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HIGHLIGHTING THIS ISSUE

JTEEL

RAPIDLY moving events last week did much to dispel doubts as to the amount of understanding and drive behind the national defense program. President Roosevelt repeatedly (p. 21) gave assurance that the national defense commission will have complete charge of the program and its execution. Based on a report by E. R. Stettinius Jr., he declared the situation surrounding strategic materials to be "well in hand." He named Mr. Stettinius chairman of a committee to report immediately on consolidation of government purchases. . . . On the other hand, congress (p. 23) added impetus to its program of legislation aimed at implementing execution of the defense program.

A good start has been made at augmenting the defense commission's personnel. John D. Biggers (p. 22) becomes a chief aide. Defense

Aides to Commission

ecomes a chief aide. Defense mobilization of the machine tool industry has been placed under Harold S. Vance as right-hand man to William S. Knudsen. Other assistants to

Mr. Knudsen are George J. Mead, head of the aeronautical section, and E. F. Johnson, assistant on ordnance. W. L. Batt is Mr. Stettinius' assistant on raw materials. Others are to be drafted. . . . It was indicated last week (p. 21) that the senate would follow the example of the house in empowering the President to prohibit exports of machine tools and other equipment and materials of war.

As steel production moved up 3 points last week (p. 27) to $81\frac{1}{2}$ per cent of ingot capacity, it was predicted (p. 91) that operations soon will

Spread Buying

go to near capacity. Domestic consumers are spreading their buying over the coming months so as to enable the mills better to meet govern-

ment and Allied requirements. The steel orders placed by the Allies last week were estimated (p. 21) at 200,000 to 300,000 tons, with more to come. Shipment on pig iron and scrap contracts placed by Italy is jeopardized by the withdrawal of that country's ships from world channels. . . . New chairman of the United States Steel Corp. of New Jersey (p. 23) is Irving S. Olds.

Many modern tools are more versatile. The press brake (p. 48) is being used extensively for both light and heavy-duty multiple punching,

Tools More Versatile

alone or as part of a progressive punching, notching, forming setup. Through novel fixtures, broaching machines (p. 71) are used for press-fit

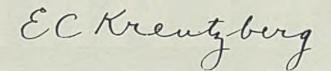
assembly of precision parts. Reverse bends that frequently occur when press-forming light-gage sheets, due to whipping of the sheet (p. 66), are avoided through a support principle that is applicable to any production problem. . . Blaw-Knox Co. uses a 4000-ampere arc welder (p. 51) with which it can join plates from $\frac{1}{2}$ to $2\frac{1}{4}$ inches thick; experiments on thinner and thicker material are under way.

Charles H. Jennings (p. 72) tells how distortion may be avoided in making fillet-welds. C. T. Elder (p. 52) describes the use of electric

Avoiding Distortion

heat in order to guard against breakdowns of electrical equipment that result from condensation, and absorption of moisture. . . W. J. Au-

burn (p. 56) discusses accepted practices in export packaging of steel sheets, tin plate, bolts, screws, tools and other products. . . Harold Lawrence (p. 62) tells of economies that can be effected in cutting with the oxygen torch. . . High-grade galvanized sheets are produced in a Welsh mill (p. 60) on equipment of latest American design. . . Northwestern university (p. 79) is adding a technological institute.



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Defense Plans Go Forward: Broader

Powers for Stettinius. Knudsen

Former U.S. Steel Chairman Heads Group To Study Government Purchases.

Commission in Complete Charge.

Machine Tool Industry Already Mobilized.

Unification Approaching on Aircraft Program.

Roosevelt Calls More Industrialists To Aid.

■ INDUSTRY'S role in planning and developing this country's national defense program last week began to emerge from the nebula that has surrounded Washington since its announcement.

The national defense commission has been assured it will have complete charge of the program. The commission has been and is being augmented by top-ranking executives who have suspended for the time their careers in private industry in favor of the defense plan.

E. R. Stettinius Jr. has been named chairman of a committee which will study the problems of government purchases through the procurement division. The army and navy will be represented on the committee, as will be Don Nelson, procurement director.

A report on the consolidation of purchases has been asked for immediately.

President Roosevelt has asked the army and navy to consult with William S. Knudsen, in charge of industrial production, regarding all important contracts.

At the commission's second meeting last Thursday, Mr. Stettinius, in charge of raw materials, made a preliminary report on strategic materials, including tin and manganese. Later the President announced this situation is "well in hand."

The President also announced that no action has yet been taken to embargo machine tool exports. The President, however, is reported to be supporting a bill in congress which would control exports of machine tools and military equipment. The house already has passed the bill and it is expected to be acted upon by the senate June 10.

A national inventors' council, composed of outstanding scientists and industrial research experts, to stimulate development of new defense weapons, is being created by Secretary of Commerce Harry Hopkins. Hopkins has urged legislation authorizing the patent commissioner to keep such inventions secret and to withhold grant of a patent if publication might be detrimental to the defense program.

Answers to many other questions being asked by businessmen are still awaited. Neither the defense program's ultimate size, cost, nor speed of execution can be forecast on the basis of information available.

Only certainties are that it will be big, expensive and—at the start comparatively slow moving.

Allies Now Buying Substantial Tonnages of Steel

■ ORDERS for between 200,000 and 300,000 tons of steel reportedly were placed with several United States producers by France last week. Although detail₃ were withheld, it was understood most of the orders were for rounds for shell manufacture, early delivery being demanded.

Heavy tonnages of shell steel, bars and semifinished are under negotiation and may be placed early this week. Great Britain's mills, operating on a 24-hour, 7-day week basis, are exerting every means to increase production, but Britain wants to purchase large amounts of semifinished here to keep rolling mills and forging plants working full time.

French production has been seriously curtailed by the German invasion, and it is believed future purchases from there will be finished products or products that will require a minimum of finishing.

Most allied steel buying to date has been placed on the other side. In the future an increasing amount of this business will be placed by the Anglo-French purchasing commission in New York. Offices of the commission, at 15 Broad street and the adjacent building at 37 Wall street, are being expanded as rapidly as possible. It is proposed to use three additional floors.

Additional personnel arrived last week to facilitate the commission's steel purchases. So far the commission has devoted most of its activities to procuring equipment and material other than steel.

The commission has placed about \$600,000,000 of orders for American airplanes and accessories since the "real war" began a month ago. Aircraft orders since January, 1939, have totaled \$1,200,000,000.

Informed quarters declare deliv-

eries have been speeded up in the past two months, although no official reports on deliveries are avail-The navy department last able. week released 50 of its Curtiss scout bombers for shipment to the Allies. Others will follow.

Large stocks of war equipment left over from the World war may soon be sold by the United States to Great Britain and France. Solicitor General Francis Biddle has

ruled such sale would violate neither international law nor the present neutrality act.

The equipment, classified by the army as "surplus," includes 100,000 old British Enfield rifles; 10,000 Lewis, Vickers and Marlin machine guns; 58,000 old fashioned guns for airplanes; 98 obsolete 40-ton British tanks: 300 British 75-mm field guns; 110 British 6 and 7-inch field guns; 133 British 8-inch howitzers; 245 trench mortars; considerable stocks of shells and ammunition.

Much of the equipment was made in British factories during the World war before American factories were geared to the war's demands.

Acute demand for war equipment for immediate delivery, result of heavy Allied losses in Flanders, is reported to have led British and French agents to attempt to buy the stocks despite obsolescence.

Complete Plan To Co-Ordinate Machine Production

AN ORDERLY, clear-cut procedure for the manufacture of machine tools for national defense has been established and production will go forward rapidly as soon as specific requirements are determined, Clayton R. Burt, chairman of the defense committee of the machine tool industry, said last week.

"The production plan was developed in conference with William S. Knudsen, of the government's advisory defense commission in charge of manufacturing. The plan is as follows:

"1. The setting up of a machine tool co-ordinating committee, consisting of Mr. Knudsen as chairman, and Harold S. Vance, chair-man of the board, Studebaker Corp., as vice chairman, two representatives from the defense committee of the machine tool industry, two representatives from the navy, and two representatives from the army.

"2. This co-ordinating committee will then determine the specific requirements of the army, the navy, United States manufacturers, and

foreign customers, and establish priorities for the guidance of the machine tool industry in filling these requirements. In determining pri-orities national defense will take precedence over all other considerations.

"3. It is anticipated that congress will shortly pass a law authorizing the navy to requisition for national defense purposes machine tools now on order for foreign customers. This, however, is purely a matter of selection and is not in any sense an embargo upon foreign shipments.

"4. The machine tool industry will undertake to make deliveries of machine tools in time to meet the requirements of the national defense program by expanding present working forces and facilities, and by subletting production of parts, and if necessary complete machines, to various factories not engaged in important government work. "5. The machine tool industry will

inaugurate a comprehensive program of training the additional men required to speed up production. "It is expected that in the near

future the army and the navy will be prepared to submit details covering sizes, kinds and types of machines which will be required, and the time at which they must be available. As soon as this specific information has been obtained, the machine tool industry, under priority rulings of the co-ordinating committee, will be able to set up definnite delivery schedules.

"It must be emphasized that this program covers not merely machine tools to be purchased by the army and navy, but the entire machine tool needs of the United States. Machine tools bought directly by the government will represent only a small share of the machine tools actually needed for national defense purposes. The largest portion will be those required by manufacturers of aircraft, munitions, and other types of defense equipment. It is for this reason that the establishment of the co-ordinating committee to determine priorities is of the utmost importance."

More Industrial Leaders Drafted by Administration

PRIVATE industry last week was called upon to supply additional talent to supervise and plan the national defense and industrial mobilization program.

John D. Biggers, president, Libby-Owens-Ford Glass Co., Toledo, O., who had charge of the census of unemployed a year ago, will be added to the national defense commission as a chief aide. It is understood he will work with Mr. Knudsen who has charge of industrial production in the defense program.

H. S. Vance, board chairman, Studebaker Corp., South Bend, Ind., has been placed in charge of the machine tool section under Mr. Knudsen.

George J. Mead, former vice president and director of United Aircraft Corp., East Hartford, Conn., is being transferred from the treasury department to be director of the aeronautical section. He will be assisted by Capt. Sidney M. Kraus. E. F. Johnson, former General

Motors executive, will assist Mr. Knudsen with ordnance problem3.

W. L. Batt, president, SKF Industries Inc., Philadelphia, and chairman of the commerce department's business advisory council, is already on duty with the commission. He is working on raw materials problems, with Mr. Stettinius.

Allen W. Morton, vice president, Koppers Co., Pittsburgh, and Gano Dunn, president, J. G. White En-gineering Corp., New York, also will be industrial aides to the commission.

Dr. Theodore Yntema, University of Chicago, will be an economic advisor and statistical expert for the defense group. Dr. Yntema directed preparation of the United States Steel Corp.'s presentation before the

temporary national economic committee last winter.

Charles G. Leith, University of Wisconsin geologist, has been designated as a consultant on strategic materials.

Another business adviser will be Clarence Francis, president, General Foods Corp., New York. Numerous others will be added

to this list within the next few days. Invitations to serve have been issued to representatives of various industries.

In addition to the personnel being recru'ted outside the government, Mr. Stettinius and Mr. Knudsen are being assigned staff members of the army and navy. Col. James H. Burns, formerly associated with Assistant Secretary of War Louis H. Johnson, and Capt. Allen Reed, of the navy, already have been assigned to Mr. Stettinius.

Naval Expansion Bill Finally

Passed; Status of Appropriations

SENATE last week approved the \$1,473,756,000 naval appropriation bill, already passed by the house, and the measure was sent to the President.

Corresponding army supply bill carrying \$1,823,252,000 at week's end was awaiting approval of conference report by both houses.

Earlier in the week the senate without a dissenting vote, had passed the Vinson bill proposing an 11 per cent increase in naval vessels which authorized a total additional expenditure of \$654,902,270. This bill provides for the construction of 22 new warships to cost \$372,750,000, 22 auxiliary vessels estimated to cost \$183,000,000, and 1011 more airplanes for the navy to cost \$99,152,270.

The President's latest defense estimates contemplate a total of \$4,-625,000,000 for the army and navy next year. The Chief Executive's latest "over a billion dollars" request last week was revealed to include \$960,400,409 in cash and \$317,540,761 in contract authorization.

Of this, the army would receive \$452,751,239 cash and \$254,176,761 contract authorization. More than one-third-\$180,889,395 in cash and \$109,259,597 in authorization is for planes and equipment for the air corps, while \$96,513,530 in cash and

\$90,085,520 in contract authorization, is asked for tanks, guns and other equipment under the ordnance department.

An emergency fund of \$200,000,000 is proposed for stimulating production of munitions. Construction of more than 25 powder and arms plants is contemplated under this appropriation, either by private companies or the government.

Navy would receive \$507,253,170 cash and \$63,560,000 in authorizations. A total of \$222,400,000 is allowed for construction of ships including armor and armament, which would provide for starting three aircraft carriers, 13 cruisers, 30 destroyers and 22 submarines, together with auxiliary vessels and patrol craft.

Included in the large warship program are vessels authorized by the Vinson bill. Construction of 19 other warships is provided under funds carried in the regular 1941 naval supply bill.

An additional \$25,000,000 in contract authorization is allowed for the "rental and conversion" or acquisition and conversion of ships for use as auxiliaries and patrol craft. A total of \$103,800,000 is asked for construction of naval bases and increasing shipbuilding facilities at navy vards

New Chairman of U. S. Steel Corp. **Experienced in Law, Economics**

BIRVING S. OLDS, since 1936 a director and finance committee member of United States Steel Corp., New York, was elected chairman of the corporation last week, succeeding Edward R. Stettinius Jr. Tendered to permit him to devote his services to the national defense committee, Mr. Stettinius' resignation as chairman of the board of directors and as a member of the finance committee was accepted at a special board of directors' meeting earlier in the week.

Associated with White & Case, a New York law firm, since 1911, before which he had served as secretary to Mr. Justice Holmes, United States Supreme Court, Mr. Olds was admitted to the firm as a partner in 1917. He was counsel for the purchasing department of the British war mission to United States during 1917-1919, and in 1918 was

appointed special assistant in United States war department.

Mr. Olds has been engaged, since



Irving S. Olds

the World war ended, and as a member of White & Case, in legal work related to matters of organization and administration of corporate business enterprises.

Graduated from Yale university and Harvard law school, Mr. Olds was admitted to the bar in Pennsylvania in 1910, and in 1912 to the New York bar. He was born at Erie, Pa.

Actively participating in industry since 1924, Mr. Stettinius that year entered General Motors Corp., New York, through the Hyatt roller bearing division at Newark, N. J. Two years later he was appointed assistant to John L. Pratt, vice president and a director of the corporation. In November, 1930, he became assistant to Alfred P. Sloan Jr., General Motors president, and was elected a vice president in 1931.

When W. J. Filbert was made chairman of the Steel corporation's finance committee in 1934, Mr. Stettinius went to United States Steel as the committee's vice chairman. He succeeded Mr. Filbert as chairman when the latter retired in December, 1935, was also made a di-Mr. Stettinius had been rector. chairman of the board since April, 1938, when he succeeded Myron C. Taylor.

Thyssen Says Germany Will Be Defeated

Germany's weak spot is its lack of industrial preparedness, according to Fritz Thyssen, exiled German steel leader who financed Hitler's rise to power. In a message to the American Magazine he said Germany will be defeated despite its "astounding" early successes.

"Never was a war so recklessly started and with less industrial preparation," he added, saying he vigorously opposed what he considered to be an 'unjustified war' and that he had vainly warned Field Marshal Goering the country was not ready to fight. "Hitler did not consult his min-

isters or the Reichstag about going to war. Therefore he blundered," Thyssen said.

Baldwin Locomotive **Opens New Dispensary**

Baldwin Locomotive Works, Eddystone, Pa., last week placed in service a modern \$20,000 6-room dispensary covering 1700-square feet of floor space. A full-time physician and registered nurse have been added to the staff. Dispensary will remain open for night shifts under a trained nurse.

Novel feature is a dental room where non-accident dental work, if desired, is done at moderate cost.

Buy Steel To Avoid Overloading Mills, Purchasing Agents Told

■ REAL problem in the present drive for national defense is to find men with the skill necessary for operation and manufacture of war materials, Louis Johnson, assistant secretary of war, stated at the annual convention of the National Association of Purchasing Agents, Cincinnati, last week. "The (defense) program must be extended vigorously so that no prudent enemy will be tempted to attack us," he said.

An appeal to spread steel buying regularly over the coming months so that it will not add to difficulties of mills endeavoring to meet the government's rearmament needs, was made by Frank H. Carter, purchasing agent, Maryland Drydock Co., Baltimore.

"We should make a careful survey of our immediate requirements, as well as those for the future, and build up adequate stocks to carry us only until such time as the mills will be able to schedule other rollings from which to replace those items which have been consumed in our production program. . . There is an apparent tendency on the part of mills to hold to reasonable prices and avoid a runaway market.

"Many things may happen to change the price structure, but with every indication of high operations, which mean more economical production and higher profits, it is reasonable to assume the steel industry will do its part to keep the market on an even keel."

Object to Price Cuts

In discussing base prices and extras, N. J. Clarke, vice president in charge of sales, Republic Steel Corp., Cleveland, said: "I am convinced that most purchasers are opposed to sudden upsets in the price structure of materials used in the manufacture of their products. If they have reasonable inventories on hand they face substantial writedowns, which, rightly or wrongly, reflect on the buyer's judgment.

"Moreover, they are at once confronted with the necessity of deciding whether to load up at the low level or wait for a still lower price at the risk of missing the boat entirely. Production plans, based on a certain price level, must be revised. If the flurry is a short one, it is highly questionable whether the lower prices benefit anyone.

"This spring, for example, when unwarranted price concessions began to appear in certain steel markets, some of the severest criticism was heard from important steel users."

Greatly increased demand for steel products points to capacity or near capacity operations in the near future, according to Mr. Clark.

A special committee of American Iron and Steel institute now is engaged in efforts to codify the existing underlying information necessary in working out rational standardization for the steel industry, according to R. E. Zimmerman, vice president in charge of research and technology for the United States Steel Corp.

That all nonferrous metals are moving into stronger positions and that price trends should reflect this situation in the near future was the opinion expressed by Fred A. Compton, purchasing agent, Detroit Edison Co., Detroit.

"Private enterprise hasn't been washed away entirely by the flood of depression fears, and restrictive legislation but it has been seriously weakened," said Charles R. Hook, president, American Rolling Mill Co., Middletown, O.

Interstate trade barriers exist today which are a serious interference to the movement of trade, according to Irvin E. Walton, purchasing agent, Heppenstall Co., Pittsburgh. Hundreds of laws, ordinances and r e g u l a t i o n s, aimed at products brought in from other states, have been put into force throughout the country, and many of these are in conflict with similar regulations in other states.

Concerted action by large numbers of citizens in all states will be necessary to break down these interstate trade barriers, he said.

The new president of the association is George E. Price Jr., purchasing agent, Goodyear Tire & Rubber Co., Akron, O.

Canadian Railroad Shops Will

Receive Large Allied Tank Orders

TORONTO, ONT. CANADA is preparing to manufacture large numbers of tanks for the Allies, and at the same time is speeding up production of other war *materiel*. British war supply board soon will place the tank orders with railway equipment manufacturing companies which are almost fully equipped to start production.

Guns, shells, munitions and other contracts are planned on a much more extensive scale. Large purchases of machinery and tools will be necessary to effect the increase.

Canada's aircraft industry is slated for sharp rise in operations, following announcement from London that the British government will not be able to continue supply aircraft for the commonwealth air training plan. Additional orders soon may be placed in the United States, while Canadian plants will be enlarged and new equipment installed. Plants also will be established here to produce engines for Canadian built aircraft.

Purchases made by the department of munitions and supply, Ottawa, Ont., and its predecessors, now exceed \$300,000,000. These figures include some \$260,000,000 for Canadian account. Orders include the following: Railway equipment, \$24,900,000; shipbuilding, \$47,000,-000; defense projects, \$13,700,000; antisubmarine defense, \$2,000,000; aircraft, \$46,800,000 and miscellaneous, \$34,300,000.

Department of munitions and supply last week awarded 765 contracts, valued at \$2,893,953. Following are the more important awards:

Mechanical transport, General Motors Products of Canada Ltd., Ottawa, \$78,881; W. D. Beath & Son Ltd., Toronto, \$99,173; Canadian Top & Body Corp. Ltd., Tilbury, Ont., \$120,022; Brantford Coach & Body Ltd., Brantford, Ont., \$41,424; Cockshutt Plow Co. Ltd., Brantford, Ont., \$41,424; Ford Motor Co. of Canada Ltd., Windsor, Ont., \$92,350.

Aircraft, Robert Mulhall, Ottawa, \$14,653; MacDonald Brothers Aircraft Ltd., Ottawa, \$13,402; National Steel Car Corp. Ltd., Hamilton, Ont., \$32,200; Canadian Kodak Co. Ltd., Toronto, \$39,031.

Machinery and tools, Canadian Fairbanks-Morse Co. Ltd., Ottawa, \$28,448.

Electrical equipment, Canadian General Electric Co. Ltd., Ottawa, \$8004; Northern Electric Co. Ltd., Ottawa, \$6005; Norton Steel Works Ltd., Toronto, \$6290.

Dominion Steel & Coal Corp. Ltd., Sydney, N. S., now is shipping to Great Britain between 75 and 80 per cent of its entire output. This compares with 30 per cent or less a year ago.

Reports Britain Exports Machine Tools in Effort To Hold Markets

■ DETERMINATION to hold and even increase her foreign markets is indicated by Great Britain's continued shipments of machinery and machine tools to Latin-American countries, even while importing similar equipment from United States, according to A. E. Reed, assistant vice president and export manager, W. S. Tyler Co., Cleveland. Mr. Reed returned recently from a trip throughout South America where he studied prospective markets for steel and nonferrous products.

Faced with the problem of financing a war on a scale far greater than at first anticipated, England is showing signs of regimenting exports and in some instances is creating blocked sterling accounts, the sole purpose of which is to force reciprocal purchases of its products by the countries from whom it buys.

Natural inter-American sympathy, however, plus advantages United States possesses in transportation facilities, superior delivery possibilities and high quality of products combine to make the United States potentially the chief supplier of Latin-American needs. Preference for American products is strong, with very few exceptions, Mr. Reed discovered.

American metalworking machinery, while highly respected, frequently is considered less desirable than either British or German equipment because it is believed too highly specialized and is too expensive. Comparatively undeveloped, Latin-American industries require simpler equipment for production of high tolerance articles. American tool builders are not inclined to turn out such equipment while faced with large backlogs for their regular product.

American Products Favored

German trade penetration of South and Central American markets in recent years has been largely at Great Britain's expense, has not kept pace with growth of United States' exports to those nations. Japan, despite frequent sensational reports to the contrary, seems completely out of the picture as far as trade domination in Latin America is concerned. Imports from Japan of 14 major Latin-American nations declined about one-third during the past year, aggregated only 1.6 per cent of their total. Nations principally involved in the struggle for the southern markets are and have been

United States, Great Britain and Germany.

Future, as well as present Latin-American imports from United States seem to be limited only by ability of those nations to pay for their purchases, most of which today are on a cash or short term basis. It is obvious their imports will rise in proportion to our purchases of Latin-American products, and here lies the key to the future. Every new product of Latin America that we can buy and every increase we can make in the traditional imports from that area will come right back to us in increased sales of our manufactured products.

With possible exception of Argentina, traditionally pro-British in its import program, Mr. Reed found United States is definitely favored throughout Latin-America as a source of manufactured articles. Germany's market gains of recent years are being doubly dispelled, by war and by weakness inherent in her barter trade system. Many of the southern republics have on hand large trade balances in blocked marks, entirely useless at present and not very satisfactory at best.

Reciprocity Is Key to Problem

Industrial development in Latin America, at present in its first stages, Mr. Reed feels, will not injure our ultimate trade volume. Lacking the reservoir of skill, experience and financial resources that has taken generations for the older industrial nations to build up, the American republics will be in position to manufacture only a fraction of their needs for many years. Their productive facilities will be engaged in fabrication of relatively easily manufactured articles. Specialized and precision items as well as those products that require large volume production to achieve low costs, will still be imported, probably from United States, since it seems the favored source for such equipment.

One factor adversely affecting our trade development in Latin America, the price differential between United States' products and European equipment, said Mr. Reed, is being rapidly narrowed, at least for the period of the war.

United States' problem is to determine how best we can increase our purchases from Latin-American nations without injuring our domestic economy. Upward trend in industrial activity during 1939 was reflected in increased purchases from Latin-Americas, resulted in immediately greater exports to the same nations.

Exports of metals and manufactures from United States to Latin-Americas during first six months of the European war increased 137 per cent; machinery and vehicle exports increased 27 per cent. Increase in total exports to the same nations was more than 50 per cent, to better than 359 million dollars.

Commerce department statistics indicate the Latin-American nations imported during the fairly normal, peace-time year of 1937 substantially more than 200 million dollars worth of iron and steel products, vehicles and machinery. Although complete figures are not available, it seems probable United States furnished well above 50 per cent of that total. This was despite strenuous efforts by Britain and Germany to take over Latin-American outlets.

Metalworking Machine Exports Reach New Peak

■ Additional details regarding United States exports of powerdriven metalworking machinery in April show an increase of more than 600 per cent over April, 1939, in the value of some classifications.

As reported in STEEL, June 3, page 33, the exports reached the new record monthly value of \$21,281,332, an aggregate gain of 140 per cent over April, 1939, when they totaled \$8,854,755. Expansion was reflected in all classifications. Some of the most important:

	April			
	1940	1939		
Lathes	\$3,823,750	\$1,104,093		
Milling machines	2,173,723	1,520,573		
Thread-cutting and automatic screw		1010101010		
machines	2,078,130	318,433		
Vertical boring mills, chucking				
machines	843,652	291,093		
Gear cutters	678,213	198,952		
Vertical drilling ma-				
chines	1,400,979	187,249		
Planers and shapers	429,766	348,268		
Surface grinders	519,932	185,753		
Internal grinders	946,807	271,892		
External cylindrical				
grinders	813,712	392,978		
Other grinders	1,090,954	310,367		
Sheet and plate met- alworking ma-	,,	010,001		
chines	1,020,457	661,681		
Forging machinery	805,763	615,961		

First graduating exercises for Thompson Products Inc., Cleveland, apprentices were held last Friday night at Cleveland club, Cleveland. Twelve were presented with diplomas and class rings by Fred C. Crawford, company president. To graduate, an apprentice must serve four terms of approximately 2080 hours each.

Steel for Sale Output In April 3,005,218 Tons

■ Finished steel made for sale totaled 3,005,218 net tons in April, according to American Iron and Steel institute, New York. Total for first four months this year is 13,578,203 tons.

Of the April production, 191,291 tons or 6.37 per cent went into further finished products and 371,532 tons or 12.37 per cent was exported. Of the first four months' total, 864,-674 tons, or 6.37 per cent went into further finished products and 1,674,-346 tons, or 12.37 per cent, was exported.

Products, less those for conversion, took 68.9 per cent of ingots produced.

April finishing operations were at a rate of 63.8 per cent of capacity, and for first four months, 71.6 per cent. Number of companies continues at 153.

Beginning with this month, American Iron and Steel institute will issue a monthly analysis of finished steel products, with totals to date, rather than its quarterly report.

Pig Iron Production Rate Shows Uptrend

Actual coke pig iron production in United States during May totaled 3,497,318 net tons, according to complete reports. Average daily rate of production was 112,817 tons, compared to 104,635 in April. These figures are essentially as reported in STEEL, June 3, p. 26, which compilation included some estimates.

Furnaces in blast May 31 totaled 170, instead of 171 as previously reported. Ensley No. 6 stack of Ten-

	Сар			CAN IRON AND roduction for Sa			lucts		_	A	pril - 1940	
		78				PRODUCTION FOR SALE-NET TONS				To Date (4 Months 1940)		
		25	ā	Annual Capacity		Cum						
		Number compan	Items	Net time	Total	Percent of capacity	Export	To members of the undustry for con- version into further fasished products	Total	Per Cent of capacity	Export	To members of industry for version into fu finished prod
	Ingots, blooms, billets, slabs, sheet bars, etc	22	1	* * * * * * *	291,176	XXX	60,180	109,232	1,365,619	III		473.8
	Heavy structural shapes	E	2		174,006	40.7			710,720	41.3		
	Steel piling.			328,000	11,200	41.6	656		40,378	37.2	3,789.	
	Plates-Sheared and Universal	19		5,855,450	246,916		40,091	2,065	1,124,523	58.1	127,934	12,1
	Skelp	7	5	* * * * * * *		III	1,004	15,787	151,548	xxx		
	Rails-Standard (over 60 lbs.)	- 4	6	3,647,600	154,023		4,891		644,637	53.4	26,096	
	Light (60 lbs. and under)	6			8,670	34.4	2,100		33,850	33.4	9,085	*****
	All other (Incl. girder, guard, etc.)	.2		118,000	2,114	21.8	850		13,090	33.5.	2,270	
	Splice bar and tie plates	15		1,300,200		52.7	563		222,426	51.7	3,318	*****
	Bara-Merchant			* * * * * * *	255,347	III	.38,167	19,686	1,301,250	XXI	117,318	106,1
	Concrete reinforcing-New billet	14		******			25,071		321,442		100,132	
	Rerolling	18	ALC: N	******	11,702		148		38,732		3,626	*****
1	Cold finished-Carbon	18		******	45,798	XXX	1,435		209,430		3,912	
	Alloy-Hot rolled	1.15		* * * * * * *		* * *			274,051	* * *	16,243	18.
1	Cold finished	4		******	6,840		489		30,336		979	
	Hoops and baling bands	5	16	******	7,683	* * *	645		29,000	* * *	1,841	
	TOTAL BARS	53	17	12,372,465	489,234	48,2	69,274	23,238	2,204,241	53.9	244,051	125,
	Tool steel bars (rolled and forged)	15	18	110,220		58.4	211	-	21,876	60.0	943	XXXXX
	Pipe and tube-B. W.	13	19	1,737,860	65,587	40.0	6,114		261,741	45.5	27,174	
	L. W	10	20	1,360,360	24.242	21,7	3,580		97,355	21.6	13,402	*****
	Electric weld	5	21	731,520	18,745	31,2	2,121		72,464	30.0	9,095	* * * * *
	Seamleas.	15	22	3,159,840	122,893	47.4	14,417		562,091	53.8	59,759	IIIII
	Conduit	6		151,145	5,906	47.6	11		20,912	41.8		
	Mechanical Tubing	1.13	24	554,825	18,410	40.4	973		89,986	49.0	562	
	Wire rods	19	25	XXXXXXX	62,692		14,408	11,813	316,531		4,197	IIIII
	Wire-Drawp	37	26	2,255,210	100,165	54.1	16,121			III	74,815	50,5
	Nails and staples	19	27	1,091,690	41.184	46.0	5,451	707	436,287	58.5	56,516	5,5
	Barbed and twisted	16		438,270	16,421	45.7	2,868		174,625	48.4	20,115	
	Woven wire fence	15	29	772,790	22,223	35.0	239		58,133	40.1	9,240	
	Bale ties	n	30	119,050	5.069	51.9	68		79,741	31.2		****
1	All other wire products	6	31	27,030	1,215	54.8			16,400	41.7		* * * * *
	Fence posts	13	32	147,485	4,548	37.6	- 20		3,501	39.2	-	
	Black plate	12	33	653,295					15,977	32.8		
	Tin plate-Hot rolled	9		1,201,960	29,761	.55.5	1,661	9,220	121,714	56.3	5,602	40,5
	Cold reduced	10	34	2,930,860	37,309	37.8	3,993		181,628	45.7	55,276	
	The second secon	- 26	35		197.,365	82.1				77.6	157,118	
	Sheets-Hot rolled		36	* * * * * * *		XXX		10,496	1,651,427	XXX	167,806	50,8
	Galvanized	16	37	*******	87,248	XXX	16,451	· · · · · · · · · · · · · · · · · · ·			61,843	****
	Cold rolled	18	38	* * * * * * *	155,063	***	6,073		725,724		31,948	
1	All other	15.	39	******		XXX			189,056	***	8,444	
1	TOTAL SHEETS	21	40	13,255,610	590,970	54.3	59,117	10,496	2,962,592	67.6	270,041	50,8
	Strip-Hot rolled	24	41	3,525,110	86,201	29.8	6,929	8,733	443.738	38.1	26.330	50,3
	Cold rolled	. 35	42	1,313,360	51,852	48.1	1,483		228,940	52.7	6,075	XXXXX
	Wheels (car, rolled steel)	5	43	419,035	14,900	43.3	296	-	73,753	53.2	1,945	
1	Axles	_5	44	472,280	4,207	10.9	183	-	32,116	20.6	1,533	****
1	Track spikes	11,	45	327,275	10,071	37.5	135	-	39,666	36.6	1,640	XXXXX
1	All other		46	9,100	449	60.1	-	-	3,544	117.7	-	IIXII
	TOTAL STEEL PRODUCTS	133	47	******	3,005,218		371,532	191,291	13,578,203	XXX	1,674,346	864.6
	Estimated total steel finishing capacity based on a yield from ingots of		48	53,714,800	******	63.8	*****	******		71.6		
	Pig iron, ferro manganese and spiegel	27	49	******	400,247		17,479	76,525	1,709,844		04 577	1.73 7
	Ingot moulds	4	50	******	22,585	XXX	229	I A A A A A A A A A A A A A A A A A A A	109,823	***	96,533 682	431,6
.1	Bars	10	51	160,600	1,373	10.4		65		III		IXXXI
	Pipe and tubes	3	52	109,377	2,575	28.7			9,347	17.6	79_	7
	All other	3		71,180				-	11,222	31.0	445	
-	TOTAL IRON PRODUCTS (ITEMS 51 to 53)		53 54	276,247	4,724	13.3	1	<u>154</u> 219	4,070	17.3	811	1,1
									24,639			

Total steel products produced for sale, less skipments to members of the industry for conversion into further fonished products: Current month 2.813.927 N.T.; 63.8% of Finishing Capacity. To date 12,713.529 N.T.; 71.6% of Finishing Capacity. The above tormages represent 68.9% of the ingots produced by companies whose products are included above.

Total Number of Companies Included - 155

nessee Coal, Iron & Railroad Co., in Alabama, was taken out of blast May 31. Two furnaces were reported blown in June 1: Duquesne No. 6, Carnegie-Illinois Steel Corp., and Monessen No. 2, Pittsburgh Steel Co., both in Pennsylvania. Interlake Iron Corp. banked its Federal B furnace, in Illinois, Jan. 1.

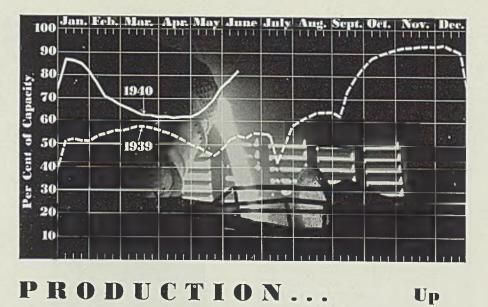
May Ingot Output 20 Per Cent Over April

Open hearth and bessemer steel ingot tonnage produced in May rose more than 20 per cent over April. to a total of 4,841,403 net tons, according to the American Iron and Steel institute. April output was 3,974,706 tons, while in May, 1939, a total of 3,295,164 tons was produced. Last month's output was 47 per cent larger than in May, 1939.

Average operations in May were 72 per cent of capacity, compared with 61.04 per cent in April and 48.64 per cent in May, 1939. Average weekly production last month was 1,092,867 tons, against 926,505 tons in April and 743,829 tons per week in May, 1939.

Aggregate tonnage in five months this year was 23,145,214 tons, compared with 17,434,843 tons in the corresponding period in 1939. Average weekly output in first five months this year was 1,065,617 tons and in the same portion of 1939 it was 807,912 tons.

In May 94.6 per cent of the ingots were made in open hearths.



STEELWORKS operations last week advanced 3 points to 81.5 per cent. Eight districts increased output, one reported a slight loss and three were unchanged. A year ago the rate was 53.5 per cent; two years ago, 25.5 per cent.

Birmingham, Ala. — Unchanged at 85 per cent with 12 open hearths in production.

Detroit-Rose 1 point to 75 per cent

Buffalo-Advanced 14 points to 84 per cent as several open hearths were added. Indications point to an increase this week.

Central eastern seaboard — Up 2 points to 73 per cent, smaller producers being more active.

Youngstown, O. - Advanced 9 points to 67 per cent, with 60 open hearths and three bessemers active,

Steel Ingot Statistics

Period	Calc Open Net tons	ulated M Hearth- Per cen capacity	nt Net	Per ce	All Comp	Per cer of	 produc- it tion, all companie 	Number of weeks s in
1940 Reported b				do 07 070	of Open He	capacity	net tons	month
Jan.	5,369,601							
	1,203,508	$\frac{86.40}{72.37}$	285,714 205.527	56.10 43.19	5,655,315	84.11	1,276 595	4 43
	,073,196	65.54	191,559	37.62	4,409,035 4,264,755	70.16 63.42	1.064.984 962.699	414
	,798,371	63.11	176,335	35.76	3,974,706	61.04	926.505	4.43 4.29
May 4	,582,694	73.74	258,709	50.80	4,841,403	72.00	1,092,867	4.43
5 mos 22	,027,370		1,117,844		23,145,214		1,065,617	21.72
1939 Reported by	Compani	es which	in 1939 ma	de 97.97%			100% of B	
	,413,783	55.35	165,080	27.22	3,578,863	52.83		
	,149,294	56.55	219,621	40.10	3,368,915	55.07	807,870 842,229	4.43 4.00
	621,177	58.71	217,950	35.93	3,839,127	56.67	866,620	4.00
	,122,418	52,27	230,356	39.22	3,352,774	51.11	781,532	4 29
5 mos 16	411,369		1,023,474		17,434,843		807,912	21.58
	104,697	50.34	190,467	31.40				
	314,012	55.48	209,868	35.73	3,295,164 3,523,880	$48.64 \\ 53.71$	743,829	4.43
	308,029	53.75	256,798	42.43	3,564,827	52.74	821,417 806,522	4 29
Aug 3	,965,515	64.29	276,479	45.58	4,241,994	62.62	957.561	4.42
Sept 4	,436,792	74.45	332,676	56.77	4,769,468	72.87	1,114,362	4.28
	626,685	91.22	453,492	74.77	6,080,177	89.75	1,372,500	4.43
	,694,788	95.34	452,995	77.12	6,147,783	93.71	1,433,050	4.29
	,468,880	88.87	353,134	58.35	5,822,014	86.13	1,317,198	4.42
Total 48	,226,070	66.43	3,358,916	47.05	51,584,986	64.70	989,355	52.14

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; 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.

and schedules for further additions this week. Youngstown Sheet & Tube Co. and Republic Steel Corp. each blew in one blast furnace, giving each 100 per cent pig iron production.

Chicago - Increased 3 points to 86 per cent as larger producers added to open hearth activity. Further gains are forecast.

New England — Gained 10 points to 66 per cent, the first upward movement in this district for three weeks.

Pittsburgh - Added 1 point to 80 per cent, with further increase expected this week.

Wheeling - Steady at 79 per cent, with little change indicated.

Cincinnati - Further gain of 6 points to 70 per cent reflects increased output of flat-rolled stock.

Cleveland --- Held at 82 per cent with schedules for this week showing no change.

St. Louis - Down 1 point to 56 per cent.

District Steel Rates

Percentage of In Le		Capacit: Districts		gaged
	Week	())	We	me eek
		Change	1939	1938
Pittsburgh	80	+1	43	19.3
Chicago	86	+ 3	52.5	22
Eastern Pa	73	+ 2	37	25.5
Youngstown	67	+ 9	51	25
Wheeling	79	None	73	38
Cleveland	82	None	53	31
Buffalo	84	+14	44	23
Birmingham	85	None	67	58
New England.	66	+10	40	25
Cincinnati	70	+ 6	68	16
St. Louis	56	- 1	47	39.3
Detroit	75	+1	57	18
Average	81.5	+ 3	53.5	25.5

MEN of INDUSTRY

A. F. ALLEN, secretary-treasurer, and a director, American Steel & Wire Co., Cleveland, was honored recently at a dinner attended by his associates in the Wire company, for his completion of a half century of service with subsidiaries of the United States Steel Corp. He was presented with the corporation 50year gold service medal. Mr. Allen joined the former Illinois Steel Co. in June, 1890, and nine years later became associated with American Steel & Wire. He served successively as clerk in the secretary's office, assistant treasurer, assistant secretary; in 1901 was elected secretary and in 1928, treasurer. Mr. Allen is also vice president, secretary and a director, Cyclone Fence Co.

John Slezak has been elected president, Turner Brass Works, Sycamore, Ill., maker of liquid fuel appliances. He formerly was vice president and general manager.

J. C. Harrington has been elected president and general manager, National Forge & Ordnance Co., Irvine, Pa. He succeeds the late C. E. Wilder, with whom he worked for a number of years as chief assistant.

Albert C. Schweitzer has been named eastern district traffic manager, United States Steel Corp. subsidiaries. He succeeds Charles W. Trust, recently named general traffic manager. He has been assistant traffic manager of the eastern district since 1938.

John W. Murphy, associated with Bethlehem Steel Co., Bethlehem, Pa., since 1924 as a salesman, and located in the Baltimore district since 1930, has been promoted to



John W. Murphy



A. F. Allen

assistant manager of sales, Baltimore district. Before joining Bethlehem he was with the Midvale Steel & Ordnance Co. as a concrete reinforcing bar engineer and sales representative in its Boston office.

William B. Castle, vice president and director, Interlake Iron Corp., in charge of the Zenith division, Duluth, has retired, after 60 years' active association with the industry, including iron ore, steamship and blast furnace experiences. He will continue his directorship.

Sir H. C. Harold Carpenter, professor of metallurgy, Royal School of Mines, Imperial College of Science and Technology, London, and past president of both the Iron and Steel institute and Institute of Metals, has been named 1940 medallist of the Japan Institute of Metals, Tokyo.

Lawrence E. Barringer, engineer in charge of electrical insulation, General Electric Co., Schenectady, N. Y., has been awarded the 1940 Benjamin G. Lamme medal of Ohio State university, Columbus, O., for "achievement in the field of research and development of materials for electrical insulation."

William H. Pratt, consulting engineer, General Electric Co., West Lynn, Mass., works, has retired after 45 years' service. After graduating from Massachusetts Institute of Technology, Mr. Pratt joined the West Lynn works in 1895.

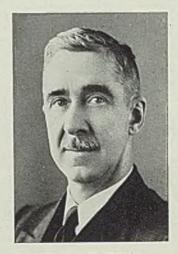
C. R. Mitchell Jr. has been made assistant district manager of sales at

New York for Allegheny Ludlum Corp., Pittsburgh. A graduate of the University of Pittsburgh in 1928, he began work with the former Allegheny Steel Co. in 1931. From that year until 1934, when he was transferred to the New York office, Mr. Mitchell's activities were in various capacities in the mill at Brackenridge, Pa.

J. S. Bennett has been appointed manager of sales, American Engineering Co., Philadelphia, maker of Lo-Hed hoists, Hele-Shaw pumps, Taylor stokers and marine deck auxiliaries. William H. Schultze has been made sales manager, marine division, and C. L. Myers continues as sales manager, stoker division.

A. I. Richardson has been appointed manager of Allis-Chalmers Mfg. Co.'s district office at Dallas, Tex. He was previously located at the company's district office in Charlotte, N. C. A native of Texas, Mr. Richardson joined Allis-Chalmers in 1925, spending two years in the shops prior to preparing for sales engineering work. Since then he has been with the company's district offices at Atlanta, Ga., Chattanooga, Tenn., and Charlotte, N. C.

Stanley M. Mercier has been made chief engineer, conveyor division, Jeffrey Mfg. Co., Columbus, O., maker of coal mining machinery, electric locomotives, chains, conveying and crushing machinery. Mr. Mercier will direct all conveyor engineering and engineering sales activities. Born and educated in England, Mr. Mercier has had varied experience in industrial and construction engineering, design and



Stanley M. Mercler

sales, and has been associated with many outstanding construction operations in the country the past decade.

Victor A. Olsen, works manager, Cadillac Motor Car division, General Motors Corp., Detroit, and for 21 years active with this division, has been named general manager, Detroit Transmission division of General Motors.

Clarence A. Raftrey, the past several years assistant works manager, succeeds Mr. Olsen as works manager.

G. L. Crawford has been appointed Buffalo district manager in charge of sale₃ of all products, Wickwire Spencer Steel Co., New York. He succeeds A. G. Bussmann, recently promoted to general sales



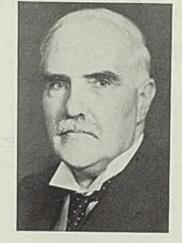
G. L. Crawford

manager. Mr. Crawford, with Wickwire since 1927, continues as sales manager of structural products, the position to which he was appointed in April, 1939. His headquarters are at the company's Buffalo offices, 70 Niagara street.

E. H. Anchors, formerly branch manager for Air Reduction Sales Co. at Atlanta, Ga., has been named manager of the Oklahoma City, Okla., district. He began his career 15 years ago with the Commercial Acetylene Supply Co., and was southern manager of that company when it was acquired by Air Reduction. Since that time he has served continuously as branch manager at Atlanta.

T. D. Cartledge and L. A. Bliss have been elected vice presidents, Linde Air Products Co., a unit of Union Carbide & Carbon Corp., New York. E. J. Hayden has been elect-

ed vice president, central division. Mr. Cartledge has been general sales manager, and Mr. Bliss, works manager. Mr. Hayden has been



John Craig

Whose election as president, British Iron and Steel institute, was noted in STEEL, June 3, p. 33. Mr. Craig is chairman and managing director, Colvilles Ltd., Glasgow, Scotland, with which oganization he has been associated since 1888. Mr. Craig is a past president, National Federation of Iron and Steel Manufacturers, now the British Iron and Steel Federation; a director, British Iron & Steei Corp. Ltd.; is on the council of the Federation of British Industries, and holds directorships in several other firms

manager of the central division. E. B. Suydam, heretofore assistant general sales manager, has become general sales manager, to succeed Mr. Cartledge, and P. B. Pew, formerly assistant works manager, has been made works manager, to succeed Mr. Bliss.

C. K. Bryce has been elected vice president, Oxweld Acetylene Co., also a unit of Union Carbide & Carbon. Mr. Bryce was formerly manager of factories.

Dr. Edward R. Weidlein, director, Mellon institute, Pittsburgh, has announced appointment of Dr. Edward E. Marbaker to the incumbency of



H. Rodgers Dorney

Who has been elected president, Baltimore Steel club, Baltimore, as reported in STEEL, May 20, p. 28. Mr. Dorney is local representative for Jones & Laughlin Steel Corp. the industrial fellowship founded by O. Hommel Co., Pittsburgh, maker of frits, ceramic chemicals, colors and bronze pewders. Mr. Marbaker has been a fellow of Mellon institute 20 years, engaged in research and development work in chemistry, ceramics and metallurgy.

John G. Bergdoll, associated with York Ice Machinery Corp., York, Pa., about 26 years, has been promoted to chief engineer. He was first employed as a machinist's apprentice in 1914 and since then has occupied the positions of draftsman, equipment development engineer, product engineer, and assistant chief engineer.

Sir William Larke, director, British Iron and Steel Federation, London; A. O. Peech, director, United Steel Companies Ltd., Sheffield; and Dr. C. H. Desch, superintendent, metallurgy department, National Physical Laboratory, Teddington, were re-elected vice presidents of the council of the British Iron and Steel institute at the institute's annual general meeting in London, May 2-3.

Re-elected members of the council were E. J. Fox, managing director, Stanton Ironworks Co. Ltd., Nottingham; Dr. T. Swinden, director of research, United Steel Companies Ltd., Sheffield; Dr. A. Mc-Cance, director, Colvilles Ltd., Glasgow; P. B. Brown, deputy chairman, Hadfields Ltd., Sheffield; and J. R. Menzies-Wilson, director, Stewarts & Lloyds Ltd., Glasgow.

Announcement of new president and vice president of the institute, and details concerning medal awards and honorary memberships were presented in STEEL for June 3, p. 33.

Chicago Bridge & Iron Co., Chicago, has made the following changes in its sales department: S. C. Hamilton, district sales manager at Birmingham, Ala., has been transferred to Houston, Tex.; R. A. Williams, who has been handling the sale of Morse filter plants, has been moved to the Dallas, Tex., office. H. F. Stearns has been made district sales manager at Birmingham. He formerly was in the New York office. A. H. Heineman has also been moved from New York to Birmingham sales department, while Herbert A. Guerin will go from the Cleveland office to the New York office. George Jewett, of Chicago, will go to New York; Ray Menefee, of the Chicago engineering department, will go to Cleveland; William Fickett has been transferred from Chicago drafting room to the sales office, and Kenneth Sandbach has been transferred from the Hillside erection office to Philadelphia sales office.

Medals for Invention, Discovery Awarded by Franklin Institute

■ FRANKLIN institute, Philadelphia, has made its 1940 awards of medals for invention and discovery. Among the awards, formally presented on May 15, were the following:

Edward Longstreth medal for the encouragement of invention, to:

James Slayter, vice president in charge of research and development, Owens-Corning Fiberglas Corp., Newark, O., for "his achievement in devising improved methods and apparatus for making spun and blown glass filaments."

Richard L. Templin, chief engineer of tests, Aluminum Co. of America, New Kensington, Pa., for "the ingenious application of mechanisms resulting in the development of the Templin automatic autographic deformation recorder."

Maxwell M. Upson, president, Raymond Concrete Pile Co., New York, for "his contributions to the scientific development of foundation engineering and construction, characterized by genius for invention and technical skill."

John Price Wetherill medal for discovery or invention in the physical sciences, or for new and important combination or methods already known, to:

ready known, to: Edward E. Kleinschmidt, Highland Park, Ill., and Howard L. Krum, Beverly Hills, Calif., for "their part in the development of a successful electrically-operated duplicate typewriting machine now known as the teletypewriter."

Other Awards

George R. Henderson medal for distinguished contributions in the field of railway engineering, to:

William E. Woodward, vice president in charge of design, Lima Locomotive Works Inc., for "his accomplishments in locomotive engineering and his important contributions in the field of steam locomotive design."

Elliott Cresson medal for recognition of distinguished contributions in the realm of physical science, to:

Frederick M. Becket, president, Union Carbide & Carbon Research Laboratories Inc., and consultant, Union Carbide & Carbon Corp., New York, fer "his outstanding achievements in the development of processes for the production of lowcarbon ferroalloys, which have led to the wide use of many of the now well-known alloy steels, particularly low-carbon stainless steels and the higher chromium oxidation-resistant steels; and also for his many inventions and contributions in the field of electrometallurgy."

Franklin medal for workers in physical science or technology, whose efforts.....have done most to advance a knowledge of physical science or its applications, to:

Arthur H. Compton, Ryerson physical laboratory, University of Chicago, Chicago, for "his brilliant experiments on various properties of x-rays, some of which involved new methods of attack, and, in particular, for his discovery and theoretical treatment of the Compton effect."

Leo H. Baekeland, founder and retired president, Bakelite Corp., New York, for "his inventions and his contributions to the improvement of the industrial arts, and, in particular, of his invention and manufacture of the synthetic product, bakelite."

Certificate of Merit, to:

George H. Ernsbarger, Honolulu, and Frank L. McCarty, Ogden, Utah, for "the development of a simple, rugged and ingenious device for loading a jigging conveyor."

Died:

■ CLINTON E. WILDER, president and founder, National Forge & Ordnance Co., Irvine, Pa., May 23 at his home in Warren, Pa. Born in Keene, N. H., 61 years ago, Mr. Wilder learned the machinist's trade in his youth and continued in the steel business all his life. Before organizing his own firm he was superintendent, Driggs Ordnance Co., Sharon, Pa., and of the Erie Forge Co., Erie, Pa. In 1915 he organized National



C. E. Wilder

Forge & Tool Co., Erie, and operated there until 1916 when he acquired the buildings and property of the Irvine Steel & Forge Co., Irvine, Pa. The outgrowth of this was the incorporation in 1927 of the National Forge & Ordnance Co., which is now observing its twenty-fifth anniversary.

John J. Crozier, 64, president, Kennett Foundry & Machine Co., Kennett Square, Pa., and vice president, International Reclaiming Corp., New York, May 29.

John J. Jackson, 71, general counsel for Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., for 29 years before his retirement in 1938, May 27. He also was assistant treasurer, Westinghouse Lamp Co.

Harry G. Marburger, for 21 years superintendent, Northville, Mich., plant of Ford Motor Co., in Detroit, May 29.

Russell M. Scott, 55, for nearly 30 years superintendent of the foundry of Packard Motor Car Co., Detroit, and in later years associated with foundries of Pontiac Motor division, and McKinnon Industries Ltd., St. Catherines, Ont., in Detroit, May 30.

Henry C. Yeiser Sr., 87, who retired as president, Globe-Wernicke Co., Cincinnati, 12 years ago, in Cincinnati, May 27. In 1882 he organized Globe Files Co., and later merged with Wernicke Co. to form the present company which he headed 46 years.

V. D. Moody, 63, president, Moody Engineering Co., New York, May 30 in that city. Before organizing his own firm in 1910, he worked for a time with General Electric Co., Schenectady, N. Y. In recent years he was consulting engineer for many American and foreign firms, including Bethlehem Steel Co. He was a member, American Society of Mechanical Engineers, American Petroleum institute, and Society of Professional Engineers.

John Wesley Collins, 54, manager of Detroit plants, Aluminum Co. of America, in Detroit June 1. A native of Strathroy, Ont., he went to Detroit in 1905 and was employed in gray iron and aluminum jobbing foundries in that territory, joining Aluminum Castings Co. in 1910 as molder on experimental and sample castings. He rose through successive positions until becoming manager. He was a member, American Foundrymen's association and of a number of Detroit social organizations.

Expanding Production Increases Hazards to Health of Workmen

■ IN ADDITION to improving existing programs for safeguarding the health of millions of industrial employes, speakers at the joint meetings of the American Association of Industrial Physicians and Surgeons and American Industrial Hygiene association in New York, June 4-7, urged prompt action to protect workers from dangers of new materials and methods which may develop as industry swings into production for national defense.

Pressure for increased output, congestion and hastily improvised production facilities are included among problems to confront industrial hygienists, according to Dr. Donald H. Cummings, director, division of industrial hygiene, University of Colorado, Denver, who touched on steps to be taken at steel plants. Explosives, being highly toxic, and heavier production of munitions, will greatly increase problems of the industrial hygienists.

Advocates Welding Safeguards

Suitable clothing to be worn by welders to fend off fumes created by the fusing flame was advocated by Dr. C. P. McCord, medical director, Industrial Health Conservancy Laboratories, Detroit, and Drs. G. C. Harrold and S. F. Meek, Industrial Hygiene Laboratories, Chrysler Corp. This should be in addition to protection against injurious rays of light and heat. Greater use of welding in shipbuilding, aircraft assembly and automobile production, the latter often involving 300 or more welding operations per vehicle, was cited as enhancing the growing importance of industrial hygiene in welding plants.

Attended by 1500 medical directors, industrial hygienists, plant chemists, safety engineers, industrial nurses and others concerned with health and safety in industry, the convention exhibits included 65 booths showing new equipment and facilities related to progress in shop hygiene and medicines for the protection and health of workers.

Dr. Leroy U. Gardner, director, Saranac Laboratory for the Study of Tuberculosis, of the Edward L. Trudeau Foundation, was awarded the William S. Knudsen plaque for outstanding achievement in industrial medicine, first awarded in 1939. For 11 years Dr. Gardner has made an intensive study of silicosis, causes, treatment and prevention.

William P. Yant, Mine Safety Appliances Co., Pittsburgh, president

June 10, 1940

of the American Industrial Hygiene Association, reviewing a program for protection against use of new substances or materials, also processes, said the recommendations will be circulated among 50,000 industrial physicians and surgeons, also hygienists and others engaged in allied fields. Key centers of application will be determined by close to 5000 engaged full time in industrial practice.

Smaller plants without industrial medical departments were urged to seek advice from public facilities as provided by numerous states by Dr. Michael Lake, medical director R. H. Macy & Co., New York. Most states are increasingly conscious of the need of such advisory services.

Health and its protection are prime factors in national defense, said Maj. Gen. Amos A. Fries, U. S. army, retired, and, whether the nation be at peace or war, this assures important places for the industrial physician and hygienist in the mobilization of industry for national defense.

Warren A. Cook, division of industrial hygiene and engineering research, Zurich General Accident and Liability Insurance Co., Chicago, is the new president of the American Industrial Hygiene association. Reelected as secretary is Gordon C. Harrold, Industrial Hygiene Laboratories, Chrysler Corp., Detroit. He formerly served as secretary-treasurer. Members resolved to offer cooperation for national defense and authorized the new president of the organization to write letters announcing the action and stand of the association to Dr. Thomas Parran, surgeon general of the United States public health service and head of the war and navy medical services.

Awarded British Medal For Work in Metallurgy

■ Newly elected president of the British Institute of Metals, Lieut. Col. R. M. Preston, director of Rio-Tinto Co. Ltd., London, England, was inducted into office at the organization's general meeting last month by Dr. C. H. Desch, retiring president. During the sessions Dr. Paul D. Merica, International Nickel Co., New York, was announced winner of the Institute's platinum medal for 1940, in recognition of his services to metallurgy.

Papers presented at the meeting included:

"The Influence of Alloying Ele-

ments on the Crystallization of Copper. II—Large Additions and the Part Played by the Constitution," by Dr. L. Northcott, research department, Woolwich.

"The Structural Changes in Copper Effected by Cold Rolling and Annealing," by Dr. Maurice Cook and Dr. T. Le Richards, research physicists, I.C.I. Metals Ltd., Birmingham.

"The Aging of High Purity 4 Per Cent Copper-Aluminum Alloy," by Dr. Marie L. Gayler and R. Parkhouse, metallurgy department, national physical laboratory, Teddington.

Aircraft Industry Enlarges Facilities

■ Air Associates, Garden City, N. Y., last week began construction of a \$300,000 plant at Bendix, N. J., to double present capacity, according to F. Leroy Hill, president. Company expects to move into new quarters containing 70,000 square feet of floor space, by next September.

Aviation Corp. has acquired for its wholly-owned subsidiary, Aviation Mfg. Corp., New York, physical assets and name of Barkley-Grow Aircraft Corp., Detroit, according to Harry Woodhead, president, Aviation Mfg. Corp.

Curtiss-Wright Corp., Buffalo, is considering enlargement of the Caldwell-Wright airport and the construction of a \$2,000,000 warplane plant, to employ 1000 workers, at Newark, N. J.

Massachusetts Institute of Technology, Cambridge, Mass., will enlarge aviation research facilities by a \$100,000 addition to its engine research laboratory, made possible through a gift by Alfred P. Sloan Jr., chairman of the board, General Motors Corp., Detroit.

Adel Precision Products, Los Angeles, is planning to expand facilities by construction of a two-story factory building.

Harvill Aircraft Die Casting Corp., Los Angeles, will buy ten acres of land near municipal airport and erect a plant with 52,000 square feet of floor space, tripling capacity. This will be the second time recently that the company has tripled its capacity.

Long Beach Aircraft Corp., Long Beach, Calif., has been incorporated with a capital of \$100,000 to operate an aircraft school and manufacturing plant.

Manta Aircraft Corp., Los Angeles, has been incorporated with a capital of 100,000 shares of no par stock.

B. Brookins Aircraft Corp., Los Angeles, has been organized, represented by Ellis I. Hirschfeld, Bankers building, Los Angeles.

Windows of WASHINGTON



WASHINGTON

■ THE HOUSE passed the 1940 federal aid highway bill June 4. This authorizes the appropriation of \$178,500,000 for highway construction for each of the fiscal years 1942 and 1943. Allocations to the various highway programs, as itemized in the bill, are as follows:

Regular federal aid	\$93,750,000
Secondary federal aid	18,750,000
Grade crossings	37,500,000
Forest roads	10,500,000
Public land roads	1,875,000
National park roads	5,625,000
Parkways	7,500,000
Indian roads	3,000,000

The amounts originally recommended by the May 1 report of the house roads committee totaled \$238,-000,000. These are reduced 25 per cent in the bill as approved. The reduction amounts to \$59,500,000 and was agreed to by a special meeting of the roads committee, May 29. The pared amounts now carried in the bill provide \$357,000,000 for highway construction for the two fiscal years. Regardless of the 25 per cent reduction, the total shows an increase of \$7,500,000 over the amount authorized by the federal aid highway act of 1938.

"Aid in Defense"

Charles M. Upham, engineer-director, American Road Builders' association, stated: "The legislation is invaluable to the national defense plans now being put into effect by our government. Modern highways throughout the nation will insure swift and efficient transportation of mechanized units, motorized troops and mobile supplies. They are physical assets that play a major role in modern warfare."

Rep. Wilburn Cartwright, Oklahoma, chairman of the roads committee told house members it is generally agreed that roads are as necessary a part of national defense as guns and ammunition and that their importance justifies much larger federal authorization and appropriations than have ever been proposed.

APRIL DOMESTIC MANGANESE ORE PRODUCTION DOWN 18%

Domestic production in April of manganese ore containing 35 per cent or more of manganese was 4100 gross tons, compared to 5200 tons in March, according to the bureau of mines. April shipments were 3500 gross tons, compared with 5400 tons in March.

Domestic producers' stocks April 30 totaled 1800 tons, against 1300 tons on March 31.

April imports, for consumption, of metallurgical manganese ore containing 35 per cent or more manganese totaled 71,670 gross tons and contained 33,401 tons of manganese. Russia supplied 32 per cent; Union of South Africa, 23 per cent; Brazil, 18 per cent; Gold Coast, 11 per cent; Cuba, 6 per cent.

BUREAU REPORTS ON STRATEGIC MINERALS

With the national defense program swinging into action, the bureau of mines last week reported on results of the first nine months of the strategic minerals survey conducted jointly with the geological survey.

Although the United States is far from self-sufficient in strategic minerals, the general outlook for locating important domestic deposits is definitely more encouraging than anticipated at the start of the search. Dr. R. R. Sayers, acting director, bureau of mines, said the situation with regard to five minerals, essential in peace and critical in war, is somewhat promising. These minerals are manganese, chromite, tungsten, mercury and antimony. The nickel situation, he said, is less encouraging and results in tin are classed as rather negative.

The following, according to the

By L. M. LAMM Washington Editor, STEEL

> bureau, are percentages of the nation's peacetime requirements produced from domestic mines during a recent five-year period: Manganese, 5 to 6; chromium, 1; mercury, 40; tungsten, 50; nickel, 0.5; tin, 0.2; antimony, 10.

NAMES SEVEN CONCILIATORS FOR INDUSTRIAL PEACE

Secretary of Labor Frances Perkins last week assigned seven conciliators to help avert labor troubles in key industries.

She acted as a CIO-AFL race for supremacy in the aircraft industry began. With organizers of the AFL International Association of Machinists already active in the field, the CIO board directed its leaders and the United Automobile Workers' Union to formulate an immediate program for national organization of the industry, which is expanding rapidly.

The seven conciliators are:

Aviation manufacturing: Thomas M. Finn.

Steel: James F. Dewey.

Shipbuilding: Philip W. Shappell. Machine tools: J. E. Addicks. Building trades: Howard Colvin. Rubber, chemicals: W. C. Liller.

CONGRESS TO CONSIDER WAGNER ACT AMENDMENTS

Critics of the national labor relations act and the labor board last week won a point in congress when the house overrode administration objections and voted 292 to 106 to consider proposed amendments to the act.

The representatives adopted a procedural rule whereby two bills one sponsored by the regular house labor committee and the other by the special Smith committee which has been investigating the board's administration of the act—will be voted upon.

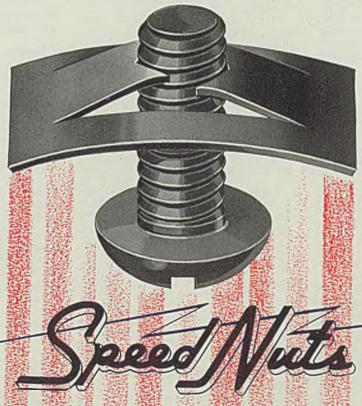
The Smith committee's bill, comprising 17 drastic amendments,



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TINNERMAN PRODUCTS INC. 2039 FULTON ROAD IN CANADA: Wallace Barnes Co., Ltd., Hamilton, Ontario IN ENGLAND: Simmonds Acrocessories, Ltd., London

OVER SOU MILLION ALREADY USED-OVER SOU SHAPES AND SIZES

would abolish the present board and establish a new one divested of administrative powers, and would make other important changes in board procedure.

The house labor committee's proposal would enlarge the board to five members, provide for continued recognition of craft unions as bargaining agencies, grant employers caught in interunion disputes the right to petition the board for representation elections and guarantee labor contracts be effective for at least one year.

SUPREME COURT TO RULE ON WAGE-HOUR, LABOR ACT CASES

United States Supreme Court has adjourned until October. Before recess, the tribunal agreed to pass on litigation involving constitutionality of the wage-hour law. Justice department sought a review of a decision holding the act could not be applied to the production of goods not directly connected with interstate commerce. The law was challenged by a Georgia lumber company.

The court also agreed to review litigation which applies specifically to the H. J. Heintz Co., Pittsburgh, in which a circuit court held the national labor relations board has authority if agreement is reached, to require an employer to enter into a written collective bargaining contract with a labor organization.

Supreme Court declined to reconsider a decision holding the Sherman antitrust act bars any combination which tampers with the price structures. The opinion ruled that a group of oil companies had violated the legislation by conspiring to raise the price of gasoline in several midwestern states.

RFC AID FOR MINERAL DEVELOPMENT FAVORED

Senate committee on banking and currency has favorably reported a bill to authorize the reconstruction finance corporation to make loans for the development of deposits of strategic and critical minerals and other metallic and nonmetallic minerals and to authorize the RFC to make loans for mineral development purposes.

Under existing law, the RFC is authorized to make loans for mineral development purposes to corporations, individuals and partnerships engaged in the development of deposits of tin, etc. The bill would authorize the corporation to make such loans to those who are engaged in the development of deposits of strategic and critical minerals which in the opinion of the corporation would be of value to the United States in time of war.

Maximum loan which the RFC is permitted to make by existing law to anyone for mineral development purposes is \$20,000. The bill as reported would enable the corporation to make additional loans, not in excess of \$20,000, to anyone who has previously obtained a loan for such purposes from the corporation and who has spent the funds previously obtained as to justify the corporation's making an additional loan for such purposes.

PRESIDENT ASKS AUTHORITY FOR DOLLAR-A-YEAR MEN

President Roosevelt last week proposed to congress that authority be granted government officials to employ "persons of outstanding experience" at \$1 a year to aid in the national defense program. The President's message:

"Provided, That until such time as the President shall declare the present emergency at an end the head of any department or independent establishment of the government may, notwithstanding the provisions of existing law, employ any person of outstanding experience and ability at a compensation of \$1 per annum."

URGES STANDARDIZATION IN STEEL ANALYSES

Lack of standardization "seriously hampers" the mass production of steel, essential in speeding up the nation's defense program, Dr. Lyman J. Briggs, director, bureau of standards, told the thirtieth national conference on weights and measures last week.

Dr. Briggs said he attended a technical discussion on airplane developments recently in which it was disclosed that the multiplicity of types and kinds of steel demanded by the various industries was a "bottleneck" in the production of motors and planes.

Declaring the production of these special steels slows up production and increases overhead, the speaker said he believed the number of steels could be reduced and that steps are already being taken to this end.

RECORD RAILWAY EQUIPMENT EXPORTS ARE IN PROSPECT

United States exports of railway equipment in April, valued at \$2,-792,213, were the highest for any month since January, 1938. Indicating prospects for a record export year, the value of the total shipments of equipment in the first four months this year, amounting to \$6,-930,286, equals approximately the value of shipments in the first ten months of 1939. April exports almost equaled the combined totals of March, at \$1,594,678, and February, at \$1,429,220.

More than 75 per cent of the April exports were to Brazil, including 14 steam locomotives, valued at \$1,500,607, and 243 freight cars, valued at \$589,742. Shipments to noncontiguous territories during April were valued at \$13,380.

AWARD CONTRACT FOR 12,500 TONS OF CHROMIUM ORE

Award of a contract for 12,500 long tons of chromium ore at \$24.50 per ton to E. J. Lavino & Co., Philadelphia, agent for the Rhodesia Chrome Mines Ltd., was announced by the procurement division. The contract was for \$306,250.

Award was made on the bids opened May 24. The ore will be delivered f.o.b. cars, Philadelphia harbor, Philadelphia.

GOVERNMENT IRON, STEEL AWARDS TOTAL \$2,176,893

During the week ended May 25, the government purchased \$2,176, 892.57 worth of iron and steel products under the Walsh-Healey act as follows: Pennsylvania Forge Corp., Philadelphia, \$44,269.38; Florence Pipe Foundry & Machine Co., Philadelphia, \$18,381.96; Joseph T. Ryerson & Son Inc., Jersey City, N. J., \$22,449.44; Lynchburg Foundry Co., Lynchburg, Va., \$10,780; General Railway Signal Co., Rochester, N. Y., \$11,550.28; United States Steel Export Co., Washington, \$19,697.61.

New York Air Brake Co., New York, \$79,552.31; The J. B. Beard Corp., Shreveport, La., \$108,919.59; Continental Roll & Steel Foundry Co., East Chicago, Ind., \$19,972.30; Henry Disston & Sons Inc., Philadelphia, \$12,447.00; Pennsylvania Forge Corp., Philadelphia, \$44,767.50; Standard Steel Works, North Kansas City, Mo., \$19,468.20; Taylor-Wharton Iron & Steel Co., Easton, Pa., \$129,770.25; Builders Iron Foundry, Providence, R. I., \$105,509.94; Wilson - Weesner - Wilkinson Co., Knoxville, Tenn., \$13,225.00.

Tennessee Coal, Iron & Railroad Co., Birmingham, Ala., \$13,264.98; Budd Wheel Co., Detroit, \$259,466.80; United States Steel Export Co., Washington, \$14,427.38; Jones & Laughlin Steel Corp., Pittsburgh, \$21,242.45; Continental Gin Co., Birmingham, Ala., \$72,521.40; Harrington & Richardson Arms Co., Worcester, Mass., \$192,497.50; Remington Rand Inc., Buffalo, \$171,-569.58; Wm. R. Bootz, successor to Crescent Stove Works, Evansville, Ind., \$92,749.44; Wm. Scrimgeour, Washington, \$11,424.84; The Singer Mfg. Co., Elizabeth, N. J., \$278,-875.67; Russell, Burdsall & Ward Bolt & Nut Co., Port Chester, N. Y., \$20,078.77; Alan Wood Steel Co., Conshohocken, Pa., \$194,370 (estimated); and Westinghouse Electric & Mfg. Co., Washington, \$72,183.

April Steel Exports Decline, But Four-Month Volume Rises

■ United States exports of steel and iron, excluding scrap, totaled 391,754 gross tons, valued at \$29,223,257, compared with March shipments of 457,052 tons, valued at \$34,220,853, a decline of 14 per cent in volume, according to the metals and minerals division, department of commerce. Corresponding figures for April, 1939, were 153,884 tons, valued at \$12,245,537.

Despite the April decrease, total exports for four months were 1,-681,455 tons, valued at \$127,958,676, nearly three times the figures for the corresponding months of 1939, which were 585,547 tons, valued at \$44,802,484.

Shipments to every continental

U. S. FOREIGN TRADE IN IRON AND STEEL, INCLUDING SCRAP

	1	Gross T			
		Imports	Exports Imports		
Jan.	583,521	8,274	362.672	27.664	
Feb.	671,301	6,740	359,690	19,149	
Mar,	663,980	5,096	474,360	25,369	
April	612,906	6,674	394.008	44,083	
May			532.641	28,142	
June	******		588,856	32,587	
July			513.664	30.851	
Aug,			477.078	28,328	
Sept.			575,613	29,874	
Oct.			591.856	19,189	
Nov.			605,555	15,216	
Dec.			600,437	14,709	
Total			6,076,429	315,161	

area except Africa were lower in April than in March. Trade with Europe totaled 137,583 tons in April, 153,326 tons in March. North and Central America and the West Indies took only 65,935 tons, compared with 73,870 tons in March. South American countries bought 77,552 tons against 125,874 tons the preceding month. Shipments to Africa, largely because of trade with the Union of South Africa, increased from 14,645 tons in March to 25,182 tons in April.

Nonalloy ingots and other semifinished steel were exported in largest volume, 79,551 tons, including 48,717 tons to the United Kingdom, 10,996 tons to Japan and 9620 tons to Switzerland. Nonalloy "other" plates were second in volume with 40,430 tons, 10,073 tons to Canada, 5863 tons to the Union of South Africa and 5272 tons to the United Kingdom.

Scrap exports in April totaled 221,152 gross tons, valued at \$3,-575,940, showing an increase over 206,928 tons, valued at \$3,387,037, in March. In April, 1939, scrap exports were 240,124 tons, valued at \$3,595,271. For four months this year scrap exports totaled 850,253 tons, valued at \$14,667,833, while in the corresponding months last year the total was 1,005,183 tons, valued at \$14,932,564. In April the United Kingdom received 77,160 tons, Italy 74,459 tons, Japan 38,421 tons and Canada 20,710 tons.

UNITED STATES EXI STEEL P			N AND
Gross	Tons		Jan.
			thru
Articles	Apr. 1940	Mar. 1940	Apr. 1940
Dig iron	16,285	26,146	76.415
Ferromanganese and spiegeleisen Other ferroalloys Ingots, blooms, etc.: Not containing alloy	111		E 000
Other ferroalloys	312	301 479	5,889 2,011
Ingots, blooms, etc.:	70 == 1	00.074	
	79,551 553	89,874	284,413
steel bars, cold fin,	4,050	$285 \\ 3,794$	15,542
Bars, concrete	251 9,090	$ \begin{array}{r} 3,794 \\ 2,651 \\ 13,880 \end{array} $	$\begin{array}{r} 4.723 \\ 15.542 \\ 6.527 \\ 61.224 \end{array}$
Surs, from Juner steel bars: Not containing alloy Svainless steel Alloy not stainless. Vire rods Juner plate Soller plates, not fab.; Not containing alloy Svainless steel	00.004		
Stainless steel	29,364 137	38,852 65	115.086 340
Alloy not stainless.	$137 \\ 3,176 \\ 15,516$		340 8,294 58,352
Boller plate	15,516	19,124 1,463	58,352
ther plates, not fab.:	10 100		
Stainless steel	40,430	32,641 51	129,388 104
Alloy, not stainless	219	148	923
heets, galv, iron	989 412	2,420 610	$15.332 \\ 2.895$
heets, galv, steel	13,600	14,780	59,667
Alloy, not stainless skelp iron or steel heets, galv, iron heets, "black" steel heets, "black" steel: Not containing alloy	32,573	44,372	145,656
Stainless steel	1.00	176	766
Alloy, not stainless heets, black iron	$1,098 \\ 1,624$	636 5,679	2,751 12,774
Alloy, not stainless heets, black iron irlp steel, cold-rolled: Not containing alloy Stainless steel	2,906	4,299	
Stainless steel	2,500	4,2369	$16,612 \\ 228$
Alloy, not stainless	56	31	139
Alloy, not stainless trip steel, hot-rolled: Not containing alloy	9,816	12,869	44,880
Stainless steel	20	18	41
in plate, taggers' 'in	32.306	103 44,376	$19\overline{4}$ 201,626
erneplate (including			
Not containing alloy S'ainless steel Alloy, not stainless in plate, targers' 'in orneolate (including long ternes) anks, except lined hapes, not fabricated bapes, not fabricated bapes, fabricated lates, fabricated lates, fabricated lates, and sashes heet piling alls, 60 lbs, alls, under 60 lbs, alls, relaying all fastenings witches, frogs, crsgs, altroad spikes	4,299	528 2,380 16,751 5,479 572	$1,713 \\ 10,171 \\ 64,152 \\ 22,948 \\ 6,239 \\ 6,239 \\ 100 \\ 1$
hapes, not fabricated	19,864	16.751	64,152
lates, fabricated	692	5,479	6.239
letal lath	84	182	4902
heet piling	.106 534	128 238	2 756
alls, 60 lbs.	1.828	10,548	2,756 26,432
ails, relaying	$\frac{2.160}{1.708}$	858 1.510	5,191
ail fastenings	400	1,025	4.716 3.090
ailroad spikes	189 273	606 491	1.671
ailroad splices .R. bolts, nuts. etc. oller tubes, seamless oller tubes, welded ine	71	119 1,953	$1,801 \\ 771$
oiler tubes, welded	$1.658 \\ 248$	1,953	7,507 716
	- 10	201	
Seamless casing and oil-line	11.313	8.355	46,076
oil-line Do., welded Seamless black	$11.313 \\ 5.153$	3,845	17,191
	1,011	4,633	10,469
Mail, fron screwed	436	392	1,842
Cast-fron sprewed	198	272	912
Cast-iron pressure	1.746	1,443	11.737
	1.020	864	4.101
Black steel	2,347	3,542	12,486
Galvanized steel	663	3.549	1,991
Galv. wrought-iron.	4,171	3.549 848	17,861 2,656 5,703
ll other pipe, ftgs	672	1,542	5,703
Plain iron or steel.	6.470	9,238	30.021
Gaivanized	$5.304 \\ 2.145$	4,564 2,060	15,868
Barbed oven-wire fencing oven-wire sc'n cloth: Insect	339	389	1,505
Insect	43	85	200
Other	182	191	$200 \\ 779 \\ 3,279$
life rope and cable	754 77	1,011	3,279 487
lectric welding rods.	273	303	1,136
Insect Other The rope and cable. The strand lectric welding rods ard clothing ther wire Wre mult	2,061	1	5
Vire nails	4,414	$1.343 \\ 4.254$	$6.611 \\ 18.301$
orseshoe nails	102	85	372 279
acks	373	65 419	1,360

Articles	Apr. 1940		thru Apr. 1940
	1010	12210	13240
Ordinary bolts, ma- chlne screws Castings: Gray-Iron (incl.	1,280	1,199	4,745
Malleable-iron Steel. not alloy Alloy, incl. stainless Car wheels, tires, and	299 130 104 50	174	$1,496 \\ 586 \\ 750 \\ 641$
axles:			
Axles, no wheels Axles, no wheels Axles with wheels Horseshoes and calks Forgings, n.e.s.:	873 137 694 38	$1,724 \\ 240 \\ 11 \\ 100$	4,175 715 779 148
Not containing alloy Alloy, incl. stainless	$\substack{2,008\\412}$	1,709 318	7,045 1,197
Total 39	1.754 4	57,052 1	681,455
Scrap, iron and steel. 2 Scrap, tin plate Tin plate circles,	218,778 798	$205,041 \\ 702$	842,272 2,368
strips, cobbles, etc Waste-waste tin plate	530 748	533 466	$1.843 \\ 2.738$
*Terne plate clippings and scrap	298	186	1,032
Total scrap 2	21.152	206,928	850,253
GRAND TOTAL 61	2.906 6	63,980 2,	531,708
Iron ore	369	1,830	3,673
*New class.			

Ian

Increasing Stainless Steel Wire Plant's Capacity

■ Allegheny Ludlum Steel Corp., Pittsburgh, will double production capacity at its Dunkirk, N. Y., stainless steel wire plant by completion soon cf a new building now under construction and addition of new highspeed drawing equipment, according to W. F. Detwiler, chairman of the board.

The Dunkirk plant, it is said, will be the only one of its kind in the country devoted exclusively to production of stainless steel wire from hot rod down to 0.003-inch gage. The expansion will make this fourth time stainless steel wire capacity has been doubled.

California Chapter of Scrap Institute Organized

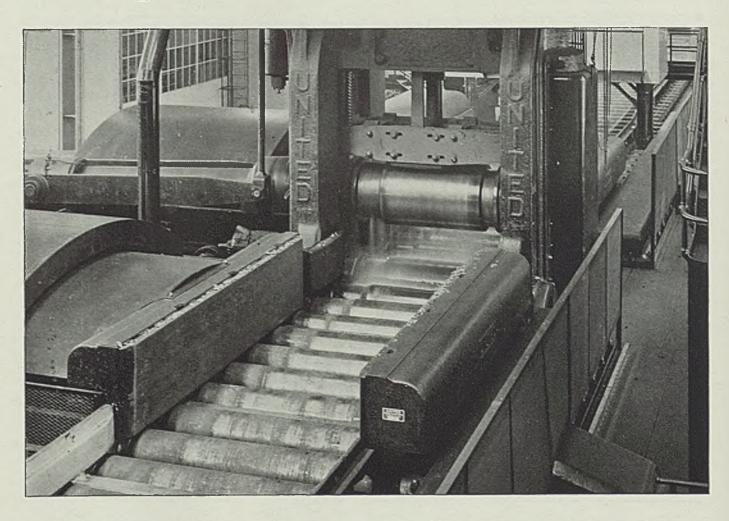
■ Iron and steel scrap dealers between Fresno and San Diego, Calif., have organized a California chapter of the Institute of Scrap Iron and Steel Inc., New York. At a recent initial organization

At a recent initial organization meeting, M. F. Berg, California Mill Supply Corp., Los Angeles, was elected president; David Rosenthal, Eastern Iron & Metal Co., Los Angeles, was elected vice president; Lester Finkelstein, Foundry Supply Co., Los Angeles, was elected treasurer; and P. W. Keen, Biddle Trade bureau, Los Angeles, secretary.

Bar Mill Wage Steady

■ Monthly settlement of bar mill wage base by Amalgamated Association of Iron, Steel and Tin Workers and the Western Bar Iron association last week developed a card rate for June on boiling, bar and 12-inch mills at 2.15c; on guide and 10-inch mills, 2.25c, rates that have been unchanged since June, 1939.

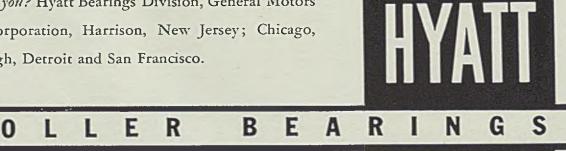
ONE Good turn AFTER ANOTHER



ON HYATT ROLLER BEARINGS tables, cranes,

motors, and cars are increasing steel mill production, and profits. Everywhere it's just one good turn after another when shafts, gears, and wheels run on these dependable bearings. Specify Hyatts for your new equipment ... use Hyatts for your changeovers. Where can we help *you?* Hyatt Bearings Division, General Motors Sales Corporation, Harrison, New Jersey; Chicago, Pittsburgh, Detroit and San Francisco.

This UNITED 44" BLOOMING MILL, with its Hyatt-equipped table, at Indiana Harbor, Youngstown Sheet & Tube, is typical of the many blooming and slabbing mills throughout the country, built by United, with Hyatt Roller Bearings.



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Mirrors of MOTORDOM

DETROIT

By A. H. ALLEN Detroit Editor, STEEL

IN HIS new office in the Federal Reserve building on Connecticut avenue in Washington William S. Knudsen, former head of the largest automobile company in the world and now in charge of emergency defense preparations for the mightiest nation of the world, must be pushing back his felt hat to ruffle his iron-gray locks at the enormity and complexity of the job he faces. Coordinating the national production plant to meet demands for a vast complement of defense equipment is something no American has been called on to do for a long time; it is a job which must be basically distasteful when the ultimate goal and the ultimate cost are considered.

Yet there could have been no more happy choice for the post, no person who combines the attributes of efficiency and a scintillating personality to a greater degree than this 6 foot 2-inch great Dane who came to America 40 years ago and rose to national fame in the intervening years. Of one thing you can be sure—Knudsen will be the boss; he reports only to the President and assumed his new role only with the understanding he would be free of political interference and official red tape.

He is a man who has a keen faculty for organization, who knows how to delegate responsibility to the right assistants so that he can free himself for the task of overall supervision. His interoffice communications, with their familiar bluepenciled "K" at the end, will be missed throughout the General Motors executive organization, but so thorough and well-knit is this family that the boss' leave of absence will cause scarcely a ripple in the routine. C. E. Wilson, executive vice president, who normally functions in Knudsen's absence, will continue as active overseer of GM operations.

One of Mr. Knudsen's first tasks will be the stimulation of aircraft engine manufacture and it seems a foregone conclusion Detroit plants will be called into this picture. In the high-power engine field, there are four main types of engines which observers consider likely for immediate attention.

These engines are the Allison liquid cooled 1000-horsepower plant, used in three types of pursuit planes and ordered in large numbers by the Allies; the Rolls-Royce Merlin 1200horsepower engine, described in these columns some months ago and now signed over to American plants to manufacture; the Wright and Pratt & Whitney radial air cooled engines which likely will be licensed to other manufacturers.

Auto Plants Ready

The Allison plant in Indianapolis has undergone several expansions in recent months but production of the engine is still under 100 per week. Details of this plant, design of the engine and production rates are being kept very quiet under the eagle eye of the war department, but a trip to Indianapolis is all that is needed to indicate the immense speeding up and expansion of facilities which has been accomplished.

The Cadillac plant here supplies numerous steel parts for the Allison engine and, in view of the space available, probably could be set up easily and quickly to turn out complete engines.

Packard will figure prominently in engine production, already having license to produce a sleeve valve engine and being in production on high-power marine engines for torpedo boats, both projects having been mentioned in this department.

Ford has stated he can equip his plant to turn out 1000 planes a day. which is no idle boast either. Given a standardized design and the order to proceed, Ford could in a few months be in quantity production. Some are wondering whether such a move may not already have started, in view of the pressure which suddenly has been applied to Ford tool and die programs. It is understood that some die work has even been let out to the Graham plant here on a "time and material" basis by Ford. Certain equipment orders have been given "rush" instructions, with no explanation offered.

The Ford plant would seem to be a logical source for mass output of the smaller types of training ships and light combat and reconnaissance plants and engines, leaving the larger types to plants already established in this field. The Rouge plant could absorb the manufacture of 1000 airplanes daily without seriously disturbing output of passenger cars and trucks, in the opinion of Mr. Ford.

Briggs Mfg. Co. is another possible source of large aircraft engines, in view of its extensive experimental work with the British Aspen engine.

All in all, with the intensive cooperation of Detroit builders, the supply of aircraft engines may be a good deal simpler than many have been led to imagine.

No. 2 problem on Mr. Knudsen's agenda probably will be the determination of how to fill needs for machine tools. Last week, dispatches from Washington told of an embargo being placed on foreign shipments of machine tools, not as a punitive measure but simply for the protection of domestic buyers.

Suspension of foreign shipments

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MIRRORS OF MOTORDOM-Continued

might work a serious hardship on the Allies who have bought heavily, chiefly boring mills and milling machines. Many machine tool companies have refused to load up on foreign business, and currently are making every effort to give quick attention to hard-pressed customers busy on government work.

The case is cited here of a company producing aircraft parts for a large engine builder. Doubling of production demands necessitated new equipment urgently. Getting in touch with a machine tool builder in Ohio, the situation was explained and within two days a necessary machine had been shipped, installed and was in operation. There are hundreds of cases like this one.

A few machine tool companies have grabbed off all the foreign business they could manage and in one case this policy resulted in a definite loss of prestige among domestic customers. Other companies have large numbers of foreign inquiries on hand, but do not even bother to enter them on books, reserving them in the event of a breathing spell in domestic demand, which is not likely now.

Magnesium Bottleneck Seen

Machine tool company executives were considerably upset in recent conferences with army and navy officials in Washington when only the most haphazard procurement plan was disclosed by the military experts, and considerable intramural bickering was evident.

Already the ghosts of large, idle plants, eating their heads off in years to come when armament manufacture may have tapered, are invading the dreams of parts manufacturers in this area. One plant here, which has gone along for years with a force of about 30 men and has made a nice profit in the gage business is faced with the problem of meeting immediate demand for its product from aircraft engine builders which would necessitate expanding its facilities and working force to the point where 300 men would be required.

Emphasis on aircraft production spotlights another bottleneck which is going to require some reaming. That is the supply of aluminum and magnesium, the latter particularly, now used extensively in aircraft, both in engines and fuselages. Dow Chemical Co. is virtually the only source of magnesium metal and despite steady expansion is reported booked solid until the first of next year.

Used in cast, rolled and extruded forms, these light metals have assumed new vital importance. Plans are under way to open a new magnesium casting plant in Buffalo by July 1, to be operated by American Magnesium Corp., Cleveland, Aluminum Co. of America subsidiary. Both Curtiss-Wright and Pratt & Whitney are buying large quantities of magnesium castings, and the new Buffalo plant is calculated to relieve some of the pressure on the Cleveland division. About \$400,000 is being spent on equipment, the plant being an old one, idle since 1932. Employment will approximate 300.

Other nonferrous foundries are being urged to embark on production of magnesium castings, but

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	432,433
May	210,174	313,248	
June	189,402	324,253	
July	150,450	218,494	
Aug	96,946	103,343	
Sept	89,623	192,678	
Oct	215,286	324,688	
Nov	390,405	368,541	
Dec	406,960	469,120	
Year	2,655,171	3,732,608	
Tatim	anted har	Woudle Don	anta

Estimated by Ward's Reports

Week ended:	1940	1939†
May 11 May 18 May 25 June 1 June 8 tComparable week.	98.480 99,030 96,810 61,255 95,560	72,375 80,145 67,740 32,445 62,395

eyeing the deficiency in supplies of the raw material they are cautious about such ventures.

From his vantage point as director of materials, supplies in the present defense preparations, Edward L. Stettinius likely is already concentrating on constrictions of this type. Another appears to be developing in heat treated alloy steels of the type used extensively in aircraft manufacture. Deliveries of 14 or 16 weeks on this type of material are common. A number of warehouses have expanded stock3 to include these high-grade alloy steels. Lack of sufficient heat treating equipment is one explanation offered for the inability to get prompt shipments.

■ DEFENSE preparations and the war in Europe have stolen the show from topics of discussions usually heard at this time. Business men watch the headlines and then stop at brokers' offices to notice the effect

on the tape. Sentiment naturally is strong in favor of the Allied cause and keen students of current events will tell you that business in this country for the next few months hinges entirely on the ability of France and England to stave off the German onslaught. They reason that if Germany subdues Paris and has any success with an attack on England, popular feeling here will undergo a profound sinking spell which will offset any business gains which may result from the billions to be spent on armament. On the other hand, if the Allies make a successful stand, the country is in for a mild business boom this summer and fall.

■ MEMORIAL DAY race at Indianapolis this year was actually only three-fourths of a race because of the rain which brought out the yellow flag, keeping all cars in position for the last 125 miles. Only three cars made the full 500-mile jaunt, with Wilbur Shaw in an 8cylinder supercharged Maserati, one of seven Italian-built cars, the winner. Shaw's second consecutive win seemed to establish the fact that foreign engines finally have been brought to the point where they will hold together for the long race.

The Maserati engine, used in Shaw's car, typifies recent European racing practice in structural design, according to Automotive Industries, with split-type crankcase of magnesium alloy, with bronze-backed shell bearings babbitt lined. Fuel was an alcohol blend. Engineers paid tribute to the superior design of the Maserati chassis.

New contract between Briggs Mfg. Co. and UAW-CIO has been signed and became effective June 7. Announcement was made by union officials who also made public a letter from W. P. Brown, president, in which he stated, "employes who have been members of the UAW-CIO at any time since Jan. 1, 1937, have accepted a contractual obligation to be members in good standing during the life of the agreement we have just completed. Therefore they should pay their dues promptly and take an active part in the affairs of the union so that proper and responsible representation may be assured."

Rejection of a proposed new contract with General Motors Corp. by the UAW-CIO led to the arrival of federal conciliators from Washington to attempt to iron out differences. The corporation offered a 2½ per cent wage increase in the form of vacation pay, insisted on the right to discharge aliens and employes guilty of sabotage. The union seeks a 10 per cent wage increase and "streamlined" grievance procedure.

"No one of us is as smart as all of us!"

IN the factory and in the field, New Departure designers and engineers work with their customers to develop better bearings and better machines. Indeed . . . Cooperation and an Open Mind is one reason for the success of . . .

NEW DEPARTURE THE FORGED STEEL BEARING

NEW DEPARTURE - DIVISION OF GENERAL MOTORS - BRISTOL, CONNECTICUT - DETROIT - CHICAGO

Simplification Is Needed

■ EMPLOYERS generally have made considerable progress during the past couple of years in stabilizing their employment. The primary aim is toward greater security of income for the employe, improved industrial relations and more efficient operation under the social security system. Some employers have reached the point where they are able to guarantee their employes a definite number of work-weeks per year. They include mainly manufacturers of such products as soap and ham which the public consumes at a fairly uniform rate.

The steel industry has not been regarded up to recently as one in which stabilization of employment can be provided on a pronounced scale. Steel traditionally has been known as a "prince or a pauper," enjoying a feast or enduring a famine. When the orders came the steel production rate moved up rapidly. Men were added to payrolls in large numbers and prosperity reigned. When the peak was over men were laid off and times were lean.

Too Many Variables in Composition Prevent Employment Stabilization

Under the customs now prevailing in the steel industry there seems little hope for employment stabilization. The steel industry currently accepts orders involving in the neighborhood of 1000 to 1200 chemical combinations—with an average of some four variations of physical properties for each chemical combination. Under such a condition the industry is unable to do much in the way of utilizing slack periods to produce steel for use in subsequent bursts of activity.

Many thoughtful men in the steel industry recently have come to the belief that this perplexing and important problem can be solved—provided there is sufficient understanding and co-operation to undertake the required procedure. The approach would be along lines suggested by Earle C. Smith (STEEL of June 3, p. 44), chief metallurgist, Republic Steel Corp., Cleveland, before the recent meeting of the American Iron and Steel institute.

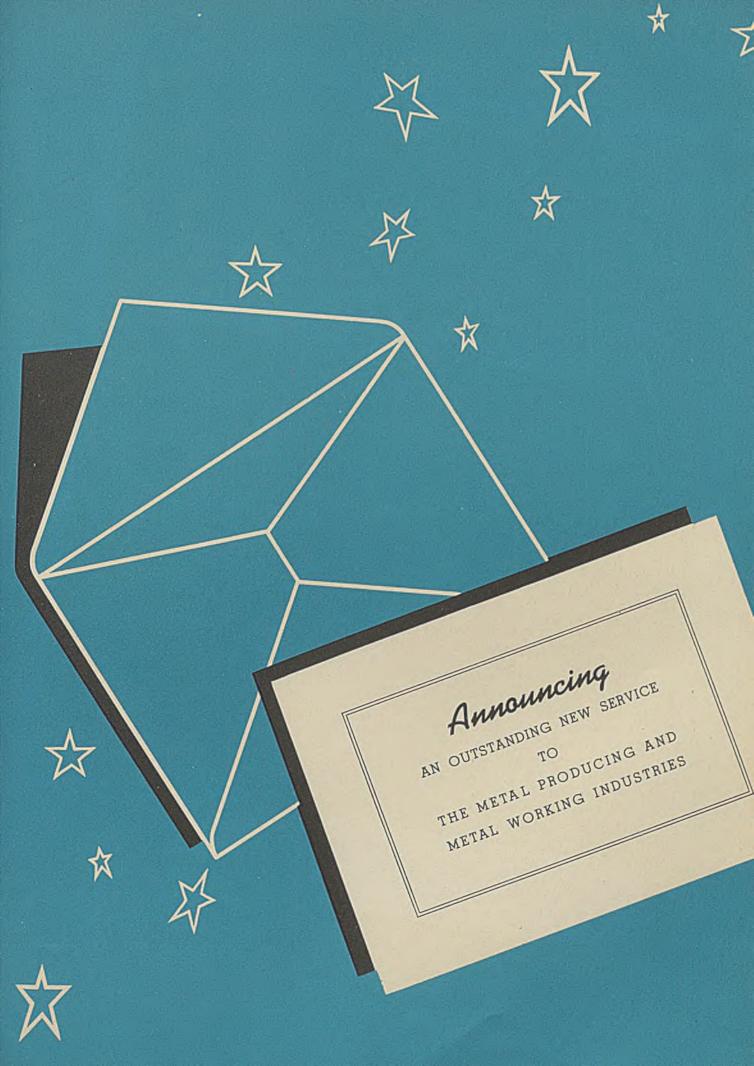
Mr. Smith finds that not more than 20 steels represent more than 1 per cent of the total output each. It is feasible, he held. to set up a list of "significant" steels from which to select a steel that will meet practically any requirement. On the basis of one-quarter of 1 per cent of the total tonnage, he believed that such a list should not include more than 200 significant steels. The proposal need not prevent any consumer from ordering, nor any mill from making, other steels—but it would be understood that costs mount when special steels are made in small quantities.

The proposal is interesting from another point of view—that of profits earned by the steel industry. It is a matter of common knowledge that one of the reasons why the steel industry fails to show a reasonable profit over the long pull is its custom of ignoring costs which in many cases ought to be charged as extras. Agreement on a list of significant steels would bring this matter of extra costs more glaringly into the limelight.

A List of "Significant" Steels

Can Be Set up, If-

The present system in selling and making steel is grossly inefficient—and inefficiency such as this invites terrible penalties in the world of today. With the country alarmed over its future security, in the light of developments in the European war, inefficiency must be eliminated wherever it is found in our production system. In line with this a list of significant steels should be set up immediately. It can be done if steelmakers, with the full co-operation of consumers and specification-making bodies, determine to do it and to accept it. It is to be hoped they will not wait until an emergency forces the issue.



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Denton's Almanac 1940-1941

OR some time STEEL has recognized a growing need for a convenient and authoritative source of statistical information on the metalproducing and metalworking industries. This has been evident from the increasing flow of inquiries to STEEL's Readers Service Department for a wide range of data, particularly for a time-saving reference book designed for the metal industries. To meet that need, and as an additional service to regular readers, the editors of STEEL have compiled and prepared for publication the first annual edition of Penton's Almanac, 1940-1941. » » Penton's Almanac represents months of planning and research and in its final form is a complete book of facts and figures covering every phase of the ferrous and non-ferrous metal industries. Vital statistics are fully tabulated and important developments digested, with the entire contents completely indexed for easy reference. » » As an addition to STEEL's regular weekly service, Penton's Almanac will give thousands of executives and operating officials an invaluable source of information heretofore difficult, if not impossible, to obtain.

> SEE NEXT PAGE FOR DETAILED CONTENTS

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1940-1941

A complete reference book of facts and figures for the metalproducing and metalworking industries. 148 pages, 85/8" x 115/8", printed on coated paper stock and bound with durable cover. Cross-indexed for easy reference.

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FINANCIAL-Net earnings of steel industry by years ... Net earnings 2400 corporations ... Analysis by industries ... Nonferrous producers and labricators... Machine tool builders... Automobile companies

LABOR-Employment and unemployment, 1900-1939 ...Immigration statistics...Industrial dis-putes...U. S. Steel Corporation pension plan ...Review of events, CIO, AFL...Walsh-Healey wage case ... Automotive labor developments ... States' action on organized labor

DISTRIBUTION-Steel distribution by products ... Breakdown of consumers... Use of alloy steels... Warehouse steel sales

AUTOMOTIVE-Production by years ... Factory sales...Earnings and purchasing power for workers ... Chronology ... Registrations

RAILROADS—Freight car loadings...Revenues and expenses... Capital expenditures... Material and supply purchases ... Taxes paid ... New equipment installed ... Rails laid

SHIPBUILDING—Merchant fleets of world... Tonnages launched by years ... Naval strength of leading powers ... U. S. Maritime commission vessels under construction April 1, 1940

CONSTRUCTION - Dodge reports ... Notable buildings... World's largest bridges...Distribution of fabricated structural steel ... Housing ... Roads and grade eliminations ... Disbursements for state highways

AGRICULTURE-Farmers' cash income ... Farm bankruptcies... Tractors on farms by states... Manufacture and sale of farm implements

CONTAINERS-World tin plate production ... Tin plate capacity ... Statistics of food packs ... Production of tin plate articles ... Prices of sanitary cans.

OIL, GAS-Oil transportation by method ... Oil wells drilled ... Proved oil reserves in U.S.... World production of crude petroleum... Major pipe line systems ... Fuel consumption by industries...Natural gas statistics

AVIATION-Aircraft production and exports. Progress of civil aeronautics in U. S.... Metals used in aircraft... Fuel consumed... Distribution of aircraft in use ... value of exports

PRODUCTION—Monthly and annual steel ingot and pig iron production statistics and operating rates ... Weekly steelworks operating rates ... Steel and pig iron capacity figures... Steelworks district boundaries... Finished steel output ... Exports, imports

RAW MATERIALS-Scrap, coke, iron ore, coal production and consumption data...Complete list of by-product coke ovens, owners, location, operators and type of ovens

MISCELLANEOUS-U. S. foreign trade with belligerents and neutrals in first six months of European war... Principal markets for American products; chief suppliers to U.S....Truck traffic ... Machine tools ... Foundry equipment ... Electrical goods ... Nonferrous metals

BASING POINTS-Data on products by principal cities...Basing point chronology...Freight rates on principal steel products...U. S. tariffs on ferrous and nonferrous metal products... List of reciprocal trade nations

PRICES-Complete ferrous and nonferrous, by products...Changes in extras...Ratio of ex-tras to total prices...Scrap...Ore...Ferroalloys...Coke ... By-products

EUROPEAN — French...German...Belgian... British ... Domestic and export prices

METALS PLANT EXPANSION-Copper and brass ...Lead....Zinc....Tin....Antimony....Aluminum ... Five-year improvement program

STEELWORKS EXPANSION-Completed in 1939 ...Breakdown by companies...Open hearths built...Rolling mills completed...Continuous strip and sheet mills...Expenditures for modernization

CHRONOLOGY — MERGERS — ASSOCIATIONS AND SOCIETIES — HONORS CONFERRED — PERSONNEL CHANGES-OBITUARIES-BOOKS

The BUSINESS TREND



Monthly Index Reverses

Downward Tendency

INDUSTRIAL activity in the iron, steel and metalworking industries last month reversed the downward tendency in effect since the first of the year. STREL's index average for May was 104.6, a gain of 1.9 points over the 102.7 level recorded the previous month and compares with 118.9 in December, the peak month last year. In May, 1939 the index average was 83.4.

Demand from domestic and for-

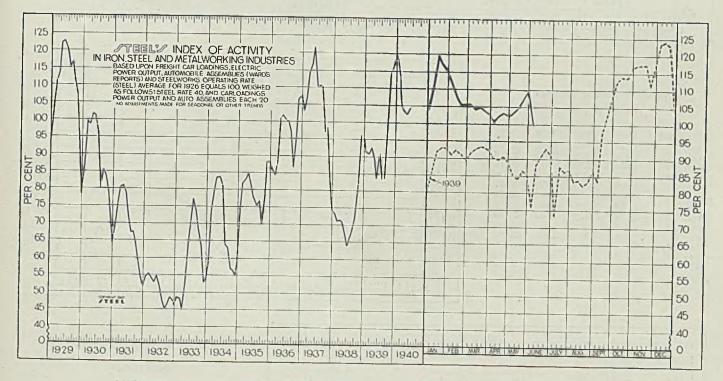
eign sources has recorded further improvement in recent weeks. This is particularly noticeable in the heavy industries. Near-capacity production schedules are being maintained in the machine tool, aircraft and shipbuilding divisions. The probability of accelerated demand from foreign sources and the proposed rearmament program will necessitate further expansion of activity in these industrial lines.

Due to the interruption of activity occasioned by the observance of Memorial day, STEEL's weekly index declined 9.9 points to 99.2 during the period ended June 1. In the comparable week of 1939, 1938 and 1937 the index declined 9.5, 8.4 and 10.5 points respectively. A sharp rebound is expected to be recorded by the index to still higher levels than prevailed before the holiday week.

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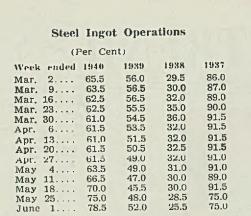
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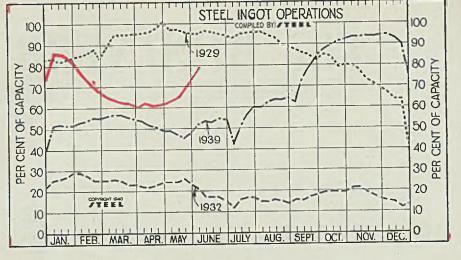
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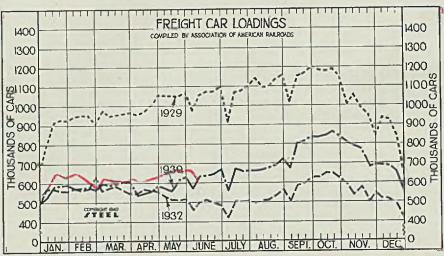


STEEL'S index of activity declined 9.9 points to 99.2 in the week ended June 1:

118.9 95.1 74.7 107.6 88.2 58.9 54.0 46.2 51.3 64.3 78.3	Ended 1940 Mar. 23. 103.7 Mar. 30. 103.2 Apr. 6. 101.8 Apr. 13 109.7 Apr. 20. 103.4 Apr. 27. 102.8 May 4. 103.3 May 11. 104.8 May 25. 109.1 June 1. 99.2	1939 93.2 92.2 90.0 89.7 90.4 89.2 85.1 84.2 86.6 85.4 75.9	Data Jan. Feb, March April May June July Aug. Sept. Oct. Nov. Dec.	1940 114.7 105.8 104.1 102 - 104.6	1939 91.1 90.8 92.6 \$9.8 83.4 90.9 83.5 83.9 98.0 114.0 116.2 118.9	1938 73.3 71.1 71.2 70.8 67.4 63.4 66.2 68.7 72.5 83.6 95.9 95.1	1937 102.9 106.8 114.4 116.6 121.7 109.9 110.4 110.0 96.8 98.1 84.1 74.7	1936 85.9 84.3 88.7 100.8 100.3 100.1 97.1 86.7 94.8 106.4 107.6	1935 74.2 82.0 83.1 85.0 81.8 77.4 75.3 76.7 77.0 88.1 88.2	1934 58.8 73.9 78.9 83.6 83.7 80.6 63.7 63.0 56.9 56.4 54.9 58.9	1933 48.6 48.2 44.5 52.4 63.5 70.3 77.1 74.1 68.0 63.1 52.8 54.0	1932 54.6 55.3 54.2 54.8 51.4 47.1 46.5 48.4 47.5 46.2	1931 69.1 75.5 80.4 81.0 78.6 72.1 67.3 67.4 64.3 59.2 54.4 51.3	1930 87.6 99.2 98.6 101.7 101.2 95.8 79.9 85.4 83.7 78.8 71.0 64.3	1929 104.1 111.2 114.0 122.5 122.9 120.3 115.2 116.9 110.8 107.1 92.2 78.3
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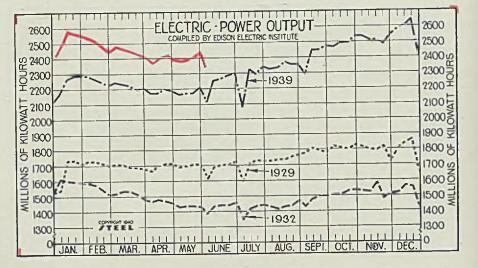
Freight Car Loadings

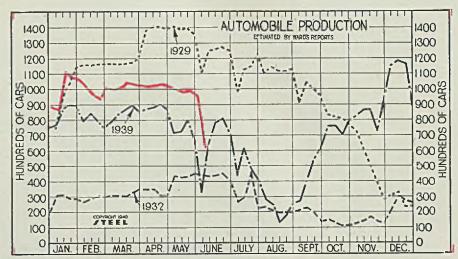
	(1000	Cars)		
Week ended	1940	1939	1938	1937
Mar. 2	634	599	553	734
Маг. 9	621	592	557	749
Mar. 16	619	595	540	759
Маг. 23	620	605	573	761
Mar. 30	628	604	523	727
Apr. 6	603	535	522	716
Apr. 13	619	548	538	751
Apr. 20	628	559	524	761
Apr. 27	645	586	543	782
May 4	666	573	536	767
May 11	681	555	542	774
May 18	679	616	546	779
May 25	687	628	562	795
June 1	639	568	503	692

Electric Power Output

(Million	KWH)
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Week end	ed 1940	1989	1938	1937
Mar. 2	2,479	2,244	2,036	2,200
Mar. 9	2,464	2,238	2,015	2,213
Mar. 16.	2,460	2,225	2,018	2,211
Маг. 23.		2,199	1,975	2,200
Mar. 30.	2,422	2,210	1,979	2,147
Арг. 6 .	2,381	2,173	1,990	2,176
Apr. 13.	2,418	2,171	1,958	2,173
Apr. 20.		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		1,973	2,207
June 1.	2,332	2,114	1,879	2,131

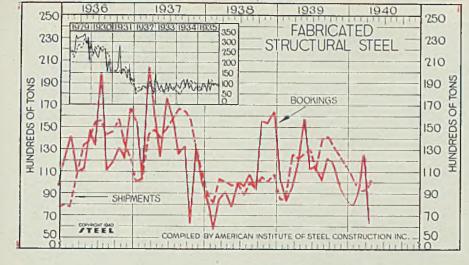




Auto Production

(1000 Units)

Week ended	1940	1939	1938	1937
Mar. 2	100.9	78.7	54.4	127.0
Mar. 9	103.6	84.1	57.4	101.7
Mar. 16	105.7	86.7	57.5	99.0
Mar. 23	103.4	89.4	56.8	101.0
Mar. 30	103.4	86.0	57.5	97.0
Арг. 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	133.2
Арг. 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

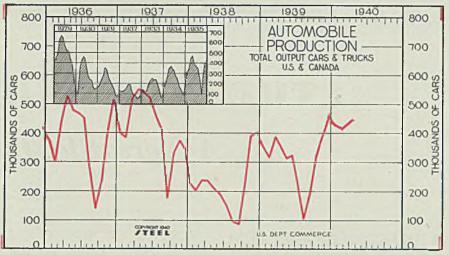


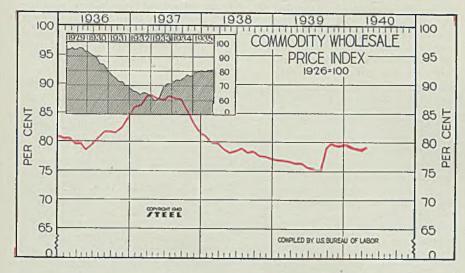
Fabricated Structural Steel

(1000 tons)							
		hipmen			Bookin	<u>zs</u>	
	1940	1939	1938	1940	1939	1938	
Jan.	110.9	84.3	87.8	81.7	101.7	80.3	
Feb.	97.2	84.4	81.2	98.9	82.7	57.3	
Mar.	95.9	125.3	103.3	128,3	95.1	84.3	
Apr.	102.9	120.9	100.0	63.5	118.3	91.2	
May		125.9	96.4		156.9	77.3	
June		130.1	98.6		111.6	99.9	
July		110.5	88.0		114.1	96.0	
Aug.		139.7	98.6		100.9	106.8	
Sept.		140.8	93.5		121.4	92.5	
Oct.		133.8	105.0	1.141	118.8	154.8	
Nov.		128.2	99.9		99.3	153.1	
Dec.		116.2	106.5		84.4	163.4	
Total		1440.1	1158.8		1305.0	1256.6	

Automobile Production

	(U)	nlt: 100	0 Cars)		
	1940	1939	1938	1937	1936
Jan.	449.3	357.0	227.1	399.2	377.2
Feb.	421.8	317.5	202.6	383.9	300.8
March	440.2	389.5	238.6	519.0	438.9
April	452.4	354.3	238.1	553.4	527.6
May		313.2	210.2	540.4	480.5
June		324.2	189.4	521.1	469.4
July		218.5	150.4	456.9	451.2
Aug.		103.3	96.9	405.1	275.9
Sept.		192.7	89.6	175.6	139.8
Oct.		323.0	215.3	338.0	230.0
Nov.		370.2	390.4	376.6	405.8
Dec.		469.0	407.0	346.9	519.1
Ave.		311.0	221.3	418.0	384.7





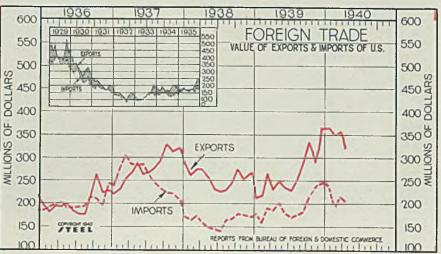
All Commodity Wholesale Price Index U. S. Bureau of Labor

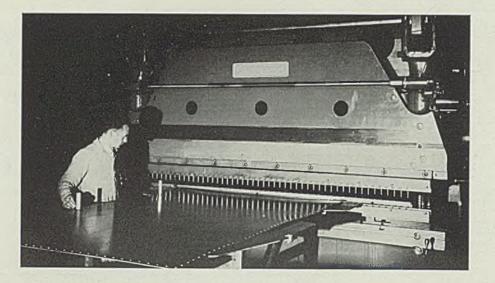
	(1926 =	100)		
	1940	1939	1938	1937	1936
Jan.	79,4	76.9	80.9	85.9	80.6
Feb.	78.7	76.9	79.8	86.3	80.6
March	78.4	76.7	79.7	87.8	79.6
April	78.6	76.2	78.7	88.0	79.7
May		76.2	78.1	87.4	78.6
June		75.6	78.3	87.2	79.2
July		75.4	78.8	87.9	80.5
Aug.		75.0	78.1	87.5	81.6
Sept.		79.1	78.3	87.4	81.6
Oct.		79.4	77.6	85.4	81.5
Nov.		79.2	77.5	83.3	82.4
Dec.		79.2	77.0	81.7	84.2
Ave.	1141	77.1	78.6	86.3	80.8

United States Foreign Trade

(Unit:	\$1,000,000)	
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	Exp	orts	Impo	orts
	1940	1939	1940	1939
Jan	\$368.6	\$212.9	\$241.9	\$178.2
Feb	347.0	218.6	199.8	158.0
Mar	352.3	267.8	216.7	190.5
April	324.0	231.0	212.2	186.3
May	*****	249.5		202.5
June		236.1		178.9
July		229.6		168.9
Aug		250.8		175.8
Sept		288.6		181.5
Oct	*****	332.1		215.3
Nov		292.7		235.4
Dec		367.8		247.0
Total .		\$3,177.0	· · · · · · · · ·	\$2,318.3





THE PRESS BRAKE A Versatile Tool

■ WHILE known primarily for its ability to bend and form metal sheets and steel plate, the modern version of the press brake has increased its usefulness by solving a great variety of problems, not the least of which is the multiple punching necessary in high production of both industrial and consumer products.

Compared with many other metalworking tools, the modern steel press brake has developed rapidly since the early 1920's due largely to press brake manufacturers' continually exploring new avenues to utilize the versatility of this machine in an ever-increasing variety of applications.

Today press-brake punching applications range all the way from the thin sheets used in cameras, pans, ventilating systems, refrigerator cabinets, grain bins and lockers to the heavy plate used in oil tanks, automobile bumpers, tractor guards, road scraper blades, railroad freight and passenger cars, locomotives and similar heavy equipment.

A typical example of heavy-duty operations is the multiple punching of carlines which are the steel ribs of metal freight cars. They extend from the floor up to the roof, across the top and down the other side. Thus, length of these units is approximately twice the car height plus its width. Typical webs of The greatly improved precision of the modern press brake makes it suitable for both light and heavy-duty multiple punching operations, either alone or as part of a progressive punching, notching, forming setup. One such unit saves \$18,000 in the first two months' use

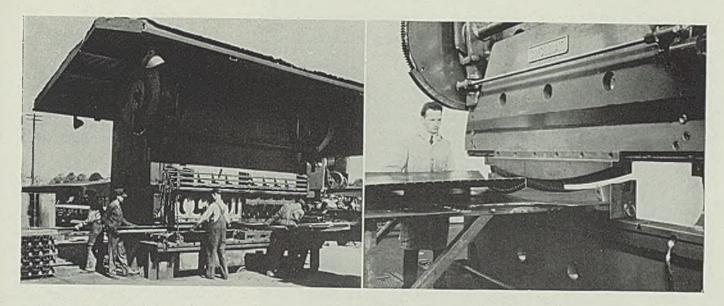
a carline are approximately 5/32inch thick at punching points. About 242 holes are punched in each carline, and diameters generally are 13/32, 17/32 and 21/32-inch.

In one railroad shop, the method in use required 121 hits to punch a single carline in 8.2 minutes. When the press-brake method was adopted, only seven hits produce a finished carline in 1.2 minutes, a saving of 7 minutes on each unit. The press brake punches 400 carlines in 8 hours in contrast with a former output of 58 carlines in 8 hours.

There is, of course, a two-fold reason for this increase in production. First, the press brake itself has been greatly increased in accuracy, strength, rigidity, power and speed. Thus it can punch a large number of holes simultaneously and with great accuracy. Its long die surfaces maintain their accuracy for considerable periods of use. Second, well engineered die equipment with proper gags and adjustable center distances greatly facilitates punching maximum number and correct pattern of holes at each stroke. As will be seen in accompanying illustrations, a wide variety of die equipment can be used effectively.

Another railroad, faced with the problem of forming and multiple punching a lot of 18,000 hopper car stakes, found that a saving of over \$1 per stake could be effected by installing a press brake of sufficient capacity to handle the job. A 12-foot Cincinnati all steel press brake similar to that shown in Fig. 1 was built to handle this carstake job as well as punching of other sections of the hopper cars. The machine paid for itself in 4 months in making only two lots of 18,000 car stakes alone.

These side stakes of 3/8-inch mild steel are handled by three men as shown in Fig. 1. Two work stations are utilized. The first man feeds the punching station where fortyfive 11/16-inch diameter holes are put into the blank at each stroke of the press brake. The punched piece goes to a second man for forming four bends at the second station. Third operator removes punched and formed car side stake from the press brake and a fourth man stacks the complete unit. One stake is produced at each hit. This setup saved \$18,000 the first two



months of operation. Unit is mounted outdoors under a simple overhead covering as shown.

The speed, accuracy and dependability of this equipment have been of major importance in cutting several hundred dollars from the cost of building each car. The change from punching to forming of various parts is quickly and easily handled by sliding out the punching bolsters as a unit and inserting forming dies. As dies can be made in sections, it is simple to arrange a 2-station setup as described above.

A manufacturer of large oil tanks found that the accuracy of press brakes in multiple punching was the answer to faster assembly and quicker disassembly. The stays or

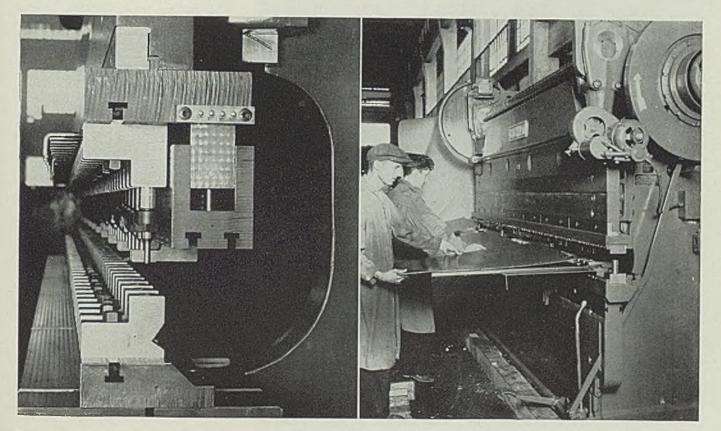
Fig. 1. (Upper left)-A 12-foot press brake multiple punching and forming freight-car side stakes of 3/8-inch mild steel at two working stations. Fig. 2. (Top page 1)—This unit with gaging table and fixed center punches makes the holes in four sides of 1/8-inch steel plates prior to flanging in Fig. 3 (upper right) which assures proper bolthole alignment. Fig. 4. (Lower left)-End view of adjustable punches, dies and stripper plate fingers. Many tool combinations are possible. Fig. 5. (Lower right)—Progressive 3-station setup for multiple punching and forming refrigerator cabinets-three operations at one

handling of the material

sections of the tank are of 1/8-inch steel. As shown in Fig. 2, the piece is fed to the dies from a gaging table with both ends and both sides punched in four successive hits. Punches are on fixed centers.

Punched pieces go to a second press setup, Fig. 3, where a flanging and curving operation is performed. Staves then are ready for fast assembly and disassembly in the field as bolt holes line up accurately.

An interesting press brake operation in the automotive field is the punching and trimming of bumpers. These bumpers usually are 5/32-inch high-carbon steel and are punched with four 15/32-inch square holes and three 17/32inch round holes and trimmed



on both ends in one hit. Several interchangeable trimming dies are provided to give different shaped ends as required for different makes of automobiles. Trimming dies and piercing punches and dies are adjustable endwise to shift the location of holes for different types and sizes of bumpers. The equipment thus is extremely flexible, accurate, fast and can be relied upon to give high output at low cost.

Fig. 4 is a closeup of an end of a typical press-brake setup showing arrangement of multiple punches and stripping units for high-production work. Such equipment is extremely flexible, as it can easily be modified to handle a wide variety of work.

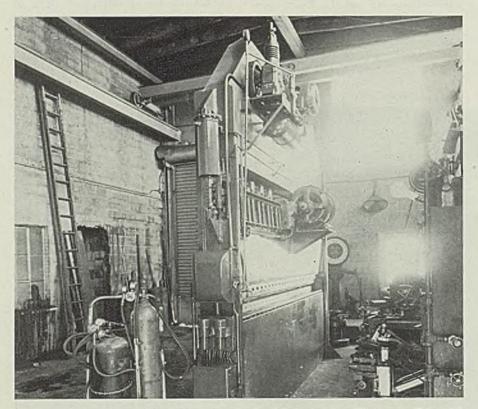
Most large manufacturers of refrigerators use press brakes for multiple punching in combination with notching and forming operations to facilitate fabricating metal cabinets. A heavy-duty press brake permits combinations of die operations impossible on other types of equipment because of the minimum deflection between bed and ram across the entire die surface. Standard die surfaces of press brakes range in length from 4 to 20 feet, even greater lengths are available on special machines for multiple or combination operations. It is not difficult to arrange dies and punches on a press brake with various numbers of work stations so work can progress through trimming, notching, punching and forming operations in any sequence desired to give high output while maintaining close tolerances in all operations.

Modern Presses More Accurate

Punching pressures depend upon thickness of the sheet or plate, the perimeter of the holes, the number of holes and the kind of plate or sheet being worked. For instance, a 210 series 12-foot Cincinnati allsteel press brake with proper die equipment will punch in one hit approximately sixty 5/8-inch diameter holes through ¼-inch mild steel plate. The equivalent of this is one hundred and twenty %-inch holes through ¼-inch mild steel plate, all at one hit.

The answer to the question of how a modern press brake is differ-

Welded Dual Powered Press Brake



■ Unusual feature of the above press brake fabricated by Charles J. Griswold, Lockport, N. Y., is that it has two separate power systems. One is for forming operations on light sheet metal where the requirements call for pressures up to 7000 pounds, and the other is for heavier work. Hydraulic pressure for heavier work is applied by 10 jacks operated by connecting rods working in multiple from one 15-horsepower electric motor, having a capacity of 250 tons. Assembled entirely by welding, press is 14 feet long, 12½ feet high and weighs 7 tons. Photo courtesy Wilson Welder & Metals Co. Inc., 60 East Forty-second street. New York ent from those of the past lies in the increased accuracy of the machine. A modern press brake is extremely accurate because of its rigid construction and machine-tool refinements. This accuracy makes parts interchangeable, minimizes waste and improves the product. It has made the press brake one of the basic tools of high-production manufacturing today.

Typical of the progressive setups possible is that shown in Fig. 5, where a manufacturer of electric refrigerators is using a press brake for multiple punching and forming operations in making the refrigerator cabinets. In this 3-station setup, the work enters the press brake at the extreme rear (left) where one end is punched and notched at the same time a side is being punched at the middle or second station and one end is being formed at the third (right) station. At the next stroke of the press, opposite ends are punched and notched at station one, opposite sides are punched at station two and opposite ends are formed at the third station. Thus at each second stroke of the press, a part ready to assemble is produced. Each operator stands on a platform at the correct height most convenient for him to work.

Reports How Production

Is Being Increased

How industry is stepping up production to handle unusual demands from certain domestic and foreign markets, refining training periods and cutting waste motion is embodied in a recent 28-page report, "Intensive Training of Industrial Employees" issued by the policy holders service bureau of Metropolitan Life Insurance Co., 1 Madison avenue, New York.

According to the report, some of the initial steps to be taken in meeting this problem include accurate determination of a company's labor requirements, careful analysis of the employe's qualifications coupled with proper placement and better organization of labor sources. It points out that reorganization of the skilled man's job, separating the less skilled phases of the work for which new men can be more quickly trained, has proved effective in speeding up training.

Another approach, the report states, is to improve the quality of the training by carefully meshing the essential training material with a detailed analysis of the production job. Individualizing the training as much as possible so as to give each employe the minimum instruction needed has been found much less wasteful than on a program based on average ability.

Could you use a . . .

4000 Ampere Arc Welder ?

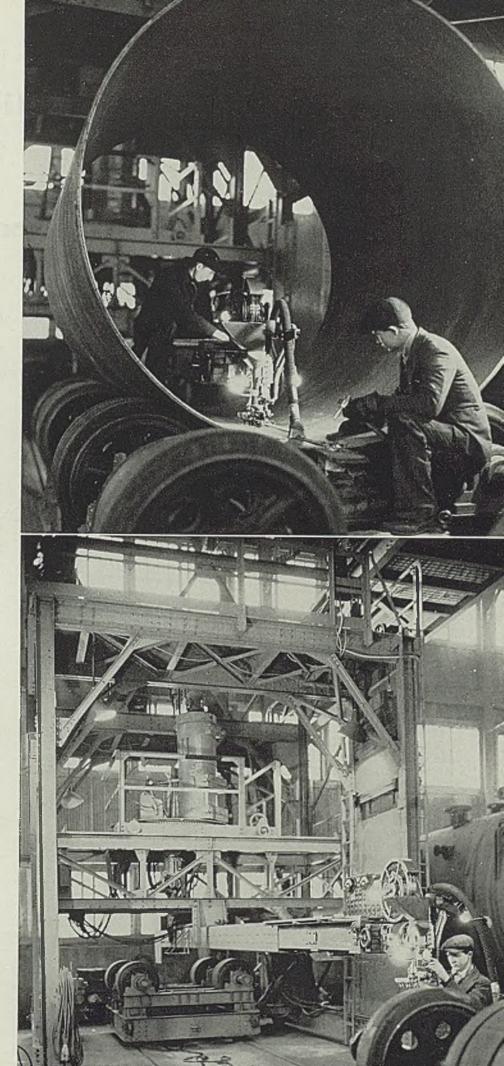
... Probably not! But a number of fabricators are already investigating the possibilities of such huge units as that shown here and recently built by The Linde Air Products Co., New York, for Blaw-Knox Co., Pittsburgh. The value of welders of this size is their ability to butt weld joints in heavy plate in one pass (on each side of the material). Although the machine shown here has an ultimate capacity of 4000 amperes, this amount has not been required up to this time as the maximum thickness that can be welded has not yet been determined.

Possibilities Explored

In its use of this machine to date. however, Blaw-Knox Co. has explored rather thoroughly the possibilities on sections ranging in thickness from 1/2 to 21/4 inches. Some experimental welding also has been done on material as light as ¼-inch and as heavy as 2% inches, but no data are available on these ex-tremes. A typical performance on a cylindrical shell made of 1/2-inch plate such as shown would be a welding speed of 16 inches per minute on the first side, laying a full weld at one pass, 18 inches per minute on the reverse side. A current of 900 amperes would be used for the first bead with 700 amperes for the finish bead on the reverse side. In the case of 21/2-inch plate, the current would approximate 1600 amperes and speed would be about 8 inches per minute for both sides.

In the upper illustration the machine is welding a longitudinal seam on a cylindrical shell. The lights shown are not from the arc but from incandescent lamps on each side of the welding head. The arc in the Unionmelt method is covered and concealed by a heavy overcoat of granulated flux material, the excess of which is picked up by a built-in vacuum attachment. This upper illustration is a typical operating view just after the machine has begun welding. One man usually is located on the ram to handle the

(Please turn to Page 91)



Electric Heat for Protection

and

Preventative Maintenance

Use of electric heat from a variety of strip heaters now available offers a reliable, convenient, safe method of obtaining heated air necessary to prevent condensation

■ CONDENSATION of moisture or "sweating" must be guarded against in connection with electrical equipment if excessive maintenance costs and breakdowns due to absorbed moisture are to be prevented.

Motors and motor-generator sets for continuous hot and cold-strip mills, ore handling equipment, large water pumps, air-compressor pumps and similar drives involves the problem of preventing condensation of moisture.

The solution offered here with proper modifications may be adapted easily to all circuit breakers, control equipment, high-voltage busbars, machine tools, gages, dies in storage, electrical parts, sheet and strip in storage and any area in which condensation of moisture would be detrimental.

Wattage Estimated Two Ways

Utilizing electric heat from the wide variety of standard strip heaters now available offers a reliable, convenient and safe method of obtaining the proper amount of heated air to prevent condensation.

The wattage depends upon cubic volume, voltage, horsepower, speed range and ventilation of equipment to be protected. Judgment based upon experience will indicate the proper wattage for most applications.

Two methods of estimating wattage may be employed. For opentype machines, allow approximately 1 kilowatt in strip heaters for each 7 tons of gross weight of the machine. For totally enclosed designs, only $\frac{1}{4}$ -kilowatt per 7 tons of gross weight need be allowed.

By C. T. ELDER Cleveland Electric Illuminating Co. Cleveland

For machines of partially enclosed design, the wattage will vary between the limits given.

Another method to be modified by the common sense of the engineer in its application is to base the estimated required strip-heater wattage upon the losses of the machine. On this basis, the wattage could be taken as approximately 7½ per cent of the machine losses exclusive of windage and friction. If total machine losses were to be used as a basis of estimate, the 71/2 per cent factor would revert to approximately 6 per cent for machines near the 360-revolutions-per-minute range. The propertion of windage and friction losses to total losses is different for various speeds, other factors remaining about the same. Thus, allowance must be made for speed, and the 6 per cent factor based upon a speed of 360 revolutions per minute modified accordingly.

Installation Simple

Installation of strip heaters is easily accomplished. For machines ventilated with filtered air, the strip heaters may be mounted on strapiron supports in the air tunnels directly beneath the frame of each machine, 10 to 30 inches from the frame. With such an arrangement, it may be advisable to keep a fan in operation to insure positive circulation cf warmed air through the machine, although this may not always be necessary. Strips may be mounted upon or enclosed in a suitable perforated or louvered sheetmetal housing as desired.

For other ventilating systems utilizing a basement, sub-basement or other space available under the machines, the strip heaters may be installed in a similar manner but of course should be enclosed in such a way as to direct the heat into the machine.

Open Machines Need Protection

Where neither scheme is feasible, the strip heaters may be assembled into a portable rack and plug-in facilities provided near the machine. Open machines should be furnished with a canvas tent to cover them when idle. Strip heaters then are placed under the tent adjacent to che machine. Care must be taken to prevent the portion of the machine near the strip heater from excessive heat. Properly placed baffles will do this. Estimates of wattage required then will approxi-.nate that for machines of totally enclosed design.

For totally enclosed machines, a tent is not required. Strip heaters are assembled into a box enclosure and a small fan arranged to introduce the warmed air into the machine housing through a duct.

Control of the electric circuit may be arranged in a number of ways. A manually operated switch of the conventional type with or without signal lights is quite satisfactory and may be arranged to control strip heaters for individual machines or for groups of machines as desired. A double-throw switch can be used to avoid operation of the strip heaters when the machine is running, using one position of the switch to close the strip-heater circuit and the other position to close the control circuit of the machine.

Additional equipment may be provided such as relays, thermostats and interlocking devices of various types to furnish any degree of control desired.

Typical example of application of strip heaters to prevent condensation is seen in a 77-inch continuous hot-strip steel mill employing ten stands. These include two scalebreakers with roughing and finishing stands. Three motor-generator sets, each with one motor and two generators, are employed with a filtered-air duct ventilating system. Total rated horsepower of all mill motors including scalebreakers is 29,000 with total rating of the three synchronous motors on the motorgenerator sets at 16,500 kilovolt-The six direct-current amperes. generators of the motor-generator sets are rated 14,000 kilowatts. Here, a total of 21 motors and generators are equipped with the strip heaters.

Banks Controlled by One Switch

All 21 strip-heater banks are connected to a single circuit controlled by one main switch. A signal light in the motor room indicates when the switch is closed. Strip heaters are mounted in the air duct, a fan maintaining positive air circulation. Total load of strip heaters employed is 120 kilowatts, 500 amperes at 240 volts.

The motor-room operator is responsible for turning the heaters on and off. Usual practice is to turn the heaters on as soon as the mill is shut down and to open the circuit when the mill resumes operation. On intermittent operation of the mill when several hours of running are alternated with several hours of idleness, this practice minimizes breathing and prevents sweating during extended periods of idleness.

Keeping the machines warm facilitates resumption of operations. Under ideal atmospheric conditions and for periods not over 10 or 12 hours, the heaters are not turned on. This is left to the judgment of the motor room operator.

If heaters are not turned off when the mill starts operation, the signal light informs the operator of the condition. However, even in hot weather no serious effect results if operation of heaters overlaps mill

Simplified line sketch to show method of placing electric unit heater in duct below rotating electric machinery operation for a period not exceeding a half hour.

A second installation was made in a large continuous hot-strip mill provided with filtered-air ventilating duct system for motors and generators. This is a ten-stand mill with two scale-breakers. Strip heaters in perforated sheet-metal housings are situated in the ventilating tunnels beneath each motor and generator. Each bank of strip heaters is controlled individually in this installation, using a doublethrow switch on the main control panel interlocked with the machine control.

All of the heater units were furnished by General Electric Co., Schenectady, N. Y., in both instances.

Use of strip heaters as described is a form of insurance. For instance, value of the rotating equipment in the 77-inch mill is approximately one and a half million dollars. On the large, high-voltage machine, a clean dry atmosphere is extremely important as a protection against alternate freezing and thawing. Protecting the insulation of high-voltage motors is especially important to prevent leakage and subsequent breakdown of the insulation. Installation of strip heaters can be made easily due to their small size and ease of mounting. An added advantage is that electric power forms a most dependable source of heat and needs no attendance over extended periods of time.

Reclaims Particles

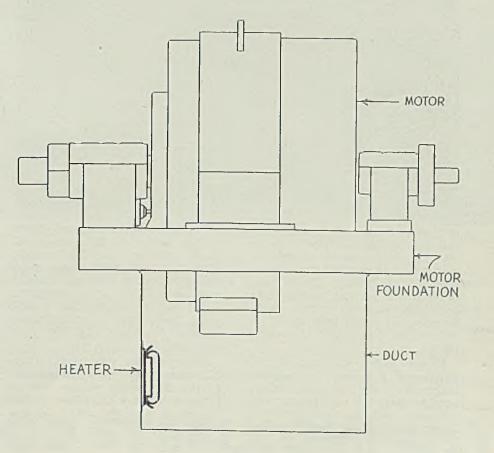
■ Besides conditioning water, fuel oil, coal, mineral and other waste particles can be reclaimed by a conditioner developed by Gale Separator Co. Inc., 405 Lexington avenue, New York.

The device has no moving parts, its gravity construction merely rolls, bounces and scrubs each individual particle or drop. Construction of the unit permits the flowing of the liquid mixture to be treated beneath a quiescent body of fluid, whereby the continual submergence causes the breaking up of its mixture, so that lighter liquids, separated oils and other substances immediately and automatically rise to the surface. The device will condition liquids of different specific gravities.

Waterproofing Material Seals Building Surfaces

■ A transparent material for waterproofing brick, stone and other building materials is announced by Flexrock Co., Twenty-third and Manning streets, Philadelphia. It is made of nitro-cellulose, lacquer, oils and a solvent of penetrating character and has enough body to clog up pores and open spaces.

The material, called Flexseal, has no color but takes on the color of the surface covered. It is applied by brush and spreads evenly.



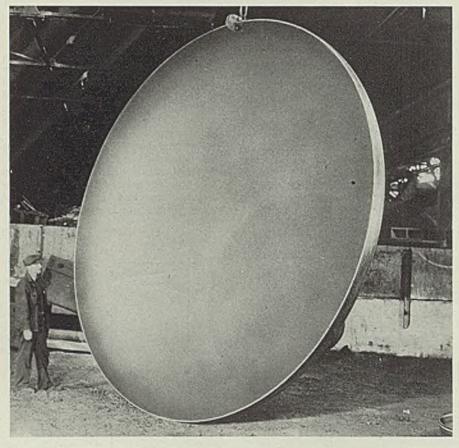
Prepainting Treatments of Various

Types Covered in Test Reports

■ REPORT No. BMS44, "Surface Treatment of Steel Prior to Painting," by Rolla E. Pollard and Wilbur C. Porter, issued April 8, 1940, by national bureau of standards, details results of tests and studies of various methods used to improve the protective value of various pretreatments before paint is applied to the steel. Tests on pretreatments of galvanized steel surfaces and also plain steel surfaces are covered.

Effectiveness of various methods of pretreating galvanized steel was determined by tests which included: Untreated hot-dipped galvanized surface; proprietary phosphate treatment; a cold wash in aqueous zinc phosphate, a solution containing free phosphoric acid and an activating agent; an etching solu-

Large Bulkheads Spun from One-Piece Circles



■ Nineteen unusually large flanged and dished bulkheads, similar to the one illustrated, were shipped recently by Lukens Steel Co., Coatesville, Pa., to Buffalo Tank Corp., to be used in vertical, multiple compartment tanks for storage of lubricating oil at the Bayonne, N. J., refinery of Tide Water Associated Oil Co.

Formed with heating and spinning equipment that can handle even larger flat circles, the heads had an outside diameter of 15 feet, were 9/16-inch thick and incorporated a dish radius of 170 inches. They had a 11-inch corner radius, 3-inch straight flange and 35¹/₄-inch overall depth. Each weighed 5724 pounds.

The bulkheads were made of circles 203 inches in diameter—largest ever rolled. Out of the 20 plates rolled on the Lukens No. 5 mill, which has a distance of 206 inches between housings, only one plate was lost.

Flame cutting was used to produce the circular plates to conform to the dimensions of the storage tanks which had an outside diameter of 15 feet and stand 42 feet high. tion consisting of water containing 8 ounces of copper sulphate per gallon; a similar etching solution of water containing 8 ounces of zinc sulphate per gallon; and a number of other etching solutions as well as phosphate and dichromate treatments.

Plain steel surface pretreatment tests covered various pickling, phosphate, chromate and similar treatments.

A summary of conclusions from the tests on galvanized steel panels shows that the hot-dip phosphate treatments and cold-wash phosphate treatments improved both the adhesion and the corrosion protection of paints under widely varying conditions.

Most hot-dip treatments apparently were slightly superior to Acid-dichromate the cold wash. treatment apparently had considerable protective value in itself and had an inhibitive action under paints but did not improve their adherence. An oxalate-phosphate treatment prolonged the protective value of inhibitive paint under severely corrosive conditions but had little effect on other types and did not improve adhesion to an appreciable degree. All other pretreat-ments tested were found to have slight or negligible value in improving the protective ability of paints.

Hot-Dip Phosphate Found Best

On the plain-steel pretreatment tests, results indicated that hot-dip phosphate treatments markedly improved the protective value of paints under both salt spray and accelerated weathering tests. chromate cold-wash Phosphatetreatments inferior to were only slightly hot-dip phosphate treatments in the improvement afforded. The hotdlp chromiq-acid treatment improved paint protection as compared with a plain pickled surface but the improvement was not as marked as that obtained with the other treatments above. All other pretreatments tested were found to have little or no value in improving the protective action of paint.

It was noted under the severely corrosive conditions of the salt spray test that protective value of paints applied on rusted surfaces was decidedly inferior to that of paints applied on plain pickled surfaces.

Some of the pretreatments apparently were able to remove light rust. However, they improved the paint protection much more effectively when used on a rust-free surface.

Complete copies of the tests are available from superintendent of documents, United States government printing office, Washington. Price is 10 cents.



Photo shows the Super-Diamond Pattern of "A.W." Rolled Steel Floor Plate. Provides completely safe tread from any angle, under any condition-

Floor troubles ended for good . . . Wherever floors do double duty-traffic aisles, stair treads, railroad running boards and platforms, car steps, truck body floors, engine rooms, catwalks, refinery towers - "A.W." Rolled Steel Floor Plate helps to prevent dangerous and costly slips and falls. Reduces maintenance to a minimum. With "A.W." Floor Plate, there are no worn and slippery surfaces to endanger men on foot or upset floor trucks. Write for folder giving complete engineering data.

MAIN OFFICE AND MILLS, CONSHOHOCKEN, PENNA. :: SINCE 1826 :: DISTRICT OFFICES AND REPRESENTATIVES—Philadelphia, New York, Baston, Atlanta, Buffalo, Chicago, Cincinnati, Cleveland, Denver, Detroit, Houston, New Orleans, St. Paul, Pittsburgh, Roanoke, Sanford, N.C., St. Louis, Los Angeles, San Francisco, Seattle, Montreal—A. C. Leslie & Co. PRODUCTS INCLUDE—Steel Products in Carbon, Copper or Alloy Analyses :: Sheared



Packing for Export

Wood cases with high-tensile wire ties as reinforcement provide excellent protection to metal products such as tin plate, bolts, screws, tools. New package for steel sheets is waterproof, rigid

Part II

THE WOODEN box is probably the most commonly used package. When correctly made, it makes an efficient container for many kinds of goods. There are a number of different styles of boxes. The best type for general export service is the box with cleated ends. The cleats afford extra nailing surface, they strengthen the ends and they add greatly to the rigidity of the Boxes with uncleated container. ends generally should not be used for export except in the case of very light or small packages. Satisfactory boxes can be made of practically any of the commercially important species of lumber.

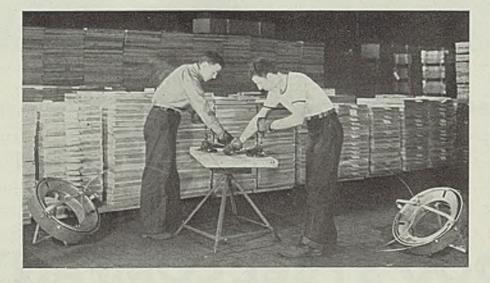
Cement-coated nails should always be used in preference to smooth uncoated nails as they have much greater holding power. Also, because of their thinner gage they cause less splitting of the wood in driving.

Nails should never be driven so the heads are sunk below the surface of the wood as this greatly reduces their holding power. As previously mentioned, all boxes for export should be wire tied or metal strapped.

Boxes and crates should always be lined with a strictly waterproof lining. Many shippers use asphaltum waterproofed paper for this purpose because it is absolutely waterproof. Also it can be folded and bent into corners without breaking the waterproof coating. For wrapping around machinery and other irregularly shaped articles, a cloth-covered asphaltum waterproofed paper is generally used. The cloth covering prevents the paper from tearing.

Shippers of bolts, nuts, screws, small tools, razor blades and tool steel generally use a cleated wooden case strapped with two galvanized wires.

One prominent Eastern set screw manufacturer has been shipping large cargoes of cap, socket and set screws to London for the British wartime industries. The cases are



By W. J. AUBURN Gerrard Co. Inc. Chicago

wire strapped with two 13-gage hightensile wires.

To Riga, Latvia, and to Reval, Esthonia, go oil pumps in cases, each weighing 300 pounds and up. These use two 10-gage wire straps and a good grade of lumber.

Takes Much Punishment

An interesting case of foreign shipments making a return trip to and from Tientsin, China, occurred at the height of the Sino-Japanese war. The shipment involved about 25 wooden cases of tinned foods from the Heinz food factories, and it was destined for the U.S. army post at Tientsin, China. Due to the movement of Japanese troops around Tientsin, the post was moved and when the shipment arrived it was unclaimed and returned to the shipper at San Francisco. Then it moved to Tacoma and finally to the Heinz warehouse in Seattle. Two latitudinal round wire straps protected this shipment of tinned foods half way around the world and the cases upon return showing nothing but a little wear and accumulated dirt. The tin cans of food were as originally shipped.

STEEL of July 10, 1939, detailed shipping of steel dump truck bodies without benefit of wooden cases, telescoped, and tied with heavy galvanized wire tightly re-enforced. This saved \$16 in lumber for the unit of two. Heavy channels on the bottom of each body served as

Fig. 1—Here 100 to 200-pound packages of tinplate are being made up for export shipment. Revolving work table helps handle the wire application



... NEWS THAT MEANS MORE SALES FOR METAL EXPOSITION EXHIBITORS

When this story broke in the newspapers, metal men forgot political news for a while-forgot World War No. 2-and started to speculate about this biggest National Metal Exposition which will open in October at Cleveland.

If this is the biggest Metal Exposition in 22 years, they said, we'd better be there to get our share of the business. Because last year 33,000 of our best prospects attended the Metal Exposition.

And so . . . to the Metal Exposition headquarters in Cleveland . . . have come letters, wires and telephone calls by the dozens. Reserving spaces for big and little companies who sell the metal industry everything from pyrometers to tons of steel.

ORLD

EVENT IN THE

METAL INDUSTR

70%

NEW. ATTENDANCE EACH YEAR

AND

OBER 21-25, 1940

5

METAL

CONGRESS

Cleveland, Ohio

86,000 square feet of space, more than was provided for on the origi-nal plan. Although the show will not be held until the week of Octo-ber 21, advance space reservations are now far in excess of any pre-QICAL 940

LISTS

space assignment committee alter reservations were received for over

86,000 square feet of space, more

But there are still plenty of good spaces left at the regular \$1.00 a square foot rate because Cleveland's ample Public Auditorium provides more than 150,000 square feet for the Metal Exposition.

So write or wire collect today for full particulars. Address: W. H. Eisenman, Director, National Metal Exposition, 7301 Euclid Avenue, Cleveland, Ohio.

COOPERATING SOCIETIES American Society for Metals Wire Association American Welding Society Iron & Steel Division and Institute of Metals Division of the American Institute of Mining & Metallurgical Engineers

57

MANAGED BY AMERICAN SOCIETY FOR METALS



Fig. 2. (Upper)—Large steel sheets are protected by first wrapping with waterproof paper, covering with hot tar, adding sheet metal cover and tying to skids. Fig. 3. (Lower)—These 20-gage sheets, 43 x 92 inches, have added protection provided for the corners by 16-gage steel rails, clinched tightly at all corners and tied into the package

skids and the entire unit minus lumber saved considerable stowage displacement in the steamer hold.

One of the larger steel mills in the Chicago-Northern Indiana area ships export tin plate in packages weighing 100 to 200 pounds.

The box is of ¼-inch thick lumber and is not of plywood. The bottom is usually one piece. Tops often are several short pieces nailed to ends and sides.

As illustrated, these boxes are wire-strapped with three 14-gage galvanized wires of especially high strength. Two wire binders are strapped over the length of the box and one across the breadth or width. This makes three wires per tinplate box, giving adequate reinforcement and rigidity two ways.

Preparation for shipping of these cases is handled by two men and consists of four operations—picking up, wire tying or strapping of three wires, stencilling of address, destination, markings, etc., and repiling. These two men handle 60 boxes per hour or one per minute. The special turntable stand aids in maintaining this speed easily.

(Please turn to Page 92)

Establishes Polishing, Buffing Laboratory

■ Industrial Equipment division, Continental Roll & Steel Foundry Co., East Chicago, Ind., has established a testing laboratory for making polishing and buffing time and method studies. Laboratory discoveries are being submitted to users and prospective users of Continental polishing and buffing equipment.

There is no obligation on the part of manufacturers who wish to submit pieces or parts to the laboratory to determine if they will lend themselves to semiautomatic polishing and buffing. Manufacturers and platers are invited to write for details for shippineg sample parts to obtain a free laboratory test.

Treatise on Machine Shop Tools and Use

Machine Shop Training Course, by Franklin D. Jones; cloth, two volumes, 6 x 9 inches; Vol. I, 474 pages, 221 illustrations, Vol. 2, 552 pages, 209 illustrations; published by Industrial Press, New York; supplied by STEEL, Cleveland, at \$6 for both volumes, \$4 for either separately.

This is a treatise covering elementary and advanced machine shop practice, especially adapted to shop courses, self-instruction and technical or trade school use. The volumes may be used independently, each covering about half the subjects.

The first volume starts with fundamental principles underlying all metal-cutting operations and continues with various branches of lathe work, followed by general applications of turret lathes and automatic machines and proceeds to consideration of drilling, reaming and boring equipment.

The second volume deals with tapping, thread cutting with dies, thread milling, grinding and rolling and other advanced operations.

The course not only explains how but gives reasons why. It not only deals with all standard types of machine tools and illustrates their use by typical applications but includes shop problems with complete solutions and much information on many closely allied subjects.

Introduces Double Action Forging Hammer

B Pneumatic Drop Hammer Co., Braintree, Mass., announces a new shockless, double action drop forging hammer capable of striking 60 to 75 blows per minute.

By proper arrangement and control the opposing heads of the unit meet each other with the same force at impact. The upper head which is lifted by air and dropped by gravity, weighs approximately 1500 pounds without dies and has a maximum stroke of 24 inches. The lower head is in the ratio of 2 to 1 and has a maximum stroke of 2 inches. Acceleration of lower head is rapid and on the basis of force times distance a sufficiently large cylinder is used to give required foot poundage to resist or neutralize the dropping weight.

Thus a total of about 6000 foot pounds is developed at impact.

The release of the lower head is controlled by the dropping head through a cam adjustable to the stroke setting of the hammer. Hammer heads are parted at impact and returned through a second cam, all action being controlled through a foot treadle. With this foot treadle the operator can produce light or heavy blows at will.

Movement of the lower or anvil head does not interfere with handling of work on dies. The No. 2 hammer delivering 6000 foot pounds is comparable to a 2000-pound board drop hammer and weighs about 8 tons.

Foundation members heavy enough to support weight of the hammer, together with a pit to accommodate members below the floor line is all that is required. Hammer is quiet in operation and requires minimum head room.



WITTER PROCESS FOR FOR FORGING SHELLS SAVINGS IN MATERIAL

SPEED OF PRODUCTION HIGH QUALITY LOW OPERATING COST SMALL FLOOR SPACE REQUIRE-MENTS MINIMUM MAINTENANCE COST Complete Equipment for SMALL ARMS AMMUNITION

ANNEALING, PICKLING, WASH-ING & DRYING SMALL ARMS COMPONENTS - FULLY AUTO-MATIC - MATERIAL NOT HAN-DLED BETWEEN CHARGING AT ANNEALING FURNACE AND DIS-CHARGING AT DRYER - UP TO 50 CALIBER CARTRIDGE CASES EQUIPMENT FOR ANY BRASS DEEP DRAWING OPERATION

Consultants - Engineers - Builders COMPLETE ORDNANCE PLANTS And Special Forging Plants

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OHIO.

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> HEAT TREATING EQUIP-MENT, FOR AIRCRAFT PARTS

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SALEM ENGINEERING COMPANY



Sheet Galvanizing Machine

New units installed in English plant have speed range up to 120 feet per minute and individual capacity of 45 to 50 tons per turn. Production rate is high. Part of output used for bomb shelters

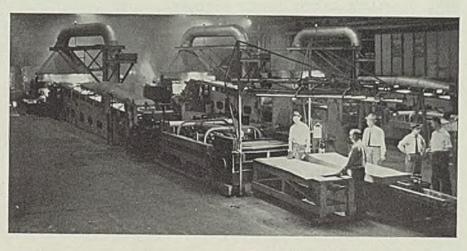
By VINCENT DELPORT European Manager, STEEL

WHEN A GALVANIZED sheet has been made with all the resources rendered available by modern engineering and technical skill, it has a beauty of its own when it presents itself, at the end of the line, with its uniform spangled coating, a perfectly flat surface and straight edges. To obtain such a result it is essential that the highest grade material be used, and that the best plant and equipment be conducted under strict control and accurate timing from beginning to end of If something goes the process. wrong at the last stages, all the attention and skill, and the benefits of intricate and expensive machinery used in the earlier stages have been expended in vain.

Galvanized sheets which qualify as ranking among the best in the world are made at the Ebbw Vale Works of Richard Thomas & Co., Ltd. in Monmouthshire on the borders of England and Wales, thanks to the combination of factors enumerated above: technical skill, constant supervision and the finest type of machinery obtainable, giving the highest rate of production compatible with superior quality.

One of the outstanding features of the Ebbw Vale Works is the galvanizing plant designed by Wean Engineering Co. Inc., Warren, O. It is the first plant of its kind to be in operation in Europe and has been working for about nine months.

One of the first things to attract the notice of the visitor when entering the premises is the complete absence of fumes, which is due to the design and efficiency of the fume extracting plant. In fact, cleanliness, clear lighting and general good working conditions are a



prominent feature of the whole of the Ebbw Vale Works.

The sheets to be galvanized arrive by rail from the rolling mills at one end of the galvanizing department in closely packed bundles weighing from 3 to 5 tons. They are unloaded by an overhead traveling crane and placed on buggies which bring them to a station where the bundles are discharged and opened. The sheets are then separated and placed in cradles in lots of from 2500 to 3000 pounds. The cradles are suspended from a large beam and thus carried by the overhead crane into the pickling vats.

Two Aetna-Taylor pickling units are used, each vat measuring 17 feet 6 inches x 7 feet 4 inches x 7 feet 6 inches deep. The beam carrying the sheets in their cradle is lowered onto two articulated arms, one at each extremity of the vat. These arms receive an alternative up-anddown movement by means of an electric motor and the sheets are thus constantly moving in the warm pickling bath where they remain for periods ranging from 15 to 20 minutes. At the end of the pickling Galvanizing units similar to those recently installed at the Ebbw works. Richard Thomas & Co., Ltd., England

operation the cradles are lifted out and the sheets are rinsed in two swilling vats. It is considered that this process of pickling is the most positive method known.

The sheets are now ready for the galvanizing operation, but immediately before entering the galvanizing kettle they are first subjected to an additional cleansing in a water tank which is the first link in the continuous line.

The first unit in a galvanizing line is the acid dip, consisting of a series of rubber-covered pinch rolls, acidresisting guides which convey the sheets one after the other through a strong solution of acid contained in a rubber-lined steel tank. From the acid dip the sheets are mechanically fed into the kettle of molten zinc, the surface of which is protected from oxidation by a layer of ammonia flux. The sheet enters the bath through the flux box which contains muriate of ammonia. In-(Please turn to Page 91)

STEEL

HUT AS SELL AT THE BAR MEE-COMFORTABLE IN THE CAB



WITH LINTERN-AIRE CONDITIONING EQUIPMENT

★ You've probably done everything possible to protect your crane operator from direct radiant heat. Now—you can protect him against the cumulative temperatures prevalent in all crane cabs operating over hot metal.... protect him also from *fumes* and *metallic dust*.

Thus, with the Lintern-Aire Conditioning Equipment, you can improve personnel relations, reduce breakage and spoilage, save lost time and benefit by more efficient crane operation.

MORE THAN A REFRIGERATING UNIT

This equipment purifies as well as reduces temperature of incoming air. . . eliminates entrance of unhealthful materials. . . yields in the average cab a complete change of air 2 to 3 times every minute. . . aids in keeping operator alert by providing an atmosphere of clean, rapidly circulating, cool air.

For existing as well as new hot metal cranes trolley cabs or stationary cabs. Send for recommendations—discover its many economies and benefits.

THE LINTERN CORPORATION

Lintern-Aire Conditioner in cab

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7960 Lorain Avenue

Cleveland, Ohi

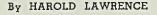
Economical Oxygen Cutting

Economies follow adoption of three standard cuts. Costs show maximum ratio of 2 to 1. Correct oxygen pressure is essential for low cost. New method cleans tips by soaking

■ MANY savings are possible in the use of present equipment. Those torches and machines that are already working in the shop often can yield further economies.

640

In machine cutting it might be well to adopt standard cuts which can be designated by the engineering department on the drawings. Figs. 1, 2 and 3 illustrate three possible types of cuts. First is the precision cut which is slow but which requires no machine work after the cut is made. Second is the standard cut which is square enough for all ordinary applications. Finally, there is the rough cut which can be used where severing alone is wanted without any demands as to edge contour.



To determine the amount of saving possible under this plan, tests were run on 7/8-inch plate making cuts almost 10 feet long. The results given in Table I show the substantial savings possible by making the quality of cut no better than that demanded by the particular job.

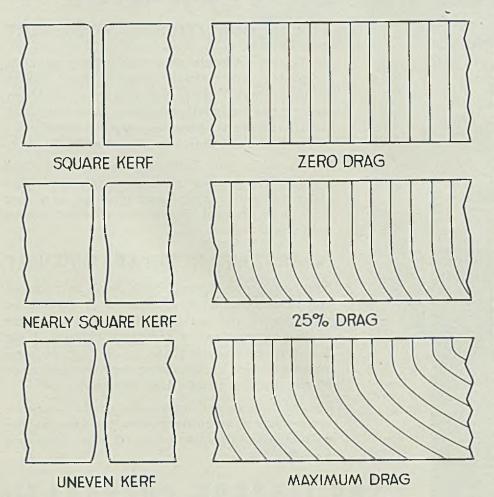
Pressures Must Be Followed

Generally the quality of cut is associated with the amount of drag. Figs. 1, 2 and 3 also show drags corresponding to each type of cut. Any experienced operator can cut steel to certain drag limitations. For that reason cuts may be specified by name or by drag with the sure knowledge that kerf contours of the desired shape will result. The savings in total cost will come about as a natural result.

What about operating pressures? Here a hard and fast rule is required.

The pressures specified by the manufacturer of the equipment MUST be followed. Seldom is it advisable to exceed these values. Frequently excess pressures result in ragged cuts and greater oxygen consumption. Sometimes "souping up" oxygen pressures results in a much higher overall cost because the extra speed is gained at too great

Adopting these three standard cuts will do much to reduce costs if the standard or rough cut is employed wherever possible. From top to bottom —precision cut with square kerf and zero drag, standard cut with nearly square kerf and 25 per cent drag, rough cut with uneven kerf and maximum drag



STEEL

	TABLE I		
	Precision Cut	Standard Cut	Rough
Oxygen	\$0.0784	\$0.0525	\$0.0392
Acetylene	0.0115	0.0077	0,0058
Labor	0.0596	0.0397	0.0298
Overhead (100%)	0.0596	0.0397	0.0298
Total cost	\$0.2091	\$0.1396	\$0.1046

a gas cost. Cutting tables should be supplied every man that uses a cutting torch and foremen in the shop should be held responsible for proper use of equipment.

A handy arrangement to enable accurate control of cutting pressures is a small pressure gage that may be attached to the cutting torch. This device allows the direct reading of oxygen pressures at the torch without needing to allow for hose pressure drops at the regulator.

Frequently these little presnure gages will disclose leaks in the oxygen hose that might not be detected in any other way. Too, the alibi of pressure drops in the hose is taken away from the cutter who feels that too much pressure is almost impossible.

Torch Tip Size Important

Another important point is size of torch tip for different thicknesses of metal. Table II shows importance of using proper size of tip as well as proper pressure. This information may well be included in cutting tables supplied operators. Since even a slow man can change a tip in less than a minute, it is folly to let a man use one large tip for all cutting. Equipment suppliers want efficient use of their torches almost as much as good shop operators. To that end most oxygen suppliers maintain service men whose sole function is to enable the user to get good operating results. Taking advantage of this service will help put gas cutting on a modern controlled' basis.

Whenever possible it is a good idea to have one maintenance man for all cutting equipment including the tips. The great difference in oxygen flow that results from slight increases in cutting orifice diameter may be seen in Table II. Even the best cutter gets into bad tip-cleaning habits, so such work should be done by a man trained by one of the suppliers to care for cutting tips properly. Most companies do this training for nothing or for a nominal charge.

Cutting tips are tools. Being tools they should be checked out of the tool room.

If any tip becomes clogged or dirty, it should be returned to the store room for a new one. That way the tool keeper is able to return all tips to the maintenance man for cleaning.

Some shops may desire to follow the older scheme of allowing the cutter to clean his own tips. In that case the cutter should be provided with a complete set of tip drills along with data on drill sizes of all the holes in the tips he uses. In extreme cases shops have been known to throw away tips after they have been cleaned a couple of times. The claim was made that tips are the cheapest part of the cutting process and the decrease in gas consumption paid for the new tips required.

One new method of tip cleaning deserves mention. Radiator cleaning compounds are available that will clean the iron oxide from the

T A	12	LE	II

Oxygen Consumptions for Different Size Tips at Fifty Pounds per Square

	inen rressure	
Drill Size Number	Diameter of Hole Inch	Oxygen Cu. Ft./Hr.
56	0.0465	90
54 52	0.0550 0.0635	126 181
49 45	0.0730 0.0820	234 310
41	0.0960	430

tips without hurting the copper and copper alloys. This eliminates necessity of using drills and maintains correct hole size. Some of these compounds are poisonous so care should be exercised in handling them. Rinsing the tips in clean water and blowing them out with compressed air is all that is needed after an overnight soaking in the cleaning compound.

Periodically inspect all cutting equipment from the generator to the tip seat. Not only is gas wasted through even small leaks but these leaks can be dangerous. Soap and water such as are used in testing tanks for leaks may be used to detect such escaping gas.

Better gas flow may come from reversing the direction of flow through hose lines. Frequently particles in the hose set up disturbing flow currents. Reversing the hose keeps these obstructions to a minimum. Do not patch a hose forever.

Leaking patches will more than

pay for new hose. Heavy duty hose with light stail hoses reprecent a good combination. The heavy duty hose stands less chance of being cut while the tail hose is flexible enough to make manipulation of the totch quife easy.

()

Ingenuity in outting has been overlooked more than the same attribute in welding. Where outting operations seem less important than the welding activities this is apt to be true. The same cost-saving jigs that make the superintement and general manager conduct mutual admiration meetings over lowered welding costs per unit are possible with cutting.

Sometimes a machine torch may be operated by hand in a statable jig with quite a saving. Other times awkward hand cuts may be eliminated by a simple torch holder. There are many possibilities in cost saving when the oxygen cutting process is employed. Sometimes the control needed seems too simple to warrant special investigation. Most foremen can save more money than they realize through adequate control to make oxygen cutting economical.

Inorganic Finish Steps Up Heating Efficiency

A new inorganic finish, called Pyronamel, which is fire, moisture and rustproof has been developed by Porcelain Enamel & Mfg. Co., Eastern and Pemco avenues, Baltimore, in co-operation with the engineers of Norge Heating and Conditioning division, Borg-Warner Corp., Detroit.

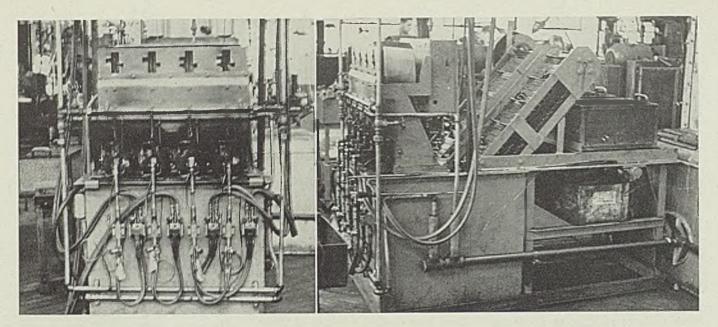
The finish is being used on heat drums of Norge Fastemp furnaces, and according to tests has rendered the heating units more efficient than before.

Medium Produces Pencil Blue Prints

■ Ink like opacity from hard drawing pencils is produced by a new transparent medium called P. T. M. developed by Frederick Post Co., Box 803, Chicago. Blue prints can be made from drawings produced by ordinary hard drawing pencils on this medium giving a solid background and sharp white lines. It produces solid and sharp details on Blacline, keeping the background uniformly white.

The back side of the medium is dust protected by ice glazed finish, similar to the reverse side of tracing cloth, the surface also being moistureproof.

Product is available in rolls 20 yards long in widths of 30, 36, 42 or 54 inches.



Transmission Shifter Yokes Are

Flame Hardened Automatically

■ IN GETTING into production on 1940 models, an automobile manufacturer was confronted with the problem of hardening the wearing surfaces of shifter yokes used in a new type transmission. The hardened area had to be confined to the locating slots and the countersunk holes and is run where the steel ball works back and forth when shifting from one gear speed to another. Flame hardening this part called for heating two different points at the same time.

Special flame-hardening tips were designed for the job, and the machine built utilizes 12 of these special tips designed by Air Reduction Sales Co., New York.

Yokes Handled Rapidly

Machine itself is designed to handle 200 pairs of yokes an hour. Fig. 1 shows a front view of the machine, which automatically hardens the forward and reverse shifter yokes. The pieces are fed in at the top slots, there being two slots for each type of yoke. The yokes slide down a T-slide and are held in position by a finger which is timed to move back and allow the yoke to drop into the quenching tank below after it has been heated to the proper temperature.

Fig. 2 is a side view of the machine. Here the control box which houses the electric control equipment that times the cycle of yoke movement can be seen mounted behind the front panel and up above the other portions of the machine. This control can be set to give any period required to heat the work properly.

After yoke has been fed in through a top slot and heated, timer releases the piece dropping it into the water quench immediately below. Here a small conveyor picks up the pieces and carries them out of the quench tank, delivers them to baskets shown on the back end of the machine in Fig. 2. From this point the parts are run through a cleaner and then are ready for the assembly line.

As can be seen in Fig. 1, each of the four torches in position at the bottom of the T-slide has a control valve block for lighting and turning off the torch. This block also acts as a safety device.

Two 6-cylinder acetylene manifolds and one 20-cylinder oxygen manifold deliver the gases to the torches with the necessary safety devices and regulators.

Two of these automatic flamehardening machines are utilized by this automobile manufacturer, one at each of two different plants. These two machines will harden all the shifter yokes that go into all 1940 models built by this manufacturer.

Crane Brake Wheels Now Cast in Meehanite

☑ As a result of recent experiments, Meehanite Research Institute, 311 Fig. 1. (Left)—Front view of automatic flame hardening machine showing four sets of torches, valves and openings for parts

Fig. 2. (Right)—Side view. Note continuous conveyor with flights to carry work up out of water quench tank into which it is deposited automatically by the machine

Ross street, Pittsburgh, recommends casting heavy duty crane brake wheels in Meehanite metal. Four different types and sizes of these wheels cast recently by Rosedale Foundry & Machine Co., Pittsburgh, have tensile strength of 50,000 pounds per square inch or better and approximate brinell hardness of 220.

Experience in service has revealed that these wheels possess improved freedom from distortion. Also it has been found that the wheel surfaces do not glaze with continued use and therefore provide constant gripping power.

Discusses Shipping of Enameled Products

■ Porcelain enamel finish when over 0.025-inch in thickness is more easily damaged than when the coating is under 0.018-inch, stated C. S. Pearce, managing director Porcelain Enamel institute, 612 North Michigan avenue, Chicago, at a recent meeting.

Principal defects discovered by examination of several thousand damaged parts revealed: Heavy application of porcelain enamel coatings, improperly designed steel shapes, steel shapes broken in fabrication and poor bonding of the enamel coating.

INSULATING VALUE

Bonded Together for Economy in Backing-Up Insulation

Write for Bulletin R-18, containing engineering data regarding B&W K-16's.



Stability and high insulating value are the chief characteristics of B&W K-16 Insulating Firebrick. They make it possible for the furnace owner or operator to save worth-while sums in the cost of backing-up insulation.

Where interface temperatures are not over 2000 F., and for equal heat-flow through the furnace wall, K-16's save as much as 40 per cent in the cost of insulating material. The details are interesting and will be furnished without obligation.

> THE BABCOCK & WILCOX COMPANY REFRACTORIES DIVISION: 85 LIBERTY ST., NEW YORK, N. Y.

BABCOCK & WILCOX

Supporting Fixtures of Bending

Press Eliminate Reverse Bends

■ A PROBLEM often encountered with light-gage material on bending presses is a reverse bend inadvertently formed due to whipping of the sheet, caused by difficulty of supporting the metal during action of press.

When done by hand, work of this kind requires skilled operators and is often a slow process. Illustrations show how one Ohio manufacturer met this problem in forming the inner liner of a typical refrigerator.

The sheets were first blanked and then formed on bending presses. Close-up view shows the bending of the straight flanged sheet into the desired box section. This was done by a special fixture which supported the metal during bending process, gaging being done from holes already punched in the sheet for other purposes.

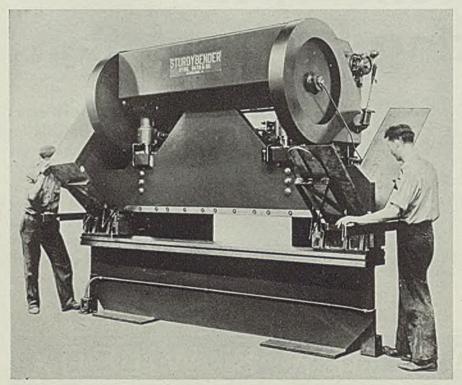
As the die was of the triple action type, flanges were taken around the corner smoothly by a special spring die arrangement. Raising fixture or supporting arms prevented occurrence of reverse bends and put the operation on a production basis. The work was

Below, two operators can prepare for welding more than 80 boxes per hour. At right, above, close-up view showing the arms supporting the sheet during the bending operation done on a Cyril Bath & Co. Sturdybender press having an overhanging bed on each end. Thus with two operators, a completed box was finished and ready for the back to be welded at better than 80 per hour.

Frequently it is desirable to make boxes with flanged edges without cutting out the corners. This can be done by making corners of a larger radius as is done on the front edge of the cabinet. Back edge has a developed notch in it because the back is welded over the flange at this point.

This principle of supporting the sheet is applicable to any production problem where handling of





work causes reverse bends, or where work is a source of danger to operators when so handled.

New Solder Joins Metals with Low Heat

■ A new method of metal joining, called reaction soldering, developed by Colonial Alloys Co., East Somerset, Trenton avenue and Martha streets, Philadelphia, joins metals speedily, providing a strong joint that does not have a tendency toward electrolytic corrosion.

Method is not restricted to one metal or group of metals and it works with both ferrous and nonferrous metals. It also can be used to fill breaks, cracks, etc.

The solder, a powder which contains a combination of selected electro-positive metals with chemicals, acts somewhat like brazing but without the high temperature of brazing.

Its reaction chiefly depends only on the application of low heats. Application is simple, consisting of applying the solder, either in powder or paste form, to the joint and heating.

Torch, flame, oven, soldering iron, electricity or any other method of heating may be used.

Finds Labelling Each Gear Aids Users

An innovation in its production and marketing of cast iron gears has been instituted by Braun Gear Corp., Brooklyn, N. Y. each gear is labeled with its actual physical properties determined on test specimens representative of the gear itself.

The label attached to each gear bears an identification number, tensile strength and both brinell and Rockwell C hardness ratings. The gear buyer also is provided with a list of additional typical properties, including shear and torsional strengths, modulus of elasticity, etc.

Purpose is to render greater assistance to the engineer in designing new equipment and making proper gear replacements in existing equipment, also to dispel the idea that cast iron gears are not dependable. Applications for these gears include conveying, baking and creamery equipment, hoisting units and the like.

The innovation is an outgrowth of the development of cast iron gears of superior properties. The gears certified by Braun are machined from nickel-chromium-molybdenum cast iron blanks analyzing: Carbon, 3.10 per cent maximum; silicon, 2.10 to 2.40 per cent; manganese, 0.80 to 0.90 per cent; nickel,

(Please turn to Page 92)



A Series of Process Alloys

which economically impart to steels

- Increased Hardening Capacity
- Increased Toughness at High Hardness
- Increased Adaptability to Surface Hardening

CLEVELAND

Increased "Merit Values"*

*Numerical expressions that are combinations of fensile strength with ductility or impact strength.

VANADIUM CORPORATION OF AMERICA 420 Lexington Ave., New York, N.Y.

CHICAGO

PITTSBURGH

And the second second

DETROIT





Say fellers:

Took a short cut through the cast house.of No. 3 blast furnace yesterday. 'Twas 'bout a half hour before castin' time and the gang had the iron troughs slicked up, the gates in place, the cinder runner leveled off and the clay gun loaded ready to plug the iron notch when the cast was finished.

Sittin' on the bench near the wheel that 's used to operate the cold blast valve was Skippy Hirsch, the blower on No. 3, and Jimmy Duncan.

Jimmy was an old time furnaceman and had been through many a tough "sityeation" when the goin' at the furnace wasn't so good. A pass had been signed for 'im earlier in the day for he wanted to do some visitin' at the plant to get a few pointers on the way we use soda ash in the ladle for desulphurizin' the metal.

Restin' Their Bones

There they were—sittin' on the bench like a couple of old cronies, chattin' away for dear life, gesticulating with their hands as though an important decision was 'bout to be made.

He was tellin' Skippy 'bout a bad breakout at a furnace he worked at in Pittsburgh a few years ago.

"Fourteen men never went home when the turn ended, Skippy," he sez. "I can see 'em yet. Molten iron came so fast and 'xplosions knocked down so much of the sheet iron roofin' that they never had a chance. And I thought my time had come, too."

"How big a furnace were you handlin'?", I inquired.

"Well, Shorty," he sez, "she was built to throw 600 tons of iron in 24 hours. She stood a 100 feet high, had a bosh diameter of 22 feet, a hearth diameter of 15 feet and a top diameter of 15 feet. Then we had 12 steel bands on 'er to reinforce the bosh brickwork each $7\frac{1}{2} \times 1\frac{1}{4}$ inches, made to withstand a pressure of 250 pounds per square inch. Plenty big enough, they were."

"What blast pressure were y' carryin' at the time she let go?" asked Skippy.

"Oh, I'd say 17 pounds at the fur-

nace gage. We had the two blowin' engines turnin' over for 44,000 cubic feet of air per minute. We were usin' 84 per cent of Mesabi ore in the burden and I suppose we had 'bout 800 tons of ore, coke and limestone inside of 'er when she let go."

Kept His Poise

"Didya get knocked off your feet, Jimmy?", Skippy inquired. "No. Y' see I was 'bout 30 or 40

"No. Y' see I was 'bout 30 or 40 feet 'way from the stack watchin' the iron run into the ladles. It all happened on the first cast on the night turn, 'round 7 o'clock in the evenin'. We'd nearly four ladles out of 'er when all of a sudden there was a loud crack, 'n a flash, 'n then an 'xplosion, 'n then more 'xplosions as the molten iron and cooling water met."

'N then, fellers, Jimmy couldn't tell the rest of the story for he was usin' his bandanta handkerchief.

* * *

Molten iron flowed out as though a dam had burst . . . workmen engaged in the vicinity of the furnace screamed as molten metal engulfed them . . . roaring sound of sheet iron falling everywhere . . . clouds of dust drew a curtain over the scene . . . more explosions, but much lighter than at the start . . . clouds of steam rising through the gaps in the cast house roof . . . then silence, momentarily.

Whistles shrieked . . . men with fire hoses played streams of water on the mess . . . the atmosphere cleared.

After what seemed hours, workmen shod with wooden shoes with a ring of iron on the underside walked over the floor of hot iron to do what they could for human forms—now silent. 14 in all.

* * *

"Next day, fellers," continued Jimmy, "we started checkin' up. Found the rivets holdin' some of the nine bosh bands had been sheared by the force of the 'xplosion; others were broken at points where the strain proved the greatest. In fact, the 'xplosion tore out seven-tenths of 'er bosh.

"Glad we don't use bosh bands in

our design nowadays, Shorty. Huh?"

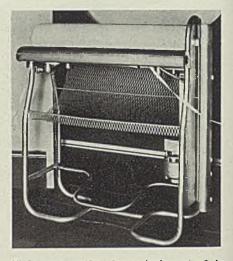
"Yea," I sez, "the cast steel armor we're usin' now on our boshes has put an end to such a story as you've just related, Jimmy, and a man 's got more of a chance of steppin' over his doormat at the close of a turn than he had when you were furnacein' 30 years ago."

"Okey, Skippy, to put the drill in the iron notch?", inquired the Pollak keeper tendin' the furnace.

"Yea. Go ahead, Son, lay on 'er." Well, fellers, the drill started hummin' and as I walked 'past the furnace on my way to the steps leadin' onto the stove platform, I glanced at the steel-clad bosh and I sez to myself, "Shorty, it seems as though no achievement was ever wrought, but somewhere a life was laid down on the way. No distinction was ever won but a bit of life went to the winning of it. A drawin' pen in the hands of draftsmen has made the blast furnace a safer place to work." Well, I'll be seein' you.

"Shorty" Long

Tubular Ironer



▶ 1.atest outlet for tubular steel is in the fabrication of the all-steel domestic ironer shown above, shortly to appear on the market. Made by MiLady Inc., 5221 General Motors building, Detroit, it features tubular steel and welded frame, chromium plated steel shoe supported by four springs, expanded steel mesh catcher and cylinder, the latter mounted in oilless bearings on a rigid tubular center member. Power is supplied by a 1/20-horsepower motor, and heat provided by full-length electric element in the shoe.

BULLETIN 740 AUTOMATIC STARTER

This single-step automatic starter, with its compression resistors, provides smooth acceleration for squirrel-cage motors.

BULLETIN 640 MANUAL STARTER

For Machines that need

J

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D

With this manual starter, the operator can gradually build up the current value until the motor smoothly turns over the load.

AB ALLEN-BRADLEY COMPRESSION RESISTANCE STARTERS

How To ELVET-SMOOTH ACCELFRANT How to get

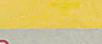
ere are many applications where it would be highly desirable to start uirrel-cage motors smoothly, without shock—either to improve the prodt or to reduce wear and tear on belts, gears, and connected machinery. ere is where one of the starters described below fits ideally into the picture.



For Automatic Starting The Bulletin 740 starter is controlled by push buttons or other pilot device. The

Bradleyunit compression resistors can be easily adjusted to meet exactly the starting torque requirements of the motor load.

SPEED-TIME CURVE OF BULLETIN 740 STARTER



end for these EDUCED-VOLTAGE

TER BULLETINS -

Includes bulletins on manual and automatic resistance type starters and on automatic transformer type starters.

Allen-Bradley Co. 1320 S. Snoond Street Milwankee, Wisconister

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Large and Small Sizes for Every Industrial Need

SPEED

TIME

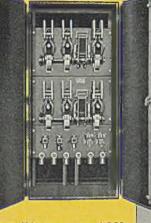
Allen-Bradley compression resistance starters have been used by industry for many years to control conveyors, textile machines, punch presses, wire drawing machines, line shafts, V-belt drives, band saws, chain drives, and other such equipment. Available in capacities up to 250 hp, 220-440-550 v.

For Hand Starting

With the Bulletin 640 starter, the operator has the motor starting speed under his full control. Thus, shock to connected machinery can be eliminated. By reducing machine wear and tear, maintenance expense is saved.

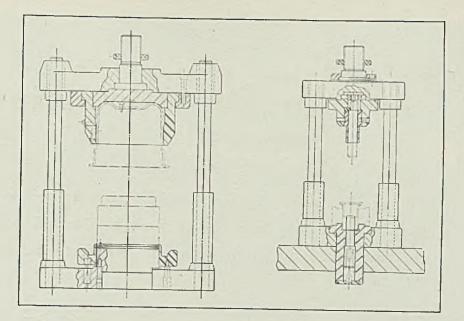
SPEED-TIME CURVE OF BULLETIN 640 STARTER

BULLETIN



Bulletin 740 starter, rated 250 hp, 220 volts, showing main contactors and auxiliary relays.

ALLEN-BRADLEY MOTOR CONTROL QUALITYS



Broaching Machines Assemble

Press-Fit Parts

THE USE of hydraulic broaching machines in assembling press-fit parts appears a development with considerable possibilities in obtaining greater tool flexibility and thus decreasing obsolescence. Two interesting fixtures for presss-fit assembling of precision parts are in use at the plant of a leading manufacturer of electric refrigerators. They are used respectively for pressing the eccentric shaft into the rotor and for assembling the motor stator in the motor housing.

Both fixtures are mounted on standard hydraulic broaching machines, this type of equipment having been generally adopted for such operations at this plant due to its greater range of shop application and because it thus cuts machine and tool obsolescence.

As shown in accompanying diagram, the fixture at the left is used for pressing the motor housing over the motor stator, employing a 10ton Colonial Utility broaching machine. The fixture which is quickly removable requires no clamping of the parts, it will be noted.

The stator is placed in the lower half of the fixture within a locating

collar and its rotary position is determined by means of a pin in the fixture. The housing is slipped into the top of the fixture which is attached to the hydraulic ram of the machine. Locating here is by means of a pin through a hole in the housing. The housing is retained in the upper fixture by a simple leaf spring, bearing against a plug in the housing.

Housing Pressed Over Stator

As the ram moves down, the motor housing is pressed over the stator. When it contacts the locating collar in the lower fixture, it pushes the collar down against spring pressure to complete the assembly. When the ram reaches the bottom of the stroke it returns automatically to the top. The weight of the assembly releases it from the upper fixture while the collar in the lower fixture raises the assembly off the locating pin. The assembly thus is freed automatically and is merely lifted off and other parts inserted. While these operations are extremely fast, only minimum effort is required.

In the second fixture, at right in

the diagram, eccentric shafts are pressed into a rotor with a press fit.

A 6-ton Colonial Utility broaching machine is used for this operation. The same general principle of avoiding clamping or locking of parts also is followed here. The rotor is placed in the lower fixture, being slipped with its bore over a central guide plug. The eccentric shaft is slipped into the upper half -attached to the hydraulic ram. The upper fixture is so designed that the shaft will slip into it in only one position, locating being by means of the offset eccentric shaft itself. It is prevented from dropping out of the fixture by a simple ball detent, bearing against the shaft.

As the ram moves down and the eccentric shaft enters the rotor bore, the guide pin of the lower fixture is depressed ahead of it against spring pressure. Thus guiding is continuous, assuring absolute alignment without clamping. When the ram automatically returns to the top, the assembly is free so it can be lifted from the fixture and additional pieces inserted.



Angular Distortion

Fillet-weld distortion minimized by reducing number of passes or beads and by reducing size of weld. Increase in rod size and weld current do not increase distortion

DEPOSITION of a fillet weld between two members at right angles to each other results in two general types of distortion: Shortening of the members adjacent to the weld, and an angular rotation of the members. Shortening occurs in a plane parallel to the weld axis and is the combined result of the deposited weld metal shrinking and the nonuniform heating and cooling of base metal adjacent to the weld. Angular rotation, caused primarily by shrinkage of the deposited weld metal, reduces the included angle between the members on the weld side.

It is the purpose of this article to illustrate the influence of weld size and number of passes or weld layers on the angular distortion produced by fillet welds. While actual values of angular distortion given cannot be used to determine distortion expected in a welded structure, they are of importance in determining the weld size and establishing

By CHARLES H. JENNINGS

Research Laboratory Westinghouse Electric & Mfg. Co. East Pittsburgh, Pa.

the most desirable welding procedure.

Here $\frac{1}{2}$ x 2 x 10-inch plates were used. No attempt was made to restrict their deformation. Heavier plates would have produced different angular rotations because of the difference in their thermal capacities. Also if the plates had been held rigidly against rotation the overall angular distortion would have been greatly decreased.

This decrease in distortion would have been obtained at the expense of additional stretching of the deposited weld metal during cooling and possibly by local deformation of the plates adjacent to the welds. Thinner plate members in a rigid

					ng Conditions	
Sepci- men	Size weld	No. of passes	ing e	f Weld- lectrode rent	Position of welding	Remarks
1	5/16	1	AP	150	Horizontal	
2		3	AP	150	Horizontal	Joint cooled between
2						passes
3	3,4,	6	AP	150	Horizontal	Same as 2
4		10	AP	150	Horizontal	Same as 2
5		2	AP	135	Vertical	Welding upward cooled between passes
6	1/2	6	AP	140	Vertical	Welding downward cooled between passes
7	5/16	1	DH	225	Flat	
8		2	DH	225	Flat	Same as 2

TABLE II-Angular Distortion

Specl- men	Weld size	No. of layers	Position of welding	Type of electrode	Angular distortion in degrees
1	5/16	1	Horizontal	AP	1
2	7%	3	Horizontal	AP	3
3	14.	6	Horizontal	AP	7
4		10	Horizontal	AP	13
5		2	Vertical up	AP	2
6	16	6	Vertical down	AP	11.5
7	5/16	1	Flat	DH	1
8		2	Flat	DH	1.5

structure result in greater local distortion. Similarly, the heavier the plate members in a rigid structure, the lower the local distortion. Consequently shinkage must be taken care of by stretching of the weld deposit. Localization of this stretching entirely in the weld deposit probably is part of the cause of cracks sometimes produced when depositing small sized welds between thick plates.

Test procedure consisted of depositing fillet welds between pairs of $3 \times 2 \times 10$ -inch plates that had previously been tack welded together to form a 90-degree included angle. Measuring included angle between plates after welding and subtracting this from the original angle gave a measure of the angular distortion produced.

Two Movements Indicated

Specimens 1 to 6 inclusive were welded with 5/32-inch diameter allposition type electrodes. Specimens 7 and 8 were welded with 3/16-inch diameter downhand type electrodes. Table I gives complete welding data on the eight specimens tested.

The measured angular distortion produced by the fillet welds is tabulated in Table II. Curves plotted from these data are given in Fig. 1. The extent of distortion obtained is easily seen in Fig. 2, which shows sections cut from the test specimens.

Close examination of the welded specimens indicates two types of angular movement. Welds containing only one or two layers appear to bend simply by rotating around the weld as a fulcrum. Welds containing large numbers of layers produce a more complicated type of distortion as may be seen from Fig. 2.

Deposition of the first few layers of weld metal produces simple rotation of the plates around the weld. Deposition of additional layers of weld metal tends to increase this

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Ohio Ferro-Alloys Corporation Canton, Ohio

rotation, but the degree of fixity produced by the first layers tends to prevent it. Final result was to cause the plate to bend. Fig. 2 shows clearly the bending produced with large-size multiple-layer welds.

Angles of rotation given in Table II were obtained by measuring the angle between the unbent sections of plate extending beyond the weld.

From Fig. 1, two general trends are apparent: First, the angular distortion increases with an increase in the number of passes of weld metal deposited in making a weld. Second, the angular distortion increases with an increase in the size of the weld. Increasing the size of a weld, however, inherently requires an increase in the number of passes of weld metal required to make the weld, consequently it is believed that the increase in angular distortion accompanying an increase in weld size is primarily the result of the increased passes required.

The importance of the number of passes of weld metal on the angular distortion obtained is obvious from Fig. 1. Curve B illustrates the distortion trend as a function of the number of passes of weld metal deposited in the horizontal position with one type of electrode. The other points about the curve represent welds made in other positions or with other electrodes. These points do not all fall directly on the curve but they do, in all cases, follow the trend of the curve.

Curve A illustrates the distortion

Fig. 1—Relation of distortion to weld size and the number of passes of weld metal

trend as a function of the weld size for welds made in the horizontal position with all-position type electrodes.

The angular distortion produced by %-inch fillet welds made with different electrodes in different positions and with different numbers of passes also is plotted with this curve. It will be seen that the values of distortion obtained from these tests do not fall on the curve. The fewer the number of passes required to make the %-inch weld, the lower was the distortion produced.

The two 5/16-inch fillet welds were both single pass welds. Even though different electrodes were used, the angular distortion was the same.

It is of interest to compare the results obtained on the 5/16-inch and 3/4-inch welds deposited with allposition electrodes in the horizontal position and down-hand electrodes in the flat position. In making the welds with the down-hand electrodes, 3/16-inch diameter electrodes were used in place of 5/32-inch diameter electrodes with 225 amperes in place of 150 amperes. Regardless of this larger electrode size and increased welding current, the amount of angular distortion was the same with the 5/16-inch weld but less with the %-inch weld. This indicates that increasing the welding current and electrode size does not necessarily result in an increase in angular distortion.

The reason for this condition may be the result of three factors: Difference in type of electrode used, difference in position of welding and increased welding speed accompanying a larger diameter welding electrode.

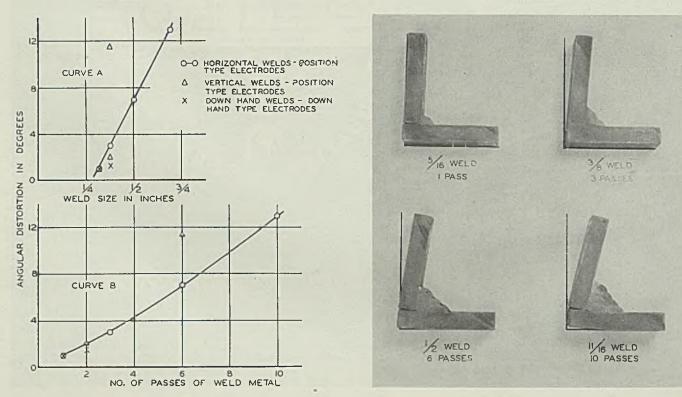
In summing up the results of this investigation the following distortion trends are obtained:

First, the angular distortion produced by fillet welds is a function of the number of passes of weld metal used in making the weld. The greater the number of passes, the greater the angular distortion. In production work, therefore, it is desirable from the standpoint of the distortion to make any given size weld in as few passes as possible.

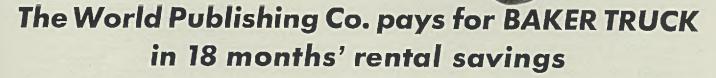
Second, angular distortion produced by fillet welds increases as the size of the weld increases. This condition, as previously discussed, is largely the result of the greater number of passes of weld metal required to make larger welds. Therefore to hold the angular distortion to a minimum, it is desirable to make fillet welds as small as is consistent with good design practice.

Third, angular distortion produced by fillet welds of a given size and number of passes was found to remain the same or to decrease as the electrode diameter and welding current increased. It is not known over what range of electrode diameters and currents this condition holds but it should be true for moderate Therefore, increasing variations. welding speed by increasing electrode diameter or welding current should not produce any additional trouble from the standpoint of angular distortion.

Fig. 2—Note how increased number of passes increases angular distortion and bends plate adjacent to weld



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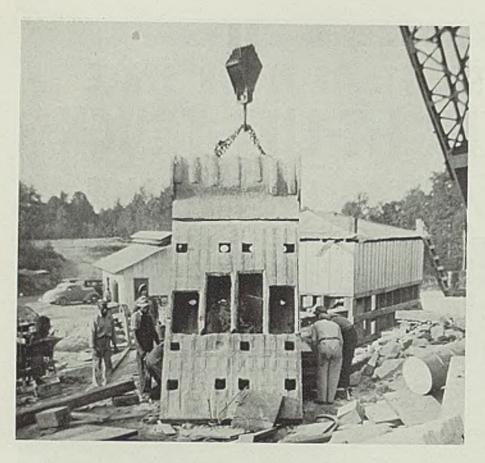


• Four years ago The World Publishing Company of Cleveland needed extra storage space. They purchased a Baker Hy-Lift Truck which enabled them to make every floor foot count double and reduced their requirements by 10,000 sq. ft. "In rental savings alone our truck paid for itself in 18 months," they told us. "We also cut by $\frac{2}{3}$ the time required for unloading skids of paper from box cars—an additional saving—and we are using the truck constantly for maintenance and millwright work

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Arc Welding Used To Repair Huge 25,000-Pound Stone Crusher Jaw

WHILE crushing waste stone at the quarry of Rion Crushed Stone Corp., Rion, S. C., the lower section of the 25,000-pound swing jaw of a huge jaw crusher suddenly broke off entirely. Since failure of this crusher halted operations of the entire quarry, it was important that it be placed back in service as soon as possible, because of unfilled orders.

Investigation revealed the earliest possible delivery of a new swing jaw would mean laying off for 90 days, and then only if the first casting was free of slag inclusion. Also the cost would be \$12,000 delivered.

It was finally decided to arc weld the broken jaw. The V-welds were prepared by oxyacetylene cutting, being made from one side only so outside welds could be made later. The cuts were cleaned by sandblasting.

The back step method was used on all welds with each bead being peened with an air hammer and thoroughly cleaned before the next was laid. At the points where the three vertical ribs join the broken casting, the ribs were cut off 3½ inches to allow for steel plates $3\frac{1}{2}$ inches thick between the ribs and the broken casting. These were cut so all welds would be laid on good metal in the broken part, and then welded to the ribs. After all the welds were completed on the original swing jaw, a piece of steel 7 x 16 feet by $2\frac{1}{2}$ inches was fillet welded on the face of the jaw for reinforcement.

The crusher was placed back in service 53 days after the accident with a total cost of \$3,778.53, plus the five weeks it took to repair the crusher.

During the entire welding opera-

Itemized	Cost Sheet for Welding
	Jaw Crusher
Supervision	\$ 250.00
Skilled labo	r 1,044.06
Common lab	or 479.02
Welding roc	ls 338.74
Oxygen and	acetylene 272.58
Steel plates	
Compressor	(day) 200.00
Compressor	(night) 160.00
House	
	ver 180.00
Miscellaneou	18 145.00
Total	\$3,788.53

Illustration shows a 100-ton railroad crane moving the heavy lower section of the swing jaw in order to position it for welding

tion, the work was housed in a wood and sheet metal building built to shelter both the men and the job. The building was designed so it could be lifted by crane when a change of position in the jaw was necessary. A 100-ton railroad crane was used to position the jaw so welds could be made in flat position. Four welders did all of the work, two of them working during the day and two during the night shift.

One hundred pounds of 3/16-inch Hollup 18-8 stainless steel and 3600 pounds of 3/16-inch Hollup Sureweld B electrodes were used in the entire undertaking.

The accompanying table gives an itemized list of the cost as setup by the company.

Newer Levelers Turned Into Production Units

■ Edward W. Voss, 2882 West Liberty avenue, Dormont, Pittsburgh, announces design changes in recent installations of the Voss Ungerer leveler which now classify it as a production machine for flattening sheet, strip and plate.

The new high-output leveler utilizes an adjustable backup roller system which embodies a multiplicity of staggered narrow backup rollers serving the double purpose of preventing the leveling rolls from bending in operation and flexing them for localized flattening of the material. This overall support overcomes the tendency of small diametered rolls to whip at high operating speeds or to deflect under pressure.

Other construction innovations include the location of the screwdown control motor on the top frame of the leveler, and the incorporation of an improved lubricating system for the rollnecks.

Washer Shipments Show

Sixteen Per Cent Gain

■ April shipments of household washers totaled 135,179 units, an increase of 16.3 per cent over the 116,-199 shipped in April 1939, according to American Washer and Ironer Manufacturers' association, Chicago. Ironer shipments aggregated 11,984, a 15.8 per cent increase over the 10,350 of April 1939.

Washers shipped the first four months this year totaled 546,455, an increase of 7.42 per cent above the 508,718 of the same 1939 period.

Judge for yourself how much it's worth to specify BIRDSBORO PRECISION CASTINGS

Look at this unretouched photo of a run-of-thefoundry industrial casting. Notice first the surface. Have you ever seen a cleaner steel casting—or one with fewer signs of gas-caused blemishes? Birdsboro Precision Castings are sound like this all the way through. Now check the detail on the cast numerals. Look at the sharp edges. No sign of wash or crumbling of the mold here. Every detail is exactly

numeral 5849? The width of the outline is scarcely thicker than a single grain of molding sand.

Surfaces like this plus high fidelity to pattern are the reasons why precision castings save money and speed production—why companies as far away from Eastern Pennsylvania as New England, Florida and the Mississippi River find it economical to specify steel and iron castings made by Birdsboro's Randupson

reproduced. Or look inside the rectangle beside the letter A. Can you read the

5.8A9

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BIRDSBORO STEEL FOUNDRY AND MACHINE COMPANY Plants at Birdsboro and Reading, Pa.

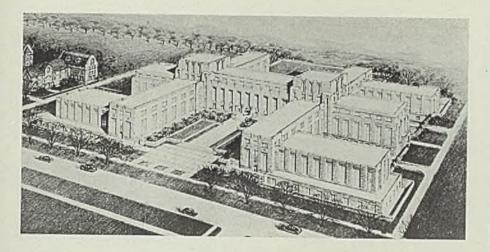
 Now you can weld tubular parts without external flash or extrusion at the weld. Grinding of joints - expensive, and sometimes dangerous — is unnecessary ... as demonstrated by the joints in this photograph of a bicycle frame as it left the welding

Joints made by this method -the Hart Process of electric machine. resistance welding (U.S. Patent

WELDED TUBULAR JOINTS WITHOUT FLASH ! No. 2,091,982)—are stronger than the tubes joined by it. There is no warpage. Costs are reduced. And the equipment required is not expensive. Let us tell you more in detail how you can employ the Hart

Process to make uniform, strong, sound, clean tubular joints. Write-Steel and Tubes Division, Republic Steel Corporation, Cleveland, Ohioowner and licenser.

Steel and Tubes engineers are ready to belp you in the selection, application and fabrication of Republic ELECTRUNITE fabrication of we have one of our repre-sentatives visit you at your convenience?



Northwestern Inaugurates New Technological Institute Facilities

■ PLANNED eventually to accommodate 400 students, a new technological institute building is now under construction at Northwestern university campus, Evanston, Ill. To be completed September, 1941, building will contain 450,000 square feet of floor space, use over 350 tons of structural steel and 2000 tons of reinforcing bars and contain approximately \$500,000 worth of machinery.

As shown in accompanying illustration, center section is to be three stories with 2-story wings. Cost of building will be about \$4,920,000, equipment in excess of \$1,350,000. Construction of building and purchase of equipment were made possible by gift of \$6,735,000 from the Walter P. Murphy Foundation. Of the 350 separate rooms, at

Of the 350 separate rooms, at least 35 will be laboratories with most modern equipment. Structural testing laboratory will include a transverse-universal testing machine capable of exerting 1,000,000 pounds pressure at the midspan of a steel beam 55 feet long. This will be the cnly laboratory capable of testing heams of such length under actual working conditions, it is said.

Students will be enrolled under the co-operative plan whereby they will work three months in private industry at a job to provide practical experience alternated with three months of laboratory training at the institute. During freshman year, the student spends his first three consecutive 3 month periods at the institute, using the fourth quarter as summer vacation. At beginning of the second year he alternates between classroom and industrial work until completion of the course the fifth year. This requires the beginner to complete satisfactorily a year's work before being placed. Enrollment of students in technological institute was begun in fall of 1939 with a selected class of 100. Registration in 1940 is limited to 180 students, and in 1941 to 250. Total enrollment of the institute upon completion will be limited to 800 students.

21 States Supply Raw Materials for Steel

Mines and quarries in 21 states, from the Atlantic seaboard as far West as the Rockies and beyond, have supplied the steel industry over the past 20 years with iron ore, coking coal and limestone, the chief raw materials used in the manufacture of iron and steel.

According to the American Iron

Stainless Food Tank

Because of its sanitary qualities, stainless steel is finding increasing application in equip ment for food product manufacture. Grain storage tank of Enduro stainless fabricated by Georgen-Machwirth Co., 817 Sycamore, Buffalo, is 6 feet high below cones, holds 270 cubic feet. Upper part of tank, shown at bottom, is 9 feet 6 inches long, 4 feet 3 inches wide. Photo, courtesy of Re-public Steel Corp., Cleveland

and Steel institute, iron ore comes from 14 states, coking coal from 11 and limestone from 13. Most of the 21 states supply more than one of the three principal materials.

The mines and quarries for producing these materials give employment to tens of thousands of men.

Nearly 61 per cent of the domestic iron ore consumed by the steel industry over the past 20 years has come from mines in Minnesota. Iron mines in Michigan furnished 22 per cent of the ore used, while from Wisconsin came about 2 per cent. These three states constitute the famous Lake Superior district, which has yielded more iron ore than any other section of the world.

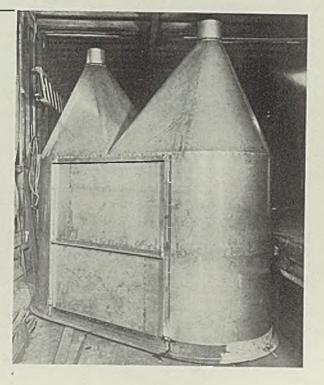
Alabama in the past two decades has produced about 10 per cent of the nation's iron ore.

The remaining five per cent of the domestic iron ore consumed by the steel industry came from Pennsylvania, New York, Wyoming, New Jersey, Colorado, Tennessee, Utah, Missouri, Georgia and New Mexico.

Pennsylvania has supplied about 27 per cent of the coking coal consumed by the steel industry. About 24 per cent has come from West Virginia.

Limestone and other fluxing stones used in the blast furnace to carry off impurities from the other materials, are available in almost every state in the country. Pennsylvania, Ohio and Michigan, however, all of which are important steelmaking states, supply more than three-fourths of the industry's limestone requirements.

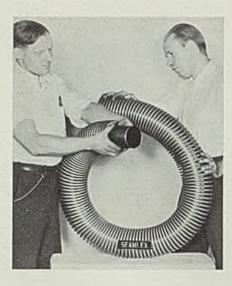
Ten other states, including West Virginia, Alabama, Illinois, Colorado and Utah, also supply the steel industry with limestone.





Seamless Metal Hose

■ Seamlex Co. Inc., Long Island City, N. Y., has developed a seamless bronze tube of unusual flexibility. It can be bent to a radius of 6 inches. Pronounced S-shaped corrugations ¾-inch deep are responsible for its flexibility. The convolutions form a lefthand helical thread, assuring uniform distribution of stress. Tube will withstand a safe internal working pressure of 150 pounds per



square inch. Suitable pipe thread couplings or flanges also are available in standard sizes.

Portable Oil Flusher

■ J. A. Honegger, Bloomfield, N. J., has placed on the market a Port-O-Flush portable pressure oil flusher and dispenser for use in flushing out oiling machinery and other processing or industrial equipment. Device works instantly and thoroughly because the oil is introduced into the bearing by air pressure at 60 to 100 pounds per square inch.

It will handle oils of all viscos-

ities from that of kerosene, for flushing out bearings and transmissions of all kinds prior to oiling up to 600 W transmission oil for gear reduction drives. The flusher holds one quart of oil and is light in weight.

Welding Helmet

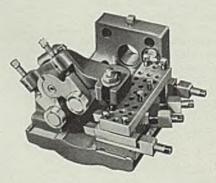
■ Sellstrom Mfg. Co., 615 North Aberdeen street, Chicago, announces a welding helmet No. 220S with hidden hinge. It is made of a new material that insulates against heat



and weighs only 15 ounces complete with lens and holder. Helmet is of lift-front type that gives operator a dense lens in the outer holder and a clear lens or less dense lens set in the inner holder. The inner and outer frames have concealed spring hinges which allow the outer holder to be raised or lowered in accurate positions. Holder is interchangeable and is held in position by two screws.

Multiple Cutter Turner

■ Gisholt Machine Co., Madison, Wis., has introduced a multiple cutter turner for turret lathes. It is capable of making several reducing

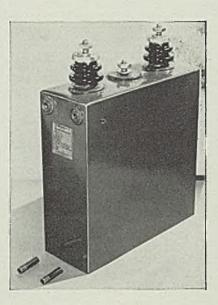


cuts simultaneously. Tool features rigid steel construction, hardened steel rollers mounted on roller bearings and adjustable roller arms that attach securely to the block. Setup operations are facilitated by the micrometer adjustment screws on the tool blocks. Turner is available in several sizes which permit turning diameters as small as ¾-inch and as large as 4¾ inches.

Capacitors

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has placed on the market a line of water-cooled Inerteen capacitors for high-frequency service on induction furnaces and similar applications. Capacitor sections are made by winding a special grade of paper with thin copper foil. Foils are bonded on one end to the water tube so they conduct heat to the water and carry the current. Leads are brought out at the center and the ground terminals of each group of sections is near the ends of the case. The case is of welded construction with a recess at the bottom to aid in locating the unit on insulators. The top is of nonmagnetic stainless steel on ratings of 500 cycles and above.

The inlet and outlet water connections are tapped for ¼-inch standard pipe threads and short



tubes are furnished for attaching rubber hose. Complete unit is vacuum dried and impregnated and filled with capacitor Inerteen, a noninflammable fluid.

Nibbling Machines

■ W. J. Savage Co., Knoxville, Tenn., announces improved line of nibbling machines. Line incorporates direct-over-center drive and new tool holder. Up-set head tool makes it possible to cut stainless and other alloy steels, aluminum, brass, cop-

THE FAFNIR WIDE INNER RING BALL BEARING WITH SELF-LOCKING COLLAR

is the only ball bearing made which can be locked to the shaft with a fingertwist . . . a positive drive which grows tighter in service.



It requires no shaft shoulders, sleeves, threading, lock-nuts, adapters or precise adjustments . . . nothing but fingers. See how simple and dependable is the operation of its self-locking collar!

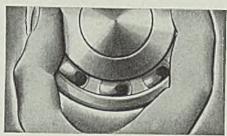


This is the end of the bearing's inner ring. Note that it is machined as an eccentric

cam, its outer diameter purposely not concentric with the inner ring's bore.

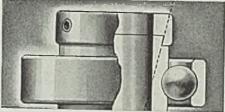


This is the inside view of the Self-Locking Collar which fits over the extended inner ring of the bearing. It is machined as a mating cam, its counterbored recess purposely not concentric with its bore.



When the cams are engaged, and the collar is revolved a quarter-turn, the cam action locks the bearing's inner ring tightly to the shaft—with a positive *bind*, which eliminates slippage and affords great thrust capacity. The shocks and jars of service

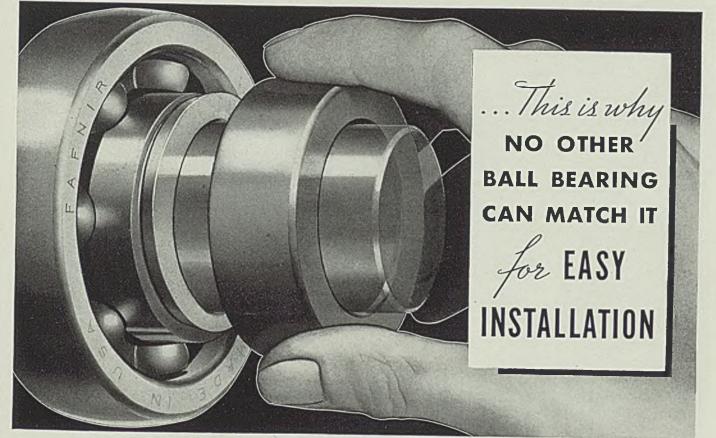
only lock it tighter, yet disassembly is quick and easy when required.



Furthermore, the cams are machined at an angle with the bore, to make accidental disengagement even more unlikely. A setscrew is provided, not as the sole driving means, but merely to hold the collar in locked position.

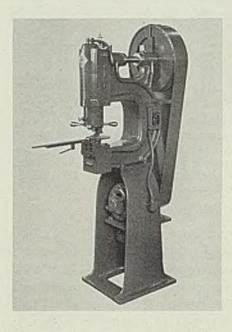
* * *

The extended inner ring provides greater shaft support. The deepgroove, large-ball Fafnir Ball Bearing provides a bonus in radial and thrust capacity. Easiest of all ball bearings to mount, and to disassemble, too; this Fafnir type is available in a wide line, with or without housings, seals or shields. The Fafnir Bearing Company, New Britain, Connecticut.





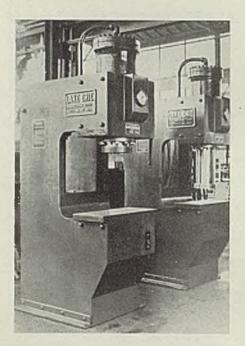
per and other materials. Starting holes are now punched under power. A new machine added to the line



has a capacity of 5/16-inch in mild steel. It handles sheets 24 inches wide of any length due to a revolving head which permits cutting at any angle on a 360 degree circle. Nibblers are available with cutting capacities in mild steel up to %-inch and throat depths of 9, 12, 18, 30, 34 and 36 inches.

Straightening Presses

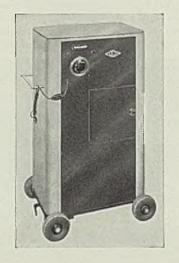
■ Lake Erie Engineering Corp., Kenmore station, Buffalo, announces addition of a line of hydraulic straightening presses using C type gap frame design. They are rated at 66-ton capacity and pressures are controlled accurately by hand lever. Heavy steel side plate design assures



rigidity. They have a stroke of 16 inches with fast operating speeds. Each press is self-contained with pumping unit enclosed in base. Working space is accessible for convenient handling of pieces. Presses are adapted for all types of straightening work including finished shapes such as aircraft parts and similar pieces requiring final straightening after drawing or forming.

Area Determinator

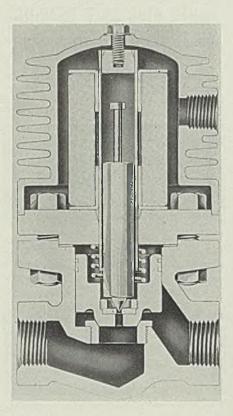
■ American Instrument Co., Silver Spring, Md., has introduced an area determinator for measuring the area of any flat object of any shape, color or texture that will fit into a circle 9.93 inches in diameter. It is accurate within 3 per cent of the true area. Reproducibility is within 0.2 per cent. This accuracy is not affected by the experience of the operator or the nature of the object's outline. Measured area is read directly from a dial. Instrument operates direct from the house current supply. Its overall dimen-



sions are $18 \times 26 \times 42$ inches. The housing is mounted on four wheels having pneumatic tires.

Solenoid Valve

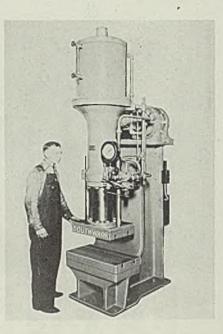
Hoppe Engineering Co., Indianapolis, Ind., announces a forged steel solenoid valve for severe service on steam, hot or cold water, hot or cold oil, air or gas lines. Its body and cap are massive and rugged, the cap being held with triplex steel bolt studs. The disk has a ball shaped face which seats against a flat angular face on the body seat ring. Top of disk is a piston, fitted into the upper portion of the body. Both disk and body seat ring are of Exelloy, a heat treated chromium iron. The solenoid is a glass insulated wire, and will withstand a temperature of 1000 degrees Fahr. It is available in sizes from $\frac{1}{2}$ to 2 inches either horizontal or



angle type bodies, screwed or flanged end.

Utility Presses

■ Baldwin Locomotive Works, Paschall post office, Philadelphia, announces two new presses for general utility work. These are self-contained and are designed for a wide range of work. A single control, either hand or foot operated, per-



mits operator to inch, stop or reverse platen at any point in its

The trouble is that we don't use the knowledge we possess.

A LL of us here knew the properties of MO-MAX Molybdenum Tungsten High Speed Steel, yet we did nothing about it until last year. Now our records prove that high speed tools made of MO-MAX are twenty per cent more efficient. That's a big saving in our production costs. We could have made that saving five years sooner if we had applied our knowledge. Certainly somebody here should have seen to it that we made some tests long before we did. Perhaps I should have done so myself. Anyway I don't want this organization to overlook any opportunities like that again. We can't pay high salaries for what people know, but we can and will pay well for what people do.



MOLYBDENUM-TUNGSTEN HIGH SPEED STEELS

Leading steel companies can supply you with their licensed brands of MOMAX. For booklet with technical data and sources of supply, write The Cleveland Twist Drill Company, Cleveland, Ohio.

A 216

stroke. By means of another control setting, presses may be oper-ated semiautomatically. Standard presses are available in 65 and 80ton capacities.

Adsorbers Free Air Lines of Odor

Dorex Adsorbers developed by W. B. Connor Engineering Corp., 114 East Thirty-second street, New York, are now being used extensively for the control and removal of odors, oil vapors and gases in com-

pressed air lines. Each unit operates on the principle of the ordinary gas mask. An odor and vapor filter of specially prepared high activity cocoanut shell carbon is the absorption vehicle. This car-bon will absorb and retain odors or vapors up to 20 per cent of its own weight. When saturated, it may be removed and reactivated for reuse.

The carbon is held in a compact perforated metal canister, which forms a filter unit, providing large surface area. The canister is housed in a cast shell. Installa-



ENGINEERED FOR MAXIMUM GRINDING PRODUCTION

ABRASIVE COMPANY GRINDING WHEELS are manufactured in grain and grade specifications especially adapted to give best results on your production grinding machines. Maximum grinding efficiency involves speed of cutting action, length of wheel life and quality of finish or work obtained. Our extensive manufacturing facilities and engineering resources are directed wholly towards the most efficient combination of these factors which will give you the best production from your grinding operations.

Abrasive Company offers a complete grinding wheel and abrasive service for all operations from coarse snagging in foundries and steel mills to the finest precision grinding in

metal-working production, tool rooms and machine shops. For better service from the grinding wheels you ABRASIVE use investigate ABRASIVE Wheels-engineered for your work! Our representatives will be glad to make com-GRINDING WHEELS plete data available to you. UNEXCELLED IN QUALITY & UNIFORMITY Prompt service from local stocks through industrial distributors in all principal cities.

ABRASIVE COMPANY

Tacony and Fratey Sts., Philadelphia, Pa.

tion is merely a matter of connecting the inlet and outlet pipe joints. Adsorbers also are available in many other types for handling odor problems in industrial nuisance-odor elimination and for odor control in air conditioning and ventilation.

Polishing Lathe

Divine Bros. Co., Utica, N. Y., announces a VCS polishing and buffing lathe which features self-aligning bearings, quick V-belt adjustment and enclosed motor. Its starter is mounted conveniently, being located on a pipe stand at the rear of machine. The lathe is equipped with a continuous duty, open, squirrel cage motor. This can be supplied in 3, 5 and 7½ horsepower.

Fire Extinguishers

■ Buffalo Fire Appliance Corp., 44 Central avenue, Buffalo, announces two new fire extinguishers of the carbon tetrachloride vaporizing liquid type. These are of the 1 and 2-gallon type. The extinguishers have an extra heavy brass seamless shell. The pump is double acting, and throws a continuous stream from 25 to 30 feet. There are no outside valves and the stream stops the minute the pumping stops.

Control Relay

General Electric Co., Schenectady, N. Y., has introduced a relay for controlling a stoker in conjunction with time switch, limit controls and room thermostat. It combines in one assembly a relay and low-voltage control transformer. Six terminals on a convenient terminal block provide means for line, load and limit control connections without use of a connection box. Three conduit openings for interconnecting with other control de-vices also are provided.

Welding Brackets, Nuts

Ohio Nut & Bolt Co., Berea, O., announces new rectangular welding nuts, bosses and brackets for use in the manufacture of almost any type of product made of metals and suitable for resistance welding. The welding brackets, bosses and nuts are available of the same material as the part to which they are to be welded. Bosses come in sizes ranging from $\frac{3}{8} \times 1 \times \frac{1}{2}$ -inch up to $\frac{13}{16} \times \frac{3}{8} \times 1$ -inch.

The welding nuts are available in a similar range of outside dimensions and with threaded holes for assembling, with screw threads ranging from $\frac{1}{6}$ to $\frac{5}{6}$ -inch in diameter.

Brackets are made with welding projections on one or both legs or the welding projections may be placed on either the outside or the inside part of the leg. The widths of the brackets range from % to 13/16-inch and the thickness is the same for each leg ranging from ½ to %-inch. These are furnished with tapped holes in one or both of the legs; or with drilled or reamed holes that serve as bearings for either push rods or revolving shafts.

Flow Meter

■ American District Steam Co., North Tonawanda, N. Y., has introduced a new flow meter for steam, water, air or gas. It operates in conjunction with an orifice plate in the pipe line and records the flow on a large, evenly divided chart by means of a frictionless mechanism. The internal moving parts within the meter comprise a magnet attached to a mercury container suspended from a spring.

A fixed, internally shaped bell surrounds the lower portion of the magnet and forms a seal with the mercury in the container directly beneath it.

Movement of container is directly proportional to the flow through the orifice and follower magnets in the external recording mechanism transmit the movement to a gravityheld pen arm which records on the chart.

The chart and integrator mechanism is driven by a synchronous alternating current clock motor. Meter is offered in four types, recording only, recording and integrating, indicating and recording and indicating, recording and inte-

Face Shield

■ Boyer Campbell Co., 6540 Antoine street, Detroit, has placed on the market a new face shield for welding. It is equipped with a platacele window that slides in and out of a fiber frame. The fiber frame simplifies replacement and is interchangeable on all models of face shields made by this company except Nos. 10 and 20.

Crane Cab

■ Harnischfeger Corp., 4411 West National avenue, Milwaukee, has introduced an all-welded, full vision crane cab which is front lever operated. Its controllers are totally en-



Fast cutting, long wearing, Best Metal Cutters

SIMONDS

HACK SAW BLADES All standard sizes of the above blades and, in addition, the new Non-breaking Hard Edge Flexible High Speed Steel Hand Blades

(COLOR TRADE-MARK REG. U. S. PAT. OFF.)

Sold only through Dealers

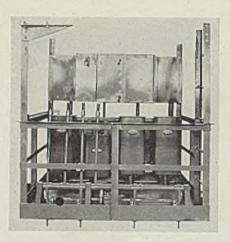
SIMONDS Famous Family of METAL CUTTING TOOLS

Established 1832

FITCHBURG, MASS

SIMONDS SAW AND STEEL COMPANY

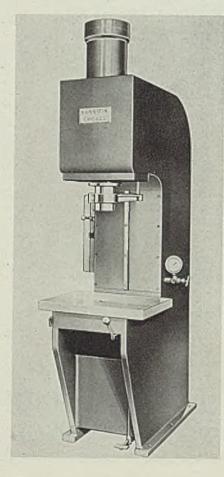
closed and mounted in rear of cage where they will not hinder operator's view. Controllers are of drum type



and all wiring is in conduit with junction boxes. Its sectional panel switchboard has inverse time overload relay protection. When door is open, safety-type main switch is inoperative. In addition to the hydraulically-operated foot brake, a mechanical brake is incorporated for emergencies.

Forcing Press

■ Hannifin Mfg. Co., 621 South Kolmar avenue, Chicago, has developed a new hydraulic forcing press of 25-ton capacity, featuring



welded steel frame construction, built-in motor-driven hydraulic power unit and sensitive pressure control which provides an infinitely variable pressure. Press has a stroke of 24 inches. Its table is 30×22 inches and overall height 113 inches. Unit is driven by a 10horsepower motor, making it possible to attain speeds of 83 inches per minute.

Ring-Balance Meter

E Republic Flow Meters Co., 2240 Diversey Parkway, Chicago, has introduced a mechanical ring-balance meter for metering steam, water, gas, air, etc., at static pressures up to 1000 pounds per square inch. It gives full scale readings on differentials as low as 3 inches of water. Meter is housed in a steel case suitable for exposed locations. It is



easily adjusted by changing a calibrating weight, has a 12-inch evenly graduated chart and is furnished with any combination of indicator, recorder and cyclometer integrator.

Stationary Tachometers

■ O. Zernickow Co., 15 Park Row, New York, has introduced an improved line of stationary tachometers which are unaffected by magnetic fields, electricity, changes in temperature or moisture. Improvements include ball bearing pendulum pivots, ball bearing swivel link and ball bearing driving spindle to eliminate friction. Tachometers are housed in housings 2^{*}/₄ inches deep, equipped with a 6-inch dial.

Salt Tablet Dispenser

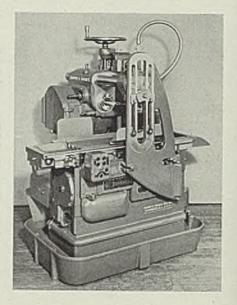
■ Milburn Co., 905 Henry street, Detroit, has placed on the market a new aluminum salt tablet dispenser specially plated and known as Dispens-Eze. It has a capacity of more than a thousand 10 or 15-grain tablets. Because of its aluminum plated construction it is impervious to attack from salt. Dispenser is equipped with a Yale lock which



both safe-guards contents and locks it to the wall bracket. Its list price is \$6.00.

Milling Machines

Brown & Sharpe Mfg. Co., Providence, R. I., has placed on the market No. 12 electrically controlled plain milling machines of increased capacity. The column height of each has been increased 4 inches, providing a corresponding increase in the vertical adjustment of the spindle, total adjustment now being 10½ inches. The width of the base



has been increased $2\frac{1}{2}$ inches with a corresponding increase in the horizontal dimension of the working space. This now gives a dimension



WASTE IS OBVIOUS HERE!

however ..

GREEN CAST GREASES

TIDE WATER

Regional Offices: Boston, Philadelphia, Pittsburgh, Charlotte, N.C.

STRIA

on our difficult bearing lubrication job would not withstand the on our alfileuit bearing iubrication job would not withstand me moisture conditions encountered. It gummed up in the bearings power costs jumped as much as \$400 per month. * * on the recommendation of Tide Water engineers we changed to Tycol Green Cast Greases because of their superior lubricating Properties, and their ability to resist the washing action of water. Bearings are now better lubricated and excessive power water, bearings are now better tubilicated and excepsive power costs have been banished. And we were surprised and decosis nave been banished. And we were surprised and de-lighted to learn that 25% more cars may now be haved per locomotive because of the reduction in frictional losses." » » This operator, like hundreds of others using Tycol Green Cast Greases, gets better protection—more effective lubrication per pound of grease. Here's the reason: Tycol Green Cast per pound of grease. Here's the reason, tycor grean ous Greases are made from the finest cylinder oils available. A minimum of soap—a maximum of oil—is used. More lubricat ing oil per pound assures more economical lubrication. * * Call the Tide Water representative or office for full details. TIDE WATER ASSOCIATED OIL COMPANY

BEARINGS...

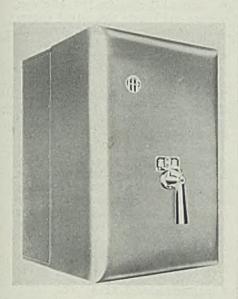
. hidden waste caused by poor lubrication increased the power costs 25% until TYCOL GREEN CAST GREASES revealed this loss To quote the plant superintendent: "The grease formerly used

N THESE

of 17 13/16 inches from the face of the spindle head to the arbor yoke support. All features of design and construction have been retained, although many minor improvements and refinements have been made throughout the machine.

Circuit Breaker

■ I-T-E Circuit Breaker Co., Nineteenth and Hamilton streets, Philadelphia, announces a new 600-ampere, 3-pole, type K.B. circuit breaker mounted in an individual steel enclosure of the pull-box type. Its interrupting ability is such that it can be rated at 20,000 root means-



square. Unit is available electrically or manually operated for open mounting or for cubicle mounting in switchgear.

All Purpose Fan

■ Autovent Fan & Blower Co., 1805 North Kostner avenue, Chicago, announces a new Allvent, all purpose ventilating fan that provides any amount of air changes without objectionable noises. It features a V-belt drive and a 3-blade fan wheel which supplies or exhausts unusually large volumes of air at extremely low speeds.

Surface Planer

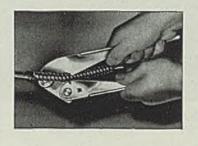
■ Oliver Machinery Co., Grand Rapids, Mich., announces a No. 399 single surface planer for planing boards up to 18 inches. It is powered by a 3-horsepower, 3600 revolutions per minute motor. Its cylinder is of extra heavy design and power rolls will give any desired feed from 15 to 35 feet per minute. Feed is controlled by lever at left of machine. Base is a one-piece casting, and table is supported on two large



screws which have adjustable nuts to maintain alignment with the cylinder. One-piece chipbreaker is controlled in operation with front pressure roll and adjusted by a screw.

Armor Cutter

■ Ideal Commutator Dresser Co., Sycamore, Ill., has introduced a handy pocket size BX armor cutter, jaws of which are formed to take BX cable of any make, 2 or 3-wire No. 12 or No. 14. Cutter cuts quickly and cleanly with one snip



without injury to wire insulation. Hardened steel cutting blade is removable for sharpening. It weighs only 12 ounces.

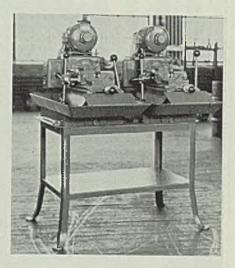
Time Stamp

■ International Business Machines Corp., 270 Broadway, New York, announces a new time stamp, Printime, base of which is curved away from the platen on all sides to increase the ease with which papers may be inserted in the throat for time stamping. It measures $9 \ 3/4 \ x \ 3 \ 3/4$ inches at the base and is 5 inches tall. The type wheels, printing ribbon and electrically operated timing mechanism are all housed in the head of the stamp.

The weight of the head is counterbalanced so a slight downward pressure only is required to secure an even, legible imprint. Thicker parcels or bulky packages may be timestamped by raising the head to a 90-degree angle with the base, and pressing them against the type wheels. The date line indicates in a straight line the year, month, date, hour and minute, a.m. and p.m.

Threading Machine

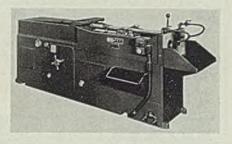
■ Geometric Tool Co., New Haven, Conn., has introduced a double spindle threading machine. It is furnished in three sizes with a com-



plete threading range from 1/16 to 1½-inch diameter (national fine thread series pitches only in the larger diameters). Machine is built up by units, thus one size of thread may be cut in one unit, another size in the other. If desired, only one unit need be operated.

Broaching Machine

Oilgear Co., 1301 West Bruce street, Milwaukee, announces a new XB-12 fluid power, variable speed twin horizontal broaching machine. It features simple push-button and



alternative toe-lever switch control and emergency stop pushbutton on

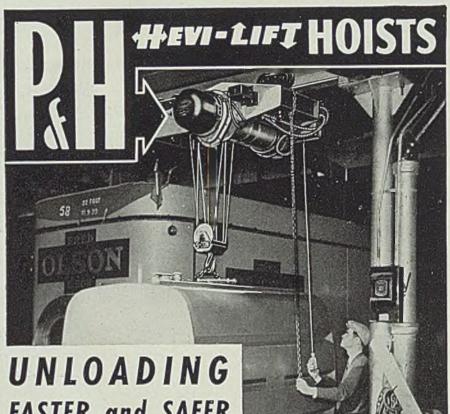
each side, independent variable broaching speed control of each crosshead, gravity and capillary feed lubrication of ways and liners, vertical adjustments for pullers, mechanism for adjusting crosshead stroke and vertical motor driven coolant pump and automatic directional coolant valve. Allsteel welded frame supports the trough, cylinders, pump, motor and coolant pump. The pump is arranged for direct drive and preset relief valves in the pump protect work, tools, pump and machine against overload. The two rams of the machine work al-

ternately, one on the return while the other is pulling, so that production is limited only by the operator's ability.

The machine features a peak pulling capacity of 18,000 pounds and a cutting and return speed of 4 to 36 feet per minute. Its broaching stroke is 36 inches.

Hydraulic Pump

■ Racine Tool & Machine Co., Racine, Wis., has introduced a new model variable volume hydraulic



UNLOADING FASTER and SAFER WITH "THRU-THE-AIR" HANDLING!

Slow and dangerous loading and unloading went "by the boards" when a 5-ton P&H Hevi-Lift Hoist replaced hand methods in this mid-west shipping center! With this modern, "thru-the-air" handling, docks are cleared faster, and danger to the workmen has been practically eliminated. Speed and safety — two important factors on any material moving job — are always improved when you turn to "thru-the-air" handling with P&H Hevi-Lift Hoists. Wherever your problem is lifting, lowering or moving bulk or packaged materials, chances are that P&H Hevi-Lift Hoists are the cost-cutting answer. It will pay you to investigate. Send for the booklet H-5, which describes P&H Hoists in all capacities up to 15 tons.

General Offices: 4411 West National Avenue, Milwaukee, Wis.



pump rated at 1000 pounds pressure. Its shaft is of larger diameter, and oil seals of mechanical self- compensating type prevent leakage at the shaft end. Vane slots are now slanted away from the direction of rotation. This permits the use of wider vanes having greater strength and affords a wider sealing area against interior slippage of oil. Hydraulic balancing of the vanes is accomplished by an improved porting of the side plate. The side plates permit close working and sliding fits without the danger of scoring and seizing.

Pressure Pads

■ National Carbon Co. Inc., Madison avenue and West 117th street, Cleveland, announces resilient pressure pads for holder end of brushes to offset injurious effects of vibration on carbon brushes. The pads reduce and may eliminate such destructive effects as chipping and cracking of brushes, wear on the holder end of the brush and wear of the pressure finger tip.

The resilient material used for these pads is durable and will retain its resiliency throughout the life of the brush. The form of the pad and its exact location on the brush are dependent on the shape and dimensions of the pressure finger and location of its contact with the brush.

Cylindrical Exhaust

Industrial Equipment division, Continental Roll & Steel Foundry Co., East Chicago, Ind., announces a new cylindrical exhaust unit for collecting the exhaust from polishing and buffing wheels. It occupies a minimum of space, less than 4 cubic feet, and collects exhaust through dust hoods built around the wheel or unit being ventilated.

Exhaust is drawn into the unit by a vertical fan and is introduced into a spiral plenum chamber for complete precipitation. Unit's motor is totally enclosed and sealed against dust and dirt. Collected matter is removed periodically by means of a sliding tray. The unit can be installed on the floor at rear of machine or suspended conveniently overhead.

Monitor-Type Cab

■ Industrial Brownhoist Corp., Bay City, Mich., announces monitor-type cab for diesel locomotive cranes. It enables operator to see the loads better and also eliminates blind spots to the rear and sides. Cab is well ventilated and provided with windows opening on all four sides.

Sheet Galvanizing

(Concluded from Page 60)

side the kettle is the rig which by entering, double bottom and exit rolls through connecting guides convey the sheets through the bath onto the spangle conveyor.

The spangle conveyor is designed to evenly withdraw the heat from the sheet to promote uniformity of the spangle formation. This is also facilitated by magnetic rolls at the entering end of the spangle conveyor, which hold the sheet firmly on the conveyor until the crystals have formed.

Sheet Cooled by Air

From the spangle conveyor the sheet enters the cooling conveyor where it is cooled sufficiently by large volume low-pressure cooling air applied top and bottom. It is necessary to reduce the temperature of the sheet sufficiently to prevent warpage as it enters the water bath through a 9-roll flattener. The water in this bath is heated by steam and thermostatically controlled. Succeeding squeezer rolls and pressure air blast remove all moisture from the finished sheet before it enters the final unit in the line, the roller leveler with 17 flattening rolls. At the end of the line the sheets are assorted, branded and weighed.

The galvanizing department comprises two complete units such as the one described, the total length of the continuous line from the water tank immediately before the kettle, down to the final exit and leveling rolls being 108 feet.

Operations along the line are controlled by two Westinghouse control panels, one for each unit, placed just beyond the kettle. These enable the plant superintendent to start or stop the line, regulate the speed of flow through the bath which ranges up to 120 feet per minute—regulate the temperature and other elements involved along the line.

The average capacity of each of these units ranges from 45 to 50 tons per 8-hour shift. It is of interest to note that only a few years ago an output of 200 tons per week for one line was considered fairly good production.

Many of the 14-gage sheets passing through the galvanizing units are intended for making parts for Anderson shelters. The sheets are sheared for correct size, the ends punched for assembling by bolts, and the sheets corrugated by means of a Stamco corrugating mill. The ends of the corrugated sheets are curved by passing through a pair of polished rolls, the correct bending being obtained by automatically stopping the machine by a template rod. The finished product is then stacked ready for shipment.

4000-Ampere Arc Welder

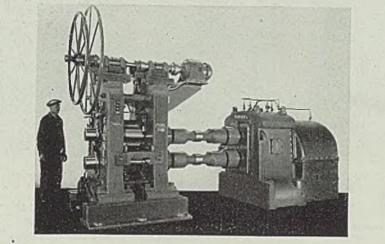
(Concluded from Page 51)

controls while another follows the bead.

As shown in the lower illustration, the head in the upper view is only a small portion of the complete welder which travels over a considerable floor area on a large gantry running in rails set in the floor. Drives and controls are set so the head can be traversed along the weld seam throughout an extremely wide range of speeds. Similarly, control of current and feed of weld rod are adjustable throughout a wide range.

The trucks shown in inverted position in both illustrations have large bearing surfaces upon which are positioned tank sections to be welded. In the lower view, an operator is adjusting the rod feed mechanism at the welding head. The gantry, in addition to including provision for moving horizontally, also permits the entire head to be moved vertically as may be required. For details of the Unionmelt process of welding heavy plate in one pass, see STEEL Jan. 23, 1939, p. 48.

FARREL ROLLING MILL PERFORMS COMPLETE RANGE OF ROLLING OPERATIONS ON WIDE VARIETY OF METALS



This 16" x 16" two-high rolling mill is an example of Farrel engineering to fit the job. In this case the job was the rolling of a wide variety of metals, including copper, brass, bronze, silver, nickel silver, monel metal, bi-metals and semi-precious metals. Production requirements dictated a mill that could be used for all rolling operations from breaking-down to finishing, and one of heavy, rugged construction to handle large reductions.

The mill has forged, heattreated, alloy steel rolls heavy Meehanite housings force-feed,grease-lubricated.plain, bronze bearings . . . combination double-handwheel screwdown with motor drive for rapid approximate positioning of the top roll hydraulic top-roll counterbalance Mechanite delivery and feed tables.... adjustable side guides on feed table.... a wiper on each roll.... and a safety bar tripping device for quick stopping in an emergency.

The reduction gear drive and pinion stand are combined in an integral unit, with Farrel-Sykes continuous tooth herringbone gears and mill pinions mounted in anti-friction roller bearings. Gears and bearings are force-feed lubricated. A Farrel Gearflex Coupling connects the motor and drive and universal spindles connect the pinion stand with the mill.

Designing and building mills such as this to meet particular requirements is a specialty of Farrel-Birmingham. If you have a special mill problem our engineers will be glad to consult with you.

FARREL - BIR MINGHAM COMPANY, Inc. ANSONIA, CONN. New York • Buffalo • Pittsburgh • Akron • Chicago • Los Angeles

MATERIALS HANDLING-Continued

Packing for Export

(Concluded from Page 58)

Several other mills in this same territory are using these hand-operated machines for re-enforcement of tin-plate boxes of the same type.

In the export of steel sheets, a new packaging method has been developed to provide better protection to the material. In shipping prime electrical sheets, 240 per lift as illustrated in Fig. 2, waterproof paper is wrapped around the loose sheets. Tar is poured on top of the wrapping paper, sealing the steel sheet contents against moisture. A complete metal sheet then is applied to cover both top and bottom for final protection. This is followed by attaching six 8-gage galvanized high-tensile wires, half running each way of the lift and over longitudinal 2 x 4-inch skids which form an excellent base for handling at a later date.

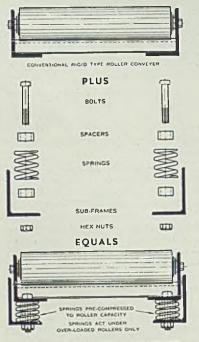
On 20-gage prime steel sheets, 43 x 92 inches, a complete metal lift or package is fabricated as shown in Fig. 3. Both top and bottom of the package are covered by a waster sheet, on which are stencilled measurements, weight and destination. On all four sides or edges is a metal rail of about 16-gage steel that is



MATHEWS CONVEYER COMPANY

142 TENTH STREET, ELLWOOD CITY, PENNA.

CONTINUOUS FLOW PRINCIPLE OF HANDLING MATERIALS



CUT MAINTENANCE COSTS

THE principle is simple; the roller axles are rigidly locked in the frame as in the conventional "rigid type" construction, but the conveyer frame which retains the rollers is carried on pre-compressed coil springs. The springs are held in compression equal to the rated safe load of each roller. Under impact conditions or excessive loads the springs absorb the overload.

This construction represents the greatest improvement in roller conveyer in many years. Its application will reduce maintenance costs by prolonging the life of the equipment. When conditions are severe, "spring mounted" is the practical conveyer construction for the job.

Capacities from 150 lbs. to 8000 lbs. per roller available.

Ask for Illustrated Folder

clinched tightly on all corners to form adequate protection for this heavy package. Four 8-gage wires are ample for reinforcing purposes here.

Metals and Alloys in Dictionary Listing

■ Dictionary of Metals and Their Alloys, by F. J. Camm; fabrikoid, 245 pages, 5½ x 8½ inches; published by Chemical Publishing Co., New York; supplied by STREL, Cleveland, for \$3.

Arranged in alphabetical form, this volume contains descriptions of a large number of metals and alloys, and in many cases supplies data on compositions and characteristics. The book also contains short chapters on heat treatment of tool steels, practical hints on hardening and tempering, spraying metallic coatings, rustproofing iron and steel, electroplating, polishing and finishing metal, chemical coloring of metals, hardness test, and an appendix with numerous tables.

Labelling Gears

(Concluded from Page 66)

0.75 to 1.25 per cent; chromium, 0.15 to 0.30 per cent; molybdenum, 0.40 to 0.60 per cent.

Physical properties are maintained within a narrow range and in every instance a minimum tensile strength of 50,000 pounds per square inch is guaranteed. Tests on a bar representative of the iron

Typical Properties	
Ultimate tensile strength,	
pounds per square inch	50,000
Ultimate strength in compres-	150 000
sion, pounds per square inch	150,000
Ultimate shear strength, pounds per square inch	58,000
Ultimate torsional strength,	001000
pounds per square inch	67,000
Modulus of elasticity	20,000,000
Torsional modulus of elasticity	7,500,000
Transverse strength, pounds	
(1.2 inches diameter bar, 18 inches span)	3,000
Transverse deflection, inches	0,000
(1.2 inches diameter bar, 18	
inches span)	0.4
Brinell hardness	220
Weight, pounds per cubic inch	0,26

cast from one specific heat showed tensile strength of 52,500 pounds per square inch, Rockwell C hardness of 20 and brinell hardness of 223.

The gears are given no heat treatment. Actually no gears have been produced so far with tensile rating of less than 52,000 pounds per square inch and the range has been up to 63,500. Typical properties are set forth in the accompanying table.

War and Defense To Swell Steel Demand

Consumers seek protection against future delivery delays. Production holds upward trend. Heavier buying by Allies imminent



Demand Increasing; heavy war tonnage expected.

Prices

Holding in all lines, with continued scrap advance.

Production

Further rise of 3 points to 81¹/₂ per cent.

FACED with probable increased steel demand from the Allies and certain large requirements for domestic preparedness the steel industry believes it is on the threshold of practically capacity production.

Except for a sudden termination of the European war much steel will be required from the United States, directly to Great Britain and France and indirectly through Canadian manufacturers, now buying largely in this country. Added to this probability is the certainty that the program for enlarging protective policies by the Washington government will call for heavy supplies of steel in practically all forms, over an extended period.

Operations responded to increased demand last week, advancing 3 points to 81½ per cent, continuing the upward curve which started at the beginning of May.

In an effort to protect against shortage for ordinary uses steel consumers are beginning to buy more freely for future delivery, some seeking contracts into fourth quarter. Producers are not yet willing to assume commitments that far ahead, even though prices be specified as those prevailing at delivery. Pig iron buying is on the increase as it appears no change will be made in price for third quarter.

Interruption of shipments from Belgium, a large producer of bolts and nuts, has diverted much inquiry for these products to the United States, particularly on the part of Great Britain.

Current negotiations by the French commission are estimated to involve 200,000 tons or more, mainly shell rounds. British purchases are expected to be much smaller than those of France for some time. Placing of 200,000 six-inch finished shell forgings with Pull-.lan-Standard Car Mfg. Co., for its Butler, Pa., plant, will require about 10,000 tons of steel.

Great increase in buying by the Allies seems imminent and changes are under way in methods of purchase and character of products desired. Practically all war steel buying in the past has been by government agencies in Great Britain and France, the Anglo-French purchasing commission in New York devoting most energies to equipment and materials other than steel. Personnel of the commission is being greatly enlarged and it is believed steel purchases will be handled, directly through this agency. In the past most steel has been in the form of bars, semifinished and shell steel. Indications are that future buying will tend more to finished products or those requiring only minor finishing operations on the European side.

Steel ingot output in May, 4,841,403 net tons, was 20 per cent larger than in April and 47 per cent greater than in May, last year. The operating rate rose to 72 per cent of capacity in May, from 61.05 per cent in April.

Steel and iron exports in April fell 14 per cent short of the high level reached in March, but aggregate tonnage exported in four months was virtually three times that shipped in the same period last year. March total was 391,754 gross tons, excluding scrap, compared with 457,052 in March. Total for four months this year was 1,681,455 gross tons, against 585,547 tons in four months, 1939. Scrap exports increased somewhat, principal takers being the United Kingdom, Italy, Japan and Canada.

Iron ore movement from Lake Superior mines is starting the season with vigor, 7,244,549 gross tons being shipped in May, practically double the movement in the corresponding month last year, 3,601,453 tons.

Automobile output last week increased from the low point of the preceding week, 95,560 units being produced. This was only slightly under the average for May and indicates continued demand for cars, seasonal influences having less effect than usual.

Continued rise in the operating rate was the result of increased activity in eight districts, only one showing a decline and three holding steadily. Youngstown rose 9 points to 67 per cent, Pittsburgh 1 point to 80, Buffalo, 14 points to 84, Detroit 1 point to 75, eastern Pennsylvania 2 points to 73, Chicago 3 points to 86, New England 10 points to 66 and Cincinnati 6 points to 70. St. Louis dropped 1 point to 56 per cent. Birmingham at 85 per cent, Wheeling at 79 and Cleveland at 82 were unchanged.

Although consumers are buying little scrap, prices continue to strengthen and the composite of steelmaking grades advanced 29 cents last week, to \$18.67, highest since the last week of November. The iron and steel composite increased 4 cents, because of scrap advances. COMPOSITE MARKET AVERAGES

June of June 1 and 10 a	larch, 1940 June \$37.07 \$35 56.50 55	r Ago Years Ago e. 1939 June, 1935 5.69 \$32.42 5.70 54.00 4.49 10.45	
--	--	---	--

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

COMPARISON OF PRICES

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

Finished Material	June 8, 1940	May 1940	Mar. 1940	June 1939	Pig Iron
Steel bars, Pittsburgh Steel bars, Chicago Steel bars, Philadelphia Iron bars, Chicago	2.15 2.47	2.15c 2.15 2.47 2.25	2.15c 2.15 2.47 2.25	2.15c 2.15 2.47 2.05	Bessemer, del. 1 Basic, Valley Basic, eastern, No. 2 foundry,
Shapes, Pittsburgh Shapes, Philadelphia	2.10	$2.10 \\ 2.215$	$2.10 \\ 2.215$	$2.10 \\ 2.215$	No. 2 foundry, Southern No. 2,
Shapes, Chicago Plates, Pittsburgh	2.10	$\begin{array}{c} 2.10 \\ 2.10 \end{array}$	$2.10 \\ 2.10$	$2.10 \\ 2.10$	Southern No. 2, No. 2X, del. Pl
Plates, Philadelphia Plates, Chicago	2.15	$2.15 \\ 2.10$	$2.15 \\ 2.10$	$2.15 \\ 2.10$	Malleable, Vall Malleable, Chic
Sheets, hot-rolled, Pittsburgh	2.10	$2.10 \\ 3.05$	2.10 3.05	2.00 3.05	Lake Sup., char Gray forge, del
Sheets, No. 24 galv., Pittsburgh Sheets, hot-rolled, Gary	3.50	3.50 2.10	$3.50 \\ 2.10$	3.50 2.00	Ferromanganese
Sheets, cold-rolled, Gary Sheets, No. 24 galv., Gary	3.05	$3.05 \\ 3.50$	$3.05 \\ 3.50$	3.05 3.50	Scrap Heavy melt, st
Bright bess., basic wire, Pitts Tin plate, per base box, Pitts	2.60 \$5.00	2.60 \$5.00 2.55	2.60 \$5.00 2.55	2.60 \$5.00 2.45	Heavy melt. ste Heavy melting
Wire nails, Pittsburgh	4.00	2.00	2.00		Ralls for rollin

Semifinished Material

Sheet bars, Pittsburgh, Chicago.	\$34.00	\$34.00	\$34.00	\$34.00
Slabs, Pittsburgh, Chicago	34.00	34.00	34.00	34.00
Rerolling billets, Pittsburgh	34.00	34.00	34.00	34.00
Wire rods No. 5 to &-inch, Pitts.	2.00	2.00	2.00	1.92

Bessemer, del Philsburgh	924.94	924.94	924.04	\$22.04	
Basic, Valley	22.50	22.50	22.50	20.50	
Basic, eastern, del. Philadelphia	24.34	24.34	24.34	22.34	
No. 2 foundry, Pittsburgh	24.21	24.21	24.21	22.21	
No. 2 foundry, Chicago	23.00	23.00	23.00	21.00	
Southern No. 2, Birmingham	19.38	19.38	19.28	17.38	
Southern No. 2, del. Cincinnati	22.89	22.89	22.89	20.89	
No. 2X, del. Phila. (differ av.).	25.215		25.215	23.215	
	23.00	23.00	23.00	21.00	
Malleable, Valley	23.00	23.00	23.00	21.00	
Malleable, Chicago			30.34	28.34	
Lake Sup., charcoal, del. Chicago		30.34			
Gray forge, del. Plttsburgh	23.17	23.17	23.17	21.17	
Ferromanganese, del. Pittsburgh	105.33	105.33	105.33	85.33	
~					
Scrap					
Heavy melt, steel, Pitts	\$19.25	\$18.00	\$17.05	\$15.00	
Heavy melt, steel No. 2, E. Pa	18.00	16.00	15.90	13.10	
Heavy melting steel, Chicago	17.25	16.65	15.50	13.40	
Ralls for rolling, Chicago	21.25	20.45	18.25	17.65	
Railroad steel specialtics, Chicago		19.75	18.40	15.30	
Rambau steer speciaties, emerge	20120	10.10	10.10	10,00	
Coke					
CORE					
Connellsville, furnace, ovens	\$4.75	\$4.75	\$4.75	\$3.75	
Connellsville, foundry, ovens	5.75	5.75	5,75	5,000	
	44.05	44 01	11 00	10 20	

June 8,

Pittsburgh....

1940

\$24.34 \$24.34

11.25 11.25

May

1940

Mar.

1940

\$24.34

June

1939

\$22.34

STEEL, IRON, RAW MATERIAL, FUEL AND METALS PRICES

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

Sheet Steel Hot Rolled 2.10c Pittsburgh Chicago, Gary 2.10c Cleveland 2.10c Detroit, del. 2.20c 2.10c Buffalo Sparrows Point, Md. 2.10c New York, del. Philadelphia, del. Granite City, Ill. Middletown, O. 2.34c 2.27c 2.20c 2.10c 2.10c Youngstown, O. 2.10c Birmingham Pat fc Coast ports 2.65c Cold Rolled Pittsburgh Chicago, Gary 3.05c 3.05c 3.05c Buffalo 3.05c Cleveland Detroit, delivered 3.15c Philadelphia, del. 3.37c Granite City, Ill. Middletown, O. Youngstown, O. 3.39c 3.15c 3.05c 3.05c Pacific Coast ports 3.70c Galvanized No. 24 Pittsburgh 3.50c 3.50c Chicago, Gary 3.50c Buffalo Sparrows Point, Md. 3.50c Philadelphia, del. 3.67c New York, delivered 3.74c Birminghum 3.50c

Quantas Olan TI		2 60.0
Granite City, Ill.		
Middletown, O		
Youngstown, O.		
Pacific Coast por	ts	. 4.05c
Black Plate, No. 1	29 and	Lighter
Pittsburgh		. 3.05c
Chicago, Gary		. 3.05c
Granite City, Ill.		. 3.15c
Long Ternes No.	24 Una	ssorted
Pittsburgh, Gary		
Pacific Coast		
Enameling		
	No, 10	No. 20
Pittsburgh	2.75c	3.35c
	2.75c	
Chicago, Gary.		
Granite City, Ill.	2.85c	
Youngstown, O.	2.75c	
Cleveland	2.75c	3.35c
Middletown, O	2.75c	3.35c
Pacific Coast	3.40c	4.00c
-		
Corrosion o	ind]	Heat-
Decistant	B 11.	
Resistant	MIIC	ys
Pittsburgh base,	cents	per lb.
Chrome-		-
	No. 302	No. 304
	24.00	25.00
Bars	24.00	
	34.00	29.00
Sheets	34 (0)	36.00

Sheets	. 34.	00	36.00	
Hot strlp	. 21.	50	23.50	
Cold strip	. 28.	00	30.00	
Straight				
No.	No.	No.	No.	
410	430	442	446	
Bars	19.00	22.50	27.50	

teel transie			
Plates 21.50	22.00 25	5.50 30 50	Buffalo
Sheets 26.50	29.00 32	2.50 36.50	Gulf ports
Hot strip. 17.00			Birmingham
Cold stp22.00	22.50 32	2.00 52.00	St. Louis, del.

Steel Plate

Pittsburgh	2.10c
New York, del	2.29c
Philadelphia, del	2.15c
Boston, delivered	2.46c
Buffalo, delivered	2.33c
Chicago or Gary	2.10c
Cleveland	2.10c
Birmingham	2.10c
Coatesville, Pa.	2.10c
Sparrows Point. Md	2.10c
Claymont, Del.	2,10c
Youngstown	2.10c
Gulf ports	2.45c
Pacific Coast ports	2.65c
Steel Floor Plates	

Chicago, by-product fdry., del. ...

Pittsburgh	
Chicago	3.35c 3.70c
Pacific Coast ports	4.00c

Structural Shapes

Plttsburgh	. 2.10c
Philadelphia. del	
New York, del.	
Boston. dellvered	
Bethlehem	
Chicago	. 2.10c
Cleveland, del.	. 2.30c

2.10c 2.45c 2.10c 2.34r Pacific Coast ports 2.70c

11.25

10.50

Tin and Terne Plate

Tin Plate, Coke (base be	x)
Pittsburgh, Gary, Chicago	\$5.00
Granite City, Ill.	
Mfg, Terne Plate (base b	161 X)
Pittsburgh, Gary, Chicago	\$4.30
Granite City, Ill	4.40

Bars

Soft Steel	
(Base, 20 tons or over	1713
Plttsburgh	2.15c
Chicago or Gary	2.15c
Duluth	2.25c
Birmingham	2.15c
Cleveland	2,15c
Buffalo	2.15c
Detroit, delivered	2.25c
Philadelphia, del.	2.47c
Boston, deilvered	2 52c
New York, del,	2.49c
Gulf ports	2 50c
Pacific Coast ports	2.80c
Rall Steel	
(Base, 5 tons or over	r')

Pittsburgh	2.05c
Chicago or Gary	3.05c
Detroit, delivered	2.15c
Cleveland	2.05c

TEEL

2 2% 3 1/2 -7 ar 9 a) 11 8

2 2%

4 .

4%

9-12 28 1/2

 Steel

 1 to 3, butt weld

 2, lap weld

 2¼ to 3, lap weld

 3¼ to 6, lap weld

 7 and 8, lap weld

 10-inch lap weld

12-inch, lap weld

% butt weld 1 and 1% butt weld

1% butt weld

2 butt weld 1½ lap weld 2 lap weld

2½ to 3½ lap weld

Boiler Tubes

Sizes

1% "O.D. 1% "O.D.

2" O.D.

2 ¼ ″O.D. 2 ¼ ″O.D. 2 ¼ ″O.D. 2 ½ ″O.D.

2% "O.D.

3" O.D.

3% "O.D.

4" O.D. 5" O.D.

Sizes 1 "O.D. 1¼"O.D. 1¼"O.D. 1¾"O.D. 1¾"O.D.

6" 0.D.

4 lap weld 284 4½ to 8 lap weld ... 274 9 to 12 lap weld ... 234

Carloads minimum wall seam-less steel boiler tubes, cut lengths 4 to 24 feet; f.o.b. Pitts-burgh, base price per 100 feet subject to usual extras.

Lap Welded

13

13

13

13

12

12

12

12

11

10

9

7

Gage

13

13

13

13

Seamless Hot

Gage Steel

\$ 9.72 11.06

12.38

13.79

15.16

16.58

17.54

18.35

23.15

28.66

44.25

68.14

\$ 7.82

9.26

10.23

11.64

Line Pipe

Steel

Iron

Blk.

25

29

33

32 1/2

23 %

25 %

26 %

Buffalo2.05cBirmingham2.05cGulf ports2.40cPacific Coast ports2.70c Iron Reinforcing New Billet Bars, Base Chicago, Gary, Buffalo, Cleve., Birm., Young., Sparrows Pt.,
 Pitts.
 1.60-1.90

 Gulf ports.
 1.95-2.25

 Pacific Coast ports.
 2.00-2.30
 Pitts. Rail Steel Bars, Base Pittsburgh, Gary Chi-cago, Buffalo, Cleve-land, Birm. 1.60-1.90 Culf morts 195-2 25 Gulf ports 1.95-2.25 Pacific Coast ports. 2.00-2.30 The above represent averag going prices. Last quotation announced by producers wer 2.15c, mill base, for billet bar and 2.00c for rail steel. Wire Products

Pitts-Cleve,-Chicago-Birm.	
per 100 lb. keg in carle	oase
Standard and cement	111111
coated wire nails	
	\$2,55
(Per pound)	
Polished fence staples.	2.55c
Annealed fence wire	3.05c
Galv. fence wire	3.40c
Woven wire fencing (base	
C. L. column)	67
Single loop bale tier,	
(base C.L. column)	56
Galv. barbed wire,	
80-rod spools, base	
column	70
Twisted barbless	
wire, column	70
To Manufacturing Trac	10
Base, Pitts Cleve Chi	
Birmingham (except spr	ino
wire)	
Bright bess., basic wire.	2.60c
Galvanized wire	2 60c
	3.20c
Worcester, Mass., \$2 highe	
bright basic and spring	
subre subre and spring	wite.

Cut Nails

Carload, Pittsburgh, keg. \$3.85

Cold-Finished Bars

Pittsburgh Chicago	Carbon 2.65c 2.65c	3.35c
Pittsburgh Chicago Gary, Ind	2.65c	3.35c 3.35c 3.35c
Detroit Cleveland Buffalo	2.70c 2.65c 2.65c	*3.45c 3.35c 3.35c
• Dellvered.		01000

Alloy Bars (Hot)

(Base, 20 tons	or over)	
Pittsburgh, Buffalo	Chi-	
cago, Massillon,	Can-	
ton, Bethlehem		2.70c
Detroit, delivered .		2.80c
Alloy	A	llov
S.A.E. DIff. S.	A.E.	DIff.
$\begin{array}{cccccccccccccccccccccccccccccccccccc$.00	0.70
2100		1.35
23001.55 33	800	3.80
25002.25 34	00	3.20
4100 0.15 to 0.25 Mo		0.55
4600 0.20 to 0.30 M	0. 1.50-	
2.00 Ni.		
5100 0.80-1.10 Cr		0.45
5100 Cr. spring flats		0.15
6100 bars		1.20
6100 spring flats	• • • • • • • •	0.85
Cr. N., Van.	• • • • • • • •	1.50
Carbon Van.	• • • • • • • •	0.85
9200 spring flats		0.15
9200 spring rounds,	squares	0.40
Electric furnace	up ou ce	mes.

100	The second
10c	(Base, hot strip, 1 ton or over; cold, 3 tons or over)
'0c	cold, 3 tons or over)
	Hot Strip, 12-inch and less
25c	Plttshurgh Chicago
7c	Gary, Cleveland,
00c	Youngstown, Middle-
5c	town, Birmingham, 210c
	Detroit, del 2,20c
	Detroit, del 2,20c Philadelphia, del 2,42c
	New York, del 2.46c
	Pacific Coast ports 2.75c
	Cooperage hoop, Young.
0e	Pitts.; Chicago, Birm. 2.20c
50	Cold strip, 0.25 carbon
0e	and under, Plttsburgh,
UL.	Cleveland, Youngstown 2.80c
	Chicago 2.90c
	Detroit, del 2.90e
0e	Worcester, Mass 3.00c
oe Se	
De De	Carbon Cleve., Pltts. 0.26-0.50 2.80c
	0.51-0.75 4.30c
9e	0.76—1.00
ns re	Over 1.00 8.35c
rs	Worcester, Mass. \$4 higher.
	Commodity Cold-Rolled Strip PittsCleveYoungstown 2.95c
se	Chicago
	Detroit, del 3.05c
	Worcester, Mass 3.35c Lamp stock up 10 cents.
55	Lamp stock up 10 cents.
	Rails, Fastenings
ōc	runs, i usternings
5c	(Gross Tons)
De	Standard rails, mill \$40.00
	Relay rails, Plttsburgh
	20-100 lbs 32 50-35 50

Strip and Hoops

40.00 20-100 lbs.32.50-35.50 Light rails, billet qual., Pitts., Chicago, B'ham. \$40.00 Do., rerolling quality... 39.00

Cents per pound Angle bars, billet, mills. Do., axle steel 2.70c 2.35c Do., axie steel 2.35c Spikes, R. R. base 3.00c Track bolts, base 4.15c Car axies forged, Pitts, Chicago, Birmingham. 3.15c Tie plates, base 2.15c Base, light rails 25 to 60 lbs, 20 lbs. up \$2:16 lbs. up \$4:10 4.15c 2.15c

20 lbs., up \$2; 16 lbs. up \$4; 12 lbs. up \$8; 8 lbs. up \$10. Base railroad spikes 200 kegs or more; base plates 20 tons.

Bolts and Nuts

F.o.b. Pittsburgh, Cleveland, Birmingham, Chicago. Dis-counts for carloads additional 5%, full containers, add 10%.

Carriage and Machine x 6 and smaller68.5 off Do. larger, to 1-in.66 off Do. 1% and larger.....64 off ra bolts Tire bolts52.5 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 bolts60 off
- Nuts
- Semifinished hex. U.S.S. S.A.E.
 ½-inch and less.
 67

 ♣-1-inch
 64

 1½-1½-inch
 62

 1½ and larger
 60
 70 65 62
- Hexagon Cap Screws Upset, 1-in., smaller....70.0 off Square Head Set Screws

Upset, 1-in., smaller....75.0 off Headless set screws....64.0 off

Piling

5

T TITLA	
Pitts., Chgo., Buffalo	
Gulf ports	2.85c
Pacific Coast ports	2.95c
Rivets, Washers	
F.o.b. Pitts., Cleve., Ch.	go.,
Rham	

	Bham.	
Structural	•••••	3.40c

net meen-			
G-Inch and under Wrought washers, Chi., Phila., to and large nut	jobbers	3	2″ O.D. 2¼″O.D. 2¼″O.D. 2¼″O.D. 2½″O.D.
mfrs. 1.c.l. \$5.40	; c.l. \$	5.75 off	2% "O.D.
			3" O.D.
Welded Iron			3¼ "O.D.
Steel Pipe			4″ O.D. 4¼″O.D.
			5" O.D.
Base discounts Pitts., Lorain, O.,	to con	sumera	6″ O.D.
in carloads. Gary.	Ind., 2	noints	Cast Irc
less on lap weld.	1 pot	nt less	
on butt weld. Chi 2½ and 1½ less,	cago d	elivery	Class B i 6-in., & ove
Wrought pipe, Pitt	sburgh	hase	4-in., Birmi
Butt We		· oube,	4-in., Chica
Steel	14		6-in. & over 6-in. & over
In.	Blk.	Galv.	Do., 4-in.
3/2	63 1/2	54	Class A I
************	66 1/2	58	Stnd. fitgs.,
1-3	68 %	60 1/2	
Iron			Semifini
Iron ¾ 1—1¼	30	13	Rerollin
1%	34 38	19 21 %	(G
2	37 %	21 7	Pittsburgh,
Lap We	ld		Cleve., Bi Birm., Spa
Steel			Duluth (bill
2	61	52 %	Detroit, dell
2/1-3	64	55 %	Forging
3½—6 7 and 8	66	57 1/2	Pitts., Chi.,
9 and 10	65 64 %	55 ¼ 55	Young., B
11 and 12	63 %	54	Duluth
			Pitts., Cleve
2	30 1/2	15	Sparrows
479-379	31 1/2	17%	falo, Cant
4	33 % 32 %	21 20	Detroit, dell
9-12	284	20	W

13 13.04 15.03 13 14.54 16.76 12 16.01 18.45 12 17.54 18.59 20.21 12 21.42 12 19.50 22.48 24.62 11 28.37 10 30.54 35.20 37.35 46.87 10 43.04 9 54.01 7 71.96 82.93

on Pipe

Class B Pipe-Per Net Ton 6-in., & over, Birm. \$45.00-46.00
6-1n., & over, Birm. \$45.00-46.00
4-10. Birmingham 48 00-49 (M)
0-m. & over, Chicago 53.80-54.80
6-1n. & over, east fdy. 49.00
Do., 4-in 52.00
Class A Pipe \$3 over Class B
Stnd. fitgs., Blrm., base \$100.00
Semifinished Steel
Rerolling Billets, Slabs
(Gross Tons)
Pittsburgh, Chicago, Gary,
Cleve, Buffalo Young
Cleve., Buffalo, Young., Birm., Sparrows Point\$34.00
Detroit, delivered 36.00
Forging Quality But t
Forging Quality Bfliets Pitts., Chi., Gary, Cleve.,
Young, Buffalo, Birm. 40.09
Duluth
Sheet Bars
Pitts., Cleveland, Young.,
Sparrows Point, Buf-
falo, Canton, Chicago 34.00 Detroit, delivered 36.00
Wire Rods
Pitts., Cleveland, Chicago,
Birmingham No. 5 to 31-
inch incl. (per 100 lbs.) \$2.00
Do., over 32 to 11-in. incl. 2.15
WORCester up \$0.10; Galves.
ton up \$0.25; Pacific Coast up
\$0.50.
Skelp
Skeip Pitts., Chi., Youngstown,
Costeguille Sparnours Dt 1 00-

Coatesville, Sparrows Pt. 1,90c

Galv. Coke

15

67 1/2

60 63 65

64 63 14

62 %

7

15%

13

15

7

9

11%

15

14 9

Char-

coal

Iron

\$23.71 22.93

19.35

\$ 9.01

Rolled Drawn

Price Per Net Ton

Beehive Ovens	
Connellsville, fur \$4.35	- 4.60
Connellsville, fdry 5.00	- 5.75
	6.25
	6.50
	- 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 21.68

	ounce by inounces
1	Spot, gal., freight allowed east
26.57	of Omaha
29.00	Pure and 90% benzol 16.00c
31.36	Toluol, two degree 25.00c
39.81	Solvent naphtha 27.00c
49.90	Industrial xylol 27.00c
73.93	Per lb. 1.0.b. Frankford and
	St. Louis
	Phenol (less than 1000
	lbs.) 14.75c
Cold	Do. (1000 lbs. or over) 13.75c
Drawn	Eastern Plants, per lb.
\$ 9.01	Naphthalene flakes, balls,
10.67	bbls, to jobbers 7,00c
11.79	Per ton, bulk, 1.o.b. port
13.42	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.

and the second se	No. 2	Malle-		Besse-
Basing Points:	Fdry.	able	Basic	mer
Bethlehem, Pa	\$24.00	\$24.50	\$23.50	\$25.00
Birdsboro, Pa.		24.50	23.50	25.00
Birmingham, Ala.§	19.38		18.38	24.00
Buffalo		23.50	22.00	24.00
Chicago		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		24.00
Erie, Pa		23.50	22.50	24.00
Everett, Mass		24.50	23.50	25.00
Granite City, Ill		23.00	22.50	23.50
Hamilton, O.		23.00	22.50	
Neville Island, Pa.		23.00	22.50	23.50
Provo, Utah				
Sharpsville, Pa		23.00	22.50	23.50
Sparrow's Point, Md.		1 1 1 1 1	23.50	
Swedeland, Pa		24.50	23.50	25.00
Toledo, O		23.00	22.50	23.50
Youngstown, O.	. 23.00	23.00	22.50	23.50

tSubject 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			1.111
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			1.141.1
Cincinnati from Hamilton, O		24.11	23.61	
Cincinnati from Birmingham	23.06		22.06	
Cleveland from Birmingham	23.32		22.82	1.141.1
Mansfield, O., from Toledo, O	24.94	24.94	24.44	24.44
Milwaukee from Chicago		24.10	23.60	24.60
Muskegon, Mich., from Chicago,				
Toledo or Detroit		26,19	25.69	26.69
Newark, N. J., from Birmingham				
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	
Plttsburgh district from Nevill	leſNevil	le base,	plus 69	c, 84c,
Island	. jand \$	1.24 fre	ight.	
Saginaw, Mich., from Detroit	25.31	25.31	24.81	25.81
o				

No. 2 Fdry.	Maile- able		Besse- mer
St. Louis, northern 23.50	23.50	23.00	
St. Louis from Birmingham †23.12		22.62	
St. Paul from Duluth 25.63	25.63		26.13
†Over 0.70 phos.			

Low Phos.

Basing Points: Birdsboro and Steelton, Pa., and Buffalo, N. Y., \$28.50, base; \$29.74 delivered Philadelphia.

Grav Forge	Charcoal
Valley furnace\$22.50	Lake Superior fur\$27.00
Pltts. 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-rall 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	Ladie Brick (Pa., O., W. Va., Mo.)
Per 1000 f.o.b. Works, Net Prices Fire Clay Brick	Dry press
Super Quality Pa., Mo., Ky. \$60.80 First Quality Pa., Ill., Md., Mo., Ky 47.50 Alabama, Georgia 47.50 New Jersey 52.50 Second Quality Pa., Ill., Ky., Md., Mo Pa., Ill., Ky., Md., Mo 42.75 Georgia, Alabama 34.20 New Jersey 49.00 Ohio First quality Site quality 39.90	Magnesite Domestic dead - burned grains, net ton f.o.b. Chewelah, Wash., net ton, bulk
Second quality 31.35	Fluorspar
	Washed gravel, duty pd., tide, net ton. \$25.00-\$26.00 Washed gravel, f.o.b. Ill., Ky., net ton. carloads, all rail 20.00 Do. barge 20.00 No. 2 lump 21.00

Ferroalloy Prices

Ferromunganese, 78-82%, lump and bulk, carlots tide., duty pd. \$100.00 Ton lots 110.00 Less ton lots 113.50 Less 200 lb. lots 118.00 Do., carlots del. Pitts. 105.33 Spicgelelsen, 19-21% dom. Palmerton, Pa., spot. 32.00 Do., 26-28% 39.50	carlots
Bor, Job // Seresilicon, 50% freight allowed, c.l. 69,50 Do., ton lot 82.00 Do., 75 per cent. 126.00 Do., ton lots 142.00	Spot ¼ c higher Ferromelybdenum, 55- 65% molyb. cont., f.o.b. mill, 1b 0.95 Calcium molybdate, 1b.
Spot, \$5 a ton higher.	rr ~1yb. cont., f.o.b. mill 0.80
Silicomanganese, c.l., 2%	Fert. titanium, 40-45%,
per cent carbon, 103.00	10., con. ti., f.o.b. Niag-
2% carbon, 108.00; 1%, 118.00	ara Falls, ton lots 51.23
Contract ton price	Do., less-ton lots 1.25
\$12.50 higher; spot \$5	20-25% carbon, 0.10
over contract.	max., ton lots, lb 1.35
Ferrotungsten, stand., lb.	Do. less-ton lots 1.40
con. del. cars1.90-2.00	Spot 5c higher
Ferrovanadium, 35 to	Ferrocolumbium, 50-60%,
40%, lb., cont2.70-2.80-2.90	contract, lb. con. col.,
Ferrophosphorus, gr. ton,	f.o.b. Niagara Falls \$2.25
c.l., 17-18% Rockdale,	Do., less-ton lots 2.30
Tenn., basis, 18%, \$3	Spot is 10c higher
unitage, 58.50; electric	Technical molybdenum
furn., per ton, c. l., 23-	trioxide, 53 to 60% mo-
26% f.o.b. Mt. Pleasant,	lybdenum, 1b. molyb.
Tenn., 24% \$3 unitage 75.00	cont., 1.0,b. mill, 0.80
Ferrochrome, 66-70 chro-	Ferro-carbon-tltanium, 15-
mium, 4-6 carbon, cts.	18%, ti., 6-8% carb.,
1b., contained cr., del.	carlots, contr., net ton.\$142.50

1 6110	uno.	I THOOD
Do., less-ton lots 1 7-72% low carbon: Car- Ton I loads lots % carb 17.50c 18.25c 1 % carb 18.50c 19.25c 1 10% carb. 20.50c 21.25c 2 20% carb. 19.50c 20.25c 2 Spot ¼ c higher erromelybdenum, 55- 65% molyb. cont., f.o.b. mill, lb	1.75c 2.00c Less ton 18.75c 19.75c 21.75c	Do, spot
f.o.b. Niagara Falls Do., less-ton lots Spot is 10c higher echnical molybdenum	\$2.25 2.30	contract, lb. contained \$1.10 Do, spot 1.15 Chromium Metal, 98% cr., 0.50 carbon max.,
trioxide, 53 to 60% mo- lybdenum, 1b. molyb. cont., f.o.b. mill erro-carbon-tltanium, 15-	0.80	contract, lb. eon. chrome 84.00c 00. 89.00c Do spot 83.00c 83.00c Do spot 83.00c 83.00c
		Citter Menal 10 inon

04.00

	tract, freight allowed	đ,
0.80	1b. spot carlots, bulk	7.00c
	Do., ton lots	7.50c
	Do., less-ton lots	7.75c
\$1.23	Do., less 200 lbs	8.00c
1.25	Spot, ¼ c higher.	
1.40	Tungsten Metal Powder,	
1.35	according to grade,	
1.40	spot shipment, 200-lb.	
1.10	drum lots, lb	\$2.50
	Do., smaller lots	2.60
	Vanadium Pentoxide,	
\$2.25	contract, 1b. contained	
2.30	Do spot	1.15
2.00	Chromium Metal, 98%	
-	cr., 0.50 carbon max.,	
	contract, 1b. eon.	~ ~ ~ ~
	chrome	84.00c
0.80	Do spot	
0.00	88% chrome, contract	83.00C
	Do spot	88.00C
	Silicon Metal. 1% iron,	
142.50	contract, carlots, 2 x	

% -In., 1b Do., 2%	14.00c 12.59c
Spot ¼c higher	
Silicon Briquets, contract	
carloads, bulk, freight allowed, ton Ton lots Less-ton lots, lb. Less 200 lb. lots, lb. Spot %-cent higher.	\$69.50 79.50 3.75c 4.00c
Manganese Briquets,	
contract carloads, bulk freight allowed,	
lb Ton lots	5.00c
Ton lots	5.50c
Less-ton lots	5.75c
Spot %c higher	
Zirconium Alloy, 12-15%.	
Zirconium Alloy, 12-15%, contract, carloads,	
Zirconium Alloy, 12-15%, contract, carloads, bulk, gross ton	\$97.50
contract, carloads, bulk, gross ton Do. spot	\$97.50 102.50
contract, carloads, bulk, gross ton Do, spot 34-40%, contract, car-	102.50
contract, carloads, bulk, gross ton Do, spot 34-40%, contract, car- loads, lb., alloy	102.50 14.00c
c o n t r a c t, carloads, bulk, gross ton Do, spot 34-40%, contract, car- loads, lb., alloy Do, ton lots	102.50 14.00c 15.00c
c o n t r a c t, carloads, bulk, gross ton Do, spot 34-40%, contract, car- loads, lb., alloy Do, ton lots Do, less-ton lots	102.50 14.00c
c o n t r a c t, carloads, bulk, gross ton Do, spot 34-40%, contract, car- loads, lb., alloy Do, ton lots Do, less-ton lots Spot ½ c higher	102.50 14.00c 15.00c
c o n t r a c t, carloads, bulk, gross ton Do, spot 34-40%, contract, car- loads, lb., alloy Do, ton lots Do, less-ton lots Spot %c higher Noivedenum Payed or	102.50 14.00c 15.00c
c o n t r a c t, carloads, bulk, gross ton Do, spot 34-40%, contract, car- loads, lb., alloy Do, ton lots Do, less-ton lots Spot %c higher Molybdenum Powder, 99% f.o.b. York, Pa.	102.50 14.00c 15.00c 16.00c
c o n t r a c t, carloads, bulk, gross ton Do, spot 34-40%, contract, car- loads, lb., alloy Do, ton lots Do, less-ton lots Spot %c higher Molybdenum Powder, 99% f.o.b. York, Pa.	102.50 14.00c 15.00c 16.00c \$2.60
c o n t r a c t, carloads, bulk, gross ton Do, spot 34-40%, contract, car- loads, lb., alloy Do, ton lots Spot ¼ c higher Molybdenum Powdor, 99%, f.o.b. York, Pa. 200-lb. kegs, lb Do, 100-200 lb. lots.	102.50 14.00c 15.00c 16.00c
c o n t r a c t, carloads, bulk, gross ton Do, spot 34-40%, contract, car- loads, lb., alloy Do, ton lots Spot ¼c higher Molybdenum Powder, 99%, f.o.b. York, Pa. 200-lb. kegs, lb Do, 100-200 lb. lots. Do, under 100-lb. lots	102.50 14.00c 15.00c 16.00c \$2.60 2.75
c o n t r a c t, carloads, bulk, gross ton Do, spot	102.50 14.00c 15.00c 16.00c \$2.60 2.75
c o n t r a c t, carloads, bulk, gross ton Do, spot 34-40%, contract, car- loads, lb., alloy Do, ton lots Spot ¼c higher Molybdenum Fowder, 99%, f.o.b. York, Pa. 200-lb. kegs, lb Do, 100-200 lb. lots. Do, under 100-lb. lots Molybdenum Oxide	102.50 14.00c 15.00c 16.00c \$2.60 2.75

ducers' plant 80.00c

WAREHOUSE STEEL PRICES

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

	Soft			Plates ¼ -in. &	Struc- tural	Floor	Hot	-Sheets- Cold	Galv.	Cold	- Cold	Drawn H	
	Bars	Bands	Hoops	Over	Shapes	Plates	Rolled	Rolled	No. 24	Rolled Strip	Carbon	SAE 2300	SAE 3100
Boston New York Met.) Philadelphia Baltimore Norfolk, Va	3.98 3.84 3.85 3.95 4.15	3.86 3.76 3.75 4.05 4.25	4.86 3.76 4.25 4.45	3.85 3.76 3.55 3.70 3.90	3.85 3.75 3.55 3.70 3.90	5.66 5.56 5.25 5.25 5.45	3.51 3.38 3.35 3.55 3.75	4.48 4.40 4.05	4.66 4.05 4.25 5.05 5.40	3.46 3.31 3.31	4.13 4.09 4.06 4.05 4.15	8.63 8.59 8.56	7.23 7.19 7.16
Buffalo Pittsburgh Cleveland Detroit Omaha Cincinnati	3.35 3.35 3.25 3.43 3.90 3.60	3.62 3.40 3.30 3.23 3.80 3.47	3.62 3.40 3.30 3.48 3.80 3.47	3.62 3.40 3.40 3.60 3.95 3.65	3.40 3.40 3.58 3.65 3.95 3.68	5.25 5.00 5.18 5.27 5.55 5.28	3.05 3.15 3.15 3.23 3.45 3.22	4.30 4.05 4.30 4.00	4.45 4.45 4.64 5.00 4.67	3.22 3.20 3.20	3.75 3.65 3.75 3.80 4.42 4.00	8.15 8.15 8.15 8.45 8.50	6.75 6.75 6.75 7.05 7.10
Chicago Twin Cities Milwaukee St. Louis Kansas City Indianapolis	3.50 3.75 3.63 3.62 4.05 3.60	3.40 3.65 3.53 3.52 4.15 3.55	3.40 3.65 3.53 3.52 4.15 3.55	3.55 3.80 3.68 3.47 4.00 3.70	3.55 3.80 3.68 3.47 4.00 3.70	5.15 5.40 5.28 5.07 5.60 5.30	3.05 3.30 3.18 3.18 3.90 3.25	4.10 4.35 4.23 4.12	4.60 4.75 4.73 4.87 5.00 4.76	3.30 3.63 3.54 3.41	3.75 4.34 3.88 4.02 4.30 3.97	8.15 8.84 8.38 8.52	6.75 7.44 6.98 7.12
Memphis Chattanooga Tulsa, Okla Birmingham New Orleans	3.90 3.80 4.44 3.50 4.00	4.10 4.00 4.34 3.70 4.10	4.10 4.00 4.34 3.70 4.10	3.95 3.85 4.33 3.55 3.80	3.95 3.85 4.33 3.55 3.80	5.71 5.68 5.93 5.88 5.75	3.85 3.70 3.99 3.45 3.85		5.25 4.40 5.71 4.75 4.80	5.00	4.31 4.39 4.69 4.43 4.60	·····	
Houston, Tex Seattle Portland, Oreg Los Angeles San Francisco	4.05 4.00 4.25 4.15 3.50	6.20 3.85 4.50 4.60 4.00	6.20 5.20 6.10 4.45 6.00	4.05 3.40 4.00 4.00 3.35	4.05 3.50 4.00 4.00 3.35	5.75 5.75 5.75 6.40 5.60	4.20 3.70 3.95 4.30 3.40	6.50 6.50 6.50 6.40	5.25 4.75 4.75 5.25 5.15		5.75 5.75 6.60 6.80	10.65 10.65	9.80 9.80

	-SAE	Hot-rolle	ed Bars	(Unannea	lled)—
	1035-	2300	3100	4100	6100
	1050	Series	Series	Series	Series
Boston New York (Met.) Philadelphia Baltimore Norfolk, Va.	4.18 4.04 4.10 4.10	7.50 7.35 7.31	6.05 5.90 5.86	5.80 5.65 5.61	7.90 8.56
Buffalo	3.55	7.10	5,65	5.40	7 50
Plttsburgh	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 Portland, Oreg Los Angeles San Francisco	3.85 5.70 4.80 5.00	8.85 9.40 9.65	8.00 8.00 8.55 8.80	7.85 7.85 8.40 8.65	8.65 8.65 9.05 9.30

BASE QUANTITIES

BASE QUANTITIES Soft Bars, Bands, Hoons, Plates, Shanes, 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 Citles; 400-3999 pounds in Birmingham. Cold Rolled Sheets: Base, 400-1499 pounds in Chicago, Cin-cinnati, Cleveland, Detroit, New York, Kansas City and St. Louis; 450-3749 in Boston: 500-1499 in Buffalo; 1000-1999 in Phila-delphia, Baltimore; 300-4999 in Los Angeles. Galvanized Sheets: Base, 1500-3499 pounds, New York; 150-1499 in Cleveland, Pittshurzh, 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 in Kansas City; 150 and over in Memphis; 10 to 24 bundles in Philadelphia.

Philadelphia.
Cold Rolled Strip: No base quantity; extras apply on lots of all size.
Cold Finished Bars: Base, 1500 pounds and over on carbon.
except 0-299 in San Francisco, 1000 and over in Portland, Seattle;
1000 pounds and over on alloy, except 0-4999 in San Francisco.
SAE Hot Rolled Alloy Bars: Base, 1000 pounds and over, except 0-4999. San Francisco; 0-1999, Portland, Seattle.

CURRENT IRON AND STEEL PRICES OF EUROPE

Dollars at Rates of Exchange, June 6

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

By Cable or Radio

Domestic Prices at Works or Furnace-Last Reported

**Gold pound sterling not quoted. §§ Last prices, no current quotations. #1No quotations

	Britis	ь		th Sea ports, ss tons;: **Quoted in			£s	d		French Francs		Belgia §§ Franci		Releh §§ Mar
	gross t		Quoted in	gold pounds	Fdy, plg fron, St. 2.5.	\$19.09	5	11 0(a)	\$15.13	788	\$31.44	950	\$25.33	63
	U. K. p.		dollars at	sterling	Pasic bess, pig iron	17.97	5	4 6(H)		an-	29.79	900	27.94	(b)69.50
		Ta	d current value	£sd	Furnace coke	5.45	1 1	18	4.32	225	10.92	330	7.64	19
Foundry, 2.50-3.00 Si Basic bessemer	\$20.64	6 0	0 \$33.23	3 18 0	Billets	32.25	9	7 6	22.33	1,163	42.20	1.275	38.79	96
Hematite, Phos0305	21.40	6 5			Standard rails	1.72c	11	30 -	1.44c	1,602	2.06c	1,375	2.38c	132
		0 0	• • • • • • •		Merchant bars	2.16c	14	0 0††	1.3Ic	1,454	2.06c	1.375	1.98c	110
Billets	*****			$ \begin{array}{r} 3 & 15 & 0 \\ 7 & 2 & 6 \end{array} $	Structural shapes Plates, 1%-in. or 5	1_9Ic	12	8 0††	1 27c	1,414	2.06c	1.375	1.93c	107
Standard rails	\$36.12	10 10	0 \$48.99	5 15 0	mm	1.93c	12 1	0 611	1.66c	1,848	2.42c	1.610	2.29c	127
Merchant bars	2.08c	13 10	0 2 77c	7 6 0	Sheets, black	2.70c	17 1	0 05	1.97c	2,193‡	2.85c	1,900‡	2.59c	144:
Structural shapes	1 93c			7 9 0	Sheets, galv., corr.,									
Plates, 14 In. or 5 mm. Sheets, black, 24 gage	1.98c	12 17	6 3.53c	960	24 ga. or 0.5 mm	3.21c	20 1	6 3	3.23e	3,589	4.80c	3,200	6.66c	370
or 0.5 mm	2.62c	17 0	0 2.98c	7 17 0°	Plain wire	3.00c	19 1	0 0	2.11c	2.340	3.00c	2,000	3.11c	173
Sheets, gal., 24 ga., corr.	3.13c			10 7 6	Bands and strips				1.47c		2.48c	1,650	2.29c	127
Bands and strips			. 2.76c	7 5 0	†British ship-plate	s. Con	tinen	tal, b	ridge pla	tes. §2-	ga.	11 to 3	mm, ba	sic price.
Plain wire, base	*****				British quotations	are for ba	sie of	en-hea	rth steel.	Conti	nent usua			
Wire nails, base			0 50	9 7 6	(a) del. Middlesbro	ugh. 5s	reba	te to a	pproved e	ustomers		matite.		annealed.
Tin plate, box 108 lbs.	\$ 5.25	1 10			t†Rebate of los o						,		010001	ancalcu,

British ferromanganese \$100.00 delivered Atlantic seaboard duty-paid.

-The Market Week-

STEEL SCRAP PRICES IRON AND

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated; tindicates brokers prices Eastern Pa. 23.50-24.00 St. Louis, 14-34"... 17.50-18.00

HEAVY MELTING STEEL
Birmingham, No. 1. 16.00
Bos dock No. 1 exp. 15.75-16.25
New Eng. del. No. 1 14.50-15.00
Buffalo, No. 1 18.50-19.00
Buffalo, No. 2 16.50-17.00
Chicago, No. 1 17.00-17.50 Chicago, auto, no
Chicago, auto, no
alloy 16.00-16.50
Cincinnati, dealers. 14.50-15.00
Cleveland, No. 1 18.00-18.50
Cleveland, No. 2 17.00-17.50
Detroit No. 1†16.00-16.50
Detroit No. 2
Eastern Pa., No. 1. 19.50-20.00
Eastern Pa., No. 2. 18.00
Federal, Ill., No. 2. 14.25-14.75
Granite City, R. R.
No. 1
Granite City, No. 2. 14.00-14.50
Los Ang., No. 1, net 13.00-13.50 Los Ang., No. 2, net 12.00-12.50
Los Ang., No. 2, net 12.00-12.50
N. Y. dock No. 1 exp. 15.50
Pitts., No. 1 (R. R.). 20.00-20.50 Pittsburgh, No. 1 19.00-19.50
St. Louis, No. 1 †15.25-15.75
St. Louis, No. 2 †14.25-14.75
San Fran., No. 1, net 13.00-13.50
San Fran., No. 2, net 12.00-12.50
Seattle, No. 1
Seattle, No. 1 13.00-14.00 Toronto, dirs., No. 1 11.00 Valleys, No. 1 20.00-20.50
valleys, 140. 1 20.00-20.00

COMPRESSED SHEETS

Buffalo, new	17.00-17.50
Chicago, factory	16.50-17.00
Chicago, dealers	15.00-15.50
Cincinnati, dealers .	14.00-14.50
Cleveland	17.50-18.00
Detroit	17.25-17.75
E. Pa., new mat	19.50-20.00
E. Pa., old mat	15.50-16.00
Los Angeles, net	10.00-10.50
Pittsburgh	19.00-19.50
St. Louis	+13.00-13.50
San Francisco, net	10.00-10.50
Valleys	19.00-19.50

BUNDLED SHEETS

Buffalo, No. 1	16.50-17.00
Buffalo, No. 2	
Cleveland	
Plttsburgh	17.50-18.00
St. Louis	†11.00-11.50
Toronto, dealers	9.75

SHEET CLIPPINGS, LOOSE

Chicago 12.00-	12.50
Cincinnati, dealers. 10.00-	10.50
Detroit	14.25
St. Louis †9.50-	10.00
Toronto, dealers	9,00

BUSHELING

BUSHELING Birmingham, No. 1. 15.00 Buffalo, No. 1..... 16.50-17.00 Chicago, No. 1..... 16.50-17.00 Cincin., No. 1 deal. 11.00-11.50 Cincin., No. 2 deal. 4.75-5.25 Cleveland, No. 2... 12.00-12.50 Detroit No. 1 new. †16.00-16.50 Valleys, new, No. 1 18.00-18.50 Variers 550-6.00 Toronto, dealers.... 5.50- 6.00

MACHINE TURNINGS (Long) Birmingham 5.00

Ores

Lake Superior Iron Ore

Gross ton, 51% % Loiner Laks Ports

Old range bessemer	\$4.75
Mesabi nonbessemer	4.45
High phosphorus	4.35
Mesabl bessemer	4.60
Old range nonbessemer	4.60

BORINGS AND TURNINGS For Blast Furnace Use Boston district †5.25- 5.75 Buffalo 10.50-11.00 AXLE TURNINGS 16.00-16.50 Buffalo Builato 16,00-16,30 Boston district.... †9,00-9,50 Chicago, elec. fur. 17,50-18,00 East. Pa. elec. fur. 17,50-18,00 St. Louis †10,50-11,00 Toronto 6,00-6,50 CAST IRON BORINGS 8.00 Birmingham Boston dist. chem.. †8.25- 8.50 Buffalo 10.50-11.00 Chicago 10.50-11.00 E. Pa., chemical 14.50-15.00 New York †7.00 St. Louis..... †7.00- 7.50 Toronto, dealers 6.75 RAILROAD SPECIALTIES ANGLE BARS-STEEL SPRINGS.

 SFRINGS
 21.00-21.50
 New YOTK

 Buffalo
 21.50-22.00
 Eastern Pa.

 Chicago, coil
 21.50-22.00
 Eastern Pa.

 Chicago, leaf.
 19.50-20.00
 St. Louis

 Eastern Pa.
 23.50-24.00

 Pittsburgh
 24.00-24.50
 STEEL CAR AXLES

 St. Louis
 †19.00-19.50
 Birmingham

 STEEL RAILS, SHORT

 Birmingham
 17.00

 Buffalo
 22.50-23.00

 Chicago
 (3 ft.)
 20.50-21.00

 Chicago
 (2 ft.)
 21.50-22.00

 Chicanati, dealers.
 21.00-21.50

 Detroit
 150-22.00
 STEEL RAILS, SCRAP Birmingham . 15.50 Birmingham 15.50 Boston district.....†14.50-15.00 Eastern Local Ore Cents, unit, del. E. Pa. Foundry and basic 56-63%, contract.. 1 10.00 Foreign Ore Cents per unit c.i.f. Atlantic ports Manganiferous ore, 45-55% Fe., 6-10% Mn. (asking price; 19.00 no sales) North African low

SHOVELING TURNINGS

Gross tons delivered to consume	rs, except where otherwise stated
Buffalo 11.00-11.50 Chicago 11.00-11.50 Cincinnati, dealers 7.00-7.50 Cleveland, no alloy 11.50-12.00 Detroit , 10.50-11.00 Eastern Pa. 12.00-12.50	Buffalo 19.00-19.50 Chicago 17.50-18.00 Cleveland 20.00-20.50 Pittsburgh 21.00-21.50 St. Louis +17.50-18.00 Seattle 18.00-18.50
Los Angeles 4.00- 5.00 New York †7.50	PIPE AND FLUES
Pittsburgh 13.00-13.50 St. Louis †7.50- 8.00 San Francisco 5.00	Chicago, net 12.50-13.00 Cincinnali, dealers. 11.50-12.00
Toronto, dealers 7.00- 7.25 Valleys 11.50-12.00 SHOVELING TURNINGS	RAILROAD GRATE BARS Buffalo

Buffalo 13.00-13.50
Chicago, net 13.00-13.50
Cincinnati, dealers, 10.50-11.00
Eastern Pa 17.00
New York
St. Louis

RAILROAD WROUGHT

Birmingham 14.00 Boston district 19.50-10.00 Eastern Pa., No. 1. 20.00-21.00 St. Louis, No. 1... †11.50-12.00 St, Louis, No. 2....†14.00-14.50

FORGE FLASHINGS

Boston district	, †10,25-10.50
Buffalo	
Cleveland	
Detroit	. †15.50-16.00
Pittsburgh	. 17.00-17.50

FORGE SCRAP

Boston district	77.00
Chicago, heavy	20,00-20.50

LOW PHOSPHORUS

Cleveland, crops	
Eastern Pa. crops	23.50-24.00
Pitts., billet, bloom,	
slab crops	24.50-25.00

LOW PHOS. PUNCHINGS

	5	feet	and	00

Birmingham	10.00
Boston	16.00
Chicago 21.00-	21.50
New York	16.50
Eastern Pa 22.00-	22.50
St. Louis	19.50

Birmingham	
Boston district	18.00-18.50
Chicago, net	22.50-23.00
Eastern Pa	23.50-24.00
St. Louis	19.50-20.00

LOCOMOTIVE TIRES

Chicago (cut)..... 20.00-20.50 St. Louis, No. 1.... †16.00-16.50

SHAFTING

Boston	district	 	. †18.00-18.50
New Y	ork	 	. †19.50-20.00

CAR WHEELS	
Birmingham, iron	13.00
Boston dist., iron	14.50-14.75
Buffalo, steel	23.00-23.50
Chicago, iron	18.50-19.00
Chicago, rolled steel	20.00-20.50
Cincin., iron, deal	17.75-18.25
Eastern Pa., iron	21.00-21.50
Eastern Pa., steel.	23.50-24.00
Pittsburgh, iron	20.00-20.50
Pittsburgh, steel	24.00-24.50
St. Louis, iron	16.00-16.50
St. Louis, steel	19.50-20.00
an over the property of the second se	

NO. 1 CAST SCRAP

Birmingham	15.50
Boston, No. 1 mach.†	16.00-16.50
N. Eng. del. No. 2.	14.75-15.00
N. Eng. del. textile	18.00-18.50
Buffalo, cupola	18.50-19.00
Buffalo, mach	20.00-20.50
Chicago, agri. net.	14.50-15.00
Chicago, auto net.	17.00-17.50
Chicago, railroad net	15.50-16.00
Chicago, mach. net.	15.50-16.00
Cincin., mach. deal	18.50-19.00
Cleveland, mach	22.50-23.00
Detroit, cupola, net.	17.00-17.50
Eastern Pa., cupola.	21.00-21.50
E. Pa., No. 2 yard	18.00-18.50
E. Pa., yard fdry	18.00-18.50
Los Angeles	16.50-17.00
Pittsburgh, cupola	19.00-19.50
San Francisco	14.50-15.00
Seattle	
St. L., agrl. mach;	
St. L., No. 1 mach	17.50-18.00
Toronto, No. 1	
mach., net dealers	18.00-18.50

HEAVY CAST

Boston dist. break.. †14.25-14.75 New England, del... 15.00-15.25 Buffalo, break..... 16.50-17.00 Cleveland, break, net 15.50-16.00 Detroit auto net... †17.50-18.00 Detroit break...... †16.00-16.50 Eastern Pa. 20.00-20.50 Los Ang., auto, net. 13.00-14.00 New York break ... †16.50 Pittsburgh, break ... 16.50-17.00

16.50 STOVE PLATE

Birmingham	10.00
Boston district †11.00	-11.50
Buffalo 14.50	-15,00
Chicago, net 11.50	-12.00
Cincinnati, dealers. 10.50	-11.00
Detroit, net \$10.50	-11.00
Eastern Pa.	17.00
New York fdry	12.75
St. Louis	-12.50
Toronto dealers, net	12.00

MALLEABLE

New England, del	21.50-22.00
Buffalo	20.00-20.50
Chicago, R. R	21.00-21.50
Cincin. agri., deal	15.00-15.50
Cleveland, rail	22.00-22.50
Eastern Pa., R. R	22.00-22.50
Los Angeles	12.50
Pittsburgh, rail	23.50-24.00
St. Louis, R. R	17.50-18.00

Manganese Ore					
Including war risk					
duty, cents per unit					
Caucasian, 50-52%.					
So. African, 50-52%	55.00-	57.00			
Indian, 49-50%					
Brazilian, 46%	50.00-	53.00			
Cuban, 50-51%, duty					
free	71.00-	73.00			
Molybdenum Sulphide conc., lb.,					
Mo. cont., mines		\$0.75			

-The Market Week-

Sheets, Strip

Sheet Strip Prices, Pages 94, 95

Pittsburgh-Mills have been able to secure releases on almost all placed tonnage in the eastern half of the country. However, some outstanding low-priced material has not been released and sellers are actively soliciting this business. It now seems probable that all low-priced material will be shipped before the June 30 deadline, although considerable new material has been placed and may slow down deliveries somewhat. Sheet mili operations are now at 70 per cent of capacity, which indicates peak operations on active mills. Galvanized sheet operations this week were at 54 per cent. Demand continues to increase for narrow material, although automotive needs have been filled for 1940 models. Nearly all outstanding tonnage has been released for shipment as soon as possible and mill operations are moving upward to meet this demand and to keep shipments about equal to orders, thus preventing possible jam in deliveries.

Chicago - Approximately 70 per cent of the low-priced material booked in April had been specified. Producers remain firm in earlier determinations to insist on shipments of low-priced tonnage before July 1. Automotive activity has dwindled, with no important movement expected till late July or early August, although some releases of material for early 1941 model runs already have been received.

Boston-Heavier releases against low-priced blanket cold strip orders are accompanied by a substantial volume of new buying for prompt delivery and some bookings for third quarter shipment. While new sheet buying is light, most consumers and distributors have releases in against orders and deliveries are heavier.

New York-Heavy sheet specifications have been filed to assure protection on contracts made at the recent reduced prices. Most buyers have covered their full tonnage and many are provided for most of third quarter and some even fur-Consumers in general are ther. finding normal outlet for their products and are taking sheet shipments in full.

Snead & Co., Jersey City, N. J., has been awarded the contract for 7500 steel bookstack shelves for the Library of Congress annex, taking a substantial quantity of sheets, bids May 22, to the architect of the capitol

Philadelphia-Sheet specifications now are fairly well in on the lowpriced tonnage booked recently. Some mills are adhering closely to

the policy of taking only such tonnage as can be rolled and shipped by June 30. One mill in particular has filled its schedule on galvanized sheets taken at 3.30c, base, and refused to place additional business on its books at this figure.

St. Louis-Sheet consumers are cautious in placing orders after the final flurry to file specifications against low-priced contracts, for delivery before June 30.

Cincinnati — Sheet and strip releases against second quarter con-

FOR SHOCK LOADS

and heavier roll neck pressures.

They're at your service!

New York

AT HIGH SPEEDS —

STEEL PICKS PENOLA!

• Steel men don't take chances on lubricants.

They can't! Especially since the trend is toward

faster rolling speeds and fewer passes by taking

heavier drafts. That means greater bearing stresses

For complete protection under these condi-

tions, a vast majority of steel mill operators in

the U. S. and Canada specify Penola lubricants

for all roller bearings, gear drives and pinions!

Penola manufactures and sells more steel mill

lubricants than any other maker in the world.

Let Penola's lubrication engineers help you.

PENOLA LUBRICANTS

(Formerly Pennsylvania Lubricating Company) Penola Inc., Pittsbutgh, Pa.

St. Louis

tracts are heavier and mills are pushing toward capacity. Export buying is heavier, all for prompt delivery. Some business has been placed for third quarter, but not enough to point the trend.

Birmingham, Ala. - Sheet releases have been heavy in the past week, and production is not running greatly in excess of deliveries.

Baltimore-Sheet buyers are taking tonnage at a faster rate than it is being consumed. Current consumption is fair, and prospects for

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LUBRICANTS FOR THE

STEEL UNDUSTRY

the summer in some lines are not encouraging. On the other hand, residential requirements, which are unusually good, are bolstering volume.

Toronto, Ont.—Sheet requirements are gaining rapidly, due to increased placing of war orders and inquiries indicate the Canadian mills will require capacity production to meet demand. The automotive industry has been placing more extensive orders and it is reported large orders are going to the United States, with others imminent.

Plates

Plate Prices, Page 94

Pittsburgh—Plate mill schedules are still at capacity with some buyers pressing for deliveries and new tonnage coming out constantly. Plate mill operators expect heavy demands when the rearmament program gets in full swing and are attempting to turn out all placed tonnage as rapidly as possible.

Chicago — Plates last week and the week previous met improved demand. Requirements are aided by tonnages for government use, bridgework, railroad car building, and heavy equipment manufacture. Petroleum industry needs also continue prominent, as do those of roadbuilding machinery. Prices are reported firmer than for many weeks past.

Boston — Storage tank plate requirements are heavier, contracts being topped by 675 tons for two oil units, 96,000-barrels each, Stamford, Conn. Miscellaneous buying has improved, small lot specifications predominating for prompt delivery. Fabrication by shipbuilders is well maintained with heavier releases expected shortly. The Worcester car shop has a new order for 77 trolley coaches, but railroad releases are not substantial.

Steel required for four steam-propelled cargo ships, awarded Bath Iron Works, Bath, Me., for American Export Lines Inc., New York, will approximate 22,000 tons, mostly hull plates.

Electric Boat Co., Groton, Conn., was the only bidder on construction of three submarines for the navy June 5. each taking close to 1000 tons of steel. The company offers to better the delivery dates requested by the navy department by five to six months.

New York--Current plate buying is slow but every indication is for a marked increase soon. Buying for export is imminent, the Allied program being well outlined and substantial tonnages will be needed for domestic armament. Other factors indicate a rapidly increasing demand for plates. Fabricators of domestic fuel cil tanks are at peak seasonal operations and have been specifying actively.

Philadelphia — Considerable speculation is noted regarding plate tonnage required for the anticipated new navy building program, which is said to include three aircraft carriers, 13 cruisers, in addition to a large number of other vessels. All plate mills in this area are busicr but it is maintained that consumers are not rushing to cover ahead on anticipated requirements. Smaller independents are withholding action on third quarter prices, due to rapidly advancing raw material costs.

Birmingham, Ala.—Schedules are fairly well filled in plates, even in the absence of railroad demand. Most buying is by tank manufacturers, and deliveries are still being made to west coast points and for shipbuilding on the Gulf coast. Operations are at better than 80 per cent.

San Francisco—Activity in plates is confined to lots less than 100 tons and no large new inquiries have come out. To date this year 29,323 tons have been booked, compared with 17,246 tons for the corresponding period in 1939.

Baltimore—Railroad work is more promising. The Virginian Railway is inquiring for 15,000 tons of car steel, including a substantial tonnage of plates, for fabrication at Princeton, W. Va., and the Baltimore & Ohio, effective June 1, is inaugurating a new program at its Mt. Clare repair shops. Ship tonnage continues active. Miscellaneous plate demand, however, is sluggish.

Toronto, Ont.—Announcement that Canadian plants soon will go into production of tanks indicates buying of plates on a large scale soon will develop. Expansion of shipbuilding also will require large tonnages of plates. New business is said to be going almost exclusively to United States producers.

Plate Contracts Placed

- 2222 tons, armor plate, pro. 235, bureau of ordnance, navy department, items 1, 3, 6 and 8 to The Midvale Co., Nicetown, Pa.; items 2, 4, 5, 7, 9 and 10 to Carnegie-Illinois Steel Corp., Pittsburgh.
- 675 tons, two 96,000-barrel tanks, Michael Hoffman Fuel Oil Co., Stamford, Conn., to Chicago Bridge & Iron Co., Chicago.
- 510 tons, two oll barges, Lea River Lines, Leetsdale, Pa., to Nashville Bridge Co., Nashville, Tenn.
- 500 tons, 500,000-cubic-foot gasholder, metropolitan utility district, Omaha, Nebr., to Stacey Bros. Gas Construction Co., Cincinnati,
- 350 tons, two oil storage tanks, Narragan-

sett Electric Co., Providence, R. I., to Bethlehem Steel Co., Bethlehem, Pa.

- 170 tons, four fermenting tanks, U. S. Industrial Chemicals Inc., Baltimore, to Ingalls Iron Works, Birmingham, Ala.
- Unstated tonnage, steel barges for Pickwick Landing dam, Tennessee Valley authority, Knoxville, Tenn., to Treadwell Construction Co., Midland, Pa.; bids May 15, Knoxville, Tenn.

Plate Contracts Pending

- 1000 tons, 10,625 linear feet, 48-inch steel pipe, West Roxbury district, Boston; bids June 20, Metropolitan district commission, water division, Boston.
- Unstated tonnage, two welded sicel barges, United States engineer, first district, New Orleans; Treadwell Construction Co., Midland, Pa., \$13,000, low, pro. 352, bids May 30.
- Unstated tonnage, one to four 56-foot allwelded steel tugs, spec. 389, United States engineer, Philadelphia; bids June 9.

Bars

Bar Prices, Page 94

Pittsburgh—Releases from domestic consumers and additional buying for export are increasing production of merchant bars. Buying by jobbers has been much heavier as well as by miscellaneous manufacturers, and export tonnage is being accepted as rapidly as shipment can be arranged and credit established. Coldfinished shows little change in activity.

Chicago — Carbon bar demand continues to increase, although alloy needs in the past week were reported slightly lower. Government work is most prominent in bar needs. One large interest estimates approximately 40 per cent of present bar buying is directly or indirectly for government use. Prices continue firm, with practically no concessions reported.

Boston—Slightly heavier releases by industrial consumers of hot carbon and alloy bars is accompanied by mild improvement in warehouse specifications, secondary sellers in some cases rounding out stocks more liberally. Alloys continue relatively more active than merchant bars. Considerable part of volume is either directly or indirectly connected with government orders.

New York — Demand for merchant bars has increased as consumers seek to provide stocks against possible delivery delays later. Some inquiry has been made for fourth quarter at prices prevailing at time of shipment but sellers are not willing to commit themselves that far ahead. Currently plain carbon bars are available in three to four weeks but the period is being extended rapidly, with expectation of considerable delivery delay shortly.

Philadelphia - Deliveries on bars are more extended but so far there has been no effort on the part of consumers to cover on more than normal requirements. Machine tool requirements still are high and forge shops are busier. A local maker of bearings will increase capacity shortly with the acquisition of an idle plant. Government buying is growing, recent purchases including alloy rods which will be shipped for Frankford arsenal to Standard Pressed Steel Co., Jenkintown, Pa., for fabrication into 24,-000,000 alloy bullet cores.

Birmingham, Ala.—Little change is indicated in bars, with production steady at approximately 80 per cent. Manufacturers of agricultural implements account for most of the tonnage.

Baltimore—Merchant bar business is fairly good, with buyers laying in moderate stocks as a hedge against the possibility of more extended mill deliveries later on. A good tonnage is moving to shipyards, and more special steels are being ordered by electrical tool and precision instrument manufacturers.

Toronto, Ont.—New interest in merchant bars is developed as some consumers anticipate more difficulty in obtaining supplies later in the year, as mills become more heavily taxed in producing war materials.

Pipe

Pipe Prices, Page 95

Pittsburgh—Oil country business shows no signs of change, reflecting poor export market for oil and little noticeable increase in the domestic market. Stocking is increasing in the standard pipe markets, with warehouses building up bank of material in anticipation of possible delivery difficulties and recognizing the increasing share going to export. Pipe specialties, such as aircraft tubing, are moving well and bookings are running far ahead of production. Mechanical tubing releases are steady.

Boston—The largest steel pipe inquiry in months closes June 20 with the metropolitan district commission, Boston, 1000 tons, 48-inch, for installation in West Roxbury district. Cast pipe volume is bolstered by two contracts for 1910 tons for Lynnfield, Mass., and New Britain, Conn., to the Burlington, N. J., foundry. Industrial building needs enhance the outlook for merchant steel and wrought pipe.

Birmingham, Ala. - Pipe oper-

ations are on a satisfactory basis but hardly up to expectations. Most tonnage continues to come from municipalities, in small lots. Operations are on a four-day basis generally.

Seattle—Business is slow and prospects unpromising for the next 90 days. No important projects are developing. Award of 200 tons of 2 to 6-inch for a Portland water district awaits allocation of funds. Amity, Oreg., has purchased a small lot of 4-inch cast iron from Pacific States Cast Iron Pipe Co.

San Francisco-Only two large in-

quiries for cast iron pipe are in the market and no award has yet been made on 1250 tons of 6 to 12inch pipe for Long Beach, Calif. Demand for small lots is reported to be holding up well. So far this year 14,632 tons have been placed, compared with 13,471 tons for the same period last year.

Cast Pipe Placed

105 tons, small sizes, Westover Held, Chicopee, Mass., to Warren Pipe Co. of Mass, Everett, Mass.; bids May 21, constructing quartermaster.



-The Market Week-

Wire

Wire Prices, Page 95

Chicago — Bookings in the past month generally showed increases over April, with prospects considered good that orders soon will exceed those of a like period in May. Roadbuilding mesh requirements are in good volume. Rural demand is improving.

New York—Incoming wire orders are steadily improving, demand for manufacturers' wire and specialties leading, although buying covers a wide range. While most tonnage is for prompt delivery, mills are booking wire for third quarter shipment at firm prices. Demand for rope has registered gains with further improvement expected, notably in the maritime field. Government purchases of electric and other types of cable are heavy. Habirshaw Cable & Wire Corp., Yonkers, N. Y., has booked 72,920,000 feet, W-110-B wire at \$6.95 per 1000 feet, f.o.b. mill, for the signal corps, army base, Brooklyn. This wire, with a copper core

and COMPANY

436 Seventh Avenue

PITTSBURGH, PENNA.



and combination copper-steel covering, insulated and braided, will make-up more than 65 car loads. Contract was placed under pro. 394, bids May 14.

Boston-Wire mill operations are higher, improvement in demand for specialties being notably reflected in this district. Orders for manufacturers' wire, rope and electrical cable are more numerous, several district mills having booked substantial government contracts for the latter. Limited bookings for July-August shipment are being made, but most incoming orders are for early delivery. Recent improvement in wire rods is maintained, but finishing departments in the aggregate continue to operate ten or more points above semifinished steel schedules with one exception where open hearths are at capacity.

Birmingham, Ala.—All wire products are in good demand with a quantity of releases against blanket buying. Production is approximating 85 per cent and shipments are little greater than output.

Baltimore—Good demand for nails for residential work here is being offset by a lag in business from rural distributors, which also extends to fencing and other merchant wire products. Manufacturers' wire demand is being fairly well sustained.

Rails, Cars

Track Material Prices, Page 95

Domestic freight car awards in May totaled 2010 units, compared with 2077 in April, bringing the total for five months to 8698, against 8208 in the comparable period in 1939. Comparisons follow:

	1940	1939	1938	1937
Jan	360	3	25	17,806
Feb	1,147	2,259	109	4,972
March	3,104	800	680	8,155
April	2,077	3,095	15	9,772
May	2,010	2,051	6,014	4,732
5 mos	8,698	8,208	6,843	45,437
June		1,324	1,178	548
July		110	0	1,030
Aug		2,814	182	1,475
Sept		23,000	1,750	1,216
Oct		19,634	2,537	1,355
Nov		2,650	1,232	275
Dec		35	2,581	275
Total		57.775	16.303	51.611

Missouri Pacific has completed allocation of rolling stock authorized by court some time ago, including six diesel-electric locomotives noted last week and five others placed since, a three-unit streamlined passenger train, 30 covered hopper cars and 200 stock cars.

The Virginian railway is inquiring for 15,000 tons of car steel for fab-

102

H. A. BRASSERT

310 South Michigan Avenue

CHICAGO, ILLINOIS

rication in its shops at Princeton, W. Va., for building 500 hoppers and for repairs to 1000 cars.

Locomotives Placed

Missouri Pacific five 55-ton diesel-electric switchers; two to General Electric Co., one each to H. K. Porter Co., Pittsburgh, Whitcomb Locomotive Co., Philadelphia, and Davenport-Besler Corp., Davenport, Iowa. Also one 1000-horsepower diesel-electric streamlined passenger locomotive to Electro-Motive Corp., La Grange, Ill.

Rail Orders Placed

Rio Grande du Sul, Brazil, 25,000 tons ralls, to Inland Steel Co., Chicago.

Car Orders Placed

Boston Elevated Railway, Boston, 20 trolley cars to Pullman-Standard Car Mfg. Co., Worcester, Mass.

- Donora Southern, 30 gondolas to Magor Car Corp., Passaic, N. J.
- Missouri Pacific, 200 forty-ton stock cars to American Car & Foundry Co., New York, 30 seventy-ton covered hoppers, to Mount Vernon Car Mfg. Co., Mount Vernon, Ill., two streamlined coaches to St. Louis Car Co., St. Louis.

Car Orders Pending

Chief of engineers, war department, three 40-ton and three 15-ton flat cars; bids in, spec. 189.

Buses Booked

The a.c.f. Motors Co., New York: Ten for Safety Motor Transit Corp., Roanoke, Va.; ten for Worcester Street Railway Co., Worcester, Mass.; six for Edwards Motor Transit Co. Inc., Williamsport. Pa.; three for Citizens Rapid Transit Corp., Hampton, Va.

Shapes

Structural Shape Prices, Page 94

Chicago — Increased inquiry is noted, though orders are slightly lower. State highway bridge construction in Illinois and other western states account for close to 2000 tons on inquiry. Structural producers report increasing tendency to improve positions. Considerable tonnage for export has been noted

Shape Awards Compared

	Tons
Week ended June 8	16,137
Week ended June 1	24.692
Week ended May 25	20.234
This week, 1939	22,416
Weakla	
Weekly average, year, 1940	18.089
Weekly average, 1939	22,411
Weekly average, May	22,717
Total to date, 1939	~~~,111
	534,637
Total to date, 1940	416.040
Includes awards of 100 tons or	
the stands of 100 tons or	more.

by large interests here, this material reportedly being shipped to Canada and reconsigned to foreign ports.

Pittsburgh—New construction on industrial expansion, as well as public works jobs, continues to bring out substantial shape tonnage. Effects of the national defense program are already beginning to show, with additions to plants expecting to make munitions and machines of war now appearing.

Boston—For industrial plant expansions, structural steel lettings exceed 1000 tons, following award of several thousand tons for similar projects recently. Three shop buildings at Worcester and West Lynn, Mass., are involved. Bridge inquiry is more active, but limited mostly to small stringer and beam spans.

New York — Bridge and grade crossing inquiry is slightly heavier and more small industrial projects are appearing. Total active tonnage is less than in recent weeks. Inquiry is featured 3800 tons for state hospital buildings at Deer Park, N. Y. Seattle—Award of 2100 tons for

A GALVANIZED METAL You Can DRAW and PAINT!



523 DRAWS...AND NOT A DUD!

• That's how ARMCO galvanized ZINC-GRIP-PAINTGRIP sheets went through their profit-paces for the manufacturer of these fuel reservoirs.

This double-purpose metal meant extra advantages for the fabricator. The 31/2-inch draw had no effect on the tightly adherent ZINCGRIP coating. There was no flaking, no peeling of the zinc. No die-scoring either.

Next the bonderized surface of Armco PAINTGRIP came into play. This special mill finish permitted quick



painting in any color! No etching, no loss of the protective zinc coating.

Time and money were saved on make-ready too. Only a soapy water solution was needed to prepare the sheets for the dies. Since oil was not used surface cleaning before painting was easier and less costly.

Maybe you can profit from this double-edged sales mover and shop saver. The experiences of many other manufacturers with ARMCO ZINCGRIP-PAINTGRIP bear this out. Would you like to see the evidence? We'll be glad to show you. Write The American Rolling Mill Company, 1870 Curtis Street, Middletown, Ohio.

ZINCGRIP-PAINTGRIP SHEETS

Behind the Scenes with STEEL

C'est Le Guerre

• We clipped this dispatch from London out of the paper some time ago and just saw it now sticking out from under our blotter: Members of the Women's Auxiliary of the Territorial Service will be required to show their pink forms whenever called upon to do so.

Der Tag

■ Now it can be told—and quite nicely, too, in that snappy looking four-page announcement up front opposite E. C. Kreutzberg's editorial. STEEL's new service is off the press and in the mail—a copy of *Penton's Almanuc*, 1940-1941, for every regular subscriber. Just sit tight (several mint juleps will do the trick) and your copy will show up before the week is out.

Competently Complete

We're pretty well sold on the whole idea of this Almanac and can see right now where it is going to establish itself right off the bat as standard equipment in thousands of up and coming plants and offices from key-oast to key-oast. As you will soon see when you take a peek at any of the 148 pages, this Almanac is no haphazard conglomeration bundled up in a pretty cover. It represents seven months of intensive research and planning and hard work by a competent staff under the direction of A. J. Hain, Managing Editor of STEEL. Much of the material in it is original, all of it is authoritative, and the selection, we feel, is excellent.

The Name's The Thing

■ There was more worrying and debating in naming this new offspring than the little woman and ourselves went through in deciding on a boy's name, which we have yet to use. "Cyclopedia," "Encyclopedia," "Guide Book," "Source Book" and a dozen others were all dragged across the conference table and buried with honors. From usage, "Almanac" seemed from all angles to hit the nail on the head and since reading habits in many a plant we've been in are the same as we recall back on the farm, we imagine many a reader will enjoy some fond and happy memories.

Fore!

Golf, they say, is a form of work made expensive enough for a man to enjoy it.

We're Swiss

■ The New York Sun practically libelled us with an AP news item from Cleveland last week. A thief, apparently, stole a typewriter and a radio from a local printing cencern but is going to be out of luck unless he can get language lessons on the radio. The typewriter writes only Bohemian characters. The part we didn't care for was the headline they used: Typewriter Speaks Shrdlu.

Readers Comments

One of the jobs a publication constantly has on its hands is to prove interested readership by men who count. This week on page 4 there are four readers' comments from these four gentlemen: Edward G. Budd, president, Edward G. Budd Mfg. Co., Alfred P. Sloan Jr., Chairman, General Motors Corp., D. Angus Currie, president, Erie Foundry Co., and Ralph E. Flanders, president, Jones & Lamson Machine Co. We have a simple term for it: Readership in the Right Places.

Chasing Copy

Someone is going to fool around and get hurt in that Shell adv. on page 15 and if prospects of the Lintern Corp. (p. 61) are half as sweltered as we are at the moment that headline stopper should einch many a sale.

Shrdlu

-The Market Week-

the plant extension of Boeing Aircraft Co., Seattle, has been placed with the Pacific Car & Foundry Co., Seattle. No large projects are up for figures but shops in this area have fair backlogs.

San Francisco—Structural shape lettings were the second largest this year, 7918 tons, bringing the year's aggregate to 89,307 tons, compared with 64,657 tons for the same period a year ago.

Toronto, Ont. — While plans are under way to curtail building activities, private works are going ahead and demand for structural steel is heavy.

Shape Contracts Placed

- 2150 tons, fabricating and erecting, assembly and repair shop, naval air station, Jacksonville, Fla., to Jones & Laughlin Steel Corp., Pittsburgh, \$142,-440; bids May 28, spec. 9671, on steel direct.
- 2100 tons, Boeing Aircraft Co. plant extension, Seattle, to Pacific Car & Foundry Co., Seattle.
- 1710 tons, District of Columbia armory, Washington, to Fort Pitt Bridge Works, Pittsburgh; Charles H. Tompkins Co., Washington, general contractor.
- 655 tons, addition, assembly plant, Ford Motor Co., Dallas, Tex., to Mosher Steel Co., Dallas.
- 605 tons, arch bridge, Red Cliff, Colo., to Minneapolis-Moline Power Implement Co., Minneapolis.
- 600 tons, Kanapolis dam, item 28, Ellsworth, Kan., to Commercial Shearing & Stamping Co., Youngstown, O.
- 560 tons, bridge repairs, Great Northern railway, St. Paul, Minn., to American Bridge Co., Pittsburgh.
- 530 tons, addition building 64, General Electric Co., West Lynn, Mass., to American Bridge Co., Pittsburgh.
- 480 tons, overhead crossing, Rock Springs, Wyo., to American Bridge Co., Pittsburgh.
- 400 tons, bridge over Pajaro river, Chittenden, Calif., for Southern Pacific Co., to Columbia Steel Co., San Francisco.
- 275 tons, telephone building, Fruitvale, Calif., to Bethlehem Steel Co., San Francisco.
- 350 tons, shapes and bars, barracks, mess hall, bakery and brig, naval air station, Jacksonville, Fla., to Steel Products Co., Savannah, Ga., and Bethlehem Steel Co., Bethlehem, Pa.; Artley Co., Savannah, general contractor, bids May 8, bureau of yards and docks, navy department.
- 340 tons, improvement Los Angeles river channel between Downey road and Atlantic boulevard, Los Angeles, to Columbia Steel Co., San Francisco.
- 335 tons, forge shop, Wyman-Gordon Co., Worcester, Mass., to Haarmann Steel Co., Holyoke, Mass.
- 330 tons, vocational high school, Chester, Pa., to Belmont Iron Works, Eddystone, Pa.
- 300 tons, underpass, Rock Springs, Wyo., to American Bridge Co., Pittsburgh.
- 300 tons, foundry building, Builard Co., Bridgeport, Conn., to Lehigh Structural Steel Co., Allentown, Pa., through Turner Construction Co., New York.
- 285 tons, mill building, Worcester, Mass., to American Bridge Co., Pittsburgh.

- 275 tons, McCullough housing project, Baltimore, to Aetna Contracting Co.
- 255 tons, power station buildings, Harding street, Indianapolis, for Indiana Power & Light Co., to Hugh J. Baker Co., Indianapolis.
- 230 tons, state highway bridge, Dushore, Pa., to Fort Pitt Bridge Works, Pittsburgh.
- 217 tons, three-span bridge, Bennington, Vt., to Bethlehem Steel Co., Bethlehem, Pa., through Frank J. Shields Inc. Southbridge, Mass.
- 200 tons, plate girder bridge, Hardwick, Mass., to Phoenix Bridge Co., Phoenlxville, Pa., through J. F. Fitzgerald Construction Co., Boston, contractor.
- 185 tons, bridge 27, WPSO-104-A (1) Ellsworth county, Kansas, to St. Joseph Structural Steel Co., St. Joseph, Mo.
- 185 tons, Dearing press room, Louisville, Ky., to Louisville Bridge & Iron Co., Louisville.
- 180 tons, grade separation, College avenue, Milwaukee, for state, to Wisconsin Bridge & Iron Co., Milwaukee.
- 180 tons, addition to warehouse, for Bopp Steel Co., Detroit, to Austin Co., Cleveland.
- 175 tons, bridge, Berks county, Pa., to Bethlehem Steel Co., Bethlehem, Pa., through Edward H. Ellis, Westville, N. J.
- 170 tons, bridge FAP-526B (2), Kaufman county, Texas, to North Texas Iron & Steel Co., Fort Worth, Tex.
- 160 tons, hydraulic gate hoists, Coulee dam, to Consolidated Steel Co., Los Angeles.
- 160 tons, state bridge, Batavia, O., Norfolk & Western railroad, to American Bridge Co., Pittsburgh.
- 140 tons, warehouse, for J. V. C. Terminal Corp., Carlstadt, N. J., to Bergen Iron & Engineering Co.
- 135 tons, state bridge, Oak Hill, O., to Brookville Bridge Co., Brookville, O.
- 130 tons, building, for Sears, Roebuck & Co., Oneonta, N. Y., to Bethlehem Contracting Co., Bethlehem. Pa.
- 120 tons, bridge EVSRC-1574, Glimer county, West Virginia, to Wheeling Structural Steel Co., Wheeling, W. Va.
- 115 tons, 130-foot turntable, Denver & Rio Grande railroad, Denver, to American Bridge Co., Pittsburgh.
- 110 tons, garage, Buffalo-Niagara Electric Co., Buffalo, to Bethlehem Steel Co., Bethlehem, Pa.; J. W. Cowper Co., Buffalo, contractor.
- 110 tons, office and service building, Ohio Power Co., Newark, O., to C. E. Morris Co., Columbus, O.
- 100 tons, addition to factory, for Detroit Stamping Co., Detroit, to Austin Co., Cleveland.
- 100 tons, Lamakin Village, housing project, Chester, Pa., to Belmont Iron Works, Philadelphia.
- 100 tons, high school, Elizabethton, Tenn., to Johnson City Foundry & Machine Co., Johnson City, Tenn.

Shape Contracts Pending

4000 tons, for two buildings at Patterson aviation field, Dayton, O.; bids July 2

3800 tons, hospital buildings, Deer Park, N. Y.; bids June 12.

3300 tons, twenty buildings, Sitka and Kodlak, Alaska, for United States navy. 2100 tons, four landplane hangars, specification 9185, Alameda, Calif., for United States government.

- 1185 tons, sheet and H-piling, bridge substructure, St. Georges, Del., Pencher Construction Co., Cincinnati, general contractor.
- 1000 tons, power plant, West Reading, Pa., Utillty Management Corp., Reading, Pa.; bids in.
- 800 tons, highway bridges, New York state; bids June 26, Albany, N. Y.
- 620 tons, four state highway bridges, various locations, Illinois; bids in.
- 550 tons, grade separation, Westchester avenue, Bronx, New York, for Triboro Bridge authority.
- 500 tons, two-story building, Curtiss-Wright Aircraft Corp., Caldwell, N. J.

- 451 tons, grade crossing elimination, route 23, section 8B, at Lehigh & New England rallroad, near Sussex, N. J., including Papakating Creek bridge; bids June 21, E. Donald Sterner, state highway commissioner, Trenton.
- 430 tons, bridge, Clearfield County, Pa.; bids June 13.
- 430 tons, plate girder bridge, Clearfield county, Pennsylvania; blds to state highway department, Harrisburg, Pa., June 13.

400 tons, apartment house, for Leo Calihan, Rochester, N. Y.

360 tons, state highway bridge, Safford. Ariz.; bids in.

330 tons, office building, for Grayclan Co., Elizabeth, N. J.

300 tons, receiving building, for Westing-

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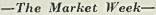
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Alloy 10 Furnace in the laboratory of the Rustless Iron and Steel Corp., Baltimore.

MILWAUKEE, WISCONSIN



house Electric & Mfg. Co., East Pitts-

- burgh, Pa. 300 tons, power plant, Vlenna, Md., Util-ity Management Corp., Reading, Pa.; bids in.
- 284 tons, two Washington state bridges, Clallam county; blds at Olympia, June 18.
- 265 tons, truss bridge, Northumberland county, Pennsylvania; blds to state highway department, Harrisburg, Pa., June 13.
- 263 tons, state bridge, Tionesta, Pa.
- 260 tons, state highway bridge, Lady-smith, Wis.; bids in.
- 250 tons, addition to factory, for Amer-ican Metal Products Co., Detroit.
- 250 tons, state highway bridges, various locations, Wisconsin; bids in.
- 200 tons, state highway bridge, Burwell. Neb.; bids in.
- 200 tons, addition to high school, State College, Pa.
- 200 tons, addition for U.S. Electric Motors Co., Milford, Conn.
- 150 tons, building, for New England Telephone & Telegraph Co., Fall River, Mass.
- 140 tons, extension to garage, for United Electric railroad, Pawtucket, R. 1.
- 140 tons, apartment building, for Garden apartments, Trenton, N. J.
- 126 tons (also 73 tons reinforcing) rebuilding Celilo locks, Columbia river; Travares Construction Co., Stevenson, Wash., low.
- 120 tons, repairs to bridge, Elkins, W. Va., for Western Maryland railroad.
- 120 tons, wide-flanged steel beam bridges, Chester, Halifax, Castleton and Lincoln, Vt.; bids June 14, H. E. Sargent, com-missioner of highways, Montpelier, Vt.
- 115 tons, state bridge, Chelmsford, Mass.
- 110 tons, plant building No. 1, for B. F. Goodrich Co., Niagara Falls, N. Y.
- 110 tons, warehouse, for Detroit Gasket & Mfg. Co., Detroit.
- 106 tons, bridge carrying Mt. Vernon Memorial highway over north access to Washington national airport, Washington; blds June 14.
- Unstated tonnage, Indiana state highway bridges; bids June 17.
- Unstated, two transmission towers; Ta-coma, Wash.; bids June 10.
- Unstated, radial gates and hoists for Roza, Wash., irrigation project, and eleven 24-inch regulating valves for Coulee, Spec. 1370-D; bids to Denver June 17 and 18, respectively.
- Unstated tonnage, 175,950 square feet sheet piling guard wall for locks and dams Nos. 11, 16, 18, 20 and 21 in Mississippi river; general contract to James Construction Co., St. Paul.

Tin Plate

Tin Plate Prices, Page 94

Operations continue to gain on increased export and domestic buying. Estimate this week is 76 per cent of capacity, representing virtual peak on most operating mills. Producers indicate they will probably not turn to obsolete units now idle. Some of current production is for increasing stock, both at mills and at consumers' plants.

Reinforcing

Reinforcing Bar Prices, Page 95

Pittsburgh—There is an apparent move toward firmer markets in concrete bars, with mills gradually building up bookings. Inquiries and orders continue active, both in private industry and from public jobs.

Requirements Chicago for Northwestern university technological school, Evanston, Ill., are now estimated at close to 2500 tons, though actual figures are not yet Volume of other work reported. continues large though chiefly involving small lots individually.

New York - Distributors are striving to strengthen reinforcing bar prices with mills taking a firmer stand in view of heavy demand for other products. Lack of tonnage placed, however, has prevented a real test. Awards are featured by placing of 950 tons for a housing project in Jersey City, N. J.

San Francisco — Important reinforcing bar awards included 4780 tons for the improvement of the Los Angeles river channel between Fourth street and Olympic boulevard, Los Angeles, placed with Blue Diamond Corp. and 2000 tons for the treasury department, same city,

Baltimore-State road work is contributing chiefly to reinforcing steel demand here, with bids in on more than 1000 tons of mesh and additional work in prospect. Building construction requirements are light. Prices on mesh are steady, compared with continued unsettlement for most other forms of reinforcing steel.

Reinforcing Steel Awards

- 4780 tons, improvement Los Angeles channel between Fourth street river and Olympic boulevard, Los Angeles, to Blue Diamond Corp., Los Angeles.
- 2000 tons, treasury department, Los Angeles, invitation A-10096, to Trojan Steel Corp., Los Angeles.

1300 tons, national airport, Gravely Point, Va., to Rosslyn Steel Co., Washington,

Concrete Bars Compared

	Tons
Week ended June 8 1	4,920
Week ended June 1	5,137
Week ended May 25	7,899
This week, 1939	8,009
Weekly average, year, 1940	8,339
Weekly average, 1939	9,197
Weekly average, May	7,058
Total to date, 1939 23	7,638
Total to date, 1940 19	1,810
Includes awards of 100 tons or mo	re.

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AIA AN ENGINEER

through John McShain Inc., Philadelphia

- 1200 tons, national guard armory, Washington, to Bethlchem Steel Co., Beth-lehem, Pa., through Charles H. Tomp-kins, Washington.
- 950 tons, housing project, Jersey City, N. J., to Truscon Steel Co., Youngs-town, O., through Weinstein & Rubin, contractors.
- 650 tons, housing development, Eliza-beth, N. J., to ReRpublic Steel Corp., Cleveland, through Truscon Steel Co., Youngstown, O.; Andrew Christenson, contractor.
- 500 tons, Boeing Aircraft Co. plant ex-tension, Seattle, to Seattle Steel Co., Seattle,
- 471 ton's, Chicago park district, Chicago, to Calumet Steel Co., Chicago.
- 440 tons, highway project RC-40-28, Ot-sega county, New York, to Truscon Steel Co., Youngstown, O., through Arute Bros. Inc., New Britain, Conn.
- 401 tons, improvement Los Angeles river channel, between Downey Road and Atlantic boulevard, Los Angeles, to Bethlehem Steel Co., Los Angeles.
- 285 tons, Grand avenue viaduct, Kansas City. Mo., to Sheffield Steel Corp., Kansas City, Mo.
- 250 tons, stills, Tidewater Oil Co., Bay-onne, N. J., to Bethlehem Steel Co., Bethlehem, Pa.; E. B. Badger & Sons, contractors.
- 220 tons, Lamokin Village, Chester, Pa., to American Steel Engineering Co., Philadelphia.
- 200 tons, bridge, Greenwood county, Kan-sas, to Sheffield Steel Corp., Kansas City, Mo.
- 182 tons, building addition, Sears, Roe-buck & Co., Milwaukee, to Joseph T. Ryerson & Son Inc., Chicago.
- 150 tons, Lincoln apartments housing, Frederick, Md., to Bethlehem Steel Co., Bethlehem, Pa.; Sofarelli Bros., contractors.
- 140 tons, road work. Delaware county, Pa., to American Steel & Wire Co., Cleveland, through Union Paving Co., Philadelphia.
- 135 tons, garage, 125 South Wabash av-enue, Chicago, to Ceco Steel Products Corp., Ciccro, Ill. to Ceco Steel Products
- 125 tons, bridge, Medicine Lodge, Kans., to Sheffleld Steel Co., Kansas City, Mo.
- 115 tons, road work, Lehigh county, Pa., to Bethlehem Steel Co., Bethlehem, Pa.; through Charles Riede Co., Lansford, Pa.
- 110 tons, bars and miscellaneous steel, Birch Hill dam, Massachusetts, to Beth-lehem Steel Co., Bethlehem, Pa.; B. Perini & Son Inc., Framingham, Mass., contractor.
- 110 tons, office building for E. I. du Pont de Nemours & Co., Wilmington, Del., to Bethlehem Steel Co., Bethlehem Pa.; Turner Construction Co., contractor.
- 106 tons, Polk county, Ark., to Jones & Laughlin Steel Corp., Pittsburgh.
- 100 tons, school, Chester, Pa., to Amer-ican Steel Engineering Co., Phila-delphia, through Wark Co., Philadelphia.

Reinforcing Steel Pending

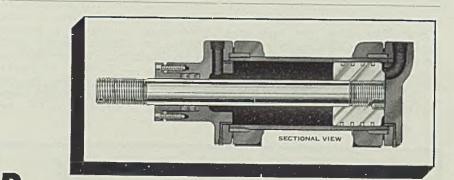
- 1400 tons, sections 3 and 4, grade cross-ings, Long Island railroad at Atlantic ings, Long Island railroad at Atlantic avenue, Brooklyn, N. Y.; bids June 20.
- 1250 tons, guard walls for locks and dams Nos. 11, 16, 18, 20 and 21 in Mississippi river; general contract to James Construction Co., St. Paul.
- 900 tons, bridge substructure, St. Georges, Del., Pencher Construction Co., Cin-cinnati, general contractor.

520 tons, bureau of reclamation, invita-

- tion B-38,273-A, Odair, Wash; Bethle-hem Steel Co., Seattle, low.
- 500 tons, building for National Fire Insurance Co., Hartford, Conn.; George A. Fuller, contractor.
- 493 tons, (also shapes, gates, plates and cast iron pipe) Mill Creek, Wash., rolled filled dam, flood control project; Parker & Schram, Portland, and Eaton & Smith, San Francisco, general contractors,
- 400 tons, infirmary patients' building, Deer Park, N. Y.
- 390 tons, flood control project, York, Pa.; bids to United States engineer, July 9.
- 370 tons, grade elimination, Westchester avenue, New York, for Triborough avenue, New York, for Triborough bridge authority; Del Balso Construc-tion Corp., New York, low.
- 300 tons, Catholic high school for boys, New York; George A. Fuller, contractor.
- 255 tons, including 75 tons mesh, concrete deck and approaches, Passaic river bridge, route 25, section 30C, Newark-Kearny, N. J.; bids June 21, E. Donald Sterner, state highway commissioner, Trenton; 182,890 linear feet, steel reinforcement trusses also required, about five pounds per foot.
- 250 tons, bridge substructure, Sec. 15-B. Peoria, Ill.; bids June 21.
- 215 tons, grade crossing elimination, Seaford, Del.; bids June 12.
- 188 tons, Panama, schedule 4067, Jos. T. Ryerson & Son Inc., Chicago, low.
- 175 tons, mats and bars, grade crossing elimination, route 23, section 8B, at Lehigh & New England railroad, near Sussex, N. J., including Papakating creek bridge; bids June 21, E. Donald

Sterner, state highway commissioner, Trenton.

- 160 tons, plant for Buckeye Cotton Oil Co., Louisville, Ky. 155 tons. bulkhead, East River drive,
- York; J. Rich Steers Inc. New New York, low.
- 150 tons, relief culvers, flood control project, Kingston, Pa., bids June 10 to U. S. Engineer, Ballimore.
- 150 tons, two pumping stations, Chicopee, Mass.
- 138 tons, bureau of reclamation, invitation 27,692-A, Deer Creek, Utah; bids June 10.
- 125 tons, Washington state highway work; bids at Olympia, June 18
- 120 tons, two Washington state bridges; Goetz & Brennan, Seattle, general contractors.
- 118 tons, bridge carrying Mt. Vernon Memorial highway over north access to Washington national airport, Washington; blds June 14.
- 100 tons, water illtration plant, Camp Dix, N. J.; bids June 13.
- 100 tons, reservoir, Norristown, Pa., Norristown Water Co.; bids June 13.
- 100 tons, plate girder bridge, Clearfield county, Pennsylvania; bids to state highway department, Harrisburg, Pa., June 13.
- 100 tons, highway projects, Connecticut; bids June 10, Hartford, Conn.
- Unstated, buildings at Sand Point, Seattle, naval air base; A. F. Mowat, Scattle, general contractor.
- Unstated, 196-foot Montana state bridge; Walter Macklin, Billings, Mont., general contractor.



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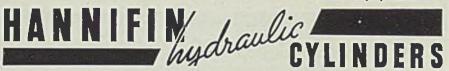
stronger, simpler, easier to use. Their exclusive design assures high efficiency oper-ation and extra ruggedness to withstand severe service. Check these features: No tie rods. End caps are removable without

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Pig Iron

Pig Iron Prices, Page 96

Pittsburgh-Blast furnace operations are heavier, with production schedules increased in many plants. Thirty-eight of 50 furnaces are blowing and repair work is being done on several additional stacks. Latest additions blown in on June 1 were one stack at Duquesne works, Carnegie-Illinois Steel Corp., and one at Monessen works of Pittsburgh Steel Co.

Chicago — Buying has leveled off but still continues at a fair rate. Most consumers have covered needs for third quarter. Shipments will be higher this month than last, undoubtedly, it is stated. So far this month, however, there has been little change in shipments except to steel mills in the midwest.

Boston—Considerable pig iron buying for third quarter delivery is being done at unchanged prices. While there has been no official announcement reaffirming prices, current transactions covering that period amount to the same. With stocks getting low Mystic furnace, Everett, Mass., will go into blast soon. Buying for prompt delivery is broader with individual orders inclined to be larger.

New York—Most pig iron consumers here are covered for at least third quarter and in various important instances for the remainder of the year on such future requirements as they can now see.

Philadelphia - Buying has slowed

down as consumers now are fairly well covered through third quarter. A little interest is evidenced in even further coverage due to the rising scrap market, but producers are unwilling to sell for that period at present prices. Shipments are heavier.

Cincinnati—Pig buying for third quarter has been so rapid that most important users are covered, uncertainty of conditions having spurred commitments. Shipments are expanding, in keeping with a heavier melt. Demand from machine tool manufacturers is extremely active.

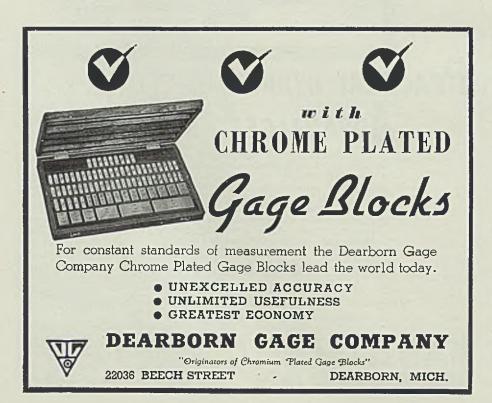
St. Louis—Pig iron shipments in May were 20 to 25 per cent larger than in April and June shows signs of further increase. Buying has increased since it has developed that prices for third quarter probably will not be changed. Reduced inventory is believed to have spurred buying.

Scrap

Scrap Prices, Page 98

Pittsburgh — Strength continues, although buying is in small volume. Some mills have been offering prices above current quotations in other sections of the country to compete with more favorably located mills, as available material here is low.

Chicago — Further uptrend in value of some items, particularly cast grades, was noted last week. Sentiment is stronger, due to con-



tinued increase in steel mill operations and indications of heavier scrap needs in the near future. Trading in No. 1 heavy melting steel, which subsided to \$17 and \$17.25 levels, has returned to \$17.50 and higher, with railroad material bringing \$18 and more. No. 1 steel remains quoted at \$17 to \$17.50, the latter figure still representing the price involved in most recent mill purchases.

Cleveland — Recent railroad closings show strong upward tendency in prices. The local market is still in the hands of dealers, consumers taking only small lots.

Boston—Iron and steel scrap prices for several grades have made further advances, notably for shipment to Pennsylvania, and yard dealers are inclined to hold out for yet higher quotations. Several inguiries from Canada for stove plate are noted. Steel for export, dock delivery, is firming and as high as \$16 for No. 1 heavy melting steel is being paid.

New York — Sharp advances in prices affecting practically the entire list have lifted quotations for domestic and export about \$1 per ton and in some instances more,

Philadelphia — Rising tendency continues in scrap with No. 1 steel up \$1 a ton further at \$19.50 to \$20. No. 2 steel, which is relatively less scarce, is up 50 cents to \$18. Practically the entire list participated in the advance. E. G. Budd Mfg. Co.'s June list of 2500 tons of new compressed sheets went at around \$18, f.o.b. plant.

Buffalo—Following the recent advance of \$1 a ton to \$18.50 and \$19 for steelmaking grades, prices have held firmly. Sentiment among scrap dealers continued strongly optimistic and the opinion prevailed in trade circles that prices could move only upward.

Detroit—The iron and steel scrap market continues active with prices up about 50 cents per ton, although some specialty items such as lowphosphorus plate and punchings for electric furnace are even stronger.

Cincinnati—Prices of iron and steel scrap are strong and tend higher, although heavy melting steel remains unchanged. Dealers are active in bolstering stocks, but mills are avoiding future tonnage commitments. Consumers are taking heavy shipments on orders, but laggard buying has been a factor in diversion of some tonnage to nearby districts.

St. Louis—The scrap market is quiet, with the sale of a small tonnage of specialties to an east side mill the only transaction of the week. Mills are proceeding cautiously in view of the international situation, but are willing to buy from brokers at a lower basis than now prevails, which brokers are unwilling to concede.

San Francisco—Scrap prices have again turned upwards and No. 1 heavy melting steel, f.o.b. cars metropolitan areas of Los Angeles and San Francisco, are quoted at \$13.00 to \$13.50 a net ton, while No. 2 is priced at \$12.00 to \$12.50. Compressed sheets have also advanced and are now being quoted at \$10.00 to \$10.50. Movement of No. 1 heavy cast scrap is not heavy.

Warehouse

Warehouse Prices, Page 97

Chicago — Demand shows expansion. Trend appears more definitely upward, though business generally is not as yet significantly changed. Mills report tendency of distributors to increase stocks against heavier demand anticipated for near-future.

New York—Demand is broadening as to number of products with aggregate volume maintained. Except for galvanized sheets prices have a firmer tone. Despite the recent reduction, some distributors are shading 4.05c for No. 24 gage. A few larger individual orders for plates and lumped miscellaneous products are appearing.

Philadelphia — Demand is fairly well diversified but so far is showing relatively little increase over May volume. Prices are steadier.

Buffalo—Moderate stimulation of demand for iron and steel warehouse items has held over but prices and business have shown no further improvement.

Detroit—Warehouse sales are being maintained at an encouraging level, and specialty items such as heat treated alloy steels in aircraft grades are in particular demand. Cincinnati—Warehouse sales are

Cincinnati — Warehouse sales are running counter to the usual seasonal declines and volume so far in June may presage greater tonnage than in May. Industrial needs, particularly for machine tool builders, tend heavier. Prices are strong and unchanged.

Iron Ore

Iron Ore Prices, Page 98

Cleveland—Lake Superior iron ore shipments in May totaled 7,244,549 gross tons, compared with 3,601,453 tons in May, 1939, according to the Lake Superior Iron Ore association, Cleveland. Shipments were 464,-669 tons in April, the aggregate for the season being 7,743,196 tons, which is 4,084,945 tons greater than in the same period last year.

Comparisons by ports, 1939 and 1940, are as follows:

Shipments	Season
Port In May	to June 1
Escanaba 346,000	406,378
Marquette 667,055	767,765
Ashland 740,621	779,077
Superior 2,410,034	2,640,618
Duluth 1,674,738	1,674,738
Two Harbors 1,406,101	1,440,642
U. S. total 7,244,549	7,709,218
Michipicoten 29,475	33,978
Grand total 7,274,024 Increase from year	7,743,196
ago 3,672,571	4,084,945

New York — A substantial tonnage of foreign iron ore, running 0.02 and higher in phosphorus, has been sold here in the past few days at prices approximating the equivalent of 15 cents per unit, c.i.f. Eastern seaboard.

Trading in low phosphorus and basic ores, however, continues at a standstill, as asking prices appear prohibitive, with pig iron selling at its present levels. North African low phosphorus and Spanish North African basic are being offered at 19 to 20 cents per unit, c.i.f. Atlantic ports, and even recent quotations of 17 to 18 cents on low phosphorus from another foreign source has failed to attract much buying.

Meanwhile, the disposition among eastern buyers, who nominally are principal consumers of foreign ore, is to turn more and more toward Lake ore to supplement present stocks and such importations as they are bringing in, chiefly from South America and Cuba.

Tungsten ore prices are strong but unchanged, with Chinese wolframite holding at \$23.50 to \$24, per short ton unit, duty paid, and with domestic scheelite holding at approximately the same range. Recent offerings of Bolivian tungsten range around \$22 to \$22.50 per short ton unit, duty paid. However, specifications do not fully meet American standards; hence, little of this tungsten, it is said, is being bought, notwithstanding the fact that prices are lower than for Chinese tungsten and domestic scheelite.

Bolts, Nuts, Rivets

Bolt, Nut, Rivet Prices, Page 95

Heavy export inquiry for bolts and nuts is being received, largely as the result of Belgian exports being shut off. Great Britain is the largest inquirer, having been the principal outlet for Belgium. De-

"They're Good Hoists—we wouldn't be without them"

-Say Works Managers

• Works Managers of many plants recommend Northern Hi-Lift Hoists in warmest terms. They know that they will do the work day after day at low cost and least trouble.

Northern Hi-Lift Hoists are built to take it. Liberal design-welded rolled steel construction-machine cut hardened steel gears-give them plenty of strength and endurance. Hyatt roller bearings provide efficiency and long life. Extreme high lift saves space-increases usefulness. Accessibility provides easy maintenance.

New Bulletin Ready-Write For It

NORTHERN ENGINEERING WORKS

-The Market Week-

liveries are to several of the Dominions as well as to the home land. Domestic buying shows moderate improvement but it is believed preparedness programs will stimulate tonnage sharply and already

inquiries are being figured on tanks and similar equipment. Automotive requirements are tapering as the 1940 season wanes. Prices are steady with expectation that third quarter prices will show no change.

Nonferrous N

		Copper								Anti-		
	Electro.	Lake,		Stra	its Tin.		Lead		Alumi-	mony	Nickel	
	del.	del.	Casting.	New	York	Lead	East	Zinc	num	Amer.	Cath-	
June	Conn.	Midwest	refinery	Spot	Futures	N. Y.	St. L.	St. L.	99%	Spot. N.Y.	odes	
1	11.50	11.50	11.25	55,00	52.25	5.00	4.85	6.00	19.00	14.00	35.00	
3	11.50	11.50	11.25	54.75	52,50	5.00	4.85	6.25	19.00	14.00	35.00	
-1	11.50	11.50	11.25	54.62 %	52,25	5.00	4.85	6.25	19.00	14.00	35.00	
5	11.50	11.50	11.25	54.37 %	51.87 %	5.00	-4.85	6.25	19.00	14.00	35.00	
6	11,50	11.50	11.25	53.87 1/2	51.75	5.00	4.85	6.25	19.00	14.00	35.00	
7	11.50	11.50	11.30	54.37 1/2	52,25	5.00	4.85	6.25	19.00	14.00	35.00	

*Based on sales by custom smelters; n

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)
Copper, hot rolled
Lead, cut to jobbers
Zinc, 100 lb, base
Tubes
High yellow brass
Seamless copper
Rods
High yellow brass
Copper, hot rolled16.62
Anodes
Copper, untrimmed17.37
Wire
Yellow brass (high)18.81
OLD METALS

OLD METALS

Nom. Dealers' Buying Prices

	No.	1		C	20	T	11	p	ю	19	ŀ	ti	(T	ı.]	R	e	d		P	\$r	a	51	\$	
New	Yor	k						,												7	.1	2	Ļ		7.37	12
Cleve	eland		,																				.8		25-8.5	50
Chic	ago									,													.7	J,	50-7.	75
St. L	ouis													-									7	.7	75-8.2	25

Heavy Copper and Wire

New York,	, NO,	1			,		,	,	÷			.8.75-9.00
Cleveland,	No,	1	,	,		,				,		.9.25-9.50
Chicago, 1	No. 1							,			,	.8.75-9.00

N	let	al Pr	ices	5		
	Lead N. Y.	Lead East St. L.	Zinc St. L.	Alumi- num 99%	Anti- mony Amer. Spot. N.Y.	Nickel Cath- odes
. 24	$5.00 \\ 5.00 \\ 5.00$	$\begin{array}{c} 4.85 \\ 4.85 \\ 4.85 \\ 4.85 \\ 4.85 \\ 4.85 \\ 4.85 \\ 4.85 \end{array}$	6.00 6.25 6.25 6.25 6.25 6.25 6.25 6.25	19.00 19.00 19.00 19.00 19.00 19.00	$ \begin{array}{r} 14.00 \\ 14.00 $	35.00 35.00 35.00 35.00 35.00 35.00
n	ine pr	oducers	uncha	inged a	t 11.50c.	

Composition Brass Turnings

Light Copper

New York	 	 .6.75-7.00
Cleveland	 	 .7.00-7.25
Chicago .	 	 .6.75-7.00
St. Louis .	 	 .6.75-7.00
	Light B	
Cleveland	 	 .4.25-4.50
Chicago	 	 4.25-4.50
St. Louis .		105 150

Lead	
New York	.4.50-4.75
Cleveland	.3.90-4.15
Chicago	.3.90-4.10
St. Louis	.4.00-4.25
Zinc	
New York	3.00-3.25
Cleveland	.2.75-3.00
St. Louis	.3.25-3.50

Aluminum

Misc., c	ast, C	levelan	d			• •				. S.0	0
Borings.	Cleve	eland .		. ,						.6.5	0
Clips, sc	ft, Cle	veland								14.0	0
Mise. cc	st, St.	Louis.			 		 	7	.75	5-8.0	0

SECONDARY METALS

Brass ingot, 85-5-5-5, less carloads. .12.25 Standard No. 12 aluminum ... 14.00-14.50



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Steel in Europe

Foreign Steel Prices, Page 97

London - (By Cable)-Every means is being taken in Great Britain to intensify steel and iron output further. All production is controlled and most is earmarked for war purposes. Large steel tonnages are wanted from America to keep rolling mills and forges working full time. Pig iron is now rationed and light foundries are obtaining government contracts. The tin plate trade is busy. Sheet and galvanized sheet exports are subject to domestic requirements. Steel output of France is seriously curtailed.

Semifinished Steel

Semifinished Prices, Page 95

Pittsburgh-Orders for semifinished steel for export continue to increase substantially, and releases from nonintegrated mills also are heavier. Deliveries on some items are beginning to drop behind, and with continuation of orders at present rate, delivery difficulties may be expected soon.

Coke Oven By-Products

Coke By-Product Prices, Page 95

New York - Coking operations having advanced slower than steel production, by-product output continues to move directly into consumption with little accumulation of supplies. Demand for xylol and toluol by lacquer and chemical industries is substantial with benzol releases somewhat spotty. Prices are unchanged and will carry through June. Naphthalene demand is heavy and for phenol fair. With new contract prices on sulphate of ammonia to be announced July 1, current activity is at a standstill.

Nonferrous Metals

New York-A strong price tone was imparted nonferrous metal markets last week by a tight supply situation in copper and zinc. Current and prospective consumption for manufacture of armaments helped to stimulate demand. Zinc advanced ¹⁴-cent to 6.25c, while casting copper late Friday rose 5 points to 11.30c.

Copper-Most leading sellers sold all the prompt metal they had available at 11.50c, Connecticut. With the exception of a small tonnage booked early in the week at 11.37 1/2 c,

all export copper sales were made at 11.50c. Italy is reported to have suspended shipment against all copper on order here—estimated at 7500 tons—until further notice.

Lead — Lead demand was moderate throughout the week. Sellers have heavy backlogs and report shipments are tending to improve. The market continued firm at 4.85c, East St. Louis, and 5.00c, New York.

Zinc—The advance in prime western metal to 6.25c, East St. Louis, reflects the improved statistical position of slab metal. May shipments were the largest since November, but unfilled orders May 31 were the

Construction

New York

HAMMONDSPORT, N. Y.—Curtiss-Wright Corp., Vulcan and Kenmore streets, Buffalo, will build an airplane factory costing about \$40,000.

JAMAICA, N. Y.—Department of sanitation, New York, 125 Worth street, New York, will build a two-story sewage disposal plant at 132-32 150th avenue, costing \$300,000. W. H. Fenton, care owner, is architect.

NIAGARA FALLS, N. Y.—Mathiesen Alkali Co., Buffalo avenue, E. M. Allen, president, will build a two-story plant 25 x 175 feet, costing over \$40,000.

NIAGARA FALLS, N. Y.—Pittsburgh Metallurgical Co., Highland avenue, will build a one-story addition 75 x 154 feet, costing about \$30,000.

NIAGARA FALLS, N. Y.—B. F. Goodrich Co., 500 South Main Street, Akron, O., A. Pellett in charge, will build a three-story plant 50 x 100 feet, costing about \$40,000.

SIDNEY, N. Y.—Scintilla Magneto Co. Inc., a subsidiary of Bendix Aviation Co., will build three buildings 60×450 feet, and two 100×200 feet. General contract to Frank Lewis & Sons, Bainbridge, N. Y., at more than \$100,000. A. Bekker is purchasing agent.

TONAWANDA, N. Y.—Eastern States Milling Corp., Military road, will build a two-story plant addition costing over \$40,000. A. E. Baxter Engineering Co., 344 Delaware avenue, Buffalo, are englneers.

TROY, N. Y.—Troy Chain Co., Tyler street, J. Worton, president, is having plans prepared for a plant addition.

Connecticut

BRIDGEPORT, CONN.—Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., will build a one-story service building 80 x 152 feet, costing \$50,000.

NEW BRITAIN, CONN.—New Britain Machine Co., 140 Chestnut street, H. H. Pease, president, will build a one-story plant addition, including crane runways, at cost of about \$40,000.

Rhode Island

PROVIDENCE, R. I.—Brown & Sharpe Mfg. Co., Promenade street, will build one-story 75 x 250 and 90 x 95 foot manufacturing buildings, costing \$100,000.

Massachusetts

WORCESTER, MASS .- Worcester Wire

heaviest in six months. Little tonnage of intermediate and prime western grades still is available. Some export business was placed at a premium over the domestic market. May exports were larger than for any any full year since 1929.

Tin — Prices tended downward through most of the week but recovered part of the loss Friday to stand at 54.37 ½ c for spot. The market was slow.

Antimony — Prices were unchanged at 14.00c, New York, for American spot and nominally 16.50c, duty paid New York, for Chinese spot. Business was light.

and Enterprise

Works, 70 James street, will build a onestory addition 130 x 225 feet. General contract has been let to Fiske-Carter Construction Co., 8 Norwich street, F. N. Cutting, 29 Pearl street, is engineer.

New Jersey

BENDIX, N. J.—Air Associates Inc., Box 333, Garden City, N. Y., plans a one and two-story airplane parts plant and offices at cost of \$175,000.

NEWTON, N. J.—Campbell Co., Hicks avenue, will build a one and two-story plant 65 x 250 feet, costing \$75,000.

Pennsylvania

CORRY, PA.—Raymond Mfg. Co., South Center street, E. Feldt, vice president and general manager, will build a plant addition costing about \$40,000.

ESSINGTON, PA.—Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., will build a three-story plant 120 x 300 feet, costing \$100,000. General contract has been let to United Building Construction Co., 246 South Twenty-second street, Philadelphia.

SHARON, PA.—Westinghouse Electric & Mfg. Co., 469 Sharpsville avenue, will build an addition for salvage department, about 12,000 square feet. M. L. Fawcett is plant manager.

WARREN, PA.—Royal Mfg. Co., M. Kovacs, 19 North First street, Duquesne, Pa., in charge, will build six one-story and two two-story retinery buildings costing \$100,000. (Noted June 3).

Ohio

ANDOVER, O.—General Electric Co., E. J. Edwards, engineer, Nela Park, Cleveland, will build a one-story factory costing about \$40,000.

CHAGRIN FALLS, O.—Stephen Jencick Engineering Laboratories Inc., will lease plant here with about 15,000 square feet floor space for manufacture of dieset motor injection system. Stephen Jencick, 68 Water street, Chagrin Falls, is president.

CLEVELAND — Kromer-Nierman Co., 1835 East Twenty-fourth street, has been formed by W. R. Kromer and associates to manufacture temperature control and heating equipment.

CLEVELAND—Clark Controller Co., 1146 East 152nd street, will build an additional factory unit and has given contract to the J. L. Hunting Co., Ninth and Chester building, Cleveland.

CLEVELAND — Interstate Brass & Aluminum Co., newly organized, has leased a one-story factory building at 3319 St. Clair avenue for use as a foundry.

CLEVELAND—Steel Storage File Co., 2216 West Sixty-third street, plans to move its business from Cleveland, building new plant or remodeling an old one. Walter F, Regenhardt is president and treasurer.

CLEVELAND — Monmouth Products Co., 1929 East Sixty-first street, manufacturer of automotive parts and light stampings, is considering building new plant or remodeling old plant in new



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location. Company forced to move by street extension passing through present plant. Ernest L. Davis is president.

LORAIN, O.—Flexo Co., 671 Broadway avenue, George W. Krause, manager, has leased plant for production of a flexiblehandled safety razor.

MASSILLON, O.—Union Drawn Steel division of Republic Steel Corp., Harsh avenue SE, will spend about \$200,000 rehabilitating and expanding its plant here. Part of building 150 x 700 feet will be remodeled and new equipment installed.

Michigan

DETROIT—Acme Sheet Metal Corp., 4628 Moran street, has been incorporated by Anthony J. Reis, to conduct an engineering and construction business.

DETROIT—Avigation Instrument Corp., Detroit city airport, has been incorporated with \$5000 capital by Felix Preston, 760 Algonquin avenue, to deal in instruments used in navigation.

DETROIT — Stainless Steel Forming Corp. has been incorporated with \$50,000 capital by George J. Haar, 5450 Grand River avenue, to manufacture stainless steel products.

DETROIT—Peninsular Tool & Die Co., 2222 Myrtle street, has been incorporated with \$10,000 capital to manufacture jigs and dies, by Earl H. Harrison, 1641 Lawndale avenue, Detroit.

DETROIT--Peninsular Grinding Wheel Co., 729 Meldrum street, will build a two-story addition to 1ts plant, 50 x 120 feet. H. D. Ilgenfritz, Detroit, is architect.

DETROIT—Lincoln Brass Works, 2067 Twelfth street, is having plans made by E. B. Arnold, care owner, for a onestory factory addition 95 x 105 feet, to cost about \$40,000.

GRAND HAVEN, MICH.—Screw Machine Specialty Co. will build a one-story plant 50 x 100 feet.

WATERVLIET, MICH. --- Watervliet

Paper Co., manufacturer of coated papers, plans plant improvements to cost about \$125,000.

WYANDOTTE, MICH.—All Metal Products Co. will build a storage building 60 x 200 feet, Carlton P. Campbell, Wyandotte, is architect.

Illinois

CHICAGO—Birtman Electric Co., 4140 West Fullerton avenue, has let contract to the Austin Co., 16112 Euclid avenue, Cleveland, for additions of 35,000 square feet to its plant at Rock Island, III., at cost of about \$100,000, to increase capacity for production of washing machines, vacuum cleaners and electric irons.

FRANKLIN PARK, ILL.—Pipe Line Service Co., 205 Wacker drive, Chicago, will build a one-story factory addition. General contract has been let to Abell Howe Co., 53 West Jackson boulevard, Chicago. Cost estimated at \$40,000.

Indiana

FORT . WAYNE, IND.—International Harvester Co., 606 South Michigan boulevard, Chicago, will bulld a onestory manufacturing plant 147 x 686 feet costing \$200,000. General contract has been let to Indiana Engineering Co. Inc., Utility bullding, Fort Wayne.

LAFAYETTE, IND.—Aluminum Co. of America, Gulf building, Pittsburgh, will build a one-story mill extension and tube mill. General contract has been let to A. E. Kemmer, Third and Brown streets, at cost of about \$300,000.

WALTON, IND.—Town board, H. Becklay, chairman, is planning a deepwell pump, steel tank on tower and watermains, at cost of \$20,000. M. L. Burden, 103½ North Harrison street, Alexandria, Ind., is consulting engineer. Bids June 12.

Missouri

ST. LOUIS-McCabe-Powers Auto Body



Co., 1217 North Broadway, has let general contract to Fruin-Colnon Contracting Co., 502 Merchants Laclede building, for a factory and office building at 5926 North Broadway, one-story 90×350 and 90×100 feet. Cost about \$50,000.

ST. LOUIS—Missouri Boiler & Sheet Iron Works, 908 South Twenty-third street, will build a one-story boiler plant 80 x 88 feet. General contract has been let to W. C. Harting Construction Co., 722 Chestnut street. Cost is about \$40,000.

Wisconsin

AMERY, WIS.—Wisconsin Hydro Electric Co. plans construction of a steam plant and a substation.

COLBY, WIS.—Frank Jordan is having plans prepared for a one-story machine shop 32×52 feet.

COLUMBUS, WIS.—Public service commission has granted permission to city for construction of a diesel engine electric generating plant to cost about \$230,-000.

FOND DU LAC, WIS.—Giddings & Lewis Machine Tool Co. will build a one-story plant 44 x 120 feet. F. J. Stepnoski & Son are architects.

GREEN BAY, WIS.—Green Bay Drop Forge Co. is building an addition to house a steel treating department.

MILWAUKEE—Chain Belt Co., manufacturer of concrete mixers, pumps and similar products, will build a two-story factory addition 31 x 123 feet. Eschweller & Eschweiler, 720 East Mason street, are architects.

MONTREAL, WIS.—City has awarded contract to Frank Tomlinson, Ashland, Wis., for a one-story municipal garage and machine shop 48 x 104 feet. R. R. Mc-Donneli is city clerk. C. J. Anderson, Ironwood, Wis., is architect.

RACINE, WIS.—Twin Disc Clutch Co., 1328 Racine street, will build a factory building and office costing \$75,000.

WAUSAU, WIS.—Marathon Rubber Products Co., J. L. Usow, president, 18 planning construction of a factory addition.

Minnesota

MAPLE LAKE, MINN. — Minnesota rural power association, Harry Edmunds. Cedar, Minn., president, will build a diesel generating plant, costing, with equipment, about \$500,000. Stanley Engineering Co., Muscatine, Iowa, is consulting engineer.

MINNEAPOLIS — Werner Transportation Co., 225 North Fifth street, will build a one-story maintenance shop addition 46 x 158 feet. Perry E. Crosier, Phoenix building is architect.

PARK RAPIDS, MINN.—Itasca-Mantrap electric co-operative, Don C. Servis, president, is preparing plans for 254 miles of rural transmission lines to serve 735 customers. George Taus, 5024 Indianola avenue, Minneapolis, is consulting engineer.

PELICAN RAPIDS, MINN.—Lake region electric co-operative, A. R. Knutson. superintendent, has plans for 200 miles of rural transmission lines.

RED LAKE FALLS, MINN.—Red Lake electric co-operative, Stephen Singer, secretary, will build 238 miles of rural transmission lines. Ellerbe & Co., E-1021



First National Bank building, St. Paul, Minn., are consulting engineers.

Texas

BRECKENRIDGE, TEX.—United Pipe & Metal Corp. has been incorporated with \$8500 capital to deal in steel and iron, by J. Gachman, Dan Gachman and associates.

TEXAS CITY, TEX.—Carbide & Carbon Chemical Corp., Carbide and Carbon building, New York, will build chemical plant on new site between here and La Marque. In addition to chemical manufacturing buildings plant will include steam plant and compressor station using gas engine-driven compressors. Construction under direction of Ford, Bacon & Davis Inc., New York. (Noted May 27).

Kansas

WICHITA, KANS. — Beech Aircraft Corp. is having plans prepared by Overend & Boucher, architects, for a onestory factory addition.

WICHITA, KANS.—Cessna Aircraft Co. has given general contract to Walter Armagost for a one-story assembly plant 100 x 400 feet. Overend & Boucher are architects.

South Dakota

MILBANK, S. DAK.—Whetstone Valley Electric Association has been incorporated to build 500 miles of rural transmission lines. Fred Schwandt is president and Alfred J. Pew is secretarytreasurer.

Nebraska

CARROLL, NEBR. — Wayne county rural public power district has given contract to Elkhorn Construction Co., Norfolk, Nebr., for 213 miles of rural transmission lines.

HASTINGS. NEBR.—City, Raymond L. Crosson, clerk, has authorized improvements to municipal light plant, including overhead crane for turbine maintenance, new switchgear, changeover of distribution system from 2450 volts to 4150 volts and adjustable-type governor for 3500-KW turbogenerator, total cost \$141,764. Black & Veatch, 4706 Broadway, Kansas Clty, Mo., are engineers.

Iowa

BROOKLYN, IOWA — Village, Jennie Schmitz, clerk, will take bids June 25 for municipal light and power plant to cost about \$135,000, including two diesel generating units of 200 kilowatts each. Stanley Engineering Co., Muscatine, Iowa, are engineers. (Noted May 13)

DENISON, IOWA—City, R. L. Rule, clerk, takes bids of June 24 on a 1500-KW turbogenerator, exciter, air cooler, surface condenser and auxiliaries.

GALVA, IOWA—WPA has approved a \$14,400 allotment for a sewage disposal plant, including Imhoff tank, filter, sludge bed clarifler and control house. I. E. Baumgartner is city clerk.

OSAGE, IOWA—City, F. J. Cromer, clerk, is making survey for construction of power and light plant. Hubbard Engineering Co., 80 East Jackson boulevard, Chicago, is consulting engineer.

Wyoming

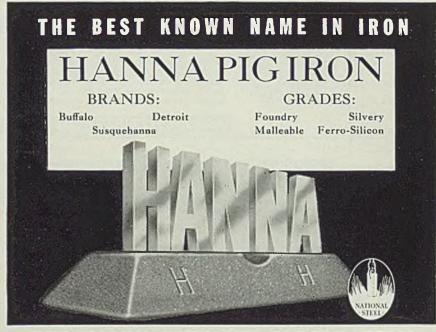
BASIN, WYO.—Big Horn Rural Electric Co., M. N. Roush, superintendent, has applied for \$100,000 additional funds to build 100 mlles of rural electric lines.

California

LONG BEACH, CALIF.—Long Beach Aircraft Corp. has been incorporated with \$100,000 capital by Harvey N. Martin, Long Beach, and associates.

LOS ANGELES—Manta Aircraft Corp. has been incorporated with 100,000 shares no par value by David R. Davis, Hollywood, Calif., John P. Davies, Altadena, Calif., and J. Norman Phillips, Los Angeles.

LOS ANGELES—Harvill Aircraft Dle Casting Corp., 2344 East Thirty-elghth street, will buy ten acres near the municipal airport and erect a new plant with



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52,000 square feet floor space and installation of additional equipment to triple output. James F. McNamara, general sales manager International Nickel Co., New York, and Stanley M. Tracy, treasurer, Driver-Harris Co., Harrison, N. J., are among directors of the company.

Oregon

PORTLAND, OREG.—Lord & Loryea, contractors, have been awarded a contract to build a power plant at the naval air base at Tongue Point, Oreg., on low bid of \$126,570.

SPRINGFIELD, OREG.—Fred J. Volght, owner of a box factory at Eugene, Oreg., plans construction of a \$15,000 plant here.

Washington

PUGET SOUND NAVY YARD, WASH. —Blds will be asked soon, as funds are allocated, for additional projects, including two seaplane ramps, hangar 240 x 320 feet, gas storage, barracks extension, fuel oil storage, equipment building, bomb storage and shop, torpedo storage, building extensions and other additions. About \$2,000,000 will be available soon.

SEATTLE—Universal Aircraft Corp., recently organized with \$1,000,000 capital, has bought the Stearman-Hammond airplane plant and will establish a plant at the Everett, Wash., airport. Ivan Merrick Sr., is one of the incorporators.

Canada

GLACE BAY, N. S.—Dominion Coal Co. Ltd., 43 Union avenue will rebuild burned machine shop and install new equipment. Total cost about \$200,000.

HAMILTON, ONT.—Steel Co. of Canada Ltd., Wilcox street, has let general contract to Tope Construction Co., 677 Main street West, for a tin plate mili. Structural steel has been awarded to Dominion Bridge Co. Ltd., Lachine, Que.

OTTAWA, ONT.—Ottawa Aircraft Ltd., 301 Slater street, has let general contract for addition to its airplane plant to Doran Construction Co. Ltd., 78 Bank street, at cost of about \$60,000.

WESTBORO, ONT. — Ketchum Mfg. Co. Ltd., Alexandria street, manufacturer of metal stampings, will build a plant addition costing about \$50,000. J. B. Roper and Henry J. Morin, 95 Sparks street, are architects.

WINDSOR, ONT—Dominion Forge & Stamping Co. Ltd., Seminole road, has given contract to Allan Construction Co., 44 Wyandotte street, East, for \$25,000 addition to its plant.

ARVIDA, QUE.—Aluminum Co. of Canada Ltd., 1010 St. Catherine street West, Montreal, Que., has given general contract to Foundation Co. of Canada Ltd., 1538 Sherbrooke street West, Montreal, for \$3,800,000 plant addition here.

BROWNSBURG, QUE.—City will build aqueduct and sewage disposal station at cost of about \$150,000. Ernest Gohier, 10 St. James street East, Montreal, is consulting engineer.

ROCK ISLAND, QUE. — Union Twist Drill Co., Butterfield division, is having plans prepared for a \$25,000 plant addition. Robert and F. R. Linlay, 660 St. Catharine street West, Montreal, Que., are architects.

THURSO, QUE.—Singer Sewing Machine Co., 195 Sparks street, will build a plant addition to cost \$60,000.

VALCARTIER, QUE.—Department of munitions and supply, Ottawa, Ont., will build additions, including testing building at the Dominion arsenal here.

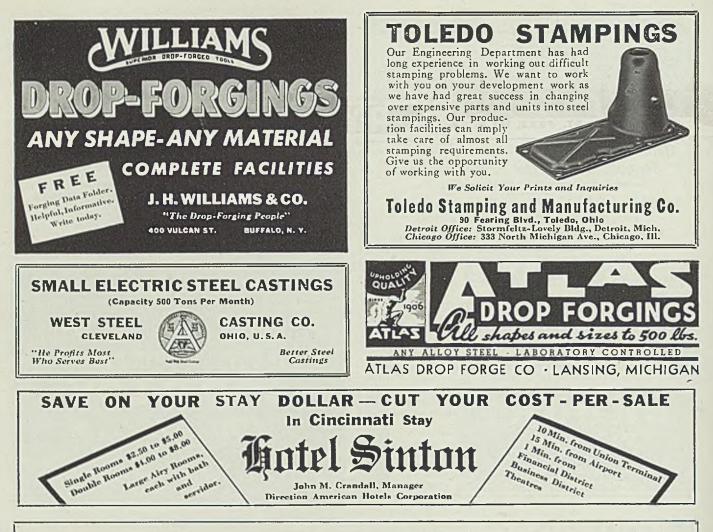


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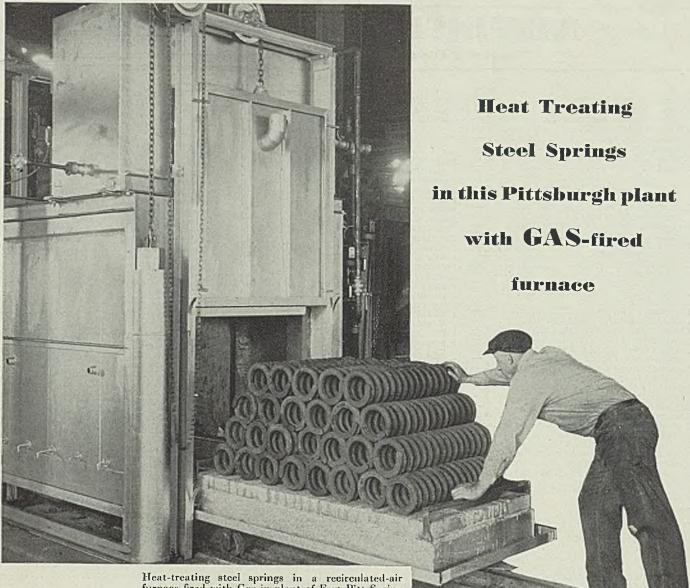
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Heat-treating steel springs in a recirculated-air furnace fired with Gas in plant of Fort Pitt Spring Co., McKees Rocks, Pa. Photograph courtesy Surface Combustion Corporation.

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