bureau of the census reports. Six months production this year was 248,156 tons, compared with 203,034 tons in first half, 1939.

Construction and Enterprise

Pennsylvania

BEAVER FALLS, PA.—Babcock & Wilcox Co., Forty-seventh street and College Hill, will build one-story additions 100 x 240 and 125 x 129 feet, at its tube plant. J. Harper is chief engineer.

CUSTER CITY, PA.—L. J. Kervin, Congress street, Bradford, Pa., is developing oil property, including wells, pipe lines and steel storage tanks, to cost about $25,000.

OIL CITY, PA.—United National Gas Co., United Natural building, is developing natural gas reserves in Jefferson county, drilling ten wells, laying pipe lines and erecting booster stations, at cost of about $30,000. J. G. Montgomery is chief engineer.

■ Additional Construction and Enterprise leads may be found in the list of Shapes Pending on page 84 and Reinforcing Bars Pending on page 87 of this issue.

PHILADELPHIA—Joseph P. Cattie & Bros., job galvanizing concern, has bought additional land adjacent to its plant for expansion in connection with a large contract for naval equipment involving large plates and sheets.

PITTSBURGH—Heppenstall Co., R. B. Heppenstall, president, 4620 Hatfield street, will build a one-story 50 x 75-foot power plant and one-story extension 25 x 60 feet. General contract to Pittsburgh Industrial Engineering Co., Thirty-ninth street.

READING, PA. — Parish Pressed Steel Co. has given contract to J. H. Focht & Son Inc. for a steel and concrete addition to its heat-treating department to increase capacity for execution of a large contract for military equipment.

WILKES-BARRE, PA.—Vulcan Iron Works, S. T. Nicholson in charge, 730 South Main street, has plans for alterations and improvements to cost about $40,000.

WILLIAMSPORT, PA.—E. Keeler Co., 238 West street, will build a three-story steel and concrete power plant and laboratory at Church street and Government place, costing $40,000.

Ohio

ALLIANCE, O.—Unico Mfg. Co., recently incorporated by M. H. Crough, 2425 Ridgewood avenue, will operate in connection with United Co-operatives Inc., in former Buckeye Twist Drill Co. plant on West Ely street and will manufacture metal barn equipment.

ALLIANCE, O. — Taylorcraft Aviation Corp. has let contract for boiler house 80 x 100 feet and storage hangar, to Paul A. Kintz, 62 East Summit street, and will ask bids soon on further additions to airplane plant.

CHAGRIN FALLS, O.—Stephen Jencick Engineering Laboratories Inc., is producing sample units of diesel motor fuel injection systems and company plans occupying its own plant as soon as volume of sales warrants. Production now is at plant of Climax Motor Devices, River street. (Noted June 10.)

CLEVELAND — Cleveland Diesel Engine division, General Motors Corp., 2160

West 106th street, George W. Codrington, general manager, will add 37,650 square feet floor space in two wings, 100 x 240 feet on present test building and 65 x 210 feet on present assembly building. Space is needed for increased production.

CLEVELAND—Hope Metals Products Inc., successor of Par-Brook Mfg. Co., 1814 East Fortieth street, is seeking larger quarters, requiring about 15,000 square feet floor space. Will continue contract sheet metal work and welding and produce a new line of metal toilet partitions. Some additional equipment will be required.

MARIETTA O.—Local committee A. L. Murray chairman is obtaining funds for reopening the idle tin plate mill at Harmar. Dan T. Haddock steelmaker has option to purchase the plant, formerly operated by the Hudson Sheet & Tin Plate Co. Plant contains five tin mills.

Connecticut

BRISTOL, CONN.—Wallace Barnes Co., 30 Main street, has let general contract to George Lacourse, 55 George street, for a one and two-story steel and concrete warehouse on South Elm street, to cost about $40,000.

Massachusetts

ASHLAND, MASS.—Warren Telechron Co. will build steel and brick factory addition and boiler plant costing about $40,000. Fay, Spofford & Thorndike, 11 Beacon street, Worcester, Mass., are engineers.

New York

ILION, N. Y.—Remington-Rand Co., 465 Washington street, Buffalo, will build a one-story plant 65 x 140 feet, general contract to Charles R. Blackstone, Warren street, Utica, N. Y.

NIAGARA FALLS, N. Y.—Union Carbide Co., 137 Forty-seventh street, will build a factory 90 x 140 feet. Foundation contract has been given to Scrafari Construction Co., 825 Fifteenth street.

New Jersey

STIRLING, N. J.—Passaic township, E. A. Devlin, foot of Fifth avenue, Paterson, N. J., engineer, will build a sewage treatment plant, including ejector station and other facilities.

Michigan

DETROIT—Detroit Diesel Engineering division, General Motors Corp., will build a laboratory building on Outer drive, Detroit. General contract to O. W. Burke Co., Detroit.

DETROIT—Fluorescent Fixture Co., 10226 Woodward avenue, has been incorporated with $10,000 capital by T. R. Hopkins, 7338 Woodward avenue, Detroit.

DETROIT — Service Air-Conditioning Co. Inc. has been incorporated with $20,000 capital to manufacture heating and air-conditioning units, by Herman Fidler, 16195 Meyers road, Detroit.

DETROIT—Northern Gauge & Tool Co., 3110 East Seven Mile road, has been incorporated with $10,000 capital to operate machine shop, by Nelson Allmendinger, 5500 Marseilles avenue, Detroit.

DETROIT—Key Control Inc., 400 Buhl building, has been incorporated with 2000 shares no par value to manufacture locks and protection systems, by Frank B. Watts, 919 Fox Theater building, Detroit.

FERNDALE, MICH.—DeVlieg Mfg. Co. has taken bids on a factory and office building costing $55,000.

LANSING, MICH.—Vapor Oil Furnace Corp., 321 East Grand River avenue, has been incorporated with $25,000 capital to manufacture heating equipment, by Fred H. Cross, 823 West Ionia street, Lansing, Mich.

MIDLAND, MICH.—Dow Chemical Co. is having preliminary plans made for four factory buildings at its Dowmetal foundry at Bay City, Mich., the development to cost about $750,000.

MT. CLEMENS, MICH.—Mt. Clemens Metals Products Co. is having revised plans prepared by H. G. Ilgenfritz, Detroit, architect, for an addition and alterations to its plant and office building.

SAGINAW, MICH.—Wilcox-Rich division, Eaton Mfg. Co., has started erection of an addition costing $22,000.

SPRING LAKE, MICH.—Burnside Mfg. Co. is building a 30 x 50-foot addition to its plant here.

Illinois

FREEBURG, ILL.—Mulberry Coal Co., Belleville, Ill., will build a coal coking plant, with auxiliaries, to cost about $500,000. Frank Otton, Belleville, is engineer.

ROCKFORD, ILL.—National Lock Co. has given general contract to Security Building Co. for one-story plant addition 23 x 30 feet and one-story storage building 36 x 134 feet.

Indiana

LAPORTE, IND.—Bastian-Morley Co. has let general contract to Larson-Danielson Co., La Porte, for a one-story steel and brick addition 135 x 200 feet, costing about $50,000.

District of Columbia

WASHINGTON — Bureau of supplies and accounts, navy department, will receive bids as follows: Aug. 30, schedule 2774, motor-driven bending rolls for Sewalls Point, Va.; schedule 2781, three motor-driven universal turret lathes, tools and equipment for Alexandria, Va.; schedule 2796, six motor driven hand planer and jointer machines for Boston and Brooklyn; Sept. 6, thirteen motor-driven engine lathes and spare parts for Portsmouth, N. H., and Mare Island, Calif.; Sept. 3, schedule 2800, twenty-four motor-driven heavy-duty engine lathes for Brooklyn and Philadelphia; Sept. 10, schedule 2811, seventeen motor-driven heavy-duty engine lathes for Brooklyn and west coast points; Aug. 27, six motor-driven external centerless grinding machines and equipment for Brooklyn and Mare Island, Calif.; schedule 2858, four motor-driven vertical jig borer, for Brooklyn.

Missouri

SIKESTON, MO. — REA has allotted $270,000 to Scott-New Madrid-Mississippi co-operative, H. M. Zaricor, superintendent, for 261 miles transmission lines to serve 1018 customers.

ST. LOUIS—Medart Co., 3500 De Kalb street, has let general contract to Fruin-Colnon Contracting Co., 408 Olive street, for a steel frame plant addition to cost about $30,000.

ST. LOUIS — Monsanto Chemical Co., 1808 South Second street, has let general contract to Fruin-Colnon Contracting Co., 408 Olive street, for a turbine room addition, one story, 50 x 56 feet, costing about $50,000. Stone Webster Engineering Co. is engineer.

Oklahoma

BARTLESVILLE, OKLA.—Independent Natural Gas Co., has applied to federal power commission for permission to lay gas pipeline from Sherman county, Texas, to Milwaukee, 877 miles. Cost estimated at about $28,000,000.

Wisconsin

SHEBOYGAN, WIS.—Wisconsin Power & Light Co., Madison, Wis., plans construction of an addition to its generating plant here, to cost about $30,000, exclusive of equipment. Sargent & Lundy Inc., 140 South Dearborn street, Chicago, are engineers.

WEST ALLIS, WIS.—LeRoi Co., manu-

facturer of gas engines, has given general contract to Klug & Smith, 111 East Wisconsin avenue, Milwaukee, for a one-story plant addition 40 x 170 feet.

Minnesota

ORTONVILLE, MINN.—City, J. A. Jacobson, clerk, takes bids to Sept. 2 on deep well turbine centrifugal pumping machinery and electric motor, including starter, also 6-inch discharge flow meter.

ST. PAUL—J. S. Garske Foundry Co., 1457 Marshall avenue, has given general contract to Oscar Bentley for erection of a foundry addition.

ST. PAUL—Brown Sheet Iron & Steel Co., 964 Berry avenue, has been discharged from bankruptcy and will increase capacity by installation of additional equipment. P. W. Casey is president and general manager.

THIEF RIVER FALLS, MINN.—City, P. G. Pederson, clerk, will ask bids soon on addition to municipal power plant. Ralph D. Thomas & Associates, 1200 Second avenue, Minneapolis, are engineers. (Noted May 27.)

Kansas

BURLINGTON, KANS.—REA has allotted $124,000 to Burlington rural electric co-operative for 140 miles transmission lines to serve 372 customers. Paulette & Wilson, 1006 Kansas avenue, Topeka, Kans., are consulting engineers.

CLAY CENTER, KANS.—Bond issue of $150,000 has been approved to finance improvements in municipal power plant. Clay C. Smith is mayor. Burns & McDonnell Engineering Co., 107 West Linwood boulevard, Kansas City, Mo., is engineer. (Noted Aug. 5.)

EL DORADO, KANS.—Skelly Oil Co., Tulsa, Okla., will start about Nov. 1 on a $250,000 expansion and remodeling program at its refinery here.

WAMEGO, KANS.—REA has allotted $148,000 to P. R. and W. electric co-operative, Clyde K. Rodkey, attorney, for 160 miles transmission line to serve 432 customers.

Nebraska

FALLS CITY, NEBR.—Union Pipeline Co., Centralia, Ill., Thomas H. McCullough, president, plans pipeline gathering system here to connect local wells.

FALLS CITY, NEBR.—Establishment of 3000-barrel oil refinery here is planned by H. H. Coffield, Rockdale, Tex., and associates, who operate a refinery at Overton, Tex.

Iowa

COMANCHE, IOWA—Bond issue of $27,000 has been approved to finance waterworks plant and distribution system. F. A. Cady is city recorder.

DAVENPORT, IOWA—Eastern Iowa light and power co-operative has received REA allotment of $145,000 for 176 additional miles of rural transmission lines.

DUBUQUE, IOWA—Dubuque Packing Co., Sixteenth and Sycamore streets, is having plans drawn for an addition to its packing plant, to cost about $250,000.

KEOKUK, IOWA—Rubber Industries division of Dryden Rubber Co. is having plans prepared for a plant addition and improvements to present plant, at cost of about $100,000, including equipment.

POCAHONTAS, IOWA — Pocahontas rural electric co-operative, George M. Stockdale, superintendent, has given contract to Evans Construction Co., Early, Iowa, at $140,415, for 258 miles transmission lines. K. R. Brown, 802 Valley Bank building, Des Moines, Iowa, is consulting engineer.

SUMNER, IOWA—City council has received report from E. E. Schenk, 214 Waterloo building, Waterloo, Iowa, covering needed improvements at sewage disposal plant. H. W. Bathke is city clerk.

Montana

ANACONDA, MONT.—Anaconda Copper Mining Co. has plans for $1,500,000 expansion and improvement plan at Anaconda and Butte, including construction of nodulizing plant at the Anaconda reduction works.

SHIRLEY, MONT.—Department of interior, bureau of reclamation, Denver, S. O. Harper, chief engineer, takes bids to Sept. 5 on two motor-driven pumping units, capacity 37 cubic feet per second at 51 feet pumping head, for pumping station here.

California

BURBANK, CALIF. — Vega Airplane Co., 3815 Empire avenue, will build warehouse structure costing about $165,000.

LOS ANGELES—Coast Machine Tool Co., 1307 Santa Fe avenue, has been organized by Fred Birker and Frank Young.

LOS ANGELES—Triplex Stainless Steel Corp. has been incorporated with $75,000 capital by Samuel H. Hoffman, Beverly Hills, Calif.; J. L. Sternbeck and I. C. Gordean, Los Angeles. Edward M. Raskin, 416 West Eighth street, Los Angeles, is representative.

LOS ANGELES—Utility Fan Corp. has bought three-story plant at Forty-eighth street and Alameda street which it will improve and equip for manufacture of its products. Structure has about 110,000 square feet floor space. Cost of plant and equipment will be about $200,000.

Washington

BREMERTON, WASH.—Puget Sound Power & Light Co., plans 24 miles of 66,000-volt transmission line and two substations to serve Kitsap county, at cost of $150,000. Will require 67 tons copper wire.

SEATTLE—Doran Brass & Foundry Co., 85 Horton street, will build $5000 crane shelter addition to plant.

SUNNYSIDE, WASH.—Union Concrete Pipe Co., Joseph Ban, president, plans erection of plant 30 x 80 feet, costing $20,000, to be equipped with latest type machinery.

OLYMPIA, WASH.—State highway department will open bids Sept. 4 on maintenance shop building at Tacoma, Wash.

WOODLAND, WASH.—Special election will be held Aug. 27 on bond issue of $22,000 for rebuilding municipal water system.

Canada

ESQUIMALT, B. C. — Department of public works, Ottawa, Ont., J. M. Somerville, secretary, is receiving bids for construction of ordnance building at H.M.C. dockyard here.

VANCOUVER, B. C. — Boeing Aircraft Co. of Canada Ltd., Terminal avenue, has given general contract to G. E. Baynes, 146 East Second avenue, for a plant addition costing about $16,000.

ST. JAMES, MAN. — Department of munitions and supply, Ottawa, Ont., C. K. Sheis, deputy minister, will build aircraft plant at Stevenson Field, here.

AMHERSTBURG, ONT.—Brunner Mond Co. Ltd., manufacturer of chemicals, will build addition to plant here, costing $25,000. C. K. MacFetridge is general manager.

WINDSOR, ONT. — Canadian Motor Lamp Co., 2429 Seminole street, has given general contract to Allan Construction Co., 44 Wyandotte street, for plant addition costing about $32,000.

LACHINE, QUE.—Dominion Engineering Works Ltd., First avenue, has let general contract to Foundation Co. of Canada Ltd. for addition to erecting shop, 85 x 200 feet, costing $70,000. Other additions are also being planned.

MONTREAL, QUE. — Dominion Dry Dock Co. Ltd., Mill street, subsidiary of Canadian Vickers, Ltd., has given general contract to James W. Ross for rebuilding plant at cost of $25,000.

CLASSIFIED

Bids Wanted

Federal Works Agency, Public Buildings Administration, Washington, D. C., Aug. 8, 1940.—Sealed proposals in duplicate will be publicly opened in this office at 1 P. M., Standard Time, Sept. 6, 1940, for construction of the U. S. P. O. at Flemingsburg, Ky. 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., Aug. 14, 1940.—Sealed proposals in duplicate will be publicly opened in this office at 1 P. M., Standard Time, Sept. 17, 1940, for construction of the U. S. P. O. at Roaring Spring, Pa. 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., Aug 16, 1940.—Sealed proposals in duplicate will be publicly opened in this office at 1 P. M., Standard Time, Sept. 19, 1940, for construction of the U. S. P. O. at Carlisle, Ky. 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.

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