

# STEEL

PRODUCTION • PROCESSING • DISTRIBUTION • USE

For forty-eight years—IRON TRADE REVIEW

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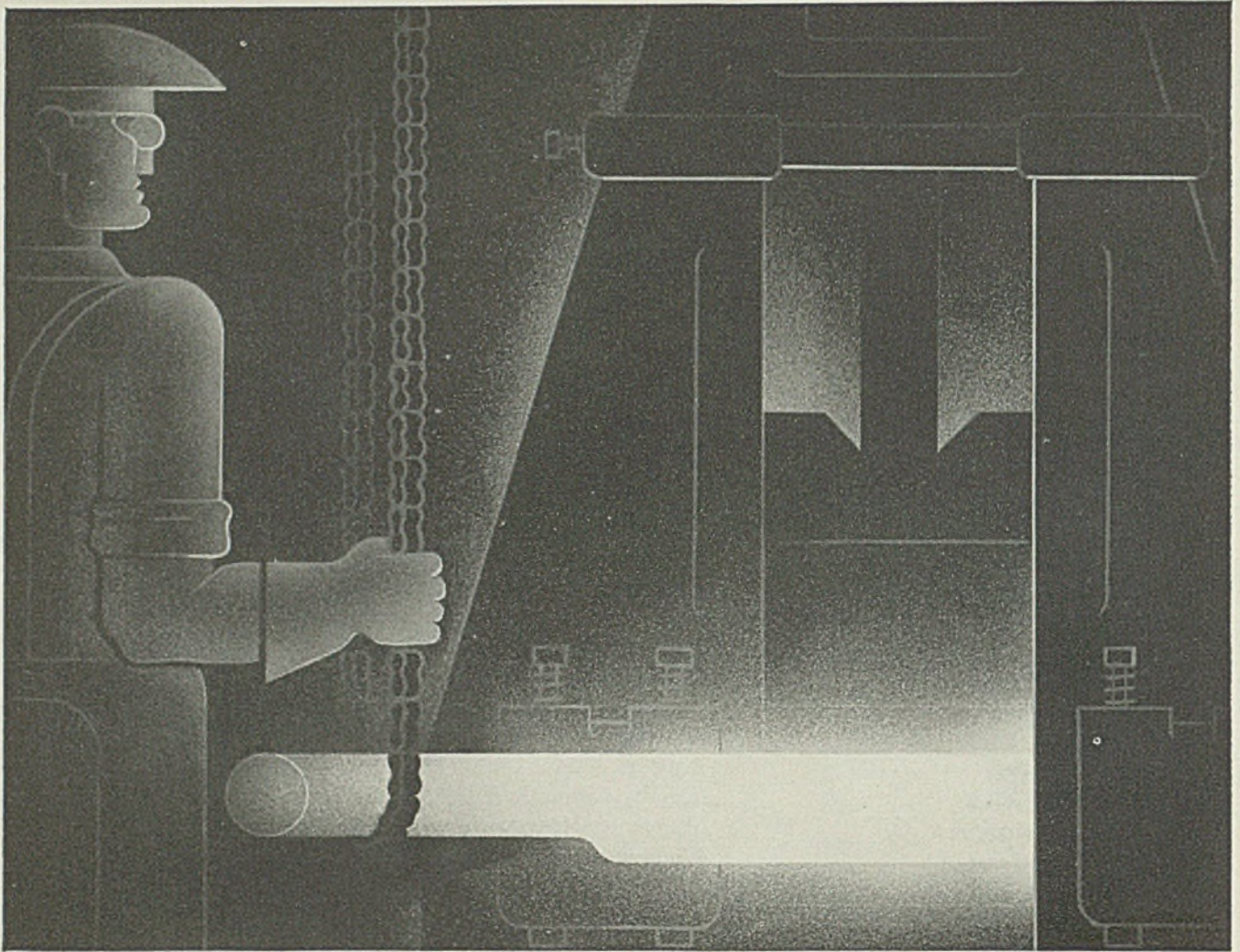


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## As the Editor Views the News

**A**WARDING contracts for 50 electric overhead cranes, four of them of 250 tons capacity each, is an important event at any time, regardless of whether business is booming, moderately active or depressed. But when orders of that magnitude come out—as they did last week (p. 27)—after a prolonged spell of stagnation in the crane market, they assume special significance. Do they presage a revival of activity in the heavy equipment industry? Do these orders signalize the beginning of a new spurt of industrial rehabilitation or expansion? What is the trend in the modernization and new construction of industry's facilities?

• • •

One swallow does not make a summer. It would be foolish to say that one big crane order calls a turn in the heavy equipment market, but the circumstances which brought about the need for 50 cranes on one project are significant and they do have a direct bearing upon the future trend of modernization and expansion of plant and equipment. U. S. Steel's expenditure of \$364,000,000 for adjusting its physical properties to the needs of the times (p. 28) is being divided between rehabilitation, expansion, repair and alteration in a way that perhaps is typical for all industry.

### Industry Puts House in Order

Big Steel, like other units of industry, has been scrapping obsolete plants, altering others extensively, building some new ones and adding much equipment. Bethlehem, Republic, and other independents are doing the same thing, as are also hundreds of companies in other branches of the iron, steel and metalworking industries. The net result of this intensive effort to put one's house in order is beginning to be reflected in the surveys of industrial facilities. The

### Cleaning Job Completed?

American Iron and Steel institute's new capacity figures for July 1, 1937, and the tabulation in *Penton's Foundry List* of foundries in the United States and Canada, coupled with other data (p. 47), indicate that the reduction in the number of industrial establishments is being checked and that the trend in capacity again is pointing upward. In other words, the worst part of the house cleaning is finished.

• • •

Of course industry's task of rehabilitation is far from finished. In many cases, an improvement in one plant of a company makes another plant obsolete. New construction anywhere usually hastens the day when contemporary facilities will have to be modernized or abandoned. Perhaps industry now has reached a stage where the accumulative effect of modernization or expansion is beginning to show. If this is true, then we shall see more activity in industrial building and in the purchase of new equipment. In fact, the movement in this direction would be rapid and of broad sweep if it were not for the political uncertainties that prevail, not only in the United States, but throughout most of the world.

### Rehabilitation Accumulative

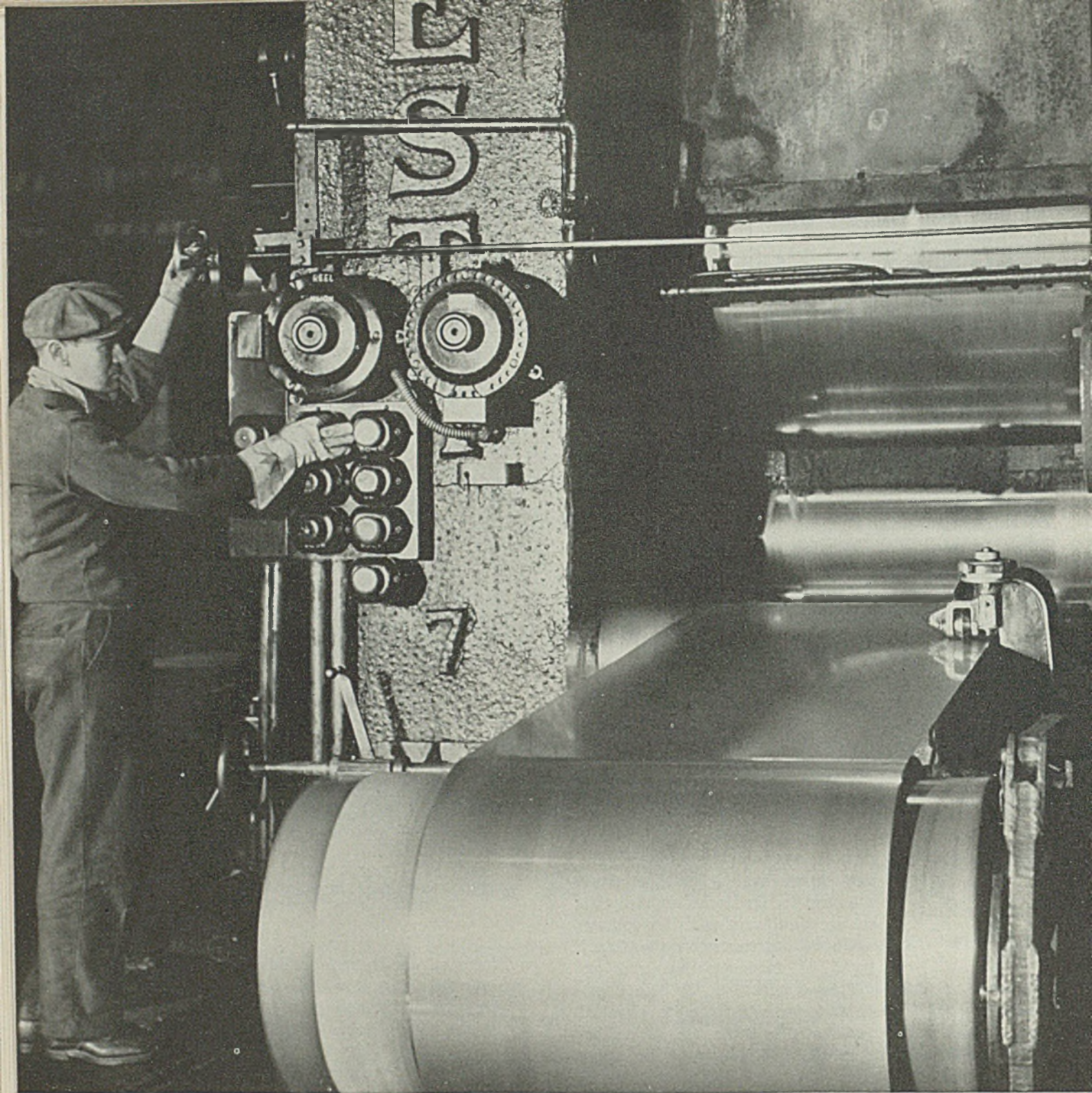
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Traces of the recent strikes remain only in the sporadic breaking of windows in the homes of loyal workers and in the actions of SWOC and the national labor relations board in attempting (p. 31) to prove that steel companies have violated the Wagner act. . . . New England manufacturers are interested in an injunction granted Reed & Prince Mfg. Co. (p. 32), which declares a seven-week strike illegal and prohibits picketing. The CIO organizer called off the strike and advised his members to go back to work. . . . The steelworks operating rate for the week ending July 17 was 82 per cent of capacity (p. 33), which represents a rebound of 8 points from the previous week which included Independence day.

### Operating Rate Up 8 Points

E. L. Shaner





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**INLAND STEEL CO.**

# \$364,000,000 for a "Better, Not Bigger" U. S. Steel Corp.

*How Capital Expenditures Thus Far in Modernization Program Have Centered on New Finishing Mills—Over a Score of Plants Abandoned—Tonnage Capacity Shows Relatively Slight Change*

**W**HEN "Big Steel," the two-billion dollar giant of the industry, girds itself, it may move slowly at first, but it moves surely.

Such is demonstrated by its rehabilitation program, now in the ninth year and proving increasingly effective as time goes on.

A leader since its formation in 1901, as a consolidation of two-thirds of the steelmaking capacity of the country, the United States Steel Corp. reached a stage in recent years, where, in the opinion of its management, it required a revitalization, an internal renaissance.

If emphasis is needed to describe what is going on, it may be said to be having both.

Since 1928 the personnel, physical properties, and financial and corporate structures have undergone searching scrutiny. More than a score of plants have been abandoned as obsolete. New and modern plants have gone up; others have undergone extensive alteration. More than \$364,000,000 had been expended up to the first of this year on manufacturing properties, with \$157,000,000 appropriated for additional work.

Research has been intensified, both commercial and technological, and has set an increasingly fast tempo

for those who plan and execute rehabilitation. Various subsidiaries have been merged for more effective operation. The formation of the Carnegie-Illinois Steel Corp. in 1935, the largest steel producing unit in the world, is outstanding. New and younger men have been brought in to certain positions of high authority.

In the conception and direction of this program Myron C. Taylor has led from the first. A man who only three years before had retired at the age of 50, he was drafted late in 1927 by J. P. Morgan, then serving temporarily as chairman of the board. A corporation lawyer, a man who had achieved marked suc-

## Steel Rises, More Equipment Ordered, 46 Days After Ground Is Broken for Irvin Works

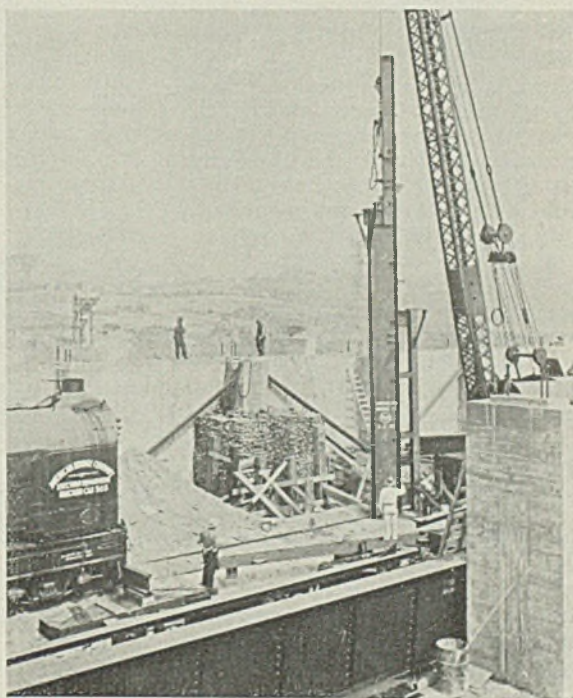
**F**IRST steel was raised last week for the Irvin works, Carnegie-Illinois Steel Corp.'s new sheet, strip and tin plate plant on Camden Hill overlooking the Monongahela river, near Clairton, Pa. This was just 46 days after ground was broken by William A. Irvin, president.

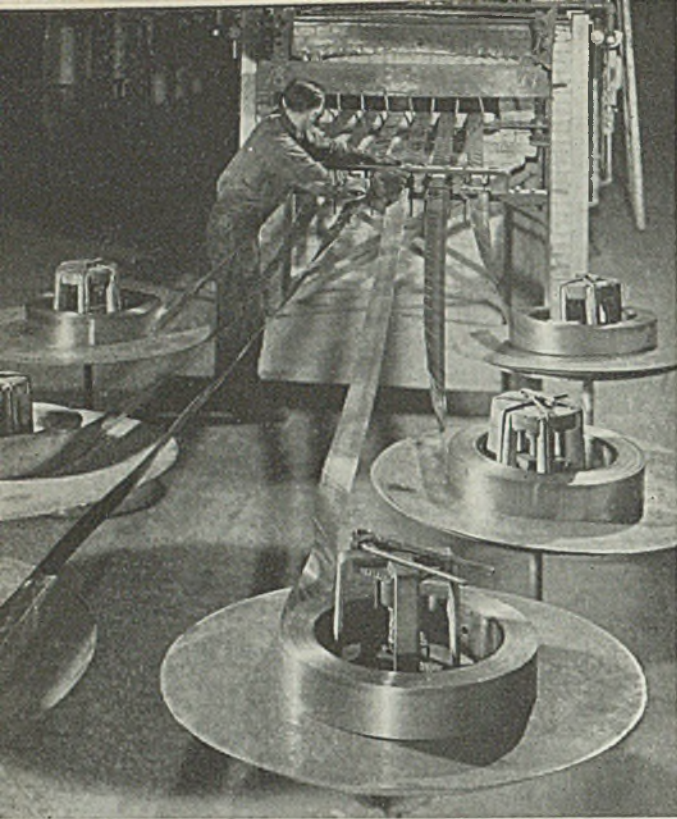
Orders for 50 overhead traveling cranes last week were divided among Harnischfeger Sales Corp.; Cleveland Crane & Engineering Co.; Alliance Machine Co.; and Shaw-Box Crane & Hoist Co.

These cranes, comprising one of the largest group installations in the history of the steel industry, vary in capacity from 5 to 60 tons; spans from 60 to 120 feet.

Additional cranes of individual type for special purposes at Edgar Thomson works, Braddock, Pa., will be supplied by the Morgan Engineering Co., and Alliance Machine Co. Four of these cranes, of 250 tons capacity and among the largest ever built, will be ladle cranes. Two will be 200-ton cranes for stripping ingot molds.

Amsler-Morton Co. has been given the contract for 16 soaking pit furnaces for Edgar Thomson, which will supply raw steel for the Irvin works. Electrical equipment has been ordered from General Electric Co., and Westinghouse Electric & Mfg. Co. The foregoing contracts are in addition to equipment ordered in June (STEEL, June 21).





**COLD - ROLLED**  
*stainless steel strip*  
*entering a continuous*  
*annealing furnace,*  
*Cuyahoga works, Amer-*  
*ican Steel & Wire Co.,*  
*Cleveland*

cess in textiles, banking, railroads and other related enterprises, but who had never been active in steel, Mr. Taylor, first as chairman of the finance committee, was set to work.

Just for the record, it was he who evolved the three-point program, calling for revision of the capital structure, revamping of plants and physical properties and review of personnel and relations problems.

Revision of capital culminated in 1929 with the retirement of bonds valued at \$340,000,000, a refunding operation which was to prove of great value. But progress in other lines was to come more slowly, and particularly with respect to rehabilitation of physical properties, with which this article is principally concerned.

There had to be surveys and correlating and analyzing of results. There were questions as to what improvements should be made to existing properties, what plants should be abandoned and what new plants should be built and where; all of these problems had to be considered closely in the light of research and market studies and possible changes in the corporate structure and naturally also in the light of what the work would cost.

In the modernization of properties the emphasis has been on light, flat-rolled products for consumer goods, a fact attested by heavy appropriations for continuous sheet and strip mills cold reduction units, tinning facilities and the like.

When it is considered that the continuous mill came into practical commercial operation only about 12 years ago, virtually revolutioniz-

ing manufacture of light flat products and, by virtue of its product, opening up new consuming fields, it is easy to understand the changes that have been and still are taking place in this department.

At the same time marked strides in the understanding and treatment of alloys, are leading to a diversity of new applications and, in fact, fast establishing the custom-made product as a rule rather than an exception; these and technological advancement in general are bringing improvements in virtually all branches of the Corporation's steel producing facilities.

#### Special Steels Developed

In recent years the Steel corporation has contributed much to the development of special steels for railroad equipment and other vehicles of transportation. Particularly notable has been its work in the high-strength, low-alloy steel groups and in this, and also the high tensile grades, it has taken an initiative reminiscent of the many years ago when Carnegie Steel Co. built the first all-steel railroad cars.

Within the past year the company has reduced to commercial practice a patented process for thermal treatment of rails and, incidentally, also another designed to develop an unusual degree of ductility in the smaller sections of high carbon steel. Facilities have also recently been developed for normalizing of car wheels.

Research has been intensified in steel dwelling construction and in welding various grades of plain and alloy steel. Technical study has led to a particular process for the zinc

coating of wire, and coating tin plate electrolytically and to improved procedure for rimming and capping steel ingots. Process for making seamless steel tubing has been advanced so that tubes 28 inches diameter with relatively thin wall are now available.

These and other improvements in technical procedure, affecting a multiplicity of other matters, are reflected in the modernization program now going forward. Many represent changes too small to list in any general summary, yet in the aggregate they constitute expenditures totaling millions of dollars.

#### Operations Are Centralized

While improvements have been carried on at many points, there has been a disposition to concentrate operations, with new work centered principally around Pittsburgh, Chicago, Youngstown and Birmingham, Ala. At Chicago many major operations got under way early, with especially heavy expenditures in 1930 and 1931 on improvements to Illinois Steel Co., properties. Then later, in 1933, there was another wave of heavy spending for work in the Chicago district, approximately \$32,650,000.

Among principal items were a 96-inch continuous plate mill, completed in 1931 with an annual capacity of 720,000 tons; a 14-furnace open hearth plant; 44-inch blooming and slabbing mill; wide-flange beam mill; 10-inch bar mill for rolling alloy steel, completed in 1931, all at the South Chicago works; and a 28-inch strip mill at Gary, completed in 1930. Also a 7-furnace open-hearth plant and a 44-inch slabbing and blooming mill were built at Gary, finished in 1931; and an additional 138-oven by-product coke plant.

Further improvements undertaken at Illinois Steel properties were conversion of two 28-inch, 2-high strip mills into a 38-inch, 4-high strip mill at Gary in 1935, and in 1936, completion of a number of items, including a tandem cold-forming mill for light structural shapes; a 5-stand tandem cold-reduction mill for tin plate; continuous 4-high hot strip mill for sheets with slab furnace and other auxiliary equipment; and a 3-stand tandem cold-reduction mill for sheets.

Many of the more important improvements to the American Sheet & Tin Plate properties have been at Gary, Ind. In 1928 an addition was completed which increased tin plate plant capacity 50 per cent. In 1931 improvements to the continuous tin mill were completed, with installation of a 4-high cold mill for tinning rolled strips, and in 1933 work was finished at Gary on a 4-high reversing cold-reduction mill

and the converting of a 4-high reduction mill to a reversing type, with improvement in continuous annealing, cleaning and shearing equipment.

The following year two 4-high reversing cold-reduction mills were added to the Gary sheet mill. Later, in 1935, continuous pickling equipment for hot-rolled strip was installed, and at the tin mill improvements to the continuous roughing mill were completed, with work getting under way at the sheet mill on a 4-high hot strip installation and on two 4-high tempering mills. A 3-stand tandem 4-high cold-reduction mill is also being added.

In the Chicago area also the American Steel & Wire Co. completed in 1930 a new wire drawing unit at Waukegan, Ill., and installed wire screen cloth equipment at DeKalb, Ill., National Tube Co. a year later completed a new seamless tube mill at Gary to make pipe up to 24 inches outside diameter.

Only last month American Steel & Wire Co. formerly opened two continuous rod mills at Joliet, Ill., with annual capacity of 220,000 tons and costing \$3,000,000. This expenditure is part of a \$5,000,000 improvement program for the wire company in the Chicago district.

With the 96-inch 4-high continuous plate mill at South Chicago, a leading development in the field of heavy rolled products in that district was the installation last year of a rail normalizing furnace at the Gary works. Ten feet wide and 250 feet long, the furnace permits the heat treatment of rails in their full length and has a capacity of 3000 gross tons a day.

#### More Expansion Planned

While important work has been going forward in the Pittsburgh district for the past several years two important developments took place one day last January. One was the formal dedication of the \$10,000,000 100-inch semi-continuous plate mill at Homestead and the other the announcement that \$60,000,000 would be spent by the Carnegie-Illinois Steel Corp. on new construction and modernization at the Clairton, Pa., plant and the Edgar Thomson mills, Braddock, Pa.

Later the plan was revised in one important respect. Instead of altering operations at Clairton, a new 600-acre site was purchased in Mifflin township, Allegheny county, for the Irvin works (named in honor of William A. Irvin, president of the United States Steel Corp.) to have an annual capacity of 600,000 tons of sheet, strip and tin plate. Completion of the project is expected a year from next fall. The work at the Edgar Thomson plant will go forward as originally planned, a slab-

bing mill with annual capacity of 1,000,000 tons.

"This program will so round out the corporation's operations in the Pittsburgh district that there will not be an important item missing," Mr. Irvin declared recently.

Included in a diversity of improvements was a substantial modernization program at Mercer, Pa., works of the American Sheet & Tin Plate Co., with equipment installed in 1930 in several departments to roll 72-inch sheets. At the Vandergrift, Pa., works the hot mill departments were improved by continuous heating furnaces, with mechanical handling equipment, a 3-high finishing hot mill and a 4-inch cold mill. This work was completed in 1933.

#### Wire Facilities Increased

The American Steel & Wire Co. in 1930 finished installation of 180 wire drawing blocks at Rankin, Pa., and in 1931 a new billet mill and two rod mills, principally to replace old mills. In 1930 this company purchased the Morris & Bailey plant of the Oliver Iron & Steel Corp., near Clairton, Pa. This plant manufactured cold-rolled products and provided a site for future expansion.

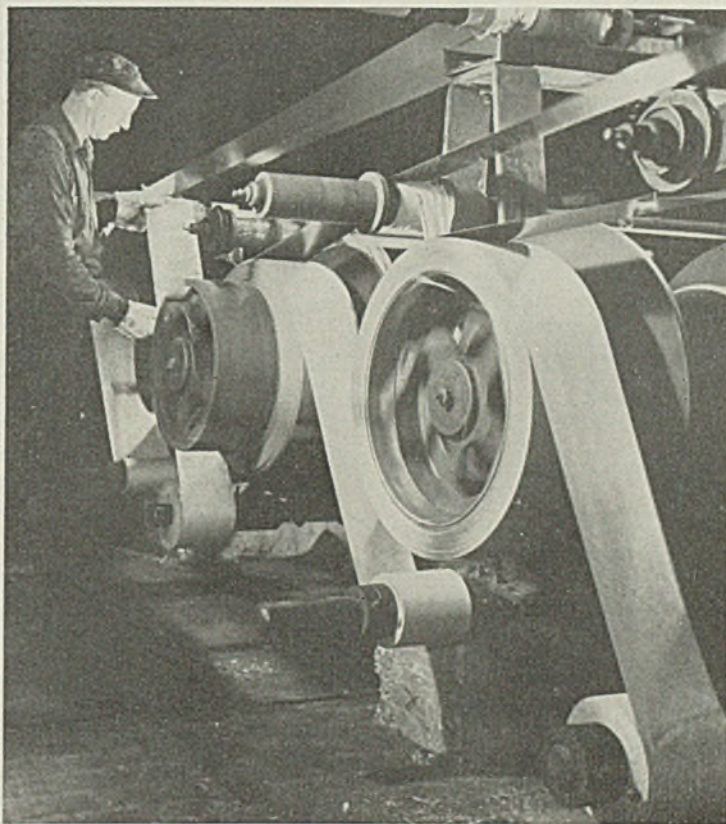
A new fabricating shop was completed by American Bridge Co., in

1930 at Ambridge, Pa. The program of National Tube Co. included several extensive improvements in the Pittsburgh district. In 1931, the Tube company completed the modernization of its National works at McKeesport, Pa., which included a new 3-furnace duplex open-hearth plant, a 32-inch reversing bar mill, two seamless tube mills, additions to the blooming and slabbing mills and installation of a normalizing furnace.

In 1931 extensive improvements were made in the cold-drawing department at Ellwood, Pa., and in 1933 work was finished in reconverting a seamless mill for the economic production of O.D. tubing, from 2 to 4½ inches.

In the Youngstown district improvements at the McDonald plant of Carnegie Steel Co. were outstanding. Among these was the 43-inch 4-high hot strip mill which went into operation late in 1935, with capacity of 300,000 gross tons annually.

At the McDonald plant a 12-inch continuous hoop mill was completed and in 1931 a new 10-inch bar mill. At the Upper Union works various improvements were finished in 1930, including increased capacity at the 12-inch bar mill. At the Farrell, Pa., plant of Carnegie substantial im-



*RECOILING finished cold-rolled stainless steel strip preparatory to shipment, Cuyahoga works. To protect the cold-rolled surface the strip is carefully interleaved with specially prepared paper. The paper runs up from reels located near the floor*

## U. S. Steel Corp. Capital Expenditures

(For additional property, new plans, extensions and improvements, less credits for sales and salvage and credit for net reduction in advanced charges for mine stripping and development)

Year	Total	Manufacturing properties, exclusive of	
		by-product coke plants	By-product coke plants
1928	\$51,570,000	\$35,232,417	\$2,789,869
1929	59,329,674	40,403,813	1,902,365
1930	144,439,895	114,960,815	5,545,336
1931	59,754,985	45,570,298	5,391,362
1932	7,540,608	4,900,006	438,613
1933	7,875,635	7,646,660	242,021
1934	7,313,792	6,098,736	1,762,319
1935	31,705,235	31,601,655	1,046,067
1936	69,421,594	54,951,681	4,037,437
	\$438,951,418	\$341,366,081	\$23,155,389

Improvements to the rolling mills were finished in 1928, and in 1930 new pouring ladles and cranes were installed in the open-hearth plant at Farrell. At the Ohio works in Youngstown No. 2 blast furnace was rebuilt and two 1500-ton hot mixers installed in 1928 and shears and equipment for handling long billets in the 23-inch roughing mill in 1935.

At the New Castle, O., works of American Sheet & Tin Plate Co. extensive improvements were made in the annealing and pickling departments in 1929.

In the Birmingham, Ala., district a \$23,000,000 program is now going forward, providing facilities for producing cold-reduced tin plate at the Fairfield works of the Tennessee Coal Iron & Railroad Co., among other developments. Features of the work include two 5-stand, 4-high tandem cold-reduction mills with auxiliary equipment, a 48-inch hot strip mill; and a 45-inch blooming mill. Additions are also being made to the hot mills and pickling and galvanizing departments; and two obsolete by-product coke oven batteries are being replaced by two batteries of 73 ovens each.

### Make Improvements in Alabama

Going back to 1928, other improvements in the district include, in that year, the completion of two blast furnaces at Fairfield, Ala. There were also alterations and enlargements to the sheet mills at that plant, and in 1930 substantial betterments were made at its 45-inch blooming mill. In 1931, a new 42-inch universal strip mill was completed there, with rearrangement of finishing facilities at the bar and structural mills in 1932.

At Cleveland and Lorain, O., the Wire company and National Tube, respectively, carried on substantial improvements. In 1929 an additional mill for rolling large rounds and strips was completed at the Cuya-

hoga works, and two years later, at the same works a new cold-rolled strip mill was placed in operation. Blast furnace C of the Central Furnace was enlarged, but a substantial portion of this group of furnaces was retired from active service last year, along with the Newburgh works of the Wire company.

National Tube Co. finished construction of a seamless tube mill at Lorain in 1930, to replace some lap weld capacity; and in 1933 extended facilities for the production of billets and slabs at its No. 1 blooming mill and 32-inch bar mill. The program of Lorain also included enlargement of blast furnace capacity by improvements at existing stacks. A number of open hearths were also rebuilt.

Modernization of properties of the subsidiary companies are to be noted at numerous points. On the Pacific coast, where the Columbia Steel Works had been acquired in 1929 at a cost of around \$41,000,000, to provide the Steel corporation with its first steel producing facilities on the coast, there was completed in 1932 at Torrance, Calif., the installation of normalizing, annealing, pickling and cold-rolling equipment for finishing sheets; and in 1933 betterments at the 12-inch rolling mill there and at the Pittsburg, Calif., wire plant. The by-product coke plant at Ironton, Utah, underwent various improvements.

American Steel & Wire Co. con-

## U. S. Steel Corp. Share of Ingot Output Declines

Year	Ingot prod. of United States Steel Corp., gross tons	Total ingot production of U. S., gross tons	% Corp. prod. of total
1902	9,743,918	14,826,092	66
1903	9,167,960	14,422,740	64
1904	8,406,378	13,767,306	61
1905	11,995,239	19,912,751	60
1906	13,511,149	23,256,243	58
1907	13,099,548	23,217,285	57
1908	7,838,713	13,953,464	56
1909	13,355,189	23,824,719	56
1910	14,179,369	25,917,281	55
1911	12,753,320	23,546,504	54
1912	16,901,223	31,102,624	54
1913	16,656,361	31,145,637	53
1914	11,826,476	23,395,530	51
1915	16,376,492	31,966,315	51
1916	20,910,589	42,474,466	49
1917	20,285,061	44,628,853	46
1918	19,583,493	43,835,627	45
1919	17,200,373	34,220,256	50
1920	19,277,969	41,554,982	46
1921	10,966,347	19,605,740	56
1922	16,082,385	35,228,281	46
1923	20,329,950	44,383,745	46
1924	16,478,857	37,476,940	44
1925	18,898,697	44,758,450	42
1926	20,306,668	47,626,547	43
1927	18,486,444	44,260,062	42
1928	20,103,749	50,734,151	40
1929	21,868,816	55,475,397	39
1930	16,726,472	40,084,631	42
1931	10,082,398	25,533,012	40
1932	4,929,236	13,439,406	37
1933	8,046,995	22,878,571	35
1934	8,660,309	25,599,118	30
1935	11,130,942	33,417,985	30
1936	16,907,996	46,807,780	28

## U. S. Steel Corp. Rated Annual Capacity

Year	Blast Furnaces (Pig iron, ferro-s, etc.), gross tons	Steel ingots and castings, gross tons	Finished steel for sale, net tons
1929	.....	.....	16,867,500*
1930	21,079,000	25,163,000	17,704,500
1931	21,737,000	26,075,000	18,371,000
1932	21,846,700	27,341,300	19,647,000
1933	21,108,900	27,341,900	19,269,500
1934	21,108,900	27,341,900	19,271,200
1935	21,108,900	27,341,900	19,261,900
1936	20,505,400	26,657,000	18,612,800
1937	20,665,000	25,772,400	17,929,400

\*Estimated.

structed a new soaking pit building in 1934 at South works, Worcester, Mass., housing eight 6-ingot pits heated by oil. In Canada, at the Ojibway, Ont., plant of the Canadian Steel Corp., the wire mill was enlarged in 1929 and in 1930 a galvanizing and tinning plant to coat black sheets and plates was completed. At the Walkerville, Ont., plant of the Canadian Bridge Co., a new building was constructed in 1930 for fabrication of transmission towers.

Scarcely a unit of the vast properties of the United States Steel Corp., if continued in operation, has not come in for some form of rehabilitation.

The program has resulted in abandonment of more than a score of plants, to say nothing of important units within plants, and this, despite the many new and improved units being installed, has kept total steel and finishing capacity from undergoing marked expansion. As a matter of fact, in 1928, at the time of the inauguration of this program, it was specifically stated that no extension in total steel production was contemplated.

### Capacity Figures Tabulated

The accompanying table on rated capacity shows an increase of only about 1,000,000 tons in capacity for finished steel for sale, between Jan. 1, 1929, and the beginning of this year. This also takes into account production of plants purchased, notably the Columbia properties on the Pacific Coast in 1929.

Incidentally, it may be noted that the high point of productive capacity was reached Jan. 1, 1932, in finished steel, ingots and pig iron; and that the past two years witnessed a rather substantial drop in finished steel and ingots and a more moderate decline in pig iron, although in the latter a slight gain was noted last year, as compared with the year before.

Bearing on this undoubtedly was the retirement of an unusual number of plants in these years. Commenting specifically on the decrease

(Please turn to Page 38)



# Thousands More Return To Chicago District Mills

CHICAGO'S SWOC-sponsored steel strike, which started like a sky-rocket last May in a blaze of violence, fizzled to a finish July 13 as workers quietly returned to plants of Youngstown Sheet & Tube Co. Inland Steel Co. had reopened its plants almost two weeks previous.

Breaking of the deadlock between Sheet & Tube and the union came after Gov. M. Clifford Townsend of Indiana stepped into the picture. The governor went into a huddle with the conflicting parties, seemingly waved his wand, and Van A. Bittner, SWOC regional director, rushed to Chicago to call off his pickets and proclaim a great labor victory.

The claim was a hollow one, considering that the union failed of its announced objective of a signed contract. Equally misleading was the governor's assertion that an agree-

ment had been reached between Sheet & Tube and the SWOC, in view of a prompt denial by J. C. Argetsinger, vice president and general counsel of the former, that an understanding existed.

But it mattered little to the 7000 returning workers, weary of seven payless weeks, whether or not the governor had adapted an unsigned statement of the company's labor policy—as charged by Mr. Argetsinger—to form the basis for the so-called agreement with the CIO union.

Arriving at the Indiana Harbor plant principally by train and stepping off on company property under the watchful eye of railroad police, employes found posted at the gates a terse statement of the management's attitude toward the truce. The signs read:

"We have not made any agreement or contract with any official,

person or organization. This plant is open for work on the conditions which existed when work stopped on May 26, 1937."

"Some time ago at the governor's request we sent him a statement summarizing what our labor policy is and has been for the last 20 years, based upon the company's letter of May 28 to all its employes," said Mr. Argetsinger. "This statement was not signed by the company. The governor apparently picked up certain sentences out of this statement, and then released his own private version to the press as the basis for a so-called settlement which never took place. This in spite of the fact that we told the governor that our statement of labor policy was not to be used or construed by anyone as anything which might constitute an agreement with anybody.

## "Diplomatic Tonsillitis Fiction"

"We cannot believe that Governor Townsend made the statement attributed to him by the press that a 'settlement plan signed by both sides was proposed by Youngstown Sheet & Tube officials,' or any other statement of this nature, because he knows they are not true. We do not believe Governor Townsend would resort to his diplomatic tonsillitis fiction in a matter as serious and important as this one.

"The memorandum which we sent the governor was not a settlement plan, it was not signed, it was furnished only when asked for by the governor himself, and it was not to be used by him or anybody else in any manner as any kind of agreement."

Apparently, however, the company's statement of policy offered an adequate basis for an "out" for the SWOC in what was turning into a losing battle.

This statement of policy, as presented to the union by Governor Townsend, follows:

"That it is in full accord with the provisions of the national labor relations act.

"The company will meet and negotiate with the Steel Workers Organizing Committee or its representatives for the purpose of collective bargaining in behalf of the members of the Amalgamated Association of Iron, Steel and Tin Workers who are employed by the company.

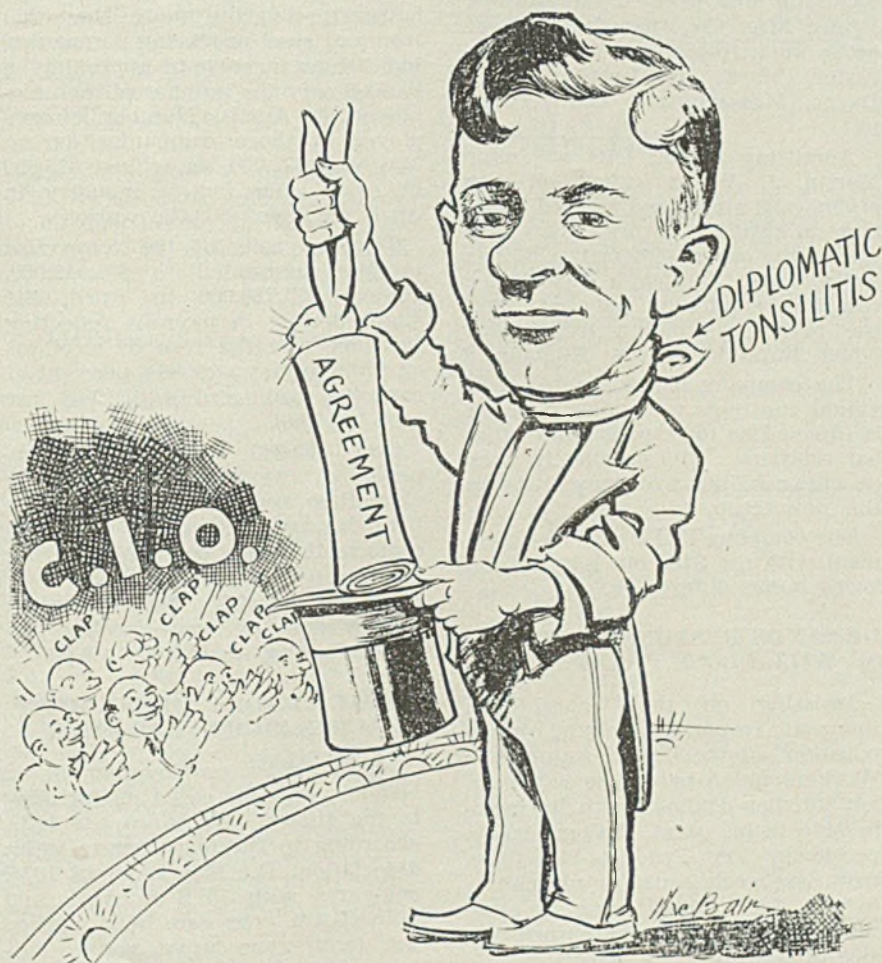
"Maintenance of a wage rate in keeping with wages paid in the steel industry in the district where the company operates.

"An eight-hour day and forty-hour week with time and one half for overtime.

"The company will not discriminate against any employe because of membership in any labor organization.

"Promotion of safety and health.

## What Magic!



The GOVERNOR: "Presto, the agreement! The strike is over!"

"The company recognizes the principle of seniority.

"Grievances will be negotiated and settled with employes through any labor organization to which they belong or representatives of such organization.

"Vacation with pay for employes of over five years services with the company. In view of loss of wages due to cessation of work during 1937, the company will permit its employes to elect to receive the vacation pay instead of taking vacations."

Reopening of the Inland and Sheet & Tube mills returns some 20,000 workers to their jobs and marks the end of steel plant idleness in the Chicago district.

The toll of the strike was heavy since all factions suffered. Ten men were killed, the irony connected with these deaths being that they occurred outside the Republic Steel Corp. plant which withstood the siege of pickets and continued to operate throughout the seven weeks.

Added to the woes of the SWOC is a counter unionization movement which has been launched in the Chicago steel area by the American Federation of Labor. The new union, to be called the American Federation of Steel Workers, has been negotiating with those independent unions which opposed the SWOC during the recent strike. Last week it announced it expected to list the Association of Steel Employes, unit of Youngstown Sheet & Tube Co. at Chicago, among the first of its new members.

National labor relations board last week served a complaint on Republic Steel Corp., alleging discrimination against employes at the instigation of the SWOC. Hearing will be held July 21 in Washington.

#### **JOHNSTOWN WORK MOVEMENT GROWS**

In steel mills operating under signed agreements in the Pittsburgh district, the CIO has been unsuccessful in trying to collect a large proportion of its dues recently. Other signs of lack of interest in the union have been increasing.

At Johnstown, Pa., the Cambria works of Bethlehem Steel Co. had returned to normalcy. Meanwhile, more than 40 cities were represented last Thursday at a meeting sponsored by the Johnstown Citizens' Committee to form a national organization pledged "to guarantee the fundamental right to work and the protection of local government." Approximately 200 delegates attended the meeting.

The Johnstown committee asked the national labor relations board for a speedy hearing on charges filed by SWOC that the committee was sponsored and supported by Bethlehem Steel Co.; charges which

the committee asserted were false.

Nine hundred employes of the Heppenstall Co., Lawrenceville, Pa., were idle from last Tuesday on. The plant was shut down after a strike had been called suddenly by officials of a steel workers' union affiliated with the CIO. Company officials said they had just opened negotiations with the union on its demands for recognition and rights as a sole collective bargaining agency when the walkout came without warning and it was decided to close indefinitely. How many of the company's 890 workers had actually joined the strike was undetermined.

The United Radio and Electrical Workers, a CIO affiliate, has been certified by the national labor board as exclusive bargaining agent for hourly-rate employes of Westinghouse Electric & Mfg. Co. in East Pittsburgh, Trafford, and Homewood, Pa.

The action was not contested by two other unions at the plants—one an American Federation of Labor affiliate and the other independent.

#### **CIO STRIKE DECLARED ILLEGAL IN MASSACHUSETTS**

An injunction, declaring a seven-week strike illegal and prohibiting picketing was granted the Reed & Prince Mfg. Co., manufacturers of bolts, nuts, rivets and screws, Worcester, Mass., by Judge William Burns, Massachusetts courts, July 13.

Admitting defeat, CIO organizer Martin J. Walsh called off the seven-week strike and advised members to return to work. This was one of the sharpest defeats CIO has suffered, and although affecting a company employing only 800 men the result has had a tremendous effect throughout New England.

The company has submitted individual contracts to employes which is ironclad as to responsibility in labor relations. CIO practically loses its entire influence in bargaining in this new setup.

The company had signed an agreement with the CIO, but a strike followed minor differences.

#### **DEMANDS RESPONSIBILITY, OR WILL CLOSE PLANT**

Insisting on the "moral and financial responsibility and incorporation" of the United Automobile Workers union before he will have any further dealings with its membership in his plant, Walter L. Fry, president, Fry Products Inc., Detroit, last week issued an ultimatum to the UAW, threatening to close the plant and contract for work outside of Detroit.

Mr. Fry will be remembered for

the national recognition he obtained some five months ago when he "sat down" in his plant following a strike of his employes engineered by the UAW. The company manufactures seat covers for automobiles and furniture covers.

In a statement to employes, he declared: "Our five months' experience with the UAW has forced this company, very reluctantly, to refuse to enter into any agreement with the UAW as now constituted. The UAW has not lived up to past agreements. Its representatives have shown an utter incapacity to lead or control. These individuals have made misrepresentations about UAW activities, have coerced non-union employes and have kept the plant in such a state of turmoil that the company, for the first time in its history suffered a financial loss during the heavy production season."

#### **INSTITUTE REPORTS ON EMPLOYMENT, PAYROLLS**

Complete figures on employment and payrolls of the steel industry during May are as yet unavailable because strike conditions in certain companies have delayed access to plant records, according to the American Iron and Steel institute.

Data which are available for May, however, covering more than 200 iron and steel producing companies, indicate an increase of approximately 6000 over the number of men employed in April. Number of employes in those companies during May was 522,000, as against 516,000 in April. The entire industry in April employed 589,000 workers.

Total payrolls of the companies in May amounted to \$81,512,000, against \$81,786,000 in April, the slight decline in payrolls reflecting the fact that the rate of steel operations in May was 88.8 per cent of capacity, compared with 90.3 per cent in April.

The 469,000 wage-earning employes of the companies reporting earned an average of 83 cents per hour in April, compared with 85.2 cents in the same companies during April.

An average of 38.7 hours per week was worked by wage-earning employes in May, against 41 in April.

#### **METAL TRADES EMPLOYMENT REACHES EIGHT-YEAR PEAK**

Metal trades employment in 22 leading cities increased during May to the highest level since late 1929, according to National Metal Trades association. The May index of 103.7 compares with 101.6 in April and with 83.6 a year ago. May marked the tenth consecutive month during which metal working employment has increased.



Republic Steel Corp.'s new 98-inch continuous strip mills in the Cuyahoga valley, Cleveland. The cold mill buildings are seen at the left. The hot mill group, to the right, is already under roof and partially enclosed

## Rapid Progress on Republic Expansion

WITH construction of its new 98-inch continuous strip mills in Cleveland proceeding on a schedule which calls for rolling steel early this fall, and a 50 per cent increase in open-hearth and sheet mill capacity under way at its Gulfsteel plants in Gadsden, Ala., Republic Steel Corp. will have increased its steel finishing capacity by 73,400 tons a month before the end of 1937.

More than \$15,000,000 of construction is now under way in various plants of the corporation and its subsidiaries, and will bring its steelmaking capacity to 6,653,000 tons a year.

Republic last week was operating 14 of its 17 blast furnaces, 55 of the 80 open-hearth furnaces at its plants, all of its bessemer converters and three out of five electric furnaces.

### Operations Nearing Normal

With only the N. & G. Taylor Co. plant at Cumberland, Md., employing less than 400 men, and a bar mill at Moline, Ill., employing 150 men, still to be opened, the corporation stated that operations are approaching normal and that 37,101 employees were at work in its mines and mills as of July 13. This represented 74.4 per cent of the average plant and mine employment of 49,898 in April, the last full month of operations before the strike, and reflected an increase of about 8000 since July 6.

With structural steel for the new strip mill in Cleveland almost entirely in place, and two 75-ton cranes already operating on the long mill runways, carrying the huge housings for the mills which will roll 25 miles of steel strip in an hour, entire project is speeding toward completion.

In Gadsden two new 150-ton open hearths will add 200,000 tons to steel

making capacity there. The open-hearth building will be lengthened by 264 feet. Two ladle cranes are being installed, one of 210-ton capacity, the other 70-ton.

An additional floor charging machine is also being installed and facilities for stripping ingots and preparing ingot molds are being improved.

In the sheet mills several buildings are being extended to take care of added equipment including a 2000 horsepower motor for the additional finishing mills, a pack furnace and additional feeder and catcher tables.

Cold mills are being re-arranged and new electrical drives installed. Capacity for annealing and pickling is being increased and an additional galvanizing pot is being constructed.

## Production

PRODUCTION snapped back last week to 82 per cent of capacity, 8 points over the preceding week. This resulted from further resumption of plants idle because of labor troubles. This brings the rate above the final week of May when labor troubles started.

**Detroit**—Up 2 points to 97 on resumption of one furnace on which

repairs have been completed. Outlook this week is 100 per cent. Ford steelworks not affected by general plant shutdown.

**Cincinnati**—Production unchanged at 93 per cent which will prevail this week.

**Chicago**—Sharp increase from 70 to 84 per cent, reflecting upturn from the holiday week and resumption of operations in plants down during strike. Active blast furnaces now number 32 out of 39.

**Pittsburgh**—Operations last week averaged 88 per cent, up 21 points. The leading producer is at slightly above 90 per cent and the leading independent at about 82. Active blast furnaces number 48.

**Wheeling**—Up 14 points to 91 per cent of capacity. A blast furnace just rebuilt has been blown in.

**Buffalo**—Production is unchanged at 88 per cent, practically the maximum possible while repairs at one plant are under way.

**Birmingham, Ala.**—Unchanged at 96 per cent, with 19 open hearths and 18 blast furnaces in operation.

**Cleveland**—Up 32 points to 79 as plants attain production after reopening from strike idleness. This rate will be lower this week on account of a shutdown of a week by National Tube Co. at Lorain works.

**Central eastern seaboard**—Up 3 points to 68 per cent. One plant operating four open hearths went down Thursday night and will resume with three Tuesday. Another will add a fifth furnace this week.

**New England**—Off 2 points to 78 per cent, with operating schedules indicating a gain of several points this week.

**Youngstown**—Up 2 points to 78 per cent with 69 open hearths and three bessemer making steel and 20 blast furnaces active. This is the best July rate in this district as mills seek to make up production lost by the strike idleness. Only Republic's Niles hot mills and some Warren hot mills are still closed. Carnegie-Illinois Steel Corp. will drop one open hearth this week and Youngstown Sheet & Tube Co. may add one.

## District Steel Rate

Percentage of Open-Hearth Ingot Capacity Engaged in Leading Districts

	Week ended July 17	Change	1936	Same week 1935
Pittsburgh ..	88	+21	63	38
Chicago .....	84	+14	70	49
Eastern Pa. ..	68	+3	49	29
Youngstown ..	78	+2	76	46
Wheeling ....	91	+14	81	73
Cleveland ....	79	+32	51	41
Buffalo .....	88	none	84	37
Birmingham ..	96	none	52	31 ½
New England ..	78	-2	63	36
Detroit .....	97	+2	100	94
Cincinnati ....	93	none	80	†
St. Louis .....	93	none	†	†
Average ...	82	+8	68 ½	43
†Not reported.				

# May Steel Imports Show Sharp Drop

IMPORTS of semifinished and finished steel and iron products into the United States in May aggregated 39,877 gross tons, valued at \$2,271,192, compared with 56,484 tons valued at \$2,709,526 in April and with 43,696 tons valued at \$1,766,599 in May, 1936, according to figures compiled by the metals and minerals division of the department of commerce.

Compared with April, imports were lower in almost every classification, 25 declines and eight increases, with no trade in six products in either

## FOREIGN TRADE OF UNITED STATES IN IRON AND STEEL

	Gross Tons		Gross Tons	
	1937	1936	1937	1936
Imports	43,063	201,692	50,489	241,564
Exports	201,692	50,489	241,564	50,489
Jan.	43,063	201,692	50,489	241,564
Feb.	41,628	290,987	43,358	213,802
March	51,805	570,584	56,720	264,337
April	68,197	683,674	49,277	301,987
May	49,050	1,043,489	59,391	314,950
5 mos.	253,743	2,790,426	259,235	1,331,714
June	.....	59,910	294,951	.....
July	.....	47,490	296,738	.....
Aug.	.....	60,697	295,341	.....
Sept.	.....	59,993	235,571	.....
Oct.	.....	64,509	261,882	.....
Nov.	.....	61,970	203,297	.....
Dec.	.....	52,584	244,156	.....
Total	.....	666,838	3,162,694	.....

month. The largest decline was in pig iron, 5108 tons, followed by steel bars, shapes, nails tacks and staples, hoops and bands and ferromanganese.

Cumulative exports for five

## ORIGIN OF MAY IMPORTS

	Gross Tons			
	Iron ore	Pig iron	Manganese ore	Ferromanganese
Norway	40,775	.....	.....	1,576
United Kingdom	30	.....	.....	.....
Canada	84	446	.....	398
Cuba	39,000	.....	2,909	.....
Chile	109,101	.....	96	.....
Algeria, Tunis	3,700	.....	.....	.....
Australia	13,005	.....	.....	.....
Newfoundland	9,000	.....	.....	.....
Germany	.....	100	.....	.....
Netherlands	.....	1,541	.....	.....
British India	.....	4,274	4,109	.....
Soviet Russia	.....	.....	25,907	.....
Brazil	.....	.....	6,983	.....
Gold Coast	.....	.....	11,834	.....
France	.....	.....	.....	85
Japan	.....	.....	.....	53
Czechoslovakia	.....	.....	.....	315
Total	214,695	6,361	51,338	2,427
	Sheets, skelp and sawplate	Structural steel	Steel bars	Hoops and bands
Belgium	1,044	7,763	2,595	1,633
France	141	1,082	749	456
Germany	341	108	82	51
Sweden	2	.....	517	12
United Kingdom	8	.....	47	241
Canada	.....	.....	.....	8
Czechoslovakia	.....	.....	.....	18
Austria	.....	.....	.....	20
Total	1,536	8,953	4,036	2,393

months this year reached 226,058 gross, excluding scrap, compared with 212,723 tons in the corresponding period of 1936.

Scrap imports in May totaled 9173 tons valued at \$122,544, nearly all from Canada. This compares with 11,713 tons valued at \$147,783 tons in April and with 15,695 tons valued at \$150,485 in May, 1936. In five months this year scrap imports were 27,685 tons valued at \$377,444, com-

## UNITED STATES IMPORTS FOR CONSUMPTION OF IRON AND STEEL PRODUCTS

Articles	Gross Tons		
	May 1937	April 1937	Jan. thru May, '37
Pig iron	6,361	11,469	52,324
Sponge iron	302	.....	1,757
Ferromanganese (1)	2,427	3,379	13,834
Spiegeleisen	787	1,240	6,637
Ferrochrome (2)	42	34	201
Ferrosilicon (3)	232	192	699
Other ferroalloys (4)	.....	.....	52
Steel ingots, blooms	.....	.....	124
Billets	198	220	874
Concrete rein. bars	771	586	3,410
Hollow bar, drill steel	273	254	1,145
Bars, solid or hollow	4,036	6,891	24,924
Iron slabs	.....	.....	1
Iron bars	94	410	926
Wire rods	1,293	1,751	7,275
Boiler, other plate	.....	137	176
Sheets, skelp, saw pl.	1,536	1,603	7,171
Die blocks or blanks	2	18	55
Tin plate, taggers' tin andterne plate	34	12	105
Structural shapes	8,962	10,716	43,009
Sashes, frames (5)	.....	.....	.....
Sheet piling	214	.....	1,068
Rails, fastenings	438	765	3,707
Cast-iron pipe, ftgs.	178	221	1,106
Mall. iron pipe fittings	45	71	205
Welded pipe	943	2,053	4,804
Other pipe	4,076	4,378	12,538
Cotton ties	.....	.....	349
Other hoops, bands	2,393	3,426	12,953
Barbed wire	932	1,746	6,510
Iron and steel wire	484	581	2,438
Teleg. and tele. wire	.....	.....	8
Flat wire and strips	336	300	1,505
Wire rope and strand	306	396	1,460
Other wire	428	252	1,647
Nails, tacks, staples	1,159	2,686	8,711
Bolts, nuts, rivets	16	23	246
Horse, mule shoes	47	35	134
Castings and forgings	472	639	1,970
Total gross tons	39,877	56,484	226,058
Iron and steel scrap	9,173	11,713	27,685
GRAND TOTAL	49,050	68,197	253,743

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

pared with 46,512 tons valued at \$402,253 in five months of 1933.

## Carborundum Day at Expo

Saturday, July 24, has been designated Carborundum day at the Great Lakes exposition, Cleveland. Afternoon and evening concerts will be presented in the radioland shell by the nationally known Carborundum band. For 11 successive seasons the band's programs have been broadcast over Columbia networks.

## Ford To Build 61 More By-Product Coke Ovens

Ford Motor Co., Dearborn, Mich., has awarded a contract to the Koppers Co., Pittsburgh, for construc-

tion of an additional battery of 61 by-product coke ovens at its Rouge plant. This brings the number of Ford coke ovens to 303. The new plant will increase the daily output of coke oven gas 25 per cent, to 40,000,000 cubic feet per day and will add 1125 tons of coke for blast furnace and other requirements. A large volume of by-products will also be recovered. Cost of the new ovens will be \$1,750,000 of which the Koppers contract amounts to \$1,200,000, the remainder being for foundations.

## Continuous Wide Strip Mills Licensed by Armco

With the granting of a license to Bethlehem Steel Co., and dismissal of an infringement suit at Buffalo, the American Rolling Mill Co., Middletown, O., has now licensed all continuous wide stripe mills in the steel industry.

Development of the continuous wide strip and sheet mill was made by the American company. Since then the steel industry has spent nearly \$300,000,000 in installing this equipment, which has lowered cost of sheets, lightened labor and provided more employment in sheet mills and fabricating plants.

## Steel Corp. June Shipments Decline

Shipments of finished steel by the United States Steel Corp. in June totaled 1,268,550 tons, compared with 1,304,039 tons in May, a decline of 35,489 tons. Compared with 886,065 tons shipped in June, 1936, the gain is 382,485 tons. The tonnage is the largest for June since 1929, when 1,385,506 tons was shipped. Six months shipments this year totaled 7,614,274 tons, compared with 5,031,350 tons in the first half of 1936. In the first half of 1929 shipments amounted to 8,340,733 tons.

## U. S. STEEL CORP. SHIPMENTS (Inter-company shipments not included)

	(Tons)			
	1937	1936	1935	1934
Jan.	1,149,918	721,414	534,055	331,777
Feb.	1,133,724	676,315	583,137	385,500
Mar.	1,414,399	783,552	668,056	588,209
April	1,343,644	979,907	591,728	643,009
May	1,304,039	984,097	598,915	745,063
June	1,268,550	886,065	578,108	985,337
July	.....	590,851	547,794	369,938
Aug.	.....	923,703	624,497	378,023
Sept.	.....	961,803	614,933	370,306
Oct.	.....	1,007,417	686,741	343,962
Nov.	.....	382,643	681,820	366,119
Dec.	.....	1,067,365	661,515	418,630
Yrly adj.	.....	†40,859	†23,750	†19,907
Total	10,784,273	7,347,549	5,905,966	.....

†Deduction.

## Financial

### SHARE EXCHANGE APPROVED BY WHEELING STOCKHOLDERS

**W**HEELING STEEL CORP. stockholders have approved a plan of recapitalization which will eliminate accrued dividends on the 6 per cent preferred through exchange of one share of this stock for one share of new \$5 prior preferred and one-half share of common. Sufficient 6 per cent preferred has been deposited to warrant directors ordering the plan carried out.

### SHEET & TUBE CALLS REMAINING DEBENTURES

Youngstown Sheet & Tube Co. has called for redemption on Aug. 25 all of its 3½ per cent convertible debentures still remaining outstanding, amounting to approximately \$5,200,000, at par and accrued interest plus a premium of 4 per cent.

On or before but not after Aug. 25 the debentures called may be converted into common shares of the company, on the basis of 16 common shares for each \$1000 debenture, subject to adjustment for dividends and interest as provided in the indenture.

The debentures called are the last of a \$30,000,000 issue made Feb. 1936.

### EARNINGS

Pittsburgh Coke & Iron Co., Pittsburgh, and subsidiaries for quarter

ended March 31, reports net profit of \$202,487 after interest, depreciation, depletion, federal and state income taxes, etc., but before provision for surtax on undistributed profits, equal after dividend requirements on \$5 no-par preferred stock, to 29 cents a share on 603,469 no-par shares of common stock.

Harbison-Walker Refractories Co., Pittsburgh, reports for the quarter ending June 30 estimated net earnings, including subsidiaries, of \$921,300, equivalent after preferred dividend requirements to 64 cents per share on 1,358,883 common shares, compared with \$807,700, or 55 cents a common share in the June quarter of 1936. For first six months of 1937 estimated net was \$2,013,100, or \$1.41 per common share, compared with \$1,348,800, or 93 cents per common share, in the 1936 period.

Rustless Iron & Steel Corp., Baltimore, Md., reports net profit for the first six months of \$389,421, or more than double the \$134,122 for the same period last year. Second quarter profit of \$218,409 also showed marked improvement over the \$171,012 in the preceding three months.

Continental Steel Corp., Kokomo, Ind., reports a net profit for the first six months of \$534,622, compared with \$325,618 in the first half of 1936. The second quarter net

totalled \$255,175 against \$238,389 in the period last year. In the 12 months ending June 30 net profit amounted to \$945,231, compared with \$715,914 in the 12 months preceding.

Scullin Steel Co., St. Louis, has net profits for the first six months of \$468,948, in contrast to \$98,663 reported for the first half of 1936. Second quarter net equaled \$302,195, before interest and taxes, compared to \$166,753 for the first quarter of the current year, and \$106,727 for the second quarter in 1936.

M. A. Hanna Co., Cleveland, reports net income of \$896,418 for the second quarter, equal to 72 cents a share after preferred dividends. This compares with 30 cents in the same period last year. First half net was \$1,390,433 against \$904,427 for the first six months a year ago.

United States Pipe & Foundry Co., Burlington, N. J., reported net profit of \$2,585,487 for the 12 months ending June 30, against \$1,899,974 in the like period a year ago. Net profit for the first half of this year was \$1,356,859 compared with \$1,199,239 in the six months June 30, 1936.

## Meetings

### CHEMICAL SOCIETY PLANS FOR ROCHESTER MEETING

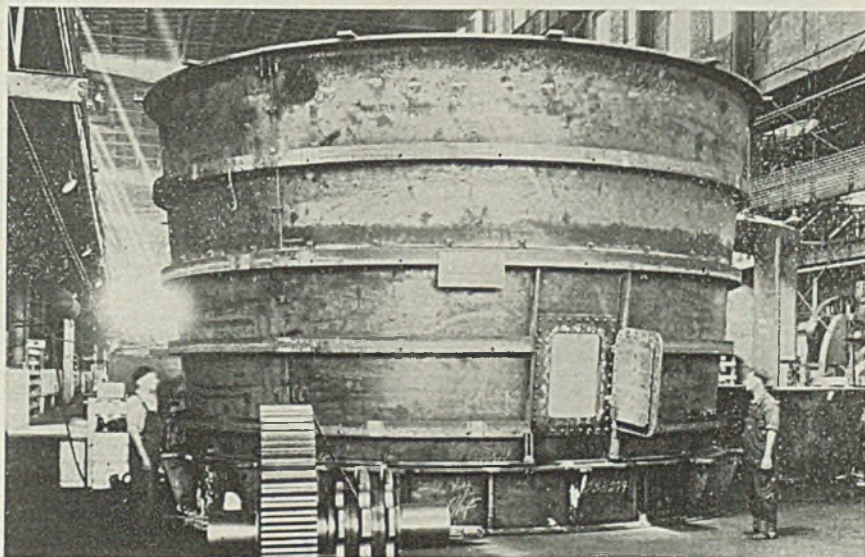
**N**INETY-FOURTH meeting of the American Chemical society will be held in Rochester, N. Y., Sept. 6-10. Florus R. Baxter, retired head of the research laboratories, Vacuum Oil Co., has been named honorary chairman, and M. H. Eisenhart, president, Bausch & Lomb Optical Co., general chairman. Dr. E. R. Weidlein, director, Mellon Institute of Industrial Research, Pittsburgh, will deliver the annual presidential address on Sept. 7.

Twenty-three symposiums are being arranged for the meeting. Among these is one on organic plastics sponsored by the paint and varnish division, and others on unit processes and automatic control, arranged by the industrial and engineering chemistry division.

### Manganese Duty Unchanged

Import duty on manganese is unchanged at ½-cent per pound metallic content under the trade agreement extension just concluded between the United States and Brazil. The state department is reported to be having a study made of the whole manganese situation.

### Turbine Draft Tube Liner, 86,000 Pounds, All-Welded



**W**ORK is progressing in Allis-Chalmers Mfg. Co. shops, Milwaukee, on the huge Pickwick Landing hydraulic turbines for TVA. Here is shown one of the steel draft tube top liners—through which water is conducted from a turbine to the tail race—measuring 26½ feet at its widest diameter, and weighing 86,000 pounds. Plates used are ¾-inch, all welded. The two 55,000 horsepower units on order will be the largest propeller type hydraulic turbines in the country

# Men of Industry

**O** E. ROMIG has been appointed assistant research engineer of the Pittsburgh district research laboratory, Carnegie-Illinois Steel Corp. Mr. Romig formerly was a contact representative in the sheet and strip division of the metallurgical department, dealing particularly with silicon steel for electrical fabrication purposes. He joined United States Steel in 1924 in the research laboratory of American Sheet & Tin Plate Co., being manager of the electrical sheet division when American Sheet & Tin Plate joined Carnegie-Illinois in June, 1936.

L. E. Block, chairman of the board of Inland Steel Co., Chicago, sailed for England recently, bound for a North Cape tour.

J. P. Pannill retired July 1 as manager of the New Orleans office of Tennessee Coal, Iron & Railroad Co. He has been succeeded by William Kerkhoff Jr.

Stanley Brandenburg has been appointed New England representative for Monarch Machine Tool Co., Sidney, O., with headquarters in Hartford, Conn.

William C. Baird, secretary-treasurer, Buffalo Pipe & Foundry Corp., Buffalo, has been elected a director of Manufacturers & Traders Trust Co., Buffalo.

George P. Brockway, purchasing manager of American Optical Co., Southbridge, Mass., has been elected president, National Association of Purchasing Agents.

Hugo Simon, Anglo-American Metals & Ferro-Alloy Corp., New York, sailed for Europe recently for a trip of several months. Albert Sulzbach has become affiliated with the New York office of Anglo-American.

Thomas J. Watson, president, International Business Machines Corp., New York, was elected president, International Chamber of Commerce at the ninth biennial congress now in session in Berlin, Germany.

Benjamin Boalt, Des Moines, Iowa, has been appointed vice president of Perfex Corp., Milwaukee, manufacturer of automatic controls for heating, air conditioning and refrigeration equipment. Since 1931



O. E. Romig

Mr. Boalt has been a director and vice president of Penn Electric Switch Co., Des Moines.

Charles Luton, formerly sales engineer for S.P.O. Inc., Cleveland, has joined the Jeffrey Mfg. Co., Columbus, O., as sales engineer in the foundry equipment division. His earlier experience includes 10 years with Taylor & Boggis Foundry, Cleveland.

Rae F. Bell, a vice president of A. O. Smith Corp., Milwaukee, since 1924, has been elected first vice president, a newly created office.

Rudolph Furrer has been elected vice president in charge of engineering of A. O. Smith. Mr. Furrer originally joined the company in 1918, resigning in 1933 to affiliate with National Tube Co., Pittsburgh, and Allis-Chalmers Mfg. Co., Mil-



Rudolph Furrer

waukee. He returned to A. O. Smith in December, 1936.

Dr. M. F. Jackson, head of the farm department of Tennessee Coal, Iron & Railroad Co., Birmingham, will be chairman of the invitation committee of the Alabama Merchants association convention to be held August 5 and 6 at Birmingham.

G. J. Dahlinger has been appointed chief of the bureau of costs, Pittsburgh office, Carnegie-Illinois Steel Corp. W. P. Marquis has been transferred to the Irvin works as works auditor, and R. W. May succeeds Mr. Dahlinger as assistant chief of the bureau of costs.

James I. Nelson has been appointed superintendent of Bethlehem Steel Co.'s hot strip mill at Lackawanna, N. Y., succeeding Clifford Fox, who was transferred to Bethlehem's new mill at Sparrows Point, Md.

Charles P. Franchot has been elected president and general manager of Burden Iron Co. Inc., Troy, N. Y. Joseph W. Burden has been named chairman of the board. O. A. Van Denburgh Jr. has been elected vice president in charge of operations and Harold T. Henry vice president and general sales manager.

R. C. Wilmot has been appointed managing engineer for wire materials of the Bridgeport plant of General Electric Co. He will supervise both engineering and manufacturing of wire products. H. H. Watson was named designing engineer for wiring devices and C. H. Barker supervisor of production.

An expansion program at the Bridgeport works which will increase manufacturing facilities over 50 per cent by Aug. 1 also has been announced by C. E. Wilson, vice president.

W. L. Whitney has been named assistant chief industrial engineer in the production department, Pittsburgh works, Jones & Laughlin Steel Corp. J. E. Beck has been appointed metallurgist at the Pittsburgh works, and A. A. Archibald has been appointed assistant metallurgist. Y. J. Bruce has been transferred to the general metallurgical department, working on cold-finished products.

Mr. Whitney started with the company in February, 1924, as a draftsman. Mr. Beck came with Jones & Laughlin in September, 1927, in the metallurgical department. Mr. Archibald, after five years as a field engineer, joined the company in

April, 1935. Mr. Bruce started with Jones & Laughlin in June, 1923, as an inspector in the Pittsburgh works metallurgical department.

♦ ♦ ♦

Philip G. Lang Jr., engineer of bridges, Baltimore & Ohio railroad, Baltimore, has been nominated for president of the American Welding society to succeed A. E. Gibson, president, Wellman Engineering Co., Cleveland.

G. F. Jenks, ordnance department, United States army, Washington, is the nominee for the office of senior vice president. Nominations for divisional vice presidents are W. J. Sannemann, Tennessee Coal, Iron & Railroad Co., Birmingham, Ala., for the Southern division; and K. V. King, chief engineer, Standard Oil Co. of California, San Francisco, for the Pacific Coast division.

Nominees for directors at large, five to be elected, include the following: A. M. Candy, consulting engineer, Hollup Corp., Chicago; J. H. Deppeler, chemical engineer and works manager, Metal & Thermit Corp., New York; E. R. Fish, chief engineer, boiler division, Hartford Steam Boiler Inspection & Insurance Co., Hartford, Conn.; A. E. Gaynor, John A. Roebling's Sons Co., New York; L. S. Moisseiff, consulting engineer, New York; F. C. Fantz, vice president, Midwest Piping & Supply Co., St. Louis; E. L. Mathy, first vice president, Victor Equipment Co., San Francisco; W. W. Petry, Cincinnati Milling Machine Co., Cincinnati; and C. E. Woodman, Kansas City Bridge Co., Kansas City, Mo.

Election is being conducted by mail ballot to close Aug. 5. The new officers will assume their posts at the society's eighteenth annual meeting in Atlantic City, N. J., Oct. 18-22.

♦ ♦ ♦

Edwin R. Palmer, general manager of Adam Opel A. G., General Motors German affiliate, and active with the corporation since 1919, has been appointed assistant comptroller, with offices in Detroit. Starting as general accountant with Chevrolet in Flint, Mich., in 1929 he was transferred to Germany where he remained until his recent appointment.

♦ ♦ ♦

J. B. Trotman, manager turbine pump division, Roots-Connersville Blower Corp., Connersville, Ind., has announced the following appointments of zone representatives: E. E. Horn, Marietta, Ga., will cover North and South Carolina, Georgia, and Florida. George P. Schumacker, Cleveland, will head distribution in northeastern Ohio. Chester E. Wing, Cincinnati, will supervise sales in adjacent counties of Ohio, Indiana,



Edward Steckel Knisely

and Kentucky. James T. Castle and D. J. McConnell, Pittsburgh, have charge in western Pennsylvania. E. A. McCallum, San Francisco, covers the Northern half of California.

♦ ♦ ♦

Simeon Jester Jr., formerly with the sales department of the Philadelphia office of American Engineering Co., has been transferred to Chicago.

♦ ♦ ♦

Herman R. Brickle, formerly vice president, Fort Pitt Bridge Works, Pittsburgh, has been named president, succeeding Theodore A. Straub, who has resigned.



H. H. Morgan

Who has been elected vice president, American Society for Testing Materials, as announced in STEEL, July 5, page 28. Owing to a similarity in names, the portrait which STEEL presented in that issue was incorrect. Mr. Morgan is manager, rail and track fastenings department, Robert W. Hunt Co., Chicago, a company with which he has been associated since graduation from Lewis institute in 1904. He has long been active in A.S.T.M. work, since 1932 being chairman of committee A-1 on steel. From 1935 to 1937, he was a member of the executive committee. The vice presidency is for a two-year term

## Died:

EDWARD STECKEL KNISELY, 63, retired former vice president in charge of sales for Bethlehem Steel Co., in Johns Hopkins hospital, Baltimore, July 9. Mr. Knisely joined Bethlehem as an apprenticed machinist in 1890 at the age of 17, and spent almost 38 successive years with the company until his retirement in 1928. Entering the Pittsburgh sales office in 1904, he became western sales representative in 1908 and general manager of sales in 1915. He was appointed vice president in charge of sales in 1923 and held that post until his death.

♦ ♦ ♦

John Devine, 53, founder and president, Devine Pattern Works, West Allis, suburb of Milwaukee, July 1.

♦ ♦ ♦

E. D. McKenney, 59, traffic manager, Alabama By-Products Co., Birmingham, July 12, at Athens, Ala.

♦ ♦ ♦

R. E. LeMay, 48, chief mechanic, Fairfield plant, Tennessee Coal, Iron & Railroad Co., Birmingham, July 7.

♦ ♦ ♦

Richard Prosser, senior member, Thomas Prosser & Son, engineering and steel importing firm, 15 Gold street, New York, July 12, at Weekapaug, R. I.

♦ ♦ ♦

Samuel Poster, 74, former superintendent and for 47 years an employe of Lockhart Iron & Steel Co. Pittsburgh, July 8, in that city.

♦ ♦ ♦

Otto H. Warnock, 71, retired designing engineer for Westinghouse Electric & Mfg. Co., July 11 at his home in Larimer, Pa.

♦ ♦ ♦

Oliver J. Westcott, 68, president of the Westcott Engineering Co., Chicago, and a specialist in building and bridge construction, struck by lightning near McHenry, Ill., July 11. Mr. Westcott was associated with various steel producing and fabricating companies before going into business for himself in 1901.

♦ ♦ ♦

A. H. Schaffert, 65, chief consulting engineer, Truscon Steel Co., Youngstown, July 5, in Cleveland. Mr. Schaffert had been associated with Truscon since 1928, when he was appointed vice president and general plant manager. He was appointed chief consulting engineer after the recent merger with Republic Steel Corp.

# Activities of Steel Users and Makers

**L**EWIS FOUNDRY & MACHINE CO., Pittsburgh, subsidiary of Blaw-Knox Co., has enlarged its manufacturing facilities and increased its total floor space approximately 50 per cent. Additional, modern machinery being installed includes roll grinders, boring mills, and gear cutting machinery. A powdered coal fuel system, complete with automatic conveyor for carrying coal from storage bins to pulverizers, has been installed.

A separate power sub-station has been erected for electrical production in the event of an unexpected power shut-off.

♦ ♦ ♦

Atlantic Refining Co. has placed in operation at its Philadelphia refinery a plant to purify refinery gas by the new Koppers phenolate process. The plant was erected by the Koppers Co., Pittsburgh. A similar plant has just been completed for the Chartiers Oil Co., at Wayne, W. Va., to be placed in operation Aug. 1. The new plants recover hydrogen sulfide from natural gas and refinery gases, with purification efficiency from 95 to 99.8 per cent. The plant of the National Refining Co. will purify 22,000,000 cubic feet of gas daily.

♦ ♦ ♦

Alliance Porcelain Products Co., Alliance, O., recently began production of steel porcelain tubs. Officials stated orders already placed will keep the new department operating on a 24-hour basis until September.

♦ ♦ ♦

Snap-On Tool Co., Mt. Carmel, Ill., will start operations August 1 in its new plant which is now being completed. Machinery costing \$75,000 has been installed.

## U. S. Steel Modernization

(Concluded from Page 30)

of 884,600 tons in rated capacity of ingots and castings as of Jan. 1, 1937, as compared with the year previous, with a relative reduction in finished steel, the Steel corporation explained that this arose in part from dismantling of certain obsolete bessemer units no longer required, and to a considerable extent by changed operating practices in open-hearth furnaces necessitated by the proportionately larger volume of special and alloy steel now produced in place of ordinary steels.

Some of the principal properties

retired by the various subsidiaries since 1928, inclusive, are:

Carnegie Steel Co.—McCUTCHEON works, North side, Pittsburgh, 1928; Bellaire, O., plant; blast furnace No. 1, New Castle, Pa., 1929; Lower Union plant, Youngstown, O., 1931.

Illinois Steel Co.—Milwaukee blast furnace, 1928; two blast furnaces (out of four), Joliet, Ill., also at that point, and these latter replaced by modern installation, the Bessemer converters, blooming and billet mills, two merchant mills and two rod mills, 1936.

National Tube Co.—Riverside plant, Benwood, W. Va., (sold) 1928; six lap weld pipe mills discontinued at National works, McKeesport, Pa.; also two at Lorain, O., 1929; and Pennsylvania and Republic departments of Pittsburgh works, 1934.

American Steel & Wire Co.—Neville blast furnace (sold), 1928; Salem, O., plant, 1929; Braddock, Pa., works, 1931; Newburgh Steel Works, Cleveland, and certain of the Central Blast furnaces, Cleveland, 1935; Farrel, Pa., wire works; rod mill and boiler plant, Rankin, Pa.; two strip mills at Cuyahoga works, Cleveland, 1936.

American Sheet & Tin Plate Co.—Pittsburgh works, New Kensington, Pa., and Old Meadows works, Scott-

dale, Pa., 1928; Chester, W. Va., works; Aetna-Standard works, Bridgeport, O.; Pennsylvania works, New Kensington, Pa., and Leechburg, Pa., works, 1931; two sheet mills at New Philadelphia, O., and Wellsville, O., 1934; steel works and blast furnaces, New Castle, Pa., Dover works, Canal Dover, O., and facilities at Gary, Ind., being replaced by continuous strip mills and cold reduction processes, 1935.

American Bridge Co.—St. Louis plant (sold), 1928, Lassig plant, Chicago, 1929; Canton, O., works, 1931; and American works, Chicago, 1936.

Tennessee Coal, Iron & Railroad Co.—Alice blast furnace, Birmingham, Ala., and Linn Iron works, 1928; blast furnaces No. 1 and No. 2, Bessemer, Ala., car works, Fairfield, Ala., (sold), 1929.

Minnesota Steel Co.—One blast furnace and five open hearths (out of 10), Duluth, 1935.

## Funds Still Unexpended

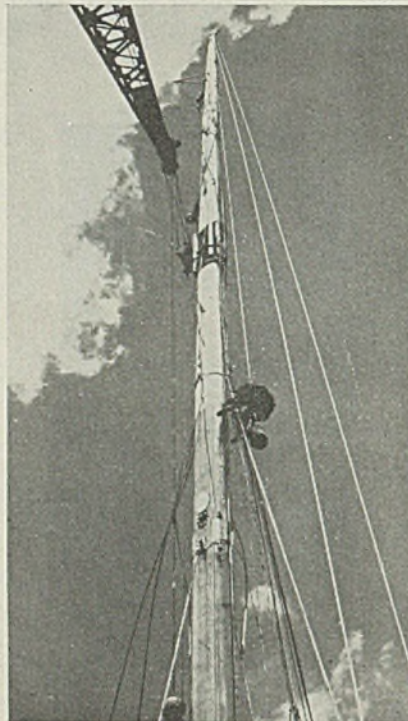
As indicated much rehabilitation work remains. At the close of last year a balance on authorized appropriations of \$96,000,000, was unexpended and within less than a month later an additional \$60,000,000 was appropriated, this being for the Irvin works and the slabbing mill at the Edgar Thomson works in the Pittsburgh district. This brought the total of unexpended appropriations of \$157,000,000 up to more than \$9,000,000 above the balance unexpended at the close of 1929 of \$147,870,000, believed to be the highest at the end of any one year since the program was undertaken.

No further appropriations have been announced, although such may be a possibility, for investigations and studies, which have been going on and in which Ford, Bacon & Davis Inc., New York, have been co-operating with the Steel corporation management for some months past, are not likely to be completed before October of this year.

Meanwhile, in addition to the Irvin and Edgar Thomson developments in the Pittsburgh district, other work in progress includes the 84-inch 3-high finishing mill for stainless steel plate and wide sheets at Woods, Pa.; by-products coke works and distillates plant at Clairton, Pa.; 5-stand tandem cold-reduction mill for tin plate at Gary and a number of other activities, all for Carnegie-Illinois Steel Corp.

American Steel & Wire Co. has a special type cold-reduction mill under construction at its Cuyahoga works, and Tennessee company the large program previously referred to, involving two rolling mills to supply steel for a continuous strip mill, two continuous cold-rolling mills for producing light gage plate for deep drawing, and tinning department,

## Cup Defender Has Welded Mast



*FINISHING* the 165-foot arc welding duralumin mast of the cup defender RANGER. Fabrication features of the yacht will be described in STEEL shortly. Photo courtesy Lincoln Electric Co.



# Decline in Foundry List Slows Up

UNITED STATES now has 5001 foundries and Canada 463. For the United States this is a decline of 72 and for Canada a loss of seven from 1935. The figures are compiled by *The Foundry* for revision of *Penton's Foundry List*.

The decrease in total number is attributed to a continuation of depression influences. In the past two years the loss has averaged nearly 40 a year, compared to 74 a year for the preceding five years.

Current statistics indicate substantial improvement. During the past two years many new foundries have been placed in operation. Also the tendency toward mass production has resulted in larger units and increased capacity. The yearly loss shown in the 1937 survey is less than half that reported in any other 12 months during the boom and depression periods.

In the United States slight decreases were noted in all classifications except exclusively nonferrous foundries which increased from 1277 to 1311. A summary follows:

	United States		Canada	
	1937	1935	1937	1935
Gray Iron	3070	3208	356	365
Malleable	138	147	12	12
Steel	283	316	28	24
Nonferrous				
(exclusive)	1311	1277	81	79
Nonferrous				
(depts. of gray iron, steel, mall.)	1224	1292	206	207
Aluminum	2112	2157	285	231
Total*	5001	5073	463	470

\*Adjusted for overlapping.

Ten states show an increase over 1935 in number of foundries. Wisconsin leads with a gain of 62 and California is second with 25. However, relative positions of leading foundry states are unchanged. The states with more than 100 are:

Standing	1937	1935
1 Pennsylvania	591	610
2 Ohio	533	555
3 New York	416	432
4 Illinois	386	392
5 Michigan	324	327
6 California	294	269
7 Wisconsin	289	227
8 Massachusetts	210	225
9 Indiana	206	220
10 New Jersey	184	194
11 Connecticut	122	135
12 Missouri	111	109

Chicago continues to lead cities with a total of 163. Los Angeles replaces Cleveland in second place, Cleveland dropping to third. St. Louis moves into ninth place. The leading 10 cities:

	1937	1935
1 Chicago	163	158
2 Los Angeles	115	99
3 Cleveland	113	113
4 New York	100	101
5 Detroit	94	93
6 Milwaukee and West Allis	82	85
7 Philadelphia	76	78
8 Boston (Greater Boston)	59	55
9 St. Louis	58	52
10 Cincinnati	55	53

## Finds American Methods Benefit Foreign Industry

How the continuous rolling process has revolutionized the steel industry in Europe was related by Charles R. Hook, president, the American Rolling Mill Co., when he was welcomed home from a foreign business trip by 5000 employees, families and friends at Armco field, Middletown, O., July 10.

New methods of manufacturing

are being taught in European mills by men who learned the steel business in the company's plants, where the continuous rolling process was developed, he said.

"These boys have gone into countries where the art of sheet rolling originated many years ago—countries where for years the secrets of the business were passed on from father to son—and are teaching them the new methods of manufacturing."

Mr. Hook cited comparative earnings of American and foreign steel workers, showing the American employes receive 2½ to 7 times more.

Other speakers at the "welcome-home" celebration, planned by employe representatives, were: L. F. Reinartz, works manager at Middletown East works; William Stringham, assistant vice president, who discussed the company's Australian development; and Dan Cummings, vice chairman, East works employe representatives, who read an address written by George M. Verity, chairman.

## June Machine Tool Orders Lag Behind May, April

Machine tool orders in June fell below those of May and the peak month of April, according to the National Machine Tool Builders association, Cleveland. The association's index dropped 8 per cent from 208.5 for May to 191.8. In April the index was 282.5. For three months the average was 227.6.

Recession occurred in domestic business, this index dropping from 161.4 to 137.6. Foreign orders increased from 47.1 to 54.2.

The association interprets the June decline as a natural reaction from the unusually high volume of April and points out the recession trend is similar to that occurring in January and February following a high volume in December.

## Allis-Chalmers Expansion To Cost Over \$3,000,000

Allis-Chalmers Mfg. Co., Milwaukee, has definitely decided to spend \$3,000,000 to \$4,000,000 for plant expansion and improvements this year, Max W. Babb, president, announced last week. The separate projects include reconditioning the boiler house at the main works at West Allis, Milwaukee, at a cost of \$800,000; enlarging the agricultural tool plant at La Crosse, Wis., at a cost of \$1,000,000; and an addition costing between \$1,000,000 and \$2,000,000 to the farm tractor plant at West Allis. William Watson is vice president in charge of works.

### Exhibit Depicts Benefits of Machine Tools



NATIONAL MACHINE TOOL BUILDERS ASSOCIATION'S exhibit at the Great Lakes exposition, Cleveland, graphically depicts how machine tools serve the average man. Three large dioramas, two animated charts and four panel murals illustrate benefits to recreation, agriculture, the home, employment conditions and wages, purchasing power, education, transportation and manufacture



# PROFITABLE USE IN TOOL ROOMS

A BATTERY OF VERTICAL TURRET LATHES IS USED CONSTANTLY IN THE TOOL ROOM OF THE BULLARD COMPANY, FOR FAST ACCURATE MACHINING OF ODD JOB WORK SUCH AS JIGS, FIXTURES, ETC. EASE OF CHANGE-OVER FROM JOB TO JOB, EXTREME RIGIDITY, MACHINING TO DECIMAL LIMITS, AND FULLEST USE OF MODERN CUTTING TOOLS MINIMIZES IDLE TIME AND INCREASES RESULTANT SAVINGS —

THE BULLARD COMPANY . . . BRIDGEPORT, CONN.



# MIRRORS OF MOTORDOM

**V**ACATION season is now in full swing here and nearly all office forces are operating on reduced schedules throughout July and August. Last Friday, the Ford Rouge plant and two-score other Ford plants and branches throughout the country closed for the so-called "annual inventory and vacation period." Employees will be called back Aug. 9 for resuming production on 1937 models. In the meantime, preliminary work will have been completed for switching over to new models which probably will be ready for display early in September.

The shutdown at Ford will not affect blast furnaces, coke ovens, cement plant, open hearth, merchant mill and cold-finishing mill, glass plant or paper mill. In addition, the jobbing foundry, patternshop, tool-room, blacksmith shop and engineering departments all will remain on full time, while a number of other departments will be obliged to work part time during the vacation period to maintain schedules.

## Ford Passes Million Mark

Best estimates on how many more of this year's V-8s will be built place the figure at around 150,000, based on material now contracted for. At a rate of 6000 per day, this would call for 25 more days on 1937 models.

About ten days ago, Ford turned out the one-millionth V-8 to be built in this country during the current production season, which brought the total of Ford cars built since 1903 to more than 25,000,000. Ford production in Canada for the current season is upward of 60,000, while Lincoln and Lincoln Zephyr production for 1937 is close to 29,000. Ford manufactured 1,000,000 cars and trucks within 8½ months, the first of the present series appearing in October of last year.

A number of refinements are being planned for next year's Lincoln Zephyr. Wheelbase will be about 3 inches longer. Hypoid gears will be

BY A. H. ALLEN  
*Detroit Editor, STEEL*

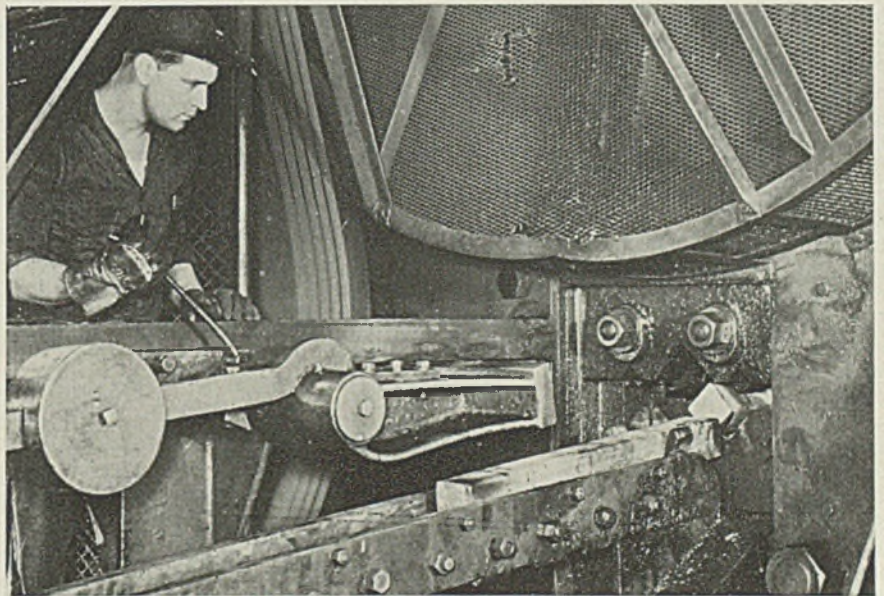
used in the differential, to eliminate the driveshaft tunnel which obstructs the floor in present models. It is also understood the motor will embody several changes, chief of which concerns the adoption of hydraulic tappets, used in the present engine of the large Lincoln. These tappets make for a quieter engine by providing automatic takeup on the tappets, and are reported to reduce gasoline consumption. Cadillac also uses them.

**S**PURRED by the success which Hudson has experienced with its "electric hand" type of automatic

transmission, and with the favorable reception accorded Oldsmobile's new automatic transmission, at least two other car builders are reported ready to announce availability of the "electric hand" on new models. This device is a product of Bendix, which Hudson was licensed to use for the first year and which currently Hudson is furnishing on about 50 per cent of its production. Chief advantage of this type of transmission is that it does not run up production costs excessively and at the same time represents an additional sales feature.

More and more it appears automobile executives are concentrating on holding down production costs on new models, and it would not be surprising if new models carried no increase in list prices. General thinking has been that a 10 per cent

## Slices 5x5-inch Billets for Crankshafts



**E**LECTRICALLY-DRIVEN billet shears of 1250-ton capacity are operated in the forge plant of Buick at Flint, Mich., to crop cold 5 x 5-inch billets into 37-inch lengths for crankshafts. Bars in 15-foot lengths are supplied to an automatic conveyor which feeds to the shears. Crankshaft blanks weigh 166 pounds



## MIRRORS OF MOTORDOM

markup was in prospect, but there is good basis for the belief these increases will be scotched by careful scrutiny of all costs, with the elimination of some gadgets and accessories. In planning new models, each builder is now hoping the rest will increase their prices, while he continues on the present figures. The result obviously will be that all prices remain unchanged. There is more behind present widespread warnings of higher prices than just a desire to inform the public in advance.

**E**QUIPMENT interests still find deliveries one of their most harassing problems. For example, a new motor parts plant now being built in the Buffalo district will engage the entire lathe-building capacity of a certain machine tool builder up to March of 1938. Such choking of productive capacity makes the work of the equipment salesman doubly difficult, no matter how many prospects for machinery buying he may line up—and there is more than one automobile plant confronted with the urgent need for replacing obsolete and inefficient machines before many more months pass.

Blue pencils have been going over layouts of the new Ternstedt plant which GM is building at Trenton, N. J., eliminating a machine here and there and in general further consolidating the facilities. Originally the new plant was estimated to provide about 35 per cent of the capacity of the Detroit Ternstedt plant. This figure has now been trimmed to some 20 per cent, although the estimate is not final.

Large numbers of tools and dies for the eastern division of Ternstedt are now in process in plants here, indicating changes have been made in the original plans to have a fair capacity for the production of tools and dies at the plant in New Jersey.

Some observers, speculating on the sudden flocking to New Jersey of General Motors divisions (STEEL, July 12), are inclined to credit the move in part to the favorable attitude of the state political machine, particularly of the Jersey City group. Composed of Democrats of long standing, the organization nevertheless is said to understand prob-

### Automobile Production

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

	1935	1936	1937
Jan.....	300,335	377,244	399,634
Feb.....	350,346	300,810	383,698
March....	447,894	438,943	518,977
April.....	477,059	527,625	553,415
May.....	381,809	480,518	540,357
5 Mos. ...	1,957,443	2,125,140	2,396,081
June ....	372,085	469,368	†477,200
July.....	35,297	451,206	.....
Aug.....	245,075	275,934	.....
Sept.....	92,728	139,820	.....
Oct.....	280,316	230,049	.....
Nov.....	408,550	405,799	.....
Dec.....	418,317	519,121	.....
Year ....	4,119,811	4,616,437	.....

Estimated by *Ward's Automotive Reports*

Week ended:		
June 19 .....	111,620	
June 26 .....	121,032	
July 3 .....	122,890	
July 10 .....	100,981	
July 17 .....	115,380	
Week ending		
	July 17	July 10
General Motors ...	49,840	40,091
Ford .....	26,655	27,172
Chrysler .....	26,300	21,050
All others .....	12,585	12,668
†Estimated.		

lems of large business, and to welcome new enterprises.

Naturally, in addition to this, is the proximity of the large Baltimore Chevrolet plant which requires a steady flow of parts, plus the competitive angle furnished by the Ford assembly plant at Harrison, N. J.

Packard is taking figures on a considerable volume of equipment, for its forge shop where rearrangement and additions will be effected shortly. This is about the only large equipment program now up for consideration.

**R**ETAIL sales are exhibiting unmistakable signs of tapering in some localities, which possibly forecasts further shutdowns for changeovers to new models in the next month. Most General Motors divisions, however, report production schedules well up toward the peak. Olds, for example, plans to close down its motor department for only two days in the changeover, just long enough to insure complete

cleaning up of parts on the 1937 jobs.

Chrysler divisions are about in the same boat and no protracted closings are now in prospect. Nearly all producers have made some releases on new models, and steel shipments to more than one builder have been going forward in increasing volume.

Looking back over monthly sales figures for the past 2½ years, *Ward's Automotive Reports* notes that General Motors divisions have averaged 39.80 per cent of the total: Chrysler 24.32 per cent; Ford 26.31 per cent; and all others 9.57 per cent. Thus it is seen that the "big three" account for more than 90 per cent of all car sales. General Motors' share has run as high as 44.91 per cent, and as low—during the strike in February—as 24.53 per cent. The range on Chrysler is from 33.16 per cent to a low of 17.10 per cent, the latter in April of this year when the Chrysler strike was in process. Ford sales fall between a high of 38.14 per cent in February of 1935 and a low of 13.14 per cent last November.

**R**UMORS are cropping up in certain sections of the country concerning deliberate sabotage of new cars as an outgrowth of the labor troubles which various producers have gone through. These wild stories range from reports of a cracked motor block filled with solder and painted over, to the placing of stray wires under gaskets, and omission of minor parts, but it is practically unanimous opinion here that such practices would be impossible in any automobile plant today, with its full complement of inspectors who carefully check every part going into a new car. Furthermore, workmen well realize any slips which they make and which are undetected simply make their jobs that much more insecure.

Manager of a small manufacturing plant near Detroit found himself with enough business to keep his force busy 48 hours a week, but there was not enough profit in the business to pay the time-and-a-half rate for the 8 hours extra over the 40-hour week specified in his agreement with his men.

Resolving to put the problem to the men, he placed a large blackboard in a conspicuous place and posted a notice asking any men who wanted to work 48 hours weekly at the regular rate to sign their names.

For two days the board remained blank, but on the third day, after a few men had signed, the entire force followed suit, with the result the plant is now accommodating the additional business, and the men are earning an additional 20 per cent.



# WINDOWS OF WASHINGTON

WASHINGTON

**N**OBODY knows just where congress is going these days, not even its leaders. This is due largely to the situation in the senate committee discussing the court reform bill. However, the legislative situation has grown so bad in the upper house that committees have not been able to make even routine reports.

This condition applies to the new hours and wages bill. Although the labor committee took action on this some time ago it has not been able to report the bill because of the tense situation in the senate.

The senate dentists, in the shape of the committee on education and labor, have just pulled nearly all the teeth of the Black hours and wages bill. Most of the extravagant powers which would have been delegated to the new labor board, and about which both industry and labor complained, have been taken out as it is proposed to report the bill.

## Board Shorn of Power

Nearly all the discretionary powers which had been vested in the proposed new board were taken out of the bill. At the same time, Senator Black, originator of the bill with the late Representative Connelly of the house, is urging that it be passed at the present session.

While details of the committee action were not available at the time, attention was called in these columns last week that the committee had put back the 40-40 provisions, as originally suggested by the President, that is 40 cents per hour as a minimum wage and 40 hours per week as a maximum work week.

In the bill as passed on by the committee, definitions of "labor organization" and "labor dispute" were omitted. The committee also completely revamped sections 4 and 5, to which so much objection was made, and incorporated the unobjected matter into a new section 4, containing the body of an amendment suggested by Senator Walsh, Massachusetts, the essence of which seeks the elimination of substandard

BY L. M. LAMM  
*Washington Editor, STEEL*

wages and hours from interstate industry. In fear that such an abrupt change might do serious injury to industry and workers alike, the bill will seek its results "cautiously, carefully and without disturbance or dislocation," through a policy of open hearings before the new labor standards board.

In connection with this bill it is interesting to note that Senator Robinson, late majority leader, told newsmen last week that consideration of the bill at the present session is very unlikely. On this subject, there is a general opinion among Washington observers that there will probably be a stoppage of administration legislative matters until after the Supreme Court revamping plan has been finally settled.

One of the interesting features of the new hours and wages bill enables the United States tariff commission to investigate the difference in cost of production between domestic articles and similar foreign articles, resulting from the operation of the statute, with the view to determining whether duties should be increased to equalize such differences.

There is also a provision in the bill which in effect would amend the Walsh-Healey government contract act to make subject to that statute every government contract in excess of \$2000. It will be recalled that at present the starting point is \$10,000.

## Robinson Death a Handicap

Washington was shocked last week by the death of Senator Joseph T. Robinson, majority leader of the upper house. There is no question that the senator from Arkansas had carried the bulk of the legislative load for the White House, not only during the present session of congress but practically since the pres-

ent administration has been in power.

There was the greatest speculation as to what would become of the court plan, with most of those guessing that the President would insist on continuing his program. There is bound to be some letup in the legislative pressure, however, because Senator Robinson had the whole situation at his fingers' ends and he knew just what would be done under all conditions. It will not be an easy task for the President to find someone to fill the shoes of Mr. Robinson, who has frequently taken the raps for the President on legislative matters during the past five years.

The house committee on interstate commerce has completed its work on the Lea bill, which would broaden the powers of the federal trade commission and the committee has taken its final vote. However, it has not yet been reported out because of fear of criticism by Representative Lea for not having made any move on the food bills now pending before this committee. Some gestures have now been made in that direction, with the result that the Lea trade commission bill will probably be reported soon.

## NAVY YARDS MAY TAKE OVER MUCH SHIPBUILDING

President Roosevelt had a long conference last week with Assistant Secretary of the Navy Edison in connection with the capacity of navy yards for shipbuilding of various kinds. At a press conference following his talk with Secretary Edison, the President stated that he believed the country is in for a shipbuilding boom in the near future.

A survey is being made at the request of the President, not only of navy but private ship yards, for the building of navy auxiliary ships and for merchant ships as well. In this connection also a survey is being made of the navy yards at Boston, Philadelphia, Norfolk, Charleston and New Orleans with especial reference to the possibility of building

new ways and buying new machine tools. It is essential, the Chief Executive told the press, to increase American shipbuilding capacity. There is a possibility also, he stated, in answer to a question, that abandoned yards may be brought back into production if that is found feasible.

Mr. Roosevelt also called attention to the fact that there is a chance that navy yards may be building ships for other government departments in the future instead of having them built in private yards. He feels that the present law can be readily construed in that manner, he stated.

#### **MONEY RAISING TACTICS CALLED CORRUPT PRACTICE**

For some weeks there have been rumblings on Capitol Hill of the way in which the democratic national committee is raising funds through forced sales to corporations of President Roosevelt's personally autographed edition of the democratic campaign yearbook at \$250 per copy. This culminated last week by introduction in the house of a resolution by Bertrand Snell, New York, minority leader of the lower body of congress, asking for an investigation.

Snell charged that lists of many corporations selling supplies of all kinds to the government have been furnished to the democratic committee by various government departments.

In a statement on the floor of the house last week, when introducing his resolution, Snell charged that he knew of at least one corporation who had complained to a district attorney about the matter but that nothing had been done about the complaint.

In his charge to the house the minority leader said that the question involves "a clear violation of the federal corrupt practices act." A section of this act, he contended, "expressly declares it unlawful for 'any corporation whatever' to make a contribution to any campaign involving presidential electors."

This matter has been discussed for some weeks around Washington but it was brought to a definite head last week by the Snell charges and his assertion that he has definite information to back them up.

#### **SCRAP EXPORT BILL MAY INCLUDE STEEL PRODUCTS**

All routine government reports asked for by the house and senate military affairs committees in connection with bills calling for prohibition of iron and steel scrap exports except under license are now in the hands of these committees.

Officials of the two committees

stated last week that they had no idea when hearings would be held and no definite decision has apparently been made that hearings will be held. This applies especially to the situation in the house.

In connection with these scrap bills it is understood that Representative Kopplemann, Connecticut, intends to amend his iron and steel scrap prohibition bill by writing another bill which will include a prohibition on the export of several other commodities, which he refuses to discuss at this time. It has been stated that the bill might contain some finished steel products and nonferrous metals but he contends that he has not completed the preliminary work he wants to do before writing the bill.

#### **THINK PRESIDENT AND CIO HAVE DRIFTED FAR APART**

Much speculation continues here in connection with the alleged break between the President and John L. Lewis, in spite of the fact that the President at a recent news conference refused to discuss the matter on the basis that it was too silly to even talk about.

Many Washington newsmen who do not see eye to eye with the President, and there are many of them, refuse to take the President's words as meaning that there has been no break. It was more in how the President made his reply to the question than what he actually said that still has Washington commentators wondering just what the situation is.

Of course in the CIO camp Mr. Roosevelt's refusal to discuss the alleged break was interpreted as meaning that there had been no break and officials of that organization were not backward in pointing this out to inquirers.

Those in the opposite camp interpret the fact that the President would not discuss the news question as evidence that he did not mean what he did not actually say but that he actually did mean what he said in quoting Shakespeare on "a plague on both your houses." As pointed out in this column a couple of weeks ago, this must have been meant more for labor than industry because the President had already said all that he had to say against industrialists when he stated some weeks ago, referring to the Republic Steel problem, that he could not see why anyone who made a verbal contract would not make a written one.

In addition to the White House side of the matter, Madam Perkins of the labor department had her say about sit down strikes for the first time, declaring they are not suited to the United States and Secretary Roper of the commerce de-

partment declared against violence in strikes. All these things taken together by Washington observers are believed to mean something.

Attention has been called also to the fact that in addition to these things the President discussed at a semiweekly news conference the government labor situation at some length. He did state definitely that government employes could not be prevented from joining a union but on the other hand he was very definite in stating that the government would not discuss government wages with any union and would not indulge in any collective bargaining.

National Association of Manufacturers approved the President's comments and asks that provision be made in the national labor relations act to prohibit strikes against or picketing of government agencies. This was discussed in the senate hearing before the bill was passed but was not included.

On top of all this is the interesting fact that John Lewis has not been a recent visitor to the White House and while he may have made some White House contacts it is interesting to note that up to a few weeks ago he was seen at the executive offices quite frequently. All of this has led to much speculation by those watching union events.

#### **EXPORT-IMPORT BANK MAY AID CHINESE BUYING**

Discussions were held here last week between H. H. Kung, Chinese finance minister, and Jesse H. Jones, chairman of the export-import bank, on financing Chinese purchases in the United States of railroad and textile equipment. Mr. Jones stated, following the conferences, that probably arrangements would be made whereby the bank would make credit advances to finance such orders. This is a suggestion that was made a couple of years ago by Julian Arnold, veteran commercial attache to Shanghai, when he made a short visit to the United States. He urged then that some kind of credit be arranged to finance exports of this machinery and equipment for which there is said to be a large market in China.

#### **TIN SCRAP QUOTA RAISED**

Additional allotments amounting to 3656 long tons of tin plate scrap have been assigned to five producers of that commodity, according to an announcement by the state department.

This is in accordance with provisions of a statement made by the department in December and makes a total of 23,847 long tons which have been assigned to 51 producers for export, subject to license, during present calendar year.

## Trend in Productive Capacity Again Is Pointed Upward

**R**ECENT surveys of the nation's facilities for producing iron and steel indicate that industry is beginning to make noticeable progress in adjusting plant and equipment to post-depression conditions.

The American Iron and Steel institute reports that the total annual ingot capacity of the United States as of July 1, 1937, was 69,534,194 gross tons, a gain of 289,500 over the 69,244,694 gross tons of capacity reported as of Dec. 31, 1936. At the same time the institute stated that the annual capacity of blast furnaces had increased from 49,604,737 to 49,819,737 gross tons in the same period.

These figures represent the first positive gains in primary capacity since the depth of the depression. Steel ingot capacity declined in 1932 and 1933, gained slightly in 1934, and receded again in 1935 and 1936. Blast furnace capacity declined in 1931 and 1932, gained in 1933 and receded in 1934, 1935 and 1936.

In view of this record during the depression period, the addition of 289,500 gross tons to the annual capacity of ingots and of 215,000 to that of pig iron—all within a brief period of six months—is significant.

### Foundry Industry Stabilizing and Upward Trend Is Resumed as Mass Production Tendency Grows

A somewhat similar picture is presented of the foundry industry by statistics compiled from the 1937-1938 edition of *Penton's Foundry List*, which is just off the press. The survey shows that the total number of foundries in the United States and Canada declined from 5543 in 1935 to 5464 in 1936. The fact that this recession amounts to only 1.4 per cent, coupled with other data gathered in preparing the new list of foundries, indicates that the downward trend in number of establishments has been checked. Also the tendency toward mass production has developed an increase in the number of large-production foundries. It is apparent, therefore, that the foundry industry is becoming stabilized numerically and that the trend of capacity again is pointed upward.

Comparisons of foundries according to classifications reveal marked differences in the two-year period. From 1935 to 1937 the number of gray iron foundries declined from 3573 to 3426, of steel foundries from 340 to 311, and of malleable iron foundries from 159 to 150. Electric steel foundries increased from 224 to

228 and establishments engaged exclusively on non-ferrous castings gained from 1356 to 1392. However, nonferrous departments of other shops declined from 1499 to 1430 and the total for all nonferrous was down from 2855 to 2822. Aluminum foundries increased from 2388 to 2397, permanent mold foundries from 86 to 152, die casting plants from 92 to 97.

The adjustments to changed conditions reflected by these surveys represent a fair degree of rehabilitation and modernization of plant and equipment plus a limited amount of new construction or expansion. To anyone familiar with the spurts of activity in the establishment of new facilities in the recovery periods of previous depressions, the cautious manner in which industry has approached the idea of expansion during the past few years is a grim reminder that conditions today are far different from those in previous post depression periods.

### Burden of Taxes Heavy Enough While Social Reform Legislation Complicates Management Problem

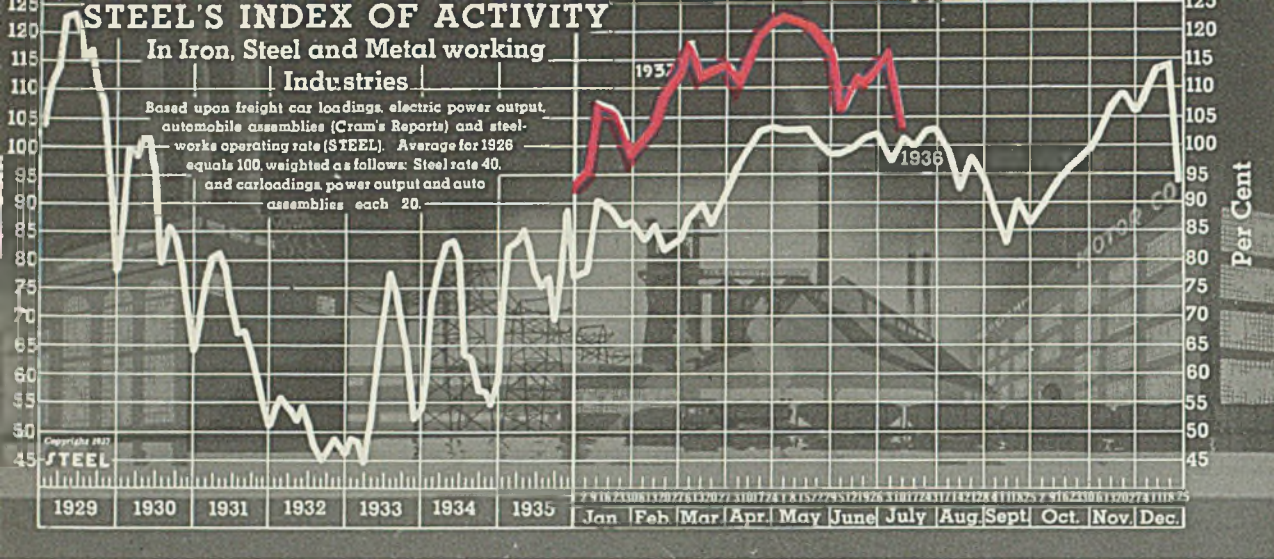
For instance, under the old order the principal factor to be considered in the recovery period was the temporary unduly heavy burden of taxes. Social and economic reforms usually were discussed in and out of congress, but they never assumed the status of a real threat to business.

In sharp contrast, management today is confronted not only with an unprecedented crisis in federal government finance, which undoubtedly means high taxes or worse, but also with many laws—passed or contemplated—which have or threaten to have a direct bearing upon management's ability to operate new plant and equipment profitably.

Certain legislation—such as the current Black-Connery bill for regulating hours, wages and working conditions—if passed, might easily be the determining factor as to whether a contemplated addition to capacity should be in the North or South, or in an urban or rural community.

Other laws, particularly the recent tax laws, influence the manner in which new facilities shall be sponsored. Whether a new plant be erected by an existing company or whether a new company be formed to operate it is a question not easily answered until the pattern of current legislation is clearer.

The thousand-and-one uncertainties of today undoubtedly have curtailed the volume of expansion thus far in the present recovery period. Probably industry has gained some slight advantage in that expansion has not run away with itself as on some previous occasions. On the other hand, it has lost the great value of the old order of economic progress, whereby legitimate expansion automatically weeded out obsolete, high-cost production facilities.



The

STEEL'S index of activity declined 11.5 points to 103.8 in the week ending July 10:

Week ending	1937	1936	1935	1934	1933	1932	1931	1930
May 15	123.2	103.1	80.5	82.4	65.2	54.3	78.7	102.5
May 22	122.2	100.4	82.8	81.9	66.1	55.1	78.3	102.3
May 29	115.6	98.6	71.9	75.7	65.3	54.2	75.7	94.9
June 5	105.1	98.8	79.3	82.3	69.9	51.0	73.5	97.9
June 12	111.4	99.4	80.0	83.6	72.1	51.1	73.2	96.2
June 19	110.3	101.0	77.3	81.8	73.9	51.8	70.9	95.0
June 26	112.8†	101.9	78.4	79.4	77.0	51.6	70.6	94.0
July 3	115.3†	97.5	64.1	52.3	71.4	49.2	64.1	75.0
July 10	103.8*	100.9	76.5	67.8	79.1	41.7	69.4	86.9

\*Preliminary. †Revised.

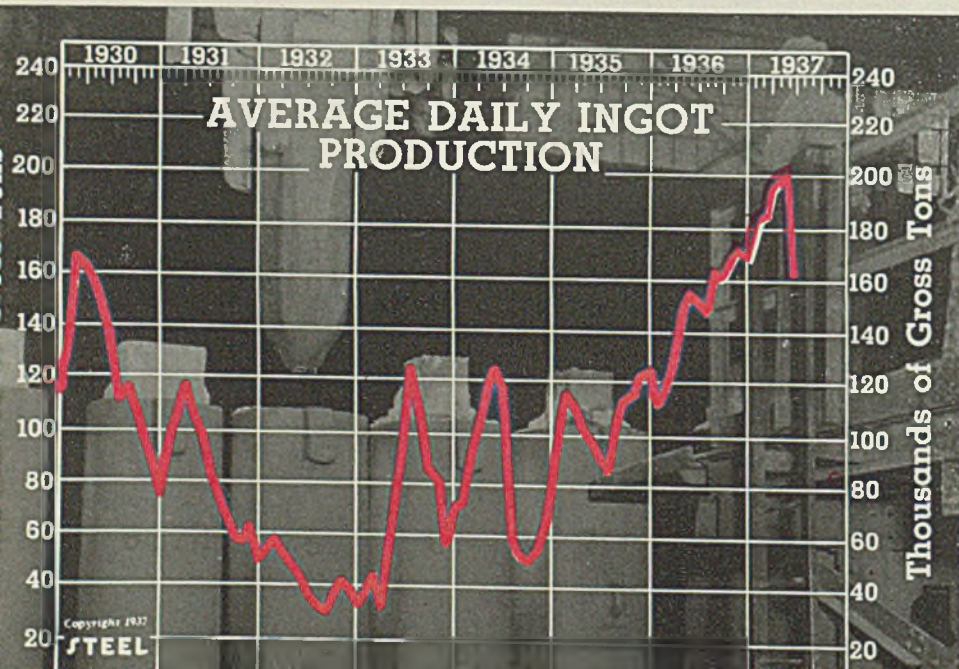
## Outlook for Activity in July And August Is Brighter

INDICATIONS of a fairly strong business situation over the remainder of July tend to minimize the significance of the drop in the rate of industrial activity registered in the week ending July 10. STEEL'S index for that week stood at 103.8, a recession of 11.5 points from the preceding week caused almost entirely by the interruption caused by the observance of Independence day.

Freight car loadings, steelworks operations, electric

power output and automobile output all reflected the holiday factor, but the drop in motor car and steel production was less pronounced than the loss in freight traffic and power output. This was due to the fact that steelworks operations and automobile production had been below normal on account of labor trouble. Now that most of the idle plants have resumed operations, the rebound in the steel operating rate will be abnormally high for a post-holiday week.

With steel operations again above the 80 per cent mark, the automobile industry preparing for new models and car loadings and power output holding steady at pre-holiday levels, the outlook for the remainder of July and early August is more encouraging than it was several weeks ago.



	Gross Tons		
	1937	1936	1935
Jan.	182,181	112,813	106,302
Feb.	184,361	118,577	115,595
March	193,209	128,576	110,204
April	195,072	151,625	101,562
May	198,213	155,625	97,543
June	160,914	153,263	90,347
July		150,874	87,224
Aug.		161,351	107,997
Sept.		160,043	113,000
Oct.		168,333	116,398
Nov.		173,496	121,170
Dec.		170,448	122,936



# BUSINESS TREND

## Class I Railroads Earn 2.73 Per Cent in First Five Months

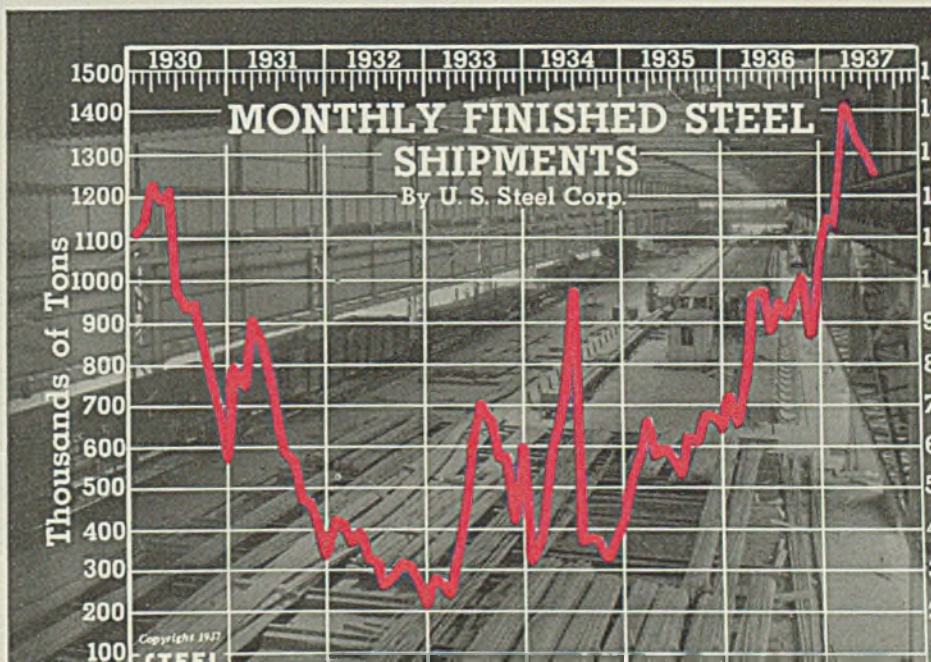
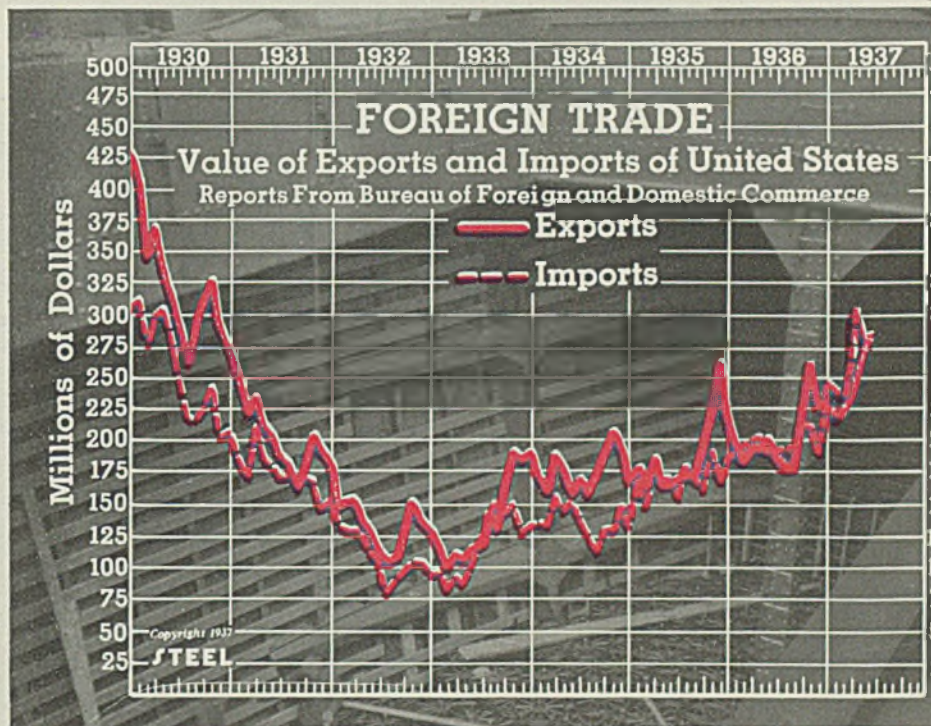
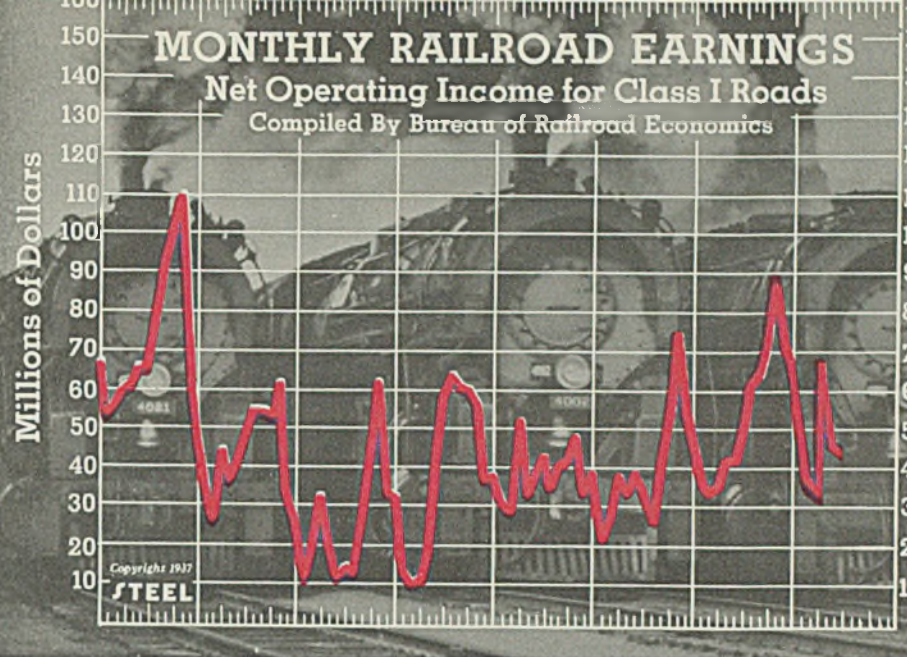
	1937	1936	1935
Jan. . . . .	\$38,436,679	\$35,728,532	\$21,934,645
Feb. . . . .	38,358,638	33,594,718	26,296,411
March. . . . .	69,379,328	35,205,513	38,129,871
April. . . . .	47,807,447	41,493,455	34,708,718
May. . . . .	43,662,959	41,797,047	39,598,511
June . . . . .	50,312,580	50,312,580	34,102,703
July. . . . .	61,773,765	61,773,765	26,919,343
Aug. . . . .	64,680,717	64,680,717	42,156,706
Sept. . . . .	70,166,026	70,166,026	57,349,265
Oct. . . . .	89,851,409	89,851,409	75,454,501
Nov. . . . .	72,410,571	72,410,571	54,224,290
Dec. . . . .	70,519,601	70,519,601	46,020,695

## May Registers First Favorable Trade Balance this Year

	Dollars (000 omitted)			
	1937		1936	
	Exports	Imports	Exports	Imports
Jan. . . . .	221,550	240,396	198,654	187,482
Feb. . . . .	232,504	277,805	182,024	192,774
March . . . . .	256,390	306,699	194,790	198,686
April . . . . .	269,171	287,252	192,795	202,779
May . . . . .	288,924	285,038	201,042	191,110
June . . . . .	.....	.....	185,188	192,233
July . . . . .	.....	.....	178,324	193,409
Aug. . . . .	.....	.....	178,249	195,016
Sept. . . . .	.....	.....	219,976	215,525
Oct. . . . .	.....	.....	264,708	212,001
Nov. . . . .	.....	.....	225,766	196,423
Dec. . . . .	.....	.....	229,739	244,321

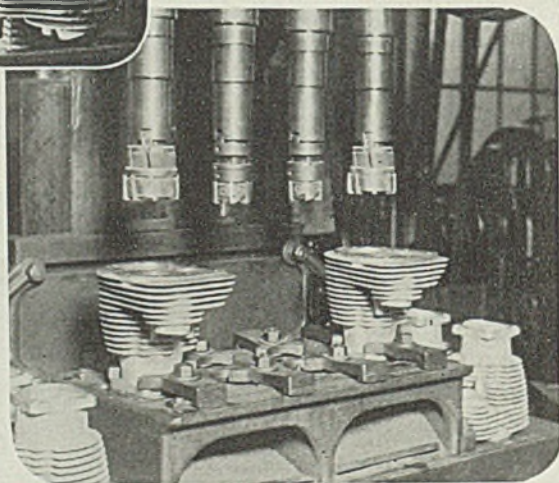
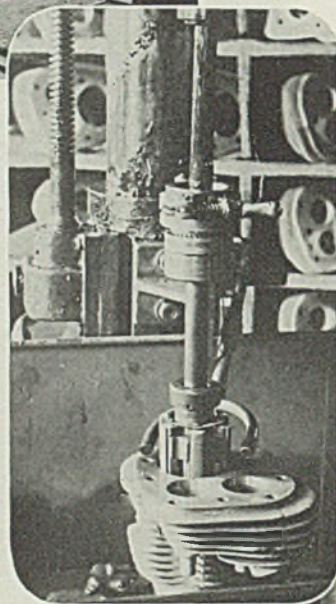
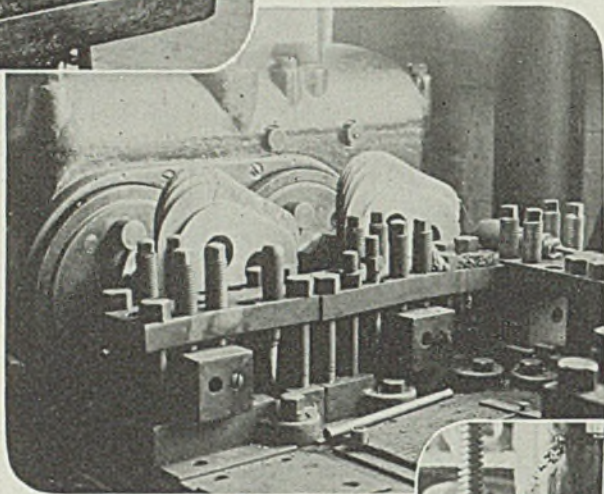
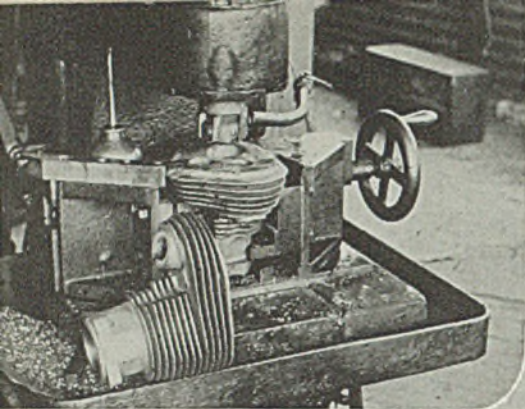
## Finished Steel Shipments Off Sharply in June

	Gross Tons		
	1937	1936	1935
Jan. . . . .	1,149,918	721,414	534,055
Feb. . . . .	1,133,724	676,315	583,137
March . . . . .	1,414,399	783,552	668,056
April. . . . .	1,343,644	979,907	591,728
May . . . . .	1,304,039	984,087	598,915
June . . . . .	1,268,550	886,065	578,108
July . . . . .	.....	950,851	547,794
Aug. . . . .	.....	923,703	624,497
Sept. . . . .	.....	961,803	614,933
Oct. . . . .	.....	1,007,417	686,741
Nov. . . . .	.....	882,643	681,820
Dec. . . . .	.....	1,067,365	661,365



# Machine Operations on

BY FRED B. JACOBS



(From top to bottom)—  
Fig. 1—Rough boring a cylinder on a single-spindle drilling machine. Fig. 2—Two cylinders located at one setting for facing in a flat turret lathe. Fig. 3—Honing a cylinder, the final finishing operation. Fig. 4—Special fixture accommodates four cylinders for finish reaming

**M**ANUFACTURE of motorcycle parts at the plant of Indian Motorcycle Co., Springfield, Mass., involves a number of interesting details, a few of which are described in this article. The operation shown in Fig. 1 is rough boring a cylinder. Bore is  $3\frac{1}{4}$  inches in diameter and  $7\frac{1}{4}$  inches long; the machine used is a single spindle Baker Bros. drilling machine. As the illustration shows, the work is gripped by its outside diameter over the cooling flanges in a fixture provided with special jaws, while the boring head is fitted with six high-speed steel cutters set at a slight angle. Inasmuch as the machine spindle is supported rigidly just above the boring head, chattering is eliminated, even when using a comparatively coarse feed. The result is a smooth round hole which is used for locating the work for the second operation shown in Fig. 2.

Fig. 2 shows two cylinders located at one setting in a Jones & Lamson flat turret lathe. The cylinders are slipped over expanding arbors which locate from the hole while the flanges at the bottom of the cylinders shown in the illustration bring up against stop pins which relieves the arbors of all radial strain. After this operation the parts are turned end for end and the bottoms faced. The bottom surface where it locates in the crankcase is provided with a pilot which can be seen plainly on the cylinder in the foreground in Fig. 1.

A finish reaming operation is shown in Fig. 3. This machine is

fitted with a special fixture arranged to accommodate four cylinders for simultaneous reaming. Referring to the illustration, it is shown that the two reamers in the center are of smaller diameter than those at the ends. Thus the fixture

will accommodate two cylinders each of the same diameter and two of another diameter at one setting. After the cylinders are reamed, the top and bottom surfaces are faced off by locating the cylinder over an expanding arbor working on the

# Motorcycle Engine Cylinders, Pistons

same principle as in Fig. 1, except that in the finish facing the work is located in an ordinary engine lathe.

Final finishing operation on the cylinder involves honing as shown in Fig. 4. The work is held in place, locating from its bottom flange, on a fixture provided for the purpose on a Hutto honing machine fitted with a Hutto honing head carrying six Carborundum stones. During this operation the hone is lubricated with kerosene supplied by the forked pipe shown in the illustration. The hone makes about 40 strokes per minute and is passed through the work with a spiral motion. Only a few thousandths of an inch of metal are removed and the result is a smooth, round and straight hole so that the finished motor can be broken in with no danger of scoring the cylinder.

Not all cylinders can be finished

by the honing method, however. For example, a cylinder cast integral with its head must be sized by grinding as shown in Fig. 5. Here the cylinder is held in a special fixture located from the bottom flange. In the left foreground are shown the type of dial gage passed through the

bore to determine its size and the master ring gage used for setting the indicator.

The machine is a Heald No. 60 planetary-type grinder fitted with a Norton silicon carbide wheel 2 3/4 inches in diameter, 3/8 inch face. This wheel is operated at a normal travel

Fig. 5 (right)—Cylinder cast integrally with head is given a final sizing by grinding. Dial gage and master ring gage are shown in the foreground. Fig. 6 (below)—Cylinder head set up for facing the lower surface

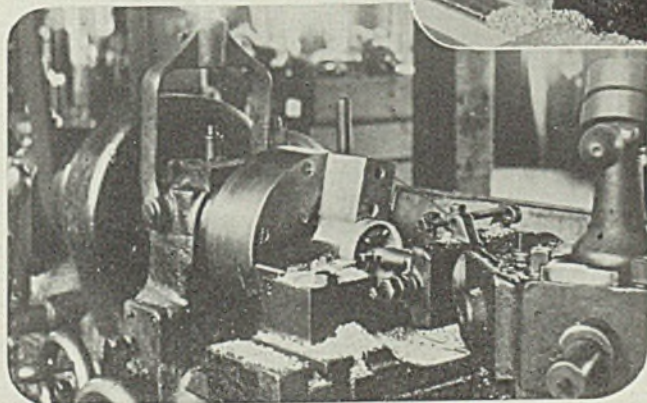
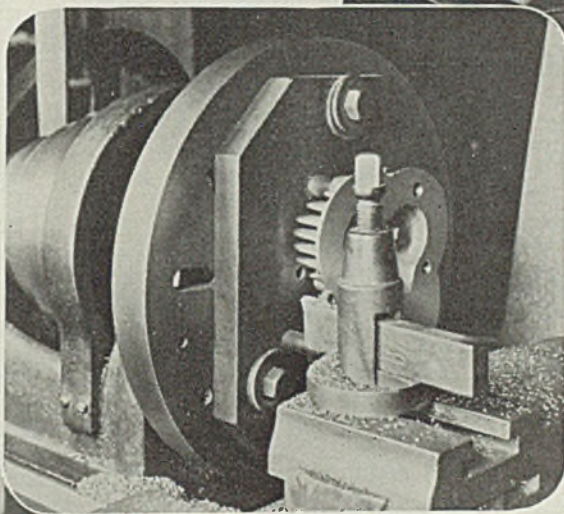
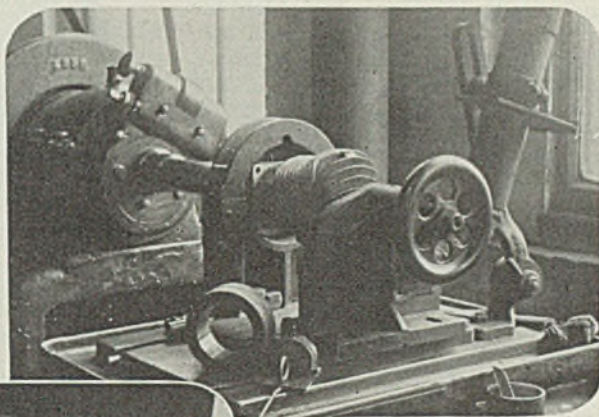


Fig. 7 (left)—Facing end and boring out inside of the skirt of a piston in a turret lathe

of 5000 surface feet per minute while the planetary motion is about 60 revolutions per minute. By using a comparatively coarse traverse feed for roughing, about 1/4-inch advance for each planetary revolution, and a finer feed for finishing, accurate and economical results are assured.

A cast iron cylinder head set up for facing the lower surface is shown in Fig. 6. Prior to this opera-

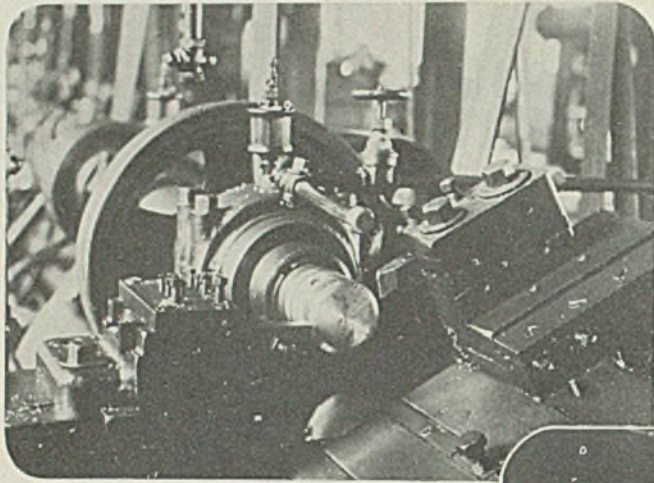


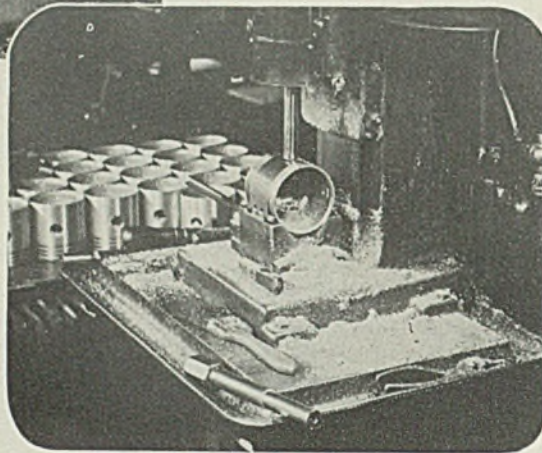
Fig. 8 (left)—Finishing a piston on an automatic lathe. Body is turned, end faced and ring grooves formed. Fig. 9 (below) — Diamond boring operation on aluminum alloy piston. Standard drill press with specially designed mechanism for locating and feeding the boring bar are used

tion, however, seven holes are drilled and spot faced. Thus, locating points are provided for setting the work accurately for the operation. The depth of cut or amount of metal removed is determined by setting the tool on a gage which locates against the top surface of the combustion chamber. An accurate setting is necessary for if not enough metal is removed compression in the finished motor will be low. On the other hand removal of too much stock would result in too high compression. Thus this important feature is controlled by setting the tool in the manner described. The work located on a plate which is bolted to the face plate of an engine lathe. Inasmuch as one operator can run two lathes on this job production is efficient.

Aluminum alloy cylinder heads are drilled, spotfaced and the bottoms faced in the manner just described, but these heads are subjected to a special operation wherein they are heated to a temperature sufficient to expand the metal slightly, 450 degrees Fahr., by feeding them through a continuous furnace. Then the operator screws a composition bronze metal plug in place to accommodate the spark plug. When the head cools it holds the plug firmly in place.

A number of interesting operations are involved in machining aluminum alloy and cast iron pistons. The first operation, illustrated in Fig. 7, involves facing the end and boring out the inside of the skirt. This is an ordinary turret lathe operation and, as the illustration shows, the work is gripped in a 3-jaw chuck. The jaws are amply wide to avoid distorting the work.

With the seat thus formed as a locating point, the piston is drilled and reamed in a jig provided for the purpose. Then it is finished on a Gridley automatic lathe as shown in Fig. 8. Here the piston is located over a special driver and held in place with a drawback rod provided with an eye to accommodate a pin



slipped through the piston pin hole. In this operation the body is turned, the end faced and the ring grooves formed. This piston is 2 1/4 inches in diameter, 3 1/32 inch long, and is provided with four ring grooves.

Motorcycle engine pistons of both cast iron and aluminum alloy are accurately sized by grinding on a Landis 10 x 30-inch cylindrical grinder, fitted with a special relief grinding attachment designed and built by the Indian Motorcycle's engineers. The device carries a roller which engages with another roller on the spindle for grinding the cylindrical part of the piston. For grinding the eccentric relief on the skirt this roll is shifted to engage a cam of the correct outline to generate the desired relief. The wheel used is Norton crystolon, 14 inches in diameter, 1 3/4-inch face. Wheel speed is approximately 5500 surface feet per minute while the work speed is about 20 feet per minute. The work is held over a special arbor provided for the purpose and both the cylindrical and relief portions are finished at one setting of the work.

An interesting diamond boring operation on aluminum alloy pistons is shown in Fig. 9. The device utilizes an ordinary drill press while the mechanism for locating and feeding the boring bar as well as the piston locating device was designed and built by the Indian Motorcycle engineers. The illustration

shows the piston held in a V-block fixture, the clamping device being a spring brass clamp which wraps the piston. This clamp is hinged at one side and provided with a clamping device at the other side. In the foreground is shown the locating plug used for setting the hole in the correct vertical position. This plug is passed up through the fixture and piston from underneath the platen, thus aligning the hole accurately. Then the strap previously mentioned is set in place and the locating plug withdrawn. In this position the single point diamond boring

tool is fed downward automatically at a speed of approximately 1200 revolutions per minute. Only a slight amount of metal is removed, approximately 0.005-inch on each wall or 0.010-inch on the diameter, and the result is a smooth accurate hole which forms an ideal seat for the piston pin.

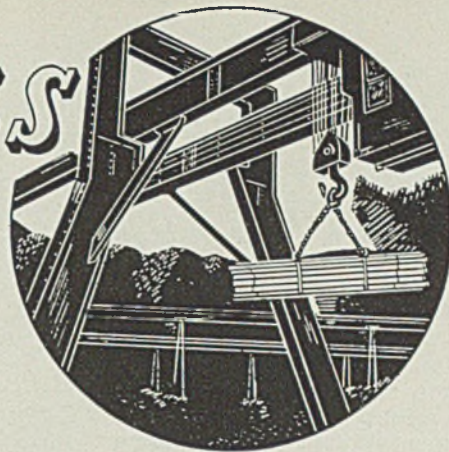
While the operations described are, of course, only a few of those carried on daily at the plant, they reflect the degree of pre-

cision necessary in this branch of manufacturing.

## New System Eliminates Ship Fires and Cargo Losses

A new system, known as Cargo-caire, for installation in ocean going ships, has been developed by Colby Steel & Engineering Co., Seattle. From a central unit pipes lead into different parts of the ship's hold, with resulting elimination of sweating, control of humidity, detection and extinguishing of fires and destruction of vermin. The equipment necessary is said to occupy less than 1/4 of 1 per cent of useful cargo space, and to entail consumption of 14 to 17 tons of metal in the form of stainless steel sheets, brass valves, copper tubing, steel tubing, sheet steel ducts, duct fittings, blower, fans and motors. The system is said to have undergone exhaustive practical tests which show that circulation of conditioned air prevents losses of cargo due to decay, spoilage and vermin and also that in the event of fire smothering gases can be applied instantaneously in the parts of the hold affected. Associated with Mark R. Colby, president, in this development, are Oliver D. Colvin, naval architect, and Werner H. E. Hahne, research engineer.

# MATERIALS HANDLING



## Industrial Trucks and Conveyors Speed Storage Battery Production

**M**ANY interesting examples of efficient materials handling practices have been introduced in the branch plant of the Delco-Remy Corp., Bloomfield, N. J., since it was first opened in January, 1936. Housed in an L-shaped building of single-story, saw-tooth construction, formerly occupied by the American-LaFrance & Foamite Industries Inc., this relatively new unit in the General Motors family in the East is devoted exclusively to the manufacture of storage batteries for cars assembled along the eastern seaboard or exported from Atlantic ports.

In its first year of operation, this plant produced nearly a half million batteries, shipping them to Chevrolet assembly plants at Tarry-

town, N. Y. and Baltimore, as well as to the Chevrolet export boxing plant nearby and to service units in Boston, New York and Philadelphia. Since the opening of the new Linden division of General Motors (STEEL, May 31, page 24 and June 14, page 47), it also supplies batteries to this plant. Increased demands on production facilities in recent months have been supplied without difficulty, largely because the materials handling system in

the plant functions smoothly and with maximum flexibility.

Raw materials for batteries are comparatively few in number, chiefly red lead, litharge, battery cases and cedar wood separators, but receipt, storage and transportation to point of use have been planned in each instance to reduce waste to a minimum, to minimize storage space requirements and to insure adequate supplies at all times. Straight-line production methods, conveyerized in

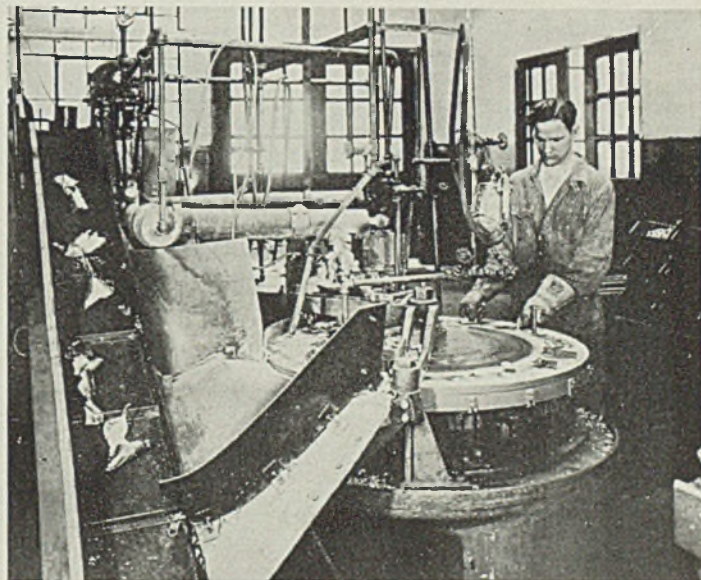
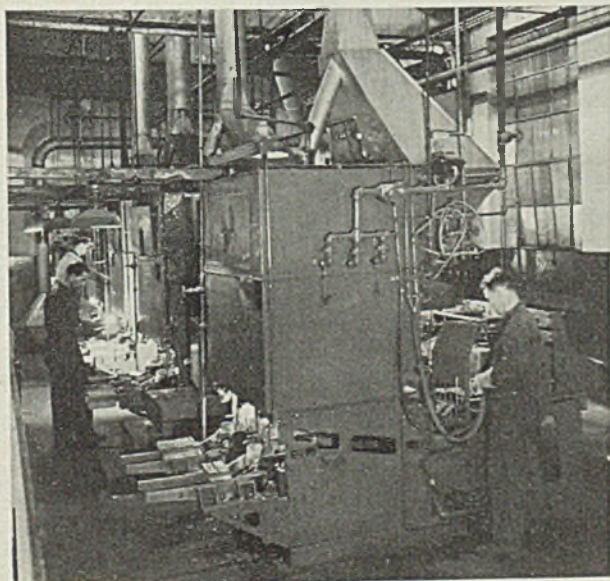
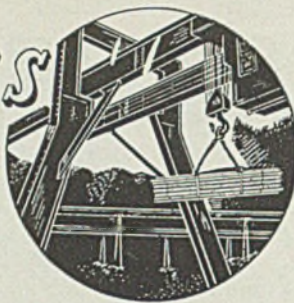


FIG. 1 (left)—Battery of four grid-casting machines which cast the rough grids for storage batteries. The machines are of the duplex type; the molten metal flows into a ladle which empties it automatically into the molds. Fig. 2 (above)—This machine molds parts such as connectors and plate straps. Waste is carried up an inclined conveyor to the reclaiming furnace

# MATERIALS HANDLING

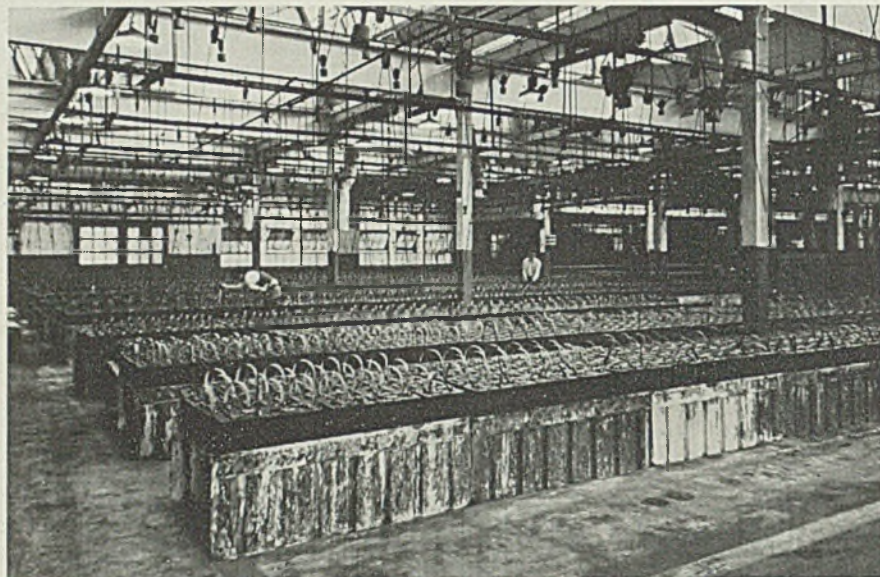
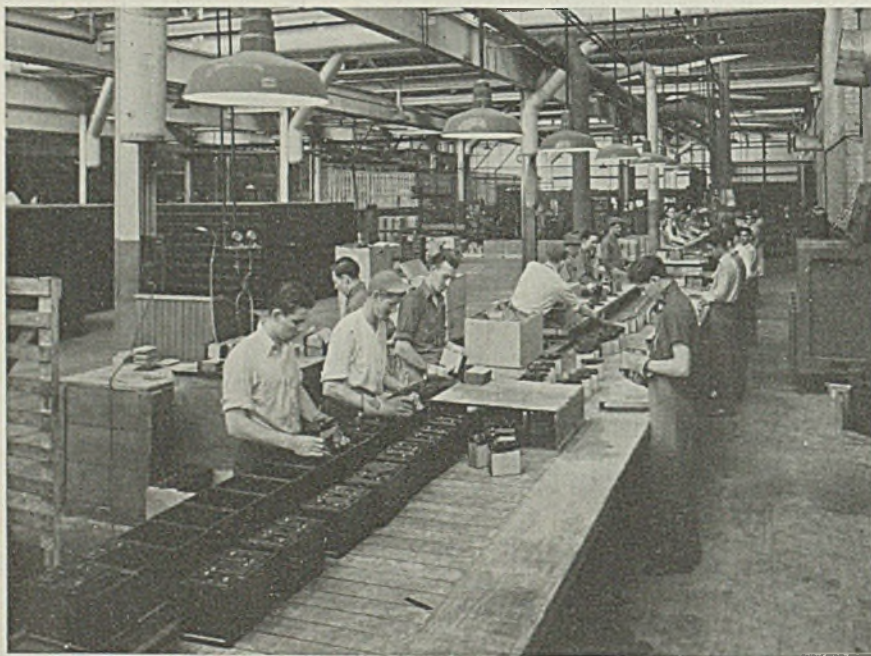


large part, are characteristic of this same careful planning. Packing and shipping operations include some innovations which have been developed by the plant staff to insure safe shipment for both domestic trade and export.

## Lead Pigs Form Pallets

Incoming materials arrive in car-load lots on a switch-track from the Erie railroad. This track runs alongside the entire length of the plant, where there is a covered dock, used for both receiving and shipping. Lead is received in 50-ton carlots. Each pig weighs approximately 73 pounds and the load is nested into units of approximately 2500 pounds. The manner of nesting, which is somewhat similar to that described in STEEL, April 19, page 47, provides sufficient clearance on the bottom tier so that the unit forms its own pallet. Four battery-powered industrial trucks and one gas-powered unit, each equipped with high-lift-forks are utilized for car unloading and for transportation of

**FIG. 3**—View of the main conveyor line showing the section on which cells are placed in the cases. The plate poking conveyor is in the background; storage piles of battery cases are to be seen in the center



lead to storage and to furnaces. These same lift-trucks, together with a hand-lift unit, are used also for a variety of handling tasks throughout the plant since grids and plates are all stored on special wooden skids while awaiting movement to assembly lines.

Oxides are received in steel drums. The latter are transported by lift-trucks to storage near the point of

use. Drums are then individually emptied onto an elevating conveyor which takes the contents up to one of three tanks. From the tanks they are dropped through a gate and pass through a screw conveyor into weighing hoppers, from which the oxides are delivered to the mixers.

Reclamation plays an important,

**FIG. 4**—Corrugated steel skids serve a double purpose. They are used both as transportation and storage units, as this view of the charging floor indicates

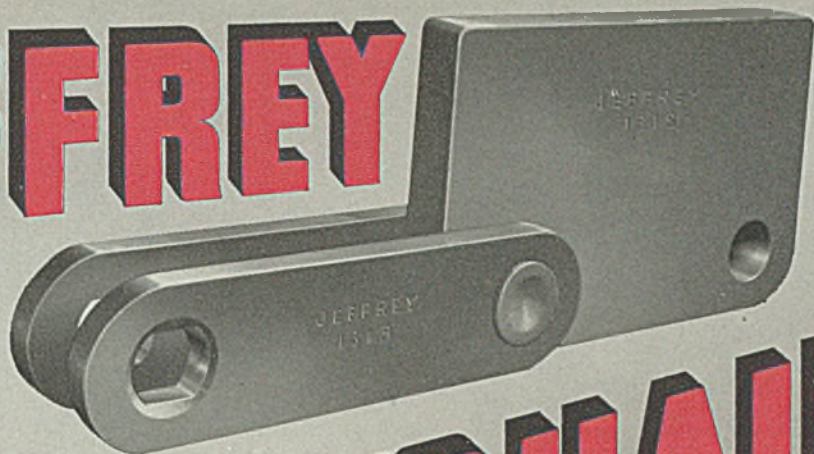
although small part in the economy system. Inspection is thorough and consequently grids and plates often are rejected. In such instances no lead is lost, as the rejected material is returned to the reclaiming department where the lead is melted and re-pigged for use in the molding department. The oxide is reduced to lead and by the addition of antimony is made available for grids or other parts.

## Casting Process Automatic

The plant has four grid-casting machines of the duplex type. In these machines, shown in Fig. 1, the metal is melted and by means of a valve its flow is regulated to a ladle which empties it automatically into grid molds. On another machine, Fig. 2, lead is also molded into cell connectors and plate straps. From the molds the grid castings are conveyed to the trim presses where they are fed automatically through the machine. After being trimmed and inspected, the accepted grids are placed on a conveyor for delivery to the pasting department. The scrap from the trimming operation is returned to a melting pot in

(Please turn to Page 84)

# JEFFREY



# CHAINS IN THE STEEL MILL



## HOT SLAB TRANSFER

Hot Slab Transfers and Cooling Beds present as many design problems in any application of conveying chains in a steel mill. ● Here intense heat must be reckoned with. Here a number of single pieces weighing up to 17 tons must be conveyed at faster than walking speeds. Here the ravaging effects of roll scale are encountered. ● Alone, any one of these conditions sets a real task for chain designers. Combined they demand the finest quality, workmanship and steel treatment. Jeffrey Vulcan (block-and-link) chains are built to such specifications. ● With sixty years of chain manufacturing experience and a broad knowledge of steel mill service conditions, Jeffrey is qualified to recommend and build the proper chain for your specific service need.



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Years  
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# Pipe Clamps Cast From Malleable Iron

**I**NGENIOUS special fixtures are valuable aids to economical production at the plant of the M. B. Skinner Co., South Bend, Ind., manufacturers of repair clamps, saddles and other units for use with steel and cast iron pipe in various commercial sizes. Pipe repair clamps are made in two half rings bolted together to form a complete circle and must be capable of withstanding high pressure in service. The company has the half rings made as malleable castings which, in order to have adequate holding power, must be true to shape. It is necessary also to have the castings free of faults, so the company has evolved a way to straighten the castings at the same time it tests them. They are placed over a special fixture in a hydraulic press, as shown in Fig. 1, and two members straighten the casting when the press ram descends. Faulty castings fail to withstand this bending operation and fail by breakage.

In Fig. 2 is shown a simple fixture for straightening comparatively large castings which cannot be handled in the press shown in Fig. 1. The ring shown in Fig. 2 is 48 inches in diameter, composed of two malleable iron half rings. A stud at the center of the fixture, actuated by the wrench shown in the illustration, is provided with a taper body. As the stud is screwed down its taper body bears against the inner tapered ends of the dogs over which the work is slipped, the dogs sliding in members provided for this purpose. With pressure applied by means of the wrench, and

by means of a few discreet hammer blows, it is a simple matter to shape the ring accurately to conform to the dogs. An expert workman in this way can straighten a ring in a few minutes.

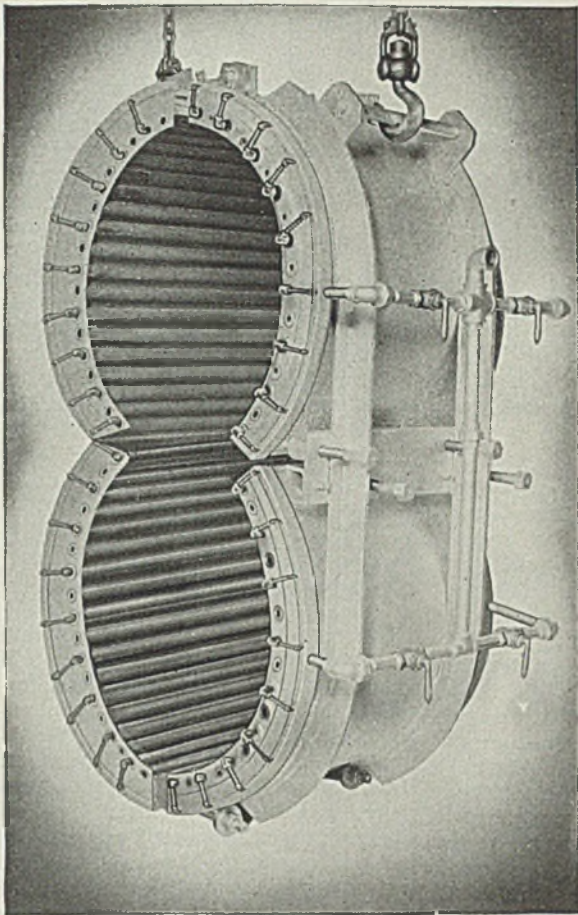
In Fig. 3 is shown a comparatively inexpensive pipe clamp forming die. A chromium-molybdenum-carbon steel casting, made by Forging & Casting Corp., Ferndale, Mich., is used as it comes from the mold without any surface finishing. This particular die is used for forming pipe clamps of 3/16-inch steel sheet, 7 1/3 x 6 1/2 inches. Back of the die, at left, is the stock as received after the first forming operation; this is done in a punch press in dies not shown. At right is shown the stock after it has been formed by the die in the foreground. The forming operation is done hot under a punch press. In this practice there is considerable saving in cost by using a simple cast die instead of an expensive machined die. Also, by working hot the piece can be formed under a comparatively small punch press, requiring a minimum capital investment.

Working on the principle that necessity is the mother of invention, engineers at the Skinner plant placed a simple reversing mechanism on drilling machines made by the Baker Bros. Inc., Toledo, O. The machine shown in the foreground, Fig. 4, is set up for a drilling and tapping operation, the tap and drill being an integral unit. After the tap passes through the work, a trip on the upper end of the drilling machine spindle actuates a pole changing switch which reverses the direction of rotation of the driving motor, thus backing the tap out.

A good example of production milling performed by means of a special fixture is shown in Fig. 5. The milling operation is on valve reseating cutters which are made in sev-

**F**ROM top to bottom—Fig. 1—Truing and testing castings on hydraulic press. Fig. 2—Fixture for straightening larger castings. Fig. 3—Simple cast steel pipe clamp forming die. Fig. 4—Combined drilling and tapping operation on a reversible drill press

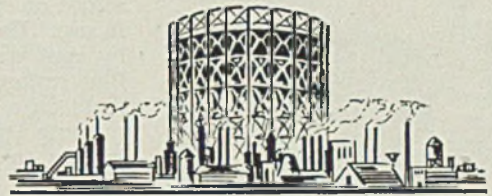




\* A typical Radiatube Roll Heater for 2-high 32" diameter x 42" rolls

# RADIATUBE\*

*the New ROLL HEATER  
by KEMP of BALTIMORE  
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and more accurate control  
to the Heating of 2-high  
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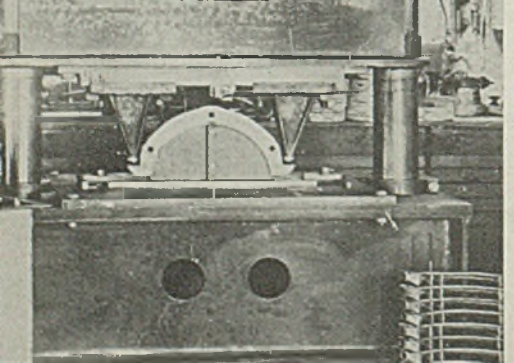
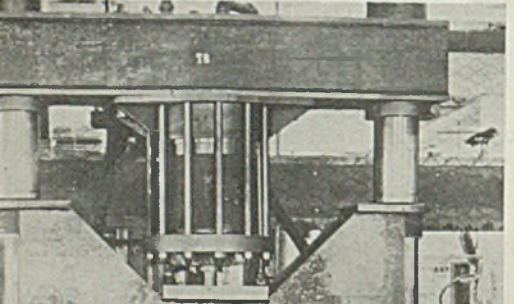
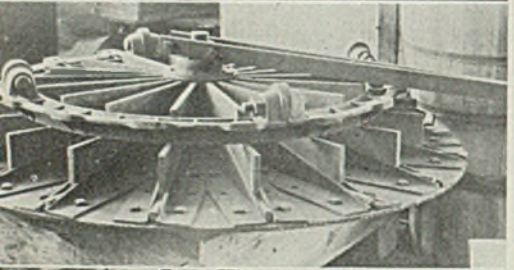
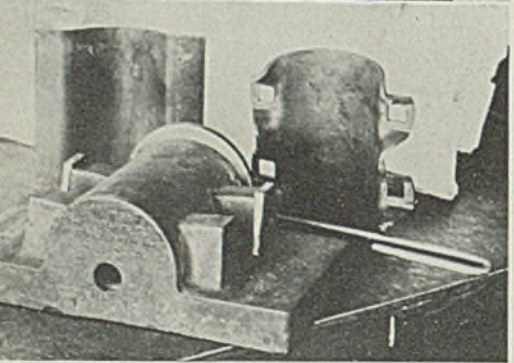
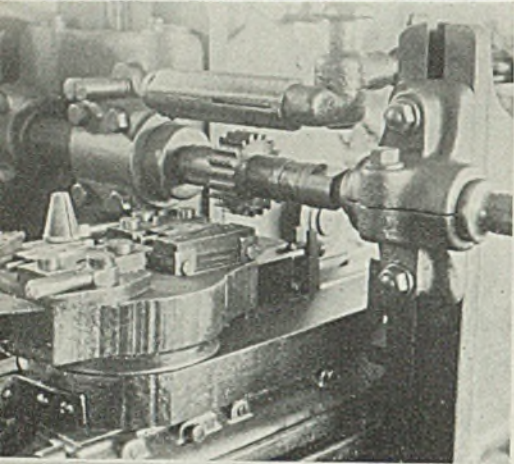
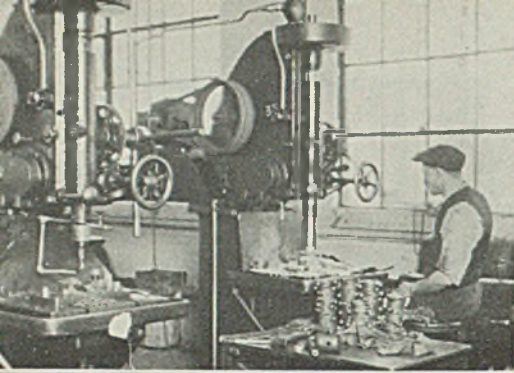
RADIATUBE Roll Heaters provide the desired radiant heat from low-priced gas at savings that may challenge belief. (In one installation where RADIATUBE replaced electricity, pre-heating costs per set of rolls dropped from \$36 per week to \$6 per week).

A series of alloy-steel tubes, fired alternately from opposite ends, transfer radiant heat from a high velocity, constant-pressure flame that burns to complete combustion. The unit is heavily insulated and designed to conform to roll contour.

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**K E M P   o f   B A L T I M O R E**



eral sizes from  $\frac{1}{2}$ -inch to 3 inches; the cutters shown at the extreme left of the fixture are 2-inch. This machine is an automatic miller made by Pratt & Whitney Co., Hartford, Conn. It is fitted with a revolving work holding fixture so that the operator can load one side while work is in progress. At the end of the milling cut the work returns automatically to the loading station where it is clamped quickly in place by jaws actuated by the hand lever shown in the foreground at left. The cone shaped part shown on the fixture is part of a valve reseating tool.

#### Special Welding Fixture

In Fig. 6 is shown an ingenious welding fixture applied to a spot welding machine supplied by Pier Equipment Mfg. Co., Benton Harbor, Mich. The work shown at right is a handle for a valve refacing appliance. The shank is  $\frac{3}{8}$ -inch in diameter and  $4\frac{1}{2}$  inches long while the handle is formed and drawn from sheet steel and is  $1\frac{3}{8}$  inches in diameter and knurled on the outside to afford an easy grip when the tool is in use. Handle and stem are joined by spot welding. As shown in the illustration, the bottom of the stem rests on a bracket provided for the purpose, while the upper member locates in two fiber guides. Thus the parts are held correctly for a workmanlike welding job. The locating devices are interchangeable so the machine can be set up readily for a diversity of like operations.

Malleable iron pipe clamps are cast as solid rings but because they must be in halves for installation, they are sawed apart as shown in Fig. 7 on a metal bandsaw furnished by Armstrong Blum Mfg. Co., Chicago. Seven clamps, each  $4\frac{1}{2}$  inches in diameter and  $\frac{3}{8}$ -inch thick are located for sawing at one setting. The clamps are held in a V by means of a sliding locating member with V-shape end while a simple clamp is used to hold the parts down on the machine table. As shown, the tail of this clamp is provided with an adjustment to insure the necessary holding pressure. A large clamp is located in much the same manner on the machine in the background but in this case only one clamp is sawed at a time.

While most of the pipe clamps made at the Skinner plant are mal-

leable iron castings, orders occasionally are received for steel clamps. In the latter event a design shown in Fig. 8 is used. Such a clamp embodies two sides, to each of which lugs are welded for accommodating the clamping bolts. In the fabrication of such clamps the stock first is put through bending rolls as shown in Fig. 9. By adjusting the center distance between the upper and two lower rolls the stock can be formed into a circle of any practical diameter. Thus no special tools are necessary in making clamps of this design as the lugs readily are welded in place by ordinary methods.

## To Discuss Standards of Underground Piping

Subjects affecting standardization of underground piping systems will be discussed at a conference on corrosion to be sponsored by the national bureau of standards, Washington, in October or November. Exchange of ideas among those engaged in investigation or mitigation of underground corrosion will be the purpose of the conference. Only hitherto unpublished papers will be presented and attendance will be limited to those wishing to make contributions.

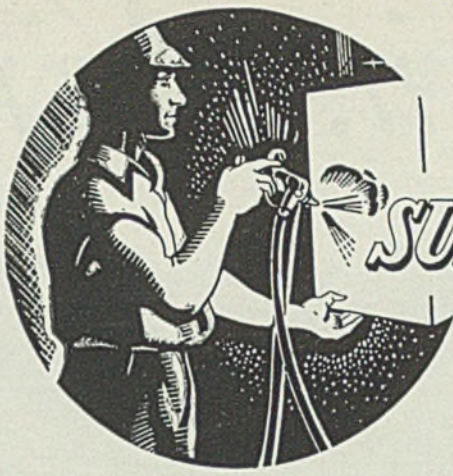
Topics suggested which will have a bearing on standardization are: Methods for determining the corrosivity of soils; methods for determining the condition of pipe lines; and tests and specifications for pipe coatings.

Any one desiring to take part in the conference is requested to notify K. H. Logan of the bureau, indicating the subject or general nature of the contribution he wishes to make. Expression of preference for the conference date also is desired.

## Issues Booklet on Tinning

Tinning of steel strip by electrodeposition is the subject of a booklet recently released by the International Tin Research and Development Council and reprinted from the Journal of the Electrodepositors' Technical Society. Consisting of two papers presented before the Electrodepositors' Technical Society, the booklet is divided into two parts, the first being "Electrodeposition and Polishing of Thin Coatings of Tin on Steel," by D. J. Macnaughtan, W. H. Tait and S. Baier, and the second being "The Effect of Deformation on the Protective Value of Hot-dipped and Electrodeposited Coatings on Steel," by D. J. Macnaughtan and J. C. Prytherch.

**T**OP to bottom—Fig. 5—Milling operation on valve reseating cutters. Fig. 6—Special welding fixture applied to a spot welding machine. Fig. 7—Rings are cast in one piece and must be cut apart as shown. Fig. 8—Specially designed steel clamp. Fig. 9—Stock for steel clamp passing through bending roll



# *SURFACE TREATMENT AND FINISHING OF METALS*

## Chemical Treatment Retards Rust, Improves Enamel Adherence to Steel

**T**O DETERMINE the relative properties of Jetal, Hanson-Van-Winkle-Munning Co., Matawan, N. J. carried on a test program of various lacquers and enamels over Jetalized steel in comparison with bare steel and steel treated with other proprietary paint base or bonding agents applied under commercial conditions. In each case the phosphate coating, as well as the auto fender enamels or synthetic resin enamels, were applied in standard manufacturing operations so that the tests were conducted under representative factory production conditions.

A test of panels coated with automobile fender enamels when exposed in a salt spray for 376 hours showed that the Jetal base, adequately rinsed after treatment, retarded rust creepage and paint lifting better than the other agents tested. The test also developed that removal of processing chemicals is important to secure these advantages.

A 1600 hour exposure of synthetic

resin furniture enamel on plain steel and on Jetalized stock developed marked differences. On the enameled plain steel panel, shown in an accompanying illustration, all edges of scratches made on the panels curled upward and a multitude of hairline blisters extended in all directions. The Jetalized panels, also shown, revealed even edges along the scratches, only occasional evidence of curling and absence of hairline blisters showing rust creepage.

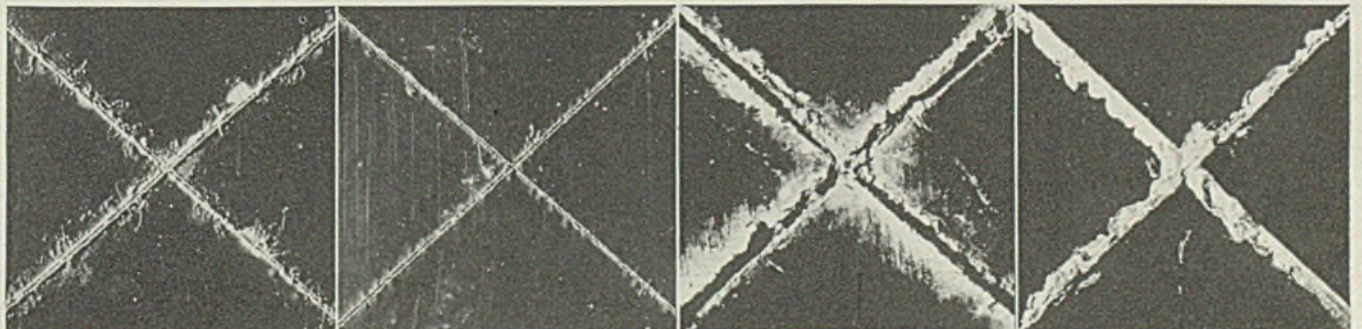
Panels cut from refrigerator doors, one with phosphate base and

one with Jetal base, were tested for adherence after a 2000 hour humidity test. The two chemical bases appeared to be of equal merit as rust retarders since no blisters of any type appeared on either. However, the adherence test brought to light an important difference in the two bases.

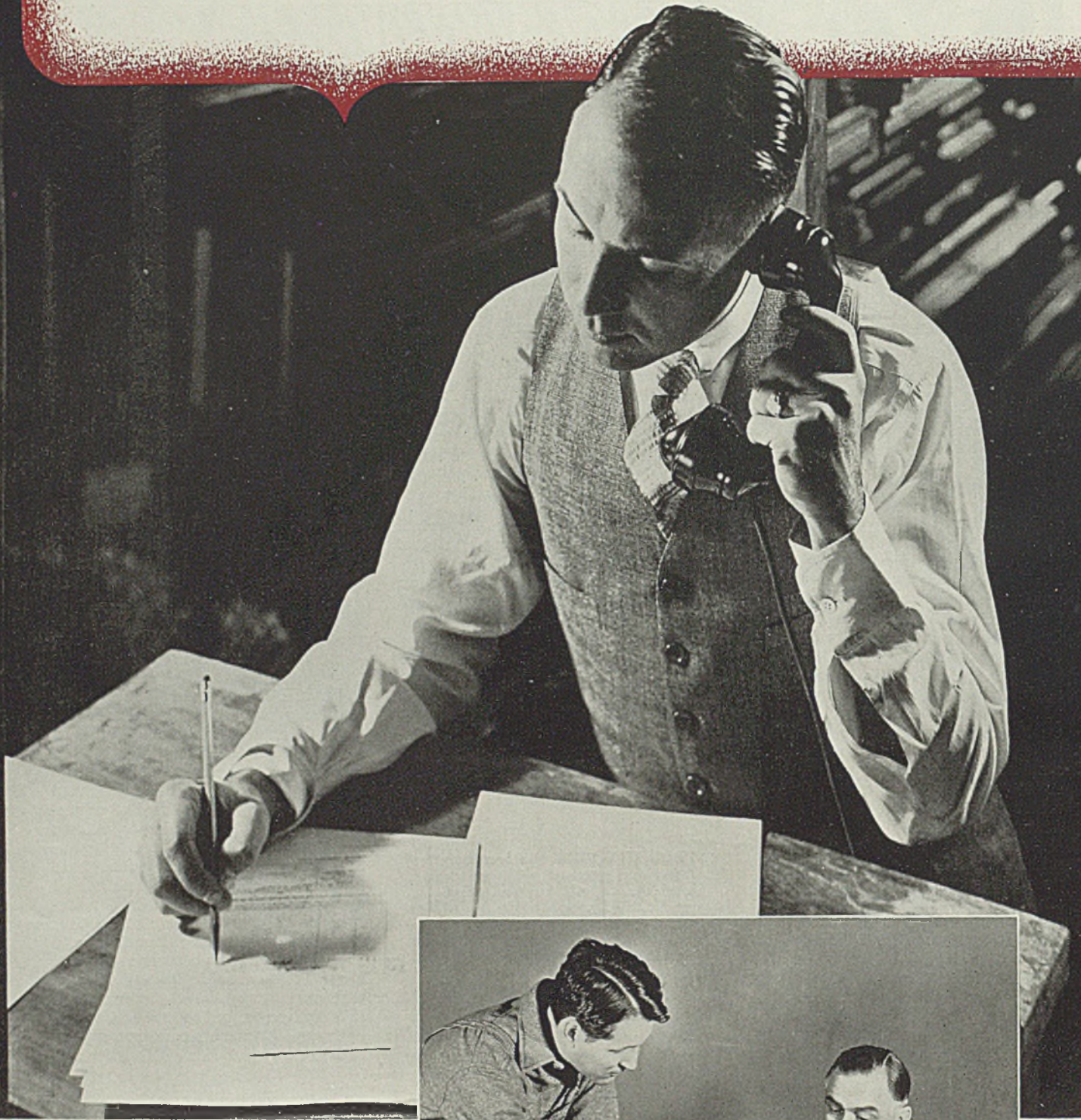
Paint adherence was measured by dropping a weight from various heights on the head of a plunger which rested on the sample. The impact eventually stretched the steel as well as the paint base and enamel, a very severe test of adherence. Results of this test are shown in an accompanying illustration.

In the case of the phosphate sample, the enamel film parted from the steel readily when the surface was dented and stretched. With Jetal, the enamel adhered firmly to the steel and was not fractured until the steel surface itself parted. The test also brought out the fact that it required about four times the energy to produce a fracture on the Jetal refrigerator finish that it does

**I**LLUSTRATING the comparative performance of plain steel and Jetalized steel under corrosive conditions. From left to right; plain steel coated with synthetic furniture enamel after a 1600-hour humidity test; Jetalized steel coated with the same enamel as it appeared after humidity test; plain steel coated with fender enamel after exposure to salt spray for 376 hours; Jetalized steel coated with same enamel after same length of salt spray exposure



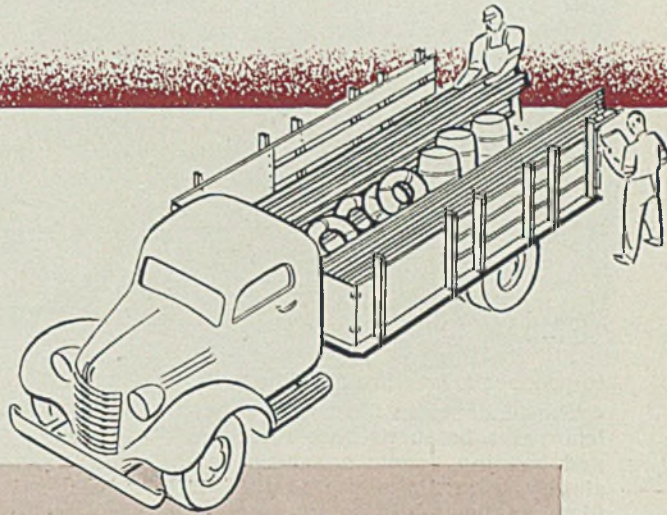
*“Yes we have it. We’ll*



*IN YOUR OWN PLANT, how often do you face the problem of choosing the steel with characteristics best suited to your product? How can you increase tensile strength . . . reduce dead weight? What steel will last longest under the combined abuses of abrasion and corrosion? When you need help on questions such as these, call your steel jobber. In this way you can profit from his wide knowledge of steel.*



# *rush it right over."*



**S**WEET words in these trying days when you're in a rush—when you're up against production schedules that can't wait—when you're out of the very steel you need to complete an important job—and with steel mills booked to the limit with urgent orders.

No shop storeroom is big enough today to carry the amazing variety of steels needed hourly by industry. None would be justified economically . . . so great would be the demands for storage space, investment, and warehouse personnel. Your jobber's very investment is made so that you will not have to place these burdens on your plant.

With his warehousing facilities, his ability to meet your daily, even hourly, needs your jobber performs an indispensable service. His stockrooms are yours to draw from. His extensive experience is yours to call upon. He knows steel . . . what is new in special steels and alloys . . . which are best for efficient production and satisfactory performance of your product.

Your steel jobber's service can far surpass

*This advertisement is published in the sincere belief that the jobber occupies a sound economic position in industry and that his services merit support, by both consumer and producer.*

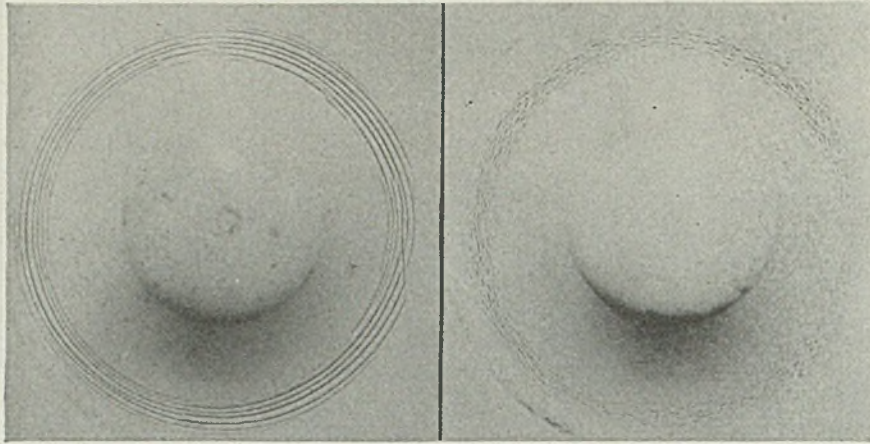
the limitations which the size of his warehouse or the number of his personnel would seem to dictate . . . for when he sells U·S·S products he has behind him the complete sales and engineering organizations of the United States Steel Subsidiaries which these products represent.

Purchasing Agent, Manufacturer's Representative, Warehouse — your steel jobber is all three to you. He is as near as your telephone. Get to know him better. Use him more. Draw upon his wide knowledge of steels. He has no other aim than to serve you well. He asks no more than the opportunity.

AMERICAN STEEL & WIRE COMPANY  
CARNEGIE-ILLINOIS STEEL CORPORATION  
COLUMBIA STEEL COMPANY                      CYCLONE FENCE COMPANY  
NATIONAL TUBE COMPANY  
TENNESSEE COAL, IRON & RAILROAD COMPANY



# UNITED STATES STEEL



**T**HESE panels were exposed to a 2000-hour humidity test after which their impact strength was measured. Left is shown refrigerator enamel over phosphated steel; right is same enamel over Jetal-ized steel

to produce a fracture on phosphate.

The tendency in the use of chemical paint bases as rust retarders and bonding agents has been constantly toward the use of thinner films, as they minimize any weakening effect on the natural tendency of a paint, lacquer or enamel film to adhere to steel. The principal value of most films of this type today is as rust retarders and as a means of securing a surface as free from harmful chemicals as possible.

Jetal is claimed to have all these rust retarding properties and, most important, it is claimed not to weaken the natural adherence of modern paints, lacquers and enamels. Long storage of treated parts before painting is safe if desired and does not detract from the protective film as a paint base. Oils or clear lacquers may be used effectively over this film where it is desired to take advantage of the full black color of the film itself.

Jetal may be used for two purposes. Not only is it said to be successful as a base for paints but it effectively colors iron and steel products a uniform jet black.

## Galvanized Steel Service Life Discussed in Paper

National bureau of standards' *Research Paper* 982 reveals interesting facts concerning the service life of galvanized steel. Necessity for heavy coatings on pipe is especially pointed out.

Prior to 1934 zinc coated steel pipe was customarily furnished with a light coating for ordinary purposes because specification of the American Society for Testing Materials did not include definite weight requirements for this type of pipe. In 1934 A. S. T. M. specification A120 was revised to provide a weight of zinc coating of not less than two ounces per square foot of total coated surface. This has now been adopted as American Standard

G8.7-1937 by the American Standards Association.

Investigations of the national bureau of standards show that these heavier coatings are superior to thin ones for long periods of service and that galvanized steel loses weight at rates from one-half to one-fifth the rate of loss of bare steel over a ten-year period. It was also indicated that the type of ferrous metal to which the zinc is applied does not have a marked effect on the rate of corrosion of galvanized materials during the first ten years of exposure. Corrosion is higher when zinc alone is exposed than when the alloy layer is exposed and highest after much of the alloy layer is destroyed.

Some study was made of lead and

it was found that lead is sufficiently corrodible in most soils to result in the penetration of lead coatings now used within ten years. After the lead has been punctured, accelerated corrosion may occur because of the differences of potential between lead and steel.

Copies of Research Paper 982 may be obtained from the Superintendent of Documents, government printing office, Washington, D. C., at 10 cents each.

## Colored Aluminum Resists Corrosion, is Insulated

Colored aluminum, while nothing new, is being turned out in a plant in Birmingham, England by a recently developed process which is said to mark an improvement in the art. The process is an electrical one whereby the protective coloring becomes an integral part of the metal, not just a surface deposit, and is permanent. Aluminum so treated, says *The Engineer*, London, will not corrode and is insulated against electric current up to 500 volts.

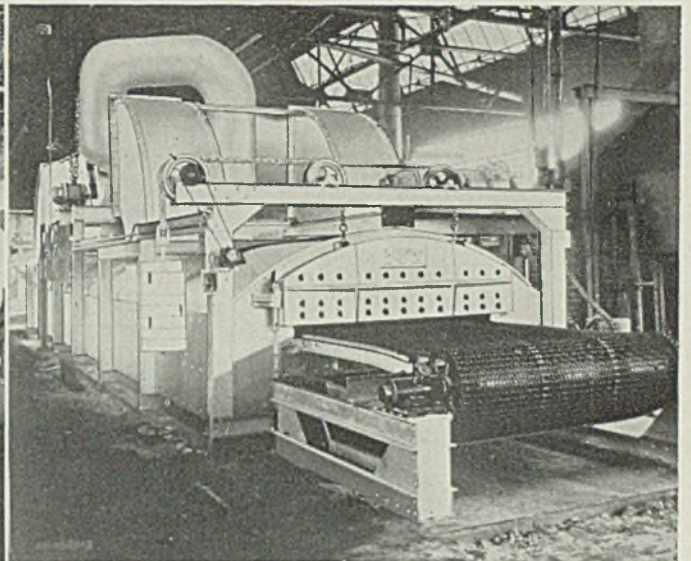
## Therapeutic Lights "Condition" Automobile Finishes



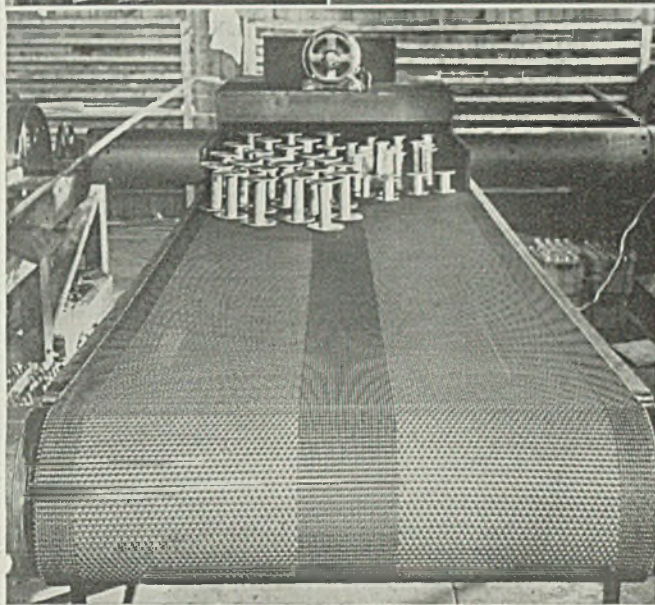
**D**OCTORS' lamps, not for sore muscles but for baking individual colors separately, are now being used in a unique "hot house" in the plant of Plymouth division, Chrysler Corp., Detroit. Therapeutic bulbs supply heat intensities as high as 250 degrees Fahr., the same temperature used in the body plant baking ovens. Thus it becomes unnecessary to return an entire body through the big baking ovens to harden a small area painted or striped an individual shade. Specially designed flexible standards allow the heat rays to be focussed on any part of the car's exterior



Above is shown Cambridge Interwoven belt conveying bottles through a glass annealing lehr.



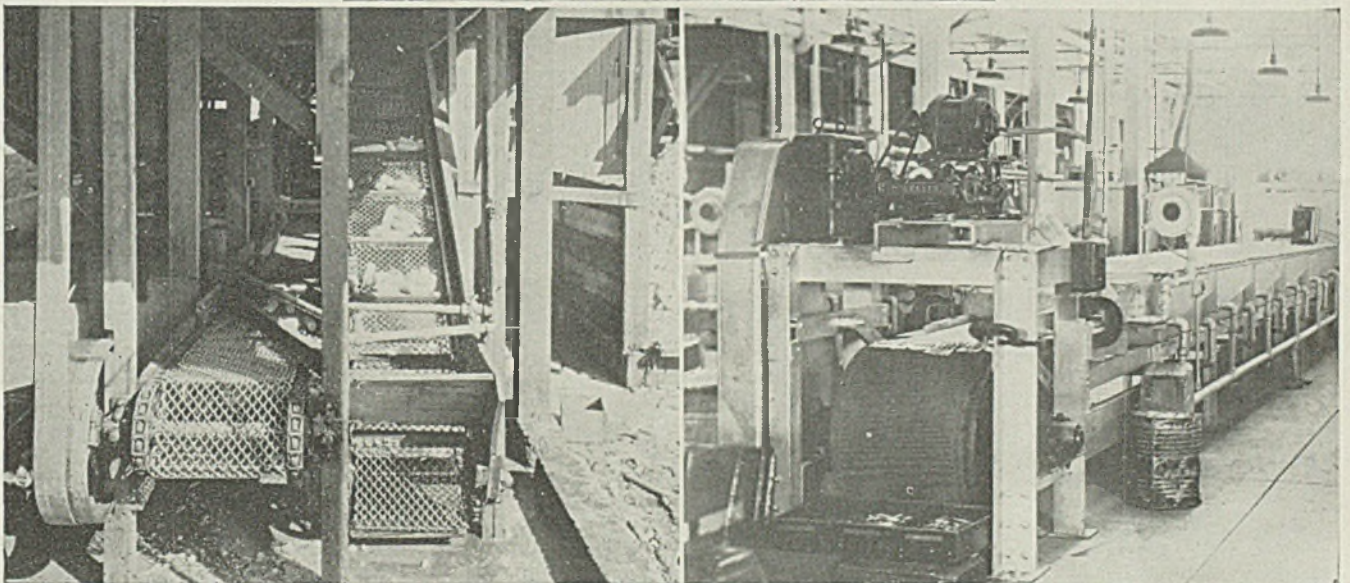
Above photo shows Cambridge Drive Chain Belting used in tempering railroad car springs.



Cambridge Belt installation with Duplex Selvage and Duplex Center conveying metal parts.

Below — Cambridge Spiral Wire Belt driven by means of a chain and sprocket drive and slatted for incline conveying of corn from the huskers.

Below—Duplex Selvage belt used in annealing silverware Blanks at 1500 degrees Fahrenheit.



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# WELDING, ETC.

BY ROBERT E. KINKEAD

## Trends in Welding Machines

CONDITIONS in the plants of users of welding determine the kind of machinery built for welding. Developments and movements in welding machinery building occur when the managements or user and manufacturer discover that conditions have changed.

Conditions in the plants of users of welding are changing rapidly at the present time and they are being reflected in welding machinery being built. These changes may be roughly defined as follows: higher wages, lower morale, higher material costs, higher taxes, and opening of the capital markets so that new capital can be obtained. Management can control none of these factors and can only suffer their consequences.

Automatic gas, arc, butt and spot welders are being developed more rapidly than ever before. Operation of high speed automatic equipment tends to offset the conditions named above. Automatic percussion welders in the lamp industry and automatic flash welders duplicate in principle the automatic screw machine. Under existing conditions it is desirable to have work done by machines that can be operated by levers or push buttons, and that is the trend at the present.

Manual welding with blow pipe or electric arc is done on an enormous scale; the trend indicates that a great deal of manual apparatus will

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IN this column, the author, well-known consulting engineer in welding, is given wide latitude in presenting his views. They do not necessarily coincide with those of the editors of STEEL

---

be replaced by equipment which is in some degree automatic. In the ship building industry this is well illustrated by present use of automatic methods of the Union Melt process.

In the field of automobiles and railway cars, automatic spot welding has been perfected to a high degree. In the welding of longitudinal seams in pipe, resistance and induction welding have become fully automatic and the Longoria process has become a contender in the field of welding non-ferrous pipe.

Trend in welding machinery is towards complete automatic operation. The field is probably evenly divided between welding applications now being done manually and new applications where no welding has been done before.

♦ ♦ ♦

## Research Is Valuable

BUREAU of standards research of literature on the subject of "Diffusion in Solid Metals," published by *Metals and Alloys*, forms a valuable background for future studies in

the welding processes. Copper brazing in hydrogen atmosphere is a commercial application of such diffusion. Problems of carbon migration in clad materials fall in this territory. The intriguing phase of this study lies in the fact that under certain circumstances diffusion may take place at ordinary temperatures or only slightly elevated temperatures. Cold welding is not a theory; it is a fact. The mere fact that cold welding copper to steel would cost 1000 times as much as hot welding and would take ten years to accomplish shows that the knowledge is not commercially applicable. A hundred years ago a ton of aluminum of present day commercial purity would have cost more than the present worth of Aluminum Company of America and would have taken a century to produce. Research carried on over a period of years plus development and invention make scientific knowledge usable.

\* \* \*

Flame cutting clad materials is adequately covered in July issue of *Oxy-Acetylene Tips*. Details of technique are given so that anyone experienced in flame cutting can get good results. Steady increase in the tonnage used of stainless clad and nickel clad steel is based on sound principle of putting the high cost metal only where needed—on the surface. Information on cutting, forming and welding these composite metals has been appearing in such volume as to dispel the fears of many fabricators that attempts to use them would result in "trouble."

## Chemical Burns Discussed

National Safety Council, 20 North Wacker drive, Chicago, has recently released a pamphlet on the subject of chemical burns, their nature and treatment. The publication discusses treatment of burns with tannic and picric acids and with gentian violet, symptoms and treatment of shock and first aid treatment of chemical eye burns. The treatment of burns caused by a long list of acids, potash, soda, metallic salts and other agents is covered and many preventative practices are recommended. Chemical burns differ from heat burns in that destruction of tissue does cease when contact with source of burn is removed. Water and lots of it, the pamphlet claims, is highly important in the treatment of chemical burns. Immediately available sources of water as well as special shower bath fixtures are recommended for locations where acids are used.

## Largest Kiln Is Welded



Photo Courtesy James F. Lincoln Arc Welding Foundation

RECENTLY completed at the Chemical Lime Co., Bellefonte, Pa., is this 400-foot rotary lime kiln, believed to be the world's largest. Entirely welded, it was manufactured by Traylor Engineering & Mfg. Co., Allentown, Pa., and is fabricated of  $\frac{1}{8}$ -inch steel plate throughout, except under the tires where the thickness is one inch. There is a total of 21 arc welded sections in the kiln

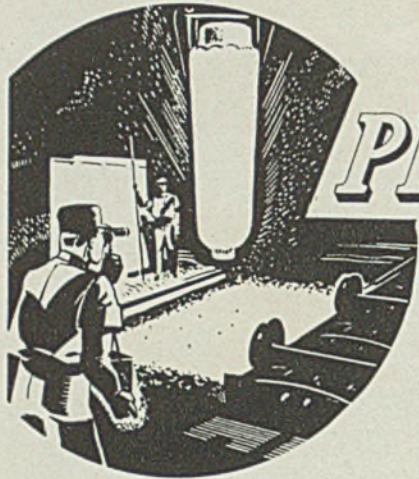




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# PROGRESS IN STEELMAKING

## Rotary Mast-Type Machine Pickles Hot-Strip Steel at Low Cost

**L**ATE last year United Engineering & Foundry Co., Pittsburgh, introduced a new pickler of the rotary mast type for pickling hot strip from continuous mills. Originally this unit was intended to serve in some of the smaller cold rolling mills where difficulties had been encountered in pickling hot rolled coils. The first unit was installed and placed in operation last December at the plant of the Granite City Steel Co., Granite City, Ill. This installation, capable of handling two coils, 42 inches wide on each of four mandrels, indicates an average produc-

tion of 60 tons per hour for 13-gage material, the production being somewhat less for lighter gages and somewhat more for heavier.

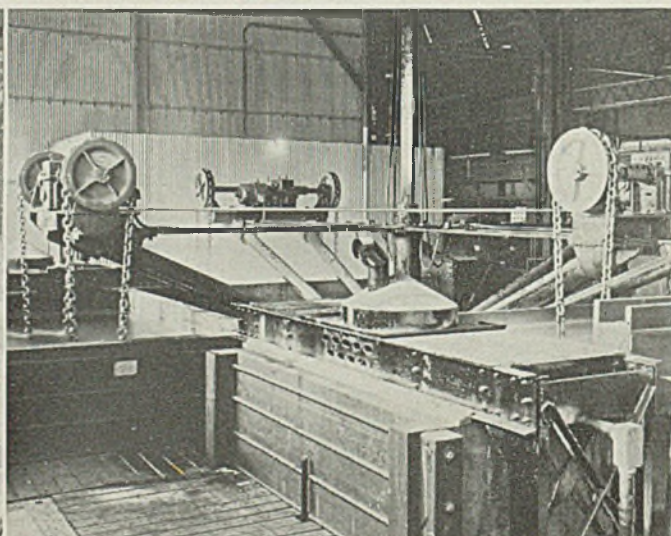
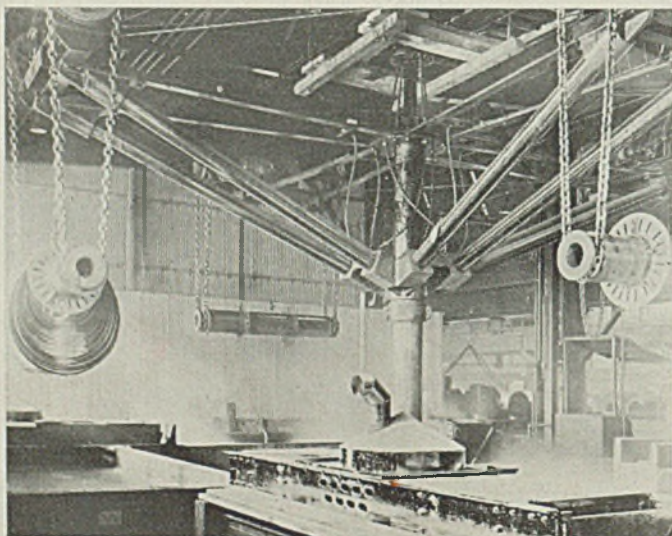
Experience with this installation definitely has proved that present wide, continuous picklers can be replaced economically by the new unit in some cases.

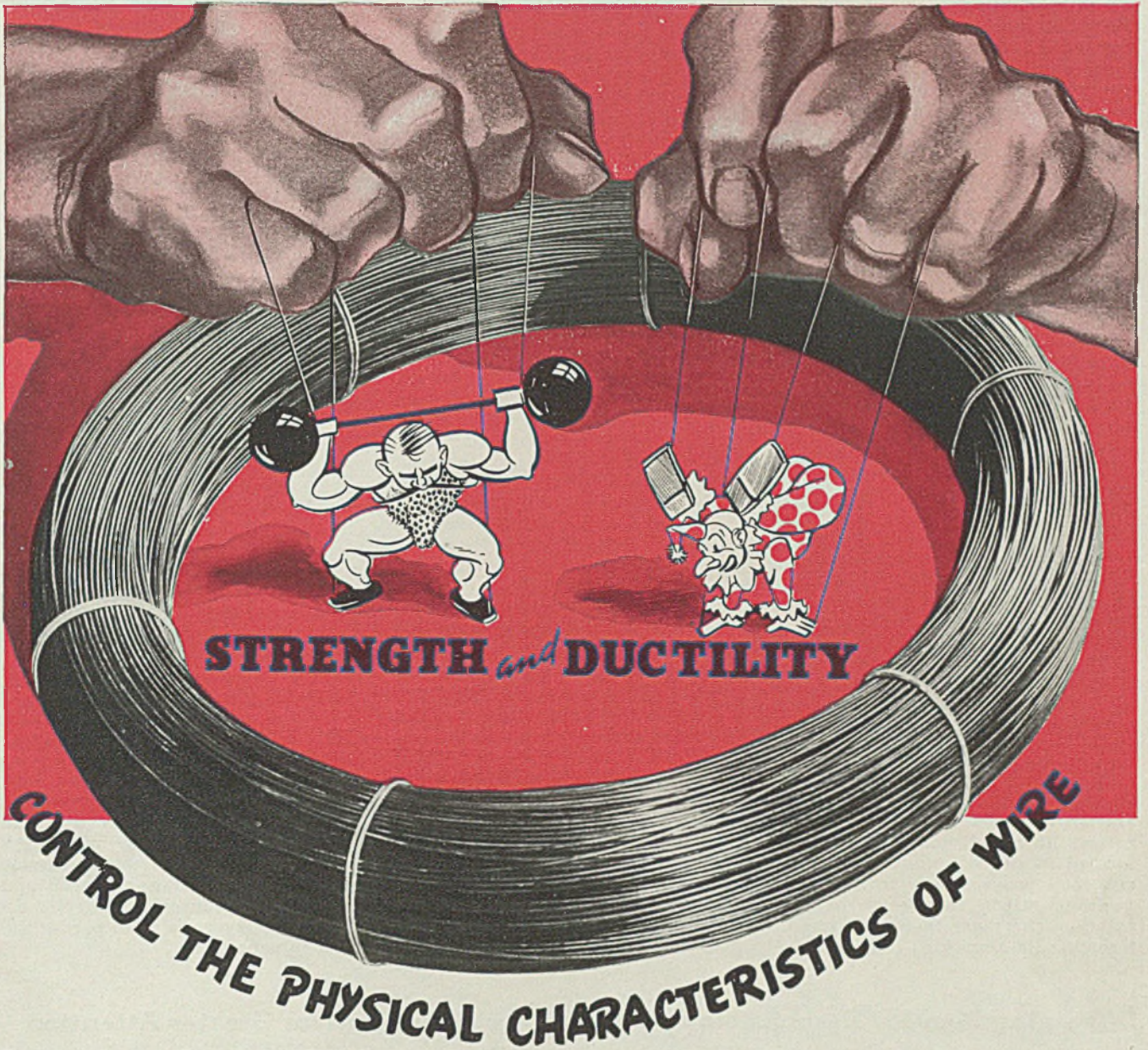
Installation cost of the Granite City

rotary mast pickler, including foundations, building, loose coiling and electrical equipment, was less than half of that of a completely installed continuous line of the same production. Too, floor space required is about one-third, the Granite City installation occupying a space 50 feet square.

The machine has three tanks and a loading position arranged in a circle of approximately 15-foot radius. A mast is placed in the center of the circle and a cross-arm arrangement mounted on top of the mast. At the end of each arm is

**A**T left is a view of the rotary pickler showing mast in the raised position with loaded mandrel at left and unloaded mandrel in center. At right the mast is in the lowered position with coils being processed





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placed a rotating shaft having an acidproof sprocket. Hanging from each of these sprockets is an acid-proof chain. The central mast is equipped for raising the weight of four coils of maximum width, or multiple coils of less width, and also is arranged for rotation through progressive arcs of 90 degrees each. The tanks are filled, respectively, with acid, cold water, and hot soluble oil.

In operation, the coils are received from the hot mill are recoiled in a special back spinning set of cradle rolls which produce loose, properly spaced coils such as shown at the left in Fig. 1. The loosened coil is delivered to the charging platform of the machine and an acidproof mandrel with diameter about three-fourths the inside diameter of the loosened coil is inserted through the length of the coil by a small traveling carriage. The ends of this mandrel are equipped with acidproof sprockets similar to those supported by the overhead arm of the central mast. The chains dangling from these overhead sprockets then are inserted by the operator in grooves in the mandrel. The coil then is ready for the first step.

#### Three Others Treated

During this operation three other coils are in process of being treated, one in the acid, one in the cold water tank and one in the hot rinse tank. Upon completion of the pickling operation in No. 1 tank, the mast is raised, lifting all four coils. It is rotated 90 degrees, thus advancing each coil progressively to the next position. Upon completion of the rotation, the mast then is lowered, inserting the unpickled coil noted in

the previous paragraph into the acid tank.

It should be noted that when the coil is supported on the mandrel on its side the various layers of the coil on the bottom open automatically while the coil is tight where it contacts with the mandrel. Upon insertion in the acid tank, the mandrel commences to rotate slowly so that in one-half revolution the part of the coil which has been tight becomes the loose part of the coil. In addition to this rotation, an acid-proof right angle venturi is placed in one end of the tank, having the small opening uppermost and the large opening projecting toward the loose part of the coil. A small, high-speed propeller is located just inside the small diameter neck of the venturi which, when rotating, sets up a definite circulation of the acid. This circulation of acid is important, since it maintains a supply of fresh acid over each part of the loose portion of the coil. Since the loose portion is being changed constantly, this general arrangement insures clean pickling of the entire coil.

At the conclusion of the pickling cycle, ranging from four to seven minutes, depending on the strength of the acid, the coil is transferred to the cold water tank where the acid is flushed thoroughly while the coil is rotated. The next movement of the mast transfers the coil to the hot rinse tank where it again is flushed and heated. The next step transfers it to the unloading conveyor where the mandrel is extracted and the coil rolled sidewise out of the way, permitting the next coil to roll into the charging position. Upon leaving the pickler the

coil is already oiled and is ready for storage, for shipment or for cold rolling.

For raising the mast quickly, without excessively large pumping equipment, a hydro-pneumatic accumulator is placed in one corner of the building. During the pickling a small capacity pump picks up the fluid exhausted from the hydraulic lifting cylinder, pumping it into the accumulator and building up a pressure of approximately 1000 pounds per square inch. Upon completion of the cycle, pressure of the accumulator is exhausted by means of an operative valve into the lifting cylinder, thus raising the load quickly. After turning the mast, it is lowered by exhausting the fluid into a receiver tank from where it again is picked up by the pressure pump. The mast is rotated simply by a motor-driven turning gear which is set by limit switches to turn the mast assembly exactly 90 degrees.

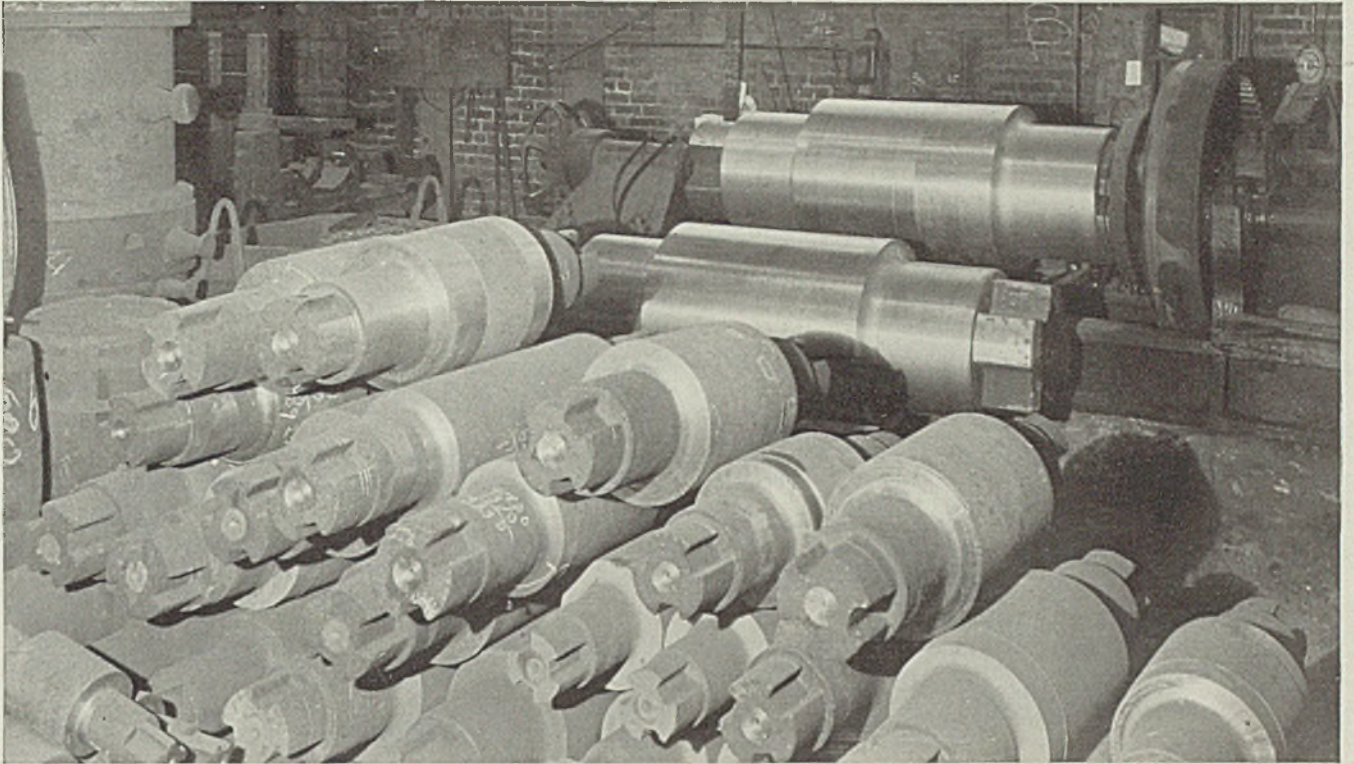
The machine may be built to any capacity to suit the customer's requirements, so that an entire coil may be submerged in acid at one time regardless of whether it weighs 1000 or 10,000 pounds. Capacity can be increased by using a longer mandrel which can be filled with a series of coils of smaller width. These multiple coils do not in any way interfere with the pickling action. To operate the machine a crew of three men is required. This compares with 22 men in a typical small shop pickler crew where it is necessary to recoil and reshuffle coils, inserting hairpins between the layers so as to permit the acid to penetrate.

## Training Men for Responsible Steel Plant Positions Receives Greater Attention



**D**EFINITE indication of the return of industry to the college campus in its search for trained men is seen in the announcement of the United States Steel Corp. that 594 graduates of 91 colleges and universities have accepted an opportunity of employment in subsidiary companies. The Corporation will continue to fill many important posts with employes who have not had the benefit of college training but who have worked their way up through the ranks. It is the aim, however, to put greater emphasis on the training of the men, whether they be college graduates or not, so that there will be available a reserve of competent man power to fill positions of responsibility as they occur.

In the accompanying illustration is shown a technical graduate of the observation corps checking a heat of steel with an optical pyrometer



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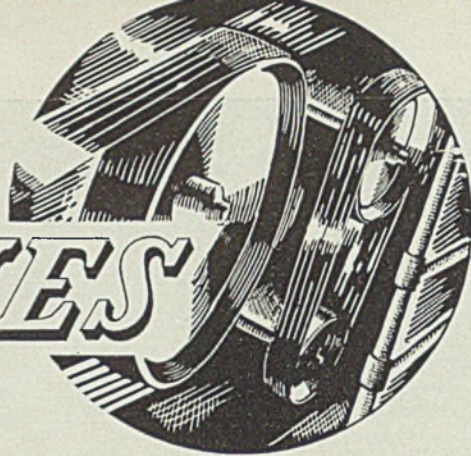
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# POWER DRIVES



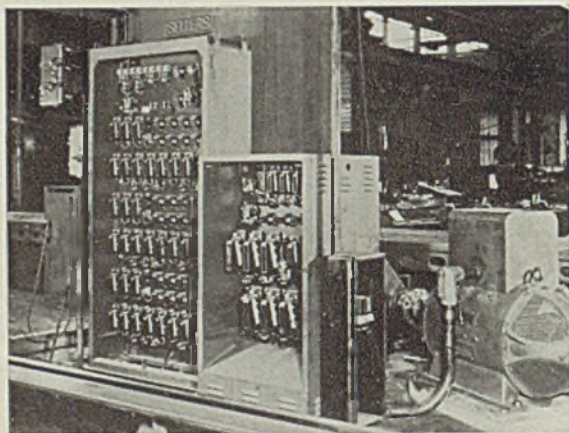
## Machine Electrification Utilizes Special Motors and Control

**E**LECTRIFICATION of machinery has proceeded to a point where individual motors are applied for each function of the machine. This is a natural result of the attempt to reduce costs by cutting the time that the machine is not actually in production and by

increasing the production of the machine.

Flexible operation of machine tools is readily obtained through the use of electrical control. In order to provide individual control for separate functions of a machine, it is often necessary to apply motors

BY R. S. ELBERTY\*  
Westinghouse Electric &  
Mfg. Co., East Pittsburgh,  
Pa.



**D**DOUBLE - COM-  
MUTATOR  
planer motor with  
platen and feed control on 60-inch Sellers open-side planer. The armature series-parallel control is in the control box mounted on the motor

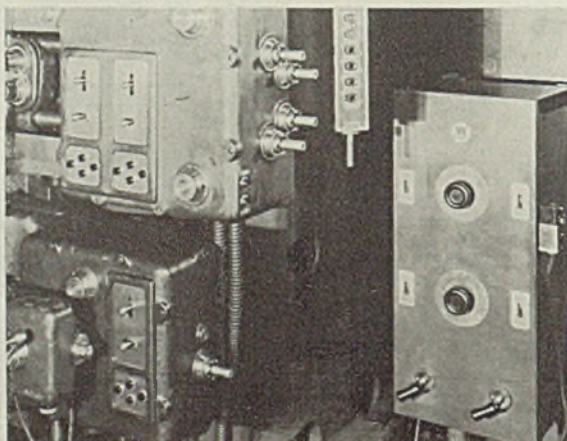
with special characteristics. Sometimes the suitable characteristics can be obtained by the selection of a particular type of standard motor, in other instances special motors should be developed for the application.

Direct-current motors have a wide field of application to machine tools due to their adjustable-speed characteristics. Shunt-field control can be used for speed ranges as high as 6 to 1 and speed ranges of 60 or 100 to 1 can be obtained using the variable-voltage or Ward-Leonard system with a new type regulator control recently developed for machine-tool application. Shunt direct-current motor has a relatively constant speed under changing load conditions. This type of motor is applicable to most machine tools and is used to obtain adjustable speeds with ranges as high as 6 to 1. There are but few limitations as to operating speeds.

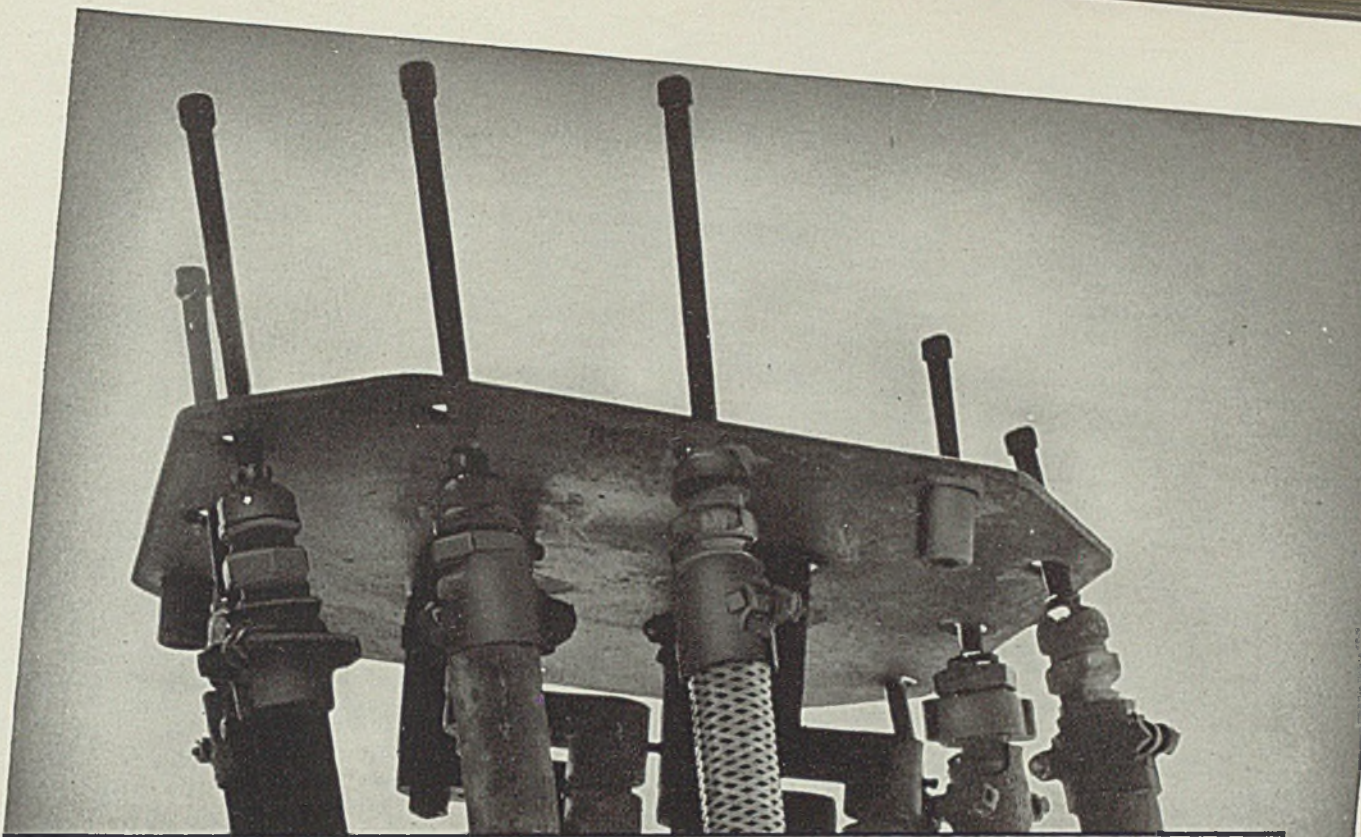
Compound direct-current motor has a dropping speed-torque characteristic and provides a high starting torque, often being capable of line-starting. This motor is used on punch presses and other flywheel machinery and is also suitable for rapid traverse.

Series motor provides a maxi-

**M**ASTER control switches on 60-inch Sellers open-side with switches for feeding and traversing the three heads and reversing platen drive



\*Abstract of papers presented at the Second Machine Tool Electrification Forum held under the auspices of Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.



# MILLIONS FOR DEFENSE

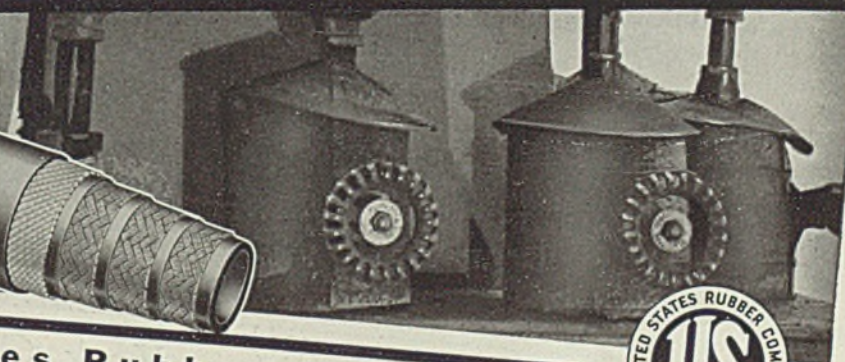
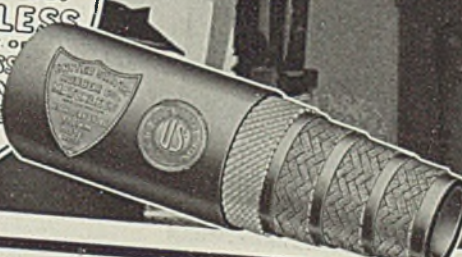
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July 19, 1937

United States Rubber Products, Inc., New York, N. Y.

mum starting torque but the speed varies greatly with a change in load. The motor is used widely in materials handling and traction equipment, but has not much application to the machine-tool field. Series type motors are used extensively on portable tools to obtain high speeds.

Alternating-current polyphase induction motor has the lowest cost and the simplest construction. This is the type of motor most widely used in industry. The motor is essentially a constant-speed device. Although multispeed, alternating-current motors are quite common, only a few certain limited speeds

are obtainable with these motors.

High-reactance, rotor, induction motor has a low starting torque (60-100 per cent) and has been used on grinders for smooth starting or on laundry washers for smooth reversing. The high-resistance motor provides a high starting and reversing torque (250-400 per cent) and is used on punch presses, tapping machines, traverse motors and similar applications.

By means of suitable windings, speed-torque curves falling between the high-resistance and high-reactance characteristics are possible, and standard motor windings usual-

ly fall about half way between the two extremes. Two, three, and four-speed induction motors are quite common in the machine tool and other fields; special-duty motors have been made but the actual speed-torque performance characteristics are fairly well defined within the limits outlined above.

With the general characteristics of motors in mind, it can be seen that most of the applications of a special nature can be handled by standard motors. Characteristics of direct-current motors depend greatly on the control used. The electric drive applied to a reversing planer uses direct-current motors to obtain adjustable speed, quick reversal with low power inrush, and emergency dynamic braking. Most of these characteristics are obtained by suitable control, but planer motors are built mechanically to have a low  $WR^2$ . The motors are also designed electrically to have low inductance fields and armatures. Speed ranges of 4 to 1 and 6 to 1 are standard for constant-voltage, field-control, planer motors.

Demand for a low cost, wide speed range, planer drive brought out the development of the double-commutator planer motor. This motor has a commutator at each end of the armature and uses a series connection of the armature for speed ranges from 150-300 revolutions per minute (50 horsepower) and a parallel connection of the armature for speed ranges from 300-1500 revolutions per minute (100 horsepower). Several such units are in operation and the Mesta Machine Co., Homestead, Pa., will shortly install their third double-commutator planer drive.

#### Drive Is Expensive

Double-commutator planer motor, illustrated, is quite special and more expensive than would be justified by the normal application. The advantage of low  $WR^2$  and compact design is not particularly important in many applications and the wide speed characteristics can be obtained by using two matched standard motors with the armatures connected in series for the low speeds and in parallel for the high speeds.

One new variable-voltage machine-tool drive employs a regulator to maintain constant speeds at low speeds and changeable loads. Although the special control is the main feature of the drive, a direct-current motor and motor-generator set are also required. Speed ranges as high as 100 to 1 are possible. The equipment is essentially a constant-torque drive and the horsepower is proportional to the speed, at least over the low-speed ranges. Two 35-horsepower, 40 to 1 speed range



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drives are already in operation on metal planers, two 50-horsepower planer drives are being built and four low-horsepower, milling machine feed and traverse drives are also being built.

Adjustable-speed, direct-current motors have definite limitations in load-carrying capacity, will not carry large overloads at high speeds, and do not compare with constant speed, direct-current motors which are ordinarily capable of heavy overloads for short intervals of time. Adjustable-speed, direct-current motors should not carry more than 115 per cent of rated load at the top speed, even for extremely short time intervals.

#### Standard Motors Useful

Many alternating-current motor applications of a special nature can be filled by standard motors. For example, the power required for drilling is ordinarily in excess of that required for tapping on the same size of machine. For mild tapping service (10-15 reversals per minute) the standard, high-starting torque, squirrel-cage motor is often suitable. In one extreme case, we have found that a standard motor can be used for 30 reversals per minute on tapping service.

Starting characteristics can be varied by means of special rotor or stator windings. The alternating-current induction motor has more starting torque than mechanical and electrical inertia, as compared with direct-current motors, and usually can be depended on for quick starting on low inertia loads. Short time rated, alternating-current motors are useful sources of power for traversing, clamping, or work handling motions. Where smooth starting is required, such as on a grinding machine, low starting torque motors can be developed to furnish as low as 80 per cent starting torque.

Recent development of alternating-current motors has been the adjustable-speed, adjustable-torque, induction motor for short time applications. The motor has high heating in the windings at low speeds and cannot be used continually. However, the field of application is fairly large; the motor was developed for motor-operated chucks, but can be used on valves, work handling motions, clamps or indexing devices.

In actual practice only one motor is used. Two phases are connected in open delta; the third phase is connected for opposite rotation of the motor and has an adjustable series resistor for torque and speed adjustment. Short time rated motors can be applied on most machine tools to advantage as few machin-

ery operations are of a continuous nature.

Electric drive for machine tools embodies many and varied problems of electric control. Some special control features can be obtained by the assembly of standard control apparatus, but special equipment must be developed for other applications. On high-speed spindles, indexing devices, or machine parts that must be locked in a stationary position, electrically controlled braking is required. On direct-current motors, dynamic braking is employed in most cases because of the relatively low cost,

magnetic brakes being used only where the motor is to be locked.

One simple dynamic braking control for traverse motors employs a ballast resistor which also serves as a dynamic braking resistor. This is a reversing control and the ballast resistor serves to reduce the motor speed for jogging service, allowing the motor to attain fairly high speeds for traversing.

Where magnetic brakes are applied to direct-current motors, either shunt or series coils may be used. The machine tool industry usually applies shunt brakes, series brakes having a wider field of application



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on hoists, cranes, and other materials-handling applications.

Alternating-current motors may be braked in a number of ways. Plugging is used on many machine-tool applications and has the advantage that low-speed inching can be obtained through a special control connection that employs a specific type of plugging relay. With this connection, the motor is started by pressing the "inch" button. When the motor reaches the speed at which the plugging relay is set to close, the closing of the plugging relay operates an auxiliary magnetic relay which shuts down the

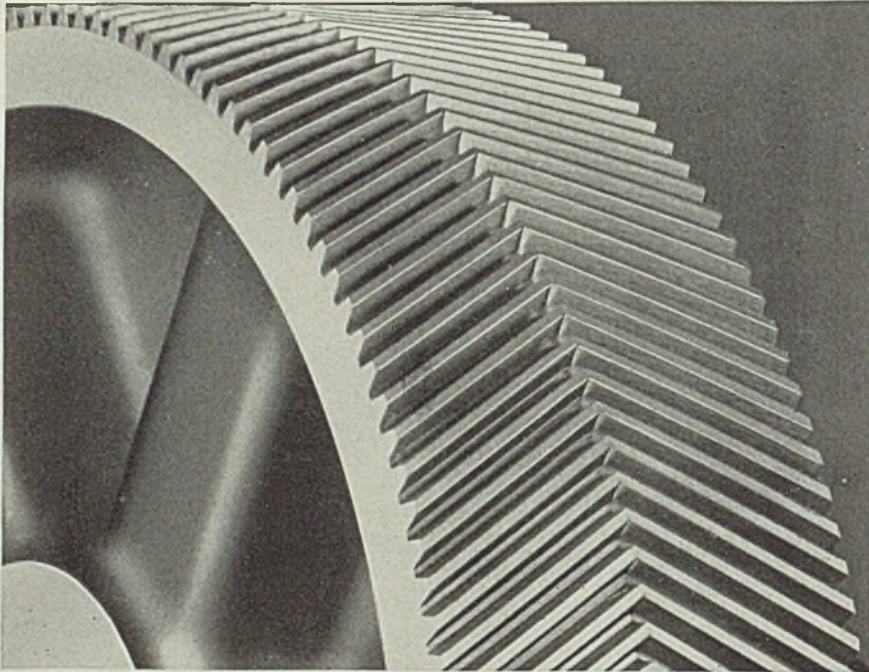
motor. The motor speed decreases until the plugging relay opens, at which time it is again energized and the cycle is repeated to operate the motor at about 50 revolutions per minute. This type of control is applied to lathes and other machine tools where a low inching speed is necessary when shifting gears.

On large milling machines and planers it is an advantage if the operator is provided with a portable control station. This is usually a pendant type of push-button station and is often supplemented by a master control station for set-up operations that are changed infrequent-

ly. The main advantage of electric drive as applied to large machine tools is the reduction of set-up time made possible by the flexibility of control.

Control of a special-purpose Ingersoll milling machine, illustrated, contains both portable and stationary master-control stations. This machine employs motor-operated field rheostats for the remote control of spindle and feed speeds. Tachometers show the speeds and "increase" and "decrease" push-buttons are used to control the speeds through the motor-operated rheostats.

Switch enables the control for the spindle, head and traverse to be



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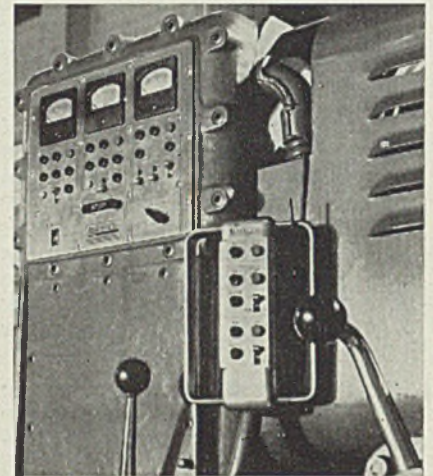
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**M**ASTER Control station for Ingersoll milling machine. Tachometers indicate speeds which are increased or decreased by push-button control

transferred from the stationary to the portable control. In this instance, the portable control is connected to the machine through a cable, but is not suspended as a pendant station.

New variable-voltage control has recently been developed which furnishes wider and more accurate speed control than was possible with the conventional Ward-Leonard system previously used. The new control uses a small motor-generator set as a regulator to control the motor speed.

## Discusses Roll Grinding

"Steel Goes 'Rolling' Along" is the title of an article by Karl G. Keck, roll grinder specialist, Cincinnati Milling Machine Co., Cincinnati. It discusses in general terms the roll grinding methods associated with the production of rolled steel. Originally published for employees in *Milling Review*, reprints of it may be had from the company.

# Metals Solving Corrosion Problems With Sewage Treatment Equipment

**P**RESENT-DAY trend is toward use of corrosion-resistant metals for vital parts of sewage disposal equipment. In many cases, concrete cannot be used for mechanical reasons and ordinary iron and steel corrode too rapidly, particularly when the nature or location of the installation make it impossible to apply or maintain protective coatings. It is for such applications that corrosion-resistant metals are necessary to keep maintenance and replacement costs at a minimum.

Presenting an address on corrosion problems of sewage treatment equipment before the New York State Regional Municipal Training institute at New York university, New York, recently, G. L. Cox, development and research division, International Nickel Co. Inc., New York, stated that prominent among the alloys used for combating corrosion of this type are monel, alloyed brass and bronze, steels of the stainless and more highly alloyed corrosion types, and the clad metals such as nickel-clad and stainless-clad.

#### Not Used Extensively

Referring to the chromium-nickel-iron alloys containing from 3 to 35 per cent nickel and 8 to 35 per cent chromium, and in particular the 18-8 chromium-nickel-type known as stainless steel, he said that applications of these alloys in sewage equipment are not extensive, but their established corrosion resistance is such as to make them useful in such cases.

Stock solutions of ferric chloride used for treating sludge frequently play havoc with valves, injectors, spray nozzles and other equipment. The high nickel alloys, containing in the neighborhood of 58 per cent nickel, 14 per cent chromium, 17 per cent molybdenum and 5 per cent tungsten, possess satisfactory resistance to corrosion of this nature, Mr. Cox further pointed out.

Many applications of sewage equipment call for cast materials available at moderate cost with good mechanical properties and resistance to corrosion. A cast iron containing usually 14 per cent nickel, 6 per cent copper and 2 per cent chromium, fulfills these requirements, the speaker stated. Corrosion tests in operating equipment show definite superiority over ordinary cast iron, especially in its freedom from that familiar type

of corrosion known as tuberculation.

Certain parts cast from tin bronzes often are inadequate in mechanical properties, he continued. Bronzes containing particular combinations of tin and nickel are known to possess age-hardening properties. Upon suitable heat treatment, they develop strengths comparable to some of the alloy cast

steels. By their use, the corrosion-resistant properties of the bronzes are combined with greater strength than normally obtainable with unalloyed bronze.

There is sufficient evidence to indicate that high-strength, low-alloyed steels and irons, such as the wrought steels containing 1 to 5 per cent nickel and the nickel-chromium cast irons containing approximately 3 per cent nickel and 1 per cent chromium, possess sufficient margin of corrosion resistance to make them useful. The improved corrosion resistance of alloy cast iron is attributable to its finer grain structure and more uniformly dispersed

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graphite which is considered to afford better resistance to graphitic corrosion.

Mr. Cox said that nickel silvers, a group of white bronzes containing from 8 to 30 per cent nickel, are used widely for plumbing fixtures because they are characteristically a solid corrosion-resistant white metal without thin plated coatings to wear off. The presence of acid and other chemical fumes in chemical laboratories related to the sewage disposal industry, as well as in others, makes it desirable to have plumbing fixture installations with improved resistance to corrosion.

## Steel Industry Under an Economic Microscope

*Economics of the Iron and Steel Industry*, by Carroll R. Daugherty, Melvin G. de Chazeau, Samuel S. Stratton; two volumes, cloth, 1188 pages, 6 x 9 inches; published by McGraw-Hill Book Co. Inc., New York; supplied by STEEL, Cleveland, for \$12; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London.

The full report of the findings of a survey of the economics of the steel and iron industry is presented in these two volumes. A condensed

presentation of the findings was made Feb. 15 at Pittsburgh, at a dinner under the auspices of the Falk foundation. (See STEEL, Feb. 22, page 17).

Conclusions set forth in this report were that the workers in the steel industry should be organized on a vertical rather than a craft basis; collective bargaining should be on a national basis under which the workers are accorded the unrestrained exercises of the liberties of self-expression and participation in measures affecting their welfare.

The study was undertaken by the Brookings Institution, the Falk Foundation and the University of Pittsburgh as a supplement to the general analysis of the national recovery administration. As the bureau of business research staff was engaged on a program of regional economic research a special staff was formed, consisting of the three authors, under direction of Ralph J. Watkins.

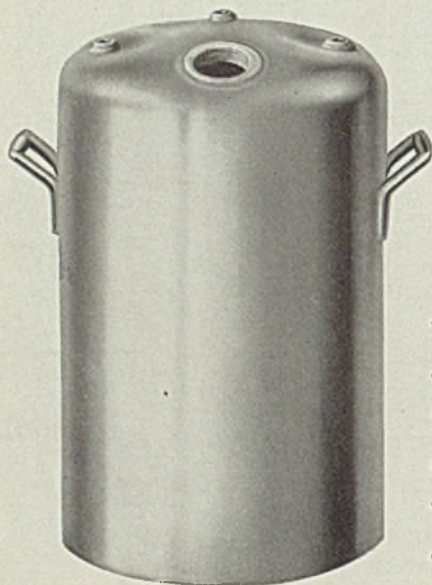
Objectives of the study were to assemble and analyze available data on economic conditions before the advent of the steel code, to evaluate influences operating under the code in the light of these conditions and trends; to appraise in terms of these objective answers the effects of the code and evaluate the results of that experiment in industrial self government; to make recommendations concerning future government and industrial policy with respect to the problem of regulation of the iron and steel industry.

Of necessity the report is voluminous and as an aid to the reader each chapter is summarized at its close and the principal trends in the analysis are drawn together in Part IV. In the 70 pages of that part is a summary of the findings designed to give introductory perspective, if read first, and to afford a concluding synthesis, if read last. However, this summary cannot stand alone and the logical and factual basis on which the conclusions rest must also be comprehended.

## Offers Reprints of Article On Stainless Aircraft

International Nickel Co. Inc., 67 Wall street, New York, announces that it is in a position to supply reprints of an article by E. J. W. Ragsdale, chief engineer, stainless steel department, Edward G. Budd Mfg. Co., Philadelphia. Entitled "Is aviation Ready for Stainless?" and published in *Metal Progress* for March, 1937, this article discussed the possibilities of stainless steel in designing and building structures of great strength and light weight and which at the same time are resistant to corrosion.

# PRESSED



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# *Hackney*

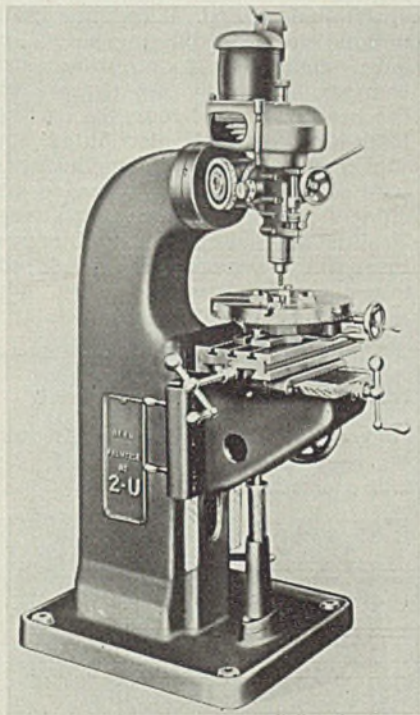
MILWAUKEE

## DEEP DRAWN SHELLS AND SHAPES

# NEW EQUIPMENT

## Milling Machine—

Reed-Prentice Corp., Worcester, Mass., has announced the No. 2U universal milling machine adaptable to general tool and die work and with a universal, self-contained, motor-driven head for milling, drilling and boring at all angles. The spindle is heat treated and ground, machined to take No. 2 Morse taper or No. 7 B & S taper, with collets to fit this taper from  $\frac{1}{8}$  to  $\frac{1}{2}$ -inch diameter. The quill is treated with a special chromium process giving



No. 2U universal milling machine has been announced by Reed-Prentice Corp.

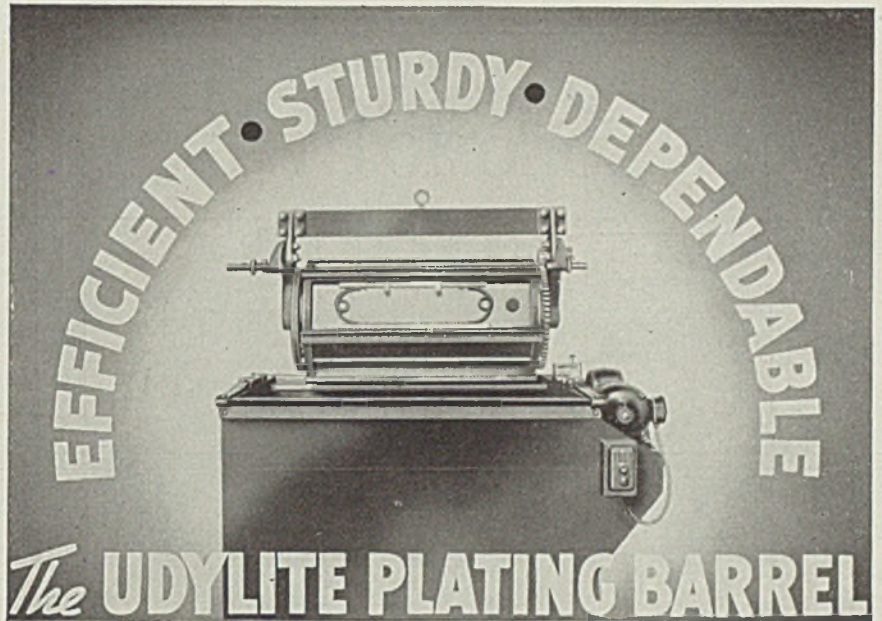
it a surface hardness one point below that of a diamond. Housing is lapped and closely fitted to the quill. Drilling and boring is by means of rack and worm feed, and a  $\frac{1}{2}$ -horsepower, 1150 revolutions per minute, ball bearing motor is used. There are six spindle speeds ranging from 275 to 4250 revolutions per minute, while the spindle has six splines and is driven by a pulley mounted on separate ball bearings. The universal head can swivel to any angle parallel with the longitudinal feed. Any angle can be obtained up to 60 degrees parallel with

the cross feed from the center toward the column and any angle 30 degrees from center toward the front of the machine. Entire unit is ruggedly built, especially the column and knee where rigid, full box form design eliminates vibra-

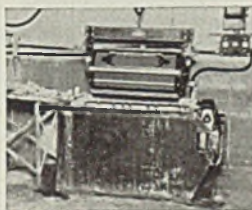
tion and its resultant effect on the work. All castings contain a high percentage of steel to suit the duty involved. Steel chip guard in top of knee protects the cross feed screw from chips at the front while a heavy leather curtain is provided at the rear, hinged to table and column.

## Mercury Lights—

General Electric Vapor Lamp Co., Hoboken, N. J., has introduced a modernized series of mercury lighting units of the long tube, Cooper



## RECORD OF PERFORMANCE



↑ This Udylite barrel has been plating 200 lb. loads, 3 loads per hour, 18 hours per day for 7 months—no repairs.

↓ After 8 months, 24-hour-a-day service in a job plating plant, this Udylite Barrel is still in perfect condition—no maintenance cost.



The Udylite Plating Barrel is efficient! The electrical insulation has been so perfected that all of the current goes directly to the work and "treeing" is eliminated. Steel reinforcing members and cylinder bearings are anodically charged . . . cathode leads are encased in unbroken insulation from bus bar to danglers . . . rubber panels do not absorb plating solution.

For strength and dependability, the Udylite Barrel has no equal. The unit is made of the strongest possible combination of materials—steel and special shock-resistant rubber. This results in a plating cylinder of great strength and resistance to rough usage.

On the basis of its remarkable performance, the Udylite Plating Barrel merits investigation. Get full details and prices by writing to the nearest Udylite office.

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1943 Walnut  
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3756 Carnegie  
Avenue

San Francisco  
114 Sansome  
Street

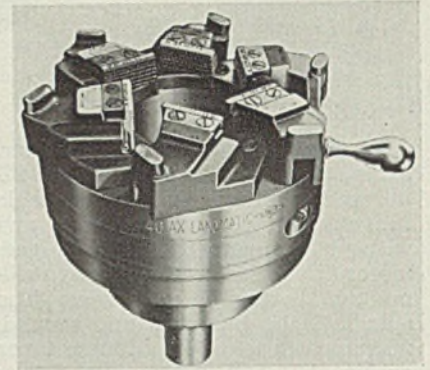
Hewitt type, improved in lighting efficiency, operating stability and appearance. The new 50-inch light source operates at 350 watts alternating current, its bare lamp efficiency being 19.4 lumens per watt. The 33-inch source operates at 280 watts with an efficiency of 17.1 lumens per watt. As equipped with newly-designed enameled reflectors, the complete lighting units have an overall efficiency of about 15 lumens per watt. Both the reflector and tube are now intended for mounting in a true horizontal position. Starting, and restarting after any current interruption, is instantaneous. The

light produced is strong and detail-revealing yet not glaring.

**Die Head—**

Landis Machine Co., Waynesboro, Pa., has added to its line of threading equipment a new die head for threading large diameters and long thread lengths. Diametrical capacity of the new head is 4 to 5½-inches with a pitch range of 7 to 20 threads per inch. The thread length, while not unlimited, is sufficient for an exceptional range. The head illustrated has a capacity of 7-inch thread length on 5½-inch diameter. This new 40 AX Landmatic head is of

the self-opening, pull-off type for application to turret lathes and to hand screw machines. It is heat treated throughout and ground for maximum wearing qualities. Diamet-



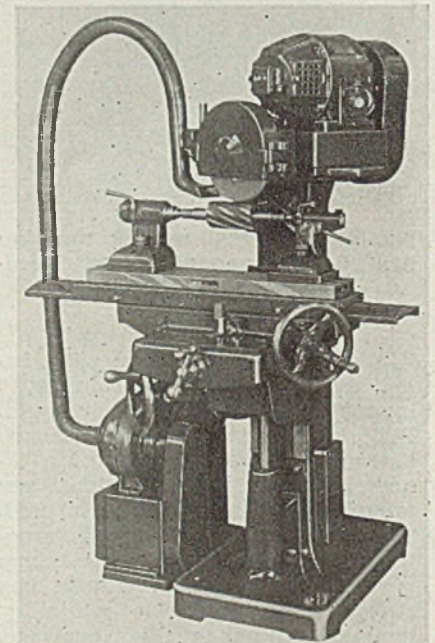
Landis die head has six chasers instead of four

rical graduations on the circumferential surface and micrometer graduations on the adjusting screw insure rapid and accurate size changes. By using six chasers on the head instead of four, the cutting load is more widely distributed, and the working parts of the head as well as the part being threaded are subject to much less cutting stress. Results are said to be an increase in tool life with more threads obtained per grind of the chaser and improved quality of the product.



**Surface Grinder—**

Covel Manufacturing Co., Benton Harbor, Mich., has announced as a



Covel swivel head surface grinder has all adjustments accurate and convenient to the operator

# ATLAS GAS-ELECTRIC LOCOMOTIVES



45 Ton Locomotive especially suitable for economical interplant switching service.

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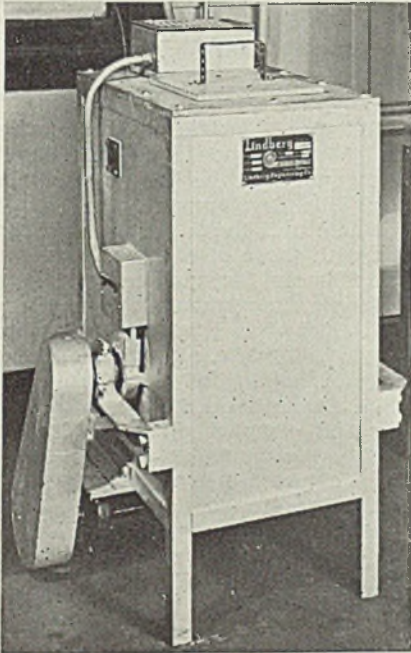
CLEVELAND, OHIO

new development its No. 72-A swivel head surface grinder with swivel table equipped for all kinds of milling cutters, including spirals, counterbores, special tools, and irregular surfaces. Centers or fixtures can be mounted on swivel table which is graduated on one end in degrees and on the other end in inches per foot taper. Lip rests for indexing can be fastened to head or table. The large grinding wheel is mounted on a heavy spindle and runs in ball bearings, eliminating end play, and is driven by a 1½-horsepower motor through a V-belt at any one of three speeds. The head swivels 30 degrees in either direction and the motor is mounted on a vibration-absorbing base which swivels with the head. All adjustments are accurate and convenient to the operator. The longitudinal travel of the table is through a spiral gear, which is mounted on a ball and roller bearing, and a rack on the table. This adjustment is claimed to be smooth and fast, but always under full control of the operator. Machine can be equipped with a dust exhaust unit, centers or vise.

♦ ♦ ♦

#### Laboratory Furnace—

Lindberg Engineering Co., Chicago, has announced a small, inexpensive, laboratory furnace built on



Lindberg laboratory furnace has a temperature range up to 1250 degrees Fahr.

the same principle as the production-type Cyclone furnace. This new unit has a work chamber 8 inches in diameter and 10 inches deep and is provided with a plug-type cover easily lifted off for inserting the

load. Electric heating elements are mounted in a separate chamber, eliminating all direct radiation to the charge. A powerful blower fan circulates the heated air through the air chamber, assuring rapid uniform heating. Ruggedly built, the furnace is constructed of heavy steel plates reinforced with structural angles which extend to the floor, forming the base and supporting the furnace at a convenient working height. Efficient slab insulation keeps heat loss at a minimum throughout the temperature range up to 1250 degrees Fahr. This laboratory Cyclone furnace is said

to serve as an accurate and inexpensive pilot furnace for checking up on production or for pre-determining the response to specified heat treatments, as well as for tempering small tools and individual steel parts.

♦ ♦ ♦

#### Humidifier—

Unit Heater & Cooler Co., Wausau, Wis., has announced the Grid Humidifier, a product to be attached in front or directly behind a unit heater. To install it, no air lines or extra piping are necessary. The me-

Presenting

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CONVENIENT  
CHARACTERS

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### Flanged and Dished Heads

The character of flanged and dished heads is largely commensurate to the quality of steel plate from which they are formed. CENTRAL plates being homogeneous throughout do much to place these products, with their range to large diameters and heavy gauges, paramount in their field.

**CENTRAL IRON AND STEEL COMPANY**  
HARRISBURG EST. 1853 PENNA.

dium for humidifying purposes is immediately at hand in the unit heater. Operation of the humidifier is at temperatures higher than the room atmosphere, which causes quick absorption of the humidifying gas or fluid. The humidifier may be operated with the unit heater as an individual unit and, even though the fan on the heater is shut down, the humidifying action of the device continues to function until such time as desired conditions are reached in the room, when the controls on the humidifier will shut it down. Installation of the humidifier with unit heaters makes possible their use in all kinds of manufacturing that re-

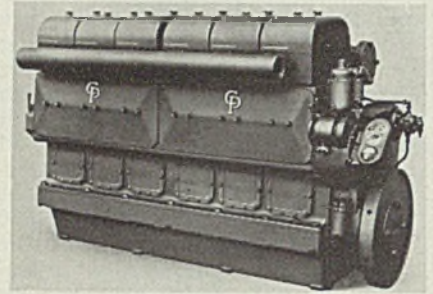
quire variation in humidity conditions due to special processes or conditions.

♦ ♦ ♦

#### Diesel Engines—

Chicago Pneumatic Tool Co., 6 East 44th street, New York City, has announced its line of type 8, CP diesel engines, of which there are four models. The new engines are of the four-cycle, direct injection type, especially designed for medium speed and continuous duty. The combustion chamber shape, the location of the streamlined inlet valve and the fuel injection system

are correlated to give great combustion efficiency. The valve passage promotes a rotary swirl during the intake stroke, and the piston on the compression stroke displaces the outer ring of air in the com-



Chicago Pneumatic new diesel engine is made in four models

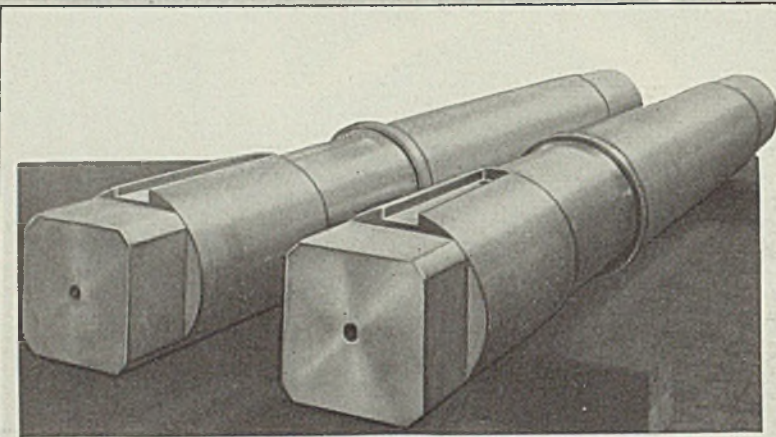
bustion chamber in toward the fuel nozzle. Into this controlled air flow combined with inlet swirl the fuel is injected from the centrally located multi-orifice nozzle. This complete mixing of fuel and air results in a clean exhaust at all loads and a fuel economy equalling that of large, low-speed diesel engines. Standard accessories are externally mounted and removable as complete units for ready repair or replacement. Dust and oil-tight covers on cylinder heads and over the cam shaft permit easy access for adjustments.

♦ ♦ ♦

#### Motor Brake—

Reliance Electric & Engineering Co., 1088 Ivanhoe Road, Cleveland, has announced the "disk-brake" motor. This development combines in a single unit the functions of a motor with those of a powerful brake, and is useful for small cranes, hoists, auxiliary movements on machine tools, and other equipment on which quick, automatic, and accurate stopping or holding of a load is necessary. Brake itself consists of a simple and compact disk-type friction device, mechanically and automatically engaged when the current is shut off and magnetically disengaged when the current is applied. The friction lining is supported on a square steel hub which is keyed to the motor shaft. A "wear-indicator", combined with the manual brake release mechanism, gives warning whenever wear needs to be taken up. This setting, however, is separate from the torque adjustment, so that either may be adjusted independently. Varying braking power, from maximum to 50 per cent of maximum, may thus be obtained as needed. The brake mechanism operates equally well in any position, and may be fitted to any Reliance motor except fan-cooled.

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# RECENT PUBLICATIONS OF MANUFACTURERS

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

**Valve Chart**—Ohio Injector Co., Wadsworth, O. Comparison chart of OIC catalog figure numbers with those of other manufacturers.

**Boring Bars, Reamers**—Gisholt Machine Co., Madison, Wis. Bulletin covering boring bars and reamers with specifications, prices, parts, and accessories.

**Rod Straightener**—American Foundry Equipment Co., 555 Byrkit street, Mishawaka, Ind. Bulletin No. 10, dealing with the American rod straightener and shear machine.

**Caustic Soda**—Pennsylvania Salt Mfg. Co., 1000 Widener building, Philadelphia. New bulletin on liquid, solid, flake, and ground caustic soda, designed as a reference and data book for users.

**Lighting**—General Electric Vapor Lamp Co., Hoboken, N. J. Illustrated booklet "Greater Lighting Efficiency" giving facts and figures about the newly-improved, horizontal Cooper Hewitt lamps.

**Gas Engines**—Worthington Pump & Machinery Corp., Harrison, N. J. Bulletin S-550-B13, describing and showing installations of Worthington sewage sludge, gas engines of the vertical, four-cycle type.

**Annealing Covers**—Surface Combustion Corp., Toledo, O. Booklet entitled "Modern Annealing Practice" illustrating by photographs and blueprints six different forms of radiant tube annealing covers for sheet strip, rod, and wire.

**Fine Steels**—Ludlum Steel Co., Watervliet, N. Y. Pocket size, wire-bound book entitled "Fine Steels by Ludlum," containing charts, conversion tables, tool steel finder, stainless finder, and many facts on various steels.

**Sand Cleaning**—Hydro-Blast Corp., 111 West Washington street, Chicago. Bulletin No. 102, covering the Hydro-Blast wet sand cleaning method, showing installations and operations and giving engineering data and time studies on the cleaning of various types of castings.

**Steels**—American Rolling Mill Co., Middletown, O. Folder dealing with Armco H. T. 50, high tensile steel. Also booklet on chromium nickel grades of Armco stainless steels, containing detailed information on fabricating, chemical and physical properties charts, and corrosion resistance data.

**Materials Handling**—Timken Roller Bearing Co., Canton, O. The 1937 conveyor and transfer equipment section of the Timken Engineering

Journal, presenting typical suggested layouts for the application of Timken bearings to all types of belt and pan conveyors, with data, tables, and sixteen new pages deal-

ing with applications to gear drives for conveying equipment.

**Enamels**—Roxalin Flexible Lacquer Co., Elizabeth, N. J. Product summary on a chip-proof flexible lacquer-enamel; an envelope is attached containing sample strips of aluminum, brass, and cold-rolled steel sprayed with the enamel. Also available is a product summary on the Blue Knight no-fingerprint taupe finish.



*True to your dies*

*For 35 years . . .*

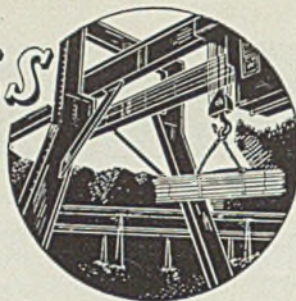
The Skill gained in 35 years of continuous hammer-building qualifies ERIE as *your* hammer builder for the most difficult of forgings . . . Power and Up-keep Economy, Speed and Safety are combined with Flexible Control. The skill of the most practiced eyes and experienced hands is built into Erie Steam Drop Hammers . . . 500 forge shop men will want to read Bulletin 316.

**ERIE FOUNDRY COMPANY**  
ERIE, PENNSYLVANIA, U. S. A.

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<b>FRANCE</b> Fenwick, S. A.	<b>CANADA</b> John Bettram & Sons Co. Ltd.	<b>ENGLAND</b> Burton, Griffiths & Co. Ltd.



# MATERIALS HANDLING



controlled by an individual motor. A special control room is located directly below the tunnel and individual control instruments are provided for each stage. The stages are steam-heated and the entire operation requires 24 hours. Variable speed is a feature of conveyor control; control buttons for starting and stopping the conveyor are located alongside other instruments in the

## Trucks and Conveyors Speed Battery Output

(Continued from Page 56)

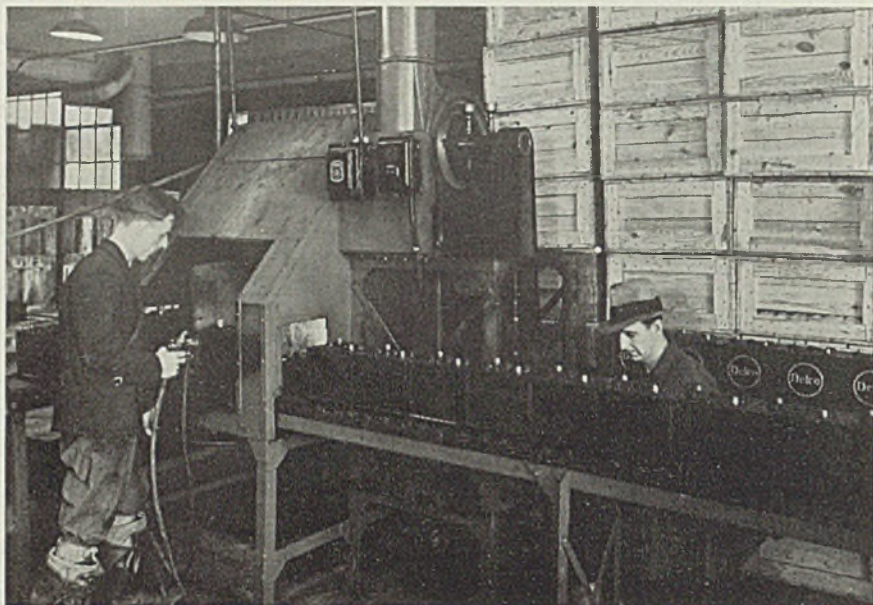
the reclamation department where it is available for grid casting.

Oxides are batched very carefully, each batch being weighed on an industrial type scale which prints a record slip for each lot. Each "egg" load, for the tank holding the batch is so termed, weighs 2000 pounds. It is picked up by an overhead crane of 2-ton capacity and is emptied from the "egg" to the mixers. The crane is cab-controlled. In the mixers the oxide is mixed under carefully specified control to a homogeneous paste which is then delivered to the pasting machines.

### Curing Tunnel ConveyORIZED

In the pasting department the inspected grids are uniformly filled as they are passed automatically through the pasting machines. As the pasted plates emerge from the machine, they are placed in racks and these racks are conveyed to the loading end of the curing tunnel.

This curing tunnel is an interesting one, and was designed by the



plant engineers. It is approximately 165 feet long and has a heavy-duty conveyor passing through it. The racks containing the pasted plates are stacked on this conveyor and passed through five stages of curing, each controlled within 2 degrees Fahr. Each of the five stages is

FIG. 5—Cases of the batteries are given a spray coat of lacquer at this station. The operator sitting on the sliding seat between the conveyors is brushing the colored medallions on the cases

control room beneath the tunnel and also at each end.

Assembly operations are performed on two conveyors arranged consecutively in a straight line which extends a total of approximately 120 feet down one side of the assembly floor. The first of these is known as the burning conveyor. It is on this equipment that the plates and lead parts are assembled into groups by the process of lead burning. Lead burning in simple terms is the melting together of two or more lead parts so that an assembly is formed.

### Gang Torches Are Used

The first operation is to place the plates in racks attached to the conveyor chain, after which the lead parts that will form cell terminals are put into proper place. As the rack proceeds around the conveyor, it passes under a gang torch where ten extremely hot flames melt the strap of the lead parts and the lugs of the plates so that they are completely molten. When the work has cooled, the plates and parts are in integral assembly called a group.

## "HERCULES" RED-STRAND WIRE ROPE

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Furnished in Flattened Strand, Round Strand, Preformed, Steel Clad and Non-Rotating constructions.

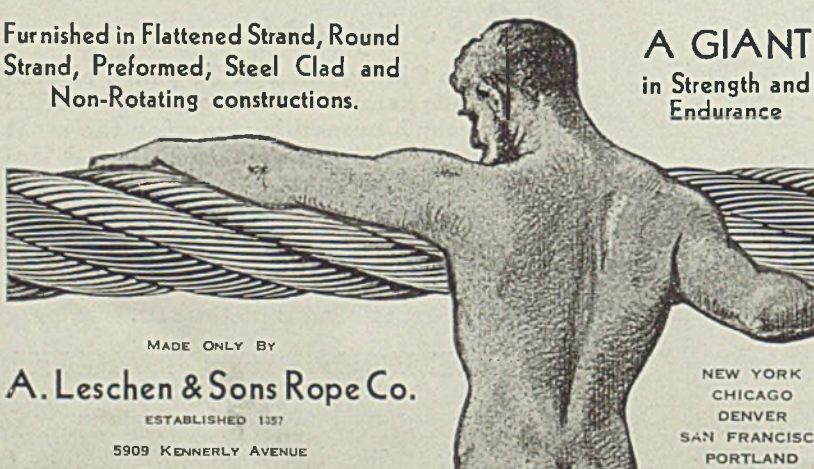
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SEATTLE

Both positive and negative plates are burned into groups and as they are automatically ejected from the racks they are nested together with plates of opposite polarity alternating.

After being inspected, these assemblies are placed on a slat conveyor on which they pass through the subsequent assembly operations. These operations are separator insertion, cover assembly, inspection, assembly in cases, burning of cell connectors and terminals, sealing, final touchup and final inspection. Fig. 3 shows the section of the conveyor on which the cells are being inserted in the cases. After assembly operations are complete, the batteries are filled uniformly with acid by means of a vacuum filler. All three cells are filled at the same time.

Separators are made of cedar from the northwestern lumber regions. They are received in wooden boxes, 3000 to a box. Approximately 125,000 to 150,000 are used each day and inventory of these essential little wooden parts averages 5,000,000. Upon receipt they are transported on four-wheel trucks to storage and before use are put through a bath of a 2 per cent solution of caustic to remove any substances which would be injurious to the battery or cause expansion of the wood fibers.

#### Use Many Steel Skids

From the assembly conveyor, the batteries are placed on steel skids as shown in Fig. 4, and these skids, by means of lift trucks, are placed on the charging floor adjacent to drops which are connected to the generator room. In the generator room are two motor-generator sets, one of 300-kilowatt and the other of 500-kilowatt capacity, which are used for changing 4100-volt alternating current to 250-volt direct current for charging purposes. Each circuit is equipped with a double-throw switch so that a reliable ammeter may be connected into any one of the circuits and it is by this means that the charging is controlled.

When batteries are on charge, a check is made each hour to make sure that the rate is being maintained at the proper value. After charging has been completed, the skids of batteries are placed on what is known as the charge conveyor where each battery is given first a high-rate discharge test to make sure that it is up to normal capacity and that its three cells are uniform.

Next the specific gravity of the acid is checked, after which the level of the acid is adjusted to a uniform and correct height. As the skid is conveyed beyond this point, the batteries are washed and dried,

so that when the skid has been delivered at the end of the conveyor the batteries are ready for shipment, if they are for original equipment in automobiles.

Batteries that are to be shipped to dealers for replacement sale are taken to another set of equipment where they are given a coat of black lacquer and the medallion is painted in the proper color. These operations are shown in Fig. 5. Gold, silver, orange and green are the colors used to denote the various guarantees.

Packing and shipping operations reflect the results of long experience.

Batteries for carload domestic shipment are not boxed or crated, instead they are stowed in a number which has proved most effective. This is known as the "unit load" method. Five heavy-gage wires are placed lengthwise on the floor of the car with ends of sufficient length to double back over and make complete loops around the cargo. The batteries are then packed on the floor of the car with corrugated pasteboard separating each two batteries. Then a flooring is placed over the first layer of batteries and an equivalent number of batteries is put on the second layer. After this,

**WELLMAN**  
*Material Handling Equipment*

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For  
**STEEL MILLS,  
BLAST FURNACES  
COAL AND ORE HANDLING**

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ENGINEERS CONSTRUCTORS MANUFACTURERS  
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large sheets of paper are used to cover the whole load and then the two ends of the wires are brought together and twisted, by means of suitable equipment, so that the entire load of 756 batteries is tied literally into one bundle.

Most of the less-than-carload domestic shipments of batteries go out in trucks and for that reason it is not necessary to crate them. The batteries, before loading, are encased in corrugated pasteboard cartons. Usually the load is braced into the truck by means of wooden shoring so that there can be no movement in transit.

Export shipments are made in

wooden boxes and the manner of packing is most exacting. Twelve pads of excelsior are first placed in position around the inner sides of the box. Two additional strips of excelsior padding are placed between each two batteries and two more in the center of the box between rows. The entire load is then blocked with 2 x 4-inch timbers. Hand nailing is used to fasten the cover, and the box is then bound with two steel wire ties. All boxing is done on a roller conveyor located alongside the wall of the building, close to the covered loading dock doorway.

Safety practices are enforced in

the plant. A fully-equipped department for medical inspection is provided, and here a company physician gives each employe frequent and thorough examinations.

## Textbook Prepared on Science of Wholesaling

*Wholesaling Principles and Practice*, by Theodore N. Bechman and Nathanael H. Engle; cloth, 628 pages, 5 1/4 x 8 inches; published by the Ronald Press Co., New York; supplied by STEEL, Cleveland, for \$4; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London.

With wholesaling an important segment of the modern business structure and comparatively little literature on the subject, the authors have endeavored to make a scientific inquiry and analysis into this branch of trade to provide a text book in courses in wholesaling or advanced marketing. The scientific student of marketing, the economist and the statistician may find it helpful in arriving at a sounder appraisal of this neglected field of economic endeavor.


However, the chief aim is to provide business men with a practical guide to solution of their distribution problems. In the first six chapters basic concepts are laid down and explained. From that point readers interested in the problems of distributors, agents, brokers and large-scale retailers will find the chapters specialized for their various needs.

Ample charts, diagrams and tables serve to illustrate various points in the text and an index provides quick reference.

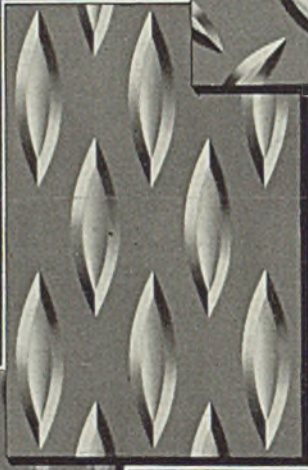
## Improve Bonding Mortar For Furnace Construction

Further improvement recently has been announced in the refractoriness and working quality of Harwaco Bond, a high temperature bonding mortar for use in industrial gas furnace masonry. The improved product has a pyrometric cone equivalent of cone 32, or 3092 degrees Fahr. Use of this diaspore-base bonding mortar is increasing for laying fireclay, super-duty fireclay and high-alumina brick where a strong bond must be maintained at the upper limits of industrial furnace operating temperatures. It remains uniformly soft and plastic throughout the steel drum or container in which it is shipped. The improvement in the product is the result of several years of research by Harbison-Walker Refractories Co., Pittsburgh.

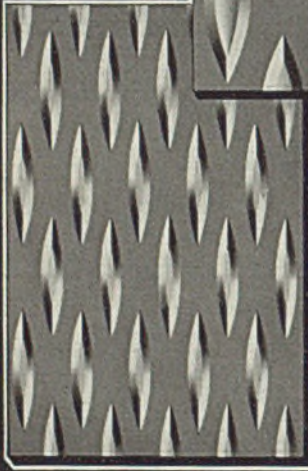
*Specify*  
**"A.W." ROLLED STEEL FLOOR PLATE**  
*for Safety!*



**"A. W."  
Super-Diamond  
Pattern**



**"A. W." Standard  
Diamond  
Pattern**



**"A. W."  
Diamondette  
Pattern**


**Safety for Busy Workers**

is the principal result you gain from any "A.W." Rolled Steel Floor Plate pattern you install. But here are others:

You gain a PERMANENT installation at amazingly low first cost—and you eliminate all upkeep cost. Installation is quick, and need not interfere with men or production. Cut to any required shape and easily matched. As readily applicable to new construction as to replacement or repair work. A sanitary flooring which drains quickly—which is heat proof, crack proof, oil proof.

Write for newly revised literature—just issued—showing five "A.W." Floor Plate patterns to meet all needs, and giving complete engineering data.

The three patterns are here shown half size.



**ALAN WOOD STEEL CO.**  
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**111 YEARS' IRON AND STEEL MAKING EXPERIENCE**

# Backlogs Promise Activity Until Fall Buying

## Scrap Rise Abrupt; Production in Gain; Ore Movement Heavy

**W**ITH production snapping back promptly after removal of the labor blockade that limited output since late in May steelmakers give the most positive evidence of belief in continued strength and expectation of renewed buying after the usual summer slackness.

In fact, except in bars, strip and some other lines, they find it incumbent to make every effort to give delivery on as much booked tonnage as possible to be in position to meet requirements of consumers when fall buying starts. In sheets and tin plate best efforts to reduce backlogs have not had much effect and reservations by automobile builders for 1938 models are just round the corner, some small lots already having been covered.

Bookings by some leading sellers have been at only 25 to 30 per cent below the June average and considerably better than at this time last year.

Announcement of finished steel and other prices for fourth quarter is expected within a short time and the belief is that prices will be reaffirmed on most products, with minor exceptions.

To market observers who believe scrap prices foretell future conditions the present situation forecasts an active fall and winter. The increase in price last week was general at \$1 to \$2 per ton, dealers finding difficulty in obtaining sufficient tonnages to meet requirements. The rise is fully as rapid as the decline that started in April.

Full operation in plants made idle by labor interference was felt last week and the national operating rate rose 8 points to 82 per cent of capacity, the best level since interruptions started at the end of May. Resumptions gave Cleveland 32 points rise to 79 per cent, Chicago 14 points to 84, Youngstown 2 to 78, Pittsburgh 21 to 88, Wheeling 14 to 91. Eastern Pennsylvania rose 3 points to 68 and Detroit 2 points to 97. New England showed the only decline, 2 points to 78. No change was shown by Birmingham at 96 per cent, Cincinnati at 93, St. Louis at 93 and Buffalo at 88.

Movement of iron ore from the Lake Superior district continues at accelerating pace, June shipments being 10,107,883 tons, a gain of 64,027 tons over May. For the season, to July 1, total shipments were 23,922,294 tons, more than double the 11,677,510 tons in

### MARKET IN TABLOID

**DEMAND** . . . . . *Lighter but much stronger than year ago.*

**PRICES** . . . . . *Steady, fourth quarter announcement expected soon.*

**PRODUCTION** . . . *Operations rise 8 points to 82 per cent as mills resume.*

**SHIPMENTS** . . . . . *At high rate as consumers' needs are large.*

the corresponding period of 1936. Strike conditions in steelworks had no effect on ore shipments and steelmakers are building stocks against heavy demands expected to continue through the winter.

Automobile production last week rose to 115,380 units from the previous week, which was shortened by the holiday, but failed to reach the level of the second previous week. General Motors produced 49,840 cars, Chrysler 26,300 and Ford 26,655.

Imports of steel and iron products in May were considerably under those of April and of May, 1936, reflecting the world situation, in which foreign nations need their products at home. May imports, aside from scrap, were 39,877 gross tons, compared with 56,484 in April and 43,696 in May, 1936. Scrap imports, principally from Canada, were 9175 tons in May, 11,713 in April and 15,695 in May, 1936. Five months imports, excluding scrap, were 226,058 tons, compared with 212,723 tons in the same period of 1936.

Great Britain continues production of steel ingots and pig iron at a rate close to the highest it ever attained. In June 1,106,400 tons of ingots was made, only slightly below the alltime record of 1,109,500 tons made in March. Even at this pace domestic steel supplies are insufficient and arrangements have been made for increasing the entente import quota by 200,000 tons for the current year.

Because of the general rise in scrap, steelmaking grades being \$1 higher in almost every case, the composite scrap price rose \$1, to \$18.75, practically the level of the second week in May, when it was \$18.79. This is the third consecutive rise, each being at a faster rate. The composite is still \$3.33 below the peak, at the beginning of April, when it was \$22.08. The iron and steel composite also felt the uplift of the scrap movement, rising 13 cents to \$40.04. The finished steel composite is stationary at \$61.70.



Iron

Table listing iron products like Terre Haute, Chicago, Philadelphia, Pittsburgh with prices.

Reinforcing

Table listing reinforcing products like New billet, Pacific coast ports, Philadelphia with prices.

Wire Products

Prices apply to straight or mixed carloads; less carloads \$5 higher...

Table listing wire products like Base Pitts.-Cleve. 100 lb. keg, Standard wire nails, Cement coated nails, Polished staples, Galv. fence staples, Barbed wire, Annealed fence wire, Galv. fence wire, Woven wire fencing, Single loop bale ties, To Manufacturing Trade, Plain wire, Anderson, Ind. (merchant products only), Duluth and Worcester up \$2, Birmingham up \$3, Spring wire, Pitts. or Cleveland, Do., Chicago up \$1, Worc. \$2.

Cold-Finished Carbon Bars and Shafting

Table listing cold-finished carbon products like Pittsburgh, Chicago, Gary, Ind., Detroit, Cleveland, Buffalo with prices.

Subject to quantity deductions and extras. List dated Aug. 26, 1935; revised Oct. 1, 1936.

Alloy Steel Bars (Hot)

(Base, 3 to 25 tons)

Table listing alloy steel bars like Pittsburgh, Buffalo, Chicago, Massillon, Canton, Bethlehem, S.A.E. Alloy Diff., Alloy, 2000, 2100, 2300, 2500, 4100 0.15 to 0.25 Mo., 4600 0.20 to 0.30 Mo., 2.00 Ni., 5100 0.80-1.10 Cr., 5100 Cr. spring, 6100 bars, 6100 spring, Cr. N., Van., Carbon Van., 9200 spring flats, 9200 spring rounds, squares.

Piling

Table listing piling products like Pittsburgh, Chicago, Buffalo with prices.

Strip and Hoops

Table listing strip and hoops products like Pittsburgh, Chicago or Gary, Birmingham base, Detroit, Philadelphia, del., New York, del., Cooperage hoop, Pittsburgh, Chicago, Cold strip, 0.25 carbon and under, Pittsburgh, Cleveland, Detroit, del., Worcester, Mass., Carbon, Pitts., Worces. ter, Mass., 0.26-0.50, 0.51-0.75, 0.76-1.00, Over 1.00.

Rails, Track Material

(Gross Tons)

Table listing rails and track material like Standard rails, mill, Relay rails, Pittsburgh, 20-100 lbs., Light rails, billet qual., Pittsburgh, Chicago, Do., rerolling quality, Angle bars, billet, Gary, Pittsburgh, So. Chicago, Do., axle steel, Spikes, R. R. base, Track bolts, base, Tie plates, base, Base, light rails 25 to 60 lbs., 20 lbs. up \$2; 16 lbs. up \$4; 12 lbs. up \$8; 8 lbs. up \$10. Base railroad spikes 200 kegs or more; base tie plates 20 tons.

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chicago. Discounts to legitimate trade as per Dec. 1, 1932, lists:

Table listing bolts and nuts like Carriage and Machine, 1/2 x 6 and smaller, Do. larger, to 1-in., Do. 1 1/4 and 1 1/2-in., Tire bolts, Flow Bolts, Stove Bolts.

In packages with nuts attached 72 1/2 off; in packages with nuts separate 72 1/2-5 off; in bulk 80 off on 15,000 of 3-inch and shorter, or 5000 over 3-inch.

Table listing step bolts and elevator bolts with prices.

Nuts

S. A. E. semifinished hex.: 1/2 to 3/4-inch, 60-10 off; Do., 9/16 to 1-inch, 60-5 off; Do., over 1-inch, 60 off.

Hexagon Cap Screws

Milled, 50-10 off; Upset, 1-in., smaller, 60 off.

Square Head Set Screws

Upset, 1-in., smaller, 75 off; Headless set screws, 75 off.

Rivets, Wrought Washers

Table listing rivets and washers like Structural, Pittsburgh, Cleveland, Structural, Chicago, 3/8-inch and smaller, Pitts., Chl., Cleve., Wrought washers, Pitts., Chl., Phila. to jobbers and large nut, bolt mfrs.

Cut Nails

Cut nails, C. L., Pitts. (10% disc. on all extras) \$3.60

Do., less carloads, 5 kegs or more, no discount on any extras... \$3.90; Do., under 5 kegs no disc. on any extras... \$4.05

Welded Iron, Steel Pipe

Base discounts on steel pipe, Pitts., Lorain, O., to consumers in carloads. Gary, Ind., 2 points less. Chicago, del. 2 1/2 less. Wrought pipe, Pittsburgh.

Table listing butt weld steel pipe sizes (In., Blk., Galv.) like 1/2, 3/4, 1-3.

Table listing lap weld steel pipe sizes (In., Blk., Galv.) like 1-1 1/2, 1 1/2, 2.

Table listing line pipe steel pipe sizes (In., Blk., Galv.) like 1 to 3, butt weld, 2, lap weld, 2 1/2 to 3, lap weld, 3 1/2 to 6, lap weld, 7 and 8, lap weld, 10-inch, lap weld, 12-inch, lap weld.

Table listing butt weld iron pipe sizes (In., Blk., Galv.) like 1 and 1 1/4, 1 1/2, 2.

Table listing lap weld iron pipe sizes (In., Blk., Galv.) like 1 1/2, 2, 2 1/2 to 3 1/2, 4, 4 1/2 to 8, 9 to 12.

Table listing sizes of boiler tubes (In., Blk., Galv.) like 1 1/2" OD x 13 Ga., 1 3/4" OD x 13 Ga., 2" OD x 13 Ga., 2" OD x 11 Ga., 2 1/4" OD x 13 Ga., 2 1/4" OD x 11 Ga., 2 1/2" OD x 12 Ga., 2 3/4" OD x 12 Ga., 3" OD x 12 Ga., 3 1/2" OD x 11 Ga., 4" OD x 10 Ga., 5" OD x 9 Ga., 6" OD x 7 Ga.

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Carloads minimum wall seamless steel boiler tubes, cut lengths 4 to 24 feet, f.o.b. Pittsburgh, base price per 100 feet subject to usual extras.

Table listing Charcoal prices (Steel, Iron) like Pittsburgh, Buffalo, Chicago, Massillon, Canton, Bethlehem, S.A.E. Alloy Diff., Alloy, 2000, 2100, 2300, 2500, 4100 0.15 to 0.25 Mo., 4600 0.20 to 0.30 Mo., 2.00 Ni., 5100 0.80-1.10 Cr., 5100 Cr. spring, 6100 bars, 6100 spring, Cr. N., Van., Carbon Van., 9200 spring flats, 9200 spring rounds, squares.

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Table listing coke prices like 2 1/2" OD x 12 Ga., 2 3/4" OD x 12 Ga., 2 1/2" OD x 12 Ga., 3" OD x 12 Ga., 3 1/4" OD x 10 Ga., 3 3/8" OD x 11 Ga., 4" OD x 10 Ga., 5" OD x 9 Ga., 6" OD x 7 Ga.

Cast Iron Water Pipe

Table listing cast iron water pipe prices like Class B Pipe-Per Net Ton, 6-in. & over, Birm., 4-in., Birmingham, 4-in., Chicago, 6 to 24-in., Chicago, 6-in. & over, east fdy., Do., 4-in., Class A Pipe \$3 over Class B Stnd. ftgs., Birm., base \$100.00

Semifinished Steel

Table listing semifinished steel products like Billets and Blooms, 4 x 4-inch base; gross ton, Pitts., Chl., Cleve., Buffalo, Young., Bham., Philadelphia, Duluth, Forging Billets, 6 x 6 to 9 x 9-in., base, Pitts., Chicago, Buffalo, Forging, Duluth, Sheet Bars, Pitts., Cleve., Young., Sparrows Point, Slabs, Pitts., Chicago, Cleveland, Youngstown, Wire Rods, Pitts., Cleve., No. 5 to 3/8-inch incl., Do., over 1/2 to 1 1/4-inch incl., Chicago up \$1; Worcester up \$2, Skelp, Pitts., Chl., Young., Buff., Coatesville, Sparrows Pt.

Coke

Table listing coke prices like Price Per Net Ton, Beehive Ovens, Connellsville, fur., Connellsville, fdry., Connell, prem. fdry., New River fdry., Wise county fdry., Wise county fur.

Table listing By-Product Foundry prices like Newark, N. J., del., Chl., ov., outside del., Chicago, del., Milwaukee, ovens, New England, del., St. Louis, del., Birmingham, ovens, Indianapolis, del., Cincinnati, del., Cleveland, del., Buffalo, del., Detroit, del., Philadelphia, del.

Coke By-Products

Table listing coke by-products like Spot, gal. Producers' Plants, Pure and 90% benzol., Toluol, Solvent naphtha, Industrial xylol, Per lb. f.o.b. Frankford and St. Louis, Phenol (200 lb. drums), do. (450 lbs.), Eastern Plants, per lb., Naphthalene flakes and balls, in bbls. to jobbers, Per ton, bulk, f.o.b. oven or port, Sulphate of ammonia.

## Pig Iron

Delivered prices include switching charges only as noted. No. 2 foundry is 1.75-2.25 sil.; 25c diff. for each 0.25 sil. above 2.25; 50c diff. for each 0.25 below 1.75. Gross tons.

**Basing Points:**

	No. 2 Fdry.	Malle-able	Basic	Besse-mer
Bethlehem, Pa. ....	\$25.00	\$25.50	\$23.50	\$26.00
Birdsboro, Pa. ....	25.00	25.50	24.50	26.00
Birmingham, Ala.†	20.38	.....	19.38	25.00
Buffalo .....	24.00	24.50	23.00	25.00
Chicago .....	24.00	24.00	23.50	24.50
Cleveland .....	24.00	24.00	23.50	24.50
Detroit .....	24.00	24.00	23.50	24.50
Duluth .....	24.50	24.50	.....	25.00
Eric, Pa. ....	24.00	24.50	23.50	25.00
Everett, Mass. ....	25.75	26.25	25.25	26.75
Hamilton, O. ....	24.00	24.00	23.50	.....
Neville Island, Pa. ....	24.00	24.00	23.50	24.50
Provo, Utah .....	22.00	.....	.....	.....
Sharpsville, Pa. ....	24.00	24.00	23.50	24.50
Sparrows Point, Md. ....	25.00	.....	24.50	.....
Swedeland, Pa. ....	25.00	25.50	24.50	26.00
Toledo, O. ....	24.00	24.00	23.50	24.50
Youngstown, O. ....	24.00	24.00	23.50	24.50

†Subject to 38 cents deduction for 0.70 per cent phosphorus or higher.

**Delivered from Basing Points:**

		25.26	24.76	25.76
Akron, O., from Cleveland .....	25.26	24.76	25.76	.....
Baltimore from Birmingham .....	25.58	24.46	.....	.....
Boston from Birmingham .....	26.37	25.87	.....	.....
Boston from Everett, Mass. ....	26.25	26.75	25.75	27.25
Boston from Buffalo .....	26.25	26.75	25.75	27.25
Brooklyn, N. Y., from Bethlehem	27.27	27.77	.....	.....
Brooklyn, N. Y., from Bmghm. ....	27.05	.....	.....	.....
Canton, O., from Cleveland .....	25.26	25.26	25.76	25.76
Chicago from Birmingham .....	24.22	24.10	.....	.....
Cincinnati from Hamilton, O. ....	24.07	25.01	24.51	.....
Cincinnati from Birmingham .....	23.69	22.69	.....	.....
Cleveland from Birmingham .....	24.12	23.62	.....	.....
Mansfield, O., from Toledo, O. ....	25.76	25.76	25.26	25.26
Milwaukee from Chicago .....	25.00	25.00	24.50	25.00
Muskegon, Mich., from Chicago, Toledo or Detroit .....	26.90	26.90	26.40	27.40
Newark, N. J., from Birmingham .....	26.01	.....	.....	.....
Newark, N. J., from Bethlehem .....	26.39	26.89	.....	.....
Philadelphia from Birmingham .....	25.38	25.26	.....	.....
Philadelphia from Swedeland, Pa. ....	25.76	26.26	25.26	.....
Pittsburgh district from Neville Island .....	Neville, base plus 63c, 76c, and \$1.13 switch'g charges	.....	.....	.....
Saginaw, Mich., from Detroit .....	26.25	26.25	25.75	25.75
St. Louis, northern .....	24.50	24.50	24.00	.....

## Nonferrous

**METAL PRICES OF THE WEEK**

Spot unless otherwise specified. Cents per pound

**Copper**

Electro, Lake, del. Conn.	Midwest del. refinery	Casting, del. refinery
July 10 14.00	14.12½	13.75
July 12 14.00	14.12½	13.75
July 13 14.00	14.12½	13.75
July 14 14.00	14.12½	13.75
July 15 14.00	14.12½	13.75
July 16 14.00	14.12½	13.75

**Mill Products**  
F.o.b. mill base, cents per lb. except as specified. Copper brass products based on 14.00c Conn. copper

**Sheets**

Yellow brass (high) ..... 19.75  
Copper, hot rolled ..... 21.87½  
Lead, cut to jobbers ..... 9.50  
Zinc, 100-lb. base .. 12.00-13.00

**Tubes**

High yellow brass ..... 22.50  
Seamless copper ..... 22.62½

**Rods**

High yellow brass ..... 16.25  
Copper, hot rolled ..... 18.62½

**Anodes**

Copper, untrimmed ..... 19.12½

**Wire**

Yellow brass (high) ..... 20.00

**Strait's Tin, New York Spot**

July 10 59.25    58.37½  
July 12 59.25    58.50  
July 13 59.75    59.00  
July 14 60.12½    59.37½  
July 15 59.75    59.00  
July 16 60.00    59.37½

**Lead**

Lead East St. L.    6.00    5.85  
Chicago    6.00    5.85  
St. Louis    6.00    5.85

**OLD METALS**  
Nom. Deal, buying prices

**No. 1 Composition Red Brass**

New York ..... 8.75-9.00  
Cleveland ..... 9.25-9.50  
Chicago ..... 9.25-9.50  
St. Louis ..... 8.75-9.00

**Heavy Copper and Wire**

New York, No. 1 ..... 11.00-11.25  
Cleveland, No. 1 ..... 11.00-11.25  
Chicago, No. 1 ..... 11.00-11.25  
St. Louis, No. 1 ..... 10.75-11.00

**Composition Brass Borings**

New York ..... 8.00-8.25

**Light Copper**

New York ..... 9.25-9.50  
Cleveland ..... 9.00-9.25  
Chicago ..... 9.25-9.50  
St. Louis ..... 9.25-9.50

	No. 2 Fdry.	Malle-able	Basic	Besse-mer
St. Louis from Birmingham .....	24.12	.....	23.82	.....
St. Paul from Duluth .....	25.94	25.94	.....	26.44

†Over 0.70 phos.

**Low Phos.**

Basing Points: Birdsboro and Steelton, Pa., and Standish, N. Y., \$28.50, Phila. base, standard and copper bearing, \$29.63.

**Gray Forge**

Valley furnace ..... \$23.50 | Lake Superior fur. .... | \$27.00 || Pitts. dist. fur. .... | 23.50 | do., del. Chicago ..... | 30.04 |
|  |  | Lyles, Tenn. .... | 26.50 |

**Silvery†**

Jackson county, O., base: 6-6.50 per cent \$28.50; 6.51-7—\$29.00; 7-7.50—\$29.50; 7.51-8—\$30.00; 8-8.50—\$30.50; 8.51-9—\$31.00; 9-9.50—\$31.50; Buffalo \$1.25 higher.

**Bessemer Ferrosilicon†**

Jackson county, O., base: Prices are the same as for silveries, plus \$1 a ton.  
†The lower all-rail delivered price from Jackson, O., or Buffalo is quoted with freight allowed.  
Manganese differentials in silvery iron and ferrosilicon, 2 to 3%, \$1 per ton add. Each unit over 3%, add \$1 per ton.

## Refractories

*Per 1000 f.o.b. Works*

**Fire Clay Brick**  
*Super Quality*

Pa., Mo., Ky. .... \$64.60  
Pa., Ill., Md., Mo., Ky. .... 51.30  
Alabama, Georgia .... 51.30

**First Quality**  
Pa., Ill., Ky., Md., Mo. .... 46.55  
Georgia, Alabama .... 41.80

**Second Quality**  
Ohio

First quality ..... 43.70  
Intermediate ..... 39.90  
Second quality ..... 35.15

**Malleable Bung Brick**  
All bases ..... \$59.85

**Silica Brick**  
Pennsylvania ..... \$51.30  
Joliet, E. Chicago ..... 59.85  
Birmingham, Ala. .... 51.30

**Ladle Brick**  
(Pa., O., W. Va., Mo.)  
Dry press ..... \$30.00  
Wire cut ..... \$28.00

**Magnesite**  
Imported dead-burned grains, net ton f.o.b.

Chester, Pa., and Baltimore bases (bags) .. \$45.00  
Domestic dead-burned grains, net ton f.o.b. Chester, Pa., and Baltimore bases (bags) .. 43.00  
Domestic dead-burned gr. net ton f.o.b. Chewelah, Wash. (bulk) .. 25.00

**Base Brick**  
Net ton, f.o.b. Baltimore, Plymouth Meeting, Chester, Pa.

Chrome brick ..... \$49.00  
Chem. bonded chrome .. 49.00  
Magnesite brick ..... 69.00  
Chem. bonded magnesite 59.00

## Fluorspar, 85-5

Washed gravel, duty paid, tide, net ton ... \$23.50  
Washed gravel, f.o.b. Ill., Ky., net ton, carloads, all rail ..... \$19.00  
Do., for barge ..... \$20.00

## Ferroalloys

*Dollars, except Ferrochrome*

Ferromanganese, 78-82%, tidewater, duty pd. .... \$102.50  
Do., Baltimore, base .. 102.50  
Do. del. Pittsburgh ... 107.29

Spiegeleisen, 19-21% dom.  
Palmerston, Pa., spot .. 33.00  
Do., New Orleans .... 33.00  
Do., 26-28%, Palmerston ..... 39.00

Ferrosilicon, 50% freight allowed, c.i. .... 69.50  
Do., less carload ..... 77.00  
Do., 75 per cent. .... 126-130.00  
Spot, \$5 a ton higher.

Silicomn., 2½ carbon .. 106.50  
2½ carbon 111.50; 1%, 121.50

Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb. del. .... 10.50

Ferrotungsten, stand., lb. con. del. cars. .... 1.80-1.85

Ferrovanadium, 35 to 40% lb. cont. .... 2.70-2.90

Ferrotitanium, c. l., prod. plant, frt. all., net ton 142.50  
Spot, carlots ..... 145.00  
Spot, ton lots ..... 150.00

Ferrophosphorus, per ton, c. l., 17-19% Rockdale, Tenn., basis, 18%, \$3 unitage ..... 63.50

Ferrophosphorus, electrolytic, per ton c. l., 23-26% f.o.b. Anniston, Ala., 24% \$3 unitage 80.00

Ferromolybdenum, stand.  
55-65%, lb. .... 0.95  
Molybdate, lb. cont. .... 0.80  
†Carloads. Quan. diff. apply







# Sheets

Sheet Prices, Page 89

**New York**—Sheet demand, new buying and specifications, continue unabated, some sellers noting a spotty improvement. Mill backlogs are heavy, some being sold through the quarter and unable to make delivery on various finishes until late in that period. There is some resale of sheets in this district at prices slightly under the listed quotations, notably galvanized. This business is scattered and confined to distributors who, finding themselves rather heavily loaded, are anxious to liquidate part of their holdings. This has had little effect on the general situation. Small tank and container demand is brisk, also for steel barrels. Rustless Iron & Steel Corp., Baltimore, bidding 58.585c per pound has been awarded corrosion-resisting alloy sheets for the Norfolk, Va., Navy yard at \$10.545.30, delivered.

**Pittsburgh**—Contrary to the situation in most other finished steel products, the sheet market continues static. With backlogs into fourth quarter in principal grades, the current seasonal slackening in new business has hardly worried producers here, for the momentum already gained is sufficient to insure a high rate of operations until buying picks up again. Galvanized bookings are especially heavy. Cold-rolled is well maintained considering the tapering of automobile production.

**Cleveland**—With few exceptions aggregate tonnage of new business continues to decline. This is particularly noticeable from automotive sources, although more tonnage than many realize has already been placed for 1938 models. Most other miscellaneous consumers have resisted seasonal influences better than expected. One example is the high operating schedules among refrigerator manufacturers.

**Chicago**—New business is quiet, comparing unfavorably with bookings previously this year but heavy backlogs necessitate near-capacity operations. Brisk schedules are in prospect through this quarter, particularly among producers whose operations have been interrupted by strikes. Some inquiries for 1938 model automobiles have not resulted in large bookings.

**Buffalo**—Sheet production is only slightly below the highest rates in the history of the district, established in second quarter this year. Strip mills continue to operate at capacity but there is said to have

# BUNDY TUBING

**B**UNDYWELD TUBING provides the ideal combination of workable properties with great strength and resistance to both vibration fatigue and high temperatures. It is rolled from copper-coated steel and is copper finished on both inside and outside surfaces. It is furnished in a wide range of sizes and is adaptable to practically any use where great strength and resistance to vibration are desirable. We will gladly quote from your blue-prints or samples.



BUNDY TUBING CO.  
DETROIT

been a slight easing of production pressure on hand mills.

**Philadelphia**—One large local automotive interest is expected to enter market shortly for flat-rolled steel requirements for 1938 auto body frames. Shipments on old contracts are reported about cleaned up. In general new demand for sheets continues to taper as reflected in easier delivery schedules. Galvanized sheets, however, still are difficult to obtain under 12 weeks.

**Cincinnati**—Buying of sheets has

decreased for the last two weeks but backlogs will carry capacity schedules for at least three weeks and in some grades, including galvanized, delivery dates are still further extended. The reaction from the recent high interest in buying has been broad, with indications some miscellaneous users are sentimentally hesitant because of abnormal conditions in automotive factories. Considerable tonnage for fourth quarter has already been placed, at prices then prevailing.

**St. Louis**—Deliveries of sheets are showing noticeable improvement, though there is still considerable pressure on mills by miscellaneous users. Of the several descriptions, hot rolled annealed is apparently the most backward on deliveries.

**Birmingham**—Except for fairly steady demand for roofing sheets buying is somewhat light. Inquiries are coming in from various sources, however, and producers describe the lull as seasonal.

# Service!

1906  1937

QUALITY · DEPENDABILITY

## DAMASCUS MANGANESE CASTINGS

Manganese and Alloy Steel Castings One Half to One Thousand Pounds Produced in our modernly equipped foundry from electric furnace steel and heat-treated in automatically controlled gas-fired furnaces.

The **DAMASCUS STEEL CASTING CO.**  
New Brighton, Pa.

(Pittsburgh District)

**D**AMASCUS STEEL CASTINGS  
(Manganese and Alloy)

## Strip

Strip Prices, Page 90

**Pittsburgh**—Incoming tonnage remains light in hot and cold-rolled strip steel, especially from Detroit, where buying for 1938 models has hardly started. Deliveries are no longer a serious problem. Current easier situation is by no means abnormal, however, and a gradual pick-up is indicated. Last week's bookings were slightly ahead of the first week in July, which was dull but not as dull as the lowest weeks of the year in May.

**Cleveland**—Strip mills have made considerable headway against backlogs and hot-rolled material can be shipped in approximately two weeks, cold-rolled in three to four. This is primarily attributed to normal slackening from automotive sources. Narrow widths are in greater demand than the wider from miscellaneous sources, with the aggregate holding up fairly well against seasonal influences.

**Chicago**—Strip deliveries vary widely, depending upon size and gage. On some grades shipment can be made within two weeks while some cold-rolled strip requires six to seven weeks. Consumption is receding and while this is reflected in new business, mills are able to continue heavy schedules and anticipate seasonally heavy output during the balance of this quarter.

**Boston**—Facing a decline in demand by the automotive industry and some seasonal drop in consumption by several other consumers, buying of narrow cold strip is fairly well maintained, some mills noting little change in aggregate incoming volume. Most current orders are for early delivery.

**New York**—New cold-rolled strip business and shipments are easing and substantial backlogs held by most producers are being materially reduced. Consumption of strip, which has held seasonally high, is down slightly, although still heavy in view of long sustained operations. Demand, while somewhat lighter,

continues well spread as to industrial consumers.

**Philadelphia**—Fill in business continues to characterize market for strip with shipments now even more closely in line with new business.

## Plates

Plate Prices, Page 89

**Pittsburgh** — Although no large plate tonnages are pending and activity is easier, mills here have good backlogs, in some cases ranging around eight to ten weeks. Welded steel caissons for the Bronx-Whitestone bridge, New York, to be made by the Dravo Corp., Pittsburgh, will require 600 tons of plates. Tank requirements and blast furnace plates are well maintained. Some railroad car shops and boiler shops are active.

**Cleveland** — Most plate mills continue at practical capacity despite easing in pressure for deliveries. Freight car and locomotive inquiries have been lacking for some time. However, local miscellaneous tonnage has held up fairly well with most tonnage going into small structural jobs. Some mills are able to make deliveries within six weeks, although one at least is unable to make shipments under 10 weeks.

**Chicago**—Heavy backlogs will extend plate shipments at their present rate to September despite the fact that new business lately has been only moderate. A large share of current shipments are for railroad use. Tank builders, structural fabricators, and miscellaneous users are taking sizable lots. Only small tonnages are pending for railroad inquiries.

**New York**—Plate buying has tapered, requirements of consumers connected with the oil industry being an exception, inquiry from such sources being slightly better. Buying is less than shipments and mills continue far apart as to ability to make deliveries. As more open places appear in rolling schedules, however, shipments in general are further improved. Contract for two steam lighters for the U. S. engineer, New York, on which United Shipyards was low, is still pending.

**Philadelphia**—New business is definitely slower with some companies exerting more pressure to book business. Mills booked as much as 16 weeks ahead only a short time ago, are able to offer delivery within eight weeks. Others are offering three to five weeks. Incoming business mostly is of miscellaneous character. Consumption currently is down. One boilermaker, for instance is reported to have

laid off men due to lack of work ahead. Some sellers report plate buying off more than sheets.

**Birmingham**—Steel mills have a fairly good backlog on plate business to round out a spotty buying period. Output is well booked for third quarter with new specifications in sight.

**Seattle**—Important projects are few, although shops have a fair run of small tank and pipe jobs. Further pulp and paper plant improvements are in contemplation but not yet up for figures. Unstated interests have been awarded 105 tons

of 30 inch land dredge pipe for the procurement officer, Portland, Oreg.

## Plate Contracts Placed

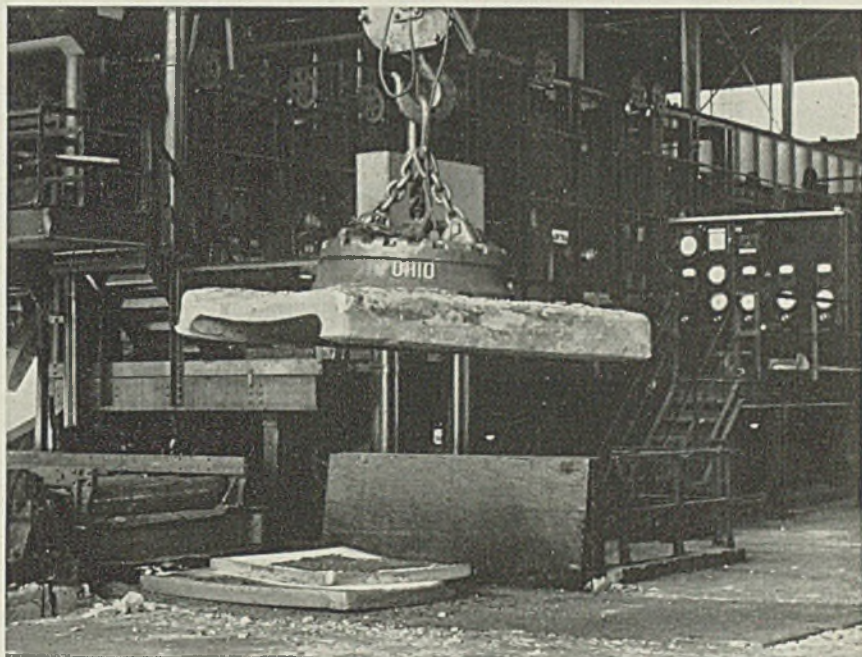
2300 tons, medium black and galvanized, bureau supplies and accounts, navy department, Washington; bids June 22; most awarded to Central Iron & Steel Co., Harrisburg, Pa.

760 tons, five hopper barges, Warner Co., Tullytown, Pa., to Welding Engineers Inc., Philadelphia.

600 tons, welded steel caissons for Bronx-Whitestone bridge, New York, to Dravo Corp., Pittsburgh, by Frederick Snare Corp., New York.

415 tons, 1,000,000-gallon tank, Ham-

# OHIO LIFTING MAGNETS



Above is a 45" Ohio Magnet at work in the Reheating Furnace Department of a new 100" Semi-Continuous Plate Mill in the Pittsburgh district.

It handles returned slabs 22" to 54" wide by 48" to 180" long and weighing from 1000 to 25000 pounds.

Also the Scale Cleaner or Mechanical Slab shown and weighing from 4000 to 5000 pounds.

We make Ohio Magnets for many purposes.

## THE OHIO ELECTRIC MFG. CO.

5906 Maurice Ave.,

Cleveland, Ohio

mond, Ind., to Chicago Bridge & Iron Works, Chicago.

Unstated tonnage, Panama, to Joseph T. Ryerson & Son Inc., Jersey City, N. J., \$8837.76, delivered, bids June 25.

## Bars

Bar Prices, Page 89

**Pittsburgh**—Hot-rolled bar bookings this month are 25 to 30 per cent below the comparable period in June. This is largely due to the sag

in automotive specifications and seasonal conditions in other fields, and is by no means an abnormal condition. A fair movement still exists to farm implement and tractor manufacturers, and a few forging shops and railroad equipment makers continue active. The present condition may remain for another two weeks or longer, after which a gradual pickup is expected.

**Cleveland** — With demand for hot-rolled and alloy bars from automotive sources at the year's low, preceding the model changeover

period, most mills have made such strides against backlogs that deliveries can be made three to four weeks and even sooner if necessary. As a result mills are once more anxious to book additional tonnage to fill in schedules.

**Chicago**—While steel bar shipments continue heavy and deliveries still hold around 30 days, new business shows some effects of the season and a decline in bookings is in prospect this month. Some inquiries for new automotive models are appearing but little business has been placed. Farm implement and tractor manufacturers hold bar requirements at an unusual heavy rate for this period and are faced with near-capacity schedules for at least another 30 days.

**New York**—Commercial steel bar demand has slipped lower. Mill backlogs are smaller and deliveries further improved on the common specifications. The decline has been more pronounced in needs for automotive accessory shops, a situation expected to improve shortly. Alloy bars have not dropped in proportion or has delivery improved materially.

**Philadelphia**—Merchant bar users are holding new commitments close to actual requirements, which show further tapering. Jobbers are well stocked, and in view of slower demand are doing little to bulwark mill order books.

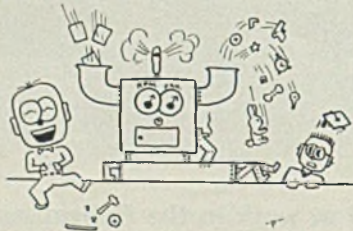
## Behind the Scenes with STEEL

### Renaissance

THREE hundred sixty-four million dollars is, in the vernacular, a wad, bunch, pile and other synonyms, of dough. When any company spends this much for reorganization and rebuilding it is news in no uncertain terms—but when a steel company spends that much without a marked increase in its capacity, there's certainly a story behind it. Confronted with these facts, our editors dug into their files of ancient and current history to find out what was and is happening within the corporate walls of Big Steel. Results of their inquiries and diggings are presented in this week's book, beginning on page 27, showing how the money has been spent and for what.

### Design for Laughing

NOBLE indeed is the sentiment displayed by members of the pedagogy who attempt to invest young hopefuls with elements of applied mechanics and machine design. Recently they convened in Madison, Wis., with the avowed purpose of establishing a Division



of Levity. Piece de resistance was an address by A. L. Townsend of Massachusetts Institute of Technology, entitled "Is There a Funny Side to Machine Design?" Personally, we believe there is, and we suggest the lads consult Rube Goldberg.

But let's have much, much more of this sort of thing. Nothing we have yet discovered waxes the runways under the flow of business as a bit of well-timed humor.

### Crafty

RECOGNITION in the form of an interesting article in *Collier's* for July 10 has come to the Amer-

ican machine tool builders. Popular belief that foreign made tools and precision devices are superior to those of our own craftsmen is riddled with un-dry facts and interesting anecdotes. No news is this to readers of STEEL, but it was with no little degree of satisfaction we saw a popular magazine and a no less popular writer, Carl Norcross, tell the teeming millions in even a small way about one of America's industry which is truly "not without honor save in its own home."

### Limelight

AS ALL business publications, STEEL is constantly flooded with news releases, good and bad, large and small, from companies and institutions seeking publicity. STEEL's large staff of editors, bless 'em, is also combing the field at all times for news of developments in the industry. In the face of this sort of thing which has been going on for a long time now, it seems quite impossible that any executive in this world could say, "Publicity never did anybody any good," just as if it were a truism like "Sugar attracts flies." But one did, the other day, and when we heard about it we broke right down and cried to think that in this world of enlightenment there could be corners so dark. After sober contemplation, we decided a firm's publicity isn't such a bad measure of its progressiveness, after all, because progressive firms know the real value of the limelight.

### Lamponery

RESERVED for the sober aspects of industry are STEEL's news pages. Seldom does lamponery find its way into their august atmosphere, but on rare occasions like on page 31 the editors pause in their analytical ways to poke fun at people or things. Cmfwyp, cartoonist for this department, danced three times around his desk for sheer joy when he found there was another cartoonist in the house—he's now working on plans for COSC—Committee for the Organization of STEEL Cartoonists. Says he's going on strike with demands for a minimum of two column inches of cartoon in this department each week, and his complete signature on every one instead of just the last letter.

—SHROLU

## Pipe

Pipe Prices, Page 90

**Pittsburgh**—Tubular mills are operating at substantially the same rate as a month ago, but new business is seasonally lighter. In some cases, bookings are 30 to 35 per cent behind the comparable period in June. Requirements for standard pipe have been off and demand for oil country goods is not as brisk. However, some specifications for tubular goods have been received for the automotive industry and more are expected within the next month. Pipe prices are steady.

**Chicago**—Cast iron pipe continues slow in large lots but orders for small tonnages are fairly numerous. Little improvement in demand is in early prospect unless additional federal funds become available for municipal work.

**Boston**—Small-lot cast pipe buying of a fill-in character is fairly active but shipments against contracts are steady. The district foundry, operating full schedules five days per week, has built up stocks. Utility buying is not heavy.

**New York**—Miscellaneous small-lot cast pipe buying is well main-

tained with little volume inquiry. About 3500 tons are pending, exclusive of 2500 tons for Washington, on which bids are in. Eastern foundries are less active than a month ago.

**Cleveland**—Jobbers report stock turnover has improved somewhat since the first of the month and some expect approximately 10 per cent increase during July over June. Industrial sources continue to bolster requirements in this district as the demand for domestic purposes remains disappointing.

**Buffalo**—Demand for water pipe continues brisk. A good sized project in Nunda, N. Y., was reported this week and several other works extension projects are pending. Award for an oil line to Buffalo removed one large pending tonnage from the market but several other good-sized projects are under way.

**Birmingham**—Cast pipe market is fairly quiet. Immediate orders are well scattered, a condition that has materialized in the past two weeks. Utility buying has improved. No large tonnages are up for figures. One large plant is on a four-day schedule.

**Sayre, Okla.**—West Oak Gasoline Co. has awarded contract for welding a 14-inch gas line near here, using stovepipe construction, oxyacetylene welded by the Lindeweld method.

**Seattle**—Little interest is shown in cast iron goods, funds being unavailable for projected improvements. No sizable tonnages are up for figures.

### Cast Pipe Placed

400 tons, 6, 8, and 12-inch, Portland, Ore., to United States Pipe & Foundry Co., Burlington, N. J.  
350 tons, 30-inch, Curtis Creek, Baltimore, to United States Pipe & Foundry Co., Burlington, N. J., through Merritt-Chapman & Scott, Baltimore.  
100 tons, 6 and 8-inch, Molalla, Ore., to American Cast Iron Pipe Co., Birmingham, Ala.  
Unstated tonnage, 6000 feet, 6-inch, Appleton, Wis., to James B. Clow & Sons Co., Chicago.

### Cast Pipe Pending

2500 tons, 6 to 12-inch, Washington; United States Pipe & Foundry Co., Burlington, N. J., low on bulk.  
225 tons, 6-inch, Nunda, N. Y.; bids soon.  
200 tons, 18 and 24-inch, East Orange, N. J.; bids in, contractor's letting.  
Unstated tonnage, 3600 feet, 18-inch for water plant intake, Port Washington, Wis.; G. W. Falcon, Evanston, Ill., general contractor.

### Tin Plate

Tin Plate Prices, Page 89

**Pittsburgh**—Tin plate has a more normal tone with the return to operation of mills in other districts

which had been hampered by labor troubles. Operations on the national scale, however, have not reached the level of late May and are estimated at around 98 per cent. Demand for material for packers' cans continues exceptionally heavy, while activity in general line cans also is excellent.

**New York**—Tin plate mills are sold through the quarter, high operations and shipments being augmented by drawing from stocks held at mills for numerous con-

sumers who are specifying liberally. Practically all volume is against contracts. On such spot business offered, delivery before 10 to 12 weeks is not possible.

### Semifinished

Semifinished Prices, Page 90

Bookings of semifinished steel have been heavy, although no spectacular tonnages have been placed. The situation continues tight, with



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in the Metal Industry?

**P** stands for PERLITON, Houghton's liquid carburizer, which is in constant use by leading metal workers. Lower in cost, more uniform and rapid!

**D** is for DRAW TEMP (Houghton's No. 275) . . . used for annealing, tempering and drawing. Low melting point, uniform, economical!

**Q** stands for QUENCHING with the world's standard No. 2 SOLUBLE QUENCHING OIL. It quenches faster . . . the same in composition and results after many years of service!

When you want results, the answer is PDQ if you contact E. F. HOUGHTON & CO., Philadelphia, Chicago, Detroit.

**THE HOUGHTON LINE**  
OF PRODUCTS FOR THE METAL INDUSTRY

sheet bars, wire rods and billets for the general trade scarce because of demand from producers' own finishing departments. Constant pressure for shipments confronts all makers. Sheet bars, slabs, billets and blooms are quoted at \$37 per gross ton, Pittsburgh; forging billets, \$43; wire rods, \$47 and \$52; skelp, 2.10c, Pittsburgh.

## Transportation

Track Material Prices, Page 90

Steel producers' backlog for railroad equipment are easier, but a fair amount of buying continues. Frog and switch manufacturers continue active. Union Pacific is understood to have ordered some 7000 wheels for prompt delivery from a Pittsburgh mill. Utah Copper Co. is understood to be inquiring for three caboose cars and an Eastern railroad is in the market for a fair tonnage of rails.

Releases of freight car material from railroads and car builders are heavy but new inquiries are light. Rail mill operations are lighter than during spring months, but schedules will be continued at least through

August and in the case of a Chicago mill, through September. Supplementary rail buying so far has been light but there are expectations that additional tonnages will be placed before the annual buying wave starts late in the year.

### Car Orders Placed

Chicago, Milwaukee, St. Paul & Pacific, 1000 70-ton gondola cars to company shops.

### Car Orders Pending

Interborough Rapid Transit, New York, 50 steel passenger subway cars; bids soon.

Navy department, Washington, two steel cars for Washington navy yard; bids Aug. 3.

Utah Copper Co., three caboose cars.

### Locomotives Placed

Chicago, Milwaukee, St. Paul & Pacific, one 4-8-4 oil-burning locomotive to company shops.

### Locomotives Pending

Elgin, Joliet & Eastern, four 600-horsepower, three 900-horsepower, diesel locomotives.

## Wire

Wire Prices, Page 90

**Pittsburgh**—While little new automotive parts tonnage actually has been placed yet, wire mills are operating at a high rate and backlogs are not entirely depleted. Ford shutdown has affected the outlook on manufacturers' wire only slightly and has been offset by a few urgent releases from other auto companies, mostly for 1937 models. A number of jobbers are definitely back in the market. Merchants' products continue seasonally slow. Prices are steady.

**Cleveland** — Specifications continue to recede with requirements for manufacturing wire holding firmer against seasonal influences than merchant products. Mills remain at approximately 80 per cent of capacity in most departments and are expected to continue at this level through the summer with the hope of clearing up backlogs before the expected heavy volume of fall business begins. Consumers are in no hurry to order ahead as most are well stocked and their own production is showing effects of the usual seasonal slump.

**Chicago**—While the season is commencing to restrict new business in steel wire, demand has tapered less than usual. A further letdown in bookings is anticipated during the balance of July. Further curtailment in automotive needs will be reflected in wire shipments, while recovery in demand from miscellaneous users of manufacturers' wire is not looked for before late summer or fall. Consumers' inventories have been curtailed and new buying is fairly close in line with early needs.

**New York**—Seasonal factors, vacations and an expected mid-summer curtailment of operations by numerous consumers, is blamed for a mild recession in wire buying. Deliveries on most items are normal, although some mills still have difficulty in cleaning up shipments against rod purchases as promptly as hoped. Manufacturers' wire continues moderately active, most current buying being for early delivery. Cable for the Bronx-White-stone bridge, New York, taking several thousand tons of wire strand, will be the next contract advertised for that project, bids to be taken this fall. This will be the largest bridge cable contract in the east in several years.

**Boston**—With manufacturers' wire slightly less active, aggregate demand for wire products is down with a somewhat spotty situation prevailing in specialties and spring material. Continued high opera-

**Automatic GAS SAVING EQUIPMENT**

**WELDIT MODEL W**  
*Automatic WELDING TORCH*

Thumb lever in handle controls welding flame. Release of thumb reduces flame to pilot size. No re-lighting or re-adjusting of flame necessary between welds. Saves 25% to 50% gas alone. Weight 13 oz. Length 14½ inches. Tip sizes 3 thru 8.

**WELDIT MODEL "A-20"**  
*Automatic WELDING TORCH*

Has automatic shut-off (gas saving) feature for intermittent welding work or instantly adaptable to continuous welding job by simply sliding thumb lever into retaining or locking slot. Weight 1 lb. 10 oz. Length 18 inches. Tip sizes 2 thru 12.

**WELDIT MODEL "E"**  
**GASAVER**

Hanging torch on Gasaver hook, between welds, automatically shuts off intake lines, saves gas. Lifting torch off hook and passing across pilot light instantly produces full welding flame, no re-adjusting necessary.

**WELDIT ACETYLENE CO.**  
642 BAGLEY AVE. DETROIT, MICH.

**Free TEST FOR TWO WEEKS IN YOUR PLANT**



tions in most departments is cutting down backlogs with most business now being booked for early delivery.

**Birmingham**—New business in wire products is expected to bolster a demand that has fallen off rather steadily in the past few weeks. Much of this class of business comes from agricultural interests which will not be in the market for a few weeks.

## Shapes

Structural Shape Prices, Page 89

**New York**—Formal award of 3300 tons additional for three New York City schools brings recent total tonnage for such work to 13,230 tons. Bids on this tonnage were taken direct on the steel, fabrication and erection. Except for small bridges, including several in New Jersey, new tonnage is coming out slowly. Sheet piling is more active, projects taking several thousand tons being out for figures, including 2500 tons for the Beach Channel drive, Queens, New York, closing July 19.

**Boston**—Award of considerable small bridge tonnage for stringer spans has been held up and the bulk of structural contracts placed have gone to fabricators outside the district. About 1000 tons, mostly in Connecticut, has been bought.

**Pittsburgh**—Awards have declined recently. However, mills continue active against previous bookings. Awards included 1150 tons for the Crosley Radio Corp. plant in Richmond, Ind., placed with Bethlehem Steel Co., Bethlehem, Pa., and 830 tons for Wayne county, Michigan, incinerator buildings placed with American Bridge Co., Pittsburgh. Among the larger inquiries recently are 2000 tons for extensions for International Harvester Co. at South Chicago, Ill., and 650 tons for a hotel addition in Denver, Colo.

**Cleveland** — The usual run of miscellaneous awards were reported last week with few exceeding 100 tons. The largest, 215 tons, was a building for the Niles Glass Co., di-

vision of General Electric Co., Niles, O., which went to the Niles Forge & Mfg. Co., Niles, O. Only a slight improvement in mill deliveries is apparent with an average of five to six weeks now promised. Pending work includes the revised bids for the Lorain avenue bridge, Cleveland, involving close to 600 tons.

**Chicago**—Activity is made up principally of small projects, but nearly 18,000 tons is involved in small jobs out for bids recently. The largest inquiry pending is 1975 tons for

plant extensions for Wisconsin Steel Works. Fabricators continue fairly busy and in one instance work has been transferred from an eastern plant to a local fabricator because of congested condition of the former's plant.

**Philadelphia**—Some new structural jobs are coming out, but not in sufficient volume to keep fabricating backlogs up to recent levels. Strikes in other sections have brought in some business. Some pressure is reported on plain shape

**WYCKOFF**

**COLD DRAWN STEEL**  
**SCIENTIFICALLY SELECTED**  
*for your*  
**SPECIFIC REQUIREMENTS**

If your steel problem involves uniformity of product, depth of hardening, toughness or surface hardness of penetration, investigate the advantages of WYCKOFF CONTROLLED COLD DRAWN STEEL SERVICE.

Precision manufacturing methods enable us to duplicate the best and most efficient grade of steel for your purpose, time after time, with the precision of a laboratory formula, with resultant savings in your fabricating costs.

### WYCKOFF DRAWN STEEL CO.

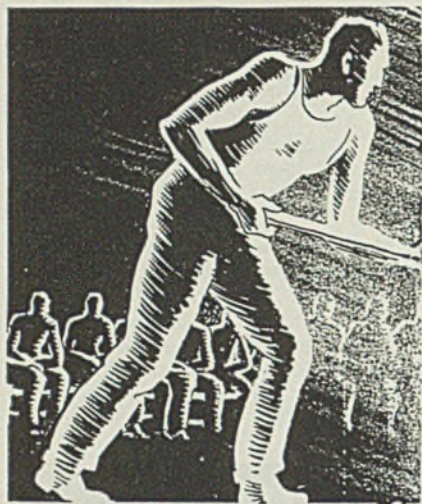
General Offices: First National Bank Building, Pittsburgh, Pa.  
 Mills at Ambridge, Pa. and Chicago, Ill.

Manufacturers of Carbon and Alloy Steels  
 Turned and Polished Shafting Turned and Ground Shafting  
 Wide Flats up to 12" x 2"

Warehouse stocks carried by nationally known distributors

### Shape Awards Compared

	Tons
Week ended July 17.....	15,390
Week ended July 10.....	13,900
Week ended July 3.....	34,782
This week, 1936.....	23,216
Weekly average, 1936.....	16,332
Weekly average, 1937.....	27,350
Weekly average, June.....	32,510
Total to date, 1936.....	647,866
Total to date, 1937.....	775,159
Includes awards of 100 tons or more.	



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prices, but market continues unchanged.

**St. Louis**—Settlement of the strike at structural steel plants here has resulted in resumption of operations. Customers are urging deliveries at earliest possible date, particularly on bridge, and other structural jobs. There were no cancellations as a result of the strike.

**Seattle**—Interest centers in two proposed Washington state bridges, one over the Skagit river, the other over the Columbia river at Clarkston, planned for early action. Minneapolis-Moline Power & Implement Co., Minneapolis, was awarded 400 tons involved in a bureau of roads bridge, Idaho.

**Shape Contracts Placed**

- 2025 tons, open hearth building addition, Republic Steel Corp., Alabama City, Ala., to Nashville Bridge Co., Nashville, Tenn.
- 1500 tons, building Federated Metals Corp., Whiting, Ind., to Austin Co., Cleveland.
- 1150 tons, manufacturing plant, Crosley Radio Corp., Richmond, Ind., to Bethlehem Steel Co., Bethlehem, Pa.
- 835 tons, high school, Ogontz and Olney avenues, Philadelphia, to Fort Pitt Bridge Works, Pittsburgh; John McShain Inc., Philadelphia, general contractor.
- 830 tons, incinerator buildings, Detroit, for Wayne county, Michigan, to American Bridge Co., Pittsburgh.
- 585 tons, bridge, James river, near Richmond, Va., to Virginia Bridge Co., Roanoke, Va.
- 500 tons, grade separation bridges, Terminal Railroad Association of St. Louis, East St. Louis, Ill., to Bethlehem Steel Co., Bethlehem, Pa.
- 460 tons, filtration plant, St. Paul, to St. Paul Foundry Co., St. Paul.
- 460 tons, building, Williamsport Textile Corp., Williamsport, Pa., to Bethlehem Steel Co., Bethlehem, Pa.
- 400 tons, caissons and cutting edges, for Bronx-Whitestone bridge, New York, to Dravo Corp., Pittsburgh, by Frederick Snare Corp., New York.
- 400 tons, bureau of roads bridge, Idaho, to Minneapolis-Moline Power Implement Co., Minneapolis.
- 400 tons, building, Arnold Schwinn & Co., Chicago, to Wendnagel & Co., Chicago.
- 390 tons, highway bridge, Monaca, Beaver county, Pennsylvania, to Fort Pitt Bridge Works, Pittsburgh.
- 370 tons, building Atlantic Brewing Co., Chicago, to Wendnagel & Co., Chicago.
- 350 tons, highway bridge No. 30, Oil City, Pa., for Venango county, to Gulbert Steel Co., Pittsburgh.
- 334 tons, structural steel and castings, embedded parts for spillway gates, Pickwick Landing dam, Tennessee valley authority, Knoxville, Tenn., to Lakeside Bridge & Steel Co., Milwaukee, \$55,000 f.o.b., Milwaukee; bids June 3.
- 329 tons, left span, Milwaukee road, Portage, Wis., to Worden Allen Co., Milwaukee.
- 280 tons, furnace building, Libbey-Owens-Ford Glass Co., Ottawa, Ill., to Mississippi Valley Structural Steel Co., Decatur, Ill.
- 250 tons, state bridges, Woodbridge, N. J., to Bethlehem Steel Co., Bethlehem, Pa.; Weldon Construction Co., Westfield, N. J., general contractor.
- 225 tons, H piling, Tumwater state bridge, Washington, to Bethlehem Steel Co., Seattle.

- 225 tons, overhead bridge, Marquette county, Wisconsin, to Worden-Allen Co., Milwaukee.
- 215 tons, building, Niles Glass Co., division of General Electric Co., Niles, O., to Niles Forge & Mfg. Co., Niles, O.
- 200 tons, bridges and retaining walls, High Point, N. C., to Knoxville Iron Co., Knoxville, Tenn.; through Southern Engineering Co., Charlotte, N. C.
- 200 tons, waste acid building, E. I. du Pont de Nemours & Co., Curtis Bay, Md., to Belmont Iron Works, Eddystone, Pa.
- 200 tons, box poles, Pennsylvania railroad electrification program, to Bethlehem Steel Co., Bethlehem, Pa.
- 195 tons, I-beam span, Stanton county, Nebraska, to Pittsburgh-Des Moines Steel Co., Des Moines, Iowa.
- 190 tons, bridge, W.P.G.M. 359, Glendive, Dawson county, Montana, to Pittsburgh-Des Moines Steel Co., Des Moines, Iowa.
- 185 tons, bridge NRS 283-D, Big Timber, Mont., to Pittsburgh-Des Moines Steel Co., Des Moines, Iowa.
- 175 tons, bridge FAP-643-E, Oldham and Deaf Smith counties, Texas, to Central Texas Iron Works, Waco, Tex.
- 175 tons, building Rustless Iron Co. of America, Baltimore, to Baltimore Steel Co., Baltimore.
- 175 tons, hospital for colored Winston-Salem, N. C., to Carolina Steel & Iron Co., Goldsboro, N. C.
- 165 tons, building addition, Wallingford Steel Co., Wallingford, Conn., to Berlin Construction Co., Berlin, Conn.
- 160 tons, Baker Homes housing project, Lackawanna, N. Y., to Buffalo Structural Steel Co., Buffalo; Fleisher Engineering & Construction Co., Buffalo, general contractor.
- 155 tons, piling and bars, state bridge, Belchertown-Palmer, Mass., to Bethlehem Co., Bethlehem, Pa.; includes 55 tons of structurals, to American Bridge Co., Pittsburgh, through Frank T. Westcott, North Attleboro, Mass.
- 155 tons, bridge 5370, LaCrosse county, Wisconsin, to Worden-Allen Co., Milwaukee.
- 155 tons, cafeteria, Bakelite Corp., Bound Brook, N. J., to Savary & Glaeser, Dunnellen, N. J.
- 150 tons, building addition, Philadelphia Electric Co., Morton, Pa., to Belmont Iron Works, Eddystone, Pa.
- 135 tons, building, Monarch Insurance Co., Springfield, Mass., to Bethlehem Fabricators Inc., Bethlehem, Pa.
- 107 tons, train shed, Cleveland, Fisher Body Corp., Detroit, to R. C. Mahon Co., Detroit.

**Shape Contracts Pending**

- 4000 tons, gates, Tennessee valley authority, Knoxville, Tenn.; bids July 29.
- 2750 tons, steel bids direct, fabrication and erection, William Cullen Bryant high school, Queens, New York, Bethlehem Fabricators, Inc., Bethlehem, Pa., low, \$262,540; bids July 9, board of education, New York.
- 2000 tons, extensions, International Harvester Co., South Chicago, Ill.
- 1975 tons, plant extension, Wisconsin Steel Works, South Chicago, Ill.
- 1100 tons, post office garage, Chicago; Jacobson Bros. Co., Chicago, low, bids July 13.
- 1000 tons, Lt Brothers department store, Sixty-ninth and Market street, Philadelphia; McCloskey & Co., Philadelphia, low.
- 650 tons, addition, hotel building, Paterson estate, Denver, Colo.
- 600 tons, Lorain Avenue bridge, Cleveland; bids July 27.
- 550 tons, Glenwood bridge, Pittsburgh, for Allegheny county, Pennsylvania.

- 550 tons, state highway underpass, WPGM-415, Denver, Colo.
- 525 tons, state bridge RC-3896, Chester, N. Y.; bids in.
- 500 tons, state highway bridge, contract 1560, Shelbyville, Ind.
- 500 tons, derricks, McPherson, Kans.
- 470 tons, bridge Shasta National forest, Calif.; bids July 27 to Agricultural department, also includes 85 tons of bars.
- 460 tons, filtration plant, St. Paul Foundry Co., St. Paul.
- 450 tons, building and warehouse, The 1900 Corp., St. Joseph, Mich.
- 400 tons, Pennsylvania railroad bridge repairs.
- 355 tons, building, Landers-Frary & Clark, New Britain, Conn.
- 350 tons, grade crossing over Pennsylvania railroad, Odenton, Md.; Jarboe & Houghton Inc., Mechanicsville, Md., low, \$124,176; bids July 13, state road commission.
- 350 tons, theater building, Comerford Theatres Inc., Wilkes-Barre, Pa.
- 330 tons, bridge, Pottstown Kentlworth, Pa.; bids postponed to Aug. 10.
- 325 tons, state bridge, Shetucket river, Norwich, Conn.; Savin Construction Co., East Hartford, Conn., low, \$117,705; bids July 6.
- 300 tons, engine facilities, Pennsylvania railroad, Harrisburg, Pa.; includes 800 tons of reinforcing bars.
- 285 tons, addition, Dollar Savings Bank, New York.
- 270 tons, direct steel bids, fabrication and erection, addition, public school 86, Bronx, New York; Schaet Steel Construction Co., Bronx, low, \$24,790, bids July 9, board of education, New York.
- 270 tons, direct steel bids, fabrication and erection, addition, public school 197, Brooklyn, New York; Bethlehem Fabricators, Inc., Bethlehem, Pa., low, \$25,500, bids July 9, board of education, New York.
- 270 tons, eyebars and rods, Pennsylvania railroad, Pittsburgh.
- 250 tons, shapes and bars, post office, Johnstown, Pa.; Charles Shutrump & Sons Co., Youngstown, O., low, bids July 13.
- 250 tons, addition to supply warehouse, Chicago board of education; bids July 20.
- 240 tons, building, Bartgis Storage & Printing Co., Ilchester, Md.
- 200 tons, overhead highway bridge, for Scranton, Pa.; bids July 30.
- 175 tons, stringer bridge and approaches, WPF 18, South Main street, Orange, Mass.; Charles I. Hosmer, Greenfield, Mass., low, \$79,101; bids July 6, state department of public works, Boston.
- 169 tons, bridge, over Central Railroad of New Jersey, route 28, Annandale, N. J.; bids July 19, state highway commission, Trenton, N. J.
- 164 tons, grade crossing, Deans road, North Brunswick, N. J.; bids July 26, state highway commission, Trenton, N. J.
- 160 tons, addition, veterans' hospital, Milwaukee; A. C. Guetzkow, Milwaukee, low, bids July 13.
- 150 tons, addition, court house, Muskogee, Okla.; Manhattan Construction Co., Muskogee, low, bids July 13.
- 135 tons, boiler house, veterans' hospital, Knoxville, Ia.; James I. Barnes, Springfield, Mo., low, bids July 13.
- 120 tons, Marion theater and office building, Chicago.
- 100 tons, bridges, state of Wisconsin; bids July 23.
- 100 tons, highway bridge, Center county, Pennsylvania; bids July 16.
- Unstated, six radial gates and six gate holsts, for Gbson dam, Sun river proj-

ect, Mont.; bids to reclamation bureau, Denver, July 26.  
Unstated, state bridge Yamhill county, Oregon; Mountain States Construction Co., Portland, general contractor.

## Reinforcing

Reinforcing Bar Prices, Page 90

**Pittsburgh**—Reinforcing awards and inquiries dropped off sharply last week. Lind Co., Pittsburgh, booked 200 tons for a warehouse in Pittsburgh. Inquiries include 2600 tons for bureau of engraving and printing, Washington. Banksville road project, Pittsburgh, will require about 200 tons more than the 1000 tons estimated previously.

**Cleveland**—New tonnage has shown little improvement with most jobs averaging only 25 tons. State work is noticeably lacking although there has been some buying of mesh for road repairs, but even the demand for this is well below a year ago. Most mills are able to make deliveries almost over night, shipping from stock.

**Chicago**—This market is only moderately active and while shipments remain fairly heavy, mills are seeking additional tonnages. Pending work is made up principally of small

individual lots, the largest project being 1900 tons for the postoffice garage on which the Lipman Construction Co., Chicago, is low for the general contract. Several hundred tons will be required for Illinois state bridges.

**New York**—Close to 10,000 tons of reinforcing bars and mesh are pending, most of the former being for sewers. New Jersey highway requirements are slightly heavier, while New York state highway projects are taking less mesh. Tonnage contracts are fewer, but close to 1800 tons, including reinforcing trusses, New Jersey approach, Lincoln tunnel, have been tentatively

## Concrete Awards Compared

	Tons
Week ended July 17.....	2,843
Week ended July 10.....	7,083
Week ended July 3.....	9,722
This week, 1936.....	8,611
Weekly average, 1936.....	6,005
Weekly average, 1937.....	5,688
Weekly average, June.....	9,596
Total to date, 1936.....	202,851
Total to date, 1937.....	164,938

Includes awards of 100 tons or more.



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closed. Small-lot buying is active with prices somewhat erratic.

**Boston**—Except for an 180-ton contract, reinforcing concrete bar buying is in small lots, aggregate tonnage totaling several hundred tons. Pending tonnage is heavier led by a highway bridge project, Fitchburg-Leominster, Mass.; A. G. Tomasello & Son, Boston, low. Small bridges throughout New England account for considerable tonnage. Prices to contractors are frequently shaded.

**Buffalo**—There are several large inquiries, including two grade crossing elimination projects which will probably not reach contract stage for several months. These projects and a high level bridge here involve an expenditure of more than \$10,000,000, largely for reinforced concrete work. A grain elevator at Hamilton, Ont., adds another \$1,500,000 to the proposed outlay for construction of this type. Preliminary estimates are that in the four projects mentioned more than 10,000 tons of reinforcing bars, will be required.

**Philadelphia**—Bids go in July 21 for 5000 to 6000 tons of bars, for experimental basin navy department at Carderock, Md. Baltimore & Ohio is expected to require fair tonnage for reconstruction of pier 12, which recently burned. Concrete Steel Co., New York, has booked 2600 tons for a viscose plant at Front Royal, Va., Wark & Co., Philadelphia, general contractor.

**Birmingham** — Reinforcing concrete bars continue in general demand with steady building operations accountable. Birmingham producers are operating near capacity

with indications of quantity specifications before end of the third quarter.

**Seattle**—Inquiry is not active and mills will further curtail operations shortly unless new business develops. No awards in excess of 100 tons were announced this week. Reclamation bureau will open bids Aug. 2 at Cody, Wyo., for the Heart Mountain division, Shoshone project, Wyo., involving 558 tons.

## Reinforcing Steel Awards

500 tons, Columbia avenue viaduct, Cincinnati, to Pollak Steel Co., Cincinnati; through Middle West Roads Co., Detroit, general contractor.

450 tons, bridges on detaining walls, High Point, N. C., to Knoxville Iron Co., Knoxville, Tenn.; through A. H. Guion & Co., Charlotte, N. C.

400 tons, in addition to 225 tons previously reported, sludge digestion plant, sewer system, Buffalo, N. Y., to Buffalo Steel Co., Buffalo.

300 tons, power plant, Llbey-Owens Ford Glass Co., Rossford, O., to Hausman Steel Co., Toledo, O.

300 tons, vocational school, Toledo, O., to Truscon Steel Co., Youngstown, O.

200 tons, warehouse, A. & P. grocery, Dallas avenue and Pennsylvania railroad, Pittsburgh, to Lind Co., Pittsburgh.

180 tons, water basin project, Belchertown, Mass., to Morrison-Stevens Co., Boston.

155 tons, building, Swift & Co., New York, to Bethlehem Steel Co., Bethlehem, Pa.

150 tons, mesh, Franklin county, Pennsylvania to Wheeling Corrugating Co., Wheeling, W. Va.

108 tons, bridge, Wabash river, Terre Haute, Ind., to W. J. Holliday & Co., Indianapolis; E. F. Smith, Indianapolis, general contractor.

100 tons, plant addition, Scott Paper Co., Chester, Pa., to Bethlehem Steel Co., Bethlehem, Pa.

## Reinforcing Steel Pending

2600 tons, bureau of engraving and printing, Washington; bids in.

1900 tons, postoffice garage, Chicago; Lipman Construction Co., Chicago, low on general contract.

1325 tons, bullion depository, West Point Military academy, New York; bids July 29.

810 tons, storm trunk sewer, contract 1, project 1, Queens, N. Y.; bids July 21.

558 tons, Shoshone project, Wyo.; bids to reclamation bureau, Cody, Wyo., Aug. 2.

420 tons, sewer, Dilmars boulevard, Contract 2, Queens, N. Y.; Johnson & Nacarro, low.

400 tons, building, Crowell Publishing Co., Springfield, O.

235 tons, also 150 tons shapes, Tongue river irrigation state project, Rosebud county, Montana; J. C. Boespflug, Miles City, general contractor.

220 tons, Roza reclamation project, Washington state; bids in.

200 tons, state bridges, Illinois; bids Md., to Belmont Iron Works, Eddystone, July 23.

114 tons, bridge, over Central Railroad of New Jersey, Route 28, Annandale, N. J.; bids July 19, state highway commission, Trenton, N. J.

114 tons, highway bridge, Avondale, N. J.

Unstated, replacements, state Union avenue bridge, Portland, Oreg.; Gilpin Construction Co., Portland, Oreg., general contractor.

Unstated, state overcrossing, Washington county, Oregon; Harold Blake, Portland, general contractor.

## Pig Iron

Pig Iron Prices, Page 91

**Boston**—Although foundry melt is down slightly, pig iron shipments against contracts are well maintained with new buying confined mostly to small lots. Immediate delivery is wanted on the latter orders. Shipments to Worcester works, American Steel & Wire Co., from the company's Cleveland furnaces by water-rail are heavy and steady. An estimated 40,000 tons is expected to move to that point during the year. This iron moves to Beacon, N. Y., by water and from the latter point by rail. Export shipments against orders are as heavy as cargo space available permits. On some quiet export business premiums continue to be paid.

**Pittsburgh**—Activity in pig iron is unchanged, with new business light and producers building up stocks. Foundry iron has been off a little recently, but this is considered only temporary. Shipments from this district in July will be close to the June rate according to every indication.

**Cleveland** — Pig iron sellers are building up stocks, despite the apparent falling off in new business from miscellaneous foundries whose own operations have been curtailed because of seasonal influences and vacation periods. Some large orders

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have been reported placed from automotive sources recently. Most melters who place forward delivery contracts have been booked.

**Chicago**—While foundry operations are declining seasonally, pig iron shipments are well sustained and the July movement is expected to show a small gain over June. Producers of automotive castings are less active, but farm equipment manufacturers are continuing near-capacity schedules. New pig iron buying is confined to occasional small lots but producers are well booked for the remainder of this quarter.

**New York**—Slight improvement in spot buying, mostly small lots, with steady shipments against contracts marks a strong pig iron market. Some sellers expect July shipments, due to holidays and vacations, will be slightly under June. Any slack, however, can be filled easily by active export inquiry. Shipments against old export volume are heavy. Furnaces have heavy backlogs and small stocks and supplies held by consumers are not large.

**Buffalo**—Little interest in pig iron is being shown. Production continues at practical capacity and steelworks are using record tonnages of hot iron.

**Philadelphia**—Some accumulation of iron is noted at Eastern blast furnace plants but producers report they are building up stocks against anticipated heavier demand this fall. Shipments are holding up well indicating continuance of fairly high rate of foundry melt. Sharp increase in scrap prices lend support to expectation in some quarters of fourth quarter advance.

**Cincinnati**—Specifications for pig iron at current prices tend upward, indicating depletion of stocks. New ordering has not been keyed to the melt which in recent weeks has slowed. A fair movement to cover late-quarter needs, both in northern and southern iron, is developing.

**St. Louis**—Some slowing in buying of pig iron has been noted during the past several days, but shipments continue at about the same daily average rate as in June. In some instances the carryover into the third quarter was above expectations, and both mills and foundries are disposed to use up inventories before making new commitments.

The melt as a whole is well maintained, but in the immediate past jobbing plants report a recession in demand for miscellaneous castings, and activities are expected to show the effects before the end of the quarter.

**Birmingham**—Contract buying of

pig iron is light, and producers are making more iron than they are shipping. The accumulation, however, is not great.

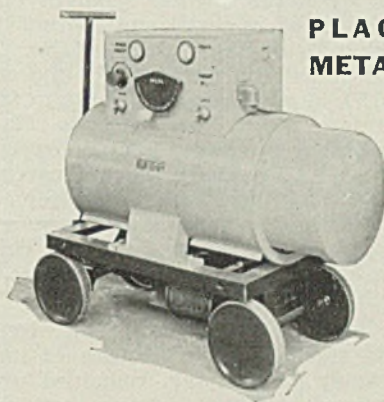
**Toronto, Ont.**—Demand for merchant pig iron has fallen off, with awards for the week around 1200 tons. Melters are in the market for iron for spot needs and orders are appearing for lots of a car to 300 tons. A number of smelters have covered for third quarter and are taking schedule delivery.

## Scrap

Scrap Prices, Page 93

**Pittsburgh**—With another advance of 50 cents, No. 1 heavy melting steel has now returned one-third of the way to the year's high mark of \$24, Pittsburgh. The current quotable range is \$19.50 to \$20. Dealers late in the week offered to buy at better than \$19.50, and found material scarce. A broker

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for an outlying mill consumer offered as high as \$20. Little material was actually being sold into mill consumption.

**Cleveland**—Prices have been advanced 50 cents to \$2 per ton in an effort to attract larger tonnages of scrap and in the Youngstown district the rise has been \$1.50. Rumors are current of large sales to steelmakers, but not confirmed. Heavy melting steel is \$2 higher here. Activity is expected to follow resumption of production in plants made idle by the strike.

**Chicago**—Scrap is strong here and prices of practically all grades are up 50 cents to \$1 a ton. Brokers are bidding \$17 to \$18 for No. 1 heavy melting steel, and this grade is quoted currently \$1.50 above the low reached during the strike period. Scrap is coming out in only moderate volume since expectations of higher prices lead some dealers to retain their accumulations. Some mill buying is expected soon.

**New York**—Slightly heavier buying and additional strength in other markets is reflected in the scrap market here with most grades up 50 cents. Heavy melting steel for domestic shipment is up \$1.50. This brings the price on a par with export tonnage, the latter being unchanged.

**Boston**—Advances of 25 to 50 cents and on a few grades, including heavy melting steel for outside domestic shipment, increases up to \$1 a ton, mark a stronger and slightly more active scrap market. In some instances higher prices for steelmaking scrap reflects strength

in other eastern sections without many notable sales.

For export, heavy melting steel advanced 50 cents to \$16.50, dock, with No. 2 up a like amount to \$15.50. Skeleton, specification pipe, scrap rails, mixed shafting and machine shop turnings also advanced late in the week.

**Buffalo**—There is active demand for No. 1 heavy melting steel, which has moved up in sympathy with outside markets. Dealers ask \$19.50 for No. 1 and are holding for top prices. No. 2 steel and substitutes have not shown quite as much strength as No. 1 but the trend is definitely higher. Scrap is coming out slowly in contrast to liberal receipts in June.

**Philadelphia**—The scrap market has developed further strength on shortage of material and continued high consumption. Sales of No. 1 steel have been made at \$19 and at \$19.50, at advances of 50 cents to \$1 per ton. No. 2 heavy steel is relatively less scarce but is up 50 cents. Several mills have been buyers. Practically the entire list is represented in the advance with some grades up as much as \$1.50. The market is in a disturbed condition with further rise expected.

**Cincinnati**—Quotations on iron and steel scrap, in absence of important mill buying, remained unchanged although dealer activity provides a strong undertone. These dealers, seeking to increase yard stocks, have tightened supplies. Foundries again are avid for short rails and this grade is especially firm. District mills are supplied for

early needs and hence in good position to resist an advancing market.

**Detroit**—Demand for blast furnace scrap has moved quotations on borings and turnings up 75 cents to \$1 per ton, with all other grades increased 25 to 50 cents. Brokers find the market considerably stronger. Cast grades are sharing the improved position, there being a disposition to use cast scrap in open-hearth furnaces instead of pig iron.

**St. Louis**—Purchasing of iron and steel scrap has expanded considerably, and the market as a whole is decidedly strong, with advances of 25 to 50 cents per ton on steel-making and some other grades. Purchases of 12,000 to 15,000 tons of heavy melting steel were made by two mills for delivery over the next 60 days. The business was split between several dealers, and the price was said to be \$1 higher than the last preceding purchase of the same material.

**Birmingham**—A 50-cent advance in heavy melting steel, indicates according to buyers a revival of somewhat laggard market. Advances in other classifications are expected within a week.

**Seattle**—The market is marking time. Shipments continue to go forward to Japan, Dulien Steel Products Inc., Seattle, loading 7500 tons, a full cargo, this week. Export inquiry is negligible and domestic buying is small as mills have withdrawn from the market.

**Toronto, Ont.**—Minor decline in demand for a few grades is reported by local scrap dealers, while other lines are moving freely. Machinery cast has a ready market. Heavy melting steel also is in demand, but requirements are not as pressing as a few weeks ago. Automobile scrap supply is well ahead of demand. Other lines are spotty, although there is a good call for stove plate.

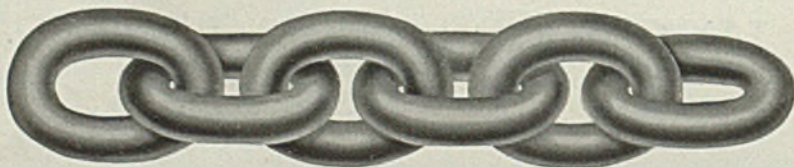
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## Cold-Finished

Cold Finished Prices, Page 90

**Pittsburgh**—Less activity in the automotive industry has made the cold-finished market dull recently. Ordinarily, automotive specifications for new models are placed about this time of year, but at present, in view of the fact that there apparently will be little change in 1938 models, only a small volume of business has been forthcoming. Combined with this situation, there is a natural seasonal reaction in other fields. Despite noticeable absence of specifications and

the fact backlogs have melted away, cold-finished sellers believe the general picture is no worse than could be expected at this time of year. Prices are steady.

## Warehouse

Warehouse Prices, Page 92

**Pittsburgh**—Warehouses report business has improved since first of July. The summer slackening in activity of buyers has been a factor, but sheets and plates continue hard to obtain and specialties are in fair demand. Structural deliveries are easier.

**Cleveland**—Order volume and aggregate tonnage out of warehouse continues to reflect the usual July recession in activity from most customers. Most jobbers have completed replenishing their stocks, particularly since current business is relatively slow.

**Chicago**—While sales are heavier than during the holiday period, the trend is following the usual summer course in tapering gradually. Business holds well above the rate a year ago, and warehouses describe conditions as generally satisfactory.

**New York**—Buying of steel from warehouse has slowed materially, practically all products being slower, the drop in structural demand being especially pronounced. Shipments from mills recently closed by strikes are arriving increasingly, but on the whole mill deliveries improve slowly. On many items deliveries are still six to eight weeks while on some gages and specifications shipments are further extended.

**Buffalo**—Warehouses are profiting by the long delays to get some products from mills.

**Cincinnati**—Tapering of sales may be attributed to seasonal influences, although better mill deliveries may cut into volume maintained in recent months. Considering the loss in business because of the Ohio river flood, the first half was exceptionally good.

**St. Louis**—Distribution of iron and steel from store continues in larger than seasonal volume. The demand is diversified, but has centered principally in plates, sheets and standard structural shapes.

**Seattle**—Jobbers report mid-season lull pronounced, business confined to small tonnages and rush orders. Volume has dropped but prices are being well maintained. Decline in demand for plates is particularly noticeable. Sheet movement is fair.

General Steel Co., 663 South Anderson street, Los Angeles, will build a 1-story, 100 x 200-foot warehouse on South Alameda street this fall.

## Ferroalloys

Ferroalloy Prices, Page 91

**New York**—Spiegeleisen specifications are steady, with buying somewhat heavier, the rebound in steel mill operations being reflected in new volume. Consumers as a rule did not stock heavily last quarter and current specifications are against the \$33, Palmerton, Pa., spot price, \$3 higher than last quarter.

Demand for ferromanganese is

light, most consumers having loaded up heavily last quarter before the advance. This supply has not yet been fully worked off and volume this month has been small, although an early improvement is expected in view of higher steel mill production.

Warwick Steel Co., 2400 West Madison street, Chicago, has been formed by H. G. Warwick, who resigned July 1 as treasurer of Corey Steel Co., Cicero, Ill. The company will deal in steel sheets and strip.



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MERCHANT PIG IRON DIVISION OF NATIONAL STEEL CORPORATION

Buffalo Detroit New York Philadelphia Boston

# Iron Ore

Iron Ore Prices, Page 93

**Cleveland**—The balance of iron ore on dock at Lake Erie ports increased 795,063 tons in June, accordingly to Lake Superior Iron Ore association. This was probably due to the strike at some furnaces. It still is considerably less than the 1936 balance.

Receipts of iron ore at lower lake ports this season to July 1, shipments to interior furnaces and dock balances follow:

Port	Receipts season	Shipments season	Dock bal. July 1, '37
Buffalo	2,136,171	295,485	3,899
Erie	984,649	957,126	76,876
Conneaut	3,464,588	3,614,662	1,092,286
Ashtabula	2,568,418	2,230,400	1,073,152
Fairport	809,716	844,506	362,530
Cleveland	3,519,824	2,624,222	481,654
Lorain	1,388,666	544,164	9,898
Huron	466,829	472,823	196,975
Toledo	747,636	375,916	31,983
<b>TOTAL</b>	<b>16,086,497</b>	<b>11,969,304</b>	<b>3,329,253</b>

1 year ago 7,342,617 6,331,492 4,045,110

Receipts at other than Lake Erie ports for June and the season to July 1 follow:

Port	Month	Season
Detroit	175,747	360,520
Indiana Harbor		491,871
Gary	918,809	2,346,893
South Chicago	1,021,678	2,690,909
Sault Ste. Marie, Ont.	79,403	195,874
Hamilton, Ont.	97,491	217,871

**TOTAL** 2,293,128 6,303,938

1 year ago 1,931,309 3,349,459

Wheeling & Lake Erie railway's new \$1,000,000 car dumper at Huron, O., loaded its first freighter last

week with coal. The machine is capable of handling sixty 70-ton cars per hour.

The Pennsylvania railroad's proposal for a \$4,000,000 harbor improvement at Sandusky, O., including enlargement of the present dock to 3000 feet long and 500 feet wide, is held in abeyance with the filing of objections to the war department by certain landowners. The improvement would provide room for mooring 15 lake ships during the winter, and installing two modern coal unloaders.

## Metallurgical Coke

Coke Prices, Page 90

Spot demand for Connellsville beehive coke remains slack with prices at \$4.40 to \$4.60. Non-striking workers last week returned to two mines of Republic Steel Corp. in the Connellsville district, the Davidson and Trotter mines. Company representatives said 197 men crashed the picket lines. The Alicia plant has fired 100 ovens. Shipments of coal to the Great Lakes region have increased slightly.

Coke deliveries at Chicago are about equal to those a month ago, with shipments regulated largely by early needs since stocks accumulated previously this year have been reduced. The decrease in coke consumption recently has been less than seasonal.

Hayes Steel Products Corp., Merriton, Ont., Canada, plans to construct an addition to its machine shop. A.

E. Nicholson, St. Catharines, Ont., is architect. Standard Steel Co. of Canada has the contract for structural steel for a smaller addition now being built.

## Steel In Europe

Foreign Steel Prices, Page 92

**London**—(By Cable)—Great Britain continues to make high production records in steel ingots and in pig iron. June output of pig iron at 699,300 tons was 3000 tons larger than May at 696,300 tons. The latter was the highest in ten years. Active blast furnace stacks at the end of June were 126, compared with 123 at the end of May. Steel ingot output totaled 1,106,400 tons, the highest since that of March. This was a gain of 59,100 tons over May.

Steel imports in June were 174,824 tons, compared with 98,054 tons in May. This is the heaviest import total for several years and reflects the demands made on Continental steel by Great Britain. Exports in June were 235,412 tons, compared with 228,312 tons in May.

Arrangements have been made with the European steel cartel to supply Great Britain 200,000 tons of Continental steel above the normal quota by the end of the year. All departments of the steel industry are fully active. Pig iron is being supplied by rationing. Most works are booked full to the end of the year. Export inquiry is expanding but available tonnage is limited.

The Continent reports export demand quiet but the outlook fair. France and Germany have concluded a commercial agreement involving exchange of iron ore and coke.

## Nonferrous Metals

Nonferrous Metal Prices, Page 91

**New York**—An advance of ¼-cent in zinc quotations on Monday featured developments in nonferrous metals last week. This was the first change in that market since April 20 when the market declined ¼-cent and was the first change since April 29 in any of the major markets, excepting tin. Export copper was stronger, fluctuating around the 14-cent level, while tin advanced to around the 60-cent level.

**Lead**—Inquiry was substantial and heavier than during the previous week. August needs are about 50 per cent covered. Prices held at 5.85c, East St. Louis, and 6.00c, New York.

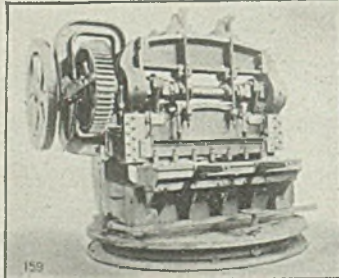
**Copper**—Heavier demand for copper in the foreign market, stimulated by war threats in the Far East, lifted export copper to 14.00c, c.i.f.

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European ports. Buying here held up well at an average of 1675 tons per market day while electrolytic held at 14.00c, Connecticut. The increase in world refined stocks during June was less than expected.

**Zinc**—Prices advanced to the basis of 7.00c, East St. Louis, for prime western on heavy demand coupled with tight nearby supplies. Final incentive for consumers to cover was the June statistical report showing only slight alleviation of the tight supply situation.

**Tin**—Straits spot advanced to 60.00c although earlier in the week the market was 3/8-cent higher. Strength was attributed to heavier consumer demand and threats of war in the Far East which might affect the tin mining industry in China.

**Antimony**—Prices advanced 3/8-cent on heavier buying. Both American and Chinese spot were quoted 14.75c, New York.

### American Builders Asked To Bid on Brazilian Ships

American shipbuilders have been invited to bid on 12 passenger and passenger-cargo motorships for the Brazilian government by the admiral director of Lloyd-Brasileiro. Tenders for the ships, which will require approximately 70,000 tons of steel, largely plates, will be received during the next 90 days.

European yards also are asked to bid on the addition to the Brazilian merchant marine fleet and as all 12 bottoms are to be motorships would naturally be in a somewhat favorable position for the contracts.

British yards, however, are reported to be well filled with tonnage, and if prices are in line, it is indicated some of the ships may be placed in American yards.

### Dravo Corp. Will Build New York Bridge Caissons

Dravo Corp., Pittsburgh, has been awarded a contract for all-welded steel caissons for the Bronx-White-stone bridge across the East river at New York by Frederick Snare Corp., New York, general contractors.

The order calls for two floating caissons 38 feet square and 21 feet high, with rounded corners for the twin main pier on the Queens side. Steel superstructures 89 feet 3 inches high also are required.

Main pier on the Bronx side requires two 38 feet square steel cutting edges and the anchorage on the Queens side requires two cutting edges, each 100 feet by 33 feet, as well as two circular cutting edges

24 feet in diameter. Caissons and cutting edges will require about 1000 tons of steel.

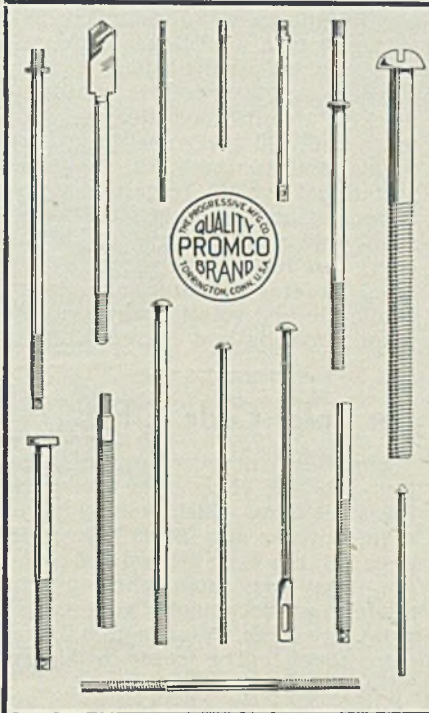
### FTC Settles Cases Under Robinson-Patman Law

Federal trade commission has disposed of four cases under the Robinson-Patman act, the first in which decisions have been made. In two cases, cease and desist orders were

issued; two others were dismissed. None of the cases concerned the steel industry, but, are of interest for the precedents established under the new law.

### Metal Exports May Face Ban If China, Japan Fight

There is considerable speculation in government circles in connection with the China-Japanese situation



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and its possible effect on our exports in the event that war is declared between the two nations.

It is pointed out that if this became a fact the president would have to invoke the new neutrality law, very much broader than the old one which expired in April. Under the new act the law is not confined to arms, ammunition, and implements of war, but could be invoked on other commodities.

In May, one-third of our iron and steel exports aside from scrap went to Japan alone. It is well known that the United States has been exporting large quantities of scrap, pig iron and other forms of steel to Japan during the past few months, and these exports possibly could be prohibited under the neutrality act if this government chooses.

### Carnegie-Illinois Honors Veterans at Two Plants

One hundred and thirty veteran employees of the Gary works of Carnegie-Illinois Steel Corp. were honored at a special informal breakfast at Marquette Park pavilion, Gary, Ind., July 11.

The men, all of whom have at least 25 years service, were presented with United States Steel Corp. service medals. Walter E. Hadley, general superintendent of the plant, presided at the breakfast and presentation. Especially honored was Frank Strand who received a gold

medal in recognition of 50 years of continuous employment.

A similar program was held at the corporation's South works in South Chicago on July 17, when more than 200 employes received medals.

### Directory Lists Sources Of Trade Statistics

Current economic statistical reports with the names and addresses of compiling or collecting agencies are listed in *Sources of Current Trade Statistics*, recently published by the department of commerce. The publication is a bibliographical reference work listing approximately 3000 series of reports issued daily, weekly, monthly or quarterly by more than 240 governmental departments and commissions, trade associations, private research organizations, trade and technical magazines, and newspapers. The series cover production, new orders, unfilled orders, consumption, stocks, wholesale and retail prices, employment, payrolls and earnings.

### Bar Color Code Is Ready

Simplified practice recommendation R166-37, color code for marking steel bars, which was approved several weeks ago (STEEL, March 15, page 31), has been printed and copies are available from the superintendent of documents, government printing office, Washington, at 5 cents each. The recommendation

was proposed and developed by the National Association of Purchasing Agents. It is limited to a color code for steel bars in grades represented by S.A.E. numbers.

### Golden Gate Expo To Use 345 Tons of Nuts, Bolts

Three hundred forty five tons of hardware, chiefly bolts and nuts, will be used in assembling exhibit buildings of the 1939 Golden Gate International exposition, now being built on Treasure island, San Francisco bay.

The hardware tonnage is part of 485 tons of miscellaneous metal items being fabricated for the exposition in the San Francisco bay shops of the Judson-Pacific Co.

### Equipment

**New York**—New orders are fewer. Potential volume remains heavy, but considering extended deliveries and declines in operations by some industries, buyers are less prompt to close on equipment already figured. Several large industrial expansions in New Jersey, including General Motors Corp.'s Trenton plant, will result in heavy buying. Shops producing machinery are operating at capacity, but experience difficulty in attaining desired output due to vacations and lack of skilled mechanics.

**Cleveland**—Resumption of operations by steel plants has given a fillip to machine tool business, which despite labor troubles, has held up well this summer. Some dealers report June business on parity with May and April. Generally, however, orders tapered after the April peak. Republic Steel Corp. is beginning to buy some tools. No large lists are pending. Deliveries have been improving slowly.

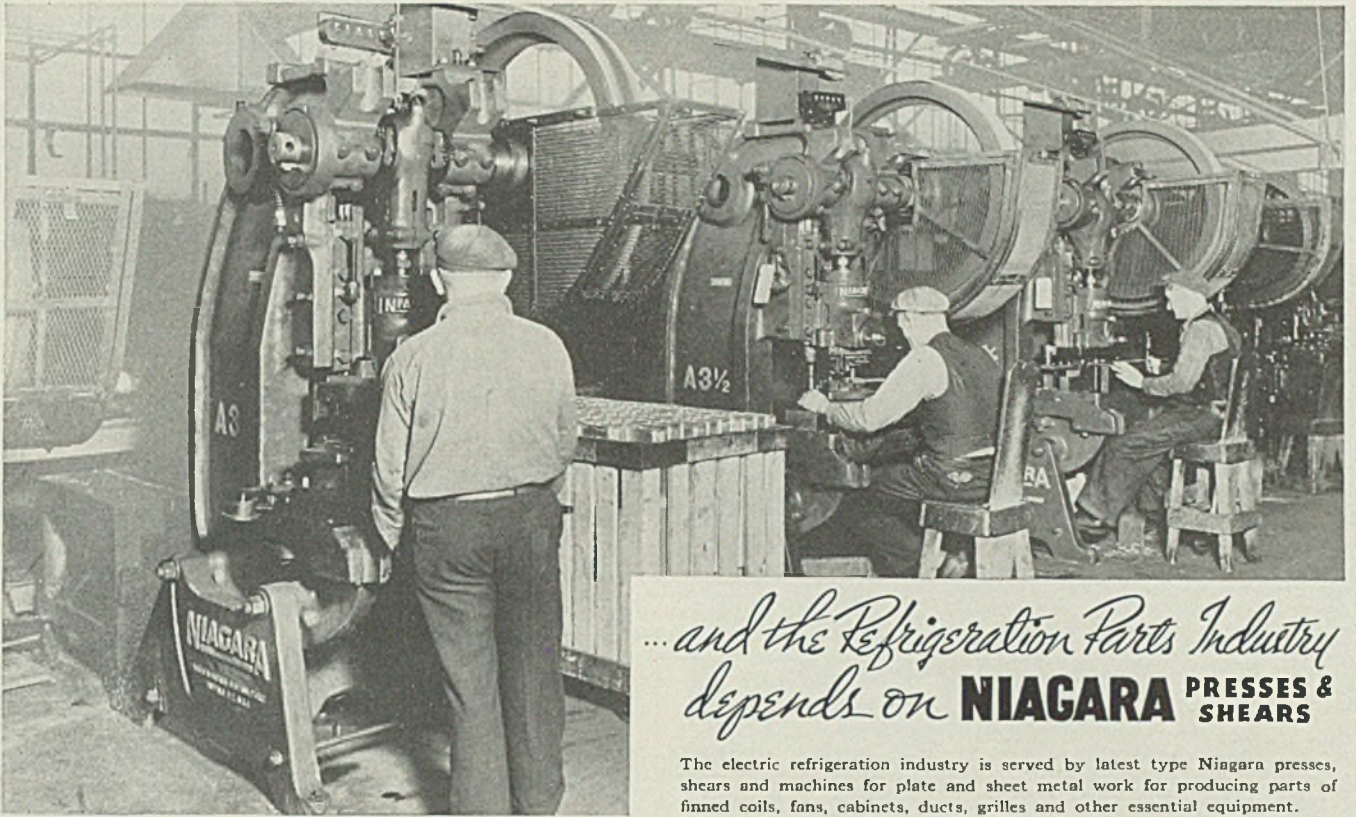
**Chicago**—Activity in machinery and equipment markets has quickened moderately. June sales, which compared favorably with those of May, are expected to be approximated during July. Deliveries show improvement in some instances but have lengthened in others, with 60 days generally the earliest obtainable. Railroads with headquarters here are inactive, with few items pending. Small tool buying is heavier.

**Seattle**—While volume has declined in last month, turnover is above normal. Electrical equipment and certain machine items are strong. Road machinery and replacements for lumber and pulp plants bolster the market.



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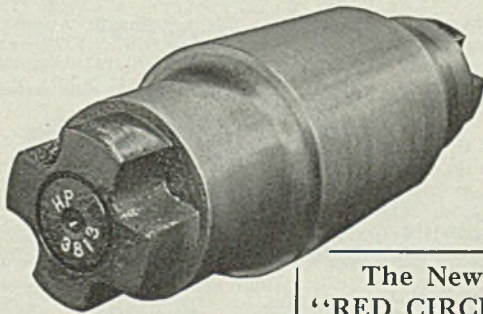
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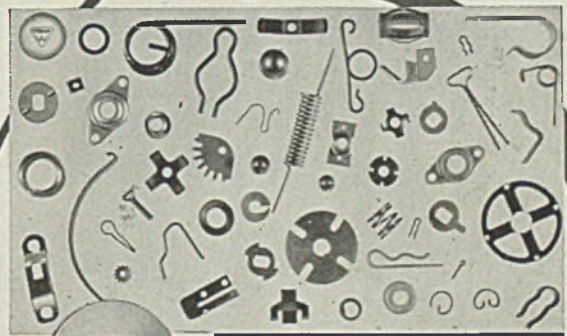


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# Construction and Enterprise

## Ohio

**BEDFORD, O.** — Aluminum Bronze Powder Co., Willis street, is taking bids for rebuilding 1-story, 40 x 70-foot plant. Estimated cost is \$40,000, with equipment.

**DELAWARE, O.**—City plans to erect an elevated steel water tank. Burgess & Niple, 568 East Broad street, Columbus, are engineers.

**LIMA, O.**—West Farm Bureau Rural Electric Co., H. R. Heffner, Lafayette, O., chairman, plans to erect 350 miles of rural transmission lines. Engineer is Carl Frye, Pure Oil building, Columbus.

**LOGAN, O.**—City is taking bids due noon July 26 for construction of an iron removal and filtration plant at waterworks. Cost is estimated at \$20,000. Roy Loomis is service director, city hall, and Burgess & Niple, 568 East Broad street, Columbus, are engineers.

**NEWCOMERSTOWN, O.**—Tuscarawas County Rural Electrification Co-operative Inc. plans to erect 170 miles of rural lines costing about \$178,000. Carl Frye, Pure Oil building, Columbus, is engineer.

**ST. MARY'S, O.** — City will take bids soon for enlargement and extension of light plant and waterworks, including installation of steam generating unit, stokers, and accessories. Council has appropriated \$51,500 for the work. C. F. Lambert, St. Mary's, is engineer.

**UTICA, O.**—City plans construction of a \$173,000 sewage disposal plant and will hold a special election soon to vote on bond issue. WPA aid is being sought. Jennings-Lawrence, 12 North Third street, Columbus, are engineers.

## Connecticut

**LEOMINSTER, MASS.** — Cluett, Pea-

body & Co. Inc., First street, plans to install motors and controls, conveyors, regulators, and other equipment in new 4-story factory addition. Cost will be about \$160,000. Charles T. Main Inc., 201 Devonshire street, Boston, is architect.

**MERIDEN, CONN.**—International Silver Co., 48 State street, is taking bids for construction of a 4-story, 40 x 145-foot factory on Butler street. Estimated cost is \$75,000.

**MIDDLETOWN, CONN.**—Connecticut Power Co., 209 Court street, will let contracts soon for construction of a 2-story, 33 x 40-foot substation costing \$40,000. Davis & Walldorf, 29 Whitney avenue, New Haven, are architects.

**WEST HAVEN, CONN.** — Armstrong Rubber Co. Inc., 475 Elm street, plans construction of a 3-story factory costing \$45,000. Engineers are Fletcher & Thompson Inc., 1336 Fairfield avenue, Bridgeport.

## Massachusetts

**NORTH GRAFTON, MASS.**—Fire destroyed the two main factory buildings of The Washington Co., emery processors, last week.

## Rhode Island

**PROVIDENCE, R. I.**—Narragansett Electric Co. plans to build a steam-electric generating station costing close to \$2,000,000. Engineers are United Engineers & Construction Co. Inc., 1401 Arch street, Philadelphia.

## New York

**BUFFALO, N. Y.** — Socony Oil Co., 1103 Elk street, plans construction of an oil distillation plant costing over \$25,000. Engineer is E. B. Badger & Sons Inc., 75 Pitts street, Boston.

**HUDSON FALLS, N. Y.**—City plans to build a sewage disposal plant costing \$150,000.

**RENSSELAER, N. Y.**—Hercules Powder Co., Columbia turnpike, plans to construct a plant addition costing over \$40,000.

## New Jersey

**JERSEY CITY, N. J.**—Metro Glass Bottle Co., Westside avenue, plans to make improvements to its plant and install some new equipment. Cost is estimated at \$40,000.

## Pennsylvania

**NEW BRIGHTON, PA.**—W. H. Elverson Pottery Co. plans to rebuild its main fabricating plant, which was destroyed by fire recently. New machinery and equipment will be installed.

**PORT ALLEGHENY, PA.**—Pittsburgh Corning Corp., care of J. P. Stapels, Grant building, Pittsburgh, plans construction of a factory for manufacturing glass blooms. Cost is estimated at \$500,000. Engineer is Alfred Vaksdal, care of owner.

## Michigan

**DETROIT**—Pentagon Refining Co. is considering construction of a 1200-barrel cracking unit.

**GRAND LODGE, MICH.**—Grand Lodge Clay Products Co. plans to repair and rebuild its plant at a cost of \$40,000.

## Illinois

**BELLEVILLE, ILL.**—City plans to construct a complete sewage disposal plant costing over \$453,000, and has retained J. G. Cooney, engineer, 3303 Rowland place, to make a survey of costs. PWA aid has been sought.

## Alabama

**BIRMINGHAM, ALA.** — Galloway Coal Co., Memphis, Tenn., is starting construction of a new mine in Walker county, to cost \$300,000. Its daily production will be 1500 tons.

## District of Columbia

**WASHINGTON** — Bureau of supplies and accounts, navy department, is taking bids until July 27 for generators, schedule 1215, steel forgings, schedule 1217, turbine driven pumps, schedule 1219, and aluminum alloy sheets, schedule 1220, for delivery various coast points. Bids will be taken July 30 for 65,800 pounds of steel forgings, schedule 1201, and until August 3 for transformers, schedule 1228, and for steel commercial boiler tubes, schedule 1230, for delivery coast points and Mare Island, Calif.

## Kentucky

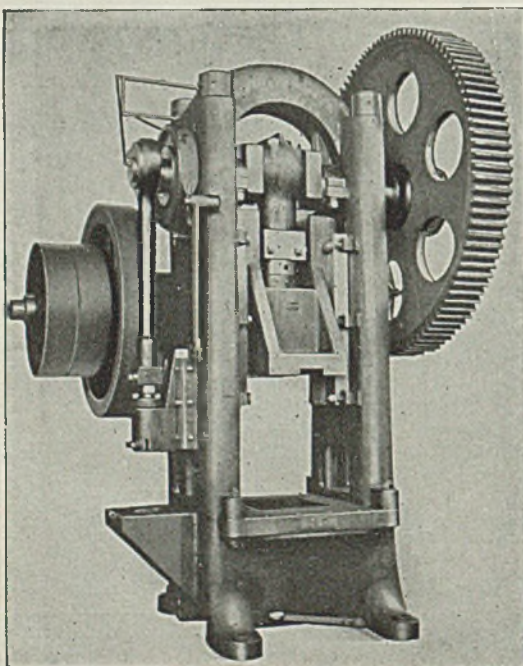
**LEXINGTON, KY.**—Fayette Farm Bureau, S. Headley Shouse, president, has received partial allotment of \$120,000 from REA to finance establishment of farm electrification co-operative in Fayette, Woodford, Madison and Jessamine counties.

**LOUISVILLE, KY.**—Distiller's Corp.-Seagram's Ltd. will let contract soon for construction of a bottling plant costing \$1,000,000.

## Louisiana

**LAFAYETTE, LA.**—Southwest Louisiana Electric Membership Corp., Lafayette place, plans to erect rural transmission lines in Lafayette, Acadia, St. Mar-

(Please turn to Page 114)



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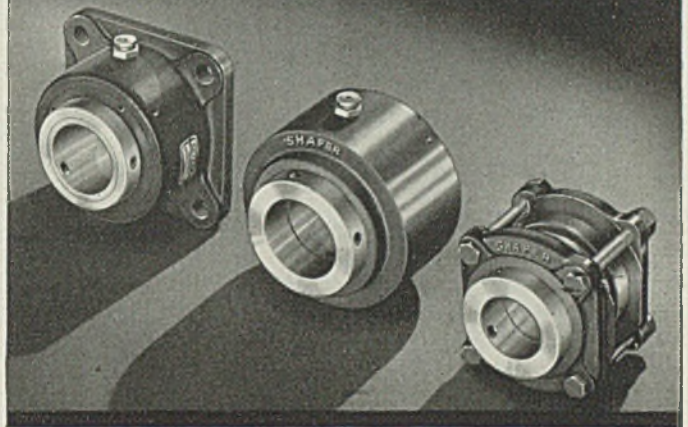
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(Concluded from Page 112)

tin and St. Landry parishes. Work will begin soon. A fund of \$420,000 has been arranged through federal aid.

**Tennessee**

ELIZABETHTOWN, TENN.—North American Rayon Corp. plans spending \$2,850,000 for plant expansion.

**West Virginia**

CHARLESTON, W. VA.—Aetna Foundry Co. has been incorporated and plans to build a cast iron foundry on Trojan Steel Co. property at Vandalia, W. Va. Work started July 15. Homer P. Elliott is president and general manager.

**Virginia**

DANVILLE, VA.—John C. Brown, county agent, will let contract in August for erection of rural transmission lines in Boyle, Mercer, Washington, Garrard and Lincoln counties. Entire cost will be \$376,000.

GROTTOES, VA.—Duplan Silk Corp., 498 Seventh avenue, New York, plans to build a new mill costing about \$550,000.

PEARISBURG, VA.—American Cellulose & Chemical Mfg. Co., 180 Madison avenue, New York, plans to install motors and controls, transformers and accessories, conveyors, regulators, electric hoists and other equipment in new cellulose rayon mill near Pearisburg. Entire project will cost about \$5,000,000.

**Arkansas**

CLARKSVILLE, ARK.—Earl Johnson Sunshine Coal Mining Co. plans expenditure of \$200,000 for improvements at mine. F. A. Shull, Terre Haute, Ind., is engineer.

**Oklahoma**

BRITTON, OKLA.—Continental Oil Co., Ponca City, Okla., plans improvements to refinery at a cost of \$80,000.

GUYMON, OKLA.—General Atlas Cement Co., care of Cities Service Co., 60 Wall street, New York, plans construction of a carbon black chemical plant to cost over \$50,000.

MUSKOGEE, OKLA.—Pure Oil Co. plans to spend \$650,000 for modernization and improvements to its plant.

TULSA, OKLA.—Ozark Chemical Co., Cosden building, plans to construct a chemical plant addition costing \$75,000.

TULSA, OKLA.—W. L. Harris, 1537 Admiral street, plans to build a 500-barrel capacity cement plant costing about \$100,000.

**Texas**

SKELLY, TEX.—Skelly Oil Co. plans construction of a 10,000-gallon gasoline plant costing nearly \$275,000.

WICHITA FALLS, TEX.—Deep Oil Development Co. plans to begin construction soon of new repressuring and gasoline plant in south Wichita county. Cost will be \$65,000 to \$75,000. Cooper-Bessemer engines will be installed. Capacity of plant will be 900,000 cubic feet daily.

**Wisconsin**

MILWAUKEE—Rundle Mfg. Co., 3305 West Forest Home avenue, plumbing-ware manufacturer, will build a foundry addition, 65 x 90 feet, Klug & Smith Co. has general contract.

MILWAUKEE—Perfex Radiator Co., 415 Oklahoma avenue, is building an addition of 6000 square feet for its recently established division for manufacturing automatic controls for heating, air conditioning and refrigeration equipment.

SUPERIOR, WIS.—Northwestern Fuel Co., St. Paul, has started work on a machine shop and service building at Superior. Cost will be about \$30,000.

**Kansas**

TOPEKA, KANS.—Hill Packing Co., foot of Jefferson street, is considering construction of a steam plant. Architect is B. W. Friedel, 1152 Washburn street.

**Iowa**

DAVENPORT, IOWA — Eastern Iowa

Light & Power Co-operative Inc., 1304 West Fourth street, will take bids until July 21 for erection of rural lines in Cedar and Muscatine counties. John P. Hand, 1933 Main street, is engineer.

HARLAN, IOWA—City will take bids soon for construction of a water softening plant costing \$30,000. Currie Engineering Co., Webster City, is engineer.

**Nebraska**

BLOOMFIELD, NEBR.—G. W. Erickson, Knox county agent, Center, Nebr., has completed a preliminary survey and will apply to REA for a loan to finance erection of rural transmission lines in county.

COLUMBUS, NEBR.—Loup River Public Power district, 2307 Thirteenth street, Harold Kramer, secretary, will take bids until July 22 for equipment for five outdoor power substations. Transformers and various auxiliary equipment and accessories will be needed. Harza Engineering Co., 205 West Wacker drive, Chicago, are engineers.

HASTINGS, NEBR.—Southern Nebraska Rural Public Power district, Ernest Petersen, secretary, has applied to state railway commission for permission to erect 430 miles of rural lines. Midwestern Engineering Co., 115 North Hastings avenue, is engineer.

LINCOLN, NEBR.—Eastern Nebraska Public Power district, 204 South Eleventh street, G. W. Kline, secretary, plans to erect rural lines costing \$490,000. Henningsen Engineering Co., Union State Bank building, Omaha, engineers.

OMAHA, NEBR.—Nebraska Power Co. plans to build a steam-electric generating plant at O and Twenty-sixth streets, at an estimated cost of \$1,000,000. Work will begin in August.

SUPERIOR, NEBR.—City will hold a special election July 20 to vote on construction of a municipal light and power plant.

ST. PAUL, NEBR.—Howard County Rural Public Power district, James Fisher, secretary, will take bids July 30 for erection of 393 miles of rural lines in Howard and Hall counties. Henningsen Engineering Co., 326 Union State Bank building, Omaha, is engineer.

TEKAMAH, NEBR.—Burt County Rural Public Power district, E. D. Beck, Decatur, president, has been granted permission by state railway commission to erect 250 miles of rural transmission lines in Burt, Dodge and Thurston counties. Henningsen Engineering Co., 326 Union State Bank building, Omaha, is engineer.

**Pacific Coast**

SOUTHGATE, CALIF.—Hazel-Atlas Glass Co., Eighty-seventh and G streets, Oakland, plans to build a factory and warehouse costing over \$40,000.

**Canada**

CRAIGMYLE, ALTA.—Echlin Carbon Development syndicate plans to build a plant for extracting carbon black as a by-product of natural gas. Engineers are Kribs & Lynar, 603 Harbor building, Toronto, Ont.

CORNWALL, ONT.—Ford Motor Co. of Canada Ltd. plans to build an assembly plant here at a cost of \$100,000.

RED ROCK, ONT.—Lake Sulphide Pulp Co. Ltd., 132 St. James street West, Montreal, Que., plans to construct a pulp mill at Red Rock, costing about \$6,000,000. Engineer is C. D. Howe Co. Ltd., 712 Public Utilities building, Port Arthur Ont.



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