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STEEL

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Contents



Volume 107—No. 3

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READER COMMENTS	4
HIGHLIGHTING THIS ISSUE	19
NEWS	
Administration Agrees to Five-Year Amortization	21
Army, Navy Negotiate Aircraft Contracts Totaling \$100,000,000	22
\$136,743,900 in Contracts for Navy's Air and Shore Defenses	22
Two-Ocean Navy Bill Authorizes 70 Per Cent Increase in Tonnage	23
Time Vital Element in Building Adequate National Defenses	23
Youth Goes to Summer Schools To Learn Mechanical Skills	24
Dominion Moves To Aid Industry Obtain Machine Tools, Equipment	25
Labor Board's Decision 99 Per Cent Invective, Says Weirton	26
Steelworks Operations for Week	27
Men of Industry	28
Scrap Inventories Reduced Nine Per Cent in First Quarter	33
Railroads To Rule on Moderate Reduction in Rates to Southwest	38
Obituaries	39
WINDOWS OF WASHINGTON	30
MIRRORS OF MOTORDOM	35
EDITORIAL—Till Death Us Do Part	40
THE BUSINESS TREND	41
TECHNICAL	
It Takes Health Plus Safety To Do the Job—By M. L. Robb	44
Coil Springs for Buicks	46
Process Alloys for Steelmaking Afford Important Improvements	52
Making Bronze Bushings Efficiently—By H. Menck	61
A.S.T.M. Adds New Standards and Specifications for Metals	64
<i>Materials Handling</i>	
Handling Built-To-Order, Part II—By Walter J. Brooking	48
<i>Progress in Steelmaking</i>	
Flame Scarfing Increases Production—By John Heffley	54
<i>Metal Finishing</i>	
New Process Is Developed for Plating Metals onto Plastics	55
<i>Joining and Welding</i>	
Shear Reinforcing for Concrete Beams	58
Designs Large Welders for Aircraft Work	62
INDUSTRIAL EQUIPMENT	70
MARKET REPORTS AND PRICES	81
BEHIND THE SCENES	98
CONSTRUCTION AND ENTERPRISE	103
INDEX TO ADVERTISERS	110

PRODUCTION • PROCESSING • DISTRIBUTION • USE



Steel-FIRST LINE OF NATIONAL DEFENSE

Steel is essentially a peacetime industry—and America's normal appetite for steel is great.

This is fortunate for all of us.

It permits steel producers to carry on year after year and to find employment for hundreds of thousands of men.

It makes management extend itself to remain competitive—to improve its production facilities—to better the quality of its old products—through research, to devise new products—in order to win in the battle for markets that goes on apace in all industry.

Republic has done exactly that and—in the emergency now facing America—is in a position to supply more and better steel—the first line of any nation's defense.

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panded its ore supplies—enlarged its blast furnaces—increased open hearth and electric furnace capacity—built new mills and added new finishing equipment. But more, Republic has built an organization of men who know steel.

And now, seeing but dimly through the haze that clouds all business prophecy, but realizing our own deep responsibility, Republic, vital to peacetime prosperity, pledges its every effort to help keep America the way we know it and love it—to keep America safe for Americans—through steel, first line of national defense. Republic Steel Corporation, Cleveland, O.

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HIGHLIGHTING THIS ISSUE

■ AGREEMENT in principle as to permissible amortization of investment for plant and equipment required for the national defense program, as well as to profits on armament contracts, was reached last week (p. 21) at a White House conference. Amortization is to be on a five-year basis. The Vinson-Trammell provision which would have limited profits on naval and army and navy aircraft construction to 7 to 8 per cent will be dropped; instead, the forthcoming excess profits tax will be made to apply to those as well as all other industries. This decision, if applied liberally, should eliminate questions as to future solvency which in some cases have prevented manufacturers from accepting government contracts.

Of vast importance to the metal producing and metalworking industries is the "two-ocean" navy bill now awaiting the President's signature (p. 23). Under this bill the navy, by 1946 or 1947, will have 35 battleships, 20 aircraft carriers, 88 cruisers, 678 destroyers and 180 submarines, signifying manufacturing activities of highly diversified character. . . . Contracts for army and navy planes amounting to \$100,000,000 were placed last week, the first (p. 22) of a series to add 25,000 planes to our national defense.

Defense on Its Way

Other naval awards, as well as awards under the Walsh-Healey act (p. 24), reflect progress toward national defense. A Westinghouse survey, however, indicates (p. 23) that many months will pass before armament in general can be produced in volume.

Steel production last week surged up 13 points (p. 27) to 88 per cent of ingot capacity with additional gains in prospect. Order backlogs continue to expand (p. 81) and mills have fallen somewhat further behind in deliveries.

Deliveries Extended

It is difficult to obtain bars in less than 30 days while some alloy bars used by the aircraft and machine tool builders are sold ahead for several months. While national defense requirements are not yet taking much tonnage directly, much business

stems from this source in anticipation. . . . United States attorney general shows a disposition (p. 30) to "soft pedal" antitrust activities at this time. . . . Historic Cramp's shipyard (p. 22) is to be revived.

Not only are occupational diseases compensable in many states but affected workers are a liability to the employer. M. L. Robb (p. 44) says

Real Health Program Pays

that a real health program in any plant, supplementing a safety program, pays well, benefitting employes as well as the employer. . . . Walter J. Brooking (p. 48) discusses the design and fabrication of special racks which permit efficient storage and handling of large and bulky items and special shapes, making it possible to utilize practically all of the cubical contents of the storage space. . . . Dewey M. McCain (p. 58) tells how lack of continuity in concrete beams may be eliminated by use of diagonal bars welded into place.

John Heffley reports (p. 54) that most of the steel at Republic Steel Corp.'s Buffalo plant now is being surface-conditioned by scarfing.

Eliminates Bottleneck

One operator can treat six to eight times as much steel with a scarfing torch as by chipping, with the result that a production bottleneck has been eliminated. . . . H. Menck (p. 61) reveals the solution to the problem of producing brass bushings in both small and large lots. A clamping flange cast on the bushing makes it possible to machine the latter in one setup, after which the flange is cut off. . . . Numerous new standard specifications and tests are announced (p. 76) by the American Society for Testing Materials. . . . New process (p. 55) plates metals on plastics.

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RYERSON

Administration

Agrees to Five-Year Amortization

Decision Regarded as Industry's "Green Light".

Excess Profits Tax Will Apply to All Industries.

Profits Limitations of Vinson-Trammell Act To Be Dropped.

Heavy Orders Placed for Army, Navy.

WASHINGTON

■ AGREEMENT in principle on plant and equipment amortization policies, proposed excess profits tax and limitation on corporate profits on war material contracts was reached at a White House conference last week. Represented were the treasury, congressional tax committees, the national defense advisory commission and the federal loan administration.

It was agreed:

To permit plant and equipment amortization on a five-year basis.

The forthcoming excess profits tax will apply to all industries—not just those executing national defense contracts. Profit limitations of 7 and 8 per cent on naval construction and army and navy aircraft will be dropped in favor of the excess profits tax.

Announcement of the formula, made for the conferees by White House Secretary Stephen T. Early, said it was "agreed that the plan is certain to result in an appreciable acceleration of the national defense program. At the same time it is intended that there shall be no substantial sacrifice of revenues accruing to the United States treasury."

The agreement, it was explained later, removes a chief source of uncertainty for industrial concerns planning to expand to handle national defense orders.

Such firms as the Packard Motor Car Co., Detroit, considering a 9000-engine contract that was rejected

by Henry Ford, know at what rate they may plan to depreciate, for tax purposes, any new plant or equipment they build to handle defense orders.

M. M. Gilman, Packard president, has said his firm would have to spend \$30,000,000 on new plant and equipment to handle the order of 6000 engines for Britain and 3000 for the United States. Depreciation on a sum of this size would bulk large in the company's profit and loss calculations.

Mr. Gilman, who conferred with William S. Knudsen, defense commissioner, on breakdown of the \$150,000,000 contract negotiations, said after the conference the projected contract was "definitely not off."

Smooths Way for RFC Loans

One interesting story, emanating from well-connected persons here, is that the army's general staff is rather apathetic toward the Rolls Royce aircraft engines involved. Packard, the story goes, doubts the wisdom of embarking on an expansion program to build this type of engine if future orders from the army are not assured. If Britain collapses, it is possible the 6000 engines built for her would not be taken over by the United States, in view of the army's attitude toward the Rolls Royce power plants.

Agreement on the amortization plan smooths the way for Jesse Jones, federal loan administrator, to

grant reconstruction finance corporation money to Packard and similar firms to handle defense orders.

Packard, it was learned, has not yet asked the RFC for a loan to build a new engine plant, but such a request is expected to follow if negotiations between Mr. Gilman and Mr. Knudsen are successful.

Agreement on a general excess profits levy to supersede the Vinson-Trammell rates, would generalize a tax that has applied until now only to naval construction and to military aircraft construction.

Vinson-Trammell rates, as changed by amendments approved June 28, limit such profits to 8 per cent of contract price or 8.7 per cent of cost. These amended rates superseded former limits of 10 per cent on naval vessels and 12 per cent on army and navy aircraft.

It is believed the World war excess and war profits laws will not serve as a model for the new levy, which is being worked out in conference with the treasury.

Working out details in the new tax bill is expected to take considerable time. Some observers believe it will not be finally approved until late August or September, and that this may cause some delay in actual placing of defense orders.

President's request for \$4,848,171,957 to be spent for "total defense" before July 1, 1941, went to congress last week as scheduled. Accompanying message said the objectives are "to carry forward the naval expansion program designed to build the

navy to meet any possible combination of hostile naval forces . . . to complete the total equipment for a land force of approximately 1,200,000 men . . . to procure reserve stocks of tanks, guns, artillery, am-

munition for another 800,000 men or a total of 2,000,000 men if mobilization of such a force becomes necessary . . . to procure 15,000 additional planes for the army and 4000 for the navy."

Army, Navy Negotiate Aircraft Contracts Totaling \$100,000,000

■ DR. GEORGE J. MEAD, aeronautical advisor to the national advisory defense commission, announces contracts amounting to \$100,000,000 for army and navy airplanes have been awarded within the past few days. He said this was the first of a series of contracts expected to add 25,000 planes within the next two years.

First planes under these new contracts are to be delivered in four to five months. Dr. Mead said it is expected the 25,000 planes will be delivered not later than July, 1942. He disclosed the RFC has agreed to loan the aviation industry funds enough to expand plant facilities.

Other contracts, Dr. Mead stated, now are being negotiated as quickly as possible. Of the contracts in process of negotiation, he explained that about 75 per cent are for army bombers and pursuit planes.

Dr. Mead pointed out that the great speed with which defense avia-

tion is being augmented has been made possible by discarding the old system of bidding and substituting a new plan of direct contract negotiations. Program has been worked out in co-operation between the army, navy, defense commission and aviation manufacturers. Only proven types of planes and engines are being ordered, while experimentation is being continued during their production.

Dr. Mead also announced the national advisory committee for aeronautics has received \$8,400,000 through Presidential order to build an engine research laboratory, probably at Langley Field, Va. He said the committee already is conducting extensive tests at Langley aeronautical laboratory. In addition, he announced that a new establishment at Sunnyvale, Calif., is about ready to take over part of the work being conducted at Langley Field.

\$136,743,900 in Contracts For Navy's Air and Shore Defenses

■ THE NAVY last week awarded contracts totaling \$136,743,900 for strengthening its air defenses and shore facilities on both the Atlantic and Pacific oceans. Department officials said it was the largest letting of its kind in history.

Among contracts awarded were:

George A. Fuller Co., New York, and Merritt-Chapman & Scott Corp., New York, shore facilities at the naval air station at Quonsett Point, R. I., \$24,204,000.

The Austin Co., Cleveland, storage facilities in the Puget Sound area, Washington, \$7,300,000.

Stone & Webster Engineering Corp., New York, power plant improvements at submarine base, London, Conn., and Boston navy yard, \$1,325,000.

J. G. White Engineering Corp., New York, power plant improvements, Iona Island, N. Y., and New York navy yard, \$740,000.

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

J. M. Tull Metal & Supply Co. Inc., Atlanta, Ga., steel, \$5,229.21.

Noland Co. Inc., Washington, lavatories, etc., \$7,561.38.

De Laval Steam Turbine Co., Trenton, N. J., pumps, \$64,745.

Spartan Aircraft Co., Tulsa, Okla., airplanes, \$1,859,880.80.

Calumet & Hecla Consolidated Copper Co., New York, copper, \$86,625.

Frick Co. Inc., Waynesboro, Pa., refrigerating plants, \$43,400.

Terry Steam Turbine Co., Hartford, Conn., turbine parts, \$9,284.80.

Bohn Aluminum & Brass Corp., Detroit, aluminum, \$116,345.50.

Leland-Gifford Co., Worcester, Mass., drilling machines, \$25,951.

Heller Brothers Co., Newark, N. J., hammers, \$8,713.32.

International Nickel Co. Inc., New York, nickel alloy, \$31,800.

Commercial Acetylene Supply Co. Inc., New York, cylinders, \$5,100.

Vanadium Corp. of America, New York, ferrosilicon, \$7,216.70.

National Supply Co., Holmesburgh, Pa.,

engines, \$219,100.

Carlan Tool Co., Elizabeth, N. J., valve reseating outfits, \$7,050.

General Electric Co., Schenectady, N. Y., motor generator sets, \$7,870.

H. Belfield Co., Philadelphia, pipe, \$6,814.

Worthington Pump & Machinery Corp., Washington, pumps, \$59,760.

General Time Instruments Corp., Thomaston, Conn., mechanical clocks, \$5,525.

Swind Machinery Co., Philadelphia, drilling machines, \$6,048.

Mine Safety Appliances Co., Pittsburgh, submarine escape apparatus, \$207,722.25.

C-O-Two Fire Equipment Co., Newark, N. J., fire extinguishers, \$118,978.65.

A. Lietz Co., San Francisco, sounding machines, \$11,495.

American Metal Co., Ltd., New York, copper, \$33,150.

Ingersoll-Rand Co., Washington, air compressor, \$8,152.

Electric Boat Co., Groton, Conn., mufflers, etc., \$64,260.

Carrier Corp., New York, refrigerating units, \$8,630.70.

Gardner Denver Co., Washington, compressors, \$22,061.14.

Okonite Co., Passaic, N. J., degaussing wire, \$48,028.50.

Anaconda Wire & Cable Co., New York, degaussing wire, \$48,028.50.

Crescent Insulated Wire & Cable Co., Trenton, N. J., degaussing wire, \$32,732.

General Machinery Corp., Hamilton, O., boring machine, \$162,550.

McKernan Terry Corp., New York, automatic airplane paying out device, \$15,724.

Stewart Motor Co., Washington, automobiles, \$12,600.

PLAN REHABILITATION OF CRAMP'S SHIPYARD

The William Cramp & Sons' Ship & Engine Building Co.'s yard at Philadelphia will be rehabilitated as part of the navy's defense program, it was reported last week. Representative Michael J. Bradley, Pennsylvania, said he had been advised by Rear Admiral Samuel M. Richardson that the yard had been selected as one of the facilities to be reopened. It once was the largest shipyard in this country. Shipbuilding activities were discontinued in 1927 and the property placed in liquidation.

WAGES-HOURS ACT TO APPLY TO DEFENSE WORK

President Roosevelt last Friday stated the administration will not relax provisions of the wages and hours act for persons engaged in national defense work.

The President's decision followed a letter from Col. Philip B. Fleming, wage-hour administrator, in which the colonel said that no need for lengthening hours contrary to the law had yet been demonstrated. Colonel Fleming cited a wartime report of the British munitions commission stating experiments over a period of 13½ months showed a decrease in munitions production as hours were lengthened. He also cited a general order by the army chief of ordnance issued in November, 1917, to the same effect.

Two-Ocean Navy Bill Authorizes 70 Per Cent Increase in Tonnage

■ SENATE last week without a dissenting vote passed the bill which increases the navy by 70 per cent. Similar action already had been taken by the house. Bill has been sent to the White House.

The new bill increases the authorized composition of the navy in under-age combatant vessels by 1,325,000 tons. It also authorizes an appropriation of \$150,000,000 for essential equipment and facilities at either private or naval establishments for building and equipping any complete naval vessels authorized by the bill.

Authorization of an appropriation of \$65,000,000 for essential equipment and facilities for the manufacture of ordnance material or munitions at either private or naval establishments is also contained in the bill, and authorization of an appropriation of \$35,000,000 for the expansion of facilities for the production of armor at either private or naval establishments.

Authorizes Auxiliary Craft

President also is authorized to acquire and convert or to undertake the construction of patrol, escort, and miscellaneous craft necessary to supplement the tonnages authorized in the bill; also to acquire 100,000 tons of auxiliary vessels.

Bill increases the number of naval airplanes from 10,000 to 15,000 and provides that this total may be exceeded if in the judgment of the President this number is not sufficient to meet the needs of the national defense.

Authorized strength in battleships was 660,000 tons; the increase provided is 385,000 tons, making a total authorized tonnage of 1,045,000 tons.

Authorized strength of aircraft

carriers was 245,500 tons; the increase is 200,000 tons, making a total authorized tonnage of 445,500 tons.

Authorized strength of cruisers was 479,024 tons; the new bill allows an increase of 420,000 tons, making the total tonnage 899,024 tons. Authorized destroyer tonnage was 228,000; increase allowed is 250,000 tons, with a total tonnage of 478,000.

Authorized strength of submarines was 102,956 tons; new bill allows an increase of 70,000 tons, making a total of 172,956 tons.

Total authorized navy strength of 1,724,480 tons is increase by 1,325,000 tons, making the total authorized tonnage 3,049,480.

Estimated cost of constructing the vessels authorized by the new bill will be \$3,760,000,000. Cost of additional shipbuilding, armor and ordnance facilities will be \$250,000,000. Estimated total cost, exclusive of planes, will be \$4,010,000,000, with an additional \$2,800,000,000 required to complete the vessels now under construction.

Senate committee believes that by 1946 or 1947 the navy will have 701 warships compared with 369 now.

As authorized by this bill, it is expected that by 1946 or 1947 the fleet will consist of 35 battleships, 20 aircraft carriers, 88 cruisers, 378 destroyers and 180 submarines. This would mean that the American fleet will equal the combined fighting fleets of Japan, Germany, Italy and France.

Within the past month contracts for two battleships, four aircraft carriers, 15 cruisers, 38 destroyers, 28 submarines, one submarine tender, one large seaplane tender, two small seaplane tenders and one mine sweeper, a total of 92 ships, have been placed by negotiated contracts.

Time Vital Element in Building Adequate National Defenses

■ HOW soon can the United States achieve quantity production of aircraft, armor plate, shells, big guns and other defense requirements?

The illusion—apparently widely held—that an adequate defense is merely a matter of a few billions of dollars and a few months time is being dispelled as manufacturers take stock of their facilities and report on

the time element.

A. W. Robertson, chairman of Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., recently stated it would take from four months to two years for his company to begin production in mass quantities for defense.

"It would require almost a year before there would be any great

quantity of finished products coming out," he said. "At the end of a year we would be ready for mass production and at the end of two years we would be going great guns."

Westinghouse made large quantities of war materials during the first World war, and has surveyed its facilities and potentialities for a return to munitions production. Survey showed the company qualified to produce defense necessities in the following periods of time:

Manufacture of shells in large quantities: Time required to get into production, six to 24 months, depending on quantity.

Production of fuse timers for shells: Time required, 12 to 15 months.

Manufacture of gun mounts and other gun accessories: Time, four to 24 months, depending on type and quantity.

Manufacture of special and standard lighting equipment, including the newly developed radio-controlled seadrome contact lights: Time, some production at once.

Generators and motors for aircraft auxiliary power: Time, eight to 12 months.

Radio equipment for military use on land, at sea or in the air: Time, six to eight months.

Four Years for 50,000 Planes

The goal of 50,000 airplanes should be reached by the spring of 1944, writes T. P. Wright, vice president in charge of engineering, Curtiss-Wright Corp., New York, and advisor on aviation, national defense advisory commission, in *Aviation*. Mr. Wright estimates airplane production can be raised to 24,000 a year in 30 months and that a production rate of 36,000 a year can be achieved in four years. To raise production to 50,000 planes a year would require five years.

What the President's proposed program means, he says, figures up to a total of 75,000,000 square feet of manufacturing floor space, compared to 8,800,000 square feet at present; a manufacturing personnel of 680,000, against about 100,000 now; and an anticipated annual cost of \$3,560,000,000.

Production of big guns and heavy armor plate involves processes that by their nature require a long time and which cannot be reduced. Gen. George C. Marshall, army chief of staff, recently stated two and one-half years would be required to build a 16-inch gun and carriage.

Armor plate manufacture also involves a long and complicated process requiring months. Add to this a shortage of capacity for the tremendous tonnage to be required for the huge naval expansion program and the time problem becomes sobering.

Youth Goes to Summer Schools To Learn Mechanical Skills

■ INITIAL steps in federal government's national labor-training program have been taken, although details are not complete. Students are being enrolled for vocational training to be given in public schools during the summer. Present facilities, according to Sidney Hillman, member of the national defense advisory commission in charge of labor and labor training, are sufficient to accommodate 150,000.

Fifty thousand will be taken from WPA rolls, and will receive WPA wages while acquiring mechanical skills that will enable them to participate directly in the defense program. Balance will be selected through state employment services co-operating with United States employment service and from workers already employed in industry but who wish to improve their skill.

Public schools' vocational training facilities will be utilized in the project, which has received the President's approval. Funds totaling \$17,281,430 have been allotted for the program. Local school officials will be responsible for the conduct of classes.

Existing advisory committees, including employer and labor representatives, will consult with local supervisors or vocational education directors concerning local needs. Additional equipment to increase training facilities probably will be secured from companies possessing machines now idle, about to be replaced or obsolete, but still considered satisfactory for training purposes.

Offer Varied Training

Trade schools included in this program will offer instruction for aircraft mechanics, machinists, auto mechanics, sheet metal workers, welders, cabinet makers, pattern-makers, electricians, blacksmiths, riveters, lathe operators, punch press operators, drill press operators, draftsmen, and for assembly line operatives.

Entire program is based on industry's preponderantly greater need for semiskilled men than for workers with a very high degree of training. Former can be taught requisite skills with minimum time and expense, according to Mr. Hillman. Set-up men and other key workers, who must understand every phase of manufacture of certain products, can be trained only very slowly. Industry itself is considered best fitted for their development.

Additional voluntary training

courses are being made available directly through the national youth administration and civilian conservation corps. Their purpose is to develop good working habits and elementary basic skills in simple operations involving primarily use of hand tools.

NYA, which has been giving shop, metal and construction work for several years, as well as other training in industrial occupations, has increased its training facilities in these lines. CCC, with enrollment averaging 280,000, will use its central repair shops and its regular work programs for training purposes. Special mechanical courses are offered for after-working hours, and are entirely voluntary. Number who have elected to take the extra work is not yet known.

Determination of skills possessed by individuals now available for employment is first problem to be solved to insure adequate supplies

of skilled labor. Federal security agency's employment service division is making a complete classification of its active file, totaling 5,500,000 workers. They will be classified by skills and states as reported by applicants for employment. Tests are being devised to aid in determining each applicant's skill.

Labor department's apprenticeship committee is prepared to provide a major expansion in its apprenticeship training program, with co-operation of industry and labor. Reporting to Secretary Perkins, the committee declared future skilled workers will be trained through carefully developed standards, and not by short-cut methods or through government subsidies. Particular attention will be paid to training skilled craftsmen upon whom depends the smooth flow of work, rather than upon the semiskilled.

Combined facilities of national, community and industrial training programs are estimated sufficient to accommodate 1,500,000 should that many be required, according to Mr. Hillman. Present estimates, however, indicate fewer will be needed for defense program's completion.

Efforts are being made to offer

Walsh-Healey Steel Awards

■ IN THE week ended June 29 the government purchased \$3,377,120.52 worth of iron and steel products under the Walsh-Healey act as follows:

	Commodity	Amount
Carnegie-Illinois Steel Corp., Denver	Reinforcement bars	\$45,005.55
R. H. Alken Co., Winthrop Harbor, Ill.	Target carriers	14,396.00
Hackensack Cable Corp., Hackensack, N. J.	Steel cable	11,773.80
John A. Roebbing's Sons Co., Trenton, N. J.	Steel cable	13,096.20
Electric Heater Co., Bridgeport, Conn.	Barrels	29,074.50
Crane Co., Washington	Steel valves	+9,743.11
Vega Airplane Co., Burbank, Calif.	Trainer assemblies	63,550.00
Carpenter Steel Co., Reading, Pa.	Steel rods	+61,528.22
Crucible Steel Co. of America, New York	Steel rods	+62,002.72
Colorado Fuel & Iron Corp., Denver	Mesh fabric	51,200.10
Lakeside Bridge & Steel Co., Milwaukee	Gate machinery	41,600.00
York Safe & Lock Co., York, Pa.	Gun carriages	829,500.00
Bethlehem Steel Co., San Francisco	Reinforcement bars	10,128.00
Saginaw Steering division, General Motors Corp., Detroit	Machine guns	726,004.00
Joseph A. Lorch, Washington	Revolvers	*27,676.00
U. S. Steel Export Co., Washington	Structural steel	86,064.57
Eclipse Machine division, Bendix Aviation Corp., Elmira Heights, N. Y.	Steel liners	22,590.00
Combustion Engineering Co. Inc., New York	Coal burning boiler	15,934.00
Midvale Co., Washington	Nickel steel	19,743.75
Budd Wheel Co., Detroit	Fuse plugs	15,636.00
Wm. R. Bootz, successor to Crescent Stove Works, Evansville, Ind.	Practice bombs	14,012.50
Clemson Brothers Inc., Washington	Hacksaw blades	11,288.85
National Tube Co., Washington	Steel flasks	13,240.85
Columbia Steel Co., Washington	Steel anchors	87,320.00
Doehler Die Casting Co., Pottstown, Pa.	Miniature bombs	15,100.00
Winona Machine & Foundry Co., Winona, Minn.	Stretcher weights	52,028.54
Norris Stamping & Mfg. Co., Los Angeles	Cartridge containers	333,728.60
Evans Products Co., Detroit	Sections for powder charges	28,169.00
Midvale Co., Washington	Steel forgings	134,640.00
Bethlehem Steel Co., Bethlehem, Pa.	Steel forgings	210,000.00
Crucible Steel Co. of America, New York	Steel forgings	23,100.00
Herring Hall Marvin Safe Co., Hamilton, O.	Safes	14,217.00
Holley Carburetor Co., Detroit	Test benches	13,655.65
Rochester Ropes Inc., Jamaica, N. Y.	Steel cable	11,966.28
Struthers Wells-Titusville Corp., Titusville Forge division, Titusville, Pa.	Propeller shafts	27,582.00
Surface Combustion Corp., Toledo, O.	Annealing furnace	12,911.00
Pennsylvania Forge Corp., Philadelphia	Steel forgings	107,016.03
Midvale Co., Philadelphia	Steel forgings	110,897.70

*Indefinite. †Estimated.

various types of training in about the same proportion as industry's requirements are expected to be. Hope has been expressed that when the mobilization peak has passed industry will be able to absorb the added workers into other production.

Dr. Will W. Alexander, vice president, Rosenwald fund, Chicago, has been appointed to the staffs of Mr. Hillman and Paul V. McNutt, federal security administrator. Dr. Alexander, who recently resigned as farm security administration administrator, will devote his time to planning the youth training program to meet defense requirements.

Appointment of a labor policy advisory committee consisting of representatives of the American Federation of Labor, Congress of Industrial Organizations and the Railway Labor Executives association was announced last week by Mr. Hillman. This committee recommended that in so far as possible the allocation of orders for defense materials should be so distributed as to make the fullest possible use of workers now unemployed. It was therefore recommended that an inventory of experience and skills of unemployed union members be undertaken at once to assist in making available such skilled workers as may be required by private industry in meeting defense needs.

COMPULSORY TRAINING BILL STUDIED BY CONGRESS

Congress is currently considering a bill that has a definite bearing on the labor training program. Known as the "selective training and service act of 1940," it was introduced by Senator Burke, Nebraska.

Under its provisions all men between 18 and 65, except those already enrolled in the armed forces of the United States and the national guard and reserves, would be required to register. Men between 21 and 45 would be liable for training and service, at home and abroad, in land and naval forces. Those between 18 and 21, and 45 to 65 would be liable only for training and service in home defense units, near their place of residence.

Basic training period, during peace time, would be eight months, although it could be extended at congress' discretion. Proposed pay would be \$5 per month, plus traveling expenses. For ten years after training, or until they reach 45, trained men would be reservists. They would be subject to additional training for not more than one month in any year, and not oftener than three years in any five.

Further provision is made that
(Please turn to Page 32)

Dominion Moves To Aid Industry Obtain Machine Tools, Equipment

TORONTO, ONT.

TO INSURE supplies of machine tools and other equipment for Canada's rapidly expanding war industries, the government has organized the Citadel Merchandising Co. Ltd., with offices in Montreal, and representatives in Ottawa and New York. Company will operate as a nonprofit organization under direct supervision of C. D. Howe, minister of munitions and supply. Officers are: President, Thomas Arnold; vice president, L. J. Belnap; directors, J. D. Johnson, C. E. Gravel and F. K. Morrow.

The Citadel company will aid manufacturers having war material orders obtain tools and equipment, both of Canadian origin and from the United States.

The Dominion's aircraft industry will receive special assistance in accelerating production by the Federal Aircraft Ltd., a new company whose activities will be supervised by Mr. Howe. Federal Aircraft officers are: President, R. P. Bell; directors, Sydney Dawes, Blair Gordon, Russell Smith and Allen Aiken.

Both the Dominion and Great Britain are increasing expenditures for war materials, and production, now at capacity in many plants, is being increased further. The Dominion's expenditures this year will exceed \$1,000,000,000, according to present plans. Great Britain is reported planning to place additional orders in Canada of \$100,000,000.

To speed up mechanical transport production, the Canadian automotive industry is making large expenditures for plant additions and equipment. Following announcement last week that General Motors Corp. of Canada Ltd., Oshawa, Ont., is spending \$3,000,000 on plant improvements, Ford Motor Co. of Canada Ltd., Windsor, announces work has started on a \$700,000 addition, Canadian Bridge Co. handling the steelwork contract. The new Ford plant will produce machine gun carriers. Over 50 per cent of the Canadian Ford plant now is being used for making military machines.

Canadian primary steel producers are maintaining production at a record breaking pace, but despite this, output is being augmented by heavy imports of finished and semifinished steel from the United States.

For some time past imports of steel into Canada from the United States have averaged better than 20,000 tons weekly, with an additional 10,000 tons of scrap.

Dominion Steel & Coal Corp. Ltd.,

is maintaining operations well above normal capacity at its Sydney, N. S., works. New records are made frequently in production of iron, steel and coal. In addition to the two-year British contract for ingots, officials report an expanded British market for iron ore from the company's mines at Wabana, Newfoundland, following the collapse of deliveries from France, Spain and Sweden. Stocks of iron at Wabana as at May 1, were reported at 850,000 tons when decision was reached to operate at half time. Now the company has returned to full time production schedule.

War Orders Total \$6,214,891

Department of munitions and supply last week awarded 1366 contracts totaling \$6,214,891. The more important orders:

Aircraft supplies—Canadian Vickers Ltd., Montreal, \$1,932,984; Canadian Pratt & Whitney Aircraft Ltd., Longueuil, Que., \$1,468; Aluminum Co. of Canada Ltd., Montreal, \$19,777; Aviation Electric Ltd., Montreal, \$112,750; British Aeroplane Engines Ltd., Montreal, \$16,417; Noorduyn Aviation Ltd., Montreal, \$40,665; Irvin Air Chute Ltd., Ottawa, \$86,713; Metallic Roofing Co. of Canada Ltd., Ottawa, \$6568; Robert Mulhall, Ottawa, \$21,448; Ontario Hughes Owens Co. Ltd., Ottawa, \$152,789; Stanley Mfg. Co. Ltd., Toronto, \$119,106; Lockheed Aircraft Corp., Burbank, Calif., \$5578.

Machinery and tools — Canada Iron Foundries Ltd., Montreal, \$130,039; George W. Crothers Ltd., Toronto, \$9500.

Electrical equipment — Canadian National Telegraph Co., Montreal, \$21,660; Canadian Pacific Railway Co., Montreal, \$12,320.

Ordnance — British air ministry, England, \$474,655; Canadian Cycle & Motor Co. Ltd., Weston, Ont., \$21,652.

Miscellaneous — R. E. Wood & Son, Chester, Pa., \$32,252; Empire Brass Mfg. Co. Ltd., London, Ont., \$27,303; General Steel Wares Ltd., Ottawa, \$8084; Noorduyn Aviation Ltd., Montreal, \$8547.

Construction—E. G. M. Cape & Co., Montreal, \$134,477; Metropolitan Electric Co. Ltd., Montreal, \$90,668; Johnson Bros. Co. Ltd., Brantford, Ont., \$364,032; Bennett & White Construction Co. Ltd., Edmonton, Alta., \$194,612; Poole Construction Co., Regina, Sask., \$692,000; A. W. Robertson, Ltd., Toronto, \$177,000.

Labor Board's Decision 99 Per Cent Invective, Says Weirton

■ COMMENTING on the national labor relations board's finding against the Weirton Steel Co., in its dispute with the Steel Workers' Organizing committee, T. E. Millsop, the company's president, last week stated:

"In this decision the labor board followed the same tactics it used in issuing the original complaint. The newspapers were given copies of the decision a day before it was issued to the company. As a result we have not had a chance to examine the decision carefully. However, a cursory examination of its 98 pages indicates that it is about 99 per cent invective and 1 per cent substance.

"It is a startling document. Among other things it condemns the company because the *Employees' Bulletin* (Weirton paper) contained extracts of speeches by a United States senator and a congressman and published reprints of articles by Boake Carter and Westbrook Pegler.

Chief Demand Dismissed

"At the hearing the SWOC claimed over 300 men should be reinstated with back pay. Only 17 have been qualified and the balance dismissed. The company has approximately 12,000 employees. Nearly three years ago the hearing started and preparation of the decision has required 18 months. The fact that the board awards back pay to 17 men for the years consumed in hearing the case, confirms proof of the board's notorious disregard for the rights of employers.

"It is significant that two of the 17 men now are being prosecuted in connection with signatures on communistic petitions. Throughout the hearing the board prevented the company from presenting proof of communistic activities on the part of its opponents.

"The decision dismisses the CIO demand for recognition because CIO did not show substantial membership among company employes. This is in complete opposition to original claims of the CIO which brought about the hearing.

"Efforts of the board to abolish independent unions established by the workers are in line with its general policy of assisting CIO in its efforts to stamp out rival labor organizations. Whether the Weirton workers will accept such domination by the board is a matter for them to decide. Exception to the decision will be filed and the case will

have to be decided by the courts because the company is convinced that the board by its conduct of the hearing disqualified itself from rendering an impartial decision."

The company was given 30 days in which to prepare a reply.

The board found the company violated the national labor relations act at its three plants by engaging in "flagrantly unfair" labor practices. It held the company dominated the Weirton Steel employes' representation plan and its auxiliary, Weirton Steel Employes' Security league, as well as Weir-Cove Community Security league and used them as the spearhead of an attack on the CIO.

Company's antiunion campaign, the board stated, also included use of labor spies, special watchmen, assaults, beatings, terrorism, evictions and exclusions from work. Coercive propaganda, it is charged, was likewise used by the company.

Further announcement was made by the board that it proposed to order Weirton to disestablish its allegedly company-dominated unions, provide financial and job restitution to employes adversely affected by the company's policies, and cease showing favoritism to any labor union.

Litigation by the federal government against Weirton Steel Co. was begun in 1934, under the national recovery act. Suit was filed at that time by the NRA labor board on charges preferred by the Steel Workers' Organizing committee. When NRA was outlawed by the Supreme Court the case was dropped.

The present case was filed in 1937, shortly after the Wagner act was passed. Volumes of testimony, more than 30,000 pages, were recorded in course of the hearings, over a period of more than 200 days. About 500 witnesses were called upon to testify, and nearly 4000 exhibits were offered. Hearings were held in Weirton but were moved to Steubenville after Edward G. Smith, trial examiner, had been hung in effigy during a series of labor demonstrations.

Republic Ad Pledges

"Defense for America"

■ "Defense for America" and every effort to help keep this nation safe for Americans is pledged in a new advertising series of Republic Steel Corp., Cleveland. Signed by T. M.

Girdler, chairman of the board and R. J. Wysor, president, the advertisement stresses steel's importance as the first line of national defense.

According to the advertisement, steel is essentially a peace-time industry. Because normal demand is so great, steel producers in time of emergency can supply more and better steel.

"And now, seeing but dimly through the haze that clouds all business prophecy, but realizing our own deep responsibility, Republic, vital to peace-time prosperity, pledges its every effort to help keep America the way we know it and love it . . ." concludes the advertisement.

Gear Sales in June Decrease 3 Per Cent

■ Gear sales in June were 3 per cent below May this year and 43 per cent above June, 1939, according to American Gear Manufacturers association, Wilkinsburg, Pa. Sales for six months this year were 35 per cent above same period in 1939. Comparative index figures:

	1940	1939
January	123	91
February	116	86
March	114	104
April	128	88
May	133	93
June	129	90

Average monthly index figure for first six months this year is 124 compared to 92 for same period in 1939.

Allegheny Ludlum's Profit \$1,008,000 for Quarter

■ Allegheny Ludlum Steel Corp., Brackenridge, Pa., reports consolidated net profit earned in quarter ended June 30 totaled \$1,008,121. This was equal, after preferred dividend requirements, to 76 cents per share on common, and compares with net profit of \$147,740 or 7 cents per share on common in the second quarter last year. Revised net income for first quarter this year was \$966,598, equal to 72 cents per common share.

Total net income for six months ended June 30 was \$1,974,719, equal to \$1.48 a share on common; net profit in same period last year was \$354,322 or 19 cents a share on common.

Corporation also declared a \$1.75 quarterly dividend on its preferred stock, payable Sept. 3 to record of Aug. 15.

J. D. Leary Dies

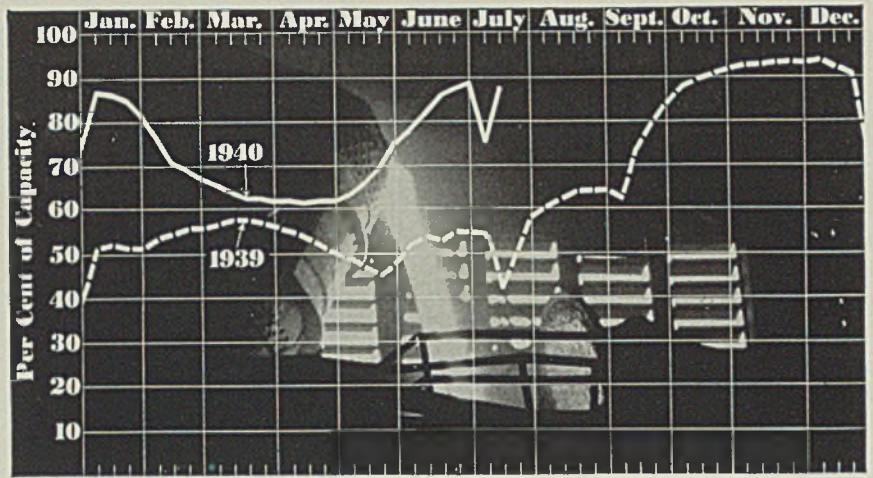
■ J. D. Leary, vice president, Cincinnati Steel Casting Co., Cincinnati, died at his home in that city, July 11.

Six Months Steel Output 37% More Than Year Ago

Production of 5,532,910 net tons of open-hearth and bessemer steel ingots in June brought the total for the first half this year to 28,678,124 tons, 37 per cent more than 20,958,723 tons made in the corresponding period last year.

June output was 14 per cent above that of May, 4,841,403 tons, and 57 per cent above 3,523,880 tons produced in June, 1939.

American Iron and Steel institute also reports the steel industry operated at an average of 84.97 per cent of capacity in June, compared with 72 per cent in May, and 53.71 per cent in June, last year. In the first six months this year operations averaged 72.64 per cent; in the first six months last year, 52.98 per cent. Production averaged 1,289,723 tons per week in June.



PRODUCTION... Up

STEELWORKS operations last week advanced 13 points to 88 per cent, one point lower than the pre-holiday week. All 12 districts showed gains from the low of the preceding period. Last year the rate was 50.5 per cent; two years ago it was 32 per cent.

District Steel Rates

District	Percentage of Ingot Capacity Engaged In Leading Districts		Same week	
	Week ended July 13	Change	1939	1938
Pittsburgh	80	+16	44	25
Chicago	95	+18	50	32.5
Eastern Pa.	84	+12	40	27.5
Youngstown	84	+14	53	30
Wheeling	94	+19	79	46
Cleveland	77	+8	43	26
Buffalo	90.5	+16.5	37	35
Birmingham	88	+17	80	42
New England	85	+5	40	35
Cincinnati	77.5	+23.5	21	38
St. Louis	65	+13	45	18
Detroit	92	+13	64	29
Average	88	+13	50.5	32

Birmingham, Ala.—Gain of 17 points to 88 per cent placed production at the level prevailing before the holiday. One open hearth was added and one was taken off.

St. Louis—Rate rose 13 points to 65 per cent, 16 open hearths being in production.

Cincinnati—Rebound of 23½ points to 77½ per cent as additional capacity was engaged after the previous week's layoff.

Detroit—With 24 of 26 open hearths active the rate gained 13

points to 92 per cent, the level of the preceding week.

Chicago—An increase of 18 points to 95 per cent brought production to the highest point this year, the same as the 1939 peak.

Cleveland—Rise of 8 points to 77 per cent with drop to about 60 per cent expected this week as a leading producer curtails for vacation.

Central eastern seaboard—With one independent operating above theoretical capacity, production last week rose 12 points to 84 per cent, 1 point above the pre-holiday week.

New England—Regained 5 points to 85 per cent, the level of the week preceding July 4.

Pittsburgh—Addition of 16 points to 80 per cent, with higher level expected this week.

Wheeling—Advanced 19 points to 94 per cent, passing the former mark of 90 per cent, with probability of this level being maintained.

Buffalo—Production last week was 16½ points higher, at 90½ per cent.

Youngstown, O.—With 68 open hearths and three bessemer in operation the rate is 84 per cent, up 14 points. The same production is scheduled for this week. Pittsburgh Coke & Iron Co. has blown in its stack at Sharpsville, Pa., and Youngstown Sheet & Tube Co. will blow out one stack this week for rebuilding.

Reorganization committee of Follansbee Bros. Co., has notified employes and stockholders that the entire assets of the company have now been transferred to the new Follansbee Steel Corp. The notice also states that operations at the Follansbee, W. Va., plant are now at about 80 per cent of capacity.

Steel Ingot Statistics

Period	Calculated Monthly Production—All Companies		Calculated Weekly production, all weeks in		Number of companies in
	Open Hearth	Bessemer	Open Hearth	Bessemer	
	Net tons	Per cent capacity	Net tons	Per cent capacity	of companies in
1940	Reported by Companies which in 1939 made 97.97% of Open Hearth and 100% of Bessemer.				
Jan.	5,369,601	86.40	285,714	56.10	1,276,595
Feb.	4,203,508	72.37	205,527	43.19	1,064,984
March	4,073,196	65.54	191,559	37.62	962,699
April	3,798,371	63.11	176,335	35.76	926,505
May	4,582,694	73.74	258,709	50.80	1,092,867
June	5,228,529	86.88	304,381	61.72	1,289,723
6 mos.	27,255,899	74.70	1,422,225	47.57	1,102,581
1939	Reported by Companies which in 1939 made 97.97% of Open Hearth and 100% of Bessemer.				
Jan.	3,413,783	55.35	165,080	27.22	807,870
Feb.	3,149,294	56.55	219,621	40.10	842,229
March	3,621,177	58.71	217,950	35.93	866,620
April	3,122,418	52.27	230,356	39.22	781,532
May	3,104,697	50.34	190,467	31.40	743,829
June	3,314,012	55.48	209,868	35.73	821,417
6 mos.	19,725,381	54.76	1,233,342	34.82	810,155
July	3,308,029	53.75	256,798	42.43	806,522
Aug.	3,965,515	64.29	276,479	45.58	957,561
Sept.	4,436,792	74.45	332,676	56.77	1,114,362
Oct.	5,626,585	91.22	453,492	74.77	1,372,500
Nov.	5,694,788	95.34	452,995	77.12	1,433,050
Dec.	5,468,880	88.87	353,134	58.35	1,317,198
Total	48,226,070	66.43	3,358,916	47.05	989,355

The percentages of capacity for 1939 are calculated on weekly capacities of 1,392,331 net tons open hearth ingots and 136,918 net tons Bessemer ingots, total 1,529,249 net tons; based on annual capacities as of Dec. 31, 1938, as follows: Open hearth ingots, 72,596,153 net tons; Bessemer ingots, 7,138,880 net tons.

The percentages of capacity operated for 1940 are calculated on weekly capacities of 1,402,899 net tons open hearth ingots and 114,956 net tons Bessemer ingots, total 1,517,855 net tons; based on annual capacities as of Dec. 31, 1939 as follows: Open hearth ingots, 73,343,547 net tons; Bessemer ingots, 6,009,920 net tons.

MEN of INDUSTRY

■ MOWRY E. GOETZ has been appointed district manager at Chicago for Republic Steel Corp., Cleveland, with F. R. Ward as assistant district manager. Mr. Goetz succeeds J. L. Hyland, who recently was made district manager of Republic's Cleveland operations. Mr. Goetz joined Republic in March, 1940, and previous to that was associated with Northwest Steel & Wire Co., Sterling, Ill., as general superintendent. In addition to South Chicago and Grand Crossing works in Chicago, Mr. Goetz also has charge of the Sylvan works in Moline, Ill.



Mowry E. Goetz

W. S. McKee, for several years credit manager, Jones & Laughlin Steel Corp., Pittsburgh, has been named assistant treasurer.

Gordon Fox, vice president, Freyn Engineering Co., Chicago, has assumed office as president, Western Society of Engineers.

S. Sloan Colt has been elected a director, General Electric Co., Schenectady, N. Y., succeeding Seward Prosser, resigned. Mr. Colt is president, Bankers Trust Co.

John R. Haysak, associated with Ferry Cap & Set Screw Co., Cleveland, 21 years, has been elected a vice president in charge of factory management.

Frank Parker, president, Iron & Steel Products Inc., Chicago, has been appointed to the railroad scrap committee of the Institute of Scrap Iron and Steel Inc., New York.

H. M. Lane has joined Paul Maehler Co., Chicago, as foundry research engineer. His experience in design of foundries and installation of equipment dates back some 40 years.

Henry S. Hall, until recently open-hearth fuel engineer, American Rolling Mill Co., Middletown, O., has joined Lukens Steel Co., Coatesville, Pa., as fuel engineer.

K. T. Davis has joined the sales engineering staff of Drever Co., Philadelphia. Mr. Davis was for a number of years vice president and general manager, Tate-Jones & Co. Inc., Leetsdale, Pa.

H. A. Taylor, for 14 years New York district manager for Concrete Steel Co., has joined the New York office of Truscon Steel Co., Youngs-

town, O. He will be in charge of sales of reinforcing bars, steel joists and kindred products.

George B. Troxell, associated with Bethlehem Steel Co., Bethlehem, Pa., since 1916, serving in the operating, metallurgical and sales divisions, returned to this country last week, after spending about three months in England and France.

Frank E. Billings has been elected president and treasurer, Worcester Stamped Metal Co., Worcester, Mass. Carl F. Carlstrom has been made vice president and general manager, and Wayne E. Billings, secretary.

T. R. Lippard, associated with Federal Motor Truck Co., Detroit, since last fall as vice president in charge of sales and engineering, has been elected president, general

manager and a director. He succeeds R. W. Ruddon, resigned. Mr. Lippard has been identified with the motor truck industry over 28 years, and for a number of years was president, Stewart Motor Corp., Buffalo.

E. Q. Camp, Humble Oil & Refining Co., Baytown, Tex., has been appointed a member, American Petroleum institute's committee on corrosion of refinery equipment, and committee on disposal of refinery wastes. Mr. Camp succeeds W. R. Hicks in both groups.

Lewis M. Clement has been appointed manager, engineering division, Crosley Corp., Cincinnati. Before joining Crosley he was chief engineer for Radio Corp. of America, and before that was associated with Westinghouse Electric & Mfg. Co., Western Electric Co., and others.

R. V. Clay, vice president and general manager, Hanna Coal Co., St. Clairsville, O., will take over marketing and other executive duties with the company's Cleveland office July 15. He will be succeeded as general manager in charge of operations at St. Clairsville by James Hyslop.

William M. Jensen has resigned as district sales manager, Pittsburgh Steel Co., Pittsburgh. Mr. Jensen was district sales manager for 13 years, 10 years at San Francisco, two years at Chicago and the past year at Pittsburgh. He is returning to San Francisco where he will go into business as manufacturers' agent.

Dr. Andrey Abraham Potter, dean of the schools of engineering, and director, engineering experiment station, Purdue university, has been awarded the Lamme medal for 1940 by the Society for the Promotion of Engineering Education, for his many achievements in the advancement of engineering education and its application to industry.

F. F. Hickey, heretofore vice president, Savage Arms Corp., New York, has been elected president. He succeeds W. L. Wright, who has become chairman. Mr. Hickey's headquarters will remain in Utica, N. Y., and Mr. Wright's in New York. E. A. McDonald, secretary-treasurer, has been elected vice president and treasurer, and G. T. Wood, formerly assistant treasurer and assistant secretary, has been chosen secretary. G. Noble David-



Henry S. Hall

son, of Chicopee Falls, Mass., formerly works manager, has been named general manager, while F. R. Phillips continues as vice president.

Frank L. Driver was elected president, Driver-Harris Co., Harrison, N. J., at the directors' meeting in June. Other officers elected: Executive vice president and treasurer, Stanley M. Tracy; vice president in charge of foreign subsidiaries, John Drennan; vice president in charge of sales, F. V. Lindsey; vice president in charge of manufacturing operations, H. D. McKinney; secretary and assistant treasurer, Ernest A. Harleman; assistant secretary, Mildred W. Clark.

Don L. Orton has been named factory representative for Louis Allis Co., Milwaukee, in the Calumet



Don L. Orton

area, with headquarters at 8600 Pine avenue, Gary, Ind. Mr. Orton has served industry in this area in a sales engineering capacity for many years.

Fred L. Plummer, Cleveland, who has been retained by a United States corporation as consultant in a soil slip problem threatening its South American plant, left by plane last week for Paramaribo, Surinam (formerly Dutch Guiana), S. A. On his return to this country July 20, he will reside in Warren, Pa., as chief research engineer for Hammond Iron Works.

C. S. Thayer, for 17 years superintendent of the Niagara Falls, N. Y., plant of Aluminum Co. of America, has been transferred to the company's new plant at Vancouver, Wash., where he will serve as general plant superintendent. Accompanying Mr. Thayer to Vancouver will be David H. Beeten, former operating assistant at Niagara Falls,

who will occupy the same position in the new plant. John B. Holmes, assistant superintendent, Niagara Falls plant, has been named plant superintendent there.

John S. Roney has been appointed exclusive factory representative in eastern Michigan for McKenna Metals Co., Latrobe, Pa., with headquarters at 14425 Mark Twain avenue, Detroit. Mr. Roney was for some time associated with American Rolling Mill Co., Middletown, O., and later was sales engineer for Foote Bros. Gear & Machine Corp., Chicago.

J. Eugene Jackson, the past eight years associated with Chase Brass & Copper Co., Cleveland, as assistant process metallurgist, has been named metallurgical engineer, Copper Iron and Steel Development association, to succeed Tom E. Barlow, recently resigned (STEEL, June 3, p. 28). Mr. Jackson, who attended the University of Texas, will direct the research, development and service activities of the association. Office of the association will be retained at 5005 Superior avenue, Cleveland.

Charles H. Chatfield and Frank W. Caldwell have been appointed executive assistant to the vice president and director of research, respectively, United Aircraft Corp., East Hartford, Conn. Erle Martin has been made engineering manager, Hamilton Standard Propellers division, succeeding Mr. Caldwell.

Joseph M. Barr has been named factory manager, Vought-Sikorsky Aircraft division, Stratford, Conn., and James J. Gaffney becomes assistant treasurer and division accountant, succeeding E. H. Glaetli, who has been assigned other duties and will continue as an assistant secretary.

William R. Robbins, now assist-



Harvey S. Johnson

Who has been appointed vice president and general manager, Metal Specialty Co., Cincinnati, as noted in STEEL, July 8, p. 39

ant general accountant of United Aircraft, will succeed Mr. Gaffney as assistant treasurer and assistant secretary, Pratt & Whitney Aircraft division.

J. D. East, statistician for the United States Steel Corp., has been added to the staff of Edward R. Stettinius Jr., of the national defense commission, Washington, as statistician.

John M. Price, the past five years vice president, Ferro Machine & Foundry Co., Cleveland, affiliate of Oglebay, Norton & Co., has been elected president, to succeed the late James F. Leitch. Henry B. Myers, factory manager since 1934, has been named second vice president of the machine and foundry company.

Mr. Price has been associated with Oglebay, Norton & Co. subsidiaries since 1913; was formerly superintendent, Montreal Mining Co. and Castile Mining Co., and from 1929 to 1932 was representative of Oglebay, Norton in the Soviet Union. Mr. Myers since 1911 has been inspector, machine shop superintendent and factory manager of Ferro Machine & Foundry.

Baldwin Locomotive Completes 109th Year

■ Baldwin Locomotive Works, Philadelphia, parent company of the Baldwin Group of Industries, recently completed its 109th year. While primarily a locomotive concern, the company, with other members of the group, manufactures a wide variety of industrial goods.

Under the guidance of Charles E. Brinsley, president, in the last decade it has consistently followed a policy of decentralization and product diversification. Ship propellers, hydraulic presses and diesel engines have been added to the products of the group until they have become a vast workshop for heavy industry.

The Baldwin Group of Industries now consists of: Baldwin Locomotive Works, Philadelphia; Baldwin Southwark division, Eddystone, Pa.; Standard Steel Works division, Burnham, Pa.; Pelton Water Wheel Co., San Francisco; Baldwin De LaVergne Sales Corp., Philadelphia; Whitcomb Locomotive Co., Philadelphia; The Midvale Co., Philadelphia; and Cramp Brass & Iron Foundries Co., Philadelphia.

In more than a century, the parent company has built over 60,000 locomotives. The first was built in 1832 by Matthias W. Baldwin, who thought it would be his last. Recently the company entered the diesel-electric locomotive field with 660 and 1000-horsepower locomotives.

Windows of WASHINGTON



By L. M. LAMM
Washington Editor, STEEL

Government May Ease Up on Antitrust Prosecution.
Commerce Department To Expand Industrial Survey.
Beryllium Suggested as Partial Substitute for Tin.
Speed Census Tabulations for Defense Commission.

WASHINGTON
■ QUESTION of antitrust prosecutions is currently in the fore with government officials and national defense commission.

Business, co-operating in the defense program as closely as possible, feels there should be some leeway in the Sherman law during the present emergency.

Reports are current justice department officials have informed defense commission members they will refrain from antitrust prosecution, temporarily at least. Nevertheless, business has its fingers crossed, especially as no responsible justice department official has made any public statement to that effect.

Various reports, however, indicate the assertion might be correct. Recently an executive of one of the nation's largest manufacturers was called to Washington and asked to participate in the defense work. Interviewed by a cabinet officer, he called particular attention to the fact his firm was being investigated by the department of justice. He did not want to put himself into a position, he said, of buying off his firm in this case.

The cabinet officer conferred with the attorney general, and the businessman is now working in the defense program. It is reported the justice department has "soft-pedaled" its investigation against his company.

Only other way in which this matter could be handled would be

through legislation. Administration, however, is understood to be opposed to any congressional action regarding the antitrust situation at this time.

Commerce department has requested several hundred representative manufacturing concerns to participate in an expansion of the monthly industrial survey conducted by its bureau of foreign and domestic commerce. Survey provides current information on manufacturers' inventories, new and unfilled orders and shipments.

In its request, the department stated: "The swift turn of recent events has made it even more imperative that business men and government have adequate information on current business movements." Such data are declared particularly essential to keep pace with rapid shifts in placement of orders, shipment of goods, and level of inventories in American factories.

Seek Broader Coverage

Companies already furnishing data, on a voluntary basis, aggregate almost 40 per cent of all manufacturing activity in United States.

Information available provides estimates of new orders received, changes in inventory position and unfilled order backlogs and trend of shipments or deliveries. Data now being released include not only manufacturing as a whole but also 10 major industry groups, including iron and steel goods and machinery.

Current expansion in the survey is reportedly intended to increase number of industries for which data may be made available and to improve accuracy of figures already being released. Manufacturers requested to participate are largely concentrated in the industries where adequate data are not yet available.

Report form has been made as brief and simple as possible, and is limited to four basic items usually maintained on manufacturers' books. Nevertheless, bureau specifically said it does not want any company to incur expense of providing figures not immediately available from its records.

Census Bureau Speeds Tabulation

Representative Brewster, Maine, last week introduced a bill, H.R. 10185, amending strategic metals bill "to require the same survey of the uses of beryllium in alloys that has been made in the uses of tin and other metals and that wherever the uses of beryllium alloys are comparable or superior to those bronzes and other alloys containing substantial percentages of tin, that steps be taken to have produced and stored the necessary quantities of beryllium products as can be successfully used for war purposes and a corresponding reduction in the storage of tin."

Bill was referred to the house committee on military affairs.

Latest data concerning the nation's basic resources for defense—essential industries and their capacity, manpower and what it is trained for, natural resources and where they are located—are being speeded by the census bureau from its 1940 canvass for guidance of the national defense commission.

Thirty-seven key industries, essential to defense plans, have been selected for emergency handling. As 1940 schedules on American manufacturing come to the tabu-



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lating organization in Washington, day-to-day totals are maintained, showing comparisons between 1939 and 1937 as to number of plants of each type, wage earners and value of products.

These running tabulations can be made available to the defense commission on short notice. Thus defense officials can have, at any time, latest figures on key industries by states, as well as accurate measurements of trends in these industries during past two years. Iron and steel, motor vehicles, aircraft and shipbuilding plants and machinery are some of the 37 key industries receiving special treatment.

Nation's labor force will be analyzed to show what workers can do, how many can do each type of work and how they are distributed in various communities. Twelve broad classifications have been set up, including: Professional; semi-professional; farmers and farm managers; proprietors, managers and officials; clerical, sales and kindred workers; craftsmen, foremen and kindred skilled workers; operatives—semiskilled factory workers, machine tenders, etc.; domestic servants; other service workers, such as policemen and firemen; farm laborers and foremen; unpaid family farm workers; laborers, except farm laborers. These figures will be presented for each county.

Other industries related less directly to defense will be analyzed as rapidly as possible after the preferred group.

Decennial census of mines and quarries, covering operations in 1939, is expected to furnish information of vital importance to the defense commission, since about 90 per cent of the raw materials covered is used either directly or indirectly by the nation's basic industries. Statistics covering production of coal, petroleum, iron and manganese ore will be included.

ESTIMATE ITALY'S STEEL OUTPUT AT 1,300,000 TONS

Factors entering into Italy's iron and steel productive capacity indicate that country's output of crude steel from domestic resources during next twelve months may total 1,300,000 metric tons, according to Vice Consul J. L. Goshie, Rome. This is about 52 per cent of the 2,500,000 tons officially estimated to be Italy's maximum annual requirement.

For the balance of her needs, Italy is dependent on foreign sources. Official statistics show that during first half of 1939, net Italian imports of iron and steel, including scrap, crude and semi-manufactured items, totaled 461,203

metric tons. Ninety per cent arrived by sea, 89 per cent via Gibraltar.

Expressed in terms of per day consumption, Italy apparently is capable of producing annually from her own domestic resources sufficient crude steel for 144 days of peace-time consumption. Data concerning amount of emergency stocks of iron and steel on hand in Italy are unavailable.

CONGRESS ADJOURNS FOR DEMOCRATIC CONVENTION

Congress adjourned July 11-22 for the Democratic convention held at Chicago beginning July 15.

Senator Barkley, majority leader of the upper house, announced at adjournment that practically no business will be transacted by the senate during the week of July 22. Some members, he declared, will not be able to return to Washington by that time. He made the statement following an agreement with Senator McNary, minority leader.

SWEDEN'S 1940 IRON, STEEL DEMAND MAY EXCEED OUTPUT

Pig iron production in Sweden during 1939 was unusually high, while ingot and rolled iron output established a new record, according to Commercial Attache George C. Howard, Stockholm. Domestic consumption of ingot rolled and forged iron was approximately 1,000,000 tons last year. Local authorities anticipate the same level will be maintained during 1940.

Whether Swedish iron and steel industry can satisfy this expected demand hinges on fuel, scrap and pig iron supplies. While fuel importation is appreciably improved and no particular difficulty is expected for normal demand, it is currently almost impossible to import scrap and pig iron. Sweden has available capacity for increasing its domestic output of pig iron. Uncertainty as to availability of sufficiently large fuel supplies for such abnormal requirements, however, makes prospects for 1940 questionable.

Compulsory Training Bill Studied by Congress

(Concluded from Page 25)

men whose employment in industry and agriculture is necessary to the national interest be deferred from service under regulations made by the President. Local boards would pass on the deferments. Grounds for deferment would include: Dependents, key position in industry or agriculture, essential

employment, occupation or profession requisite to national defense program. Every effort would be made to disturb civilian morale and productive capacity as little as possible.

Definite classifications indicating which industrial workers would be considered "necessary to the national interest" above all others have not been determined. Undoubtedly, however, men trained to fill anticipated shortages of skilled and semi-skilled workers in metal industries would be so grouped.

Determination of how many men should be called up for military training, and when, would be left to the President.

AERONAUTIC EXPORTS RISE 4 PER CENT IN MAY

Exports of aeronautic equipment in May totaled \$22,590,110, 4 per cent above April, and 118 per cent over May, 1939. Six countries took 84 per cent of the exports as follows:

France	\$10,994,137
United Kingdom	2,642,433
China	1,493,559
Sweden	1,473,467
Australia	1,386,101
Netherlands Indies	1,081,346

May exports consisted of:

309 aircraft	\$14,538,636
397 engines	3,408,915
Engine parts	1,833,076
Instruments	229,482
Propellers	607,070
Parachutes	83,933
Other parts	1,888,998

Exports in the first five months this year totaled \$110,796,758, 189 per cent more than in the like period in 1939. Ten principal markets took 93 per cent of the exports in the five months this year, as follows:

France	\$58,179,125
United Kingdom	13,160,320
Australia	9,387,254
Canada	5,779,606
Finland	3,805,024
Sweden	3,801,067
China	3,176,592
Netherlands Indies	2,367,628
Turkey	1,843,081
Norway	1,441,771

PLANEMAKERS ACCUMULATE BILLION-DOLLAR BACKLOG

Backlog of orders in the aircraft industry now totals about \$1,000,000,000, according to a recent survey. Employees number 100,000. If and when a goal of 50,000 planes a year is reached, it is estimated the industry will employ 700,000 for manufacturing alone.

Backlog of aircraft and affiliated companies in Southern California is \$343,756,762, with an employment of 36,000 and a monthly payroll of \$4,875,000. May orders for this group alone totaled \$123,631,364.

Scrap Inventories Reduced

Nine Per Cent in First Quarter

■ DOMESTIC stocks of iron and steel scrap at consumers' and suppliers' plants and in transit at the close of March approximated 6,669,000 gross tons, or 9 per cent less than 7,302,000 tons reported at the end of December, 1939, according to the bureau of mines.

Included in the March total are 2,380,172 tons on hand and in transit to suppliers' yards and an estimated 4,289,000 tons of purchased and home scrap on hand and in transit to consumers' plants, compared with 2,560,688 tons and 4,741,000 tons, respectively, Dec. 31.

Inventories reported by larger suppliers reporting in both surveys increased 4 per cent, while railroad stocks were 14 per cent lower. Esti-

mates of consumer stocks are based on the assumption that the companies reporting held 94 per cent of such stocks.

Scrap consumption in March totaled 2,906,000 tons, indicating that known stocks held by consumers and suppliers at the end of first quarter were equivalent to ten weeks supply, compared with eight weeks supply as of Dec. 31, at the December consumption rate of 3,773,000 tons.

The accompanying summary of scrap and pig iron stocks was compiled from returns from 761 consumers who accounted for 94 per cent of total scrap used in 1938, and from 66 large railroads and 194 selected manufacturing plants. Fig-

ures also include returns from 930 dealers and 848 automobile wreckers who accounted for 90 per cent of tonnage reported by these sources Dec. 31.

Estimated consumer stocks March 31 included 2,555,000 tons purchased scrap, 1,734,000 tons home scrap, total 4,289,000 tons, and 3,407,000 tons of pig iron. These compare with stocks Dec. 31 as follows: Purchased scrap 3,012,000 tons, home scrap 1,729,000 tons, total 4,741,000 tons, and pig iron, 3,369,000. These represent a decrease of 15 per cent in purchased scrap, virtually no change in home scrap and 10 per cent decrease in total, compared with Dec. 31, while pig iron stocks increased 1 per cent.

No estimate of stocks held by non-consumers was possible as coverage of the canvass, as far as suppliers are concerned, is unknown, though data include virtually complete returns from larger suppliers. Stocks held by dealers, auto wreckers, railroads and manufacturers declined from approximately 2,561,000 tons Dec. 31 to 2,380,172 tons March 31, a decrease of 7 per cent. The downward trend was most evident in the steelmaking areas of western Pennsylvania, eastern Ohio, Illinois, Alabama and Maryland, ranging from 15 to 23 per cent.

1939 Scrap Consumption High

Sharp increases were made in 1939 in scrap consumption, exports and prices and a small increase in consumers' stocks. Pig iron stocks, however, declined. Domestic scrap consumption totaled 32,434,407 gross tons in 1939, an increase of 52 per cent over 1938. Pig iron consumption was 31,457,767 tons, 70 per cent above the previous year. Pig iron used in steel manufacture increased 73 per cent, while scrap used rose only 56 per cent. Proportion of home scrap in steel manufacture decreased from 27.2 per cent in 1938 to 26.4 per cent in 1939. Decrease in purchased scrap proportion dropped from 22.8 per cent in 1938 to 21.0 per cent in 1939. Production of steel ingots rose 66 per cent. Pig iron consumed at foundries increased 51 per cent while scrap charged to iron furnaces increased 40 per cent.

Scrap exports were 20 per cent larger than in 1938, totaling 3,584,439 tons, second only to the record shipments of 1937 in tonnage and value. Open-hearth furnaces in 1939 consumed 22,795,434 tons of scrap, 70 per cent of the total, compared with 14,607,630 tons, 68 per cent, in year of 1938.

Scrap prices fluctuated widely in 1939, the rise during the active war months being the most rapid since June, 1917. Pig iron in 1939 was steady, the only change being an increase of \$2 per ton in September.

Foreign Trade in Scrap

Year	Gross Tons		Exports			
	Imports	Total	Japan	Italy	United Kingdom	Others
1925-29 average	89,333	299,962	93,341	47,936	2,273	156,412
1935	73,953	2,103,959	1,117,973	382,775	277,366	325,845
1936	153,118	1,936,132	1,057,621	285,126	364,874	228,511
1937	81,640	4,101,549	1,911,508	381,394	847,177	961,470
1938	24,451	2,998,607	1,381,801	434,717	387,347	794,742
1939	29,492	3,584,439	2,024,264	425,896	508,293	625,986

Scrap and Pig Iron Stocks March 31

	Gross Tons				
	Suppliers' stocks				Total*
	Scrap iron dealers	Automobile wreckers	Railroad	Manufacturers	
Prepared scrap:					
No. 1 heavy-melting steel	383,557	11,297	74,265	7,223	476,342
No. 2 heavy-melting steel	380,624	41,085	2,868	2,566	427,143
Bundles	116,090	995	244	4,109	121,438
Cupola grades	207,505	4,363	15,710	1,933	229,511
All other	310,152	11,923	152,064	12,316	486,455
Total	1,397,928	69,663	245,151	28,147	1,740,889
Unprepared or partially prepared scrap	387,094	92,981	92,154	1,511	573,740
Scrap in transit to yards or for export and at docks	55,759	3,319	6,465	.....	65,543
Total scrap	1,840,781	165,963	343,770	29,658	2,380,172

*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	699,021	32,830	731,851
No. 2 heavy-melting steel	403,007	30,165	433,172
Bundles	138,462	22,985	161,447
Cupola grades	385,886	17,103	402,989
All other	611,139	21,395	662,534
Total	2,267,515	124,478	2,391,993
Home scrap:			
Open-hearth grades	1,308,558	1,592	1,310,150
All other	313,439	108	313,547
Total	1,621,997	1,700	1,623,697
Total scrap	3,889,512	126,178	4,015,690
Pig Iron	3,229,994	30,311	3,260,305

*As reported. Total consumers' stocks estimated as follows: Purchased scrap 2,355,000 tons, home scrap 1,734,000 tons, total scrap 4,289,000 tons, and pig iron 3,407,000 tons.



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By A. H. ALLEN
Detroit Editor, STEEL

*Mr. Gilman's Experience with the Government.
Conflicting Ideas at Washington Causing Delay.
Packard Receives "Splendid Co-operation from Ford".
More Manufacturers Raise Price To Cover Tax.
2,388,000 Automobiles Scrapped Annually in U.S.*

DETROIT

NEWSMEN here received a hurry-up call last Monday for a press conference with M. M. Gilman, president of Packard Motor Car Co., at which time he was supposed to be ready to answer a barrage of questions concerning the airplane engine contract assumed to be "in the bag" for Packard.

Prior to the press conference Mr. Gilman had talked to reporters—too much in detail, he said later—about the contract which came up for consideration of Packard directors at a special meeting Monday. Involved were 9000 Rolls-Royce Merlin engines, 3000 for the United States government, 6000 for the British government. Tooling program was to require ten months from date of contract, plus expenditure of some \$30,000,000.

An additional 14,000 men were estimated to be required to supplement the present normal Packard working force of 10,000. Initial production was calculated to be 20 engines per month, increasing to 840 per month after five months. Based on earmarked appropriations drawn up by the government, the engines would have a sales price of about \$14,500 each. Supposedly, Mr. Gilman had the contract in his pocket, awaiting only the stamp of approval by directors. The latter, incidentally, include Mr. Gilman, Alvan Macauley, chairman of the board; Truman H. Newberry, Hugh E. Bodman, James T. McMillan, all of Detroit, and R. B. Parker, Packard distributor in Philadelphia.

As reporters filed into Gilman's office, he smiled and said, "Well, boys, I won't talk. I'll have a

statement ready in a minute."

Considerably dumfounded, the reporters started a barrage of questions. Had directors refused to approve the contract? Would Mr. Gilman return to Washington? Was the next move up to the government or to Packard? To all of which came a noncommittal reply. The statement handed out read:

"The matter of a possible contract for the building of Rolls-Royce motors for England and the United States was discussed at a meeting of all of the board of directors of the Packard Motor Car Co. today. Packard Motor Car Co is anxious to be of public service and is hopeful that a satisfactory agreement can be reached, but there are many matters that require further study."

What are some of these "many matters" Mr. Gilman "really could not say." Had the Rolls-Royce representatives, now at the Ford plant, planned to move to Packard? Mr. Gilman did not know. Assuming the contract should be signed, would Packard engineers undertake any further redesign of the engine? Mr. Gilman did not know.

Three Conflicting Philosophies

Upshot of the meeting naturally was that immediate doubt arose over whether Packard directors actually wanted the contract. That last minute disagreement over some phase of the proposal developed there can be no question. But it is still too early to conclude that Packard will not build the Rolls-Royce engines. Some observers

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thought the disagreement probably arose over details of amortizing the large investment in tooling.

One Packard spokesman pointed out that in dealings at Washington on defense matters, a serious situation develops because of three conflicting philosophies—government officials and bureaus operating along quasi-dictatorship lines; industrialists eager and anxious to get orders, but obviously with reasonable profits permissible and some sort of arrangements to cover extra investments for plant and equipment; and labor leaders concerned with protecting organized groups, pegged wages and short hours. Composing these three widely divergent viewpoints is not a simple matter and leads to delays and lost motion.

Two things Mr. Gilman made plain: That Packard had received splendid co-operation from Ford officials who have been studying the Rolls-Royce engine for many weeks; and that regardless of what happened there would be no interference with plans to proceed with normal production and announcement of 1941 models. Should additional plant space be required for aircraft engines, it is believed that nearby idle plants could be acquired. Engine test houses, an important phase of aircraft engine manufacture, could be located at the Packard proving grounds near Utica, Mich.

The Packard plant was closed last week as far as car assemblies were concerned, the final week's run seeing 977 units produced. Model changeover is now in process and by the end of the month some pilot job should be coming off assembly lines. Preview of new models is expected early in August.

Packard has made a number of forays into engine manufacture outside of purely passenger car types. At the time of the last World war, the company launched into manufacture of Liberty motors, building in all some 6500 of these units. Some years later experiments were made with an air-

plane diesel engine, but this was dropped abruptly. Currently the company is building large marine engines for installation in "torpedo" boats for the navy department, and reputedly has carried out extensive development work on new types of aircraft engines, other than the Rolls-Royce design.

An important question seems to be what Ford will do should Packard agree to the Rolls engine building job. Ford has had several hundred men at work for weeks working up design details of the engine and is understood to have perfected some details almost to the production stage. For instance, crankshaft design is reported to have been reworked for steel casting, with a weight saving of around 125 pounds over the British forged steel shaft. No announcement of any suspension of this activity at Ford has been heard.

Another angle to the Ford matter is that the company is supposed to have advanced several million dollars of capital expenditure for its French plant incident to manufacture of the Hispano-Suiza aircraft engine, only to have the contract canceled by the French government. This may have motivated Ford's unwillingness to build any Rolls engines on a British contract.

Retail Prices Rising

The rapidly changing foreign picture has caused conjecture over the possible fate of American-owned assembly and manufacturing plants in Europe. General Motors has long since written off its investments in plants like the Opel factories in Germany and knows little of what is going on there now, except that no passenger cars are being made. An Opel truck plant near Berlin presumably is turning out transport equipment for the military.

A Chrysler assembly plant at Antwerp now is under German control, but advices to this country indicate that it did not suffer to any extent from air attack.

Last week it was announced that private capital in India had subscribed \$7,000,000 for an automobile assembly plant in Bombay, to be supplied exclusively by Chrysler export division. Walchand Hira-chand, allied with shipping interests, heads the local group in India, and initial plans call for assembling Chrysler export models from parts purchased from Chrysler here. No Chrysler capital is involved in the plant or its merchandising activities, according to a Chrysler spokesman here.

Some strange stories are materializing in outlying sections of the country about the effect of the armament program on the automobile industry, all of them without a

vestige of truth. For example, a Plymouth dealer in northern Ohio told a friend two weeks ago that the Plymouth plant in Detroit had shut down to shift its entire production over to guns, thus making an acute shortage of new cars, with the likelihood that no more would be available for several months. Dealers handling other makes of cars have thrown out similar "confidential" tips, probably in the effort to drive in hesitant buyers. When such reports are proved erroneous, the buyer is going to think one of two things—that the dealer is crazy and cannot be trusted, or that the manufacturer is trying to pull the wool over his eyes. In

of this year to 118,571, compared with 80,031 for the first six months of last year. Hudson June sales were 57 per cent ahead of a year ago. Chevrolet combined new and used car and truck sales in June smashed all records for this month, totaling 317,405 units.

Average number of old vehicles scrapped annually in the United States during the last decade amounts to 2,388,000, according to advance figures from the 1940 edition of *Automobile Facts and Figures*. In the same period the average number of new vehicles sold at retail was 2,807,666, indicating that replacement of scrapped vehicles represented 85 per cent of total sales.

Battery of 1000-watt floodlights has been installed on the Cadillac-LaSalle final assembly line to aid close inspection of finishes, upholstery, etc. They provide an average of 700 foot-candles of illumination on bodies, compared with the former 40.

Automobile Production

Passenger Cars and Trucks—United States and Canada

By Department of Commerce

	1938	1939	1940
Jan.	226,952	356,962	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	*366,800
6 mos.	1,305,501	2,055,744	*2,543,674
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	3,792,608	.....

*Estimated.

Estimated by Ward's Reports

Week ended:	1940	1939†
June 15	93,635	78,305
June 22	90,060	81,070
June 29	87,550	70,663
July 6	51,975	42,784
July 13	62,176	61,610

†Comparable week.

either event, the result is distinctly unfavorable.

There is little doubt that such comment is effective in clinching sales. Customers who have been in a vacillating mood are coming through with orders, particularly when the added impact of possible price advances is felt.

Most manufacturers have added several dollars to retail prices to cover advances in federal excise taxes. Some of the increases have been announced publicly; others have been quietly marked down on price tags and nothing further said. Hudson has released a new price list for 1940 models showing advances of \$10 to \$40, as of July 5.

Olds sales for June totaled 18,086, or 44 per cent ahead of June last year. Pontiac June sales exceeded the May total for the third time in the division's history, totaling 23,372, bringing output for six months

Output of Steel-Cutting Carbides Up 372 Per Cent

■ Production of cemented carbide metal designed for steel cutting tools was 372 per cent greater in second quarter this year than in the corresponding 1939 period, according to W. G. Robbins, president, Carboloy Co. Inc., Detroit. An affiliate of General Electric Co., Schenectady, N. Y., Carboloy is a major producer of steel cutting tool metals.

Use of these cutting tool materials, including tantalum and titanium carbides, is increasing phenomenally, said Mr. Robbins. This is partly due to impetus resulting from armament production and the need for extra speed in machining operations.

The company's figures reveal that since the second quarter of 1939, just prior to the start of hostilities abroad, production of carbides for steel cutting tools has increased 60, 255, 282, and 372 per cent for each respective succeeding quarter.

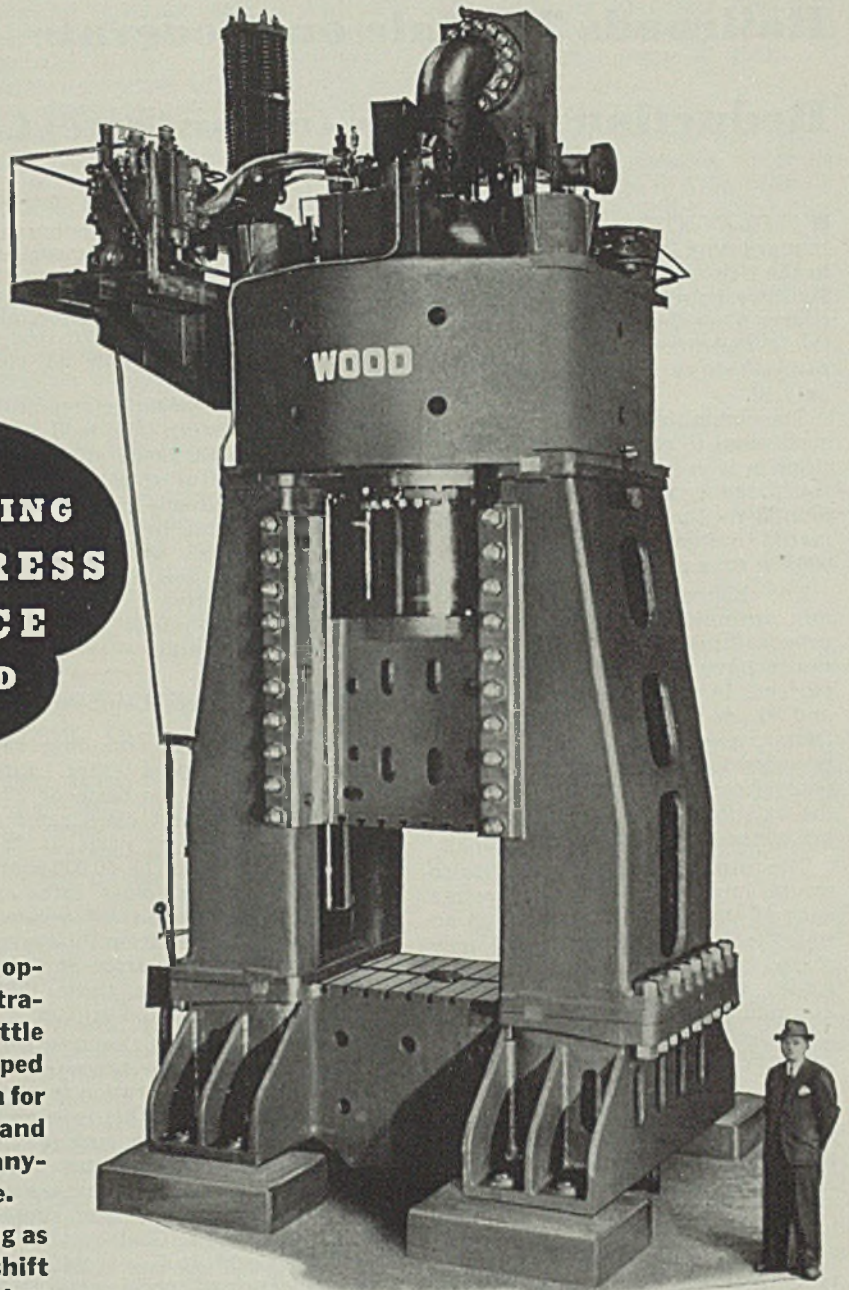
Production of finished steel-cutting tools by Carboloy, as opposed to sale of hard metal blanks only, has shown a comparable increase.

■ "The Eyes Have It," an educational sound slide film portraying methods for preventing eye accidents in industrial plants, has been completed by National Society for Prevention of Blindness Inc., 50 West Fiftieth street, New York. Film, intended for groups of workers, foremen and safety directors was directed by Harry Guilbert, director, bureau of safety and compensation, Pullman Co., Chicago.

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Railroads To Rule on Moderate Reduction in Rates to Southwest

■ THE CONTEST for advantages in marketing iron and steel products in the rich and expanding Texas and Southwest probably will be brought nearer a conclusion when the executive committee of the southwestern railroad lines meets in St. Louis July 16.

The committee will take action on a proposal to effect moderate reductions in iron and steel freight rates from leading midwestern producing plants to the Texas market, estimated to account for 1,500,000 to 2,000,000 tons annually.

The changes now under consideration are mild in comparison with a proposal made last spring which would have resulted in a cut of 40 per cent in the St. Louis-Dallas rate and 30 per cent from Pittsburgh to Dallas, as examples. The proposal provided for minimum cars of 60,000 pounds compared with 40,000 under the existing tariff based upon 32½ per cent of the first class rate.

The structure as proposed also would have placed interior points such as Dallas and Ft. Worth on an equivalent basis with gulf ports, now served by low-cost, direct water routes from the eastern seaboard and midwestern mills via the Ohio and Mississippi rivers and the intra-coastal canal along the Texas coast. As an example, Dallas and Ft. Worth, now paying a rate of 85 cents from Chicago, would have been placed on a parity with Houston and Beaumont with a rate of 55 cents.

Seek To Recapture Tonnage

In summing up reasons for the reductions, the executive committee said in part:

"Heavy tonnage of iron and steel articles is not only being trucked at lower rates and minimum weights than the rail rates from St. Louis, Kansas City and Memphis to points in the southwest for distances exceeding 500 miles, but heavy shipments are moving by barge from Kansas City, St. Louis, Pittsburgh and all other producing points on the Ohio river to Mississippi river crossings, Memphis, Tenn., and south, also to Houston and other gulf ports, from all origins named, including Birmingham.

"Steel is trucked from those points into the interior for distances as much as 500 miles. Cargo contract rates of \$5 per net ton are available from St. Louis to Houston via barge with various rates from Kansas City and other points on the Ohio and Illinois rivers, according to contract price of tows available.

"This proposal contemplates recap-

turing for the railroads the tonnage now being trucked from Missouri and Mississippi river crossings into the Southwest while concurrently meeting the situation from Houston, also other gulf ports and from Mississippi river crossings, Memphis to New Orleans, inclusive."

April 30, the executive committee of the southwestern lines held a public hearing in St. Louis attended by representatives of steel companies, fabricators, railroads and all freight associations with the exception of the Pacific Coast. As a result, the matter of rates was referred to the standing committee on rates of the Southwestern Freight board for further consideration.

Trucking Offers Competition

Subsequently, the standing rate committee proposed that rates should be set on the basis of 27½ per cent of the first class rates in place of the present basis of 32½ per cent, retaining the 40,000-pound minimum. As first class rates are higher from more distant points—for example, higher from Pittsburgh to Texas cities, than from St. Louis—the reduction from those more distant points would be greater.

At a meeting of the executive committee June 19 a new proposal was submitted for consideration in place of Class 27½ rate. This is complicated in character, providing for the publication of specific rates based upon 32½ per cent of the basic scale (shown in Appendix B, 21st supplemental report, I. C. C., docket 13535) plus 10 per cent. It also provides for the application of specific rates from the same origins to various Texas groups. Basic scale deviates from first class basis.

This latest proposal, up for consideration July 16, means that rates are likely to be fixed somewhat higher than Class 27½. After changes are finally approved by the executive committee they will be referred to other interested jurisdictions for consideration and concurrence.

Current discussions over rates, according to interested persons, may be traced back to the fact that for many years, in fact up to the late twenties, the southwestern railroads had a virtual monopoly on movement of goods in the southwestern freight territory comprising Arkansas, Oklahoma, Louisiana and Texas. Rates were and still are 70 per cent higher than in territories

east of St. Louis and are the highest for any territory.

The advent of long distance trucking resulted in new factors in the transportation. Midwestern steel companies found it paid to establish warehouses at strategic points such as Memphis and New Orleans which could be stocked from their mills by low-cost water transportation and which could serve customers economically by truck over a territory with a 500 mile radius.

To compete, producers in the St. Louis, Kansas City and Denver areas found it necessary to move steel into the southwestern territory by truck. About three years ago the situation was further complicated by the opening of the completely sheltered intra-coastal canal from New Orleans to such important points as Orange, Beaumont, Galveston and Houston. Opening of this canal meant that steel could be moved directly by barge from Pittsburgh and other producing centers, without transshipment, at contract rates reported as low as \$5 per ton. Steel also may be moved from the Baltimore area at 36 to 39 cents per hundred.

In an effort to meet this situation the southwestern railroads reduced through rates on steel to coastal points but left tariffs to interior consuming areas unchanged. This means that the rail rate to Beaumont and Houston from Chicago is 55 cents per hundred pounds compared with 85 cents to Dallas and Ft. Worth. The comparative rates from St. Louis are respectively 45 and 74 cents, from Pittsburgh 70 and 94 cents.

With this rate setup, it was quickly discovered that steel could be shipped by water to gulf ports and trucked to a wide area in competition with the railroads. As an example, the truck rate to Dallas from Houston is around 35 cents, and the private carrier cost 20 to 30 cents, both resulting in a net water-truck rate less than direct rail rate.

Importance of Southwestern Market

Increasing importance of the Texas and southwestern market for steel is indicated by the fact that Houston now ranks second only to New York in the United States in sea-borne traffic and third to New York and Philadelphia in total tonnage. Few cities can equal Houston's boast of two large office buildings under construction with a third just completed, all of which were fabricated in Houston by Mosher Steel Co. of that city. In 1939, Houston received 586,352 tons of iron and steel products by water, against 480,884 tons in 1938.

Harris county, in which Houston is located, now is the largest industrial area in the South. The upper end of Houston's channel to the sea

and the intracoastal canal now is lined with chemical plants, flour and paper mills, oil refineries and steel consuming plants. Recently constructed plants of the American Can Co. and the Continental Can Co. probably used most of the 24,494 tons of tin plate brought in by water in 1938—and undoubtedly a larger tonnage in 1939. Texas Co. at Port Arthur uses a considerable tonnage in fabrication of its own cans. One of the steel companies serves the southwestern oil industry from a yard carrying an estimated 100,000 tons of steel pipe.

Serving Oil Industry

It is reported that 80 per cent of the drilling and completion accessories for the southwestern oil industry now are made in Houston and that 85 per cent of the steel required is in alloy grades. Hughes Tool Co. employs 3800 men and Reed Roller Bit Co., 1700. Latter company is spending nearly \$750,000 for new equipment, new buildings and revised plant layout. Texas Electric Steel Casting Co., maker of rough castings for customers like Reed, is expanding capacity.

Wyatt Metal & Boiler Works, with plants in Dallas and Houston, and a specialist in tanks and pressure vessels for the oil industry, has constructed one of the largest stress relieving furnaces in use and has added X-ray equipment for inspecting welds and Unionmelt welding equipment for joining 3-inch plates in a single pass.

About 30,000 tons of steel plates are required for marine drilling rigs and oil transportation barges. One of the leading interests is Pennsylvania Shipyards at Beaumont which also has facilities for building sea-going vessels up to 35-foot draft and now is working on two C-1 ships for the United States Maritime commission. Levingstone Shipbuilding Co. at Orange also builds barges and at one time built two electric ferries for New York city service. Others are Port Arthur Boiler & Welding Works at Port Arthur and Todd Shipyards at Galveston. Consolidated Steel Corp., Los Angeles, recently acquired the Orange Car & Steel Co., Orange, and has expanded its facilities.

The Austin Co., Cleveland, has been awarded a \$5,000,000 contract for a new plant for Dow Chemical Co. to be constructed on 800 acres of land purchased from Freeport Sulphur Co. at Freeport. The Mosher company has the steel contract.

New and growing outlet for steel plates has been found in fabrication of tanks for butane, an unstable oil refinery product now widely used for domestic and industrial heating and driving gas engines for oil drilling rigs. Tanks required range in size

from 50 to 12,500 gallons and already are taking 10,000 tons of steel annually.

As an example of the growth of this phase of the tank business, Dallas Tank & Welding Co., Dallas, made its first butane tank in 1936 and a dozen or so more by the fall of 1938. Since that time production has run into the thousands and the company now is breaking ground for an addition designed to double production.

Skelp has been finding a growing market in deep-well areas. The material is welded into tubes about 24 inches in diameter and varying lengths and driven down to depths of 1500 to 2000 feet to form a casing around the usual drill pipe. It cannot be recovered for re-use.

In the growing steel fabricating industry, many names stand out, such as the Mosher company, Alamo Iron Works and San Antonio Machine & Supply Co., San Antonio; Austin Bros., Dallas structural fab-

STEEL Index Is Ready

The index to Volume 106, STEEL, for the first six months of 1940, now is ready for distribution. Copies will be sent to all subscribers requesting them.

ricators; Ft. Worth Structural Steel Co., Ft. Worth; American Mfg. Co., Ft. Worth, producer of pumping equipment and supplies.

As another indication of steel consumption in Texas, it is estimated that at least 50,000 tons of plates are needed annually for tanks fabricated in shops, mainly for the oil industry, while another 100,000 tons go into tanks erected in the field. For oil drums and barrels, one interest alone buys between 40,000 and 60,000 tons of sheets each year.

Died:

■ JOHN L. JACKSON, 85, manufacturer of machinery since 1881, recently at his home in Saginaw, Mich. He was founder and president, Jackson-Church Co., and in 1906 founded the Jackson-Church-Wilcox Co., which became Saginaw Steering Gear division of General Motors Corp.

Shiloh S. Shambaugh, 71, Florida representative of Continental Steel Corp., Kokomo, Ind., recently at Sanford, Fla.

C. A. Bonerz, 48, an electrical engineer with Cutler-Hammer Inc.,

Milwaukee, at his home near Milwaukee, July 6. He had been with Cutler-Hammer about 31 years.

George Edward Nyman, 41, a member of the engineering department, Gary, Ind., works, Carnegie-Illinois Steel Corp., in Gary recently. He had been with United States Steel Corp. subsidiaries since 1922.

T. W. Thomas, former electrical engineer for Elwell-Parker Electric Co., and Wellman Engineering Co., Cleveland, June 26 in Lindenhurst, L. I., N. Y.

Homer M. Silver, 78, president, Quaker City Foundry Inc., Salem, O., in that city recently. He had been president since the organization was founded in 1927.

Charles C. Warne, 58, general purchasing agent, New York Central system, in Yonkers, N. Y., July 6. He had served New York Central 35 years.

Joseph A. Hirsch, 72, founder and former president, Hirsch Salvage Co., Cleveland, June 29 in that city. Mr. Hirsch headed the scrap metal salvage firm from its organization in 1900 until a year ago.

Fred Arnold, 65, until recently a mechanical engineer with Champion Rivet Co., Cleveland, July 5, in Cleveland. Before joining Champion in 1936, Mr. Arnold was an engineering consultant for White Sewing Machine Co.

Thomas Gore Sr., 80, formerly associated with the Waterbury Wire Rope Co., Brooklyn, N. Y., 40 years, and inventor of a number of improvements in the manufacture of wire and wire rope, at his home at Manhattan Beach, June 28.

Richard Winfield Rhoades, 83, retired president and chairman of the board, R. W. Rhoades Metaline Co. Inc., Long Island City, N. Y., at his home there June 29. Although inactive in business the past 20 years, he remained as president and board chairman until 1938.

Richard G. Wagner, 78, former structural engineer and bridge builder of Milwaukee, June 28, at his home in Miami Beach, Fla. He was the son of the late Julius G. Wagner, who founded Wagner Architectural Steel Works, which later became Milwaukee Bridge & Iron Works and then American Bridge Co. After graduating from Rensselaer Polytechnic institute, he became vice president of his father's firm.

Till Death Us Do Part

■ OUT of the old system of hiring and firing at will, under which individual employers fixed their labor policies to suit themselves, there has emerged a new pattern. When an employer hires a new hand today it is something like getting married. To an extent at least the "bond" is one "till death us do part!" As a result a new concept has become widely accepted. That concept is, that the worker has a property right in his job.

Liberal employers do not see in this concept any dangerous approach toward socialism or any invasion of private property rights. They see it merely as one phase in a trend which has been gathering momentum in recent years—a trend toward greater security for the worker. Indeed, some employers see in this possibilities for insuring preservation of the private property principle. W. L. Batt, president, SKF Industries Inc., Philadelphia, a leading spokesman for industrial management, suggests that management do everything in its power to the end that more people will own more property—not alone buildings and land and automobiles and radios, but *jobs*.

Pride of Possession Helps Morale; Job Security Makes for Better Workers

"This is my machine—my bench—my desk' implies a measure of pride and possession, and if the element of responsibility can be tied to the holding of a job I am not too much concerned over this new concept of property rights," declares Mr. Batt. "But," he adds, "so that no one shall construe this as a justification for such excesses by labor as we have sometimes seen, let me point out that the possession of a property right does not mean its uncontrolled use. Try to burn your own house, use your own automobile to the danger of your neighbor, leave your own mangy dog

to die by the road, and see what society does to you.

"The possession of property is the surest guarantee of its better use, and the more sure labor is in its job the better it is likely to treat that job. This is not 'parlor pink' philosophy but plain common sense."

Many companies have taken positive action in the direction of "job security", "employment stabilization", "compensation adjustment" and the like. Of course, the problem has to be approached in a practical rather than an idealistic manner—for business is business. Jobs do dry up—due to economic and technological dislocations. There is the recurring problem of square pegs in round holes. But these problems need not prevent broad policies aimed at greater security for the employe. An example is the recent Allis-Chalmers contract which provides that employes leaving for military service in time of war may resume their jobs without loss of seniority rights.

Stable Employment Is Sound Business; Helps Maintain American System

Under existing laws that govern and influence employment and employer-employee relationships, employers find it sound business to regularize employment. But there is room for a broader concept—such as the one envisioned by Mr. Batt. Simply stated, it is that through cultivation of loyalty, by establishing a kind of partnership between employer and employe, it is possible to breed employer-employee understanding which will insure perpetuation of our American system.

Such policies actually have been established and are working to the satisfaction both of workers and management in many companies. Unquestionably they will work equally well in many others.

Taxes on Industry Equal \$3.05 Per Common Share; \$329 Per Common Stockholder; \$611 Per Employee

A comprehensive study of 183 typical business corporations representing a cross-section of industry. Copyright 1940 by American Federation of Investors Inc., Chicago.

[For fiscal year 1939]

Name of Company	Total Assets	Total Shares (Com. & Pfd.)	Total Number Shareholders (Com. & Pfd.)	Number of Employees (1939 aver.)	1939 Total Taxes (All Kinds)	1939 Net Income (After Taxes)	Per Cent of Taxes to Net Earnings before Taxes	1939 Taxes per Common Share	Dividends per Common Share	1939 Taxes per Common Stockholder	1939 Taxes per Employee
Acme Steel Company	\$ 14,877,284	328,108	3,414	3,000	\$ 752,540	\$ 1,908,609	28.3	\$ 2.29	\$ 2.00	\$ 220	\$ 251
Air Reduction Company	44,186,719	2,563,992	13,230	3,966	1,851,329	5,076,825	26.7	.72	1.50	140	467
Allegheny Ludlum Steel Corp.	33,637,798	1,290,148	9,717	7,032	1,236,801	2,093,518	37.1	.98	.50	131	176
Allis-Chalmers Mfg. Co.	108,059,259	1,776,092	18,100	13,166	3,425,288	3,719,546	47.9	1.25	1.25	189	260
American Bosch Corporation	4,790,646	692,644	1,200	1,050	143,375	96,322	59.8	.21	—	119	137
American Can Company	190,983,760	2,886,331	35,472	21,647	8,585,957	18,284,964	32.2	3.51	4.00	295	401
American Cyanamid Company	77,345,777	3,086,496	21,000	9,300	2,469,964	5,420,748	31.3	.94	1.60	132	266
Amer. Radiator & Stand. Sanitary Corp.	125,028,305	10,087,565	52,900	16,152	3,406,821	3,712,193	47.9	.34	.30	65	211
American Rolling Mill Company	144,316,643	3,318,610	42,720	15,482	3,046,873	4,011,909	43.2	1.06	—	92	197
American Smelting & Refining Co.	172,014,893	2,691,669	28,750	27,995	7,200,000	13,057,145	35.5	3.29	3.00	344	257
American Steel Foundries	35,900,888	1,187,496	10,891	4,795	1,049,109	1,568,514	43.4	.88	—	96	219
American Telephone & Telegraph Co.*	5,227,361,850	19,973,458	700,771	259,930	158,905,436	190,280,877	45.5	8.13	9.00**	240	611
American Tobacco Company	291,230,362	5,074,076	62,258	19,474	136,161,209	26,427,934	83.7	29.94	5.00	2,512	6,992
Amer. Water Works & Elec. Co.*	405,753,637	2,543,105	18,597	8,792	8,265,342	3,426,617	70.5	3.50	—	594	933
Amer. Zinc, Lead & Smelt. Co.*	9,208,478	741,551	5,536	1,407	223,195	319,633	41.1	.33	—	43	159
Armour and Company	259,607,427	5,172,426	82,624	51,158	8,666,136	4,844,493	64.1	2.13	—	210	169
Armstrong Cork Company	55,290,189	1,463,860	9,269	9,674	2,138,228	4,485,009	32.3	1.52	2.00	232	221
Atlantic Refining Company	203,400,377	2,811,999	33,761	12,192	32,029,501	5,028,212	86.4	12.02	1.00	1,099	2,627
Atlas Powder Company	22,420,219	318,886	4,513	2,624	653,294	1,299,137	33.5	2.61	3.00	206	249
Baldwin Locomotive Works*	61,071,156	1,093,047	13,667	6,872	2,407,680	542,026	81.6	2.34	—	192	350
Baltimore & Ohio R. Co.	1,206,747,086	3,151,585	39,339	37,306	10,983,500	(d) 1,622,207	117.3	4.29	—	318	294
Beatrice Creamery Company	24,254,702	474,758	7,366	5,776	1,353,851	1,956,439	40.9	3.58	2.00	322	234
Bendix Aviation Corporation	34,909,024	2,097,663	22,202	9,599	4,485,972	4,485,972	29.8	.91	1.50	86	199
Bethlehem Steel Corporation	732,932,382	4,852,768	73,598	95,029	21,191,492	24,638,384	46.2	7.10	1.50	459	223
Borden Company	125,714,933	4,396,704	46,889	28,099	6,720,632	7,979,837	45.7	1.53	1.40	143	239
Borg-Warner Corporation	49,497,081	2,336,710	17,344	10,350	2,771,428	5,683,801	32.8	1.19	1.35	160	268
Brintol-Myers Company	9,261,978	681,726	16,159	411	941,905 #	2,201,492	30.0	1.38	2.40	58	292
Brunswick-Balke-Collender Co.	14,819,722	474,628	2,363	2,474	842,154	2,037,435	29.2	1.89	2.75	414	340
Burrhus-Erie Company	26,494,244	1,284,047	10,488	2,399	768,975	1,752,554	30.5	.63	.50	84	321
Burrhus Adding Machine Co.	36,672,849	5,000,000	17,448	10,154	2,482,158	2,200,814	53.0	.50	.40	142	244
Butler Brothers	34,776,749	1,408,517	17,567	6,865	1,091,739	1,347,749	44.8	.96	.30	140	179
Case (J. I.) Company	42,442,304	296,785	3,679	4,005	908,284	352,343	72.0	4.66	—	410	187
Caterpillar Tractor Company	49,898,187	1,882,240	16,838	10,671	2,404,960 @	6,004,890	28.6	1.28	2.00	143	225
Celanese Corporation of America	66,296,654	1,337,997	9,559	10,000	2,521,102	6,374,101	28.3	2.46	.50	418	252
Certain-teel Products Corporation	15,838,960	698,409	2,718	3,680	364,365	348,099	51.1	.58	—	77	134
Chicago & North Western Railway Co.	687,853,847	1,808,353	16,934	25,314	6,193,010	(d) 9,109,868	45.5	3.91	—	398	245
Chrysler Corporation	222,494,989	4,351,132	49,181	60,743	30,850,089 #	36,879,829	73.5	7.09	5.00	627	508
Cities Service Company	1,068,578,766	4,471,136	62,000	24,000	18,236,868	6,588,742	43.5	4.92	—	36	760
City Ice & Fuel Company	42,006,736	1,329,722	12,283	4,000	1,700,871	3,041,051	35.9	1.47	1.20	176	425
Colgate-Palmolive-Peet Company	70,898,177	2,113,056	15,192	10,500	8,125,480	6,632,655	55.1	4.14	1.00	771	774
Columbia Gas & Elec. Co.*	682,480,314	13,324,283	71,000 @	14,526	12,729,414	12,083,222	51.3	1.04	—	217	876
Commercial Solvents Corp.	20,042,568	2,656,878	26,523	11,160	20,006,692	1,600,390	92.6	7.59	—	754	17,247
Commonwealth Edison Co.*	841,424,013	10,471,516	87,738	16,773	26,291,098	25,414,590	50.8	2.51	1.65	300	1,567
Condé Nast Publications	6,153,971	327,144	1,000	1,600	239,522	240,327	49.9	.73	—	549	150
Consolidated Edison Co. of N. Y.*	1,353,464,465	13,655,617	128,791	36,794	54,677,205	36,428,119	60.0	4.77	2.00	240	1,486
Continental Baking Company	47,875,912	2,692,613	20,095	12,475	3,016,000	4,176,121	41.9	1.32	—	203	242
Continental Can Company	126,145,000	3,053,971	37,499	15,034	3,273,919	8,635,787	27.5	1.15	2.00	94	217
Continental Motors Corp.*	7,672,306	2,650,000	26,232	1,406	(d) 215,165	3,209.3	1.08	—	—	8	158
Corn Products Refining Co.	115,934,666	2,780,000	20,495	4,617	3,499,120	10,120,397	25.7	1.38	3.00	197	758
Crane Company	109,410,126	2,541,431	12,000	16,800	3,614,995	4,612,555	43.9	1.54	.60	373	215
Crown Cork & Seal Company	43,510,542	742,609	7,149	4,564	1,015,578	1,956,048	34.2	1.96	—	260	223
Crown Zellerbach Corporation	102,170,668	2,790,854	22,559	8,000	2,252,961	5,015,390	35.4	.75	.50	197	344
Curtis Publishing Company	52,097,144	2,466,474	17,636	3,789	1,289,793	2,142,516	37.6	1.22	—	239	340
Cutler-Hammer, Inc.	8,908,085	659,998	2,995	3,124	519,125	814,670	38.9	.79	.75	173	166
Detroit Edison Company	356,559,658	1,222,260	14,812	6,550	8,670,997	9,640,296	47.4	6.00	6.00	585	1,324
					511,872	109,356	48.4	1.30		511	175

Douglas Aircraft Company	24,583,770	6,552	7,589	1,719,595	2,884,197	37.4	2.87	3.00	262	
Du Pont de Nemours & Company*	857,618,123	77,338	44,100	21,912,600	93,218,664	19.0	1.99	7.00	362	
Eastman Kodak Company	213,611,627	2,337,670	25,400	8,541,800	21,537,577	28.4	3.45	6.00	219	
Electric Auto-Life Company	36,479,981	12,993	11,970	2,461,463	5,653,840	30.3	2.06	3.00	189	
Electric Storage Battery Company	36,994,236	907,810	4,800	1,478,077	1,820,661	44.8	1.63	2.00	105	
Firestone Tire & Rubber Company*	174,752,790	2,399,926	28,359	2,958,000#	6,722,046	65.8	6.70	1.00	831	
First National Stores, Inc.	31,483,680	821,989	19,411	1,208,287	2,741,633	42.3	2.45	2.50	217	
Food Machinery Corporation	11,978,079	446,676	3,103	449,641	1,168,410	27.8	1.75	1.375	169	
General Electric Company	392,222,958	209,914	62,797	21,013,000	41,235,644	33.8	7.73	1.40	303	
General Foods Corporation	90,915,370	67,780	11,103	5,550,676	15,118,063	26.9	1.06	2.25	85	
General Mills, Inc.	63,337,297	888,111	7,300	3,086,000	6,431,000	32.4	4.64	3.50	423	
General Motors Corporation*	1,706,940,197	386,100	194,882	101,884,000#	183,290,222	35.7	2.37	3.50	279	
General Theatres Equipment Corp.*	12,427,869	592,887	5,774	249,358	696,062	26.4	4.2	.80	43	
General Tire & Rubber Co.	16,600,286	551,298	2,704	1,925,033#	2,137,318	47.4	3.66	.50	2,403	
Gillette Safety Razor Co.††	25,222,936	2,298,769	3,460@	2,937,554	3,284,797	47.2	1.47	.60	147	
Grant (W. T.) Company	42,260,296	1,538,205	4,348	3,730,459	3,824,996	49.4	3.14	1.90	937	
Hat Corporation of America	7,045,689	497,184	2,366	641,535	703,356	35.4	.82	1.10	198	
Holland Furnace Company	11,985,685	450,442	2,700	894,501	1,453,185	30.6	1.42	2.00	238	
Houdaille-Hershey Corporation	13,684,846	959,000	9,425	1,487,607	3,741,644	37.6	1.14	1.18	179	
Hudson Motor Car Company	30,063,981	1,588,810	8,954	2,992,800#	(d) 1,356,750	182.9	1.88	.75	334	
Illinois Central Railroad Co.	730,364,349	1,544,452	17,972	10,133,000	2,335,775	81.3	7.48	7.08	355	
Inland Steel Company	166,811,739	1,624,265	7,344	10,931,016	10,931,016	32.1	3.18	4.00	702	
Interlake Iron Corporation	56,425,360	2,000,000	17,670	488,219	5,158,640	—	.24	—	299	
International Shoe Company	84,243,624	3,343,300	7,536	1,137,257#	6,583,178	33.5	4.99	1.75	440	
Jewel Tea Company	10,668,212	280,000	3,625	1,137,257#	1,583,109	41.8	4.06	6.00	109	
Johns-Manville Corporation	53,749,831	925,000	11,000	2,118,696	4,164,719	33.7	2.49	2.75	193	
Kelsey-Hayes Wheel Company	15,799,465	548,267	3,163	562,396	771,694	42.2	1.03	1.48	178	
Kennecott Copper Corporation	361,182,334	10,821,653	80,412	26,300†	33,947,443	26.2	1.11	2.00	150	
Kimberly-Clark Corporation	50,975,849	587,803	2,652	1,326,576	2,651,365	33.3	2.72	1.75	266	
Kresge (S. S.) and Company	129,625,702	5,489,922	23,087	30,500	10,450,624	42.1	1.38	1.20	329	
Kroger Groc. & Baking Co.	75,146,995	3,072,566	4,170	4,135,522#	4,963,870	45.4	1.76	1.60	1,351	
Lehigh Valley Coal Corporation	53,843,291	1,823,701	25,268	21,691†	13,238,850†	70.6	7.26	2.50	610	
Lehigh Valley Coal Corporation	29,647,382	1,432,846	13,869	1,580,197	5,514,597	49.3	1.31	1.47	225	
Libbey-Owens-Ford Glass Co.	46,947,884	2,513,258	14,040	6,639	8,062,753	23.9	1.01	2.75	181	
Libby, McNeill & Libby	55,112,463	3,627,985	12,196	10,719	2,039,032	35.0	.56	—	167	
Liquid Carbonic Corporation	22,035,081	700,000	2,991	631,544	3,782,237	35.0	.56	—	190	
Long-Bell Lumber Company	34,864,412	335,461	4,992	1,137,327	1,137,327	35.7	.90	1.00	88	
Loose-Wiles Biscuit Company	28,586,115	560,710	6,050	1,255,053	(d) 91,969	118.3	3.01	—	77	
Louisville & Nashville R. R.	538,087,130	1,170,000	7,184	8,135,700	10,844,065	53.7	2.41	1.00	241	
McCall Corporation	16,727,427	527,998	2,020	433,519	7,394,231	52.4	6.95	5.00	1,132	
McGrocery Stores Corporation	22,941,747	1,040,253	10,040@	1,438,796	2,231,012	39.2	.82	1.00	100	
McGraw-Hill Publishing Co.	19,475,329	600,000	1,380	469,152	2,231,012	39.2	1.45	1.00	665	
McLellan Stores Company	8,735,584	763,181	2,709	462,882	973,306	43.1	.78	.30	310	
Mead Corporation	49,202,671	700,509	4,225	636,025	744,028	46.1	1.03	.60	201	
Mengel Company	9,997,430	483,029	5,000@	293,472	33,631	89.7	.70	—	256	
Mesta Machine Company	15,496,720	987,979	6,587	2,482	2,715,427	30.4	1.20	1.50	70	
Middle West Corporation*	448,094,088	3,308,355**	33,500**	8,616,046	4,120,492	67.6	2.67	—	180	
Minneapolis-Honeywell Reg. Co.	12,237,497	652,600	4,300	790,730	2,158,582	26.8	1.27	2.00	221	
Missouri Pacific Railroad Co.	688,738,459	1,546,596	8,586 ¹⁵	5,655,112	(d) 13,093,263	—	6.82	—	1,617	
Mohawk Carpet Mills	18,839,685	546,000	3,377	873,842	1,798,568	32.7	1.60	.75	259	
Monsanto Chemical Company	71,260,417	1,341,712	11,850	2,513,013*	5,546,416	31.2	2.02	3.00	183	
Montgomery Ward & Company	251,836,896	5,418,701	59,669	12,722,300	27,010,645	32.0	2.44	2.00	260	
Motor Wheel Corporation	13,448,363	850,000	8,500	730,915	1,849,239	28.3	.86	1.60	86	
Mullins Manufacturing Corp.	6,133,762	4,291,299	2,439	2,263,53	1,849,239	28.3	.86	1.60	86	
Nash-Kelvinator Corporation	47,222,898	6,570,736	46,092	11,800	3,223,991†	195.3	.75	—	115	
National Cash Register Co.	125,470,736	1,628,000	18,846	18,163	12,334,004	36.0	1.10	1.60	137	
National Dairy Products Corp.	47,655,116	1,628,000	18,846	18,163	1,805,086	49.7	1.10	1.00	95	
National Gypsum Company	193,666,088	6,353,956	71,898	36,543	13,034,157	39.4	1.35	.80	121	
National Supply Company	18,876,269	1,321,458	6,900@	544,623	8,472,828	27.2	.43	.25	99	
Natomatic Company	73,206,084	1,726,156	6,000@	1,430,762††	1,190,787	54.6	1.24	—	572	
Neisner Brothers, Inc.	12,303,835	975,750	3,137	384,431	1,432,877	21.2	.39	1.00	123	
New York Central R. R. Co.	10,989,790	1,244	4,220	1,139,468#	678,478	62.2	5.56	1.25	1,217	
Niagara Hudson Power Corp.*	1,820,476,112	6,447,413	87,392	32,238,235	4,509,236	87.7	5.00	—	1,383	
North American Company*	621,607,681	10,065,813**	60,107**	11,380	7,323,763	68.0	1.63**	—	519	
Ohio Oil Company	939,697,839	9,876,406**	74,322**	18,500	19,452,914	20,718,862	48.4	2.27	204**	
Otis Elevator Company	133,748,393	6,917,914	32,266	5,648	10,007,000†	87.0	1.52	—	317	
Owens-Illinois Glass Co.	40,882,243	2,065,000	11,986†	1,463,477	1,492,086	34.7	1.28	.90	122	
Pacific Gas & Elec. Co.	87,337,453	2,661,204	9,891	15,196	8,434,915	30.0	1.36	2.00	366	
Packard Motor Car Company	773,371,373	11,632,182	95,784	12,721	18,049,000	41.3	2.88	2.00	496	
Pennny (J. C.) Company	53,412,117	15,000,000	116,471	11,309	3,550,173#	86.7	.24	—	30	
Pennsylvania Railroad Company	91,207,539	2,543,984	17,439	41,200	7,097,004††	16,481,214	30.1	2.79	5.00	407
Peoples Gas Light & Coke Company	2,359,209,499	13,167,574	209,346	99,924	23,177,686	63.5	3.06	1.00	192	
Phelps Dodge Corporation	200,543,433	656,119	13,796	4,658	2,291,491	70.3	8.26	2.00	393	
Phoenix Hosiery Company	193,201,000	5,071,260	18,369	11,050@	12,278,601	31.0	1.09	1.50	301	
Pillsbury Flour Mills Company	7,513,130	204,026	834	3,351	481,143	42.3	2.02	—	980	
Pittsburgh Screw & Bolt Corp.	30,353,521	549,225	5,926	1,680	1,692,318	36.1	1.74	1.60	162	
Public Service Company of N. J.	8,232,724	1,500,000	10,826	1,638	323,524	37.8	.22	—	30	
Pullman, Incorporated*	699,294,481	7,111,590	85,685	20,568	24,311,091	25,722,729	48.6	4.42	2.50	1,182
Pure Oil Company	221,885,188	3,820,194	34,562 ¹⁶	26,537	51,492,285	56.2	1.35	1.00	707	
Quaker Oats Company	178,567,387*	4,707,462	41,177	9,380*	8,290,418*	79.1	7.88	.25	1,067	
Radio Corporation of America	59,969,554	882,000	7,830	4,108	1,706,849	24.8	2.43	5.00	429	
Rader Corporation	93,739,980	14,795,224	244,000	20,716	4,789,249 ¹⁰	37.2	.35	—	231	
Real Silk Hosiery Mills	5,709,332	191,949	1,686	3,493	352,250	169,536	67.5	1.98	276	
Republic Steel Corporation	365,049,972	6,234,967	60,418	49,882 ¹¹	9,561,985	10,671,343	47.2	1.64	191	
Reverse Copper & Brass, Inc.	33,477,737	885,988	4,093	6,600	1,198,688	1,615,069	42.6	2.15	468	
Ruberoid Company	16,290,082	397,806	1,353	2,818	425,947	608,127	41.2	1.07	315	
Rustless Iron & Steel Corp.	6,763,283	922,728	8,599	704	1,090,876	25.3	.42	.49	525	
Sears, Roebuck & Co.	323,687,405	5,643,501	52,668	57,029 ¹¹	18,818,983††	37,255,274	33.6	3.33	357	
Servel, Inc.	18,139,414	1,788,358	12,546	3,318	2,000,425#	2,926,265	40.6	1.12	162	
Shattuck (Frank G.) Company	20,757,016	1,247,500	7,000	7,000	1,000,000@	557,616	64.2	.40	143	
Shoaffer (W. A.) Pen Company	4,167,323	159,694	2,328	1,147	259,771	744,295	25.9	1.63	111	
Shell Union Oil Company	401,048,417	13,421,343	20,400	25,114†	80,002,863†	11,805,713	87.1	6.12	460	
Silver King Coalition Mines Co.	9,902,085	1,220,467	2,590	479	139,973	387,924	26.5	.12	.54	292
Socony-Vacuum Oil Company	929,652,688	31,206,071	113,072	57,423	118,060,113†	34,452,710	77.4	3.78	1,060	
Southern California Edison Co.*	400,316,867	6,649,662	96,245	4,306	120,640,186†	89,128,756	57.5	4.42	2,450	
Spiegel, Inc.	39,168,825	1,375,658	6,857	5,200	854,585	1,751,092	32.8	.67	169	
Standard Brands, Inc.	79,296,314	12,848,108	121,808	10,350	7,890,000	7,356,308	51.8	.62	67	
Standard Oil Company (Indiana)*	723,079,698	15,272,014	98,904	31,221†	104,804,173†	34,142,643	75.4	6.86	3,357	
Standard Oil Company (New Jersey)	2,034,989,485	27,285,919 ¹²	130,778	49,242	120,640,186†	89,128,756	57.5	4.42	2,450	
Stewart-Warner Corporation	18,464,655	1,243,063	17,035	5,388	1,060,759#	553,224	65.7	.85	197	
Sun Oil Company*	146,431,484	2,418,918	7,726	15,575	36,656,044†	6,959,677	84.0	15.73	6,443	
Swift and Company	312,452,992	5,920,535	59,000	60,000	6,656,044†	10,321,523	49.0	1.68	168	
Texas Company	661,067,033	10,876,139	87,875	31,497	109,779,425†	32,886,807	76.9	10.09	2,000	
Texas Gulf Sulphur Co.	61,915,942	3,840,000	31,361	700	2,870,000	7,847,483	26.8	.75	92	
Tide Water Assoc. Oil Co.	204,467,844	6,868,667	29,799	10,714	33,112,529†	8,958,971	78.7	5.20	4,100	
Timken-Detroit Axle Co.	15,866,383	990,075	9,211	3,389	1,263,200					

The BUSINESS TREND



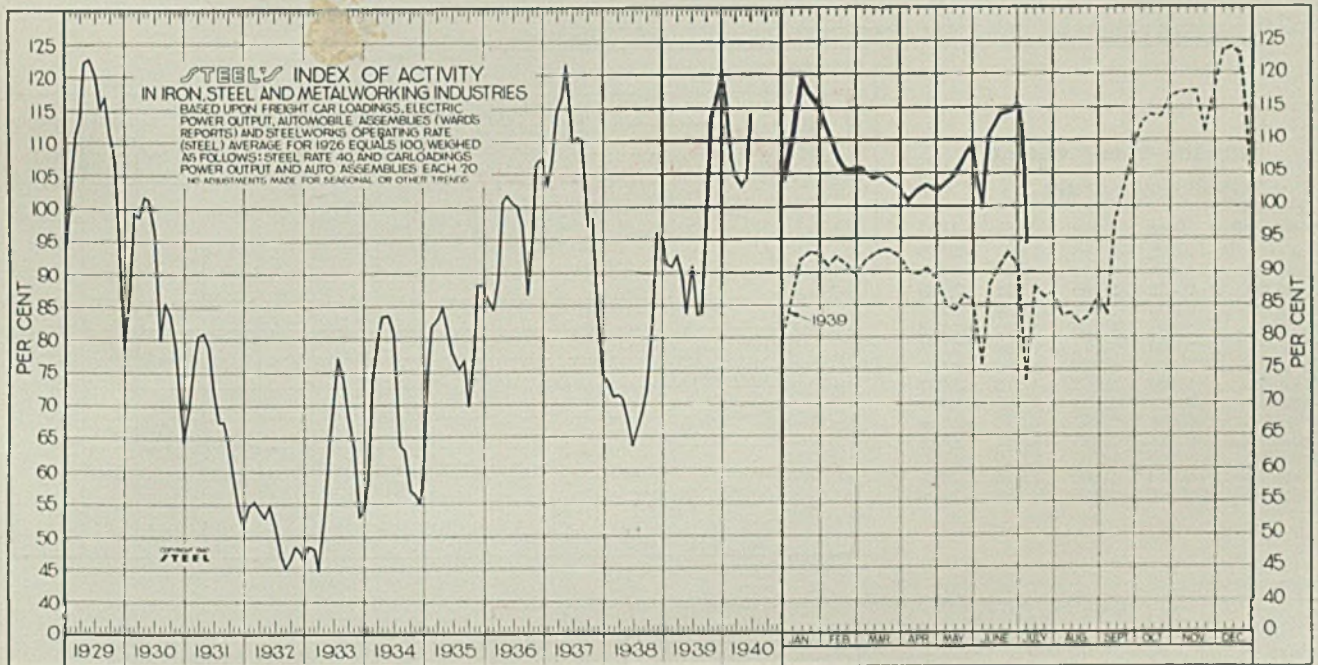
Activity Index Reflects Holiday Interruption

■ RECORDS of business for the week ended July 6 were affected by the interruption of activity occasioned by the observance of the Fourth of July holiday. Due to this factor, together with the expected seasonal curtailment in automobile production, STEEL's index of activity receded from 115.3 to 94.2. This represents a decline of 21.1 points. In the comparable weeks of 1939, 1938 and 1937, the index declined 17.6, 9.4 and 11.5 points respectively.

Contributing to the drop in the index during the latest period were losses in all the business indicators from which it is composed. In the case of electric

power output, revenue freight carloadings and steelworks operations, the major factor was the holiday interruption. The decline of 35,575 in automobile output was due largely to the same cause, although a seasonal curtailment in assemblies is to be expected at this time.

Encouraging factors in the current outlook are the expanding backlog in the steel, machine tool, aircraft and shipbuilding industries. Increased sales have also been recorded by automobile producers in recent weeks. In some instances, June retail automobile sales set new records for that month.



STEEL'S index of activity declined 21.1 points to 94.2 in the week ended July 6:

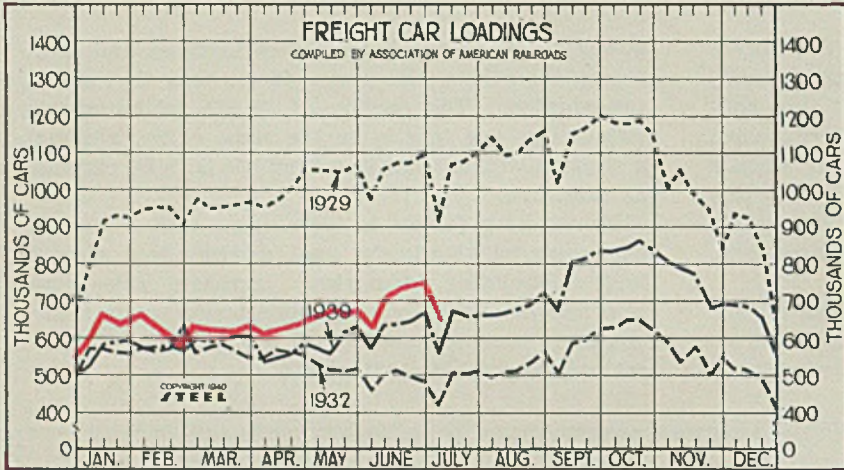
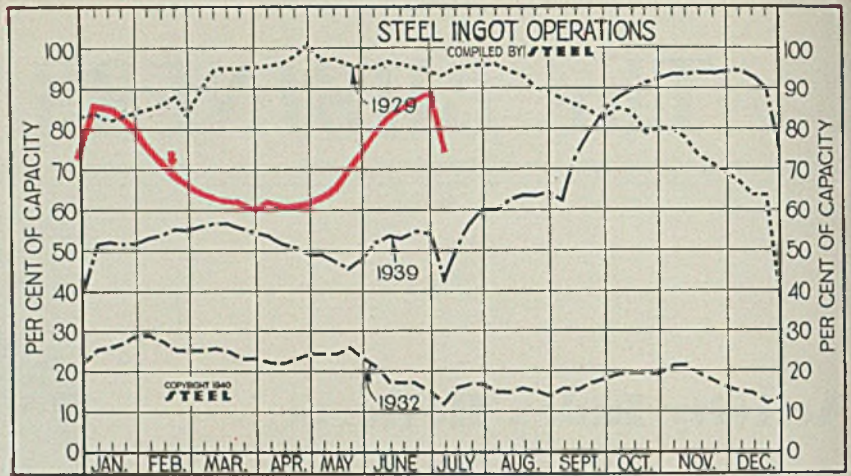
Week Ended	1940	1939	Mo. Data	1940	1939	1938	1937	1936	1935	1934	1933	1932	1931	1930	1929
May 4.....	103.3	85.1	Jan.	114.7	91.1	73.3	102.9	85.9	74.2	58.8	48.6	54.6	69.1	87.6	104.1
May 11.....	104.8	84.2	Feb.	105.8	90.8	71.1	106.8	84.3	82.0	73.9	48.2	55.3	75.5	99.2	111.2
May 18.....	106.8	86.6	March	104.1	92.6	71.2	114.4	88.7	83.1	78.9	44.5	54.2	80.4	98.6	114.0
May 25.....	109.1	85.4	April	102.7	89.8	70.8	116.6	100.8	85.0	83.6	52.4	52.8	81.0	101.7	122.5
June 1.....	99.2	75.9	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 8.....	111.9	88.2	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
June 15.....	114.6	90.9	July	.....	83.5	66.2	110.4	100.1	75.3	63.7	77.1	47.1	67.3	79.9	115.2
June 22.....	114.8	93.0	Aug.	.....	83.9	68.7	110.0	97.1	76.7	63.0	74.1	45.0	67.4	85.4	116.9
June 29.....	115.3†	91.0	Sept.	.....	98.0	72.5	96.8	86.7	69.7	56.9	68.0	46.5	64.3	83.7	110.8
July 6.....	94.2	73.4	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	47.5	54.4	71.0	92.2
			Dec.	.....	118.9	95.1	74.7	107.6	88.2	58.9	54.0	46.2	51.3	64.3	78.3

†Revised.

Steel Ingot Operations

(Per Cent)

Week ended	1940	1939	1938	1937
Apr. 6	61.5	53.5	32.0	91.5
Apr. 13	61.0	51.5	32.0	91.5
Apr. 20	61.5	50.5	32.5	91.5
Apr. 27	61.5	49.0	32.0	91.0
May 4	63.5	49.0	31.0	91.0
May 11	66.5	47.0	30.0	89.0
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



Freight Car Loadings

(1000 Cars)

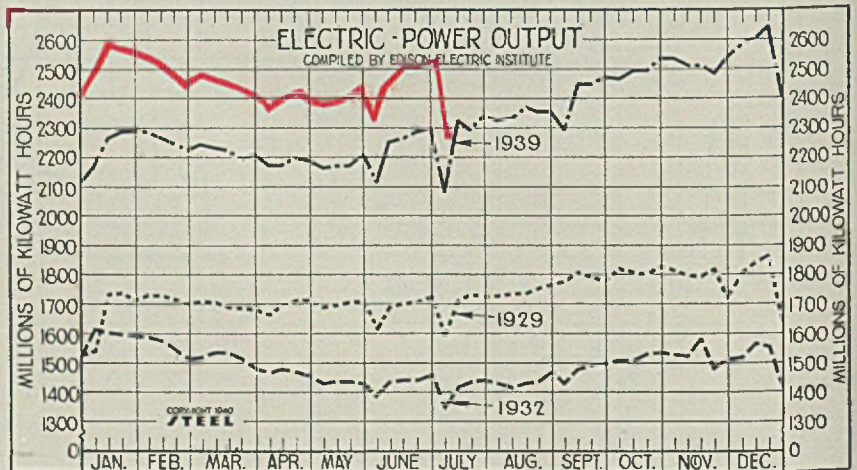
Week ended	1940	1939	1938	1937
Apr. 13	619	548	538	751
Apr. 20	628	559	524	781
Apr. 27	645	586	543	782
May 4	666	573	536	767
May 11	681	555	542	774
May 18	679	616	546	779
May 25	687	628	562	795
June 1	639	568	503	692
June 8	703	635	554	754
June 15	712	638	556	756
June 22	728	643	559	774
June 29	752†	666	589	806
July 6	637	559	501	682

† Revised.

Electric Power Output

(Million KWH)

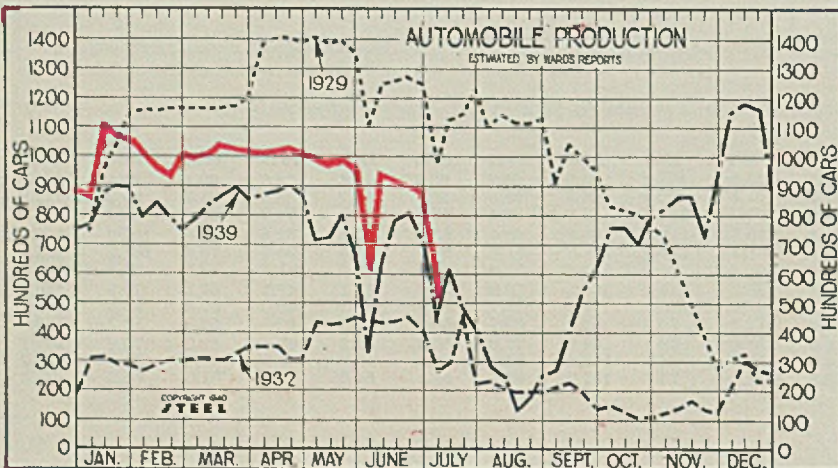
Week ended	1940	1939	1938	1937
Apr. 6	2,381	2,173	1,990	2,176
Apr. 13	2,418	2,171	1,958	2,173
Apr. 20	2,422	2,199	1,951	2,188
Apr. 27	2,398	2,183	1,939	2,194
May 4	2,386	2,164	1,939	2,176
May 11	2,388	2,171	1,968	2,195
May 18	2,422	2,170	1,968	2,199
May 25	2,449	2,205	1,973	2,207
June 1	2,332	2,114	1,879	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

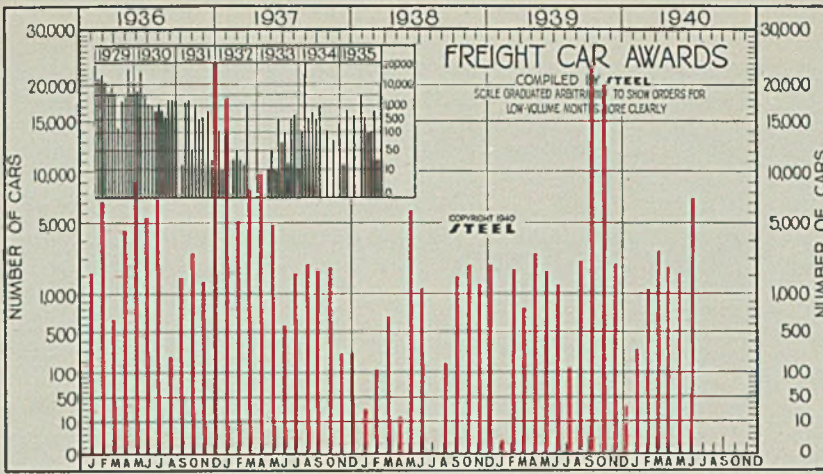


Auto Production

(1000 Units)

Week ended	1940	1939	1938	1937
Apr. 6	101.7	87.0	70.0	99.2
Apr. 13	101.9	88.0	62.0	125.5
Apr. 20	103.7	90.3	60.6	138.2
Apr. 27	101.4	86.6	50.7	139.5
May 4	99.3	71.4	53.4	140.2
May 11	98.4	72.4	47.4	140.4
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





Freight Car Awards

(Hundreds of Cars)

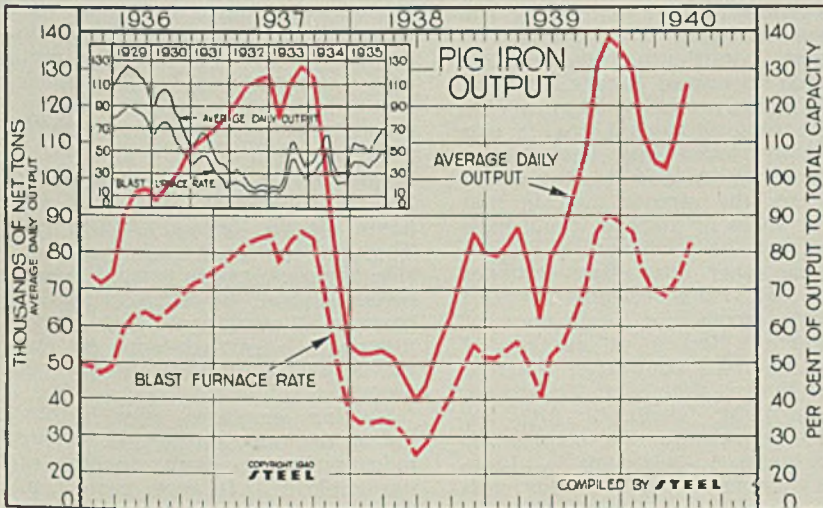
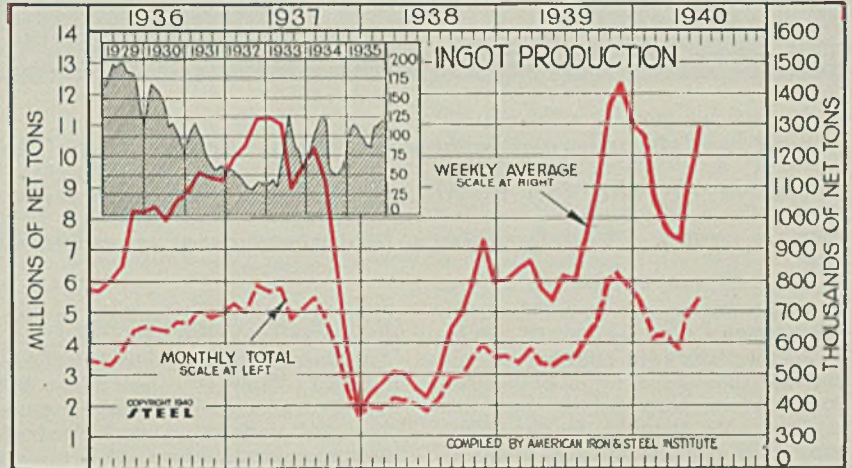
	1940	1939	1938	1937
Jan.	3.60	.03	.25	178.06
Feb.	11.47	22.59	1.09	49.72
Mar.	31.04	8.00	6.80	81.55
April.	20.77	30.95	.15	97.72
May	20.10	20.51	60.14	47.32
June	74.75	13.24	11.78	5.48
July	.....	1.10	.00	10.30
Aug.	.....	28.14	1.82	14.75
Sept.	.....	230.00	17.50	12.16
Oct.	.....	196.34	25.37	13.55
Nov.	.....	26.50	12.32	2.75
Dec.	.....	.35	25.81	2.75
Total	.....	577.75	163.03	516.11

Steel Ingot Production

(Unit 100 Net Tons)

	Monthly Total		Weekly Average	
	1940	1939	1940	1939
Jan.	5,655.3	3,578.9	1,276.6	807.9
Feb.	4,409.0	3,368.9	1,065.0	842.2
Mar.	4,264.8	3,839.1	962.7	866.6
Apr.	3,974.7	3,352.8	926.5	781.5
May	4,841.4	3,295.2	1,092.9	743.8
June	5,532.9	3,523.9	1,289.7	821.4
July	.....	3,564.8	.....	806.5
Aug.	.....	4,242.0	.....	957.6
Sept.	.....	4,769.5	.....	1,114.4
Oct.	.....	6,080.2	.....	1,372.5
Nov.	.....	6,147.8	.....	1,433.0
Dec.	.....	5,822.0	.....	1,317.2
Total	.....	51,585.0	.....	989.4†

†Weekly average.



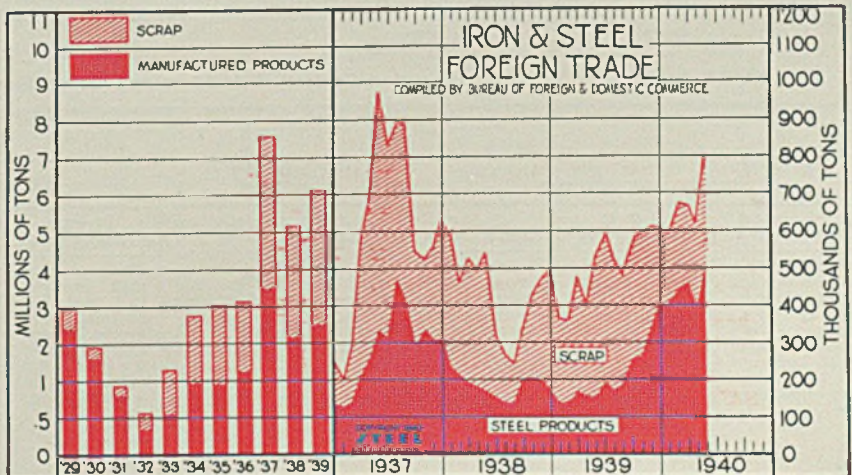
Pig Iron Production

	Daily average		Blast furnace			
	Net Tons		Rate (%)			
	1940	1939	1938	1940	1939	1938
Jan.	129,825	78,596	52,201	85.4	51.0	33.6
Feb.	113,943	82,407	52,254	75.0	53.5	33.6
Mar.	105,502	86,465	53,117	69.5	56.1	34.2
Apr.	104,635	76,732	51,819	68.9	49.8	33.4
May	112,811	62,052	45,556	74.2	40.2	29.4
June	127,103	79,125	39,601	83.6	51.4	25.5
July	.....	85,121	43,827	.....	55.0	28.2
Aug.	.....	96,122	54,031	.....	62.4	34.8
Sept.	.....	107,298	62,835	.....	69.7	40.5
Oct.	.....	131,053	74,697	.....	85.2	48.0
Nov.	.....	138,883	85,369	.....	90.3	53.0
Dec.	.....	136,119	79,943	.....	88.5	51.4
Av.	.....	86,375	51,752	.....	62.6	37.3

Iron and Steel Exports

(Thousands of Gross Tons)

	Steel Products		Scrap		Total
	1940	1939	1940	1939	
Jan.	396.1	134.8	187.5	227.9	583.5
Feb.	436.6	134.8	234.7	224.9	671.3
Mar.	457.1	162.1	206.9	312.3	664.0
April.	391.8	153.9	221.2	240.1	612.9
May	471.5	147.8	312.5	384.9	784.0
June	.....	190.0	.....	398.9	.....
July	.....	163.6	.....	350.1	.....
Aug.	.....	185.2	.....	291.9	.....
Sept.	.....	244.9	.....	330.7	.....
Oct.	.....	255.1	.....	336.8	.....
Nov.	.....	332.9	.....	272.7	.....
Dec.	.....	394.0	.....	206.4	.....
Total	.....	2,499.0	.....	3,577.4	.....



IT TAKES

Health Plus Safety

TO DO THE JOB

A real health program in any plant pays well. A healthy employe on the job is more efficient and safer than a new man. Yearly safety inventory proves valuable

■ JUST getting rid of accidents is not enough. The real profit comes in keeping workers healthy. Occupational diseases are not only compensable in many states, but the worker is a liability to the company from the beginning of such illness. At Westinghouse, the health and safety program is aimed at eliminating accidents and occupational diseases. If effective, such a program is more far-reaching than merely prevention of accidents. Good working conditions increase efficiency, which in most cases results in higher wages for workers and a better return on the company's investment, so everybody benefits.

Use Centralized Control

For these reasons, about three years ago the medical and safety department of Westinghouse were brought together under one management. See organization chart, Table I. Immediately an educational program promoting health was inaugurated. Also with this consolidation, analysis of accidents and comparative records were kept. These

show a steady reduction in frequency as evidenced in Table II.

A classification of accidents during 1939, Table III, shows that 143 out of 314 accidents resulted from disregarding instructions, lack of attention or carelessness. This proves the need for supervisors to study proper methods of instructing employes in their work. The two largest contributing factors are "struck against or caught between" and "flying or falling objects." In close study of such cases, it was generally found that poor house-keeping was largely to blame. In 38 cases the reports indicate that safety shoes or goggles would have prevented the accident.

Some other interesting statistics from last year's accidents revealed definite trends for occurrence of accidents. Record of number of accidents each hour after starting work showed first hour, 29; second, 42; third, 34; fourth, 49; fifth, 30; sixth, 33; seventh, 28; eighth, 28; after hours, 8; unknown, 33. Likewise number of accidents for each day of week varied with Monday, 58; Tuesday, 58; Wednesday, 60;

Thursday, 60; Friday, 62; Saturday, 10; Sunday, 4; unknown, 2. Note length of service influence: For less than 1 year, 66; 1 to 5 years, 77; 5 to 10 years, 52; 10 to 20 years, 70; over 20 years, 46; and unknown, 3.

Stress Health Program

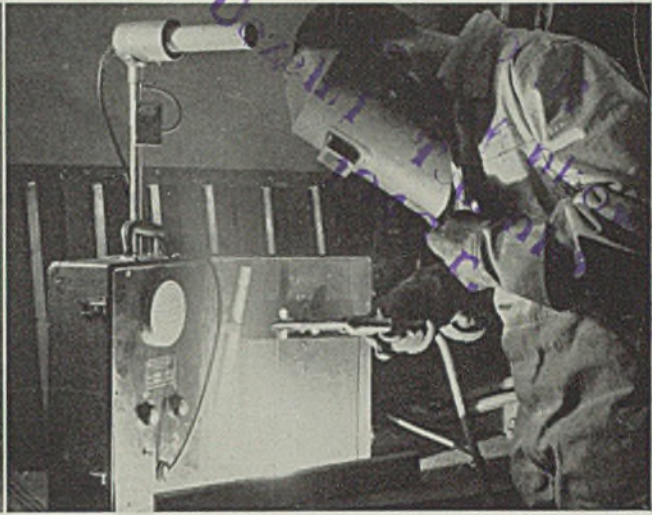
As part of the educational effort, at the beginning of each year timely subjects are scheduled for each month. The program for 1940 is: January and February, rheumatism and heart disease; March and April, tuberculosis; May, vacation habits; June, diet; July, care of teeth; August, posture; September, periodic examinations; October, home safety; November, colds, influenza, pneumonia; December, traffic safety.

Good health and safety begin at home; so reaching actually in the home is a primary objective. Through the co-operation of outside agencies, gratis pamphlets and booklets about the subjects are offered to all employes. Much of this literature is carried home by employes where children and parents read it.

Helping employes stay healthy means they stay on the job. Every industry has an equity in each of its employes. It costs money to train new employes. If an employe cannot work, a costly machine

TABLE I—Setup of Medical Engineering Control of Accident and Occupational Health Hazards at Westinghouse

MEDICAL DIRECTOR							
INDUSTRIAL RELATIONS MANAGERS' INDIVIDUAL WORKS			HEADQUARTERS OFFICE	INDUSTRIAL HYGIENE LABORATORY			
Employment Departments	Medical Departments	Safety Departments		Present Equipment	Materials Processes	Equipment Negotiations	Bldg. Const. Works Engr.
Provide Job cards showing type of work to be performed. Job cards sent with applicant to Med. Dept. for examination	Adequate Medical and Surgical service. Perform suitable physical examinations both new and periodic	Safety education. Follow through recommendations. Assist foremen correct unsafe conditions and practices	Coordinate all activities. Compile all records and reports. Publish reports and educational material through monthly magazine "Safety News." Provide and arrange health educational material for distribution	Study of hazards involved in punch presses, spray booths, foundry equipment, ovens, dip tanks, plating equipment, etc.	Check all possible hazards in contemplated new processes and material	Check all possible hazards in proposed new machines and equipment	Check all possible hazards in new construction or contemplated changes



stands idle or someone must be taught to operate it, with costly materials often scrapped during the training period. A healthy employe on the job is a more efficient and also a safer worker.

Having safe workers is a constant goal. The safety program includes the proper placement of employes from a physical standpoint by pre-employment and periodic physical examinations. The industrial hygiene engineer and laboratory are possibly the most potent factors in determining hazards involved in existing conditions as well as hazards in contemplated new processes, new materials and new building or plant layouts. See Fig. 2.

Helpful Ideas Encouraged

Headquarters office co-ordinates these activities. Here all records and reports are assembled for all plant locations. A small monthly news letter is published. An important function of this office is to spread helpful suggestions from any one plant to all plants. The working out of this program is in the hands of those responsible at each plant or location. From these plants come many good ideas and workable plans that often are included in our overall program. Fig. 1 shows typical examples.

Consider one of our smaller plants employing approximately 2500 men and women. Here the plant manager is definitely interested in health and safety. Responsibility for this activity is given over to the supervisor of industrial relations with the assistance of a full-time safety engineer. Safety committees are established throughout all departments to

Table II above gives total accident record for 1937, 1938 and 1939 while the chart below, Fig. 3, shows the number of accidents during those same three years by months

assist in carrying out the plans and program laid out by the industrial relations supervisor and the safety engineer. Many suggestions come from the committee in the shop because they are continuously on the job.

"Safety Inventory" Made

An outstanding piece of work has been accomplished by this plant in furthering health and safety in the past two years. Something entirely new in safety was worked out, "A Safety Inventory." The management wanted to know to what extent the employes were interested in their safety program. Would the employes, if given an opportunity, voice their opinions and take part in a safety program? The big question was, "Will our safety program stand such an inquiry?"

Fig. 1. (Left)—Posters do their bit—here the benefits of goggles are graphically portrayed. Fig. 2. (Right)—Testing the purity of air near an arc welder in the shop. The portable dust sampler, left, sucks air into a small metal tube, charges the dust or fume particles and collects them on walls of cylinder. Then particles are weighed, counted and studied to determine their quantity and toxicity

It did withstand such an inquiry because the employes take an active part in setting the policy for the year's program.

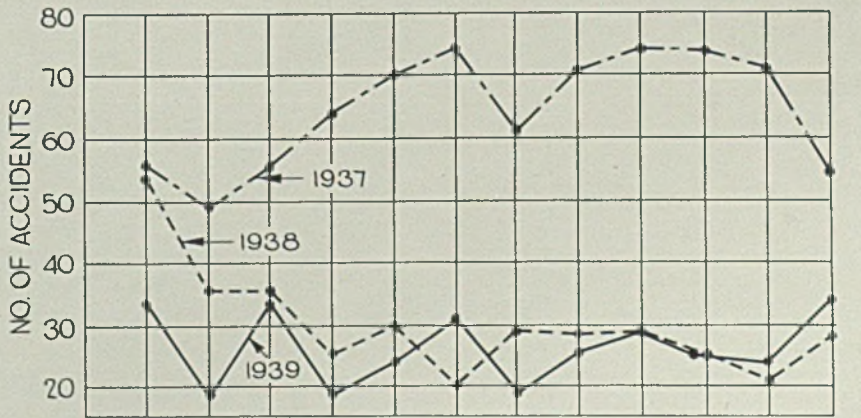
Immediately upon return to work after the plant's regular stock inventory, safety inventory cards were distributed to each employe from sweeper to manager, including all hourly and salaried work-

(Please turn to Page 62)

TABLE II—Yearly Totals

Year	Hours Worked	Accidents	Frequency*
1937	87,897,851	814	9.25
1938	60,032,369	365	6.1
1939	83,651,053	314	3.75

*Frequency is the number of accidents per millions hours worked.

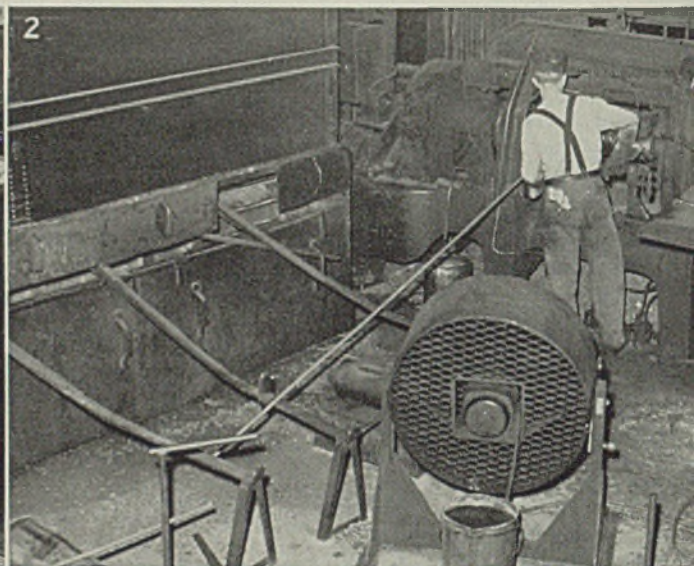
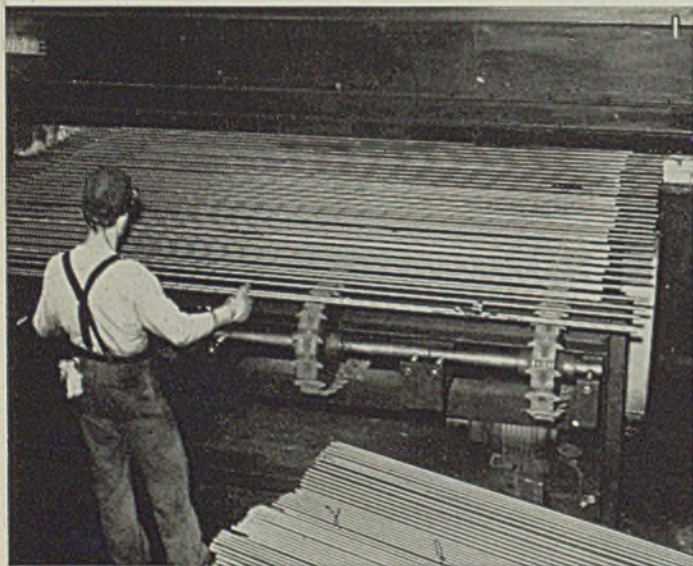


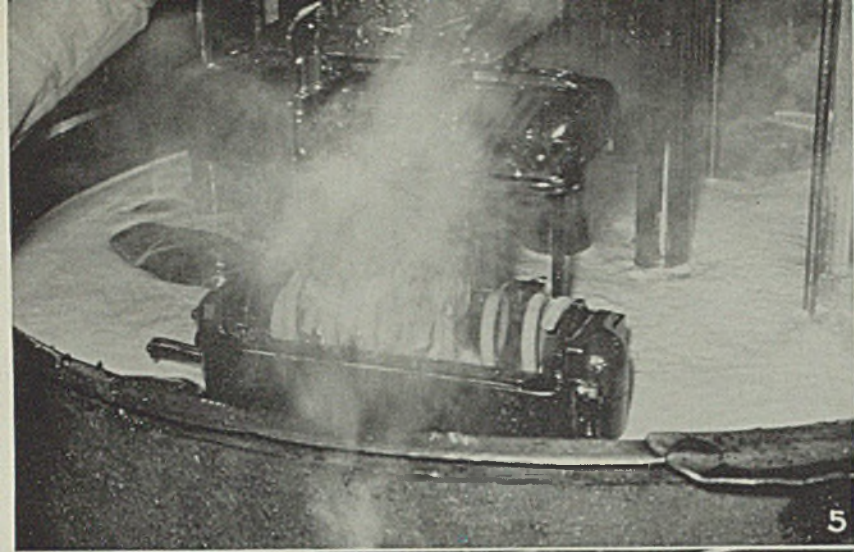
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.

Coil Springs

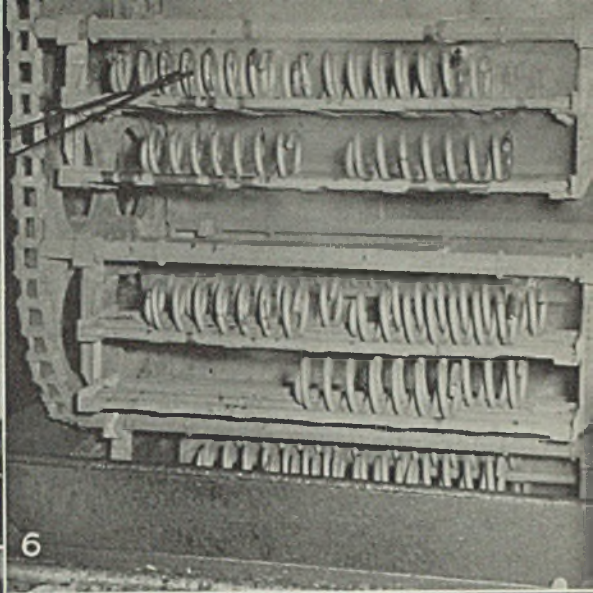
F O R B U I C K

■ COIL springs are used on all four wheels of Buick automobiles and facilities are maintained at the Buick plant in Flint, Mich., for production of around 10,000 springs per day. Following sequence illustrations shows various steps in forming and heat treating the springs from the original centerless ground silicomanganese steel rods until the finished springs are given a final check for strength. Feature of the manufacturing process is the use of grit blasting both to clean scale from the heat treated coils and to provide certain amount of "peening" or cold work to eliminate small defects which often cause fatigue failures. This operation also increases the strength of the coils because of the cold-work effect.

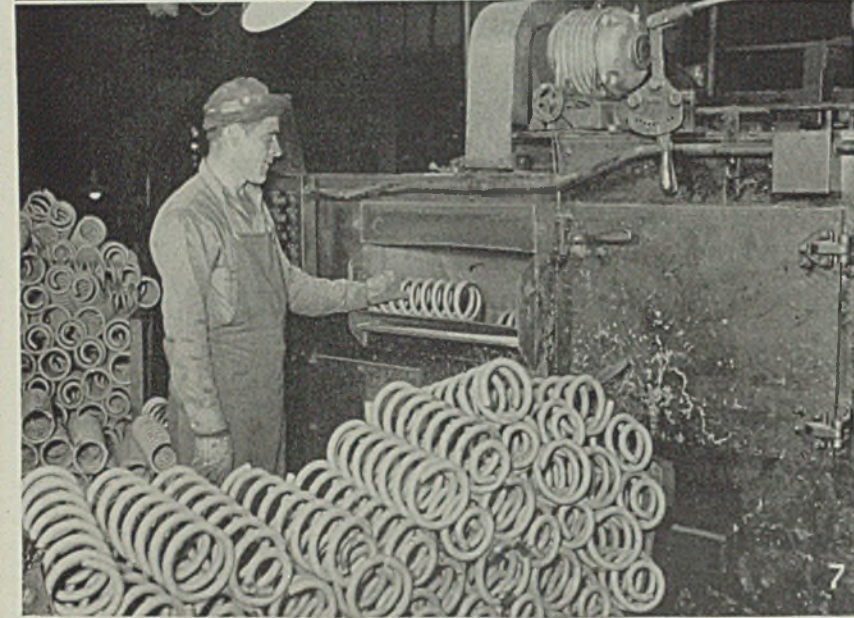




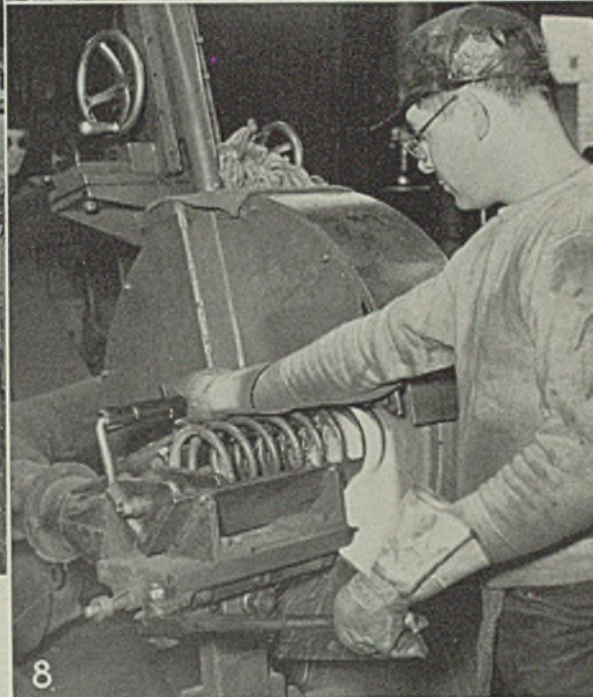
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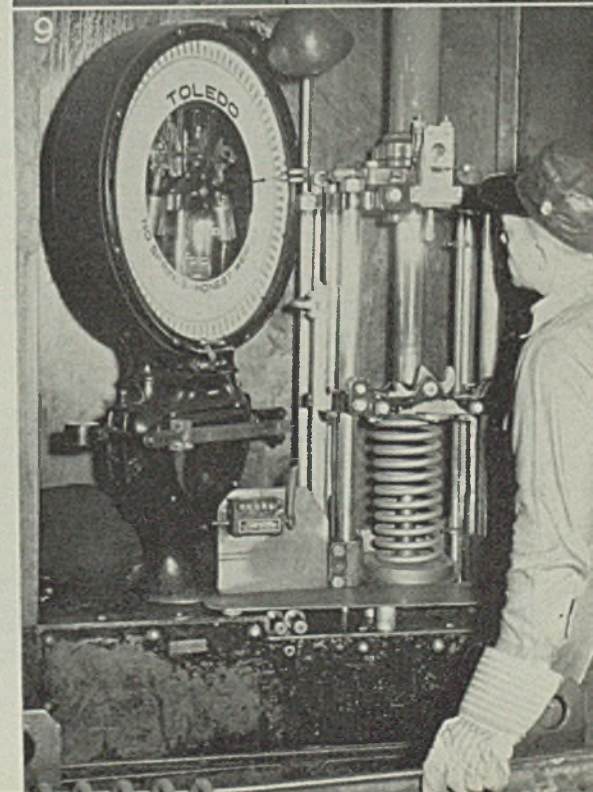
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7



8



9

1—Silicomanganese steel rods are moved continuously through heating furnace, bringing temperature to about 1500 degrees Fahr. preparatory to coiling. 2—Rods fall from the discharge end of the furnace into a rack, the operator feeding one end into the coiling machine. 3—Closeup of grooved coiling lead screw, showing the heated rod being formed into a spring on the mandrel. 4—Coiled springs then are placed on alloy trays and into a heating furnace, three abreast, where they are moved through continuously and heated to quenching temperature. 5—Transferred immediately into quenching fixture, the heated spring is clamped firmly into place in the fixture which lowers into the oil quench bath. The fixture rotates slowly around the bath to raise and open after one revolution. 6—After quenching, springs are transferred to racks in a vertical draw furnace for tempering. 7—Shotblasting in automatic equipment cleans scale from surface of coils and provides "peening" action which conditions surface to minimize danger of fatigue failures. It also improves strength of the springs due to cold-working effect. 8—The cleaned springs are ground square on the ends to insure proper seating. 9—Each spring is tested—must come within the limits of 880 to 910 pounds on the scale when compressed a certain amount

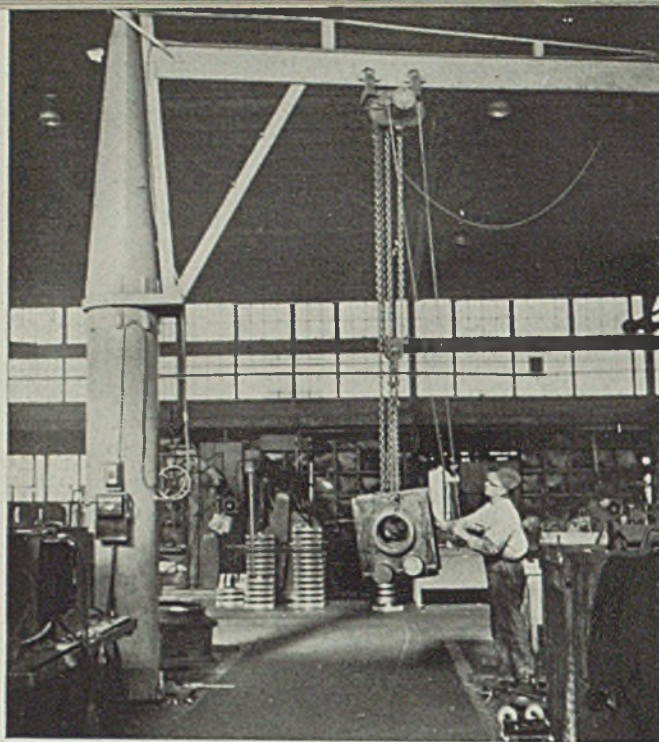


Fig. 7—Lower edge of here is only 25 inches low top of overhead crane which passes over this

Handling Built-to-Order

Specially designed handling facilities afford important space-saving economies. Vertical distance from jib of floor-supported crane to top of overhead traveling crane is made only 25 inches

■ WHILE such bins and skid platforms as those detailed in Part I can be employed efficiently for storage as well as handling, quite often larger work, bulky items or special shapes will offer an opportunity of utilizing more special racks for maximum efficiency. A typical design of a rack especially built for handling and storing operations is shown in Fig. 10. Here racks are nested for storing large rubber tires and for storing material in tin containers.

Vertical posts of such racks are made of box sections built up by welding two angles together. Other angles are used for horizontal frame members between the four legs and support removable wood or metal shelf sections, increasing ease of piling small items on the racks. A mechanical lift buggy or power lift trucks can move these racks about in the same manner as skid platform and skid boxes are handled. This type of rack affords maximum use of storage areas at a cost which makes racks less expensive than the cost of loading and unloading the

Part II

By WALTER J. BROOKING

Engineering Department
R. G. LeTourneau Inc.
Peoria, Ill.

materials for hauling and temporary storage. They permit practically all the cubical contents of the storage areas to be utilized.

Of course these units contain provision for nesting as the bottom ends of the vertical corner pieces are fitted with pins which nest in the sockets at top of racks below. Such units are extremely simple in design, are easy to construct and can be modified readily to make other similar units to serve a specific function.

The similarity in principle between the skids and racks is obvious. Further modification of the general plan of these racks to perform a specialized function is illustrated by the unit in Fig. 8. This rack contains provision for mounting four separate subassemblies or machines as they come from the assembly floor

and are painted and subsequently stored awaiting shipment or final assembly operations. As can be seen, special attachments are built on the rack into which the various parts or subassemblies fit. Use of this rack, which is a simple modification of others, effectively eliminates work otherwise would be a difficult handling and hauling problem. In addition, this simple fixture serves as a cleaning and painting rack for machines shown mounted on it, eliminating other handling operations in placing the work for painting and drying. Similarly, other special racks have important possibilities.

Another specially designed rack used at this plant to haul and store large assemblies. Its use has reduced handling and storage costs to a fraction of previous expense. The simple skeleton frame is provided with special hooks and supports to hold objects whose shape and size made them extremely difficult to handle and store economically. In addition to providing a means for hauling and storing, these racks



Uncork the Bottlenecks in producing Stainless parts

TROUBLE in machining Stainless Steel can hold up production elsewhere in the plant, tie up much needed equipment and lower the general level of output.

Fortunately, machining troubles can be avoided and production can be made to flow more smoothly by using Carpenter Free-Machining Stainless Steels. They make possible faster cutting speeds, are easier on tools and help to avoid galling.

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Type of Stainless	Machines about like:
410	SAE 3140, 4140, 6140, etc.
420	SAE 3150, 4650, 6150, etc.
302, 304	Wrought Iron—only harder
430	SAE 3140, 4140, 6140, etc.
Carpenter No. 5	SAE 1120
Carpenter No. 8	SAE 3120, 4615, etc.

It is only natural that the company which invented Free-Machining Stainless Steel should have gathered a great deal of data on how to machine, grind and polish *all* grades of Stainless Steel. The Carpenter representative is the man who can make this data available to you quickly. He is prepared to help you cure chronic headaches on old jobs and may save you hours of research on new stainless problems. Call him in this week.

THE CARPENTER STEEL CO. - - Reading, Pa.



Carpenter STAINLESS STEELS

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used also to hold the units while they are painted and dried.

It is not difficult to build such special racks due to the ease with which steel parts can be flame cut, welded and bent to shape when heated with a torch. It allows an ingenious shop man to solve otherwise difficult handling and storing problems easily.

While the bins, skids and racks described handle many objects effectively, a more mobile type of unit such as the buggies on wheels shown in Figs. 1, 3, and 5, Part I, serve for hauling heavy loads in excess of the capacity of the mechanical lift buggy or power truck. These wagons or buggies are easily pulled behind a lift truck for interdepartmental hauling and can be moved by hand for short distances within

a department. Such units, it will be noted, are equipped with single or double rubber-tread wheels and are provided with good bearings so heavy loads can be moved about easily and so one power truck can haul a train of these units as trailers, Fig. 1.

Such 3-wheel units easily handle loads of 10 tons and more, while the heavy-duty units handle up to 14 or 15 tons with no difficulty. These wagons, likewise, can be modified readily to suit practically any particular handling problem which may arise. This flexibility is extremely important in the efficient handling of certain odd-shaped assemblies.

Any shop man who has a specific handling problem should study it until its basic functional elements are clear in his mind. Then it is not

difficult to make the proper handling unit by welding structural plates and shapes of the correct dimensions. Pneumatic tires and antifiriction wheels will be found valuable in making units which are easy to move about with heavy loads.

Jib cranes form an especially valuable method of handling and holding much work during welding, making up assemblies and similar operations. These can be tailor made for the particular conditions at hand. The outdoor unit in the background of Fig. 1, Part I, for example, has its vertical column supported at the top by box sections extending from the building and made of two angles welded together. Using large-diameter pipe for the vertical column with a box section for the jib and with structural steel supports, an efficient unit was devised. It has a load capacity of 10 tons, is provided with cable control and has about a 50-foot sweep. The design of this unit is similar to that shown in Fig. 7 except that post, braces, hoist unit and boom have been modified for greater load and for cable control.

Jib Crane Must Fit the Job

Typical of the important possibilities of jib cranes in production work are the advantages obtained from the unit in Fig. 7. This 2-ton jib crane, constructed of high-tensile steel, has a 50-foot sweep. As effectiveness of a jib crane is largely dependent upon its swing and height from the floor, a minimum distance from top to bottom of the jib section is most important for overhead traveling cranes must clear such jib cranes frequently, and yet the jib crane itself must contain provision for lifting the work to maximum height possible. For such applications, a unit designed particularly for the job may be extremely desirable.

For instance, the jib crane in Fig. 7 with a boom radius of 25 feet is particularly compact vertically as the bottom of the boom lies 18½ feet above the floor, yet an overhead traveling crane is provided, the highest point on the crane being only 25 inches above the bottom of the boom of the jib crane. This low clearance was especially desirable in this instance due to the low height of the roof. The main structural part of the boom consists of two ordinary I-beams of high-tensile steel welded together with standard

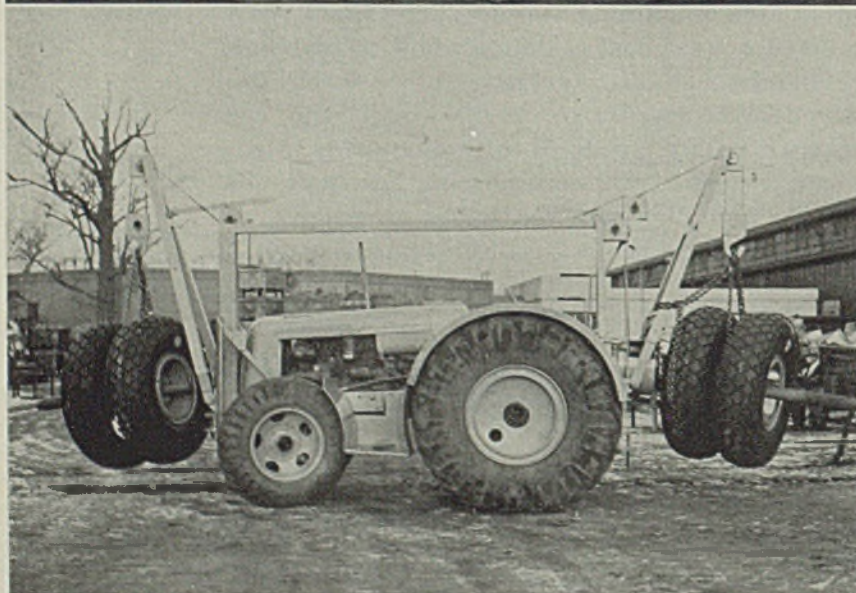
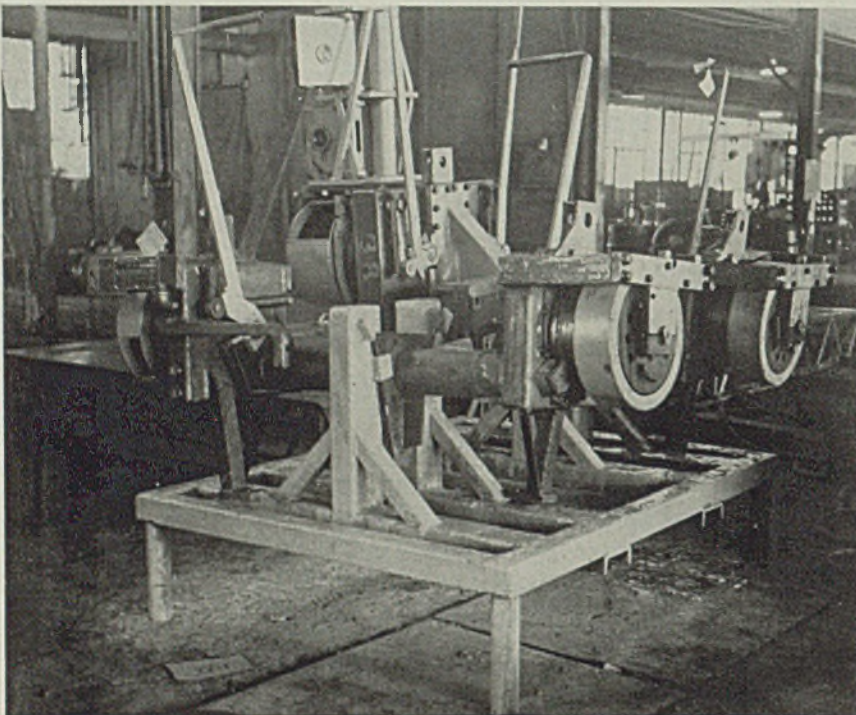
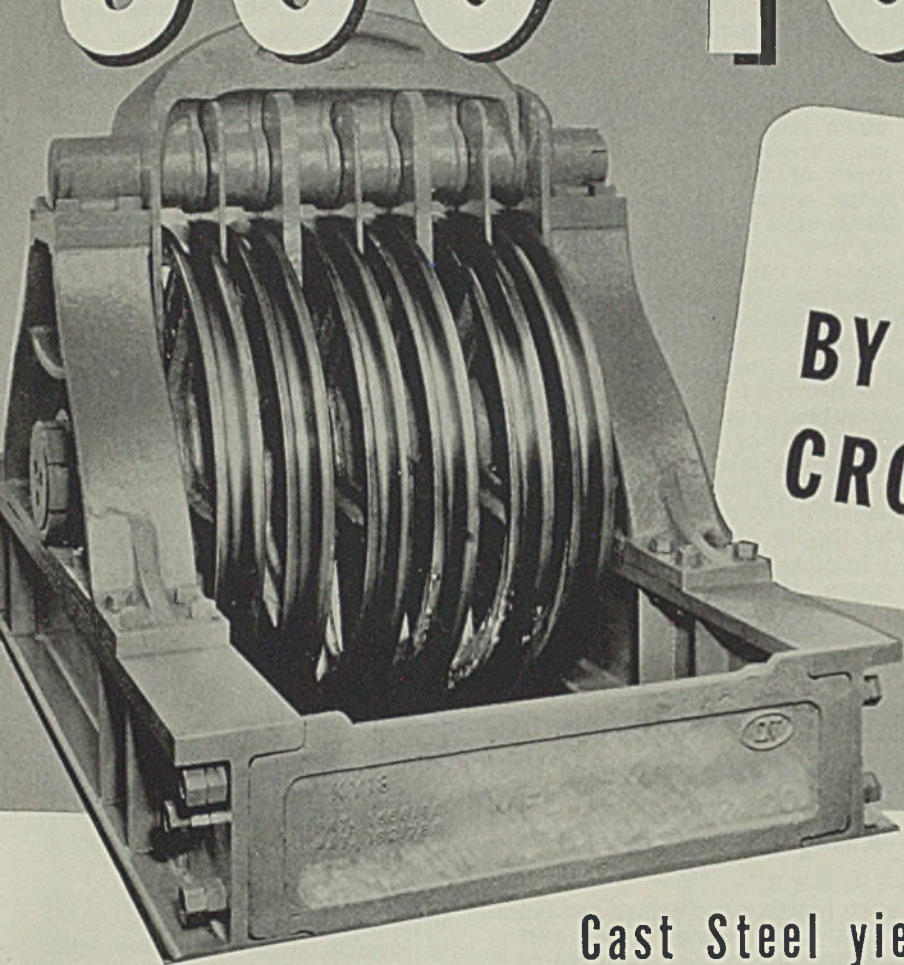


Fig. 8. (Upper)—This rack holds four odd-shaped subassemblies for cleaning, painting, storing—to eliminate much difficult handling. Fig. 9. (Lower)—Special yard handling unit made easily from a standard farm tractor by welding on standard plates and shapes. Note loads are carried at both front and rear

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MODERNIZE YOUR PRODUCT WITH

STEEL CASTINGS



Fig. 10—Racks designed especially for maximum flexibility in handling and storage work. Pins at lower ends of vertical posts make nesting easy

square bars welded to them for the hoist roller trucks. The post is made from standard steel plate rolled, flame cut and welded into a rigid, light, strong unit. Bars, box beams and plates were cut, bent, machined and welded together to complete the structure.

Important in obtaining the low

Process Alloys for Steelmaking Afford Important Improvements

■ A CLASS of process or reaction alloys for steelmaking recently developed (see *STEEL*, April 22, 1940, p. 35, May 20, p. 38) by Vanadium Corp. of America, 420 Lexington avenue, New York, appear of increasing importance. Known as "Grainal" alloys, their major effects appear to be the results of some unusual physical-chemical reaction on the steel bath rather than the familiar effect produced by the mere presence of the alloying constituents.

These complex alloys are made in a wide variety of compositions, each suited to some particular application. Perhaps the three which appear so far most economical and valuable are Grainal No. 1, No. 6, No. 10. Grainal No. 1 contains 25 per cent vanadium, 15 per cent titanium and 10 per cent aluminum. Grainal No. 6 features 13 per cent vanadium, 20 per cent titanium, 12 per cent aluminum. Grainal No. 10 contains 20 per cent titanium, 20 per cent aluminum and 6 per cent zirconium.

The new alloys have been applied to the products of many processes including basic open hearth, acid

distance of 25 inches from the bottom of the boom to the top of the overhead crane was the design of the crane itself. This unit was especially built to fit working conditions here as the bottom of the roof supporting members extend straight across the building from top of the side walls, thus limiting top clearance of the crane. By utilizing alloy steel in constructing the overhead crane, it was possible to make a unit which required only a few inches more operating clearance than the depth of the I-beams used. This crane essentially consists of two rolled steel I-beams of deep section, the lower inside flange of each serving as a base for the crosscarriage rails and the whole supported on two wheels at each end which run on rails welded to the frame of the building. The crosscarriage is a 4-wheeled rigid frame supporting the hoist block and electric hoist. This 10-ton 100-foot span crane is an excellent example of the space-saving economies which are possible when handling equipment is tailor made for the job.

In other portions of the plant, jib cranes of lighter design are employed, consisting only of a piece of pipe, a box section support made of two angles, a light steel I-beam as

(Please turn to Page 80)

pressions that are combinations in varying proportions of tensile strength with ductility or impact value.

Similarly, these process alloys improve articles surface hardened by such treatments as carburizing, cyaniding, nitriding, quenching of heated surfaces and the like.

The exact manner in which these alloys produce their unusual effect is not definitely known. Combination with oxygen or nitrogen or other gases present in the steel may be involved, or one or more of the elements may be taken into solution to effect the hardening reactions, or intergranular substances may be affected by the solution. In any event, the effect of adding Grainal is distinctly different than that produced by familiar alloying elements.

Use of these alloys does not complicate customary steelmaking processes. A small amount of the alloy is added in the final stages of the steelmaking operation. Depending upon the process and particular steelmaking conditions, the alloys may be added in the furnace, in the ladle or even in the ingot molds. The latter has been accomplished effectively without the occurrence of irregularities or other detrimental results. It is only necessary that the alloy be sufficiently crushed and that the ingot be of sufficient size to insure complete solution and uniform distribution of the alloys.

This has already permitted use of single-heat steel to provide products meeting different physical specifications.

While the above facts have been developed principally in the study of wrought steels, these alloys also have been applied to steel castings with desirable improvement. Differences in production methods and compositions, however, call for different Grainal alloys.

Bulletin Contains Ideas For Employe Magazines

■ A 24-page bulletin, full of ideas for the editor of an employe magazine has been issued by American Association of Industrial Editors Inc., 1964 East Ninth street, Cleveland. It contains most of the talks and discussions given at the association's first annual convention in Cincinnati, May 13 and 14. The bulletin is available at \$1 per copy.

Correction

Due to a typographical error the Rebecca furnace near Lisbon, O., which was reconstructed on paper in *STEEL* of July 8, p. 62, was reported as having been built in 1171. This stack was built in 1771.

SELLING IS

Easier

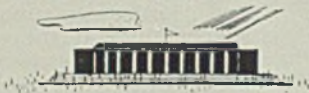


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OCTOBER 21-25, 1940 *Cleveland, Ohio*

MANAGED BY
AMERICAN SOCIETY FOR METALS



Flame Scarfing Billets

Extended application of flame scarfing ends production bottleneck formerly limiting mill output. One operator with scarfing torch handles six to eight times as much steel as he can by chipping

■ SCARFING as a billet-surface conditioning method has given excellent results at Buffalo plant of Republic Steel Corp. Starting with flame scarfing of billets in February, 1937, using acetylene, about 9 per cent of steel was being flame scarfed by the end of that year. On Jan. 17, 1938, use of city gas was inaugurated. This is a mixture of coke oven gas and natural gas rated 900 to 925 B.t.u. per cubic foot. During 1938, about 48 per cent of all steel conditioned was flame scarfed. This proportion has increased steadily since then, and in 1939, 75 per cent of the steel was conditioned by this method with the percentage still rising.

A most important reason for this quick adoption of flame scarfing as a conditioning method has been that its speed effectively removes a production bottleneck in the plant. Formerly the chipping department was quite congested. The rate at which work could be put through the chipping department determined the production of the plant much of the time.

Using ten torches, present maximum output appears to be around 500 tons per 8-hour turn. Tons output per torch per hour runs from an average of 3½ up to as high as 12 for comparatively short intervals. The rate of 6 tons per hour is around the maximum speed which can be maintained throughout an 8-hour period.

It has been found that one operator can condition six or eight times as much steel with a scarfing torch as he can by chipping. This greatly increases the production possible and completely eliminates the chipping department from the bottleneck classification as flame scarfing appears to have removed perman-

By JOHN HEFFLEY
Superintendent
Chipping Department
Republic Steel Corp.
Buffalo

ently the production bogey there.

In addition to increased output, flame scarfing appears to have other advantages. Using this method it has been found necessary to train fewer men; but they must be better trained to do the work properly. Also, flame scarfing will show up cracks and seams which in chipping would be unnoticeable. Thus an important byproduct of flame scarfing is a significant improvement in quality of the work.

Improves Working Conditions

In addition, the operators greatly prefer to operate the scarfing torches rather than chipping chisels as manipulating the torch is much cleaner and easier work. There is no dust or particles in the air and working conditions are much improved.

When the fuel changeover was made, it was found to be a great help to the crane operators, who cannot wear too dark goggles due to the nature of their work. At times the excessively brilliant cutting flames formerly used had been a source of eye irritation.

Conditioning work is done in a building, 550 x 90 feet with no cross partitioning. About two-thirds of this area is given over to flame scarfing. From five to ten or more operators can usually be seen here operating scarfing torches.

Oxygen gas is obtained from a liquid oxygen converter in a small adjoining building. Oxygen is brought

to the plant in liquid form at about 296 degrees below zero Fahr. Run through heaters, it is converted to gaseous form at about 90 pounds pressure. It is maintained at this pressure in a receptacle which holds from 13,000 to 16,000 cubic feet. Oxygen is distributed throughout the working area by 2½-inch lines. There is also a 2-inch natural gas line. Both lines run the length of the building at the center. Eight outlet boxes are spaced about 60 feet apart with three outlets per box, making a total of 24 outlets available. Usually about 10 to 16 torches are operated simultaneously.

By getting oxygen in liquid form and converting it to a gas, it is obtained approximately 99.6 per cent pure. Also, this higher-purity oxygen is drier and is obtained at lower cost than if from cylinders. In addition, the problem of handling some 300 to 350 cylinders a day is eliminated. This alone is a very important advantage as some 70 cylinders would have to be manifolded at a time to give the output desired.

One loading of the oxygen converter is equivalent to 250 cylinders. With some 2,000,000 cubic feet of oxygen used per month as in this plant, obtaining the gas from cylinders does not appear the most efficient procedure.

Natural gas is received at the plant at a pressure of 14 pounds and is reduced as it is fed into the main line which operates at 12 pounds pressure.

Elaborate safety precautions are taken throughout the entire gas supply system. Natural gas main has two blowout safety disks set to blow at 17 pounds per square inch. In the main distributing line are six check valves with two hydraulic flashback preventers in series. Also

there is a safety valve in the main line outside the plant. The pressure of 14 pounds is maintained by the fuel supplier and reduced to 12 pounds by a regulator.

Analysis of natural gas is not critical. However, it is extremely important that it be dry and reasonably free from sulphur. At this plant the gas is dried by an alcohol process. It is believed that in some instances where natural gas has proved unsatisfactory as a fuel in scarfing, the fault lay in the fact that the gas was not dry.

Torches are connected to any of the 24 outlets available by means of 50-foot lengths of hose. This is a special fire-safe hose designed to have considerable resistance to high temperatures so accidentally contacting the flame will not damage the material severely.

Cutting Action Increased

Torches are standard types but have a special rod feed developed by Republic Steel Corp. to start the cutting action. A $\frac{3}{8}$ -inch diameter rod with approximately 0.10 per cent carbon is gripped in a mechanism on the torch and connected with a trigger at the hand hold. Pressing the trigger feeds the rod into the flame a short distance, just sufficient for starting the cutting action.

When scarfing, the operator works the trigger with his thumb on the back stroke. Thus cutting flame is in action as he reverses his swing for the cutting stroke. This has proved a most valuable accessory at this plant as it permits the cutting action to be started within 0.01 to 0.03 minute, thus permitting fast manipulation of the torch. Actual scarfing is done at maximum rate of 85 feet per minute. Probably the average throughout the entire shop would be from 40 to 50 feet per minute.

Torches are stelled to prevent wear at all points where the torches contact the billet. This is necessary as in most cases the operator lets the torch heel slide along the billet surface during scarfing. Hard surfacing these wear points is quite effective, however, as some torches have operated a year before requiring major maintenance.

Cuts can be taken to remove a minimum of $\frac{1}{16}$ -inch of metal from the surface. Average amount removed is from $\frac{1}{8}$ to $\frac{3}{16}$ -inch in depth. This is taken from a width of $\frac{1}{2}$ to $\frac{3}{8}$ -inch as desired.

The 550-foot length of the scarfing room is sufficient to permit 11 railroad cars to be placed on a siding extending along one side of the building. Steel in bundles is unloaded from the cars by three 15-ton cranes operating on a 90-foot span throughout the length of the room. From the pickle tanks, the steel is brought up by crane and placed on

the scarfing beds, groups of heavy steel members spaced at frequent intervals.

The operator loosens bundles, rolls them out and an inspector proceeds to mark the billets for scarfing.

Then operator cuts out portions marked and gives the billets a quarter turn ready for the next side. Work is always reinspected two or three times to be certain that no defects are missed.

Imperfections may be classified roughly into three types: "Scabs," "tears" and "seams." "Scabs" are pieces of metal attached to the billet and usually are not deep, therefore they can be removed quickly with a light cut of the torch.

Second type of imperfection is known by various names including "tears," "breaks," "snakes" and "fishtails."

They, however, may be quite deep and so may require more than one

pass of the torch. However, a flash of light along the line of the crack tells the operator when the defect has been cut out. As successive passes are made cutting off layers of metal, the original wide heavy line seen by the operator becomes thinner and thinner. At the point where the flash line disappears, the crack is entirely removed. These cracks may be in various forms—the "fishtail," for instance, having the appearance of a Y.

"Seams" form the third class of imperfection. Where the second type of defect is usually quite deep, the majority of seams are light, extending usually no further than 0.02 or 0.03-inch in depth. Thus they are easily removed with a light cut. They may extend the entire length of the billet.

One thing not completely understood by many in the industry is (Please turn to Page 76)

New Process Is Developed for Plating Metals onto Plastics

COMBINATIONS of metals and plastics, such as steel stampings or die castings with molded plastic inlays, have become common in a host of products where the beauty and warmth of plastics can enhance the strength and long life of metal. These combinations are made in various ways, either mechanical assemblies or such other processes as dipping metal parts into liquid plastics or spraying with such plastic material. One of the latest innovations in the union of these two types of materials is the plating of plastics with metal by a process known as Metaplast.

No Special Equipment Needed

With this process, plastic surfaces are given a special bonding coat, after thorough cleaning by either tumbling, dipping or spraying. This bonding coat has sufficient electric conductivity to permit electroplating with either copper or silver, using conventional methods and equipment. If other types of plating are desired, they can be "flashed" over the baseplate of silver or copper.

After plating, the finishing operation may be tumbling, buffing or chemical dip. Tarnish can be avoided by protecting the surface either with clear lacquer or flashing over another metal as just mentioned.

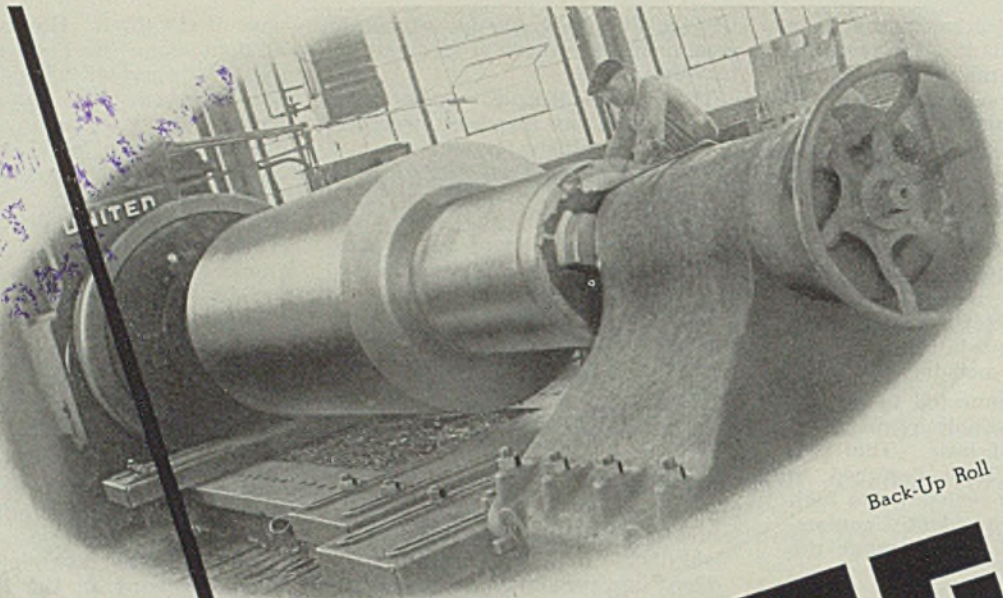
Masking of certain parts to prevent plated metal from adhering to certain portions of the surface is accomplished easily by use of Scotch tape, rubber masks or lacquer applied before the part is given the bonding coat treatment. After ap-

plying the bonding coat, the mask is removed and only those portions of the surface carrying the coat will take a metal plate.

A number of special advantages appears to accrue from the ability to apply a firmly adherent metal plate to a plastic surface. Moisture absorption, a common difficulty with plastics, can be prevented, as well as attacks by corrosive agencies which the metal coating will resist. Contrasts and design details can be brought out more strikingly. Naturally, surfaces will serve as electric conductors and also are considerably harder than the plastic itself. Stocks of plastic articles no longer of value because of outmoded colors or unsatisfactory molding can be salvaged in some instances with metal plating.

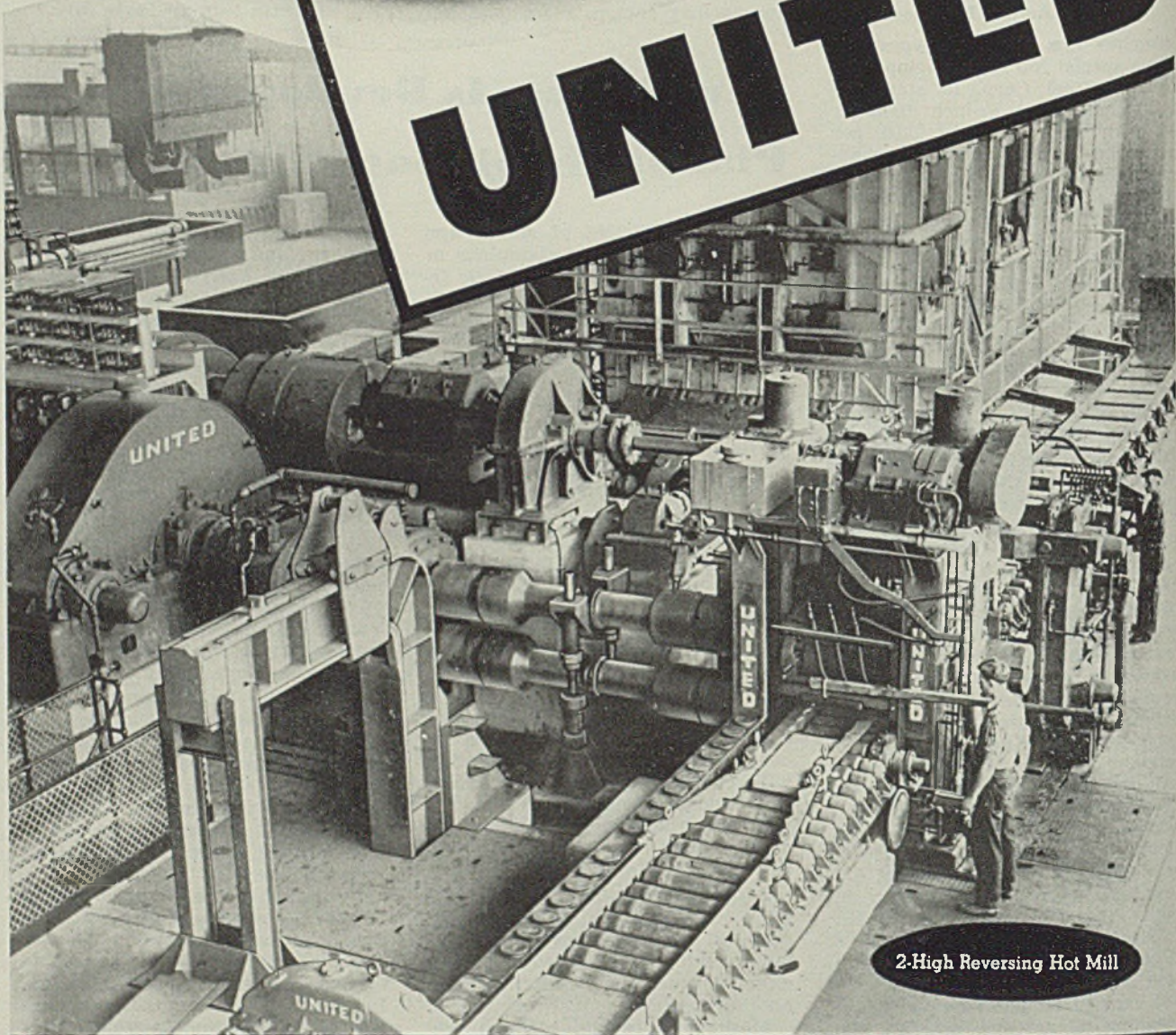
Suggested applications include cams, Faraday cages, handles, instruments, machine parts, reflectors, rollers, automotive and aircraft fittings, consumer novelties, containers, costume jewelry, fountain pens, poker chips, razors, radio parts, bottle closures, dental plates and the like.

According to the Metaplast Corp., 244 Fifth avenue, New York, the equipment necessary for the bonding and plating operations is similar to that used for standard electroplating. Plants already having suitable electroplating departments require only a small additional installation. The sponsors of the process do not sell equipment, but can furnish complete plans and specifications for various installations. The process is available to manufacturer on a license basis.



Back-Up Roll

UNITED

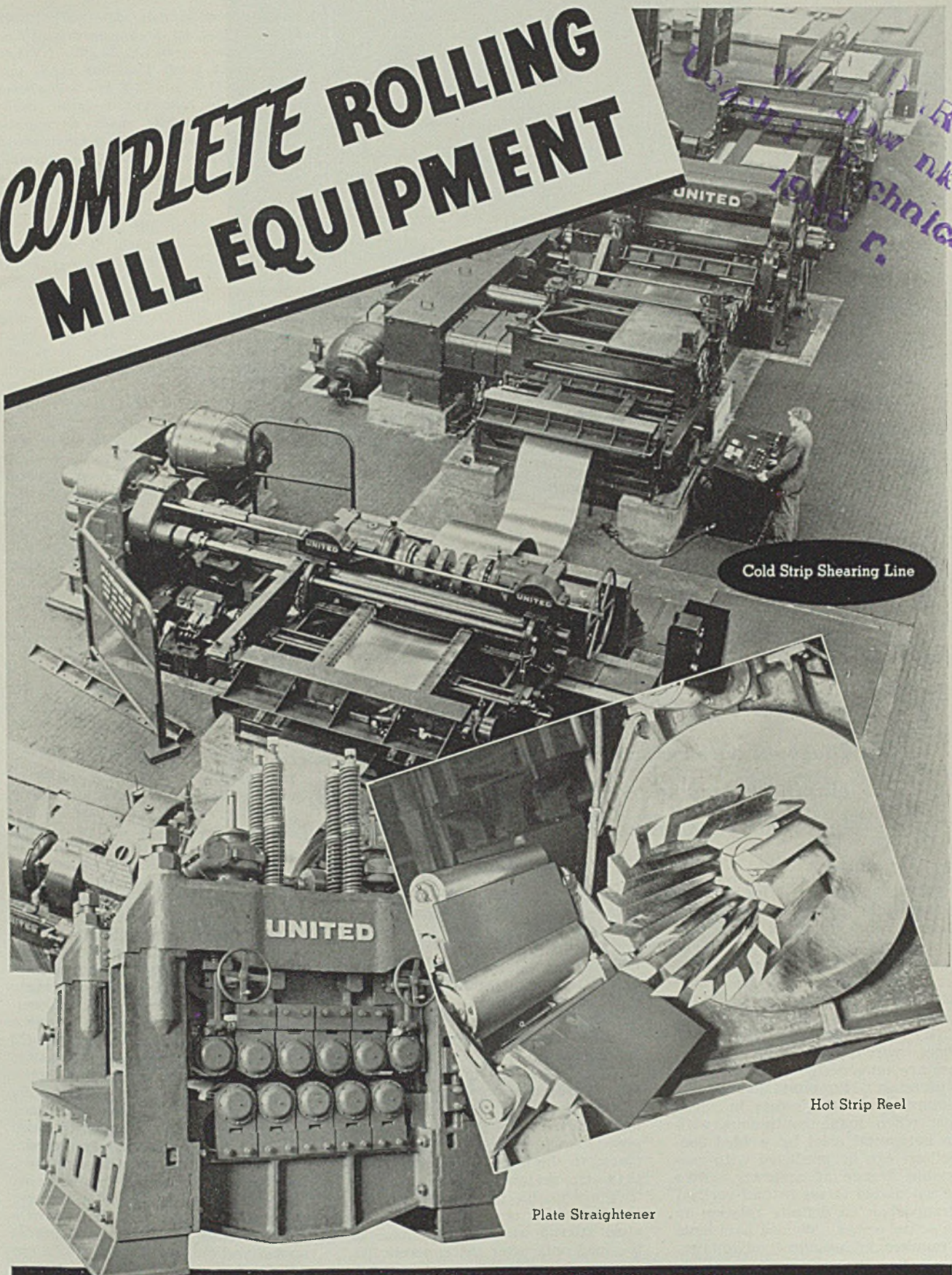


2-High Reversing Hot Mill

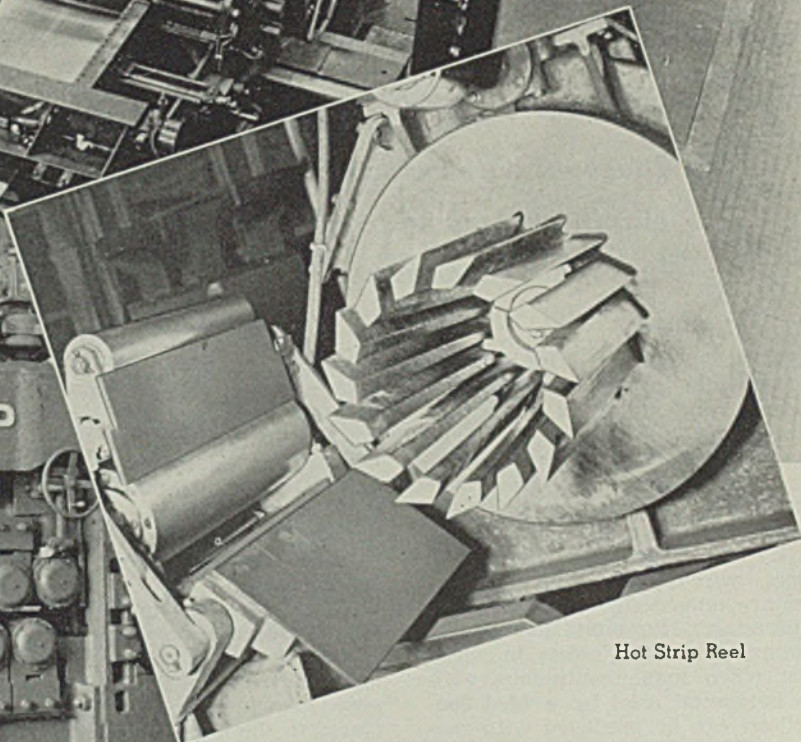
DAVY AND UNITED ENGINEERING COMPANY, LTD., SHEFFIELD, ENGLAND • DOMINION ENGINEERING WORKS, LTD.,
MONTREAL, P. Q. • UNITED INTERNATIONAL, S. A. PARIS, FRANCE • SHIBAURA-UNITED ENGINEERING CO., TOKYO, JAPAN

COMPLETE ROLLING MILL EQUIPMENT

CAŁKOWITANIE
1940 r.
znajomość
techniczną



Cold Strip Shearing Line



Hot Strip Reel

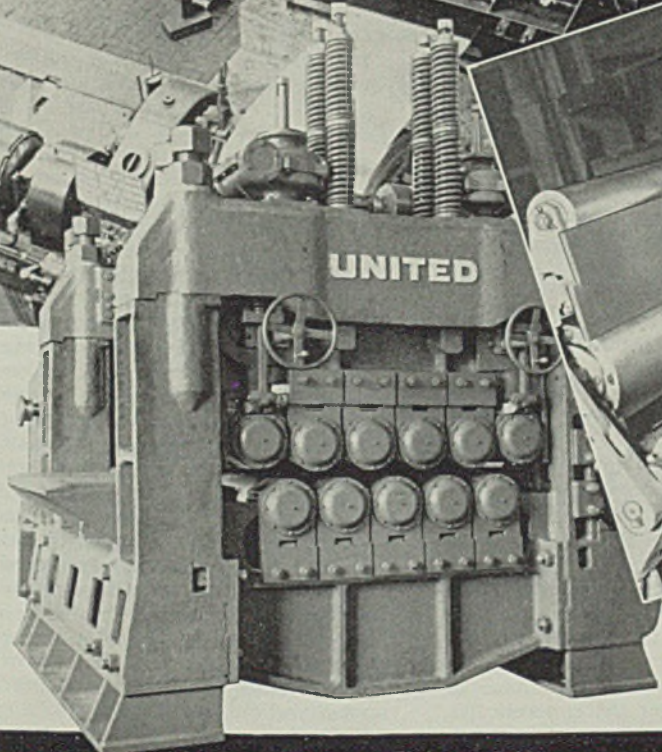


Plate Straightener

UNITED ENGINEERING and FOUNDRY COMPANY · Pittsburgh

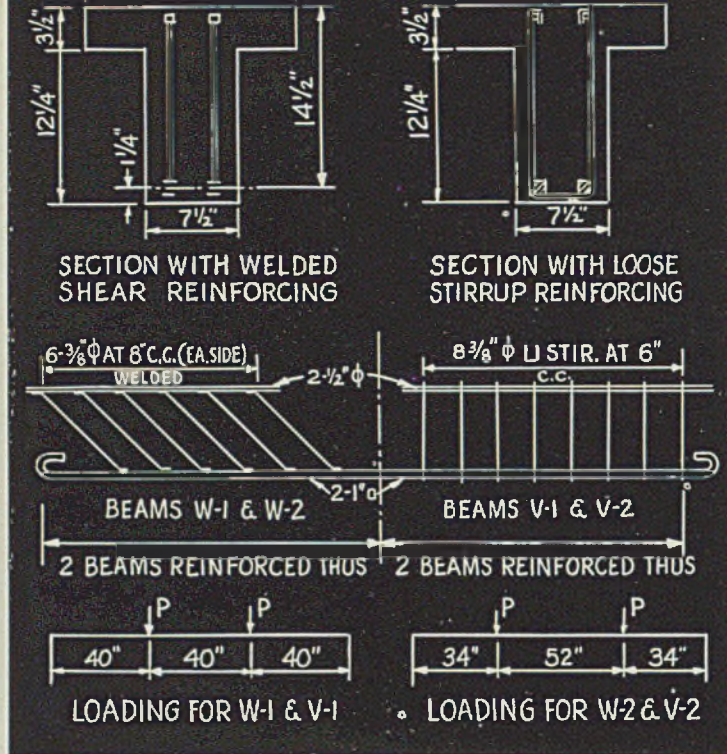


Fig 1—Beam details

Shear Reinforcing

FOR CONCRETE BEAMS

Diagonal bars welded to top and bottom steel in concrete beams eliminate lack of continuity, permit stress in shear steel to be predicted accurately, lower costs and make beams stronger

■ HERE is presented information to show that lack of continuity existing in concrete beams as now designed can be eliminated by use of diagonal bars welded to top and bottom steel. Also it will be shown that concrete beams can be made stronger in shear and more cheaply by substituting welded bars where wire-tied vertical stirrups now are universally used for shear reinforcing. Numerous strain gage readings show the stress in shear steel when made continuous with the horizontal steel by welded connections can be predicted with reasonable degree of accuracy. Also the calculated stress in tied vertical stirrups has no definite relation to the actual stress. Welded bars have a number of practical advantages over loose stirrups as will be pointed out.

Vertical stirrups as shear reinforcing constitute an unsatisfactory element in the design and construction of concrete buildings. Opinion

is almost universal that loose stirrups are not satisfactory and that they are used because of an apparent lack of a substitute. That they have prevented failure of concrete beams is general knowledge. They have done this because of the ridiculously low shearing stress allowed in the concrete by standard specifications.

Major objections to loose vertical stirrups appear to be absence of continuity as the vertical bars are not connected to the tension bars nor to each other and cannot be placed in the direction of the forces they are designed to resist. Also they are unable to take stress until the beam has cracked; that is, the steel stirrup assumes its share of the load only after the concrete has failed. In addition, there is much

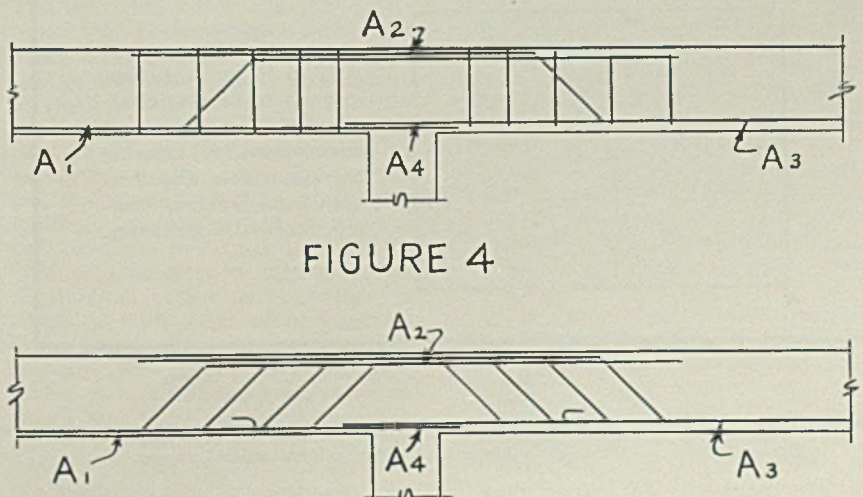
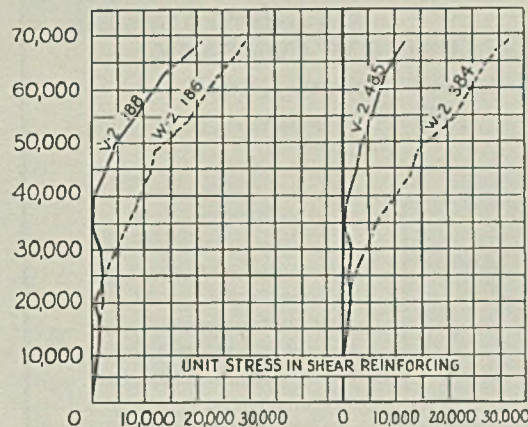
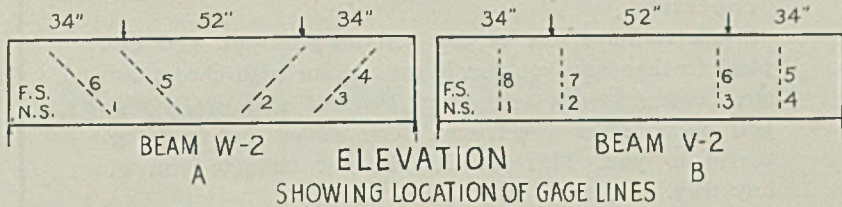
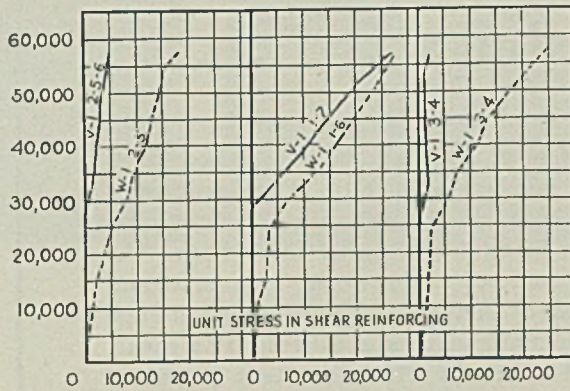
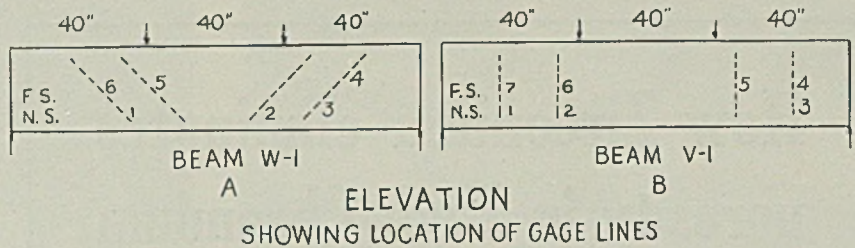
guesswork involved in the design of stirrups.

It is believed possible to eliminate all these objections together with most of the practical difficulties encountered in tying and placing shear steel by placing the shear bars at right angles to the cracks by joining the various elements of the steel together. This is the basis of all design except concrete design. To illustrate, the "truss analogy" is used by authors of text books to develop the theory of stirrup design, and much emphasis is placed on bending the stirrups around the top and bottom steel. This theory can be carried to its logical extreme by specifying that the verticals of a Pratt truss be "hooked around" the top and bottom chords.

A large number of tests have been made comparing beams in pairs which were identical except for the shear reinforcing. The shear reinforcing was made equal in horizontal cross section for each

Abstracted from paper by Dewey M. McCain, State college, Miss., submitted in contest sponsored by James F. Lincoln Arc Welding Foundation, Box 5728, Cleveland.

Fig. 2. (Top)—Location of gage lines and load-stress curves for beams W-1 and V-1. Fig 3. (Center)—Location of gage lines and load stress curves for beams W-2 and V-2. Fig. 4. (Bottom)—shows usual arrangement of vertical stirrups for shear reinforcing, upper. Lower shows placing of steel for welded diagonal bar shear reinforcing system promulgated here



pair of beams, the welded bars—placed at 45 degrees—being 1.414 times as far apart as the vertical stirrups.

Sketches in Fig. 1 show concrete and steel details of typical test beams. T-beams were used in most cases to obtain high shearing stresses without causing failure in compression.

Only reliable strain gages were used and all readings were taken twice and checked. Still some proof of the reliability of the shear stress curves was desired, so graphs were plotted showing the measured location of the neutral axis of the beam, and the calculated and measured stresses in the tension steel at mid-span. Very close agreement between the calculated and measured stresses in the steel was noted. The position of the neutral axis varied slightly as was anticipated.

Figs. 2 and 3 show position of the shear steel relative to the loads and reactions together with the load stress curves on which much of this discussion is based.

Stress Taken as Applied

Bearing out the theory of the objection mentioned previously, the average stress in the vertical stirrups, see Fig. 2, was practically zero until the load was large enough to produce cracks in the concrete. Further, regardless of the amount of load, if no crack was visible across the vertical stirrup, the stress remained zero or thereabouts until the beam failed.

On the other hand, welded diagonal bars were stressed, Fig. 3, as soon as the load was applied, and although this stress was small compared with the stress after cracking began, it is this ability to take stress as soon as the stress is applied that accounts for the relative smallness of the cracks observed in beams reinforced with welded diagonal bars.

Curves, Fig. 2, show that many shear calculations for concrete beams reinforced with tied vertical stirrups are inaccurate. Such calculations are simply guesses dressed up with arithmetic to look professional. At a load of 50,000 pounds, the stress in bars 1 and 7, beam VI, was about 17 times the stress in bars 3 and 4.

It is evident there is no load-stress (Please turn to Page 78)

How Zirconium eliminates porosity in High-Chromium Steel Castings

THE ADDITION of zirconium to low-carbon steels of the 4 to 6 per cent and 12 to 14 per cent chromium types has been found to eliminate pinholes and shrinkage cavities in sand castings of these steels. The zirconium in the form of 35 to 40 per cent zirconium alloy is added as a final deoxidizer following normal deoxidation with manganese and silicon. The result is clean, sound castings with excellent physical properties.

Ask to have one of our metallurgists call and explain further how you can improve your high-chromium steel castings with zirconium. He will also gladly tell you about other "Electromet" ferro-alloys that may be useful to you. This service will not obligate you in any way.

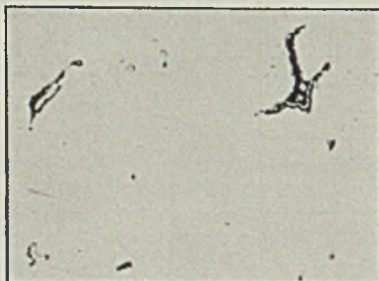
ELECTRO METALLURGICAL COMPANY

Unit of Union Carbide and Carbon Corporation

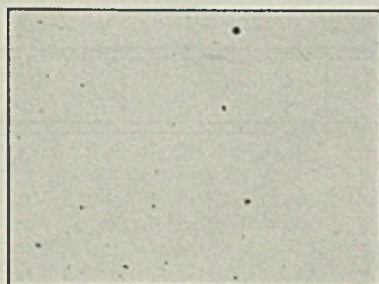
30 East 42nd Street



New York, N. Y.



Blowholes and shrinkage cavities in a 12 to 14 per cent chromium steel casting not treated with zirconium. Magnification—250 diameters.

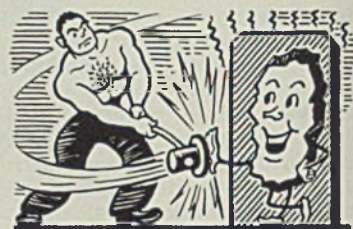


A 12 to 14 per cent chromium steel casting treated with 35 to 40 per cent zirconium alloy, showing the cleanliness and freedom from cavities. Magnification—250 diameters.

Items of Interest about other "Electromet" Ferro-Alloys

High-Nitrogen Ferrochrome Improves High-Chromium Steel Castings—High-nitrogen ferrochrome adds both nitrogen and chromium to steel. A small per cent of nitrogen in cast steels containing over 20 per cent chromium greatly refines grain size, inhibits objectionable grain growth at high temperatures, materially increases strength and toughness and effects a slight increase in hardness.

Columbium Increases Usefulness of 4 to 6 Per Cent Chromium Steels—The addition of about 0.50 per cent columbium to the



wrought 4 to 6 per cent chromium steels greatly reduces air-hardening, gives higher impact strength regardless of heat-treatment or temperature, improves oxidation resistance, increases creep strength, and improves weldability. Therefore, columbium-bearing 4 to 6 per cent chromium steels have a greatly widened field of usefulness.

If you want more information about these and the many other "Electromet" ferro-alloys and metals and the service that goes with their purchase, write for the booklet, "Electromet Products and Service."

Electromet

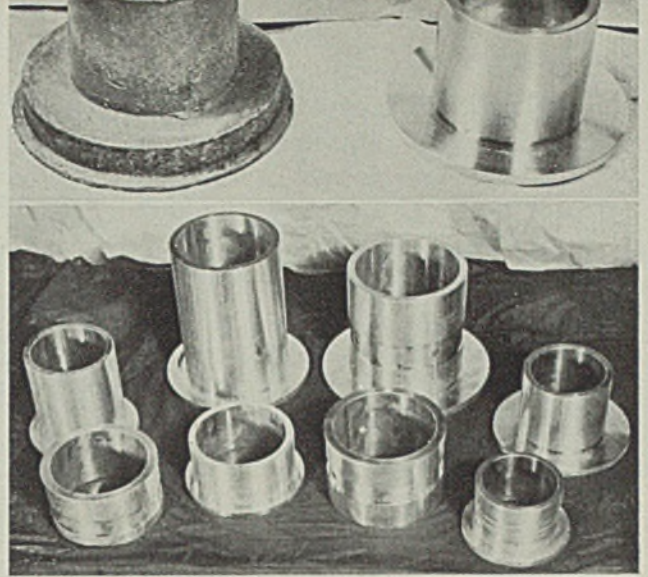
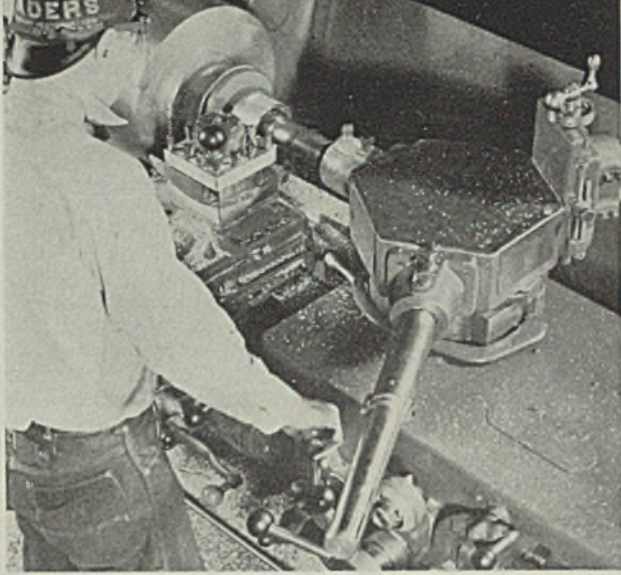
Trade-Mark

Ferro-Alloys & Metals

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Left, entire bushing is machined, cut off from collar in one setup. Right, alongside bushing as cast with added collar for chuck jaws is a completely machined bushing. Lower, finished bushings show variety handled

Making Bronze Bushings Efficiently

■ HOW TO manufacture various sized lots of brass bushings has been an annoying problem to many a production man charged with responsibility of purchasing the most effective production equipment. At the Harnischfeger plant, it often is necessary to make one or two repair bushings. Then on production as many as 1000 or 2000 bushings of one kind may be required.

Such bushings used to be machined on automatic chucking machines, turret lathes, engine lathes and similar equipment, but to achieve the accuracy desired it was often necessary to grind the outside diameter of the bushing on an arbor to assure absolute concentricity of the bore. This was not only costly and cumbersome but presented an employment problem as it was difficult to find an operator who could run all of the above machines efficiently. There was not enough work to keep any one of the machines going continuously.

This problem was solved by developing a method of casting bushings in such a manner that they can be machined completely in one setup. A turret lathe especially adapted for the work is used. This method involves casting an extra

By H. MENCK
Works Manager
Harnischfeger Corp.
Milwaukee

flange on the end of the bushing at the heaviest end of the piece, this flange having approximately a 15-degree taper.

The high-speed turret lathe used is equipped with an air-operated chuck having serrated jaw bases. The jaw itself has a 15-degree taper nose. Due to serration of the jaw bases it is possible to change the setting of the jaws quickly from large to small sizes. The added flange on the bushing provides additional stiffness to permit the bushing to be held very tightly in the chuck without the usual distortion of casting which otherwise would cause the finished piece to be out of round.

As will be seen in accompanying illustration, the turret lathe is equipped with a set of boring bars and reamers to rough out and finish machine the bore. The cross slide turret carries the necessary tools to rough and finish turn and face the outside dimensions of the bushing. Also it carries a tool for cutting the bushing off from the integral

flange by which it is gripped in the chuck. After all inside and outside surfaces have been finished, this cut-off tool separates the finished bushing from the clamping flange, which then is returned to the foundry for remelting so no material is wasted. This procedure permits the entire bushing to be completely machined inside and out at one quick and easy turret lathe setup.

Bushings are turned and faced with carboloy tools mounted in the cross slide. Carboloy tipped boring tools and reamers mounted in the main turret handle the interior surfaces. The roughing tool leaves approximately 0.015-inch of material for the finishing reamers. A set of reamers for each size bore is kept permanently fitted so to change from one size to the other it is only necessary to insert the two Kelley plugs into the bar and change the setting of the turning tool on the tool post.

In the most extreme cases, change-over from a simple small bushing to a large complicated bushing can be effected in 10 minutes or less. Actual machining time on a bushing approximately 2 inches in diameter and 2½ inches long with a

(Please turn to Page 77)

Health Plus Safety

(Concluded from Page 45)

ers, requesting each individual to "take stock" of his own situation with respect to safety with 22 different questions to be answered and with room for suggestions to be written in.

The first year the questions were designed to check the knowledge of the employe as to the equipment that was surrounding him and that he used every day to make his work day a safe one. The second year the questions were designed to create interest and develop a consciousness in the health side of the program to show the effect of lost time due to personal reasons.

This inventory told us how our employes stood in regard to safety. For example, out of 2025 cards sent out, replies to the important question: "Do you believe that the safety rules should be enforced?" 1950 said "Yes," 74 said "No," 1 was blank. This shows that the employes themselves want a good program.

Cut Compensation Costs 60%

How about the cost of such a program? This plant we have been referring to increased its program costs approximately 20 per cent over the last three years. Compensation costs were materially reduced each year, until in 1939 these costs were 60 per cent lower than in 1938. They can not go on indefinitely showing such a large reduction, but if they maintain this low cost level their program costs can be increased to some extent and still be a sound investment.

It is true all the plants enjoy the benefits of an industrial hygiene engineer and laboratory. This means much to their program. However, any small plant which cannot afford such a laboratory can have all the necessary work done by a state laboratory at little or no expense.

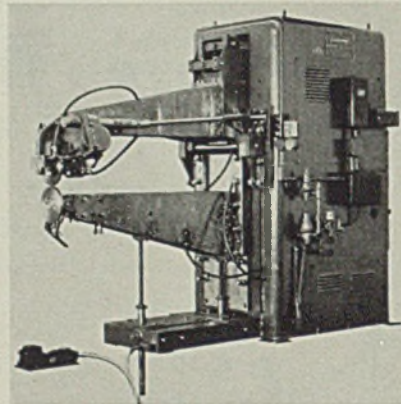
We have been discussing health and safety from a company cost angle, but there is another side to this subject. The cleaner and safer

the surroundings, the higher the morale of the employes. An improved morale cannot but result in higher efficiency of all employes and reduce labor turnover. This again is a definite saving to management, but it is hard to determine the exact amount of the saving.

It will bear repeating, however, that an effective health and safety program has a more far-reaching effect than just the elimination of accidents.

Designs Large Welders For Aircraft Work

■ Combination spot and seam welders capable of spot welding two sheets of aluminum alloy up to and including 1/8-inch in thickness and seam welding two sheets of aluminum alloy 0.080-inch in thickness, with the arms at the maximum spac-



Designed especially for aircraft work, the above combination spot and seam welder is equipped with arms 50 inches long, making it possible to insert large sheets of metal into its throat

ing of 18 inches apart were recently furnished Lockheed Aircraft Corp., Burbank, Calif.

These machines, said to be the largest combination welders, both in size and capacity, in the aircraft industry, were specially designed

and built by Federal Machine & Welder Co., Warren, O., in collaboration with Lockheed. Each unit is equipped with arms 50 inches long, making it possible to insert large sheets of metal into the throat of the welder while welding along the outer edge. The electrical design is such that the welding transformer with its nominal rating of 450 kilovolt amperes will deliver 35,000 amperes at the electrodes, with a throat area of 900 square inches. A motor-driven air cylinder device provides any electrode opening up to 7 inches for entering special types of work. The maximum welding pressure of each unit is 2000 pounds and is applied by an air cylinder, lower pressures being obtained by means of a balancing cylinder.

Both the spot welding electrode holders and seam welding heads are interchangeable. When using the seam welding head to make a continuous row of spot welds, a variable speed drive mechanism permits welds to be made at from 15 inches to 5 feet per minute.

Manufacturers Approve List of Can Sizes

■ The list of can sizes proposed by the committee on simplification of containers of the National Canners association has been accorded the required degree of acceptance, and is to become effective Sept. 1, 1940, according to division of simplified practice, national bureau of standards, Washington.

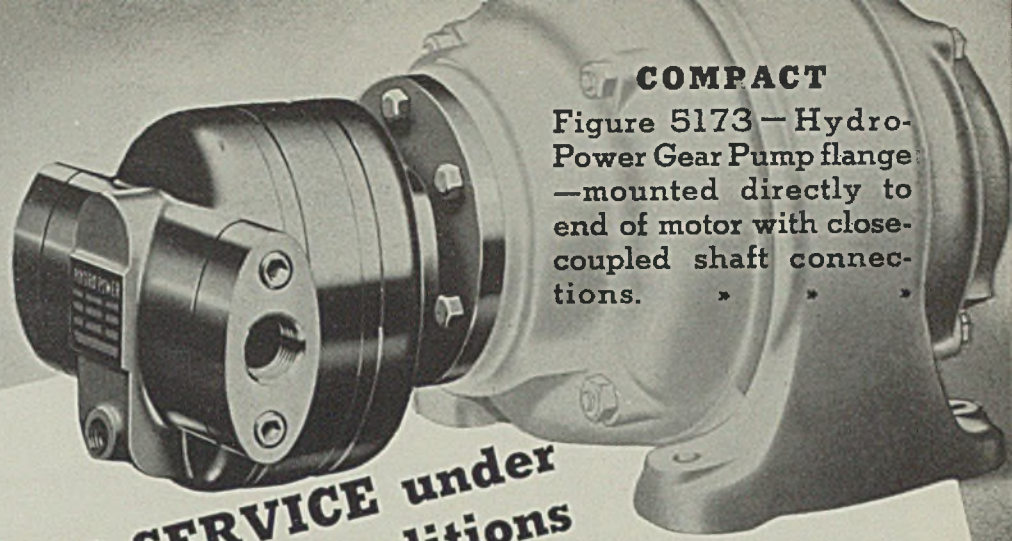
To be known as Simplified Practice Recommendation R155-40, "Cans for Fruits and Vegetables," the list will be in charge of a standing committee composed of can manufacturers, canners, distributors of canned products and consumers.

Printed booklets containing not only the recommendation but also the history and development of the project, list of acceptors, etc., will be made available, at nominal costs, at the government printing office in the near future.

TABLE III—Accident Classification for the Year 1939

CLASSIFICATION	Head			HAND, ARM			BODY			FOOT, LEG				Death	Total
	Eye	Face	Head	Finger	Hand	Arm	Back	Chest	Hernia	Toe	Foot	Ankle	Leg		
Hand Tools	1	..	1	5	2	1	2	1	..	..	..	..	..	..	13
Flying or Falling Objects	24	2	4	6	7	3	3	..	..	24	13	1	9	1	97
Slips or Falls .....	..	1	6	1	1	6	7	2	1	..	3	10	9	..	47
Struck Against or Caught Between ..	..	..	3	56	7	9	1	..	1	1	5	4	14	1	102
Lifting .....	..	..	..	..	..	2	12	..	5	..	..	..	..	..	19
Electric Shock or Flash	2	2	1	..	2	1	..	..	..	..	..	..	..	3	11
Miscellaneous (2*)	2	..	6	2	2	1	5	1	..	..	1	..	2	1	25
TOTALS	29	5	21	70	21	23	30	4	7	25	22	15	34	6	314

*Includes 2 contracting dermatitis, an occupational disease.



COMPACT

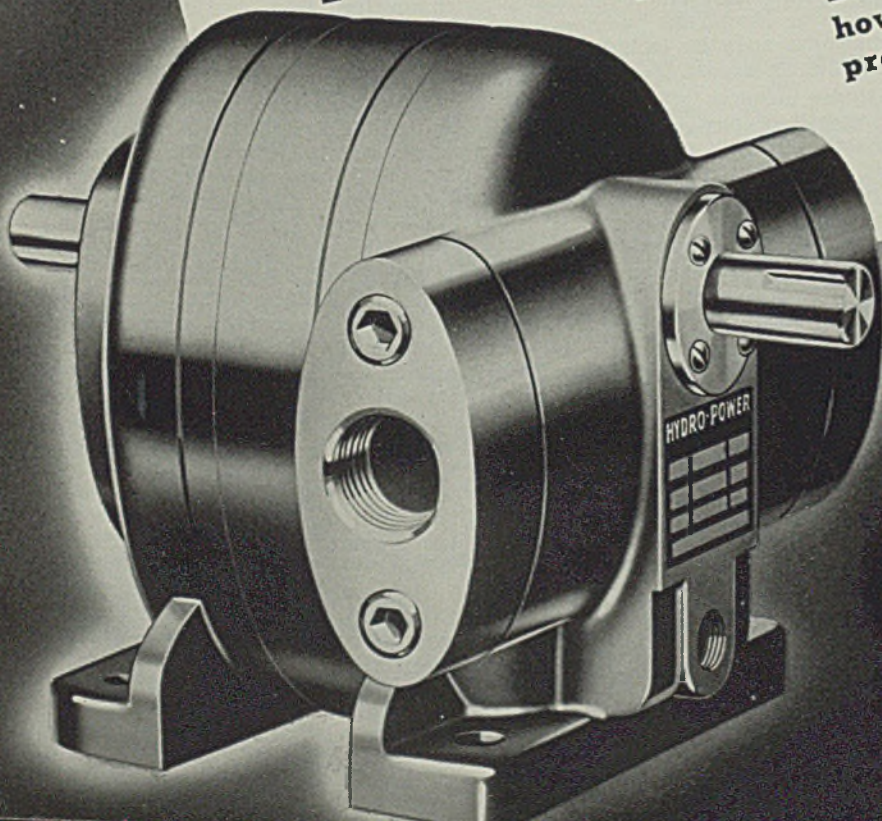
Figure 5173—Hydro-Power Gear Pump flange—mounted directly to end of motor with close-coupled shaft connections. * * *

CONTINUOUS SERVICE under strenuous operating conditions is assured with

HYDRO-POWER GEAR PUMPS

due to long Tapered Roller Bearing Construction and revolutionary design. Pressure capacity up to 1000 pounds per square inch.

Let Hydro-Power Engineers tell you how you can do a superior hydraulic pressure control job with modern Hydro-Power Gear Pumps.



INDEPENDENT

Figure 5339—Hydro-Power Gear Pump with foot mounting for direct connection to motor shaft through flexible coupling

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Sales Headquarters

604 GRANT BLDG., • PITTSBURGH, PA.

Factory: MOUNT GILEAD, OHIO

A.S.T.M. Adds New Standards And Specifications for Metals

■ MORE new specifications and tests were approved at the forty-third annual meeting of the American Society for Testing Materials in Atlantic City, June 24-28, than at any previous meeting. An indication of intense activity in standardization and research in materials was shown by the more than 250 committee meetings conducted.

In the standardization field, new tentative standards totaling some 77 were approved. The number of existing specifications adopted as standard totaled 40, which is considerably less than last year, but in 1939 the society issued its current *Book of Standards* and the number of tentative specifications advanced to standard always is higher in the the standards book year. When letter ballot action is taken on various recommendations approved at the meeting, the society will have on its books close to 950 standard and tentative specifications, tests, and definitions, a net increase of 65 over the previous year.

Report of committee A-1 on steel included five new tentative specifications — one on factory-made wrought carbon steel and carbon-molybdenum steel welding fittings and four covering carbon and alloy steel forgings, respectively, for general industrial and railroad use, providing various grades of material classified by size and by heat treatments to provide required properties. An important addition was made in the carbon steel specifications for general industrial use providing a grade for use in bridges with a minimum tensile strength of 66,000 pounds per square inch and 33,000 pounds yield point.

Plate Specification Clarified

One committee action involved clarification of the Steel Plate Specifications (A 78) in connection with fabrication of pipe—this grade of low-tensile steel of structural quality for welding is widely used for fusion welding. Of particular interest in the oil refining field was addition of requirements for upset ends of tubes and repair by grinding, in the three specifications for carbon and alloy steel tubes.

Standardized requirements for hardness testing of boiler and superheater tubes also were effected, classifying the material on which the brinell and Rockwell tests are to be used. Five specifications in the boiler and superheater field which have existed as tentative are to be referred to society ballot for

adoption as standard. An important change involved specifications for forged or rolled pipe flanges, valves, etc., which limits the carbon to 0.35 per cent when subject to fusion welding and refers to the addition of silicon.

Approved was incorporation of a new grade of high-strength boiler rivet with a tensile strength of 58,000-68,000 pounds per square inch and yield point of half the tensile strength but in no case less than 32,000 pounds. This compares with the existing standard boiler rivet grade of 45,000-55,000 pounds per square inch tensile.

The steel committee also acted to approve appointment of two new service or co-ordinating committees—one in the field of heat treatment, and the other on welding, so that consideration can be given to the materials such as forgings, pipe, various requirements for groups of castings, and the like.

Stainless Data Collected

Committee on iron-chromium-nickel and related alloys reported definite progress in its compilation of data including chemical analysis, mechanical properties, heat treatment, etc., of stainless steels. It is expected this valuable information will be published during the year. Subcommittee on inspection of architectural stainless installations was continued and it is anticipated that results of tests on material obtained as a result of damage to a large New York building by a windstorm may be included in the committee's report.

Under auspices of committee E-4 on metallography a roundtable discussion was held on lapping methods and electrolytic polishing to determine the extent of use and whether they are of such a status that they might be incorporated in the methods of preparation of metallographic specimens. The committee also announced it was studying feasibility of establishing a ferrite grain size standard as a companion item to the austenite grain size classification. The committee plans to get photomicrographs of a wide range of products and by selective study draw tentative conclusions.

Committee A-3 on cast iron recommended adoption of the Tentative Specifications for Automotive Gray Iron Castings (A 159-35 T) and Lightweight and Thin-Sectioned Gray Iron Castings (A 190-36 T). Committee on malleable iron castings reported continuation of its

work on welding. As a result of a study being made at Battelle Memorial institute, the committee plans to consider inserting more specific requirements for physical properties in the Tentative Specifications for Pearlitic Malleable Iron Castings (A 220-39 T).

Work of committee B-5 on copper and copper alloys cast and wrought has been intensified in recent years and its report was outstanding. During the year, a number of materials coming under the scope of the war department have been studied and new tentative standards issued to cover them. In this work the war department has co-operated closely. Seven new specifications were approved for publication covering:

Cartridge Brass Cartridge Case Cups, Gilding Metal Sheet and Strip, Gilding Metal Bullet Jacket Cups, Copper Rods and Bars, Brass Wire, Miscellaneous Brass Tubes, and Leaded High-Strength Yellow Brass (Manganese Bronze) Castings. Several of these items pertain to materials not previously covered in A.S.T.M. specifications.

Committee B-5 also reported agreement on new specifications which will cover 25 copper-base alloys in ingot form for sand castings. After letter ballot in the committee, this new specification, which is of interest in connection with the national preparedness program, will be referred to committee E-10 on standards for approval. When approved, the new item will replace existing specifications B 30.

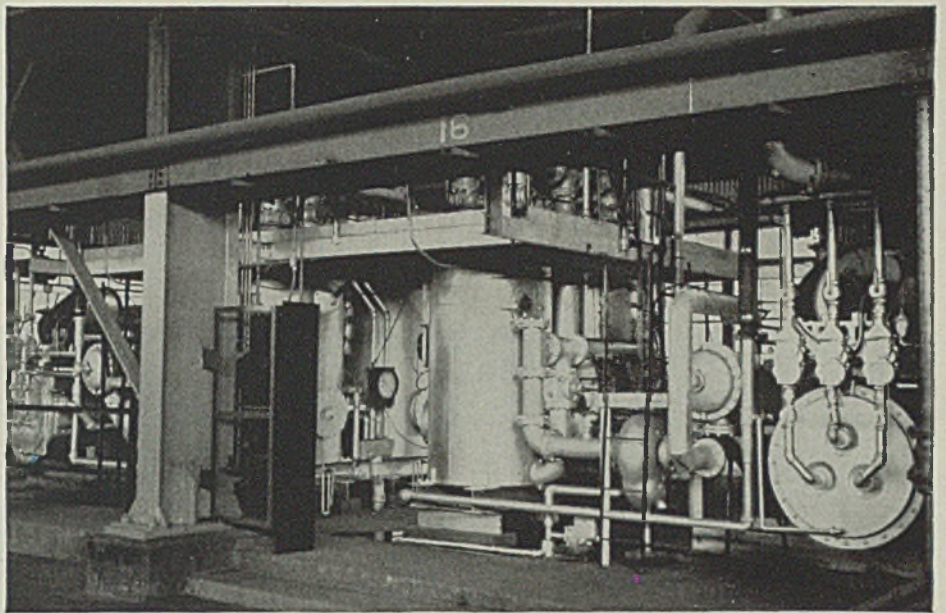
So that the committee's work may be tied in even more closely with the government specification bodies, the committee plans to designate special advisers to its advisory committee from various government departments.

Takes Action on Lead

Of major interest in report of committee B-2 on nonferrous metals and alloys was its new tentative specifications for pig lead, replacing immediately existing standard B 29. After much study, the committee overcame various difficulties in its original proposals, primarily the method of arrangement, and classification of the several types of metals covered. The specifications cover refined lead in pig form made from ore or other material by processes of reduction and refining. Following types of lead are covered: Corroding lead, chemical lead, acid lead, copper lead, common desilverized lead A, common desilverized lead B, and soft undesilverized lead.

In its report on die-cast metals and alloys, committee B-6 recommended a slight revision of the magnesium-base die castings specifications B 94, and included as an appendix to its report

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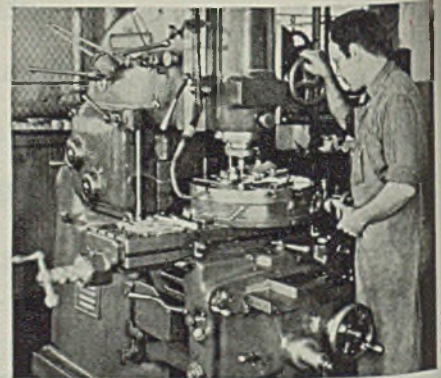
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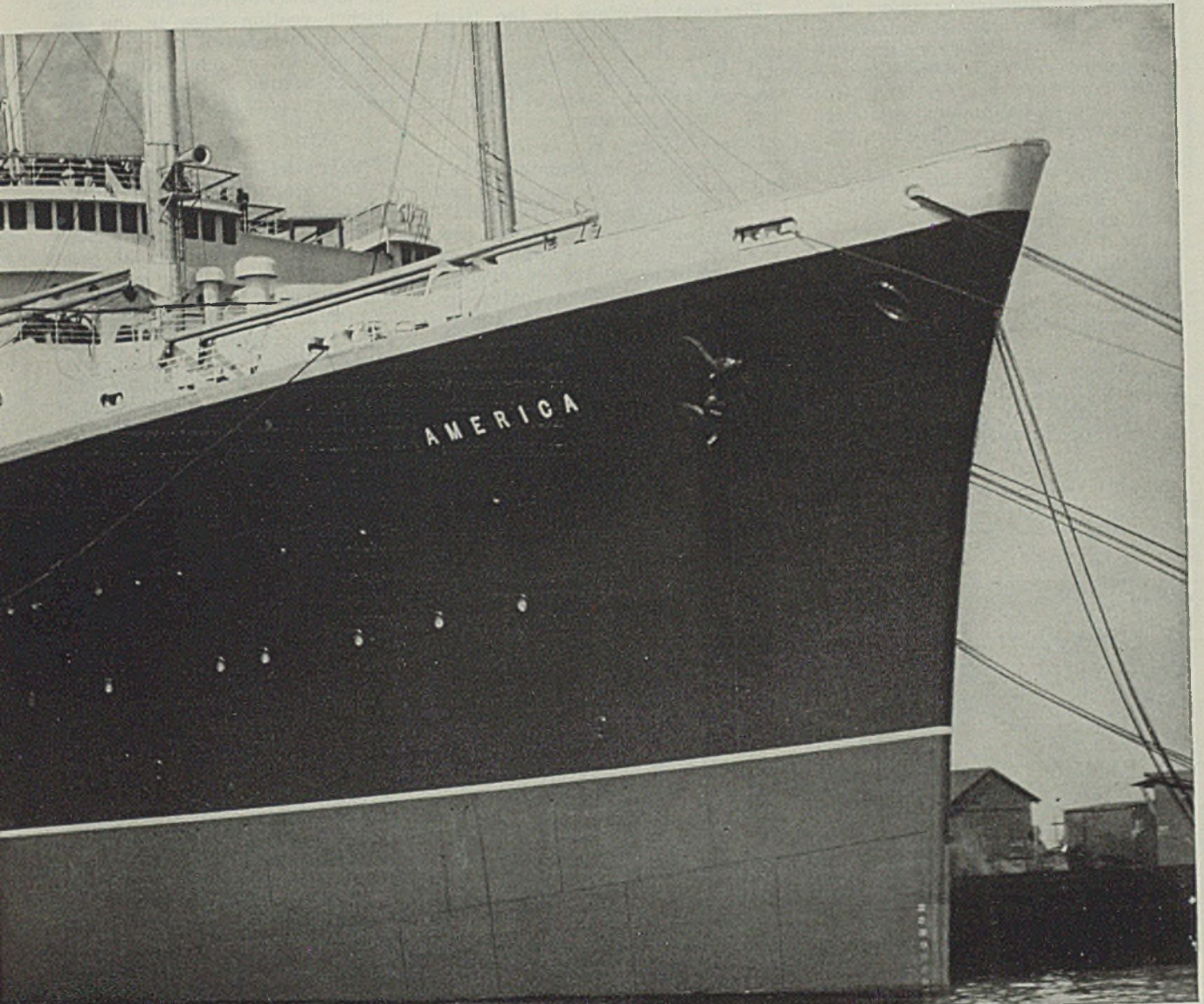
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a description of the examination and tests of specimens removed from the exposure racks after an atmospheric exposure of 5 years. The results, as expected, show relatively small differences between several materials, largely because corrosion has not progressed to a significant degree.

The committee did include a statement that visual examination confirmed the accelerated tests indicating that the high-purity alloys are more resistant to attack—at least sea coast locations—than the present commercial grades, although in industrial locations the soot and dirt deposits mask the small differences in resistance to corrosion which exist at the end of 5 years.

Based on work of subcommittee VI on anodic oxidation of aluminum and aluminum alloys, committee B-7 on light metals and alloys approved two tentative tests covering test for weight or coating on anodically coated aluminum and test for sealing of anodically coated aluminum.

Among recommendations of committee B-1 were proposed new tentative specifications for bar-lay-stranded and bunch-stranded soft copper

cables for electrical conductors, but these specifications were not presented since it developed that they were not entirely satisfactory in their present form, consequently were referred to the subcommittee in charge for further study. If it is not possible to have the society act on the specifications during the year, the committee plans to have the specifications, as revised, published in the A.S.T.M. *Bulletin*.

Proposed revisions in the twist test of specifications B 49 were revised and the committee believes that these also will be published as information and comment prior to their final publication.

Extensive reports on corrosion were presented by committees A-5 on corrosion of iron and steel and B-3 on corrosion of nonferrous metals and alloys. An important new tentative standard was approved as developed by committee A-5 covering a test for Uniformity of Coating by the Preece Test (Copper Sulfate Dip) on Zinc-Coated (Galvanized) Iron or Steel Articles. This method is really a combination of the former tests pertaining to iron or steel wire (A 191-38) and steel castings and forgings, gray iron and malleable

iron castings (A 208-38 T), but has been extended to apply to hardware shapes, threaded materials, etc. For a year at least Methods A 191 and A 208 will be continued.

Revisions of Tentative Specifications for Electrodeposited Coatings of Zinc on Steel (A 164-39 T), Cadmium on Steel (A 165-39 T) and Nickel and Chromium on Steel (A 166-39 T) were approved providing for inclusion of requirements for a thicker coating class in the zinc, and in the nickel and chromium coatings, and an intermediate thickness of coating in the specifications covering cadmium coatings.

Field Tests Reported

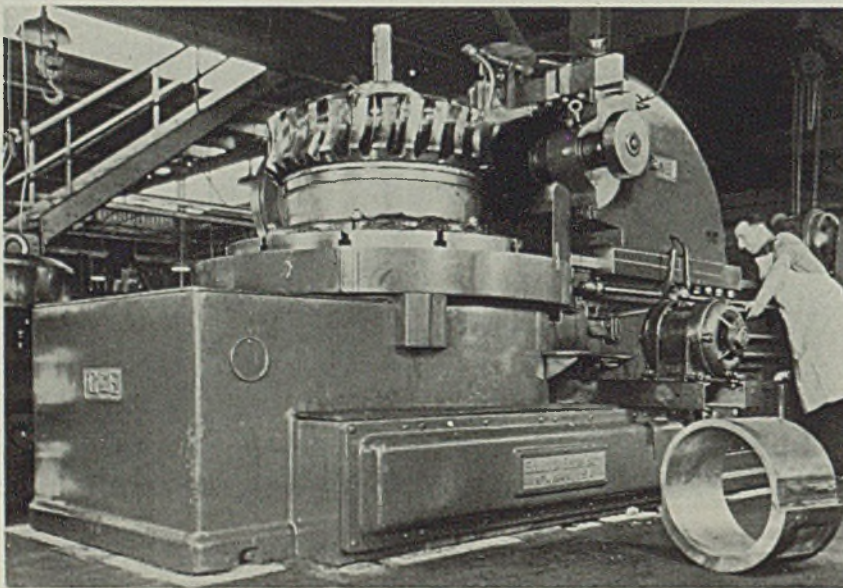
The report also discussed results of the committee's researches involving field tests and included a final report covering total immersion tests in sea water of sheet steel and wrought iron specimens, and tubing, exposed since 1927 at Portsmouth, N. H., and Key West, Fla. Conclusions which the committee in charge felt could be drawn from the results were itemized and included the fact that the spread in time of failure is great and that the difference between different kinds of material is small with respect to the spread in time. The relative order of failure of the different materials is not the same at the two test locations.

One of the most interesting conclusions was that addition of copper increased the life of all the materials under test with the exception of high-phosphorus steel at both locations and that the open-hearth iron lasted longer than the basic open-hearth steel in both the high and low-copper groups. The average chemical analysis of the materials indicated that in the copper-bearing materials the copper content was about 0.25 per cent.

It was announced in the report of committee B-3 that in co-operative work with other committees and with the joint committee on exposure tests of plating on nonferrous metals proposed specifications for electrodeposited coatings of nickel and chromium on copper and copper alloys, and on zinc and zinc alloys had been prepared and would probably be submitted to the society for approval in the near future.

Joint committee on exposure tests of plating on nonferrous metals reported that the outdoor tests of electroplated nickel and chromium coatings on steel and nonferrous metals were practically completed and that the results have been published by the national bureau of standards as Research Paper RP1293. As a result of the committee's work, proposed specifications were developed as referred to in the work of committee B-3.

Huge Worm Gear Cutter

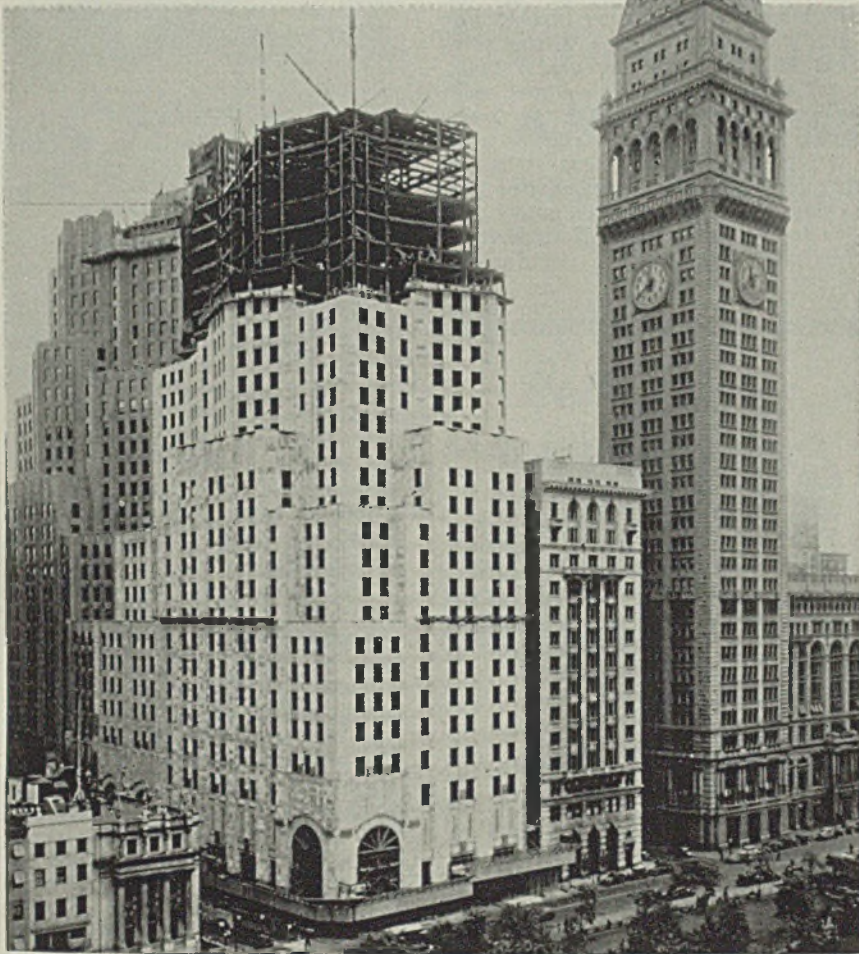


■ An unusually large worm and gear hobbing machine, shown in the accompanying illustration in operation in the plant of Michigan Tool Co., East McNichols road, Detroit, is a recent producer of Gould & Eberhardt Co., Newark, N. J. It was specially designed for the cutting of Conc-type gearing. This machine makes possible the manufacture of such double enveloping worm gearing capable of handling 6000 to 8000

horsepower in a single reduction.

The hobber is large enough to handle worm wheels up to 90 inches in diameter, and worms up to 20 inches in diameter with shanks up to 15 inches. Maximum center distance is approximately 50 inches and ratio about $7\frac{1}{2} : 200 : 1$. A cone-type drive of 50-inch center distance and ratio of $7\frac{1}{2} : 1$ is said to be capable of handling 7500 horsepower at 1800 revolutions per minute.

FIRST IN 1907, AGAIN IN 1939
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TYPICAL of the growth of the Metropolitan Life Insurance Company is the extension of its buildings on the Home Office site in New York to a two-full-block development between 23rd and 25th Streets, Fourth and Madison Avenues.

In 1907 American Bridge Company supplied the structural frame for the monumental 46-story Metropolitan Tower on the northwest corner of the 23rd-24th Street block. An imposing landmark then, it has suffered little in impressiveness over a span of 32 years.

In 1939 we were again called in. This time to fabricate and erect the steel skeleton for the second unit of the 28-story Home Office Building on the northwest corner of the 24th-25th Street block. This is a 225-foot extension to an earlier unit to the east and completes a block-long office building which presents a symmetrical facade, architecturally, throughout its 25th Street frontage. Starrett Brothers & Eken, Inc., are the general contractors.

One of the many satisfactions enjoyed by American Bridge Company is the frequent renewal of opportunities to serve old customers.

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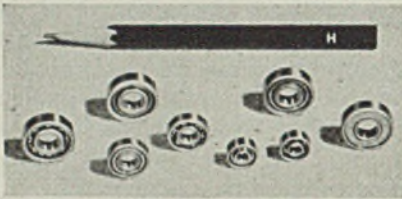


UNITED STATES STEEL



Small Bearing

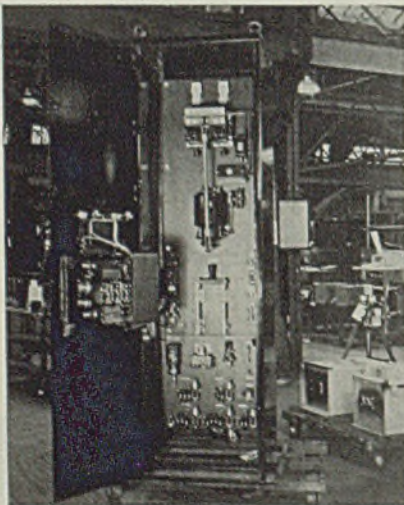
■ Norma-Hoffman Bearings Corp., Stamford, Conn., announces diminutive precision ball bearings with retainers for very small shafts.



Bearings are available in sizes of $\frac{1}{8}$ to $\frac{1}{4}$ -inch widths of $\frac{5}{32}$ to 0.196-inch.

Electronic Contactor

■ Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has developed a panel-mounted electronic contactor which provides sequencing of welder and welding timer for steel mill application. It includes heat control and thermostatically controlled cabinet temperature to prevent freezing of water in tubes. Unit is rated 880 amperes continuous, or 1500 amperes for 3 second, 60 per

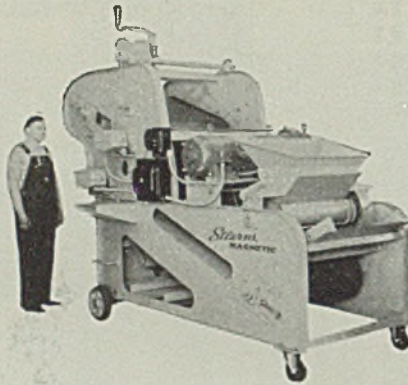


cent duty, 2800 amperes for 1.5 seconds, 30 per cent duty or 5300 amperes for 0.5 seconds, 10 per cent duty.

Double Magnetic Pulley Separator Unit

■ Stearns Magnetic Mfg. Co., 650 South Twenty-eighth street, Milwaukee, announces a double magnetic pulley separator unit for use in smelter plants, to separate brass and iron turnings and borings. It consists of two magnetic pulley separator units combined in one machine.

The upper unit is a 15-inch diameter magnetic pulley 30 inches wide with vanner edge belt and tail pulley, the lower unit is similar but has a 12 x 30-inch magnetic pulley. The material is fed either into the bulk hopper with louvre type feed or into the chute below. In the process of separation, the coarse material is picked up by the upper magnetic pulley unit, while the lower magnetic pulley unit serves as a refining or secondary separation. A winch is provided for raising or lowering the upper magnetic pulley unit to accommodate the various sizes of material being treated. Separator is

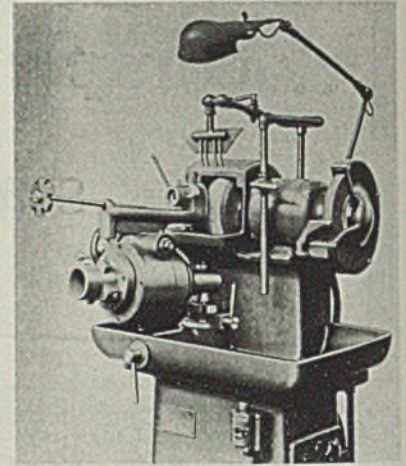


furnished in a wide variety of sizes and combinations. It is equipped with a generator and gear head motor to suit particular electrical requirements. Casters also are available to move the separator to various piles of material.

Drill Sharpener

■ Pratt & Whitney, division Niles-Bement-Pond Co., West Hartford, Conn., has developed a deep hole drill sharpener for sharpening deep hole drill tips. Being compact, it takes little floor space and is simple to operate, sharpening drills with $\frac{3}{16}$ to $\frac{1}{2}$ -inch diameters inclusive. The roughing, finishing and general purpose grinding wheels are all

driven directly by a $\frac{1}{3}$ -horsepower motor. The coolant system consists of a pump and $\frac{1}{6}$ -horsepower motor mounted at the rear of the pedestal, piping for all wheels, and a coolant reservoir inside the



pedestal with provisions for removing sediment and draining. The coolant and spindle motors are connected to the same starter and operate simultaneously.

The drill to be sharpened is inserted in a drill bushing and cam mounted on the rocker. Four removable bushings and cams of different sizes and pitches are furnished with the machine. An adjusting nut at the front of the rocker feeds the entire rocker unit on a threaded shaft toward or away from the grinding wheel. This shaft is fastened to the elevating shaft, which provides vertical adjustment to obtain the desired relief at the cutting edge.

The rocker housing contains a worm shaft which, when rotated, swings the entire unit around a gear on the threaded rocker shaft. For dressing the roughing and finishing wheels, the diamond with its bushing is mounted on the rocker. The entire rocker unit can be swiveled about the elevating shaft, a graduated dial indicating the amount of swivel.

Photometer

■ Photovolt Corp., 10 East Fortieth street, New York, has placed on the market a new Photrix small spot photometer with electronic amplification for measuring low values of illumination on small areas. It operates on alternating or direct current and is balanced for line voltage variations without the use of batteries or voltage stabilizers. The photometer is portable and consists of the instrument proper and the search unit. The latter houses the phototube and is provided

with a turntable disk having various openings used to obtain four sensitivity ranges in the ratio of 1, 10 100 and 1000. Two models of search units are available. The one for incident light has the shape of a round flat box, the other, for transparent light, is tubular shaped with a pointed light intake. The 100 division scale of the indicating instrument is 3 2/3 inches long. At the highest sensitivity range, light from a 50 candle-power lamp at a distance of 100 feet produces a deflection of 10 divisions. Each division thus represents 0.0005 foot-candles.

The high sensitivity of the photometer makes it suitable for measuring fluorescence, luminescence, weak ultra-violet radiation or Tyndall light.

Extinguisher Hose

■ Fyr-Fyter Co., Dayton, O., announces Resistoflex PVA hose for use on fire extinguishers. It is made of a specially compounded flexible synthetic resin, basically of Polyvinyl alcohol composition and is unaffected by carbon tetrachloride. It does not harden, check or crack from aging, corona, or other service conditions. The tube is reinforced by a single fabric braid and supplied with an outer covering of synthetic rubber, and is able to withstand temperatures in excess of 50 degrees Fahr.

Soldering Iron

■ Dual Remote Control Co. Inc., Wayne, Mich., announces a new Solder Master, electric soldering iron which delivers solder a drop at a time by depressing a trigger. The solder drops from a small tip under the reservoir pot on the tool head. Size of solder drop is controlled by a button on the handle. The device is equipped with a fountain feed, push button quality control, 1/2-inch screw tip, 60 watt heating element made of nichrome wire and porcelain and 6 feet of heater cord with a plug. It operates on 115 volts, alternating or direct current and its overall length is 12 inches.

Barrel Truck

■ Palmer-Shile Co., 7100 West Jefferson avenue, Detroit, announces a new barrel truck equipped with a drop hook which is dropped over the rim of a barrel, loading it automatically. The drum slips smoothly and easily into position, the load being held securely and under complete

control. Truck is equipped with rubber tired wheels and is narrower than the standard drum or barrel, therefore it can take barrels from a row, or back-among-others, as easily as when they stand alone. Truck is of all-welded steel construction and weighs only 85 pounds.

Agitator Drive

■ Patterson Foundry & Machine Co., East Liverpool, O., announces a Unipower type m40 drive for agitator and mixing service. It features lower headroom, its first stage

pinion being mounted directly on the motor shaft. Its integral base and case, reinforced by internal ribbing, also gives better sound-proofing. The Timken tapered roller bearings used in the drive provide greater load and thrust capacity while the inbuilt guide bearing snubs side thrust and takes care of bending stresses of stirrer shaft. Complete lubrication of every moving surface is provided by forced oil spray, the oil pressure being checked by a pressure gage located in front of unit. The drives are available in a wide range of speeds, from 21 to 432 revolutions per minute. Special drives also are obtainable in

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AMPCO METAL, INC., Dept. S-715, Milwaukee, Wis.



lower speeds, as well as direct drive units for operation at motor speed.

Hydro-Dynamic Press

■ E. W. Bliss Co., Brooklyn, N. Y., has introduced a hydro-dynamic press for redrawing cartridge cases. It is a long stroke reducing unit of 100-ton capacity equipped with an all electric control as well as a direct pumping unit. It also features a fast-acting valve system which permits a pressure control over a wide range. Pressure switches incorporated avoid injury to dies, and conveniently located push buttons per-

mit safe die setting operations with increments of movement of 1/32-inch.

The press is of 4-piece tie rod frame construction with keyed and fitted sections of hard high-test irons. For automatic control by position, three adjustable stops are included. The maximum stroke of the press is 84 inches.

Steel Valve

■ Hancock Valve division, Manning, Maxwell & Moore Inc., Bridgeport, Conn., announces a new 600-pound standard Duravalue Junior steel

valve, featuring a Stellite seat welded integral to the body. This construction eliminates leakage between seat ring and body. The valve disk also is heavily Stellite to resist wire-drawing and wear.

Valve body and bonnet of carbon molybdenum steel give it a temperature rating of 950 degrees at 600 pounds steam pressure. Valves are available in sizes ¼ to 1-inch inclusive, in the globe type, with either screwed or socket welding ends.

Torque Indicators

■ Blackhawk Mfg. Co., 5325 West Rogers, Milwaukee, announces five models of torque indicators having maximum capacities 133, 420 and 1000 foot-pounds. These are available in two styles. Offered for small assemblies is the 133 foot-pound Torflash featuring a flashlight signal, preset tension and a choice of 7/16 or ½-inch socket drives. The larger models have ½, ¾ and 1-inch socket drives, respectively. They feature a new "stay-set" dial. This magnifies deflection of an enclosed spring-steel shaft 26 times and remains at the maximum torque reading after tension is released. The dial also permits checking of obtained tension after the pull has ceased.

Tool Room Bench Lathe

■ South Bend Lathe Works, South Bend, Ind., has introduced a new 10-inch swing 1-inch collet capacity series S tool room bench lathe for precision operations on small work. It is mounted on a welded steel bench and uses a direct belt drive. The motor and driving mechanism are mounted under the headstock in the left end of the bench, the cone pulley belt passing up through the bed to the headstock. Backgears provide slow spindle speeds and ample power for machining large diameters. A belt tension release lever and wrenchless bull gear lock permit changing of spindle speeds. The headstock has 1¾-inch capacity through the spindle and can be equipped with either hand lever or hand wheel type draw-in collet chuck. Twelve spindle speeds ranging from 50 to 1357 revolutions per minute are provided. A quick change gear mechanism provides power longitudinal carriage feeds of 0.0015 to 0.0336-inch, power cross feeds 0.0006 to 0.0313-inch and a series of 48 right and left hand screw threads from 4 to 224 per inch. The carriage is equipped with a graduated compound rest which may be swiveled to any angle and locked for turning or boring bevels and tapers.

The lathe is made in 3, 3½, 4 and 4½-inch bed lengths, providing cen-

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ter distances of 16%, 21%, 27% and 34% inches respectively. Three drawers in the right end of the bench provide storage space for chucks, tools and accessories. The top of the bench has a rim all the way around and serves as a chip or oil pan. Attachments supplied with the lathe include hand wheel type draw-in collet chuck, telescopic taper attachment, micrometer carriage stop and thread dial indicator.

Die Casting Machines

■ Lester Engineering Co. and Phoenix Machine Co., 2711 Church avenue, Cleveland, announce two new die casting machines, the HHP-2A and HHP-3, for zinc, tin and lead alloys. Similar in design, they produce castings up to 12 and 19 pounds of zinc, respectively. Changing of pot and injection plunger adapts them to aluminum, brass and magnesium alloys.

Mold adjustment is through a worm-and-screw, and positive mold-locking up to 800,000 pounds is attained with the link-and-lock toggle system. The speed sequence of operation and timing of each operation is electrically controlled. Outstanding feature is the hydraulic system which develops a tremendous pressure and maintains it throughout the operating cycle.

The pot is supported on a ring independent of the furnace and nozzle. Adjustment is made through a rack-and-pinion movement.

Extension Lamp

■ Stewart R. Brown Mfg. Co., 258 Broadway, New York, announces an explosion proof lamp for use in the vicinity of explosive vapors. It is of 100 watt capacity and is equipped with a safety grip of molded plastic, an extra heavy spark-proof hook and guard, automatic circuit breaker and a one-piece guard that must be in place before unit will light.

Machine for Setting Of Lock Nuts

■ FabriSteel Products Inc., Kerr Machinery building, Detroit, has developed a machine for setting Fast-On lock nuts at the rate of 2500 per hour. The nuts are fed to the machine anvil, where the clutch is tripped and the nut is locked in place. The machine has a speed of 200 revolutions per minute and its clutch is nonrepeating. Nuts are fed into position ready to be installed as fast as a nut is locked into place. Length from floor to work may be adjusted from 34 to 39 inches. The base occupies a space of 27 x 30 inches.

Standardized Welders

■ American Electric Fusion Corp., 2610 Diversey avenue, Chicago, announces the standardization of its spot welder line on three sizes of frames all bearing the same characteristics of design and interchangeable parts wherever possible. Each of the three sizes are amply spacious to house either of two transformers; thus the BG type welder with 10 kilovolt ampere capacity also houses the 15 kilovolt ampere transformer of the BM type. The medium frame is amply spacious for either the 20 kilovolt ampere transformer of the

BL type, or the 30 kilovolt ampere capacity of the BM type.

The large frame machine, in similar fashion, has ample space for the 40 kilovolt ampere capacity transformer and the 50 kilovolt ampere unit. Horn lengths for various throat-depths remain the only part of these welders to be added as orders are received. Most popular sizes, however, are usually carried in stock.

Pyramidal Base Motor

■ U. S. Electrical Motors Inc., 200 East Slauson avenue, Los Angeles,

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BULLETIN 335




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announces a new pyramidal base motor which has been simplified by the reduction of parts. It has only one shaft, two large ball bearings taking radial and thrust loads. The new design not only can be used for mounting pumps, but for any machine where perfect alignment is essential.

Radial Saw

■ American Saw Mill Machinery Co., Hackettstown, N. J., has introduced a uni-point radial saw Junior model X-36B with a stationary table. It retains all the basic

features of the company's other saws in addition to improvements. Its column revolves to the left 70 degrees, which permits cutting of angles as small as 20 degrees for jack rafters or other cuts of this nature. The wooden fence can be removed, and the stationary table is 44 inches long. The unit is mounted on a welded steel frame and powered by a 3-horsepower motor.

Die Grinders

■ Rotor Tool Co., 17325 Euclid avenue, Cleveland, announces two

new air die grinders, type M-825 and M-826, for use with wheels from ½ to 2½ inches diameter. The M-826 is designed for getting into inaccessible places and the side to center distance is only 19/32-inch. Its speed is 17,000 or 21,000 revolutions per minute and weighs 2½ pounds.

The M-825 features an extension of 13 to 26 inches for cleaning up the inside of shells in munition work. The side to center clearance of this machine is reduced to ½-inch and it weighs 7 pounds. Various types of handles, such as sleeve twist, spade, button safety or right angle throttle, may be used interchangeably on both machines.

Wire Rope Connector

■ Electroline Co., 4071 South La-Salle street, Chicago, announces an improved wire rope connector which damps line vibration stress. It grips the cable with graduated compression, feathering off from maximum at the rear to zero at the front. The connector is compact and consists of three simple units—a sleeve which slips over the end of the wire rope, a tapered plug which is inserted to separate and hold the strands of wire in the sleeve and a covering socket which locks the cable securely.

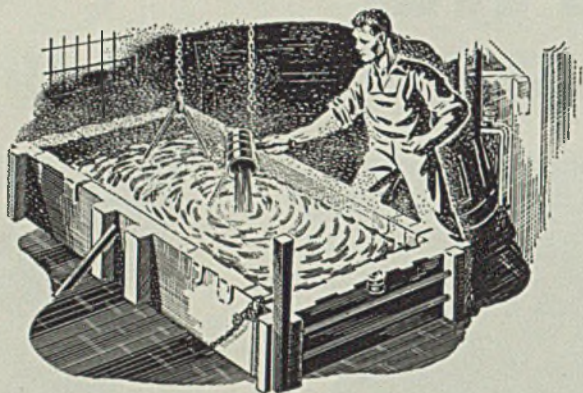
Feature of the connector is an inspection hole which enables the workman to see at a glance the condition of the twist joint. For rope sizes of ¼-inch and larger, the unit is available in black, hot-galvanized and cadmium-plated finishes. For rope sizes ½-inch and smaller, it is available in black, hot-galvanized and cadmium-plated steel; also in bronze, stainless steel and monel metal.

Profiling Machine

■ National Broach & Machine Co., 5600 St. Jean avenue, Detroit, has introduced a new automatic Red Wing profiling machine which holds finished work to a tolerance limit of 0.002-inch. It is adaptable for the manufacture of parts for small arms and artillery breach mechanisms, the duplication of all kinds of flat cams, and the profiling of airplane pistons and connecting rods to reduce weight. The machine utilizes a closed differential hydraulic circuit to actuate its movement. This system includes a hydraulic pump which actuates the pistons and a second pump which maintains and regulates the amount of pressure in the system.

The work table which carries two work fixtures moves laterally. The spindle head carrying two spindles moves at a right angle to the direction of table movement. Both of

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Detroit, Michigan Walkerville, Ont.

these movements are reversible. A master pattern or cam the exact size and shape of the finished work part is mounted rigidly to the bottom of the work table.

Cutter spindles are motor driven individually. Vertical adjustment is provided on the spindles to allow for slight variations in tool adjustment. The tapered guide pin is adjusted vertically by a graduated dial to compensate for cutter wear. Force feed lubrication is provided to all bearings and slides. Both table and profile cam is of ample proportions to accommodate large fixtures.

Miniature Respirator

■ H. S. Cover, South Bend, Ind., has developed a Dupor No. 1 miniature respirator so small that it will rest in the palm of the hand. It is built along lines of stratosphere oxygen apparatus that covers the nose only and provides protection against nuisance dusts. Its nose piece is of soft, pliable rubber that makes an air-tight fit over any shape nose. The small filter is folded in such a manner that 9 square inches of filtration area is provided.

Inhalation valve keeps wearer from re-breathing stale air. A bulb valve exhausts the breathed air without allowing unfiltered air to enter. Elastic loops slip around the ears to hold it in position. Respirator is so small that it in no way obstructs vision or interferes with goggles or glasses. As no metal is used in its construction, it is practically unbreakable. It weighs only 1 ounce and sells for \$1.00.

Press Welder

■ Thompson-Gibb Electric Welding Co., Lynn, Mass., announces its new model No. 1 press welder which features a stronger fabricated steel frame to minimize deflections under the maximum loads. Its transformer is enclosed and protected except for essential controls. It is equipped with a flat sliding head that moves with straight line action in adjustable gibbed ways, peel-off shims providing adjustment for wear. The sliding head is actuated by a cam designed to slow down the electrode as it approaches the work and minimize electrode hammering. It is returned by two compression springs concealed inside the neck.

The reduction unit runs in an oil bath, both the worm and worm gear shaft being mounted on roller bearings. The multi-tooth clutch mounted on the worm gear shaft is positive and instantaneous in action. A variable speed pulley driven by a ½-horsepower motor provides speed selection between ranges of 36 to 109 or 44 to 133 strokes per minute. The press will operate at electrode

pressures up to 1000 pounds. It also is equipped with the new, patented Thomson tubular secondary water cooled transformer. The transformer ratings are 30, 40, 50 and 75 kilovolt-ampere.

Arc Welders

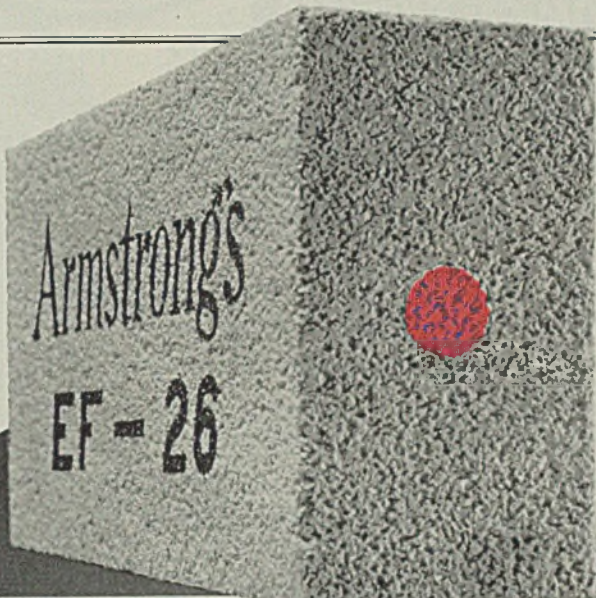
■ Ergolyte Mfg. Co., Lawrence street, Philadelphia, has introduced new continuous alternating current arc welders which bring all controls and sockets into full view on a sloped panel.

Various welding heats may be selected in gradual steps over a

wide range, correctly proportioned to correspond to the commercial gages of metal handled. Insulation is double spun glass.

The welders employ a broken-wave current produced by a special winding. The current required at no load never exceeds 50 watts. Two models are available, No. 160 with a current range of 15-160 amperes and No. 250 with a current range of 15-250 amperes. These operate on single phase or one phase of 2 or 3-phase current. Machines are furnished complete with helmet, rubber-covered cables, electrode holder and several sizes of electrodes.

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**DIFFERENT COLORS
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Armstrong's
HIGH TEMPERATURE INSULATION

Flame Scarfing Billets

(Concluded from Page 55)

that flame scarfing does not alter the structure of the metal. There is little metallurgical change in the material when it is scarfed. This is because the heat does not penetrate into the body of the metal. Evidence of this fact is that the bare hand can be placed on a surface which has just been scarfed and no discomfort will be experienced.

Economies of flame scarfing are evident when it is considered that as

high as 12 tons can be handled per torch per hour. While scarfing this grade and quality of steel only 20 cubic feet of natural gas and 200 cubic feet of oxygen will have been used in an hour.

Steel not over 0.50 per cent carbon, or alloys not over 0.35 per cent carbon are flame scarfed. Higher carbon contents up to 1.35 per cent carbon are chipped as also are the alloys with more than 0.35 per cent carbon.

Chipping practice is along conventional lines. Perhaps one of the greatest departures in chipping at

this plant is in maintenance of chisels and pneumatic tools. A special arrangement for grinding chisels is employed. Some 2 to 4 tons of chisels are ground per day at a rate of 400 per hour, or 3200 per 8-hour shift. To do this, two men operate three machines with grinding wheels of two different grades. First the heel is ground on a coarse wheel and the front and back angles are ground on a fine grained wheel. These grindings are done in a machine which controls the angle of grinding.

This special setup assures all chisels being ground at the same angle, same pitch and same cutting speed. Mechanically grinding chisels in this manner, making them all have identical cutting characteristics, has been found to facilitate chipping operations greatly since the operators quickly find the most efficient angle of operation and do not have to change it and experiment with each new chisel.

Height of chipping beds has been carefully worked out to give the best chisel angle for an ordinary man 5 feet 7 inches in height.

Another innovation in maintenance at this plant is in reconditioning the pneumatic hammers used with the chisels. Usual practice is to send these units back to the factory for reconditioning. However, at this plant they are carefully taken down, cylinder bores reground to a mirror finish, new pistons inserted with new valves, valve pins, triggers and springs. All this is done in only 2½ to 3 hours.

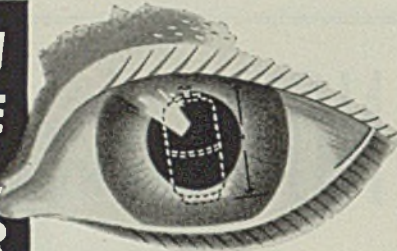
Advanced scarfing and chipping methods detailed above already have eliminated a serious production bottleneck and are enabling production to be handled at rates much greater than before, of great importance in efficient operation of this plant.

Announces Line of Heat-Resistant Finishes

■ A line of enamels especially adapted for use on stoves is announced by Mass & Waldstein, Newark, N. J. One type, supplied in white, porcelain white and in colors, produces a glossy finish that is resistant to marring, hot grease and kerosene after the application of one coat baked from 5 to 45 minutes. It will withstand heat up to 420 degrees Fahr. for 8 hours without noticeable discoloration.

For more severe service, a special high-heat gloss enamel is available which will withstand temperatures of 425 degrees Fahr. for 12 hours. Another durable finish suitable for heaters consists of a coat of Duart Wrinkle enamel followed by a coat of Metalustre. This will withstand temperatures of 420 degrees Fahr. for 150 hours without darkening.

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ENGINEER'S EYE
BECAME A PRACTICAL,
ECONOMICAL CYLINDER**



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MILWAUKEE

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● Through cooperation with Hackney engineers, many types of special shapes, shells and containers have been developed for the individual requirements of scores of manufacturers' and shippers.

In creating the cylinder shown below, for example, the advantages of Hackney's years of experience in designing, engineering, and manufacturing resulted in important savings in cost and time. From idea to finished product, Hackney's facilities were utilized to assure the most practical, economical and satisfactory results.

Chances are that Hackney can help you—either in developing new shapes or containers or in improving the product you are now using. Write for details or ask to have an engineer call. There is no obligation.

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Hackney
MILWAUKEE

**DEEP DRAWN SHAPES
AND SHELLS**

Making Bronze Bushings

(Concluded from Page 61)

flange on one side is less than 1 minute.

Spindle speeds on this machine run as high as 972 revolutions per minute, but an effective brake on the clutch lever permits quick stopping of the chuck. Rapid travel also is provided for return motions of apron and turret. A special depth measuring device on the turret is valuable in accurately controlling tools for grooving or any other special operation that may have to be performed inside the bushing.

One problem that presents itself is the selection of proper material for the pilot bushing in the spindle which serves as an "outboard support" for the boring bars and reamers. After considerable experimenting it was found that an oil-soaked hardwood bushing is most practical.

In addition to being able to machine all surfaces of the bushing at one setup, it is found that this method produces a perfectly concentric bushing, a most essential factor as it eliminates necessity for the usual "secondary operation" of grinding.

X-Ray Tube Radiographs Fast Moving Objects

■ A new cold-cathode ultra high-speed X-ray tube that makes millionth-of-a-second radiographic exposures was described to members of the American Physical society recently at Pittsburgh, by Dr. Charles M. Slack, research physicist for Westinghouse Lamp division's research laboratories, Bloomfield, N. J.

It is believed the development of the tube extends the possible usefulness of X-ray science into a wide new field, making it possible to study internal strains in rapidly moving parts of motors and machinery, enabling man literally to see into rapidly moving opaque objects, or study the effect of sudden forces on such objects.

Key to the successful operation of the new tube is the auxiliary electrode, which harnesses and puts to work a once avoided phenomenon known as cold emission, which is caused by erratic flow of current from parts of the tube other than the heated cathode or filament. The X-ray tube contains three elements—a standard anode, a small oval-shaped metal cathode and the auxiliary electrode which serves to start the discharge of electrons when the tube is activated.

In contrast with conventional types of X-ray tubes which are usually operated with ½-ampere or less or current, this new development re-

ceives a momentary "jolt" of from several hundred to approximately 2000 amperes at between 90,000 and 100,000 volts.

Many possible applications, such as radiography of metals, will require more powerful tubes and equipment than those used in the tests, however, it is believed that such tubes can be built.

Reaffirms Practice on Cupola Refractories

■ Simplified practice recommendation R154-38, "Cupola Refractories,"

has been reaffirmed without change by the joint committee on foundry refractories acting as the standing committee for the recommendation, according to the division of simplified practice of national bureau of standards.

This program establishes the stock sizes of 6, 9 and 4½-inch cupola blocks, and tap-out and slag-hole blocks.

It first became effective in March 1934 and was revised in 1938. Copies of this recommendation may be obtained from the superintendent of documents, government printing office, Washington, for 10 cents.



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JOHNSON BRONZE
Sleeve BEARING HEADQUARTERS
550 S. MILL STREET • NEW CASTLE, PA.

Shear Reinforcing

(Continued from Page 59)

relation for the vertical stirrups.

Contrast this with the load-stress curves in Fig. 3 shown for welded diagonal bars under the same conditions in the same relative positions in the beams and with the same steel ratio as the vertical stirrups in Fig. 2. Investigation showed that here calculated stress practically coincides with that found from strain-gage readings.

Thus there is a load stress relation for welded diagonal bars.

Beam deflection caused by shear

ordinarily is so small that it can be ignored without appreciable error. Shearing deflection cannot be expected to exceed 5 to 8 per cent of the bending deflection unless the ratio of length to depth is unusually small. It has been noted that deflections in beams reinforced with welded bars were from 8 to 17 per cent less than in those reinforced with vertical stirrups. The welded bars reduced the total deflection more than the shearing deflection alone, the result being equivalent to eliminating the shearing deflection and a portion of the bending deflection. This stiffening action is prob-

ably produced by the material reduction in width of cracks mentioned below.

A typical test on a beam reinforced with both vertical stirrups and welded diagonal bars side by side showed failure as follows: As the load increased, the bond on the horizontal bar of the vertical stirrup side gradually failed, throwing all the load on the welded side. The vertical stirrups came loose from the concrete. At complete failure, the beam split along the plane of the welded diagonal bars.

In the same beam, the width of cracks was measured on both sides of the beam. The average width of the cracks adjacent to the vertical stirrups was 3½ times the average of those near the welded bars. Ratio of stress in the welded bars to that in the vertical stirrups varied from 1.1 to 1 at 1/3 the total load to 2.1 to 1 at the last reading. This checks the theoretical ratio to within reasonable limits.

Welded Diagonals Advantageous

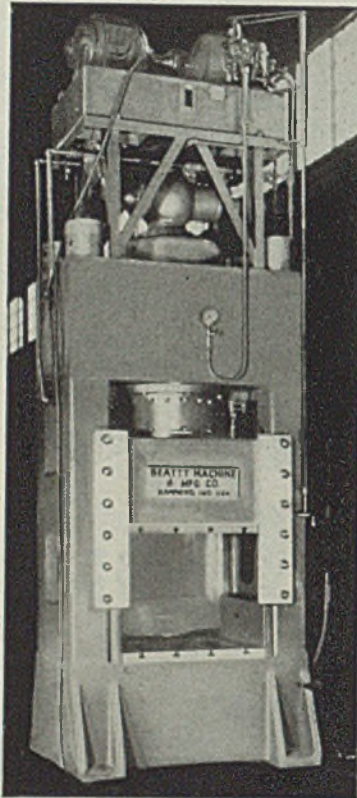
To determine the strength of a beam under severe conditions of spalling when reinforced with welded units, the concrete was chipped from the bottom of one beam to expose about half the perimeter of the tension steel for the full length of the beam. The stress in the horizontal tension steel at failure was past the elastic limit. Anchorage provided by the welded diagonals did not fail.

Upper part of Fig. 4 shows the usual arrangement of bars in a continuous beam using the bent bars and vertical stirrups. It is necessary to select bars for A1 and A3, the bent portion of which will provide sufficient steel for A2, and the straight portion of which will provide the required amount of compression steel for A4. If the steel areas for the four sections cannot be juggled to fit all requirements, straight bars can be added in the top to complete A2. In any case, steel areas for maximum positive moment to the left, maximum positive moment to the right, negative moment at the support and compression at the support are interdependent. Often the steel areas to the desired degree of accuracy and economy are not obtainable.

Lower portion of Fig. 4 shows the proposed steel arrangement using welded diagonal bars. It has many advantages. It is easy to select bars for each section as required, the top and bottom bars then are connected by the calculated amount of diagonal shear steel and the design completed with some dispatch. The bottom steel that would be bent up in present day design, can be cut off and hooked or extended past the point of inflection without hooks or

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- HIGH-SPEED HYDRAULIC PRESSES



The illustration and the table below covers standard pattern high speed press for prompt delivery.

NOTE THE OPERATING SPEEDS AS SHOWN IN TABLE BELOW:

Nos.	Cap. in tons	Size platen (inches)	Max. opening (inches)	Stroke (inches)	Operating speeds per minute in inches			H.P. Motor
					Advance	Pressing	Return	
300	200	36x36	30	18	510	11	475	10 to 25
300-A	300							
400	400	42x42	48	26	510	11	475	20 to 30
400-A	500							
400-B	750							
500	400	60x60	48	26	510	11	475	20 to 30
500-A	500							
500-B	750							

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extended the full length of the beam and lapped at the support—which ever may be required.

Although no particular claim is made as to reduction in weight of tension steel, it appears from comparative design that the amount of tension steel may be reduced about 5 per cent or more.

Comparative costs of tying and placing vertical strips as against welding diagonal bars were obtained from a number of sources. Using 30 cents per hour for common labor, 75 cents per hour for welding operators, 8.5 cents per pound for welding rod, 3 cents per kilowatt hour for electric current, 2.8 cents per pound for straight steel, 3.2 cents per pound for bent steel, cost of stirrups tied and ready for the forms totaled about 6.9 cents per pound. This compares with cost of enough welded bars to provide the same steel ratio as a pound of vertical stirrups which amounted to 6.4 cents.

Welding Method Cheaper

While these estimates, of course, are not exact, it is believed sufficient evidence has been accumulated to show that such welded shear reinforcing is about 15 per cent cheaper than vertical stirrups. This estimate, of course, does not include the saving in horizontal steel which would be an additional benefit.

Conclusions are that reinforcing units made by welding diagonal bars to top and bottom steel of concrete beams are practical; that they can be fabricated, shipped and placed without introducing new difficulties; that these units provide continuous steel for the beams, permitting the flow of stress as considered fundamental in all other structural design; that unit stresses in the welded diagonal shear steel can be predicted with precision; that welded units will cost less per beam than the tied assemblies now used.

Other advantages of welded shear reinforcing include stiffer beams, reduction in cracking of concrete, more accurate placing of the steel, controlled shop fabrication as against field tying, easier tying of the welded units, simpler and shorter design procedure, reduced possibility of bond failure.

Surface Treatment Prevents Corrosion

■ A new surface treatment to prevent or minimize corrosion or "furring" of boilers is announced by Acheson Colloids Corp., Port Huron, Mich. It may be applied by dipping, brushing or spraying and hardens when exposed to light.

Basic constituents of the composi-

tion are colloidal graphite, an electropositive metallic filler, a hardenable organic colloid and a hardening agent for the colloid suspended in water.

The composition may be applied at normal temperatures, or, if faster drying is desired, at around 100 degrees Cent.

Produces Universal Joint for Tractors

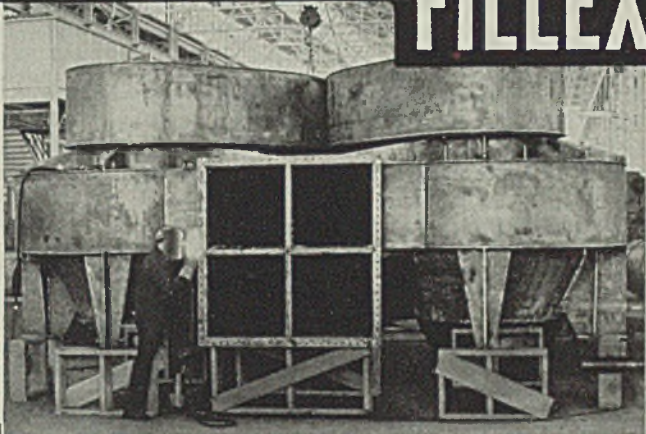
■ Although rated as one of the smallest roller bearing universal joints available, the new No. 1CA

joint announced by Mechanics Universal Joint division, Borg-Warner Corp., Rockford, Ill., has a static torque capacity of 10,000 pounds. It is designed for tractor steering columns but, because of its capacity, can be utilized in road grader controls and various drives within farm implements.

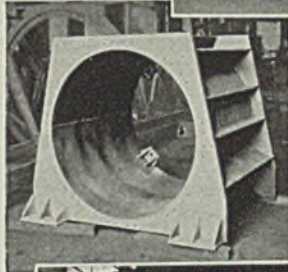
The joint is 5½ inches long with a swing diameter of 2¼ inches. It is made of heat treated steel forgings with four roller bearings running on hardened and ground surfaces. The joint is fitted with cork grease seals which in turn are enclosed for further protection.

YOUR HORIZONTAL FILLETS WILL COST LESS MADE WITH FILLEX

Dust collectors Murex-welded by American Blower Co., Detroit, involve many Fillex applications.



Fillex speeds fillet welding like that in this air test assembly, Murex-welded by The Graves-Marshall Co., Dayton, Ohio.



THE HEAVY COATED "HOT ROD" THAT PROVIDES CLEANER WELDS AT HIGHER CURRENTS

Specially designed for high speed horizontal fillet welding, Murex Fillex Electrodes help reduce welding costs.

Even at high amperages, Fillex Electrodes produce sound, evenly proportioned fillets without undercutting and with a minimum of spatter. Slag is easily removed, resulting in real savings in time on multi-pass work. Weld surfaces are smooth and welds require little or no cleaning.

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Investigate Thermit Welding, too—in use since 1902 for heavy repair work, crankshafts, housings, frames, etc.

MUREX HEAVY COATED **Electrodes**
A COMPLETE LINE FOR EVERY WELDING APPLICATION

Built-To-Order

(Concluded from Page 52)

the jib and a bearing plate, all assembled by welding. For such units, a small piece of pipe is welded to the bearing plate at the bottom and another small piece to a steel rafter at the top, these then serving as the crane post. This forms a light, simple, inexpensive yet extremely effective unit for handling weights up to ½-ton within a 15-foot radius of the post.

Made from Tractor

For outdoor work, portable yard cranes are extremely useful. Such units, while quite different from the jib cranes and overhead cranes just described, still take advantage of the same elements of superiority in design and materials. Fig. 9 shows a highly mobile and serviceable tractor crane used within the factory and outdoor storage yard. It was made from a standard farm tractor by adding a few accessory fixtures and making some simple changes.

This particular crane was especially designed to carry wheels with mounted tires to large machines stacked in the yard without wheels. Also it is used to tow the machines to and from the yard. It employs a small standard tractor as a central power unit. Base plates for front and rear booms and accessory cable-aligning frame were simply cut from steel plate and welded to the tractor frame. A standard all-welded power control unit was attached to the rear of the tractor, and front and rear booms of a simple design were hinged to lugs that had been welded

to the base plate. Welded hoist blocks and a cable from the power control unit connected to each hoist boom completed the mechanism. The cable is guided and lined up by sheave wheels whose welded housings were also welded to their light rigid supporting frame of welded box sections.

Study of this unit will suggest a wide variety of portable tractor handling equipment that can be designed for many special applications. It is not difficult to make any modifications that may be indicated to fit such a device for a particular job. At this plant, for example, large assembled machines without wheels are placed in and out of storage in the yard outside the buildings by a heavy-service tractor crane built especially for this work. It is capable of lifting, transporting and accurately placing heavy, bulky assemblies of 10 tons and over, yet it is economically made of lightweight tubular sections welded together. Power is furnished by means of an all-welded power control unit on the rear of the tractor to which the lifting unit is connected by means of a box girder. Heavy-duty dual truck pneumatic-tired wheels support the lifting unit and facilitate easy movement about the yard.

A number of yard handling units such as those described have been in use here for periods up to five years during which they have served well with practically no maintenance except occasional repainting. The serviceability of such units, their long life and low maintenance afford important economies in handling operations in addition to the increased handling efficiency they permit.

Magnifying Unit Assists In First Aid Work

Recommended for industrial first aid and hospital use is the Super Sight announced by Boyer-Campbell Co., 6540 St. Antoine street, Detroit, for assisting in the removal of for-

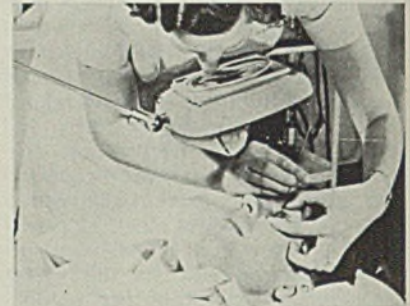


Illustration shows a nurse removing a foreign body from the eye of a worker with the assistance of the Super Sight

eign bodies from the eyes etc. Consisting of a magnifying glass equipped with a properly directed light, the unit is portable and when secured, can be moved about on an adjustable bracket, remaining in whatever position placed. By means of a clamp it can be readily attached to a chair or table for instant use.

The Super Sight also is available on suitable brackets and in neutral colors for use in the shop.

Burns from Welding Prevented by Cream

Ply No. 8, a cream that furnishes protection against burns to welders and cutters, is announced by Milburn Co., 905 Henry street, Detroit. It is applied like ordinary cream and rubbed into the skin until completely dry. Its ingredients block the ultra-violet and infra-red rays which come from the flashes during welding operations.

Method of Aluminizing Steel Pipe Simple

A method used by a commercial gas company for aluminizing steel pipe, according to Metallizing Co. of America Inc., 562 Washington boulevard, Chicago, consists of first placing the metallized pipe in a brick oven covered with sheetmetal, and then, with the application of kerosene torches, covering the aluminum coating with a layer of black carbon. Following this, the pipe is placed in service at temperatures running up to 1600 degrees Fahr. thereby causing the aluminum to soak into the steel, the carbon black acting as a sealer.

Furnished in both Round Strand and Flattened Strand constructions — in either Standard or Preformed Type.

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Steel Demand Holds at Unusually Active Pace

Mill operations back near pre-holiday rate. Defense preparations are factor in eliminating seasonal buying letdown

■ STEEL demand is fully sustained at an unusually active pace for this period, having made further gains so far in July despite the recent holiday interruption.

Ingot production advanced 13 points last week to 88 per cent. This is approximately the same as the late-June level, but additional increases are in prospect for some districts in coming weeks and the peak for the current movement apparently has yet to be reached. A year ago steelmaking was up 7½ points to 50½ per cent.

Seasonal influences which normally have a restricting effect on steel buying are being more than offset by several other factors, most prominent of which are export business and various aspects of the defense program. Stimulus provided by the latter is not so much in direct steel orders for armament manufacture as in preparations for production of defense equipment and in anticipatory buying to avoid more extensive delays in deliveries.

A fairly large amount of building construction is inspired by preparedness measures. Examples of pending work of this type are 4000 tons of shapes required for aircraft plant expansion in California and 6000 tons for government air field hangars in Massachusetts. In most cases, however, industrial plant extensions are moderate.

Railroads are more active in steel and equipment markets, and sizable purchasing programs are under consideration. Atlantic Coast Line has enlarged its freight car inquiry to include 1665 units; Illinois Central is in the market for 3000 box and auto cars, and the Southern Pacific is inquiring for 2000 box and auto cars. Norfolk & Western has ordered 25,000 tons of rails and the Baltimore & Ohio has placed 25 diesel-electric switchers. Repair work is being quickened by a number of roads.

Despite active mill schedules backlogs of some products are growing. Heavy unfilled tonnage of bar producers precludes shipment within 30 days on most grades, with deliveries of certain alloy items deferred several months. Contributing to this situation, in addition to active miscellaneous demand, are sizable needs of government shops, aircraft manufacturers and machine tool builders. The last named still are unable to make headway against backlogs, despite the fact

foreign buying has dwindled. The aircraft industry has accounted for more than one-third of recent business of numerous tool interests.

Declining trend in automobile assemblies in preparation for model changes is without major effect on total steel shipments. Auto output last week increased about 10,000 units to 62,176, following holiday shutdowns. Reflecting the fact suspensions for model changes are somewhat earlier than usual, last week's production was only 500 units larger than a year ago after maintaining a substantial margin over 1939 in earlier weeks.

Shipbuilding continues to furnish a large steel outlet, orders reported recently including 30,000 to 35,000 tons of plates for five cruisers. Shipbuilding under construction on July 1 amounted to 291 vessels, aggregating 1,566,660 gross tons, against 122 vessels totaling 630,340 tons a year ago.

Tin plate output holds at 78 per cent. Mills have fairly heavy stocks, but specifications are increasing and canners are looking to the biggest packing season in years. There is little concern over tin supplies from the Far East.

Scrap markets continue to show an easy tone in most districts, mill purchases being light following previous active coverage. While price changes generally are downward, leading steelworks grades are unchanged in principal districts and the price composite holds at \$18.83.

Finished steel prices are steadied by active demand, but with no intimations of a general upturn soon. Concrete reinforcing bars have been advanced \$5 a ton, restoring them to levels prevailing earlier this year before severe price cutting disrupted the market.

Steelmaking in most centers has recouped the losses of the preceding week, in some instances moving to new high levels for the year. Last week's increases included 16 points to 80 per cent at Pittsburgh, 18 points to 95 at Chicago, 14 points to 84 at Youngstown, 19 points to 94 at Wheeling, 17 points to 88 at Birmingham, 8 points to 77 at Cleveland, 13 points to 92 at Detroit, 13 points to 65 at St. Louis, 23½ points to 77½ at Cincinnati, 12 points to 84 in eastern Pennsylvania, 16½ points to 90½ at Buffalo and 5 points to 85 in New England.

MARKET IN TABLOID ★

Demand

Still rising for number of products.

Prices

Steady on finished steel; scrap tone easy.

Production

Up 13 points from holiday week to 88 per cent.

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

<i>New Billet Bars, Base</i>	
Chicago, Gary, Buffalo, Cleve., Birm., Young., Sparrows Pt., Pitts.	2.15c
Gulf ports	2.50c
Pacific Coast ports	2.60c
<i>Rail Steel Bars, Base</i>	
Pittsburgh, Gary, Chicago, Buffalo, Cleveland, Birm.	2.05c
Gulf ports	2.40c
Pacific Coast ports	2.50c

Wire Products

<i>Pitts.-Cleve.-Chicago-Birm. base per 100 lb. keg in carloads</i>	
Standard and cement coated wire nails	\$2.55
<i>(Per Pound)</i>	
Polished fence staples ..	2.55c
Annealed fence wire	3.05c
Galv. fence wire	3.40c
<i>Woven wire fencing (base C. L. column)</i>	
Single loop bale ties, (base C.L. column) ..	67
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)

<i>(Base, 20 tons or over)</i>				
Pittsburgh, Buffalo, Chicago, Massillon, Canton, Bethlehem				2.70c
Detroit, delivered				2.80c
<i>Alloy</i>		<i>Alloy</i>		
S.A.E. Diff.	S.A.E. 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	
4600 0.20 to 0.30 Mo. 1.50-2.00 Ni.			1.10	
5100 0.80-1.10 Cr.			0.45	
5100 Cr. spring flats			0.15	
6100 bars			1.20	
6100 spring flats			0.85	
Cr. N., Van.			1.50	
Carbon Van.			0.85	
9200 spring flats			0.15	
9200 spring rounds, squares 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	
<i>Cooperage hoop, Young., Pitts.; Chicago, Birm.</i>		2.20c
<i>Cold strip, 0.25 carbon and under, Pittsburgh, Cleveland, Youngstown Chicago</i>		2.80c
<i>Detroit, del.</i>		2.90c
<i>Worcester, Mass.</i>		3.00c
<i>Carbon Cleve., Pitts.</i>		3.00c
<i>0.26-0.50</i>		2.80c
<i>0.51-0.75</i>		4.30c
<i>0.76-1.00</i>		6.15c
<i>Over 1.00</i>		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

<i>(Gross Tons)</i>		
Standard rails, mill	\$40.00	
Relay rails, Pittsburgh 20-100 lbs.	32.50-35.50	
<i>Light rails, billet qual., Pitts., Chicago, B'ham.</i>		\$40.00
<i>Do., rerolling quality ..</i>		39.00
<i>Cents per pound</i>		
Angle bars, billet, mills.	2.70c	
Do., axle steel	2.35c	
Spikes, R. R. base	3.00c	
Track bolts, base	4.15c	
<i>Car axles forged, Pitts., Chicago, Birmingham.</i>		3.15c
<i>Tie plates, base</i>		2.15c
<i>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.</i>		

Bolts and Nuts

<i>F.o.b. Pittsburgh, Cleveland, Birmingham, Chicago. Discounts for carloads additional 5%, full containers, add 10%.</i>	
Carriage and Machine	
½ x 6 and smaller	68.5 off
Do. larger, to 1-in.	66 off
Do. 1½ and larger	64 off
Tire bolts	52.5 off
Stove Bolts	
In packages with nuts separate 72.5 off; with nuts attached add 15%; bulk 83.5 off on 15,000 of 3-inch and shorter, or 5000 over 3-in.	
Step bolts	60 off
Plow bolts	68.5 off

Nuts			
Semifinished hex. U.S.S. S.A.E.			
½-inch and less.	67	70	
¾-1-inch	64	65	
1-1½-inch	62	62	
1½ 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

<i>F.o.b. Pitts., Cleve., Chgo., Bham.</i>	
Structural	3.40c

¾-inch and under	65-10 off
<i>Wrought washers, Pitts., Chi., Phila., to jobbers and large nut, bolt mfrs. l.c.l. \$5.40; c.l. \$5.75 off</i>	

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	68½	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			
¾ butt weld	25	7	
1 and 1½ 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			
<i>Carloads minimum wall seamless steel boiler tubes, cut-lengths 4 to 24 feet; f.o.b. Pittsburgh, base price per 100 feet subject to usual extras.</i>			
Lap Welded			
Sizes	Gage	Steel	Char-coal
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
2½" O.D.	12	15.16	.....
2¾" O.D.	12	16.58	26.57
3" O.D.	12	17.54	29.00
3½" O.D.	12	18.35	31.36
4" O.D.	11	23.15	39.81
4½" 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
2½" O.D.	13	14.54	16.76
2¾" O.D.	12	16.01	18.45
3" O.D.	12	17.54	20.21
3½" O.D.	12	18.59	21.42
4" O.D.	12	19.50	22.48
4½" O.D.	11	24.62	28.37
5" O.D.	10	30.54	35.20
6" 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

<i>Class B Pipe—Pet Net Ton</i>	
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
<i>Class A Pipe \$3 over Class B</i>	
<i>Std. flgs., Birm., base \$100.00.</i>	

Semifinished Steel

Rerolling Billets, Slabs	
<i>(Gross Tons)</i>	
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 ¾-inch incl. (per 100 lbs.)		\$2.00
Do., over ¾ to 1¼-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	
Bechivo Ovens	
Connellsville, fur.	\$4.35-4.60
Connellsville, fdry.	5.00-5.75
Connell, prem. fdry.	5.75-6.25
New River fdry.	6.25-6.50
Wise county fdry.	5.50-6.50
Wise county fur.	5.00-5.25

By-Product Foundry	
Newark, N. J., del.	11.38-11.85
Chicago, outside del.	10.50
Chicago, delivered	11.25
Terre Haute, del.	10.75
Milwaukee, ovens.	11.25
New England, del.	12.50
St. Louis, del.	11.75
Birmingham, ovens.	7.50
Indianapolis, del.	10.75
Cincinnati, del.	10.50
Cleveland, del.	11.05
Buffalo, del.	11.25
Detroit, del.	11.00
Philadelphia, del.	11.15

Coke By-Products

<i>Spot, gal., freight allowed east of Omaha</i>	
Pure and 90% benzol.	15.00c
Toluol, two degree	27.00c
Solvent naphtha	26.00c
Industrial xylol	26.00c
<i>Per lb. f.o.b. Frankford and St. Louis</i>	
Phenol (less than 1000 lbs.)	14.75c
Do. (1000 lbs. or over) ..	13.75c
<i>Eastern Plants, per lb.</i>	
Naphthalene flakes, balls, bbls. to jobbers	7.00c
<i>Per ton, bulk, f.o.b. port</i>	
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	.....	.....	.....	.....
Saginaw, Mich., from Detroit	25.31	25.31	24.81	25.81
St. Louis, northern	23.50	23.50	23.00	.....

{Neville base, plus 69c, 84c, and \$1.24 freight.

	No. 2 Fdry.	Malleable	Basic	Bessemer
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

Fire Clay Brick	Ladle Brick	
Super Quality	(Pa., O., W. Va., Mo.)	
Pa., Mo., Ky.	Dry press	\$28.00
	Wire cut	26.00
First Quality	Magnesite	
Pa., Ill., Md., Mo., Ky.	Domestic dead-burned grains, net ton f.o.b. Chewelah, Wash., net ton, bulk	22.00
Alabama, Georgia	net ton, bags	26.00
New Jersey	Basic Brick	
Second Quality	Net ton, f.o.b. Baltimore, Plymouth Meeting, Chester, Pa.	
Pa., Ill., Ky., Md., Mo.	Georgia, Alabama	42.75
Georgia, Alabama	Chrom. bonded brick	\$50.00
New Jersey	Chem. bonded chrome	50.00
Ohio	Magnesite brick	72.00
First quality	Chem. bonded magnesite	61.00
Intermediate		36.10
Second quality		31.35
Malleable Bung Brick	Washed gravel, duty pd., tide, net ton	\$25.00-\$36.00
All bases	Washed gravel, f.o.b. Ill., Ky., net ton, carloads, all rail	21.00
Silica Brick	Do, barge	21.00
Pennsylvania	Birmingham, Ala.	47.50
Joliet, E. Chicago		55.10
Birmingham, Ala.		47.50

Fluorspar

Ferroalloy Prices

Ferromanganese, 78-82%	Do., ton lots	11.75c	Do., spot	145.00	Silicon Metal, 1% iron,	
carlots, duty pd.	Do., less-ton lots	12.00c	Do., contract, ton lots	145.00	contract, carlots, 2 X	
Ton lots	67-72% low carbon:		Do., spot, ton lots	150.00	½-in., lb.	14.00c
Less ton lots	Car- Ton Less		15-18% tl., 3-5% carbon,	157.50	Do., 2%	12.50c
Less 200 lb. lots	loads ton		carlots, contr., net ton	160.00	Spot ¼c higher	
Do., carlots del. Pitts.	2% carb.	17.50c 18.25c 18.75c	Do., spot	160.00	Silicon Briquets, contract	
Spiegelisen, 19-21% dom.	1% carb.	18.50c 19.25c 19.75c	Do., contract, ton lots	160.00	carloads, bulk, freight	
Palmerton, Pa., spot.	0.10% carb.	20.50c 21.25c 21.75c	Do., spot, ton lots	165.00	allowed, ton	\$69.50
Do., 26-28%	0.20% carb.	19.50c 20.25c 20.75c	Alsifer, contract carlots,		Ton lots	79.50
	Spot ¼c higher		f.o.b. Niagara Falls, lb.	7.50c	Less-ton lots, lb.	3.75c
Ferrosilicon, 50% freight	Ferromolybdenum, 55-		Do., ton lots	8.00c	Less 200 lb. lots, lb.	4.00c
allowed, c.l.	65% molyb. cont., f.o.b.		Do., less-ton lots	8.50c	Spot ¼-cent higher.	
Do., ton lot	mill, lb.	0.95	Spot ¼c lb. higher		Manganese Briquets, contract	
Do., 75 per cent	Calcium molybdate, lb.		Chromium Briquets, con-		contract carloads,	
Do., ton lots	molyb. cont., f.o.b. mill	0.80	tract, freight allowed,		bulk freight allowed,	
Spot, \$5 a ton higher.	Ferrotitanium, 40-45%		lb. spot carlots, bulk	7.00c	lb.	5.00c
Silicomanganese, c.l., 2½	lb., con. tl., f.o.b. Niag-		Do., ton lots	7.50c	Ton lots	5.50c
per cent carbon	ara Falls, ton lots	\$1.23	Do., less-ton lots	7.75c	Less-ton lots	5.75c
2% carbon, 108.00; 1%,	Do., less-ton lots	1.25	Do., less 200 lbs.	8.00c	Spot ¼c higher	
Contract ton price	20-25% carbon, 0.10		Spot, ¼c higher.		Zirconium Alloy, 12-15%,	
\$12.50 higher; spot \$5	max., ton lots, lb.	1.35	Tungsten Metal Powder,		contract, carloads,	
over contract.	Do., less-ton lots	1.40	according to grade,		bulk, gross ton	102.50
Ferrotungsten, stand., lb.	Spot 5c higher		spot shipment, 200-lb.		Do., spot	107.50
con. del. cars	Ferrocolumbium, 50-60%		drum lots, lb.	\$2.50	34-40% contract, car-	
Ferrovandium, 35 to	contract, lb. con. col.		Do., smaller lots	2.60	loads, lb., alloy	14.60c
40% lb., cont.	f.o.b. Niagara Falls	\$2.25	Vanadium Pentoxide,		Do., ton lots	15.00c
Ferrophosphorus, gr. ton,	Do., less-ton lots	2.30	contract, lb. contained	\$1.10	Do., less-ton lots	16.00c
c.l., 17-18% Rockdale,	Spot 1s 10c higher		Do., spot	1.15	Spot ¼c higher	
Tenn., basis, 18%, \$3	Technical molybdenum		Chromium Metal, 98%		Molybdenum Powder,	
unitage, 58.50; electric	trioxide, 53 to 60% moly-		cr., 0.50 carbon max.,		99% f.o.b. York, Pa.	\$2.60
furn., per ton, c. l., 23-	bdenum, lb. molyb.		contract, lb. con.		200-lb. kegs, lb.	2.75
26% f.o.b. Mt. Pleasant,	cont., f.o.b. mill	0.80	chrome	\$4.00c	Do., 100-200 lb. lots	3.00
Tenn., 24% \$3 unitage	Ferro-carbon-titanium, 15-		Do., spot	\$9.00c	Do., under 100-lb. lots	
Ferrosilicon, 66-70 chromi-	18% tl., 6-8% carb.,		88% chrome, contract	\$3.00c	Molybdenum Oxide	
mium, 4-6 carbon, cts.	carlots, contr., net ton	\$142.50	Do., spot	\$8.00c	Briquets, 48-52% moly-	
lb., contained cr., del.					bdenum, per pound	
carlots					contained, f.o.b. pro-	
					ducers' plant	\$0.00c

WAREHOUSE STEEL PRICES

Base Prices in Cents Per Pound, Delivered Locally, Subject to Prevailing Differentials

	Soft Bars	Bands	Hoops	Plates ½-in. & Over	Structural Shapes	Floor Plates	Sheets			Cold Rolled Strip	Cold Drawn Bars		
							Hot Rolled	Cold Rolled	Galv. No. 24		Carbon	S.A.E. 2300	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	4.25	3.31	4.06	8.56	7.16
Baltimore	3.95	4.05	4.45	3.70	3.70	5.25	3.55	...	5.05	...	4.05	...	...
Norfolk, Va.	4.00	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	3.40	3.50	5.75	3.70	6.50	4.75	...	5.75	...	...
Portland, Oreg.	4.25	4.50	6.10	4.00	4.00	5.75	3.95	6.50	4.75	...	5.75	...	...
Los Angeles	4.15	4.60	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

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; 10 to 24 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; 1600 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.

	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	4.10	...	...	...	...
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	8.65
Los Angeles	4.80	9.40	8.55	8.40	9.05
San Francisco	5.00	9.65	8.80	8.65	9.30

CURRENT IRON AND STEEL PRICES OF EUROPE

Dollars at Rates of Exchange, July 11

Export Prices f.o.b. Port of Dispatch—

Domestic Prices at Works or Furnace—

By Cable or Radio

Last Reported

	British gross tons U. K. ports		Continental Channel or North Sea ports, gross tons		Quoted in dollars at current value	**Quoted in gold pounds sterling	Fdy. pig iron, Sl. 2.5	Passe besse. pig iron	Furnace coke	Billets	Standard rails	Merchant bars	Structural shapes	Plates, 1¼-in. or 5 mm.	Sheets, black	Sheets, galv., corr., 24 ga. or 0.5 mm.	Plain wire	Bands and strips	French Francs	Belgian Francs	Reth Mar	
	£ s d	£ s d	£ s d	£ s d																		
Foundry, 2.50-3.00 Sl.	\$22.20	6 0 0*	\$33.23	3 18 0			\$20.53	5 11 0(a)	\$17.18	788	\$31.44	950	\$25.33	63								
Basic bessemer							19.33	5 4 6(a)	...	29.79	900	27.94	(b) 69.50									
Hematite, Phos. 03-05	23.13	6 5 0*					5.86	1 11 8	4.91	225	10.92	320	7.64	19								
Billets			\$31.95	3 15 0			34.69	9 7 6	26.62	1,221	42.20	1,275	38.79	96								
Wire rods, No. 5 gage			60.71	7 2 6				1.90c	11 3 0	1.69c	1,662	2.06c	1,375	2.38c	132							
Standard rails	\$38.85	10 10 0	\$48.99	5 15 0				2.38c	14 0 0††	1.53c	1,530	2.06c	1,375	1.98c	110							
Merchant bars								2.11c	12 8 0††	1.49c	1,487	2.06c	1,375	1.93c	107							
Structural shapes								2.13c	12 10 6††	1.95c	1,951	2.42c	1,610	2.29c	127							
Plates, 1¼-in. or 5 mm.								2.98c	17 10 0‡	2.30c	2,295‡	2.85c	1,900‡	2.59c	1441							
Sheets, black								3.53c	20 16 3	3.59c	3,589	4.80c	3,200	6.66c	370							
Sheets, galv., corr., 24 ga. or 0.5 mm.								3.31c	19 10 0	2.34c	2,340	3.00c	2,000	3.11c	173							
Plain wire								2.51c	14 15 0††	1.71c	1,713	2.48c	1,650	2.29c	127							
Bands and strips																						
†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. ‡s rebate to approved customers. (b) hematite. †Close annealed.																						
††Rebate of 15s on certain conditions. ‡Pig iron export reported stopped.																						
**Gold pound sterling not quoted. ‡‡No quotations.																						

British ferromanganese \$120.00 delivered Atlantic seaboard duty-paid.

IRON AND STEEL SCRAP PRICES

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated; †indicates brokers prices

HEAVY MELTING STEEL

Birmingham, No. 1.	16.00
Bos. dock No. 1 exp.	16.25-16.50
New Eng. del. No. 1	16.00-16.25
Buffalo, No. 1.	19.00-19.50
Buffalo, No. 2.	17.00-17.50
Chicago, No. 1.	17.50-18.00
Chicago, auto, no alloy	16.50-17.00
Cincinnati, dealers.	15.00-15.50
Cleveland, No. 1.	18.50-19.00
Cleveland, No. 2.	17.50-18.00
Detroit, No. 1.	†15.00-15.50
Detroit, No. 2.	†14.00-14.50
Eastern Pa., No. 1.	19.00-19.50
Eastern Pa., No. 2.	17.50
Federal, Ill., No. 2.	14.50-15.00
Granite City, R. R. No. 1.	15.00-15.50
Granite City, No. 2.	14.50-15.00
Los Ang., No. 1, net	13.50-14.00
Los Ang., No. 2, net	12.50-13.00
N.Y. dock No. 1 exp.	15.00-15.50
Pitts., No. 1 (R. R.).	21.50-22.00
Pittsburgh, No. 1.	19.50-20.00
Pittsburgh, No. 2.	18.50-19.00
St. Louis, No. 1.	15.50-16.00
St. Louis, No. 2.	14.50-16.00
San Fran., No. 1, net	13.50-14.00
San Fran., No. 2, net	12.50-13.00
Seattle, No. 1.	15.00
Toronto, dirs., No. 1	11.00
Valleys, No. 1.	19.00-19.50

Buffalo	12.00-12.50
Chicago	12.00-12.50
Cincinnati, dealers.	7.00-7.50
Cleveland, no alloy.	11.50-12.00
Detroit	†9.50-10.00
Eastern Pa.	12.50-13.00
Los Angeles	4.00-5.00
New York	†8.50
Pittsburgh	14.50-15.00
St. Louis	9.25-9.75
San Francisco	5.00
Toronto, dealers.	7.00-7.25
Valleys	11.50-12.00

Buffalo	22.00-22.50
Chicago	18.50-19.00
Cleveland	23.00-23.50
Pittsburgh	22.00-22.50
St. Louis	17.75-18.25
Seattle	18.00-18.50

Eastern Pa.	24.50-25.00
St. Louis, 1 1/4-3% ..	18.50-19.00

CAR WHEELS

Birmingham, iron.	13.00
Boston dist., iron.	†14.75-15.00
Buffalo, steel.	23.00-23.50
Chicago, iron.	18.50-19.00
Chicago, rolled steel	21.00-21.50
Cincin., iron, deal.	18.00-18.50
Eastern Pa., iron	21.00-21.50
Eastern Pa., steel.	24.00-25.00
Pittsburgh, iron	20.50-21.00
Pittsburgh, steel	25.50-26.00
St. Louis, iron.	17.50-18.00
St. Louis, steel.	18.50-19.00

SHOVELING TURNINGS

Buffalo	13.00-13.50
Cleveland	12.50-13.00
Chicago	12.50-13.00
Chicago, spl, anal.	15.50-16.00
Detroit	†11.00-11.50
Pitts., alloy-free	16.50-17.00

PIPE AND FLUES

Chicago, net.	12.50-13.00
Cincinnati, dealers.	11.50-12.00

RAILROAD GRATE BARS

Buffalo	13.50-14.00
Chicago, net	13.50-14.00
Cincinnati, dealers.	10.50-11.00
Eastern Pa.	15.50-16.00
New York	†11.50-12.00
St. Louis	11.00-11.50

RAILROAD WROUGHT

Birmingham	14.00
Boston district	†9.50-10.00
Eastern Pa., No. 1.	20.00-20.50
St. Louis, No. 1.	13.00-13.50
St. Louis, No. 2.	14.75-15.25

FORGE FLASHINGS

Boston district	†11.00-11.50
Buffalo	17.00-17.50
Cleveland	17.50-18.00
Detroit	†15.00-15.50
Pittsburgh	17.50-18.00

FORGE SCRAP

Boston district	†7.00
Chicago, heavy	21.50-22.00

LOW PHOSPHORUS

Cleveland, crops.	23.50-24.00
Eastern Pa., crops.	25.50-26.00
Pitts., billet, bloom, slab crops	25.50-26.00

LOW PHOS. PUNCHINGS

Buffalo	21.50-22.00
Chicago	20.50-21.00
Cleveland	21.00-21.50
Eastern Pa.	25.00-25.50
Pittsburgh	24.50-25.00
Seattle	15.00
Detroit	†17.00-17.50

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	†19.25-19.75

STEEL CAR AXLES

Birmingham	18.00
Boston district	†18.00-18.50
Chicago, net	22.50-23.00
Eastern Pa.	25.00-25.50
St. Louis	†20.50-21.00

LOCOMOTIVE TIRES

Chicago (cut)	21.50-22.00
St. Louis, No. 1.	†18.00-18.50

SHAFTING

Boston district	†18.50-18.75
New York	†19.00-19.50

NO. 1 CAST SCRAP

Birmingham	15.50
Boston, No. 1 mach.	†16.50-17.00
N. Eng. del. No. 2.	14.50-14.75
N. Eng. del. textile	18.75-20.00
Buffalo, cupola	18.50-19.00
Buffalo, mach.	20.00-20.50
Chicago, agri. net.	15.00-15.50
Chicago, auto net.	17.50-18.00
Chicago, railroad net	16.00-16.50
Chicago, mach. net.	17.00-17.50
Cincin., mach. deal.	19.25-19.75
Cleveland, mach.	22.00-22.50
Detroit, cupola, net.	†17.00-17.50
Eastern Pa., cupola	21.50-22.00
E. Pa., No. 2 yard.	18.00
E. Pa., yard fdry.	18.00-18.50
Los Angeles	16.50-17.00
Pittsburgh, cupola	20.00-20.50
San Francisco	14.50-15.00
Seattle	14.50-16.00
St. L., agri. mach.	18.00-18.50
St. L., No. 1 mach.	19.00-19.50
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	15.50-16.00
Detroit, auto net.	†17.25-17.75
Detroit, break.	†15.00-15.50
Eastern Pa.	19.50
Los Ang., auto, net.	13.00-14.00
New York break.	†15.00
Pittsburgh, break.	17.50-18.00

STOVE PLATE

Birmingham	10.00-11.00
Boston district	†11.00-11.50
Buffalo	16.00-16.50
Chicago, net	12.00-12.50
Cincinnati, dealers.	11.00-11.50
Detroit, net.	†11.00-11.50
Eastern Pa.	15.50
New York fdry	†12.25
St. Louis.	†11.50-12.00
Toronto dealers, net	12.00

MALLEABLE

New England, del.	21.50-22.00
Buffalo	23.00-23.50
Chicago, R. R.	21.50-22.00
Cincin. agri., deal.	16.00-16.50
Cleveland, rail	22.50-23.00
Eastern Pa., R. R.	22.00-22.50
Los Angeles	12.50
Pittsburgh, rail	24.00-24.50
St. Louis, R. R.	18.00-18.50

BORINGS AND TURNINGS

For Blast Furnace Use

Boston district	†7.00-7.25
Buffalo	11.50-12.00
Cincinnati, dealers.	6.00-6.50
Cleveland	12.50-13.00
Eastern Pa.	11.50-12.00
Detroit	†10.50-11.00
New York	†7.00
Pittsburgh	11.50-12.00
Toronto, dealers.	6.75

AXLE TURNINGS

Buffalo	16.00-16.50
Boston district	†9.00-9.50
Chicago, elec. fur.	17.50-18.00
East. Pa. elec. fur.	17.50-18.00
St. Louis	13.00-13.50
Toronto	6.00-6.50

CAST IRON BORINGS

Birmingham	8.00
Boston dist. chem.	†8.50-8.75
Buffalo	11.50-12.00
Chicago	10.75-11.25
Cincinnati, dealers.	6.00-6.50
Cleveland	12.50-13.00
Detroit	†10.50-11.00
E. Pa., chemical	14.50-15.00
New York	†7.50-8.00
St. Louis.	8.00-8.50
Toronto, dealers	6.75

RAILROAD SPECIALTIES

Chicago	21.50-22.00
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ANGLE BARS—STEEL

Chicago	21.00-21.50
St. Louis	18.00-18.50

SPRINGS

Buffalo	23.00-24.00
Chicago, coil	22.50-23.00
Chicago, leaf	21.00-21.50
Eastern Pa.	24.00-25.00
Pittsburgh	25.50-26.00
St. Louis	18.50-19.00

STEEL RAILS, SHORT

Birmingham	17.00
Buffalo	24.00-25.00
Chicago (3 ft.)	21.50-22.00
Chicago (2 ft.)	22.00-22.50
Cincinnati, dealers.	22.00-22.50
Detroit	†20.50-21.00
Pitts., 3 ft. and less	25.50-26.00
St. L., 2 ft. & less.	19.25-19.75

STEEL RAILS, SCRAP

Birmingham	15.50
Boston district	†14.50-15.00

COMPRESSED SHEETS

Buffalo, new	18.00-18.50
Chicago, factory	17.00-17.50
Chicago, dealers	15.50-16.00
Cincinnati, dealers.	14.00-14.50
Cleveland	18.00-18.50
Detroit	†16.50-17.00
E. Pa., new mat.	19.00-19.50
E. Pa., old mat.	15.50-16.00
Los Angeles, net.	10.50-11.00
Pittsburgh	19.50-20.00
St. Louis	13.00-13.50
San Francisco, net.	10.50-11.00
Valleys	18.50-19.00

BUNDLED SHEETS

Buffalo, No. 1.	17.00-17.50
Buffalo, No. 2.	15.50-16.00
Cleveland	14.50-15.00
Pittsburgh	18.50-19.00
St. Louis	11.00-11.50
Toronto, dealers.	9.75

SHEET CLIPPINGS, LOOSE

Chicago	12.50-13.00
Cincinnati, dealers.	10.00-10.50
Detroit	†13.00-13.50
St. Louis	10.00-11.00
Toronto, dealers	9.00

BUSHING

Birmingham, No. 1.	15.00
Buffalo, No. 1.	17.00-17.50
Chicago, No. 1.	16.25-16.75
Cincin., No. 1 deal.	11.50-12.00
Cincin., No. 2 deal.	6.00-6.50
Cleveland, No. 2.	12.00-12.50
Detroit, No. 1 new.	†15.00-15.50
Valleys, new, No. 1	18.00-18.50
Toronto, dealers	5.50-6.00

MACHINE TURNINGS (Long)

Birmingham	5.00
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Ores

Lake Superior Iron Ore

Gross ton, 51 1/2 % 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
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Foreign Ore

Cents per unit, c.i.f. Atlantic ports

Manganiferous ore, 45-55% 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.	\$25.00-30.00

Manganese Ore

Including war risk but not duty, cents per unit cargo lots.

Caucasian, 50-52%	60.00
So. African, 50-52%	57.00
Indian, 49-50%	55.00
Brazilian, 46%	50.00-53.00
Cuban, 50-51%, duty free	71.00-73.00

Molybdenum

Sulphide conc., lb., Mo. cont., mines	\$0.75
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Sheets, Strip

Sheet & Strip Prices, Pages 82, 83

Pittsburgh—Sheet mill operations have regained the pre-holiday level and are now close to 80 per cent of capacity. While backlogs are not as high on sheets as in some of the heavier products, there is still a comfortable margin. Delivery problems have not yet arisen in large volume, principally because demand from the automotive industry has been relatively light. All shipments, with a small fringe of exceptions, are now at the full price, most of the overhanging low-priced tonnage having been cancelled. In a few cases extensions have been granted. Operations of galvanizing departments this week report close to 70 per cent, indicating further contraseasonal rise.

Cleveland—Less pressure is evidenced by consumers for delivery, and buying also has moderated. A fairly large portion of current shipments represents anticipatory purchases destined for inventory and for which buyers have no immediate need. In addition automotive requirements are off seasonally. However, mills are working against relatively large backlogs, and deliveries of about three weeks generally are asked on new business in the commoner grades.

Boston—Demand for narrow cold strip is well maintained and incoming volume for specialties holds. Finishing operations are above 75 per cent in most instances, with more advance business being booked. Some consumers would cover through the remainder of the year, but sellers are reluctant to cover beyond the current quarter. Demand for sheets is light, most users and secondary distributors having stocked up substantially. Both sheet and strip buyers are building up inventories moderately although consumption is tending upward.

New York—Sheet orders are tapering. This is partly seasonal but the principal factor is the heavy tonnage released prior to July 1. Consumption is moderately lower but sustained better than usual, due in part to the desire of some users to accumulate stocks of manufactured products. Sheet deliveries show little change but are expected to shorten within a few weeks.

Philadelphia—Sheet buying is slow. Some consumers did not anticipate requirements for third quarter sufficiently, as indicated by efforts to take on additional tonnage at the cut price. Some sheet makers are unable to promise deliveries within four weeks but others can ship in less than two weeks.

Buffalo—Although sellers report books well cleared of low-priced ma-

terial by the opening of this month, mills continue to maintain a five-day week to meet demands. Bookings for third quarter are still heavy, assuring brisk production.

Cincinnati—Sheet demand is aggressively active, with an increase in foreign orders. Bookings average close to mill capacity. Foreign business is about one-third of mill capacity, several times larger than what is considered normal. Domestic buying is to assure deliveries.

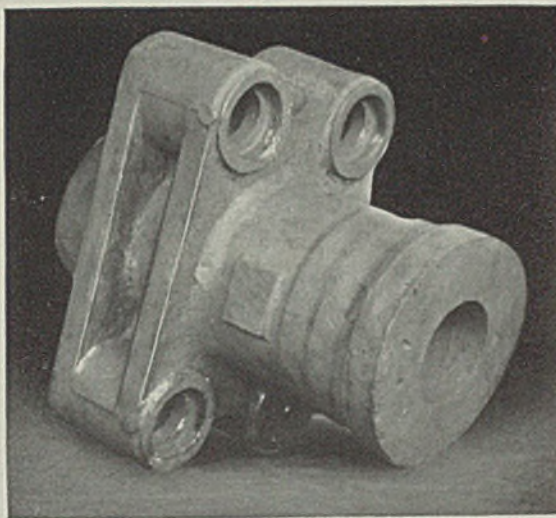
St. Louis—Production of sheets and strip have returned to the rate

which prevailed before the holiday. One mill has increased its strip output to meet urgent requests for deliveries. Steady expansion is reported in the movement of heavy corrugated galvanized sheets.

Birmingham, Ala. — Although consumer demand has not developed quite as had been expected, production of sheets continues at a steady pace as jobbers and dealers restock. Output of strip continues to be confined largely to cotton ties, and is in moderate volume.

Toronto, Ont.—Large additional

Pressure Castings



HYDRAULIC PRESSES DEMAND STRONG CASTINGS

• The Strong way of handling such important pressure castings as the hydraulic press casting shown above has more than doubled our customers in hydraulic pressure work. Strong's top rating for pressure castings is the result of the actual experience the Strong plant has had in casting many of the most difficult jobs in this field. Isn't that kind of experience the extra asset you want your steel castings to have?

STRONG



TENSILE STRENGTH • ELONGATION

STRONG STEEL FOUNDRY COMPANY, BUFFALO, N. Y.

sheet tonnage has been added to mill backlogs with increased buying from the automotive industry for motor vehicles for war purposes. Canadian mills now are booked solid to the end of September and additional large tonnages are pending which will go to United States producers.

■ Rust Furnace Co., Pittsburgh, has received a contract for supplying a zone controlled slab heating furnace to be installed in the plate mill now under construction by the

Steel Co. of Canada Ltd., Hamilton, Ont.

Plates

Plate Prices, Page 82

Pittsburgh — Backlogs held by plate mills continue to increase. Demand from the navy program continues heavy. Barge builders have been trying to increase tonnage now being shipped by mills.

Boston—Miscellaneous plate buy-

ing improves, but most tonnage is for less-than-car lots. Volume is broader spread, however, with the Worcester car-building shop taking substantially more tonnage. Shipyard specifications are substantial but pending volume for both private and navy yards overshadows current business. Releases from railroad repair shops, while slightly better, fails to keep pace with the moderate improvement in other directions. Deliveries are slightly more extended, but still prompt enough to meet demands for current needs.

New York—Demand is increasing slowly but steadily. Industrial work is broadening, tending to offset the lag in municipal tank fabrication. Shipbuilding needs are expanding and account for a substantial backlog for some sellers. Industrial work includes tanks and boilers and more floor plate tonnage than has been witnessed in considerable time. Freight car requirements are rising, with heavier tonnages involved in railroad equipment repairs.

Philadelphia—New York Shipbuilding Corp. is reported to have distributed 30,000 to 35,000 tons of plates for five cruisers between a large eastern independent, a Cleveland mill and a Pittsburgh interest. Material is for extended delivery. Small yards here have work pending involving about 3000 tons. Independent mills express disappointment over lack of active buying by miscellaneous consumers. However, some of these are busier, a maker of high-pressure boilers, for example, being booked through November. Plate deliveries range from one to four weeks.

Birmingham, Ala. — Plate production, largely because of demand for shipbuilding, tank manufacturers and miscellaneous consumers, is near capacity.

San Francisco — Interest centers around the Orange county feeder line for the metropolitan water district, Los Angeles, involving 3100 to 10,800 tons of welded steel or precast reinforced concrete pipe. United Concrete Pipe Corp. secured schedule 333 of the Burbank-Santa Monica line for the same district, calling for 990 tons of liner plates. Awards totaled 1894 tons and brought the year's aggregate to 33,943 tons, compared with 18,349 tons for the same period a year ago.

Toronto, Ont.—Demand for plates continues to expand and with producers booked solid to the end of the year most plate demand is being taken care of by imports from the United States. Demand for boiler and tank plates is well above normal and still greater requirements for plate on this account are

DAMASCUS

Manganese and Alloy Steel CASTINGS

FROM ½ TO 1000 POUNDS

1906



1940

Produced in our modernly equipped foundry from electric furnace steel and heat-treated in automatically controlled gas-fired furnaces.

We are in position to manufacture specialties made of manganese and alloy steel castings and invite concerns to write us about their requirements.

DAMASCUS STEEL CASTING Co.
New Brighton, Pa.
(Pittsburgh District)

developing as Canada's shipbuilding program advances.

Plate Contracts Placed

2275 tons, gasoline storage tanks, 50,000-gallon capacity, principally for Hawaii, to Graver Tank & Mfg. Co. Inc., East Chicago, Ind., bids to quartermaster depot, war department, Washington.

1450 tons, plates and shapes, ten all-welded barges for Semet-Solvay Co., New York, to Hillman Barge & Construction Co., Pittsburgh.

990 tons, liner plates for precast reinforced concrete pipe, metropolitan water district, Los Angeles, specification 333, to United Concrete Pipe Corp., Alhambra, Calif.

804 tons, high-strength low alloy steel plates, schedule 4105, Panama Canal, to Carnegie-Illinois Steel Corp., Pittsburgh, \$86,064.57; bids June 20.

425 tons, welded large-diameter steel pipe, Freeport, Tex., to Wyatt Metal & Boiler Works, Dallas, Tex.

125 tons, for 300,000-gallon elevated steel tank for southeastern air depot, Mobile, Ala., to Taylor Iron Works & Supply Co., Macon, Ga.

110 tons, 150,000-gallon water tank, Lower Penns Neck Township, N. J., to Loder & Sharpe Inc.

Unstated, two coast guard cutters for duty on western rivers, to Dubuque Boat & Boiler works, Dubuque, Iowa, at \$159,000 each; bids June 11, Washington.

Plate Contracts Pending

Unstated tonnage, welded cylindrical gasoline storage tank, 20,000-barrel capacity, Panama, schedule 4107, Chicago Bridge & Iron Co., Chicago, low, bids June 27, Washington.

Bars

Bar Prices, Page 82

Pittsburgh—Merchant bar sellers report volume of business in July slightly better than in June, which was the best month of the year. However, automotive releases have been tapering and this means actual production may ease somewhat.

Cleveland—Bar orders are sustained or heavier, with gains shown compared with a month ago. Carbon bar deliveries average three to four weeks, although on small rounds some producers require four to six weeks. Inquiries traceable directly to armament production are more numerous but involve relatively small tonnages. Needs of machine tool builders are sustained at record level, supported by continuation of machinery buying in capacity volume.

Boston—While secondary distributors of alloy steel bars are well covered, deliveries are slightly further extended. However, to date, there has been no lag in supplying fabricating consumers, with stocks

held by sellers in this section well balanced.

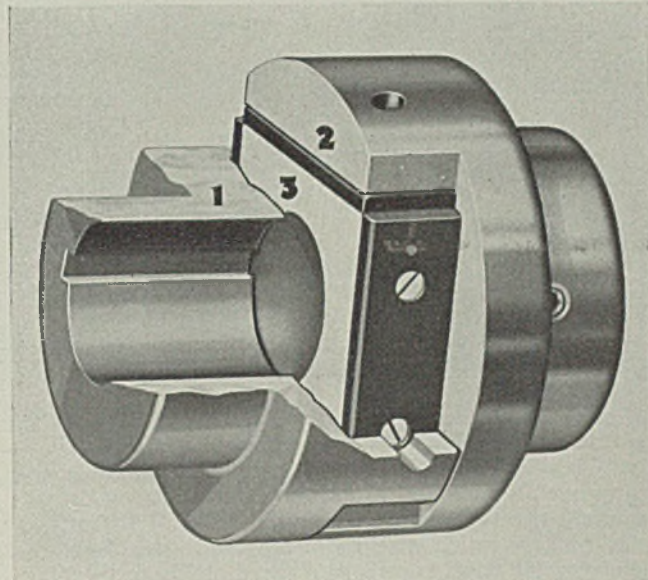
Philadelphia—Bar consumers express increasing anxiety over forward requirements, some even figuring ahead as far as November on alloy grades. Jobbers also are watching stock positions closely. Carbon bar deliveries are being promised in four to six weeks and alloy bars in five to nine weeks. Some mills can offer stock items in alloy bars in three to four weeks.

Frankford arsenal, Philadelphia, has awarded 1,745,000 feet of annealed tungsten rods, inv. 1948, to

Allegheny Ludlum Steel Corp., Watervliet, N. Y., Carpenter Steel Co., Reading, Pa.; Crucible Steel Co. of America, New York, and Universal-Cyclops Steel Co., Bridgeville, Pa.

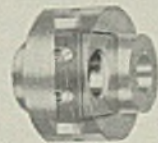
New York—Deliveries on plain carbon bars generally require four to five weeks, unless specifications happen to fit in with earlier rolling schedules. Hot alloy bars take about six weeks for shipment, with cold-finished material requiring four to five weeks for carbon and seven to nine for alloy. Heat treated bars take 18 weeks or more to

complete flexibility IN A COUPLING



WITHOUT FLEXIBLE MATERIALS

- Has only 3 simple, rugged parts—2 identical jaw flanges—1 floating metallic center block.
- The floating metallic center block which transmits load is free to float in any direction without cramping—binding—or usual friction and wear.
- Wear is absorbed by inexpensive non-metallic bearing strips on load bearing surfaces of the floating metallic center block. These are easily replaced without disturbing coupling alignment.
- No flexible materials which absorb energy and cause side thrust are used.
- Write for Catalog No. 361 which contains complete information.



AMERICAN FLEXIBLE COUPLING COMPANY • ERIE, PA.

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some cases, reflecting the lack of sufficient heat-treating facilities and heavy requirements of the government, airplane equipment and machine tool builders.

Birmingham, Ala. — Bar production, both merchant and concrete reinforcing, is exceptionally active, with the latter probably in greatest demand.

Toronto, Ont. — Merchant bar sales have developed more interest. Local steel sellers state that new booking chiefly is directly due to Canada's war effort. Mills report booking for third quarter well in

excess of that for either of the two previous quarters.

Buffalo — Buying and releases continue at favorable levels, but mills report capacity rolling schedules are making it possible to keep fairly well abreast of delivery requests.

Tin Plate

Tin Plate Prices, Page 82

Pittsburgh—Tin mill operations are steady at 78 per cent, virtual

peak of operating mills. Local producers are not concerned over possibility of a tin shortage, do not expect the price to go up and expect the heaviest packing season in many years. Local producers see little need for additional mills, however, since stocks of plate have been built up over slack periods and they expect this to take care of additional needs.

Pipe

Pipe Prices, Page 83

Pittsburgh—Pipe mills report demand for standard pipe moving up somewhat. Oil country tonnage is steady. Releases on mechanical tubing have maintained their volume this month. Boiler tube business is static. Increasing industrial construction has meant considerable new pipe business, and local mills have fared well on this tonnage.

Boston—Cast pipe buying continues in small lots with releases against blanket contracts lower than expected. While the district foundry is operating on a five-day week schedule a substantial part of the output is going into stock against possible raw material shortage later. Merchant steel and wrought iron pipe demand is slightly heavier, due to more active building, both private and government shop expansion.

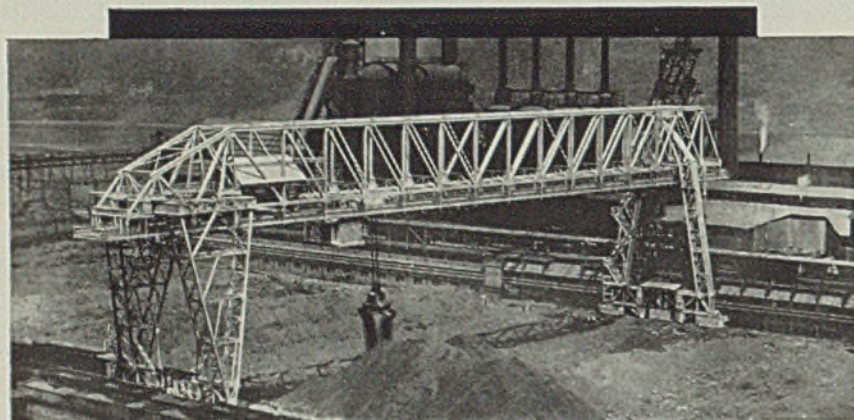
Birmingham, Ala. — Pipe production, while hardly up to expectations, is on a satisfactory basis, with plants operating, generally, on a five day basis. Most of the output is for municipalities, but utility inquiries are up somewhat.

Seattle—Cast iron pipe industry is not active although several projects are to be up soon, including two main extension jobs in Seattle. Sumner and Centralia, Wash., on alternate bids, purchased transite and wood pipe.

San Francisco — Awards of cast iron pipe were the largest for any week so far this year, 4128 tons, bringing the total to date to 19,925 tons, compared with 17,424 tons for the corresponding period in 1939. Los Angeles placed 2759 tons of 6 to 12 inch with United States Pipe & Foundry Co., American Cast Iron Pipe Co. and National Cast Iron Pipe Co.

Cast Pipe Placed

2759 tons, 6 to 12-inch, Los Angeles, allocated as follows: 1976 tons to United States Pipe & Foundry Co., Burlington, N. J., 656 tons to American Cast Iron Pipe Co., Birmingham, Ala., and 127 tons to National Cast



DRAVO DESIGNS AND BUILDS
ORE BRIDGES

● This 12-Ton Ore Bridge, designed and built by DRAVO for the Clairton Plant of the Carnegie-Illinois Steel Company is a 314' span with both ends overhanging the legs, making the total length of trolley track 400 feet. The man trolley, which with its bucket and load of ore weighs about 120 tons, travels at a speed of 900 feet per minute. The entire bridge, weighing more than 800 tons, travels 125 feet per minute and is of the skew type permitting either end to advance 20 to 25 feet ahead of the other. The bucket is lowered and raised with load at an average speed of 225 feet per minute. All controls are fully magnetic and the bridge travel motors are interlocked with automatic spring powered rail clamps.

● Added to its ability to fabricate and erect structures such as the one shown here, Dravo Corporation has had years of experience building docks, retaining walls, plant foundations, everything that enters into the problem of terminal facilities. Inquiries relative to specific problems may be addressed to

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ENGINEERING WORKS DIVISION

SHIPYARDS: PITTSBURGH, PA.—WILMINGTON, DEL.

GENERAL OFFICES AND SHOPS: NEVILLE ISLAND—PITTSBURGH, PA.

Rails, Cars

Track Material Prices, Page 83

Atlantic Coast Line, recently noted as in the market for 700 box cars and 100 phosphate cars, has increased its inquiry to include 300 hopper cars, 300 ballast cars, 200 gondolas, 50 stock cars and 15 covered cement cars, a total of 1665.

Rail buying is featured by placing of 25,000 tons of 131-pound rail by the Norfolk & Western, 18,750 tons going to Carnegie-Illinois Steel

Iron Pipe Co., Birmingham, Ala.
650 tons, 6 to 12-inch, Long Beach, Calif., to United States Pipe & Foundry Co., Burlington, N. J.
510 tons, 6-inch, universal pipe, San Francisco, to Central Foundry Co., New York.
275 tons, 4 to 12-inch for Pendleton, Oreg., to Pacific States Cast Iron Pipe Co., Provo, Utah.
128 tons, 6-inch, Whittier, Calif., to United States Pipe & Foundry Co., Burlington, N. J.

Cast Pipe Pending

500 tons, 6 to 10-inch mainly cement-lined, Panama, schedule 4150, bids July 15.
290 tons, 6 and 8-inch, Portland, Oreg.; United States Pipe & Foundry Co., Burlington, N. J., low.
200 tons, 6-inch, MacDill Field, Tampa, Fla.; bids in.

Steel Pipe Placed

20,000 to 25,000 tons, 20, 22 and 24-inch line pipe, for looping main line of Panhandle Eastern Pipe Line Co. main gas line from Texas to Middle West, to National Tube Co., Pittsburgh.

Steel Pipe Pending

Unstated tonnage, light, gas and water commission, Memphis, Tenn., 550 lineal feet 22-inch lap welded pipe, 1000 lineal feet 8-inch and 1500 feet 6-inch, and couplings; bids July 10.

Wire

Wire Prices, Page 83

Pittsburgh—Demand for both merchant and manufacturers' wire products remains steady, the export market is active, and releases in domestic market carry fair volume. Sellers expect continued demand on the present basis indefinitely, although there have been some indications that warehouses have been buying for stock and are now carrying heavy inventory, which might be a forerunner of somewhat lower buying.

Pittsburgh Steel Co. has been awarded 375 tons ungalvanized bright wire strand at \$31,800, by United States engineer, Memphis, Tenn., for delivery at Bridge Junction, Ark., bids June 28.

Cleveland—Sales of rods and manufacturers' wire continue relatively heavy, with some buyers pressing for delivery. While recent demand has been no better than steady, prospects for heavier consumption later in the quarter are favorable. Automotive requirements are in a seasonal lull that will be only temporary, and requirements of bolt and nut makers are counted on for expansion in coming weeks. Deliveries on manufacturers' wire usually are two to three weeks or more.

Boston—Incoming wire volume

continues ahead of shipments, which with higher production schedules, are heavier. Specialties and manufacturers' wire lead in buying and consumers seek to cover further in advance. While consumption is mounting, it is evident more users are building up inventories moderately. Demand for rods continues brisk and export demand is substantial.

Birmingham, Ala.—Wire products are being restocked in considerable volume by jobbers and dealers and production continues steady, virtually at capacity.



SAVE SPACE! Kinnear Rolling Doors waste no usable floor, wall or ceiling space. They open out of the way, into a compact coil above the doorway. Materials stored within a few inches of either side do not obstruct their operation.

SAVE TIME! Kinnear Rolling Doors operate rapidly, clearing the entire opening. Kinnear Motor Control permits workmen to close and open doors from any number of convenient points. Snow, ice and swollen ground can't obstruct the doors.

SAVE UPKEEP COSTS! Kinnear's rugged all-steel construction and smooth, accurately counterbalanced, ball bearing operation assure long, economical service. Interlocking-slat design results in flexibility that absorbs sharp blows, resists damage. Slats can be individually replaced. Doors are weatherproof, fire-resistant. Built in any size, for old or new buildings.

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THE KINNEAR MANUFACTURING COMPANY
1780-1800 Fields Avenue
Columbus, Ohio
Factories: Columbus, Ohio and San Francisco, California
Offices and Agents in principal cities

Corp., Pittsburgh, and 6250 tons to Bethlehem Steel Co., Bethlehem. Distribution on about 2500 tons of accessories is expected to be announced shortly.

Baltimore & Ohio has placed 25 diesel-electric locomotives with Electro-Motive Corp., the Reading Co. is inquiring for 10 switchers and the Southern Pacific for 20 steam locomotives.

Illinois Central is in the market for 3000 box and automobile cars and the Southern Pacific for 2000 box and automobile and 121 passenger cars.

Rail Orders Placed

Norfolk & Western, 25,000 tons 131-pound rails: Carnegie-Illinois Steel Corp., Pittsburgh, 18,750 tons; Bethlehem Steel Co., Bethlehem, Pa., 6250 tons.

Car Orders Placed

American Refrigerator Transit Co., 100 refrigerators, to its own shops, St. Louis.

Colombia, South America, railroad, 23 passenger coaches and 13 trailers, to American Car & Foundry Co., New York; to cost approximately \$1,000,000.

Denver Tramway Corp., Denver, ten trackless trolley coaches, to J. G. Brill

Co., Philadelphia.

Seaboard Airline, 18 streamlined passenger coaches, reported placed with Edw. G. Budd Mfg. Co., Philadelphia.

Car Orders Pending

Atlantic Coast Line, 300 hoppers, 300 ballast, 200 gondolas, 50 stock and 15 covered cement cars; in addition to 700 box and 100 phosphate cars recently inquired for.

Bonneville power administration, Portland, Ore., four transformer transfer cars, inv. 1167; bids July 15, Portland, Ore.

Illinois Central, 3000 box and auto cars. Southern Pacific, 2000 box and auto cars.

Southern Pacific, 121 passenger cars; purchase considered.

Union Pacific, 1000 ballast cars, contemplated.

Locomotives Placed

Baltimore & Ohio, 25 diesel-electric switchers, to Electro-Motive Corp., La Grange, Ill.

Locomotives Pending

Reading Co., ten diesel switchers, seven of 600 horsepower, three of 900 horsepower.

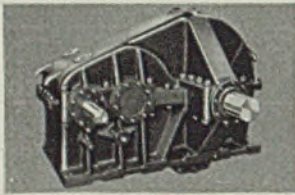
Southern Pacific, 20 locomotives; purchase considered.

BUILT for the JOB!

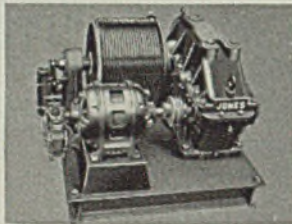
HERE are three views of Jones Herringbone Reducer units that were built to meet special requirements and unusual service conditions. They are typical of many modifications that have been made of Jones Herringbone Worm and Spur Gear Reducer units for a wide variety of industrial applications.

Along with your requirements for standard drives the Jones organization offers a broad service on special drive units.

W. A. JONES FOUNDRY & MACHINE CO., 4437 Roosevelt Road, Chicago, Illinois



• An oil field pumping unit driven by a special Jones double type Herringbone Reducer through V-belts from a gas engine.



• A locomotive coaling station equipped with a Jones skip hoist unit. These skip hoists are built as complete units by the Jones organization.



• This hydraulic dredge has Jones Herringbone Reducers for driving the cutter head shaft and the drums.

• Both standard and special applications of Herringbone Reducers are covered in this Jones Catalog No. 70. Technical information shows how to select reducers for all conditions of service in accordance with the A.G.M.A. recommended practice.

We shall be pleased to send you a copy.

Jones

HERRINGBONE—WORM—SPUR—GEAR SPEED REDUCERS
CUT AND MOLDED TOOTH GEARS • V-BELT SHEAVES
ANTI-FRICTION PILLOW BLOCKS • PULLEYS
FRICTION CLUTCHES • TRANSMISSION APPLIANCES



Shapes

Structural Shapes Prices, Page 82

Pittsburgh — Inquiries resulting from industrial construction are numerous. Thus far shipments have been meeting schedules in almost every case, although sellers are not making definite promises on large bookings for future delivery.

Cleveland—Structural shape deliveries are lengthening, particularly on special sections for which some producers are asking four weeks and more. Standard shapes are available on somewhat shorter notice. A fairly large tonnage of fabricated shape business is pending and in prospect, although inquiries lately have been slightly less numerous. An Akron tire company plant addition will take an estimated 500 tons.

Shape Awards Compared

	Tons
Week ended July 13.....	18,795
Week ended July 6.....	23,619
Week ended June 29.....	19,837
This week, 1939.....	22,858
Weekly average, year, 1940	18,377
Weekly average, 1939.....	22,411
Weekly average, June.....	18,059
Total to date, 1939.....	626,580
Total to date, 1940.....	514,556

Includes awards of 100 tons or more.

Bids are in for a local bridge involving 185 tons.

Boston—Taking close to 6000 tons of structural steel, five hangars, Westover field, Chicopee, Mass., brought out a low bid by Tuller Construction Co., Red Bank, N. J. Inquiry is heavier. A machine shop extension at the Portsmouth navy yard, bids on which have been postponed, will be included in additional construction now being planned. Morton C. Tuttle Co., Boston, has the contract for the Bath Iron Works expansion program taking a substantial tonnage. Rush of work has resulted in a shortage of draftsmen and designers with some contractors who are borrowing and exchanging these specialists to expedite details. Deliveries of plain material and completed fabricated sections is somewhat more extended.

New York — Housing projects closing this week include an alternate requiring 3500 tons of shapes and another taking an even larger tonnage of reinforcing bars. Awards and new inquiry are light but plans are under way for a Connecticut river bridge near Hartford taking 7000 tons and likely to be bid in September.

Philadelphia—United States engineer, Philadelphia, will take bids Aug. 1 on superstructure for the long-delayed canal bridge at St. Georges, Del., requiring 7600 tons of structurals. According to preliminary reports, the projected drydock at Philadelphia navy yard will require 20,000 tons of steel, mostly in the form of shapes, sheets and H-piling and plates. Due to the nature of the job, shapes will be used for reinforcement in place of bars, it is said. Smaller jobs also are more numerous.

Seattle—While no large projects are immediately pending, fabricating plants in Seattle and Portland have fair backlogs. American Bridge Co., Pittsburgh, is low at \$499,319 to Reclamation bureau for the 1230-foot Kettle river, Washington, bridge, involving 3320 tons of shapes and 126 tons cast steel.

San Francisco — Although structural lettings are light, more than 35,000 tons are pending. Awards totaled 1340 tons, bringing the year's aggregate to 107,848 tons, compared with 69,893 tons for the same period last year. Duffin Iron Works took 1800 tons for four naval supply depot buildings in Oakland, Calif. The general contract for the appraiser store and immigration station, San Francisco, 5300 tons, has, after many weeks, been let to Clinton Construction Co.

Toronto, Ont.—With new plant construction and additions continuing at a record pace to take care

of Canadian war materials production, structural steel awards are gaining in volume. Awards during the past week totaled approximately 5000 tons, with a further 8000 to 10,000 tons pending.

Shape Contracts Placed

1800 tons, four store houses, naval supply depot, Oakland, Calif., to Duffin Iron Works, Chicago.

1600 tons, including 1366 tons sheet piling, and 294 tons, H-piles, United States engineer, Duluth, to Carnegie-Illinois Steel Corp., Pittsburgh; also 77.8 tons, wales and cleats; 37.3 tons, bolts, washers, rods and miscellaneous

items, bids June 28, inv. 50.

1325 tons, additional story, United States navy munitions building, Washington, to Bethlehem Steel Co., Bethlehem, Pa., through McCloskey & Co., Philadelphia.

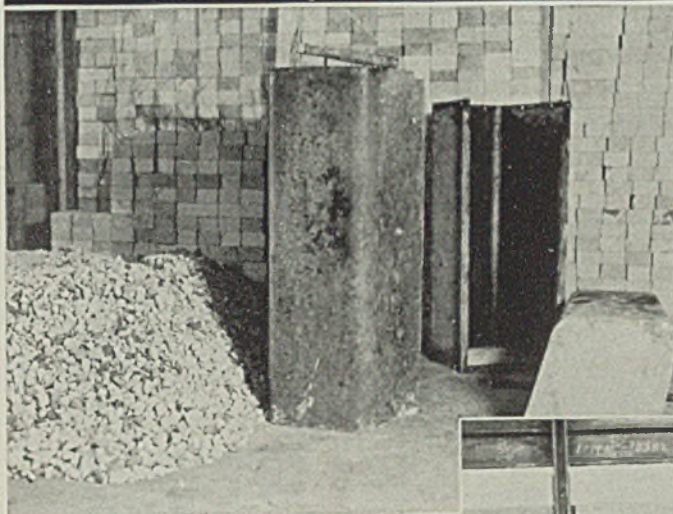
1300 tons, depot supply building, Hill field, Ogden, Utah, for government, to Bethlehem Steel Co., Bethlehem, Pa.

1000 tons, radial gates, Watts Bar project, Tennessee valley authority spec. 226320, to Dravo Corp., Pittsburgh.

970 tons, bridge, Pike-Sullivan counties, Pa., to Bethlehem Steel Co., Bethlehem, Pa., through Whitaker & Biehl, Harrisburg, Pa.

700 tons, extension to James H. Reed power station, for Duquesne Light Co.,

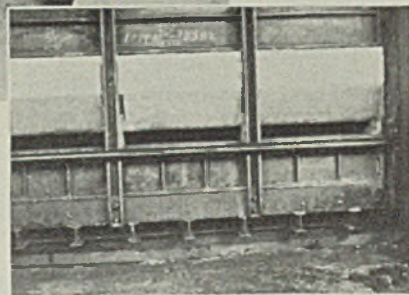
HOW FORGE PLANT SAVES MONEY ON FRONT ARCHES



←Just Out of the Mold—precast front arch section, made of LUMNITE Refractory Concrete, ready for installation in a forge furnace like the one shown below. Note pile of crushed firebrick aggregate.

Forge furnace with precast Refractory Concrete front arches in place.

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THREE YEARS AGO this forge plant in Illinois began using precast front arches of Refractory Concrete on all furnaces. The results? High refractory quality at low cost ...and a handy supply of precast units made by plant men and held ready for quick replacement.

Refractory Concrete, made with LUMNITE, stands up under severe forge furnace conditions, high temperature, drafts of air, intermittent operation, and continual vibration of nearby drop hammers.

You can save money by using Refractory Concrete, precast as in the plant shown here, or cast in place. Cast-in-place Refractory Concrete forms a one-piece, jointless refractory, easily placed in hard-to-get-at locations, or in simple furnace walls and door linings.

Refractory Concrete is easily made by mixing LUMNITE with suitable refractory aggregate and water. LUMNITE is sold by building supply dealers in all parts of the country.

Send today for a new booklet which tells how, where and why to use Refractory Concrete. Write Atlas Lumnite Cement Co. (United States Steel Corporation Subsidiary), Dept. S-4, Chrysler Bldg., N. Y. C.

LUMNITE FOR REFRACTORY CONCRETE

115 tons, highway bridge, Chelmsford-Lowell, Mass., to American Bridge Co. through Lane Construction Co., Meriden, Conn.

110 tons, bureau of reclamation spec. 1363-D, Provo river project, Utah, to Western Pipe & Steel Co., San Francisco.

110 tons, Y.M.C.A. building, Houston, Tex., to Consolidated Steel Corp., Los Angeles.

105 tons, bureau of reclamation spec. 1362D (item 1), Central Valley project, California, to Stearns-Roger Mfg. Co.

100 tons, underpass, Washington county, Texas, to North Texas Iron & Steel Co., Fort Worth, Tex.; includes cast steel bearing plates and bridge railing.

100 tons, bridge, San Sebastian river, St. Augustine, Fla., for Florida East Coast railroad, to Virginia Bridge Co., Roanoke, Va.

Shape Contracts Pending

7600 tons, bridge, St. Georges, Del., bids August 1, to United States engineer, Philadelphia.

6000 tons, five hangars, northeast air base, Chicopee, Mass.; Tulley Construction Co., Red Bank, N. J., low; also requires 350 tons reinforcing bars, same contractor low.

5300 tons, appraisers' store and immigration station, San Francisco; general contract to Clinton Construction Co., San Francisco.

4000 tons, addition to Lockheed Aircraft Co. plant, Burbank, Calif.; bids in.

3320 tons (also 126 tons cast steel) Kettle river, Washington, bridge; American Bridge Co., Pittsburgh, low to reclamation bureau, Denver.

3200 tons, three hangars, MacDill Field, Tampa, Fla.; bids July 30, constructing quartermaster, that station.

1378 tons, units 7 to 10, power houses, Bonneville dam, Oreg.; bids about July 20.

1100 tons, glass and lamp factory, for General Electric Co., Jackson, Miss.

600 tons, piling for 35 cells, Diamond Alkali Co., Fairport, O.

550 tons, general utility shop, for United States navy, Washington.

500 tons, building, General Tire & Rubber Co., Akron, O.; bids soon.

500 tons, barrel racks for warehouse D, for Frankfort Distilleries, Dundalk, Md.

465 tons, construction projects for Bonneville project, Portland; bids in.

440 tons, for two Illinois highway bridges, bids July 12.

440 tons, grade separations, Sheepshead Bay, Brooklyn, N. Y., for Triboro Bridge authority.

426 tons, three bridges for state of Missouri highways; bids July 19.

420 tons, undercrossing, Malheur county, Oreg., for state; bids July 18.

400 tons, extension to steam plant, for Southern Colorado Power Co., Pueblo, Colo.

370 tons, building, for Coca Cola Bottling Co., Louisville, Ky.

370 tons, case structure, for Tidewater Associated Oil Co., Bayonne, N. J.

350 tons, Continental Can Co. plant, Walla Walla, Wash.; Austin Co., Seattle, general contractor.

350 tons, building, General Electric Co., Erie, Pa.

330 tons, office and mercantile building, for Frank J. Hoeschler, LaCrosse, Wis.

320 tons, power house unit 3, Pickwick dam, Tennessee valley authority, Knoxville, Tenn., bids July 22; authority

takes bids same date on 66 tons galvanized steel floor grating, Kentucky lock.

300 tons, army air school, Lowry Field, Denver, Colo.; bids opened.

260 tons, factory building, for Continental Can Co., Chicago.

250 tons, state bridge RC-40-60, Dover Plains, N. Y.

250 tons, grade separation, contract H-9, Tremont avenue, New York, for Triboro Bridge authority.

230 tons, four bridges, Tioga county, Pennsylvania; bids to state highway department, Harrisburg, Pa., July 19.

220 tons, underpass, Blair county, Pennsylvania, for state.

220 tons, building, for Johnson & John-

son, North Brunswick, N. J.

200 tons, grade separation, Cuyahoga county, Ohio, for state.

185 tons, Clifton boulevard bridge, Cleveland; bids in. Also includes 315 tons reinforcing bars.

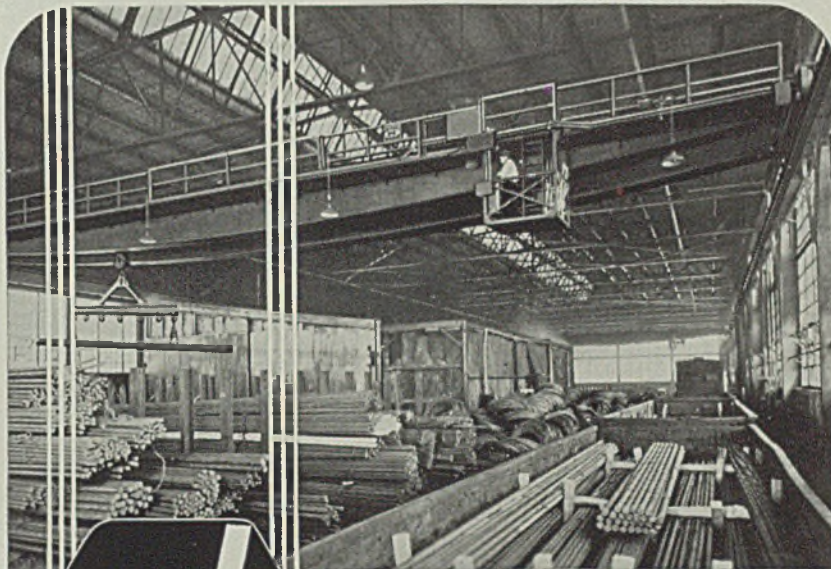
170 tons, state bridge RC-40-53, West Seneca, N. Y.

150 tons, garage, Ardmore, Pa.; bids in.

150 tons, Jett, Okla., Great Salt Lake dam; bids July 9.

150 tons, bridge, South Dennis, N. J.; New Jersey state highway department, Trenton, N. J.

150 tons, gate house and labor board building, naval air base, Alameda, Calif.; general contract to Moore & Roberts, 693 Mission street, San Fran-



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cisco, at \$427,324.
 130 tons, state bridge RC-40-58, Seely Creek, N. Y.
 130 tons, state bridge 755, Viroqua, Wis.
 120 tons, office and factory building, for Galring Tool Co., Macomb county, Michigan.
 115 tons, sheet piling, levee work on Sacramento river, California; bids July 23.
 108 tons, 3-span continuous deck plate girder bridge, length 218.61 feet overall, Saxtons river, Westminster, Vt.; bids July 19, H. E. Sargent, commissioner of highways, Montpelier.
 Unstated, towers for 69-mile, 230-KV transmission line, Chehalis-Covington,

Wash., for Bonneville project; H. H. Walker, Los Angeles, low.
 Unstated, Bradford Island, Columbia river tower crossing; bids to Bonneville project, Portland, Oreg., July 19.

Reinforcing

Reinforcing Bar Prices, Page 83

Pittsburgh — Contracts let since July 8 have been holding well to the 2.15c price which was instituted by

most producers on that date. Some tonnage from before that date has reportedly gone at slightly less, but for the most part this is the actual going price. This applies on new billet steel only, rail mills now quoting their usual 10-cent differential at 2.05c. Demand is good. Several new jobs of fairly large volume are now out for bidding and closings for the past week were strong.

Chicago — Market is more active, with increase noted both in awards and pending projects. New prices may get first significant test on the government powder magazine construction at Proving Ground, Ill., latest units of which will require approximately 1400 tons.

Boston—Reinforcing steel inquiry is slightly heavier, including close to 500 tons for housing projects, Pawtucket, R. I., and Stamford, Conn. Bids are in on hangars at Chicopee, Mass., 350 tons. Awards include 250 tons for Massachusetts highways and bridges, one at Lynnfield. Buying, however, continues centered in small lots with prices firmer.

Philadelphia — The recently announced concrete bar price of 2.15c, base, or 1.90c on lots of 20 tons or more, so far has not received adequate test and it is not indicated, therefore, whether the new price can be maintained. New business is slightly heavier.

Seattle—Inquiry is slow, no important jobs being up for figures. Development of national defense projects is expected to stimulate demand during the current quarter. Rolling mills have little backlog and operations are less than 50 per cent. Award of more than 2000 tons, mostly public works projects, is pending.

San Francisco — Awards of reinforcing bars totaled 1652 tons, bringing the total for the year to 81,520 tons, compared with 88,471 tons for the corresponding period in 1939. United Concrete Pipe Corp. secured 950 tons for a precast reinforced concrete pipe line between Burbank and Santa Monica, Calif., for the metropolitan water district,



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THE HORSBURGH & SCOTT CO.
 GEARS AND SPEED REDUCERS

5112 HAMILTON AVENUE • CLEVELAND, OHIO, U. S. A.

Concrete Bars Compared

	Tons
Week ended July 13	8,585
Week ended July 6	1,765
Week ended June 29	10,500
This week, 1939	6,473
Weekly average, year, 1940	8,169
Weekly average, 1939	9,197
Weekly average, June	10,377
Total to date, 1939	285,598
Total to date, 1940	228,747
Includes awards of 100 tons or more.	

Los Angeles. Pending business exceeds 26,500 tons. Bids are expected to be called for about July 20 for 7000 tons for powerhouse units for the Bonneville dam, Oregon. The general contract for the appraisers store and immigration station, San Francisco, requiring 2300 tons, has finally been awarded to Clinton Construction Co.

Toronto, Ont.—Reinforcing bar awards continue at a high rate, chiefly due to war construction activities. While there has been some curtailment in public works construction, the more pressing undertakings are proceeding. Bridge construction is providing good demand for bars, and industrial plant construction also is responsible for heavy reinforcing bar sales.

Reinforcing Steel Awards

- 1500 tons, grade crossing elimination, Long Island railroad, Rockaway, N. Y., to Carroll & McCreedy Co. Inc., Brooklyn, through Charles F. Vachris Co., New York, contractor.
- 950 tons, precast reinforced concrete pipe, metropolitan water district, Los Angeles, between Burbank and Santa Monica, Calif., to United Concrete Pipe Corp., Alhambra, Calif.
- 600 tons, outlet works, Blue Mountain dam, Waveland, Ark., to Truscon Steel Co., Youngstown, O.; John Kerns Construction Co., contractor.
- 600 tons, flood protection project, section No. 1, Cohocton and Chemung rivers, Corning, N. Y., to Joseph T. Ryerson & Son Inc., through Cleverock Inc., New York, contractor.
- 550 tons, apartment buildings, Coco Solo, Canal Zone, to Truscon Steel Co., Youngstown, O.; McCarthy Bros., St. Louis, contractors.
- 430 tons, highway project, Pelham Parkway, New York, to Concrete Steel Co., New York.
- 400 tons, bureau of sewers invitation, Chicago, to O. J. Dean Co., Chicago.
- 300 tons, hospital buildings, Willowbrook, N. Y., to Joseph T. Ryerson & Son Inc., Chicago; DiRiso Bros. Inc., contractor.
- 300 tons, state highway, Blackhawk, Iowa, to Missouri Rolling Mill Corp., St. Louis; bids May 28.
- 250 tons, six pumping stations at Ironton, O., to West Virginia Rail Co., Huntington, W. Va.; Norton & Nadalin, contractors.
- 230 tons, procurement invitation 5760, Topeka, Kans., to Sheffield Steel Corp., Kansas City, Mo.
- 225 tons, bridge, Seaford, Del., to Bethlehem Steel Co., Bethlehem, Pa., through National Building Supply Co.; McDermott Construction Co., contractor.
- 200 tons, reservoir, Billings, Mont., to Colorado Fuel & Iron Corp., Denver, through Northwest Engineering Co., contractor.
- 200 tons, beef house, Armour & Co., Kansas City, Mo., to Sheffield Steel Corp., Kansas City; Swenson Construction Co., contractor.
- 200 tons, Susquehanna river flood control work, Wilkes-Barre, Pa., to Bethlehem, Steel Co., Bethlehem, Pa.,

through Sardoni Construction Co., Forty Fort, Pa.

180 tons, bridge over Passaic river, route 25, section 303C, Newark, N. J., to Jones & Laughlin Steel Corp., Pittsburgh; LaFera Grecco Contracting Co., contractor.

160 tons, boiler plant, state hospital, Binghamton, N. Y., to Joseph T. Ryerson & Son Inc., Chicago; L. B. Strandberg & Son, Chicago, contractor.

160 tons, water filtration plant, Fort Dix, N. J., to Bethlehem Steel Co., Bethlehem, Pa., through National Building Supply Co.; Karno-Smith Co., contractor.

150 tons, building, Standard Grocery Co., Minneapolis, to Laclede Steel Co., St. Louis.

150 tons, flood control project, section 2, Binghamton, N. Y., to Jones & Laughlin Steel Corp., Pittsburgh; Tuckahoe Construction Co., Tuckahoe, N. Y., contractor.

130 tons, exchange building, Illinois Bell Telephone Co., Chicago, to Inland Steel Co., Chicago; W. E. O'Neil, contractor.

110 tons, relief sewers, Sandusky, O., to Republic Steel Corp., Cleveland, through Builders Structural Steel Co., Mike Fatol, contractor.

110 tons, highway project W-182-1-634, Washington county, Maryland, to Bethlehem Steel Co., Bethlehem, Pa., through Bennett & Hunter, contractors.

100 tons, highway project, route 1912, Roanoke, Ind., to Truscon Steel Co.,



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Behind the Scenes with STEEL

—The Market Week—

Life Begins At 65

■ A card in the reception room of the Sweeper-Vac Co. at Worcester, Mass., poetically paints this rosy picture for old age pensioners under what sounds like a combination Ham 'n' Egg and Townsend plan:

*Cheer up, Grandpa, don't you cry;
You'll wear diamonds by and by.
Uncle Sam has money mills,
Made to grind out brand new bills.
He will help you in your cause,
With his old-age pension laws.
No more worry over rent,
Leave that to the government.
Dine on squab and caviar,
Sport a streamline motor car.
When the blizzard blows a bit
Off to Palm Beach gaily flit.
Lead a life on pleasure bent,
But, you must spend every cent.
Whoopce, Grandpa, stay alive,
Life begins at sixty-five!*

The Office Cat

■ We've mentioned before that our most ardent reader is the office cat (nicknamed Shrdlu) at the J. F. Bingham Mfg. Co., Lawrence, Mass. Well, last week as soon as Kitty saw the south end of our little friend who was facing north, she sat right down and wrote us a very clever but caustic political comment which unfortunately wouldn't pass through Jim Farley's mail, we're afraid. Come the revolution, we'll tell you.

Security & Defense

■ Two very interesting and timely advertisements this week by Republic Steel Corp. (p. 18) and Warner & Swasey (p. 5). Such assurances of complete cooperation and singleness of purpose by leading men and leading companies are the real hope of

American security and defense. And the real strength of democracy.

Names Dept.

■ The *Plain Dealer* classified section this morning carried this notice: "\$1000 Reward for information leading to arrest of person or persons committing theft of Twist Drills from National Twist Drill & Tool Co. Please advise Mr. Crook, care of the company." A peculiar twist.

For The Asking

■ In case you missed the announcement up front, the index to STEEL, Vol. 106, is ready for distribution and will be furnished gladly by the at-your-service Readers Service Dept.

5th. Birthday

■ We're not only behind the scenes, we're definitely behind the times. Five issues ago (June 10), we celebrated our fifth anniversary by being completely unconscious of the fact, which may have been just as well. In our baptismal effort in 1935 we stated unblushingly that STEEL was the fastest growing industrial publication in the country. The real satisfaction of doing a job is to be able to say the same thing five years later. Shall we make it three cheers and a bottle of rum? (If so, make ours Bacardi.)

Space Filler

■ Here it is, a swell evening and a possible nine holes of golf waiting for us if we get the early train home but as we go to paste up the column we find we're just this much short. Surely you won't mind this easy way out of it, will you?

SHRDLU

- Youngstown, O.; Grace Construction Co., contractor.
- 100 tons, bridge, Shawnee county, Kansas, to Sheffield Steel Corp., Kansas City, Mo.
- 100 tons, municipal filtration plant, West Hartford, Conn., to Bethlehem Steel Co., Bethlehem, Pa., through F. H. McGraw Co., contractor.
- 100 tons, operations building, naval air station, Jacksonville, Fla., to Truscon Steel Co., Youngstown, O.; North-eastern Construction Co., Winston-Salem, N. C., contractor.
- 100 tons, building, Jacobs Aircraft Co., Pottstown, Pa., to Concrete Steel Co., Pittsburgh, through F. H. Kaiser, Pottstown.

Reinforcing Steel Pending

- 4000 tons, alternate housing project, New York; bids July 19.
- 3300 tons, St. James Terrace housing, Detroit; bids July 30.
- 1200 tons, igloo magazines, Savanna, Ill., for United States ordnance department; bids July 9.
- 1200 tons, riverfront dike, United States engineer, Hartford, Conn.; bids July 23.
- 1000 tons, power house, Fort Peck, Mont., for army engineers; bids July 17.
- 900 tons, standard ammunition magazines, Savanna, Ill., for United States ordnance department; bids July 10.
- 500 tons, dike and pumping station, for army engineers, Chicopee, Mass.
- 400 tons, office building, LaCrosse, Wis.
- 400 tons, housing project, New Britain, Conn.; A. E. Stephens Co., Springfield, Mass., low.
- 380 tons, for Minnesota Mining Co., St. Paul, Minn.
- 300 tons, Southfield housing project, Stamford, Conn.; John H. Elsele Co., New York, low.
- 235 tons, gate house and labor board building, naval air base, Alameda, Calif.; general contract to Moore & Roberts, 693 Mission street, San Francisco, at \$427,324.
- 219 tons, grade elimination and bridge, for state, Cuyahoga county, Ohio.
- 200 tons, undercrossing, Malheur county, Ore., for state; bids July 18.
- 150 tons, building, Northwestern Life Insurance Co., Chicago.
- 150 tons, two bridges, Merrimac and Grafton counties, New Hampshire.
- 140 tons, belt parkway, contract E-1, Brooklyn, N. Y.; bids July 11.
- 130 tons, subway, section S-6A, Chicago; bids July 11.
- 130 tons, airplane repair dock, Patterson field, Osborn, O.; Silken Bros., contractors.
- 110 tons, engine test building, Patterson field, Osborn, O., Charles H. Shook, contractor.
- 103 tons, highway project FAS-292-C, Carter county, Ohio.
- 100 tons, factory building, Monsanto Chemical Co., Springfield, Mass.
- 100 tons, viaduct for Wabash railway, St. Louis county, Missouri.
- Unstated, control and untanking house for Bonneville project, Chehalls, Wash.; S. S. Mullin, Seattle, low.
- Unstated, \$350,000 county courthouse, Vancouver, Wash.; bids July 27.
- Unstated, 350,000-bushel malt storage elevator, 18 bins, for Great Western Maltng Co.; George H. Buckler Co., Portland, Ore., general contractor.
- Unstated, state bridges and separation projects in Grant, Linn and Malheur counties, Oregon; bids to highway commission, Portland, Ore., July 18.

Pig Iron

Pig Iron Prices, Page 84

Pittsburgh—Production continues to increase, June figures showing heaviest totals so far this year and July production running ahead of June. Pittsburgh Coke & Iron Co. blew in its Sharpsville stack last week. Report, although unconfirmed, states heavy export business contributed partly to this action. Prices are firm on most current business.

Boston—Pig iron buying is light and shipments have slackened mildly. Consumers in some instances have built up stocks. Larger consumers have not covered with substantial tonnages, but are drawing on inventory less and apparently holding current supplies to the recent level. The Everett furnace has gone in blast.

New York—Pig iron specifications have increased, following the lull last week, when a number of foundries were closed for vacations. The general melt is comparable with the June rate, with little to indicate a rise. As expected, domestic buying is quiet, as most consumers have contracted for this quarter and in some cases well beyond. Export demand is quiet except for further substantial buying by Great Britain.

Philadelphia—Pig iron buying has slackened, following heavy coverage for third quarter. Consumption, however, has increased as indicated by a slight acceleration in shipments of both pig iron and coke. Average operations now are estimated at 75 per cent. Some sellers are talking about an increase in the price on low phos iron, due to scarcity.

Buffalo—Shipments are at about the best level of the year. With bookings large and releases in good volume, producers expect the current quarter to be the best period of the year. Spot demand is improving.

Cincinnati—Pig iron buying is limited to small replacements and is without market influence. Shipments continue to equal the year's peak as melters take all material on order. Foundry operations are unchanged at about 60 per cent, with machine tool plants leading.

Toronto, Ont.—Merchant pig iron sales are gaining in volume, both for spot and future delivery. Producers are maintaining deliveries to melters at a rate of about 5000 tons per week. Inventories of melters are well below the average for the year and buying to augment stocks has developed on a fairly wide scale.

St. Louis—Heavy previous coverage by melters of all descriptions is

reflected in decline in pig iron buying. New business reported since the holiday consists of small lots for prompt shipments. Specifications, however, have increased and volume on books of principal distributors indicates that this month's deliveries will probably exceed the large total recorded in June.

brought for railroad steel. Most commodities reported about a 50-cent decline from last month, which would place the level in the range of current quotations, with No. 1 heavy melting steel bringing around \$20.

Cleveland—The market here and in the Valley is quieter as regards mill buying, with prices of steelworks grades lower in both areas. Pending absorption of tonnages in previous purchases, coverage of these orders by sellers is expected to comprise the principal activity. Foundry grades continue to move in relatively large volume.

Boston—Iron and steel scrap prices are steadier. Buying is light with melters keeping current inventories stabilized. For export, dock delivery, quotations are unchanged, but yard dealers are slow to part

Scrap

Scrap Prices, Page 86

Pittsburgh—Local markets remained dull during the early part of last week but picked up a little interest with the closing of the Pennsylvania list Wednesday. Mill buying is expected this week at a price commensurate with the price



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with tonnage at current going prices.

New York—Downward trend in prices is not yet halted, with heavy melting steel grades for domestic

delivery and export off more than 50 cents. Cast scrap for nearby delivery is also lower. Buying for eastern Pennsylvania shipment has slackened. Export activity is lim-

ited to filling requirements for two boats loading 12,000 tons at Jersey City, most of which is already accumulated.

Philadelphia — While the scrap market appears to be resisting the downtrend, several grades have been marked down. These include No. 2 steel, stove plate and grate bars, old compressed sheets and machine shop turnings. District consumers are fairly well supplied but are willing to take small tonnages at going prices.

Buffalo—The market continues to mark time but agitation for lower prices has not been justified by actual sales. Dealers, however, report offerings within prevailing ranges, but consumers refuse to recognize such levels at the present time, except on No. 1 heavy melting, where small sales are reported at \$19 to \$19.50 a ton.

Detroit—Lack of buying support has further depressed scrap prices and declines of 50 cents per ton are fairly general. Mills appear well covered and much material brought out by recent high prices are going begging.

Cincinnati—Uncertainty over the European situation causes weakness in scrap. Prices are unchanged currently, but without test. Trading is desultory and for coverage on continuing contracts.

St. Louis—The market continues to drift lower, virtually all dealers' quotations being marked down from 25 cents to \$2. Offerings are larger, one reason being that certain southern cities, notably Fort Worth and Galveston, which usually move their scrap to the Gulf for export, find a better outlet in this territory. Consumer buying is relatively small.

Birmingham, Ala. — A noticeable weakening of the scrap market is reported this week but neither buyers or sellers report any price changes.

Seattle—Interest is lacking and prices are not firm. Export orders are being received for small tonnages but rolling mills are still out of the market. Other domestic business is nominal.

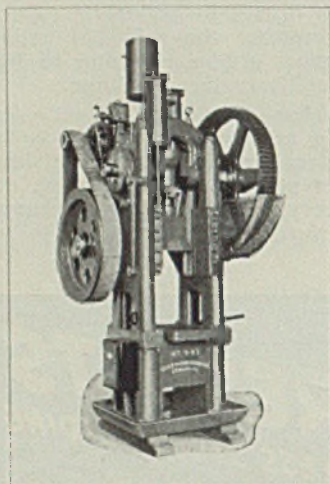
Toronto, Ont.—Scrap demand continues heavy and prices are firmer. Dealers advanced buying price on stove plate 50 cents per ton and now are paying \$13.50, delivered, Toronto yards. Offerings continue large and while there is no indication of shortage in the Canadian markets, it is reported that fairly large tonnages still are being imported, although imports from the United States are well below the high level attained in May.

San Francisco—No change has occurred in scrap prices. Some heavy purchases have recently been made by open-hearth producers. Activity

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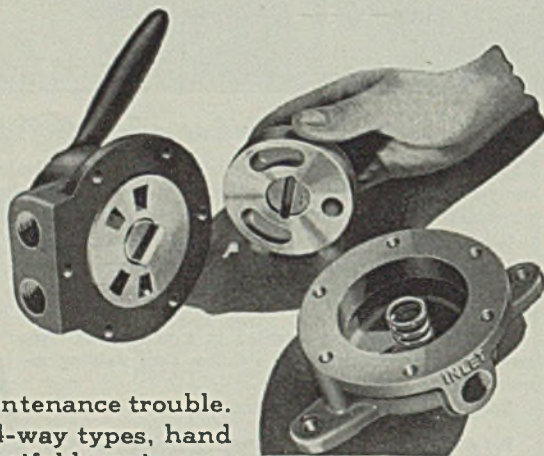
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in the export market is not pronounced. It is reported that several boats are now being loaded in the Los Angeles district for shipment to Japan.

Nonferrous Metals

New York—Activity in domestic nonferrous metal markets was the slowest last week in several months. General undertone of the market was steady, however, and no major price changes were recorded. The market has drawn important support from prospects of heavy demand arising from the government's defense program.

Copper—After selling down to 10.75c, delivered Connecticut valley, electrolytic copper firmed around midweek at 10.87½c in the custom smelter and resale markets. Mine producers maintained firm price views on the basis of 11.50c despite sales of only about 8500 tons for the full week. Brass ingot sellers reduced prices ¼ to ½-cent a pound on Tuesday, bringing the 85-5-5-5 ingot quotation down to 11.50c, delivered, for less than 20 tons. The June statistical report showed an increase of 20,922 tons in refined stocks to a total of 199,586 tons.

Lead—Most of the leading sellers

failed to balance their ore intakes for the week. Due to their well sold position, however, prices held at 4.85c, East St. Louis.

Zinc—Sentiment in the market has been bolstered by the sustained active rate of shipments. Following the July 4 letdown in galvanizing operations, the industry has resumed active production. Prime western still held steady at 6.25c, East St. Louis.

Tin—Uncertainty as to the effect which the government's plan for acquiring 75,000 tons of tin as a reserve will have on the market kept trading at a slow place and prices at a steady level. Straits spot closed at 51.25c compared with 51.87½c at the close on Monday.

Metallurgical Coke

Coke Prices, Page 83

Pittsburgh—Production is being increased in the Connellsville beehive region. Coke prices are steady and are apparently to continue on the present basis for the balance of this quarter. Domestic coke prices have gone up 25 cents. Supply is apparently keeping pace with demand. Republic Steel Corp. is reported to be putting a bank of ovens in operation.

Nonferrous Metal Prices

July	Copper		Casting, refinery	Straits Tin, New York		Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 99% Spot, N. Y.	Antimony Amer. Spot, N. Y.	Nickel Cathodes
	Electro, del. Conn.	Lake, del. Midwest		Spot	Futures						
6	*10.87½	11.50	10.50	52.00	50.25	5.00	4.85	6.25	19.00	14.00	35.00
8	*10.75	11.50	10.50	51.87½	50.12½	5.00	4.85	6.25	19.00	14.00	35.00
9	*10.75	11.50	10.50	51.50	50.05	5.00	4.85	6.25	19.00	14.00	35.00
10	*10.87½	11.50	10.50	51.50	50.05	5.00	4.85	6.25	19.00	14.00	35.00
11	*10.87½	11.50	10.50	51.37½	50.05	5.00	4.85	6.25	19.00	14.00	35.00
12	*10.87½	11.50	10.50	51.25	50.05	5.00	4.85	6.25	19.00	14.00	35.00

*Based on sales by custom smelters; mine producers unchanged at 11.50c.

MILL PRODUCTS

F.o.b. mill base, cents per lb., except as specified. Copper brass products based on 11.50c Conn. copper

Sheets	
Yellow brass (high)	18.56
Copper, hot rolled	20.12
Lead, cut to jobbers	8.25
Zinc, 100 lb, base	11.50

Tubes	
High yellow brass	21.31
Seamless copper	20.62

Rods	
High yellow brass	13.55
Copper, hot rolled	16.62

Anodes	
Copper, untrimmed	17.37

Wire	
Yellow brass (high)	18.81

OLD METALS

Nom. Dealers' Buying Prices

No. 1 Composition Red Brass	
New York	6.87½-7.12½
Cleveland	8.00-8.25
Chicago	7.37½-7.62½
St. Louis	7.75-8.25

Heavy Copper and Wire

New York, No. 1	8.50-8.75
Cleveland, No. 1	9.00
Chicago, No. 1	8.62½-8.87½

St. Louis 8.75-9.25

Composition Brass Turnings

New York	6.50-6.75
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Light Copper

New York	6.50-6.75
Cleveland	7.00
Chicago	6.62½-6.87½
St. Louis	6.75-7.00

Light Brass

Cleveland	4.25-4.50
Chicago	4.25-4.50
St. Louis	4.25-4.50

Lead

New York	4.50-4.60
Cleveland	3.90-4.15
Chicago	3.90-4.10
St. Louis	4.00-4.25

Zinc

New York	3.50-3.75
Cleveland	3.00-3.25
St. Louis	3.25-3.50

Aluminum

Misc., cast, Cleveland	8.00
Borings, Cleveland	6.50
Clips, soft, Cleveland	14.00
Misc. cast, St. Louis	7.75-8.00

SECONDARY METALS

Brass ingot, 85-5-5-5, less carloads	11.50
Standard No. 12 aluminum	14.25-14.75

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Comments from users of "Unichrome" Rack-Coating W* keep coming in—reading like this one: "It's the finest material we've ever come across for our chromium plating racks." Or like this one: "After six months service our racks are still in perfect condition."

Here's why "Unichrome" Rack-Coating W* users are so enthusiastic.

This new rack-coating material has an unequalled combination of advantages:—

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3. Contains no ingredients harmful to plating solutions
4. Cuts costs—reduces frequency of recoatings
5. Easy to apply—"dip and force dry" method
6. Light in color—easy to see how well the rack is covered
7. Any part of rack can be recoated without recoating entire rack.

Write for Bulletin No. 20 Containing Complete Information—

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



Warehouse

Warehouse Prices, Page 85

Pittsburgh—Warehouse stocks are at the highest point in their history. Caught short in the rush last fall, local jobbers have bought as much steel as their facilities can handle.

Philadelphia—Jobbers are setting up a new method of quoting outside Philadelphia. As an example, carbon bars for Allentown, Pa., delivery now are quoted 3.80c, based on 3.40c, Pittsburgh, plus 40 cents freight. Previously, the price was 3.97c or 3.75c, f.o.b. Philadelphia, plus 22 cents freight. The quantity discount of 30 cents for 40,000 pounds and over has been eliminated.

Steel in Europe

Foreign Steel Prices, Page 85

London—(By Cable)—Domestic business in Great Britain is not affected by the increase in domestic iron and steel prices. Prices of the remaining exportable products have also been increased. Further restrictions have been placed on ordinary uses of steel and structural steel is not allowed to be used for nonessential buildings. French cancelled tin plate orders have imposed a burden on the market and have weakened the situation.

Steel Corp. Shipments Up 11.5 Per Cent in June

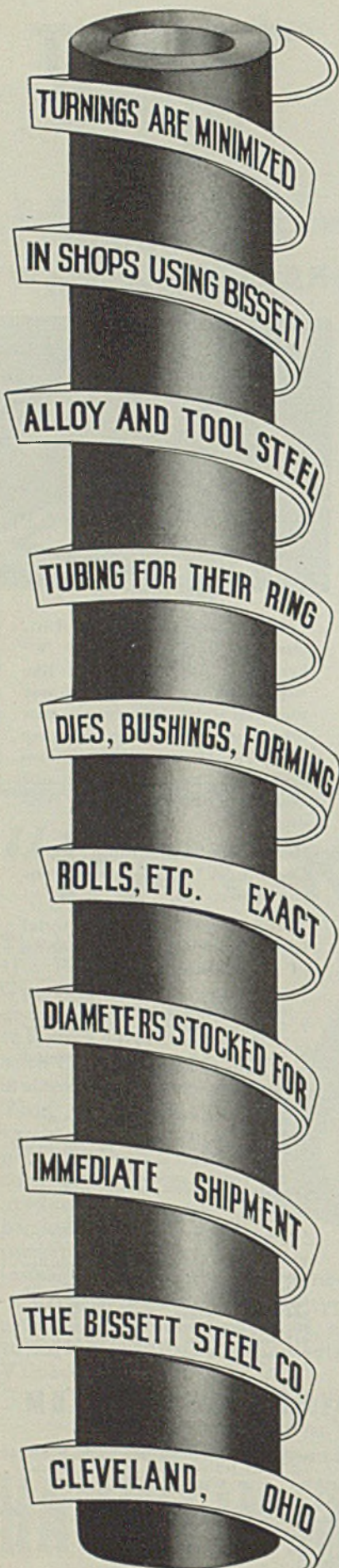
■ United States Steel Corp. finished steel shipments in June amounted to 1,209,684 net tons, an increase of 125,627 tons, 11.5 per cent, over 1,084,057 tons in May, and 402,122 tons, 49.8 per cent, over June, 1939. June shipments were the largest since December, 1939, with 1,443,969 tons. For six months this year aggregate shipments were 6,288,398 tons against 4,838,404 tons in first half, 1939, a gain of 1,449,994 tons, or 29.9 per cent.

U. S. Steel Corp. Shipments

(Inter-company shipments not included)
Net Tons

	1940	1939	1938	1937
Jan.	1,145,592	870,866	570,264	1,268,403
Feb.	1,009,256	747,427	522,395	1,252,845
March	931,905	845,108	627,047	1,563,113
April	907,904	771,752	550,551	1,485,231
May	1,084,057	795,689	509,811	1,443,477
June	1,209,684	807,562	524,984	1,405,078
July	.....	745,364	484,611	1,315,353
Aug.	.....	885,636	615,521	1,225,907
Sept.	.....	1,086,683	635,645	1,161,113
Oct.	.....	1,345,855	730,312	875,972
Nov.	.....	1,406,205	749,328	648,727
Dec.	.....	1,443,969	765,868	539,553
Total, by Months	11,752,116	7,286,347	4,181,772	
Adjustment	*44,865	†29,159	*87,106	
Total	11,707,251	7,315,506	4,097,666	

†Increase. *Decrease.



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HOTEL CLEVELAND
Cleveland

Iron Ore

Iron Ore Prices, Page 86

New York—Although still moderate compared with normal movement of foreign ores, an increasing amount of iron ore is coming here from Brazil. One leading seller recently booked orders for 68-69 per cent iron ore at 7.50c, f.o.b. Rio de Janeiro and offers tonnage at 8.00c for a 0.02 per cent maximum phosphorus grade. No offerings are reported of iron ore from Europe and Africa.

Canada Sets New Record In Steel Production

■ Canada set a new alltime record for steel ingot and castings production in May with 174,417 tons. Pig iron production amounted to 93,254 tons, exceeding April, and also was higher than in May, 1939. Ferroalloy output declined from the April figure but was more than double that of May, 1939. Production of all three for five months greatly exceeded that in the corresponding period last year. Comparisons follow:

	Steel ingots	Pig iron	Ferro-alloys
May, 1940	174,417	93,254	10,272
April, 1940	153,451	84,210	13,989
May, 1939	121,413	54,746	4,925
5 mos., 1940	792,033	460,971	48,116
5 mos., 1939	472,239	243,716	20,889

Construction and Enterprise

Ohio

CLEVELAND—Lucas Machine Tool Co., 523 East Ninety-ninth street, Bratenahl, Henry M. Lucas, George H. Yost and John H. Leighton, partners, has been incorporated. No change in company policies is intended.

CLEVELAND—Austin Co., 16112 Euclid avenue, has been given a contract for a \$350,000 new can factory for Continental Can Co., at Walla Walla, Wash.

CLEVELAND—W. J. Schoenberger Co., 8810 Harvard avenue, is preparing to expand its valve manufacturing plant by an addition of about 1300 square feet.

CLEVELAND—Cleveland Pneumatic Tool Co. will build a plant addition, costing \$125,000 with equipment.

CLEVELAND—S. K. Wellman Co., 1381 East Forty-ninth street, manufacturer of brake lining, S. K. Wellman, president, will build an addition covering about 7200 square feet.

CLEVELAND—Empire Table Co., manufacturer of steel and wood furniture, Morris Kaplan, manager, has leased plant at 3000 East Fifty-fifth street, with about 30,000 square feet, for assembling and warehousing. Company has headquarters at Chicago, 2746 West Arthington avenue, Harry Segal, president.

MARION, O.—Universal Cooler Co., Melville and Green streets, Detroit, manufacturer of refrigerating machinery, has purchased a plant here and will equip it for manufacture of its product.

MT. VERNON, O.—Shellmar Products Co. is building a two-story addition 125 x 200 feet and one-story 21 x 80 feet,

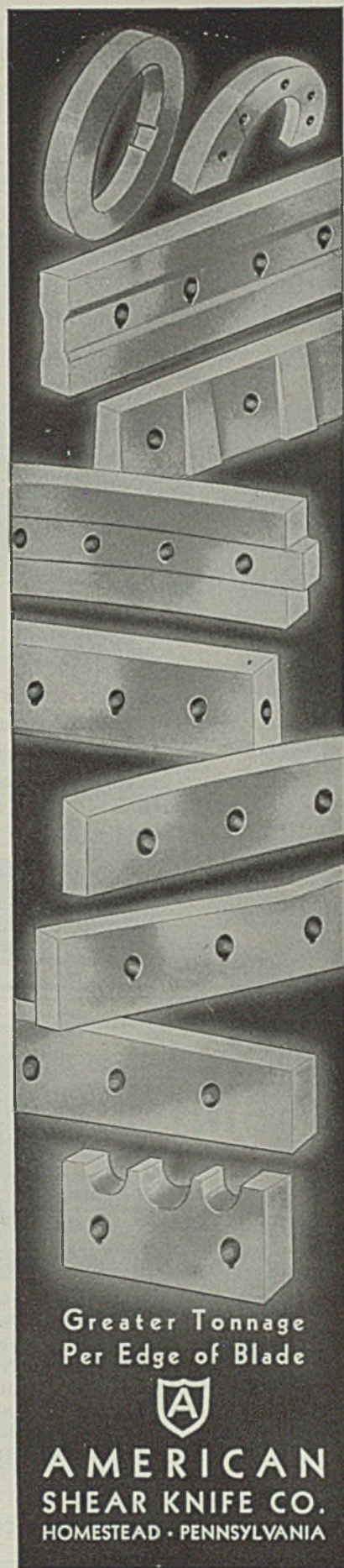
Cleveland Machinery Manufacturers Merge

■ Acme Machinery Co., Cleveland, was merged last week with Hill Clutch Machine & Foundry Co., Cleveland, when its assets were purchased by the latter company. New corporation name, according to A. C. McDaniel, president, will be Hill Acme Co.

Founded in 1882 by the late Ferdinand W. Bruch, Acme will continue to operate as a division of new company. It manufactures upset forging machines, thread rolling and cutting machines, nut and rivet machines, and the like.

Hill Clutch Machine & Foundry Co., organized in 1886, heretofore possessed two divisions, both purchased since 1930. These were the Cleveland Knife division, at Cleveland, which manufactures shear blades, rotary slitting cutters and machine knives; and the Canton Shear division, Canton, O., which produces all-steel alligator shears, portable floor cranes and industrial turntables.

Hill Acme manufactures hydraulic precision surface grinders; plate, sheet and strip polishing machines; power transmission machinery, special machinery and machine tool castings.



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SHEAR KNIFE CO.
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estimated to cost over \$125,000. Company's main office is at 224 South Michigan avenue, Chicago.

TOLEDO, O.—Williams Aircraft Corp., Col. Roger Williams, president, has been organized to build molded airplanes.

XENIA, O.—Hooven & Allison Co., Tult street, will build a powerhouse at its rope and cordage mill and install two diesel-engine driven generators and auxiliaries. Carl J. Klefer Inc., Schmidt building, Cincinnati, is consulting engineer.

Connecticut

BRIDGEPORT, CONN. — Bullard Co., 286 Canfield avenue, E. P. Bullard, president, will build a one-story 100 x 175-foot monitor-roof machine shop to cost about \$250,000. General contract has been let to Turner Construction Co., 420 Lexington avenue, New York.

New York

BINGHAMTON, N. Y.—Manufacturers Light & Heat Co., Pennsylvania Fuel Supply Co. and Manufacturers Gas Co., care Binghamton Gas Works, F. F. Ingall, vice president, 267 Court street, Binghamton, will build 117 miles of gas pipe lines, compressor station and dehydrating plant near Binghamton at cost of about \$1,685,000.

Pennsylvania

LANCASTER, PA. — Specialty Screw Machine Products Co., 336 South West End avenue, has awarded general contract to R. Klump, East King street, for

—Construction and Enterprise—

a two-story plant addition 50 x 130 feet. (Noted July 1).

Michigan

DETROIT—Cable Attachment Corp., United Artists building, has been incorporated with \$5000 capital to manufacture cable attachment devices, by Frank D. Cotter.

DETROIT—Standard Steel Treating Co. will build a factory addition costing \$20,000. H. C. Wright Building Co., Detroit, has general contract.

DETROIT — Continental Casting Co. will build a plant, general contract to Stibbard Construction Co., Detroit. Alex

Kohner, Detroit, is architect.

DETROIT—Forging & Castings Co., Ferndale, Mich., will build a plant addition and locker rooms. General contract to the Austin Co., Cleveland.

DURAND, MICH.—Simplicity Engineering Co. will build a shop building here. John MacKenzie, Flint, Mich., is architect.

IRON MOUNTAIN, MICH.—City has retained Burns & McDonnell Engineering Co., Kansas City, Mo., for a survey for proposed municipal light and power plant.

JACKSON, MICH.—Mechanical Products Inc. has been incorporated with

\$50,000 capital to do general manufacturing by A. D. Knapp, 2207 South West avenue, Jackson.

Illinois

CHICAGO—Sprague, Warner & Co., 600 West Erie street, wholesale grocers, will install cold storage plant, conveying, loading and other handling equipment in a one and two-story storage and distributing plant at Sacramento and Franklin boulevard, total cost about \$1,700,000. A. Epstein, 2001 West Pershing road, engineer.

CHICAGO—Bids will be received until Aug. 1 by J. J. Sullivan, clerk of Chicago sanitary district, 910 South Michigan avenue, for three steam turbine driven multistage blower units for the West-Southwest sewage treatment works.

CHICAGO—DeVilbiss Co., 1166 West Cermac road, will build an addition 59 x 120 feet. Mayo & Mayo, 53 West Jackson boulevard, are architects.

MAYWOOD, ILL. — Engineering Systems Inc., 221 North LaSalle street, Chicago, will build a one and two-story factory addition at Third avenue and Thirtieth street for Chicago Metal Hose Corp., 1315 South Third avenue, at cost of about \$50,000. Hallberg & Beersman, 221 North LaSalle street, Chicago, are architects.

Indiana

ANDERSON, IND. — Foundry Service Inc. has been incorporated with 1000 shares no par value to manufacture castings, by Arthur A. Brady and associates.

INDIANAPOLIS — American Engineering Corp., 1115 East Thirty-fifth street, has been formed to manufacture tools and machinery with 500 shares no par value, by George H. Heldenreih and associates.

ELKHART, IND. — National Die & Stamping Corp., 720 McNaughton street, has been incorporated with 500 shares no par value to manufacture machinery, tools and dies, by C. A. Laystrom and associates.

SPEEDWAY CITY, IND. — L. Allen, architect, 634 Architects and Builders building, Indianapolis, will let contract soon for a one-story 125 x 200-foot steel structure for Allison Engine Co., entire program costing about \$6,000,000. O. T. Kruesser is manager.

Missouri

SPRINGFIELD, MO.—City is having plans prepared by Johnson & Robinett, architects, 1042 Landers building, for hangar 100 x 120 feet, addition to administration building 30 x 40 feet, installation of field lights and other improvements at municipal airport, at cost of about \$75,000.

Tennessee

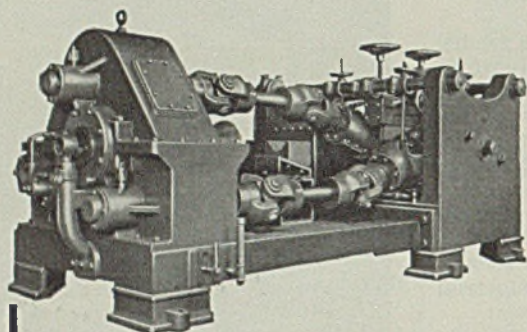
CHATTANOOGA, TENN.—Bellanca Marine & Aircraft Mfg. Co., Frank M. Bellanca, president, 122 East Forty-second street, New York, is considering Chattanooga for site of proposed plant to cost \$1,000,000.

Kentucky

LEXINGTON, KY.—Kentucky Utilities Co., Care J. E. Brown, vice president, First National Bank building, Lexington, plans construction of a complete new powerhouse at cost of \$4,000,000.

Virginia

APPOMATTOX, VA.—Stonewall Mining Co. Inc. plans operation of manganese mine on Chestnut mountain. Dabney Foundry & Machine Works, 1300 Com-



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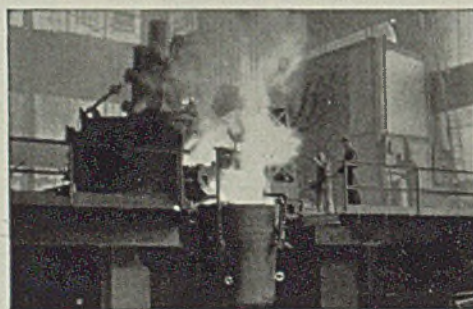
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merce street, Lynchburg, Va., is building plant. Herbert Figg, Clark building, Lynchburg, Va., is in charge of installation.

West Virginia

HUNTINGTON, W. VA. — Marlanna Smokeless Coal Co., James D. Francis, president, Robson-Pritchard building, plans construction of two coal tipples by Kanawha Mfg. Co., Charleston, W. Va.

Wisconsin

ASHLAND, WIS.—Clarkson Coal Co. has awarded contract to Fulton Construction Co., 1507 Tower avenue, Superior, Wis., for improvements to coal dock to cost \$60,000, dismantling cable car system and installing new elevated elec-

tric equipment and new screening plant.

CASHTON, WIS.—Village, Esther Stenerson, clerk, is taking bids to July 18 for a diesel engine generating unit and accessories, including fuel storage tank.

COLUMBUS, WIS.—Municipal utility department has permit from state public service commission for construction of municipal power plant with diesel-engine generator units, at cost of about \$230,-

FOND DU LAC, WIS. — Gliddings & Lewis Machine Tool Co., 142 Doty street, will erect two additional units from plans by F. J. Stepinski & Son, architects, 104 South Main street, architects. Includes one-story factory building 44 x 120 feet and one and two-story office building.

FOUNTAIN CITY, WIS.—United States engineer, 615 Commerce building, St. Paul, will open bids July 23 for construction of machine and mill building at the United States boatyard here.

MADISON, WIS. — Plans are being made for an elevated steel water tank of 100,000 gallons capacity with 10-inch pipe line to distributing system. Leon A. Smith, city hall, is superintendent of water department.

MERRILLAN, WIS.—Village has authority from state public service commission to construct a hydroelectric generating plant at cost of \$110,000. L. A. DeGuere, Wisconsin Rapids, Wis., is engineer.

MILWAUKEE—Matthew Adrian X-Ray Inc., 1568 West Pierce street, has been incorporated with \$75,000 capital to manufacture X-ray machines for food processing, tire inspection and portable machines for bakers, food retailers and professional men.

Minnesota

HUTCHINSON, MINN.—City, Eben R. Dennis, clerk, is having plans prepared by Buell & Winter Engineering Co., Sioux City, Iowa, for expansion of the municipal generating plant at cost of \$300,000.

MINNEAPOLIS—Butler Mfg. Co., manufacturer of tanks, stokers and metal buildings, will build one-story plant addition 50 x 120 feet.

ST. PAUL — Traffic Actuated Safety Sign Co. has been incorporated to manufacture safety signs by L. T. Mork, W. H. Koch and Clyde Farr.

Texas

HOUSTON, TEX. — McDonough Iron Works, Galveston, Tex., has bought site on Clinton drive for erection of 60 x 100-foot plant for general repair and marine work.

HOUSTON, TEX.—Hudson Engineering Co., E. J. Hudson, president, M. & M. building, has bought a four-acre site on Richmond road on which a brick office and mill building will be erected at cost of about \$20,000.

SHERMAN, TEX.—City, Lee H. Powell, city manager, has let contract to Star Mfg. Co., 3012 South Stiles street, Oklahoma City, Okla., for hangar at municipal airport, 80 x 100 feet, all steel.

Kansas

IOLA, KANS. — City plans improvements to municipal light and power plant at cost of \$80,000, including new kw high-pressure turbine-generator, condenser, boilers and accessories. E. T. Archer & Co., 609 New England building, Kansas City, Mo., are consulting engineers.

WICHITA, KANS.—Stearman Aircraft division, Boeing Aircraft Co., Seattle,

plans construction of six factory additions and extensive improvements to increase manufacturing facilities. Overl & Boucher, Brown building, Wichita, are architects.

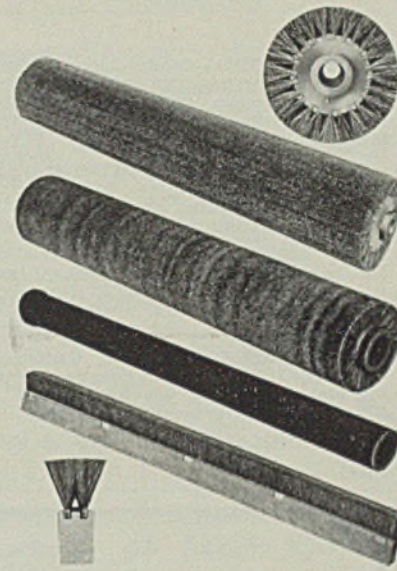
South Dakota

FORT PIERRE, S. DAK. — Manville Crude Oil Co., plans construction of an oil refinery here.

MITCHELL, S. DAK. — Northwestern Public Service Co. plans addition to power plant and installation of 1500-horsepower generator. Walter J. Dixon, Mitchell, is architect.

Nebraska

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Co., 1014 Seward street, manufacturer of metal tanks for oil storage and transport, is building a new plant at 1840 North Eleventh street.

Iowa

OELWEIN, IOWA—City will hold special election July 18 on proposal to construct municipal light and power plant costing \$600,000. H. J. Finders is city clerk. Hubbard Engineering Co., 415 North LaSalle street, Chicago, is engineer.

Montana

FORT PECK, MONT.—War department, division engineer, Missouri river division, 1200 Davidson building, Kansas City, Mo., will open bids July 17 for construction of powerhouse substructure to house one 20,000-horsepower and one 50,000-horsepower turbine. Includes 150 tons structural and 2000 tons reinforcing steel.

Idaho

TROY, IDAHO—Special election will be held July 30 on bond issue to finance municipal water system construction.

California

LOS ANGELES—Corsby Aircraft Corp. has been organized with \$100,000 capital. Orville A. Rogers, 1212 Commercial Exchange building, Los Angeles, is representative.

LOS ANGELES—Allmetal Aircraft Co. Inc. has been organized with \$500,000 capital. Represented by Miller, Peck & Miller, 222 Grosse building, Los Angeles.

LOS ANGELES—National Aviation Inc. has been formed with \$1,500,000 capital. Kaplan & Kaplan, 6253 Hollywood boulevard, Los Angeles, are representatives.

LOS ANGELES—Coast Centerless Grinding Co., 761 Slauson avenue, is having plans drawn for warehouse plant at 5724 Paloma avenue, 60 x 100 feet.

LOS ANGELES—Plastic Die & Tool

Corp. has been formed with \$20,000 capital, represented by MacFarlane, Schaefer, Haun & Mulfora, 417 South Hill street, Los Angeles.

LOS ANGELES—Allied Steel Corp. has been organized with \$50,000 capital. Chase & Chase, 315 West Ninth street, Los Angeles, are representatives.

LOS ANGELES—Artistic Iron & Metal Co., 1842 West Washington boulevard, has been organized by Robert J. Cardanell.

Washington

DAYTON, WASH.—Columbia county REA has received allotment of \$163,000 for construction of 219 miles of power lines in Walla Walla county.

VANCOUVER, WASH.—Great Western Malting Co. has awarded general contract to George H. Buckler Co., Portland, Oreg., for construction of a 350,000-bushel concrete malt storage elevator, to which port of Vancouver will extend trackage.

WALLA WALLA, WASH.—Continental Can Co. has awarded general contract to the Austin Co., Cleveland, for a plant here costing \$500,000, with 125,000 square feet floor space, including two steel frame buildings, warehouse and loading facilities.

Canada

AMHERST, N. S.—Canadian Car & Foundry Co. Ltd., 621 Craig street West, Montreal, has let contract to Cosman & Co., West Market street, Moncton, N. B., for \$150,000 plant addition here.

AYLMER, ONT.—Central Pipe Line Co., Corinth, Ont., plans to remove its gas purifying plant to site two miles south of Aylmer. Additional equipment will be installed. J. Wilson is superintendent.

DUNDAS, ONT.—John Bertram & Sons Ltd., machine tool manufacturer, 15 Flatt avenue, is having plans prepared by Hutten & Souter, 36 James street South, for six additional plant buildings.

FORT ERIE, ONT.—Fleet Aircraft of

Canada Ltd., Gilmour road, has let general contract to Redfern Construction Co. Ltd., 36 Toronto street, Toronto, for an airplane assembly plant.

MERRITTON, ONT.—Hayes Steel Products Ltd. has awarded general contract to Newman Bros., 127 St. Paul street, St. Catharines, Ont., for an addition of 5000 square feet floor space. E. A. Nicholson, 46 Queen street, St. Catharines, is architect.

NEW TORONTO, ONT.—Anaconda American Brass Ltd. will build an electric castings shop costing \$100,000 on Eighth avenue, 135 feet long. Carter-Harris-Aldinger Co. Ltd., 419 Cherry street, Toronto, has general contract.

PORT COLBORNE, ONT.—Canadian Furnace Co., East Pier, has let general contract to Smith Bros. Construction Co. Ltd., 1740 Ellen avenue, Niagara Falls, Ont., for a boiler house costing \$30,000.

PORT CREDIT, ONT.—Goodrich Refining Co. Ltd., has let contract for storage tanks to Horton Steel Works Ltd., Northern Ontario building, Toronto, Ont., as part of \$1,500,000 extension of storage capacity. New piping, machinery and pumps are to be purchased. F. Stuart Porte is architect.

OSHAWA, ONT.—General Motors Co. of Canada Ltd., H. J. Carmichael, vice president, is taking bids on a plant addition 45 x 625 feet on William street East.

SOUTH PORCUPINE, ONT.—Preston East Dome Mines Ltd., 706 Concourse building, Toronto, Ont., will build machine shop 45 x 45 feet and make additions to milling equipment. E. Savage is superintendent.

ST. CATHARINES, ONT.—McKinnon Industries Ltd., Ontario street, is considering bids for a 40 x 50 x 60-foot powerhouse addition and 96 x 100-foot plant addition.

WINDSOR, ONT.—Ford Motor Co. of Canada Ltd., 2780 Sandwich street East, has received bids for a machine shop addition 192 x 570 feet, J. C. Bonham in charge.

WINDSOR, ONT.—Dominion Forge & Stamping Co. Ltd., 2480 Seminole street, has let general contract to Allan Construction Co., 44 Wyandotte street, for \$30,000 plant addition.

BEAUHARNOIS, QUE.—Beauharnois Power Corp. Ltd., 107 Craig street West Montreal, has given general contract to Foundation Co. of Canada Ltd., 1538 Sherbrooke street West, Montreal, for a \$5,000,000 power development here.

MONTREAL EAST, QUE.—Canada Wire & Cable Co. Ltd., Leaside, Toronto, plans addition to plant on Dorchester street to cost \$50,000.

MONTREAL, QUE.—United Shoe Machinery Co. of Canada Ltd., 2610 Bennett street, has awarded general contract to Richard & E. J. Ryan Ltd., 1808 William street, for two factory buildings to cost \$50,000.

MONTREAL, QUE.—Montreal Dry Dock Co. Ltd., is having estimates made by George A. Fuller Co. of Canada Ltd. on cost of reconstructing plant burned in December.

QUEBEC, QUE.—Department of national defense, Ottawa, Ont., has given contract to Anglin-Norcross Ltd., 892 Sherbrooke street West, Montreal, for addition to arsenal here.

REGINA, SASK.—General Motors Corp. of Canada Ltd., Oshawa, Ont., will build plant here at cost of about \$40,000.

ST. JAMES, MANITOBA—Department of munitions and supply, Ottawa, Ont., has taken bids for \$500,000 aircraft plant near Stevenson aldrone, near here.

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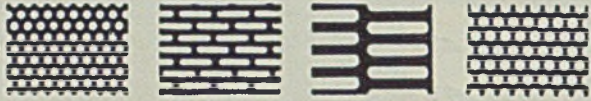
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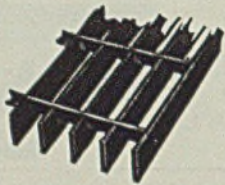
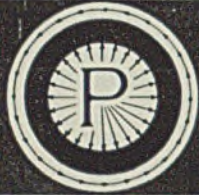
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◆ ◆ ADVERTISING INDEX ◆ ◆

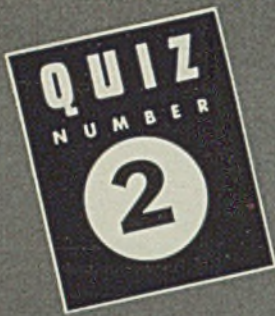
Where-to-Buy Products Index carried in first issue of month.

	Page		Page	Page		
A						
Abart Gear & Machine Co.	—	Blaw-Knox Division, Blaw-Knox Co.	—	Erie Foundry Co.	73	
Abraslve Co., Division of Simonds	—	Bliss & Laughlin, Inc.	—	Eureka Fire Brick Works	—	
Saw & Steel Co.	—	Bliss, E. W., Co.	—	Ex-Cell-O Corp.	—	
Abraslve Products, Inc.	—	Brassert, H. A., & Co.	107	F		
Accurate Spring Mfg. Co.	—	Bridgeport Brass Co.	—	Fafnir Bearing Co., The.	—	
Acme Galvanizing, Inc.	—	Brooke, E. & G., Iron Co.	—	Fairbanks, Morse & Co.	—	
Acheson Collolds Corp.	—	Broderick & Bascom Rope Co.	—	Fanner Mfg. Co.	—	
Acme Steel & Malleable Iron Works	—	Brookmire Corporation	—	Farrel-Birmingham Co., Inc.	—	
Air Reduction	12	Brosius, Edgar E., Inc.	—	Farval Corp., The.	—	
Ajax Electrothermic Corp.	—	Brown & Sharpe Mfg. Co.	—	Federal Machine & Welder Co.	—	
Ajax Flexible Coupling Co.	—	Brown Instrument Co., The.	—	Finn, John, Metal Works	—	
Ajax Manufacturing Co.	—	Bryant Chucking Grinder Co.	—	Flrth-Sterling Steel Co.	108	
Alan Wood Steel Co.	—	Buffalo Galvanizing & Tinning Works	—	Flood Co., The.	—	
Allen-Bradley Co.	—	Bullard Co., The.	—	Ford Chain Block Division of Ameri-	—	
Alliance Machine Co., The.	—	Bundy Tubing Co.	—	can Chain & Cable Co., Inc.	—	
Allis-Chalmers Mfg. Co.	—	C				
Alrose Chemical Co.	—	Cadman, A. W., Mfg. Co.	—	Fort Pitt Spring Co.	—	
American Aglie Corp.	—	Canton Pattern & Mfg. Co., The.	108	Foster, L. B., Co.	109	
American Brake Shoe & Foundry Co.	—	Carborundum Co., The.	—	Foxboro Co., The.	—	
American Brass Co., The.	—	Carey, Philip, Co., The.	—	Fuller Brush Co., The.	105	
American Bridge Co.	69	Carnegie-Illinois Steel Corp.	—	G		
American Chain & Cable Co., Inc.,	—	Carpenter Steel Co., The.	49	Garden City Fan Co.	—	
American Chain Division.	—	Carter Hotel.	—	Garlock Packing Co., The.	—	
American Chain & Cable Co., Inc.,	—	Cattie, Joseph P., & Bros., Inc.	—	General Blower Co.	109	
Ford Chain Block Division.	—	Cellcote Co., The.	—	General Electric Co.	13	
American Steel & Wire Division.	99	Central Screw Co.	—	General Electric Co., Lamp Dept.	—	
American Chain Division of American	—	Chain Belt Co.	—	Globe Brick Co., The.	—	
Chain & Cable Co., Inc.	—	Chambersburg Engineering Co.	—	Granite City Steel Co.	—	
American Chemical Paint Co.	74	Champion Rivet Co., The.	—	Graybar Electric Co.	—	
American Engineering Co.	—	Chandler Products Co.	—	Great Lakes Steel Corp.	—	
American Flexible Coupling Co.	89	Chicago Perforating Co.	—	Greenfield Tap & Die Corp.	34	
American Forge Division of the Ameri-	—	Chicago Rawhide Mfg. Co.	9	Gregory, Thomas, Galvanizing Works	—	
can Brake Shoe & Foundry Co.	—	Cincinnati Grinders, Inc.	—	Grinnell Co., Inc.	15	
American Foundry Equipment Co., The	—	Cincinnati Milling Machine Co.	—	Gulf Oil Corporation.	—	
American Gas Association.	—	Cincinnati Shaper Co., The.	2	Gulf Refining Co.	—	
American Hot Dip Galvanizers Assoc-	—	Clark Controller Co.	—	H		
iation.	—	Cleveland Cap Screw Co.	—	Hagan, George J., Co.	—	
American Lanolin Corp.	—	Cleveland-Cliffs Iron Co.	—	Hanon-Gregory Galvanizing Co.	—	
American Monoroll Co.	—	Cleveland Crane & Engineering Co.	—	Hanna Furnace Corp.	—	
American Nickeloid Co.	108	Cleveland Hotel.	102	Hannifin Mfg. Co.	100	
American Pulverizer Co.	—	Cleveland Punch & Shear Works Co.	—	Harnischfeger Corp.	95	
American Roller Bearing Co.	—	Cleveland Tramrail Division, Cleve-	—	Harrington & King Perforating Co.	108	
American Rolling Mill Co., The.	—	land Crane & Engineering Co.	—	Harter Corp., The.	—	
American Screw Co.	—	Cleveland Twist Drill Co., The.	—	Hays Corp., The.	—	
American Shear Knife Co.	103	Cleveland Worm & Gear Co., The.	—	Heald Machine Co., The.	—	
American Society for Metals.	53	Climax Molybdenum Co.	—	Helmer-Staley, Inc.	—	
American Steel & Wire Co.	—	Colonial Broach Co.	—	Heppenstall Co.	—	
American Tinning & Galvanizing Co.	—	Columbia Steel Tank Co.	—	Hetz Construction Co., Inc.	—	
Ames Bag Machine Co.	—	Columbia Steel Co.	10, 11, 69	Hevi Duty Electric Co.	—	
Ampeco Metal, Inc.	71	Columbus Die, Tool & Machine Co.	—	Hillside Fluor Spar Mines.	—	
Andrews Steel Co., The.	—	Cone Automatic Machine Co., Inc.	—	Hindley Mfg. Co.	107	
Apollo Steel Co.	—	Continental Roll & Steel Foundry Co.	—	Hobart Bros.	108	
Armstrong-Blum Mfg. Co.	—	Continental Screw Co.	—	Hodell Chain Co., The.	—	
Armstrong Cork Co.	75	Copperweld Steel Co.	—	Hollands Mfg. Co.	—	
Association of Iron & Steel Engi-	—	Corbin Screw Corp.	—	Horsburgh & Scott Co.	96	
neers.	—	Cowles Tool Co.	107	Hubbard & Co.	—	
Atlantic Stamping Co.	—	Crane Co.	—	Hubbard, M. D., Spring Co.	—	
Atlantic Steel Co.	—	Crawback, John D., Co.	109	Huther Bros. Saw Mfg. Co.	—	
Atlas Car & Mfg. Co.	—	Criswell, James, Co.	—	Hyatt Bearings Division, General Mo-	—	
Atlas Drop Forge Co.	—	Cullen-Friedstedt Co.	—	tors Sales Corporation.	—	
Atlas Lumnite Cement Co.	93	Curtis Pneumatic Machinery Co.	—	Hyde Park Foundry & Machine Co.	—	
Atlas Mineral Products Co. of Penna.	—	Cutler-Hammer, Inc.	—	Hydro-Power Systems, Inc.	63	
B						
Babcock & Wilcox Co.	—	D				
Balley, Wm. M., Co.	—	Damascus Steel Casting Co.	88	I		
Baker-Raulang Co.	—	Darwin & Milner, Inc.	—	Illinois Clay Products Co.	—	
Baldwin-Duckworth Division of Chain	—	Davis Brake Beam Co.	—	Independent Galvanizing Co.	—	
Belt Co.	6	Dearborn Gage Co.	106	Industrial Brownhoist Corp.	14	
Baldwin Southwark Division of The	—	Detroit Leland Hotel.	105	Ingersoll-Rand Co.	—	
Baldwin Locomotive Works.	—	Diamond Expansion Bolt Co., Inc.	—	Inland Steel Co.	72	
Bantam Bearings Corp.	—	Dietzel Lead Burning Co.	—	International Correspondence Schools	—	
Barnes, Wallace, Co., The, Division of	—	Differential Steel Car Co.	—	International Derrick & Equipment Co.	—	
Associated Spring Corporation.	—	Dravo Corp., Engineering Works Div.	90	International Nickel Co., Inc.	—	
Barnes, W. F. and John, Co.	—	Dravo Corp., Machinery Division.	108	J		
Basic Dolomite, Inc.	—	Duer Spring & Mfg. Co.	—	Jackson Iron & Steel Co., The.	107	
Bay City Forge Co.	—	E			James, D. O., Mfg. Co.	—
Beatty Machine & Mfg. Co.	78	Elastic Stop Nut Corp.	—	J-B Engineering Sales Co.	—	
Bellevue-Stratford Hotel.	—	Electric Controller & Mfg. Co.	—	Jessop Steel Co.	—	
Belmont Iron Works.	107	Electric Furnace Co., The.	—	Jessop, Wm., & Sons, Inc.	—	
Berger Manufacturing Div., Republic	—	Electric Generator & Motor Co.	—	Johns-Manville Corp.	—	
Steel Corp.	—	Electric Storage Battery Co.	—	Johnson Bronze Co.	77	
Bethlehem Steel Co.	1	Electro Alloys Corp., The.	—	Jones & Lamson Machine Co.	31	
Birdsboro Steel Foundry & Machine	—	Electro Metallurgical Co.	60	Jones & Laughlin Steel Corp.	—	
Co.	—	Elmes, Charles F., Engineering Works	97	Jones, W. A., Foundry & Machine Co.	92	
Bissett Steel Co., The.	102	Engineering and Construction Division	—	Joslyn Co. of California.	—	
Blanchard Machine Co.	—	Koppers Co.	—	Joslyn Mfg. & Supply Co.	—	
Blaw-Knox Co.	—	Enterprise Galvanizing Co.	108	K		
C						
D						
E						
F						
G						
H						
I						
J						
K						

◆ ◆ ADVERTISING INDEX ◆ ◆

Where-to-Buy Products Index carried in first issue of month.

	Page		Page		Page
Kearney & Trecker Corp.	—	Ohio Locomotive Crane Co., The.	108	Sutton Engineering Co.	—
Kemp, C. M., Mfg. Co.	65	Ohio Seamless Tube Co., The.	—	Swindell-Dressler Corp.	—
Kimball Safety Products Co.	—	Ohio Steel Foundry Co., The.	—	T	
King Fifth Wheel Co.	—	Oxweld Acetylene Co.	—	Tennessee Coal, Iron & Railroad Co.	—
Kinnear Mfg. Co.	91	P			
Koppers Co.	—	Page Steel & Wire Division of American Chain & Cable Co., Inc.	99	Thomas Steel Co., The.	—
Koven, L. O., & Brother, Inc.	—	Pangborn Corp.	—	Tide Water Associated Oil Co.	—
Kron Co., The.	—	Parker-Kalon Corp.	—	Timken Roller Bearing Co., Front Cover	—
L					
Laclede Steel Co.	107	Peabody Engineering Corp.	—	Timken Steel & Tube Division, The	—
Lake City Malleable Co.	—	Pease, C. F., Co., The.	—	Timken Roller Bearing Co.	—
Lamson & Sessions Co., The.	—	Pennsylvania Industrial Engineers.	94	Tinnerman Products, Inc.	—
Landis Machine Co., Inc.	—	Pennsylvania Salt Mfg. Co.	—	Titan Metal Mfg. Co.	—
Landis Tool Co.	—	Penola, Inc.	—	Toledo Scale Co.	—
Lang Machinery Co.	109	Perkins, B. F., & Son, Inc.	—	Toledo Stamping & Mfg. Co.	—
Lansing Stamping Co.	—	Petroleum Iron Works Co., The.	—	Tomkins-Johnson Co.	—
LaSalle Steel Co.	—	Pheoll Mfg. Co.	—	Torrington Co., The.	—
Lawrence Copper & Bronze.	—	Pittsburgh Crushed Steel Co.	107	Towmotor Co.	—
LeBlond, R. K., Machine Tool Co., The	—	Pittsburgh Gear & Machine Co.	—	Townsend Co.	—
Leeds & Northrup Co.	—	Pittsburgh Lectromelt Furnace Co.	—	Tri-Lok Co., The.	108
Lee Spring Co., Inc.	—	Pittsburgh Rolls Division of Blaw-Knox Co.	—	Trufo Fan Co.	—
Lehigh Structural Steel Co.	—	Pittsburgh Steel Co.	16	Truscon Steel Co.	—
Leschen, A., & Sons Rope Co.	80	Plymouth Locomotive Works, Div. The Fate-Root-Heath Co.	—	Twin Disc Clutch Co.	—
Lewis Bolt & Nut Co.	—	Poole Foundry & Machine Co.	—	U	
Lewis Foundry & Machine Division of Blaw-Knox Co.	—	Pressed Steel Car Co., Inc.	—	Union Carbide & Carbon Corp.	60
Lewis Machine Co., The.	—	Pressed Steel Tank Co.	76	Union Drawn Steel Div. Republic Steel Corp.	—
Lincoln Electric Co., The.	—	Prest-O-Lite Co., Inc., The.	—	United Chromium, Inc.	101
Linde Air Products Co., The.	—	Production & Machine Tool Show.	—	United Engineering & Foundry Co.	56, 57
Lindemuth, Lewis B.	—	Pure Oil Co., The.	—	United States Rubber Co.	—
Link-Belt Co.	—	R			
Lintern Corp., The.	—	Raymond Mfg. Co. Division of Associated Spring Corp.	—	United States Steel Corp., Subsidiaries	10, 11, 69, 93
Loftus Engineering Corp.	108	Reliance Electric & Engineering Co.	—	American Bridge Co.	—
Logemann Bros. Co.	—	Republic Steel Corp.	18	American Steel & Wire Co.	—
Lord Baltimore Hotel, The.	—	Revere Copper and Brass, Inc.	—	Atlas Lumnite Cement Co.	—
Lovejoy Flexible Coupling Co.	—	Rhoades, R. W., Metaline Co., Inc.	—	Carnegie-Illinois Steel Corp.	—
Lowman-Shields Rubber Co.	—	Riverside Foundry & Galvanizing Co.	—	Columbia Steel Co.	—
Ludlow-Saylor Wire Co., The.	—	Russell, Burdsall & Ward Bolt & Nut Co.	—	Cyclone Fence Co.	—
..... Inside Back Cover		Ryerson, Joseph T., & Son, Inc.	20	Federal Shipbuilding & Dry Dock Co.	—
Mc					
McKay Machine Co.	—	S			
McKee, Arthur G., Co.	—	St. Joseph Lead Co.	—	National Tube Co.	10, 11
McKenna Metals Co.	—	Salem Engineering Co.	—	New Departure Division General Motors Sales Corp.	—
M					
Mackintosh-Hemphill Co.	—	Samuel, Frank, & Co., Inc.	—	New Jersey Zinc Co.	—
Macwhyte Co.	—	San Francisco Galvanizing Works.	—	New York & New Jersey Lubricant Co.	—
Marr-Galbreath Machinery Co.	—	Sanitary Tinning Co., The.	—	Niagara Machine & Tool Works.	—
Mathews Conveyor Co.	—	Sawyer Electrical Mfg. Co.	—	Niles Steel Products Div., Republic Steel Corp.	—
Maurath, Inc.	—	Scovill Mfg. Co.	—	Nitralloy Corp., The.	—
Medart Co., The.	104	Scully Steel Products Co.	—	Norma-Hoffmann Bearings Corp.	—
Mesta Machine Co.	—	Seneca Wire & Mfg. Co., The.	—	Northern Engineering Works.	—
Metal & Thermit Corp.	79	Shafer Bearing Corporation.	—	Norton Co., The.	—
Midvale Co., The.	—	Shakeproof Lock Washer Co.	—	O	
Missouri Rolling Mill Corp.	—	Shaw-Box Crane & Holst Division, Manning, Maxwell & Moore, Inc.	—	Ohio Electric Mfg. Co.	107
Moltrup Steel Products Co.	—	Shell Oil Co., Inc.	—	Ohio Ferro-Alloys Corp.	—
Morgan Construction Co.	—	Shenango Furnace Co., The.	108	P	
Morgan Engineering Co.	—	Shenango-Penn Mold Co.	—	Page Steel & Wire Division of American Chain & Cable Co., Inc.	99
Morrison Metalweld Process, Inc.	—	Shepard Niles Crane & Holst Corp.	—	Pangborn Corp.	—
Morton Salt Co.	—	Shoop Bronze Co., The.	—	Parker-Kalon Corp.	—
N					
National Acme Co., The.	—	Shuster, F. B., Co., The.	—	Peabody Engineering Corp.	—
National Alloy Steel Co.	—	Simonds Gear & Mfg. Co.	—	Pease, C. F., Co., The.	—
National Bearing Metals Corp.	—	Simonds Saw & Steel Co.	—	Pennsylvania Industrial Engineers.	94
National Carbon Co., Inc.	—	Sinton Hotel.	—	Pennsylvania Salt Mfg. Co.	—
National-Erie Corp.	—	SKF Industries, Inc.	—	Penola, Inc.	—
National Forge & Ordnance Co.	104	Snyder, W. P., & Co.	—	Perkins, B. F., & Son, Inc.	—
National Lead Co.	—	Socony-Vacuum Oil Co., Inc.	66, 67	Petroleum Iron Works Co., The.	—
National Roll & Foundry Co.	—	South Bend Lathe Works.	—	Pheoll Mfg. Co.	—
National Screw & Mfg. Co.	—	Sta-Brite Mfg. Co.	—	Pittsburgh Crushed Steel Co.	107
National Steel Corp.	7	Standard Galvanizing Co.	—	Pittsburgh Gear & Machine Co.	—
National Telephone Supply Co., Inc.	—	Standard Steel Works.	—	Pittsburgh Lectromelt Furnace Co.	—
National Tube Co.	10, 11	Stanley Works, The.	—	Pittsburgh Rolls Division of Blaw-Knox Co.	—
New Departure Division General Motors Sales Corp.	—	Steel & Tubes Division, Republic Steel Corp.	—	Plymouth Locomotive Works, Div. The Fate-Root-Heath Co.	—
New Jersey Zinc Co.	—	Steel Conversion & Supply Co.	—	Poole Foundry & Machine Co.	—
New York & New Jersey Lubricant Co.	—	Steel Founders' Society of America.	51	Pressed Steel Car Co., Inc.	—
Niagara Machine & Tool Works.	—	Stewart Furnace Division, Chicago Flexible Shaft Co.	—	Pressed Steel Tank Co.	76
Niles Steel Products Div., Republic Steel Corp.	—	Strelne Tool & Mfg. Co.	—	Prest-O-Lite Co., Inc., The.	—
Nitralloy Corp., The.	—	Strom Steel Ball Co.	—	Production & Machine Tool Show.	—
Norma-Hoffmann Bearings Corp.	—	Strong Steel Foundry Co.	87	Pure Oil Co., The.	—
Northern Engineering Works.	—	Sturtevant, B. F., Co.	—	R	
Norton Co., The.	—	Sun Oil Co.	—	Raymond Mfg. Co. Division of Associated Spring Corp.	—
O					
Ohio Electric Mfg. Co.	107	Superior Steel Corp.	107	Reliance Electric & Engineering Co.	—
Ohio Ferro-Alloys Corp.	—	Surface Combustion Corp.	—	Republic Steel Corp.	18
P					
Ohio Locomotive Crane Co., The.	108	T			
Ohio Seamless Tube Co., The.	—	Tennessee Coal, Iron & Railroad Co.	—	Revere Copper and Brass, Inc.	—
Ohio Steel Foundry Co., The.	—	Thomas Steel Co., The.	—	Rhoades, R. W., Metaline Co., Inc.	—
Oxweld Acetylene Co.	—	Tide Water Associated Oil Co.	—	Riverside Foundry & Galvanizing Co.	—
Q					
Ohio Locomotive Crane Co., The.	108	Timken Roller Bearing Co., Front Cover	—	Russell, Burdsall & Ward Bolt & Nut Co.	—
Ohio Seamless Tube Co., The.	—	Timken Steel & Tube Division, The Timken Roller Bearing Co.	—	Ryerson, Joseph T., & Son, Inc.	20
Ohio Steel Foundry Co., The.	—	Tinnerman Products, Inc.	—	S	
Oxweld Acetylene Co.	—	Titan Metal Mfg. Co.	—	St. Joseph Lead Co.	—
R					
Raymond Mfg. Co. Division of Associated Spring Corp.	—	Toledo Scale Co.	—	Salem Engineering Co.	—
Reliance Electric & Engineering Co.	—	Toledo Stamping & Mfg. Co.	—	Samuel, Frank, & Co., Inc.	—
Republic Steel Corp.	18	Tomkins-Johnson Co.	—	San Francisco Galvanizing Works.	—
Revere Copper and Brass, Inc.	—	Torrington Co., The.	—	Sanitary Tinning Co., The.	—
Rhoades, R. W., Metaline Co., Inc.	—	Towmotor Co.	—	Sawyer Electrical Mfg. Co.	—
Riverside Foundry & Galvanizing Co.	—	Townsend Co.	—	Scovill Mfg. Co.	—
Russell, Burdsall & Ward Bolt & Nut Co.	—	Tri-Lok Co., The.	108	Scully Steel Products Co.	—
Ryerson, Joseph T., & Son, Inc.	20	Trufo Fan Co.	—	Seneca Wire & Mfg. Co., The.	—
S					
St. Joseph Lead Co.	—	Truscon Steel Co.	—	Shafer Bearing Corporation.	—
Salem Engineering Co.	—	Twin Disc Clutch Co.	—	Shakeproof Lock Washer Co.	—
Samuel, Frank, & Co., Inc.	—	U			
San Francisco Galvanizing Works.	—	Union Carbide & Carbon Corp.	60	Shaw-Box Crane & Holst Division, Manning, Maxwell & Moore, Inc.	—
Sanitary Tinning Co., The.	—	Union Drawn Steel Div. Republic Steel Corp.	—	Shell Oil Co., Inc.	—
Sawyer Electrical Mfg. Co.	—	United Chromium, Inc.	101	Shenango Furnace Co., The.	108
Sawyer Electrical Mfg. Co.	—	United Engineering & Foundry Co.	56, 57	Shenango-Penn Mold Co.	—
Scovill Mfg. Co.	—	United States Rubber Co.	—	Shepard Niles Crane & Holst Corp.	—
Scully Steel Products Co.	—	United States Steel Corp., Subsidiaries	10, 11, 69, 93	Shoop Bronze Co., The.	—
Seneca Wire & Mfg. Co., The.	—	American Bridge Co.	—	Shuster, F. B., Co., The.	—
Shafer Bearing Corporation.	—	American Steel & Wire Co.	—	Simonds Gear & Mfg. Co.	—
Shakeproof Lock Washer Co.	—	Atlas Lumnite Cement Co.	—	Simonds Saw & Steel Co.	—
Shaw-Box Crane & Holst Division, Manning, Maxwell & Moore, Inc.	—	Carnegie-Illinois Steel Corp.	—	Sinton Hotel.	—
Shell Oil Co., Inc.	—	Columbia Steel Co.	—	SKF Industries, Inc.	—
Shenango Furnace Co., The.	108	Cyclone Fence Co.	—	Snyder, W. P., & Co.	—
Shenango-Penn Mold Co.	—	Federal Shipbuilding & Dry Dock Co.	—	Socony-Vacuum Oil Co., Inc.	66, 67
Shepard Niles Crane & Holst Corp.	—	National Tube Co.	10, 11	South Bend Lathe Works.	—
Shoop Bronze Co., The.	—	New Departure Division General Motors Sales Corp.	—	Sta-Brite Mfg. Co.	—
Shuster, F. B., Co., The.	—	New Jersey Zinc Co.	—	Standard Galvanizing Co.	—
Simonds Gear & Mfg. Co.	—	New York & New Jersey Lubricant Co.	—	Standard Steel Works.	—
Simonds Saw & Steel Co.	—	Niagara Machine & Tool Works.	—	Stanley Works, The.	—
Sinton Hotel.	—	Niles Steel Products Div., Republic Steel Corp.	—	Steel & Tubes Division, Republic Steel Corp.	—
SKF Industries, Inc.	—	Nitralloy Corp., The.	—	Steel Conversion & Supply Co.	—
Snyder, W. P., & Co.	—	Norma-Hoffmann Bearings Corp.	—	Steel Founders' Society of America.	51
Socony-Vacuum Oil Co., Inc.	66, 67	Northern Engineering Works.	—	Stewart Furnace Division, Chicago Flexible Shaft Co.	—
South Bend Lathe Works.	—	Norton Co., The.	—	Strelne Tool & Mfg. Co.	—
Sta-Brite Mfg. Co.	—	U			
Standard Galvanizing Co.	—	Union Carbide & Carbon Corp.	60	Strom Steel Ball Co.	—
Standard Steel Works.	—	Union Drawn Steel Div. Republic Steel Corp.	—	Strong Steel Foundry Co.	87
Stanley Works, The.	—	United Chromium, Inc.	101	Sturtevant, B. F., Co.	—
Steel & Tubes Division, Republic Steel Corp.	—	United Engineering & Foundry Co.	56, 57	Sun Oil Co.	—
Steel Conversion & Supply Co.	—	United States Rubber Co.	—	Superior Steel Corp.	107
Steel Founders' Society of America.	51	United States Steel Corp., Subsidiaries	10, 11, 69, 93	Surface Combustion Corp.	—
Stewart Furnace Division, Chicago Flexible Shaft Co.	—	American Bridge Co.	—	V	
Strelne Tool & Mfg. Co.	—	American Steel & Wire Co.	—	Valley Mould & Iron Corp.	—
Strom Steel Ball Co.	—	Atlas Lumnite Cement Co.	—	Vanadium-Alloy Steel Co.	—
Strong Steel Foundry Co.	87	Carnegie-Illinois Steel Corp.	—	Vanadium Corporation of America.	—
Sturtevant, B. F., Co.	—	Columbia Steel Co.	—	Voss, Edward W.	—
Sun Oil Co.	—	Cyclone Fence Co.			



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3. What steel goes into a typical five-room house? (see page 89)
4. How many tractors are in use on American farms? (see page 57)
5. What industry was the largest consumer of rolled steel in 1939? (see page 38)
6. What are the iron ore reserves of Minnesota and Michigan? (see page 77)
7. What were the factory sales of mechanical stokers in 1939? (see page 82)
8. In what year did the Machine Tool makers have their greatest net earnings? (see page 29)
9. What important mergers took place in July, 1939? (see page 125)
10. What will be the ingot output of the new German empire? (see page 64d)

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