

# STEEEL

PRODUCTION • PROCESSING • DISTRIBUTION • USE

FOR FORTY-EIGHT YEARS—IRON TRADE REVIEW

P. 149 | 31 | III

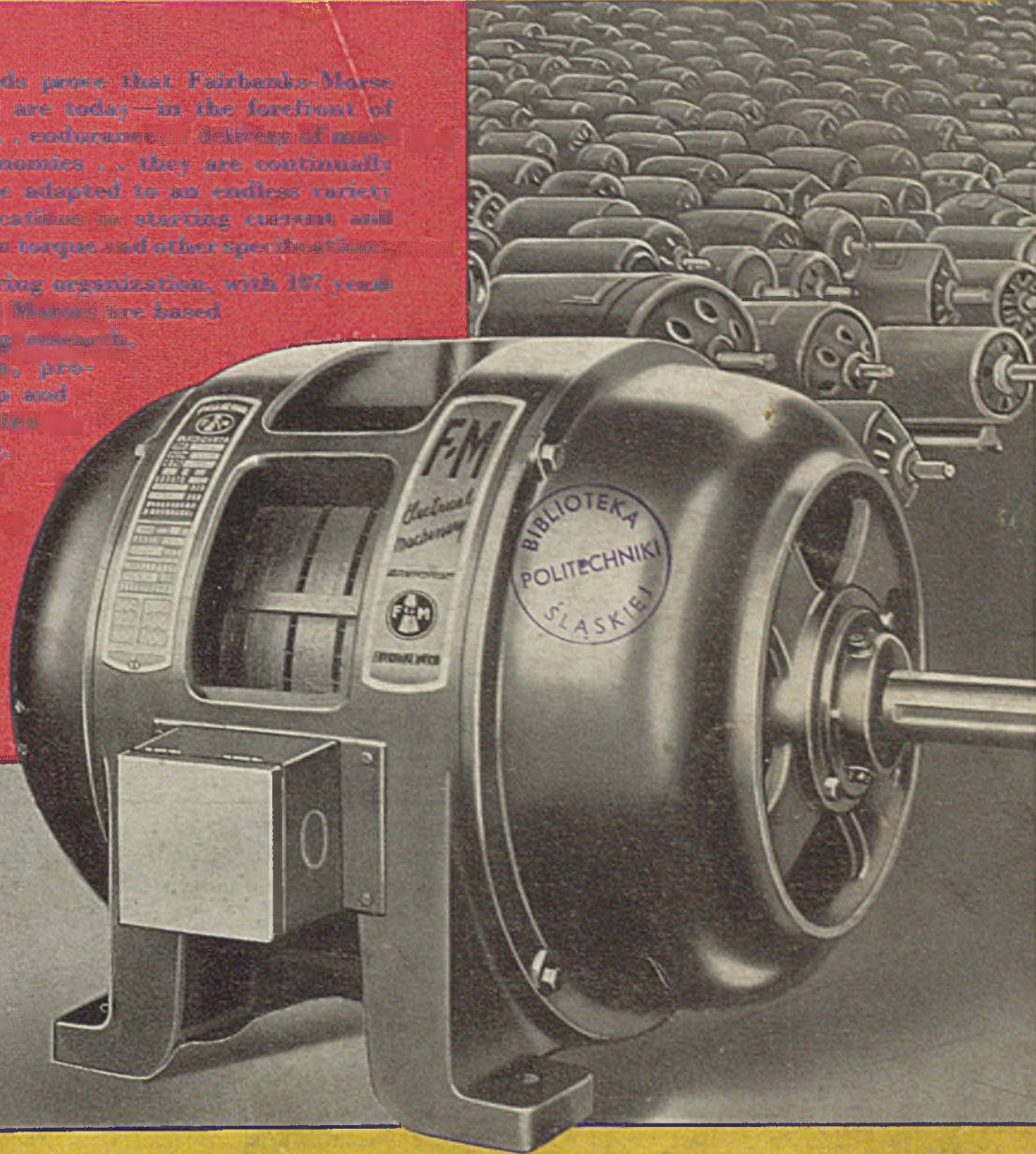
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# STEEL

PRODUCTION • PROCESSING • DISTRIBUTION • USE

For forty-eight years—IRON TRADE REVIEW

P. 719/37

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1937



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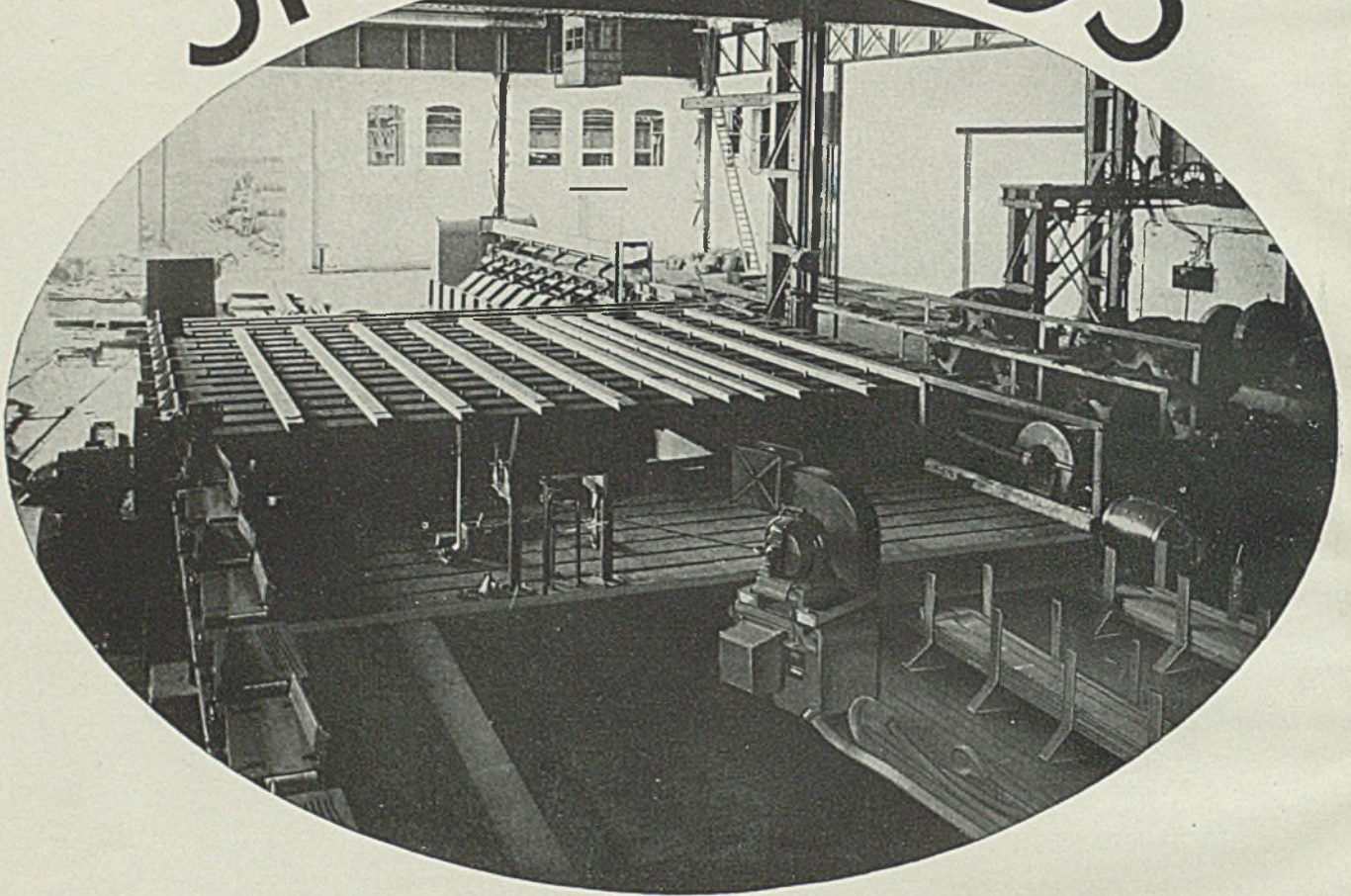
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## As the Editor Views the News

INLAND STEEL'S understanding with strikers, negotiated under state instead of federal auspices, may go a long way toward retaining public support for the cause of independent steel companies and their loyal employes. At one time last week there was danger that the victors might alienate public opinion by excessive exultation over their apparent success. Here and there were signs of a disposition to "rub it in" at the expense of defeated strikers. Inland's action, which in essence was a face-saving gesture for CIO (p. 25), helped to take the sting out of the situation and to disarm critics of "little steel."

• • •

In spite of disturbing labor conditions, production during the first half of 1937 came close to establishing a new record. Pig iron output for the half totaled 19,770,691 tons (p. 29) compared with 21,637,537 in the first half of 1929. Official figures for steel ingot output probably will show a total falling about 200,000 tons short of the 29,036,274 tons produced in the first half of 1929. Automobile production is estimated at 2,873,281 (p. 38), compared with 3,413,000 in the 1929 period. The second half will start out modestly (p. 44), with seasonal and labor factors holding activity to levels substantially below the first half average.

### First Half Near Record

• • •

A study of the use of tractors on American farms conducted by the Farm Equipment institute (p. 30), indicates a promising market for new and replacement tractors in the next few years. Every producer and manufacturer whose sales are influenced by the purchasing power of the farmers will grasp the significance of the figures showing the amount of farm products required to purchase a tractor. For instance, in 1932 a farmer had to pay for a \$1000 tractor the equivalent

### Farm Products Buys More

of 2268 bushels of wheat, 2967 bushels of corn or 26,596 pounds of hogs. In 1937 the same tractor could be purchased with 809 bushels of wheat, 994 bushels of corn or 10,638 pounds of hogs. This improved relationship—important alike to agriculture and industry—is due in part to progress in the mass production technique of the farm implement manufacturers.

• • •

The upturn in the volume of home construction affords new opportunities for material suppliers, architects and builders to pursue the development of the so-called steel house. One company (p. 46), which uses structural members formed from 12 to 16-gage strip steel, is manufacturing standard prefabricated houses on a production basis. Some day in the not too distant future, industry will awaken to the realization that steel house construction, in a quiet and unobtrusive way, has been making remarkable progress. . . . In this issue STEEL revives a former practice of publishing letters to the editor. Under the heading "Reader Comments" (p. 19) will appear communications from readers dealing with news, articles, reports or other editorial material appearing in STEEL. It is your page and we invite you to use it freely for constructive comment.

### We Welcome Your Comment

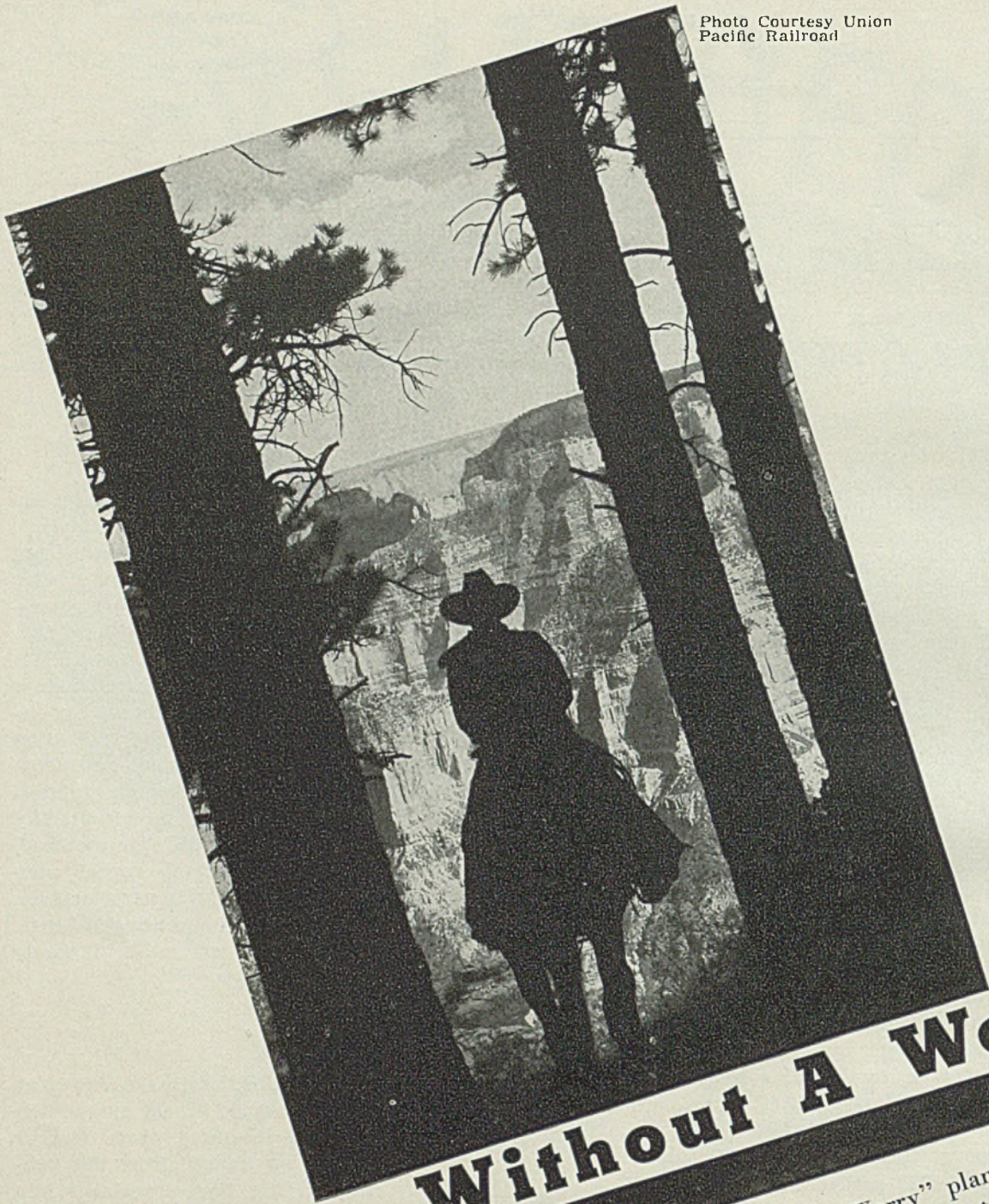
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Every issue of STEEL contains information and ideas which if utilized effectively would benefit many readers. We know of specific instances where fact or suggestion gleaned from this publication has been translated into substantial dollars and cents values. We also know that not all readers are reaping the full advantage of the editorial and advertising contents. "What Can I Do To Make Them Think?" (p. 87) is a timely reminder that executives can capitalize more fully upon the potential values of their favorite business papers if they will give more positive encouragement to their key men to read them systematically and effectively. An informed man thinks, and the ideas borne of his thinking benefit not only the thinker but the company with which he is identified.

### Encouraging Men To Read

*E. L. Shaner*

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## RYERSON

STEEL

# 35,000 Workers Return; SWOC Calls for Bethlehem and Weirton Elections

**A**BOUT 35,000 steelworkers—nearly half the number who were idle as a result of the strike at the time the “status quo” order was lifted June 25—were back at work late last week.

This compilation did not include the figures for the Bethlehem Steel Co.’s Cambria plant at Johnstown, Pa., where after many had returned 6000 were thrown out of work by the dynamiting of a water-supply pipe.

Notwithstanding further acts of violence and serious threats at some points, the back-to-work movement was gaining momentum, with clear evidence that more men would return when assured of safety.

Republic Steel Corp. gained 10,000 workers at its Mahoning valley plants, which were operating at normal capacity. At its Canton works, where 2000 were engaged during the strike, the number had increased to 5500. It opened its Massillon, O., plant slowly, 400 having reported for work by Friday. At South Chicago 1500 had returned. Republic had no definite plans for opening its Cleveland steelworks.

## SWOC Asks Elections

Youngstown Sheet & Tube Co., reopened its Youngstown district plants with more than 12,000 workers, and was making an effort to resume at South Chicago, about 400 having entered the plant Thursday.

At Inland Steel Co.’s Indiana Harbor works 12,000 returned when the strike there was called off.

The Steel Workers Organizing Committee filed with the sixth regional office of the national labor relations board, Pittsburgh, petitions for certification of representatives for collective bargaining purposes under section 9C of the labor relations act.

These petitions request company-wide elections for the Bethlehem

Steel Co., and Weirton Steel Co. SWOC stated:

“The election request is designed for the purpose of compelling the companies to bargain collectively with the Amalgamated Association of Iron, Steel and Tin Workers as the sole collective bargaining representative of all their employes, in accordance with the provisions of the labor relations act.”

Inland has not signed any agreement with the SWOC or Governor Townsend of Indiana, or anyone else in respect to termination of the strike at its Indiana Harbor works July 1.

The company issued a statement

of labor policy on May 25, 1937, the day before the strike was called. The company has stood squarely behind that statement. On Friday, June 25, Governor Townsend asked the company to talk with him. It did so, and explained its position to him in full. It gave him a copy of the statement of labor policy of May 25, with a letter of transmittal.

On Tuesday evening June 29, by telephone, the governor asked the company to give him certain assurances regarding its labor policy, which it did. The exact reassurance was as follows:

“1. The men will be returned to work without discrimination be-

## Women Cheer for Return to Work in Warren



*WITH the wage earners of the families losing more than a month's income—merely over giving the CIO the right to represent them—these women last week attended a mass meeting as part of the “back-to-work” movement in Warren, O. Acme photo*

tween strikers and nonstrikers. "2. Positive assurance that the labor policy as set forth by the Inland Steel Co. in its letter to the governor of June 26, 1937, and statement as to labor policy attached thereto, dated May 25, 1937, will be carried out.

"3. All grievances which may hereafter arise on labor matters within the scope of the statement dated May 25, 1937, will be settled in the manner acclaimed in that statement. If any such settlement so arrived at is unsatisfactory, the company will refer the matter to the commissioner of labor of the state of Indiana and will accept his decision as final."

The company then announced that its plants would reopen Thursday morning, July 1, and that it expected the public authorities of Indiana to maintain order. Thereafter, the company made no change in its position. At 11 o'clock on the evening of Wednesday, June 30, Governor Townsend by telephone made to the company the simple announcement that the pickets would be withdrawn.

#### Public Opinion Intervenes

While CIO strikers and sympathizers resorted again to violence to hinder resumption of work at the alloys division of Republic in Canton, O., the inevitable reaction in public opinion became increasingly apparent last week. Several steps were taken leading to a return to law and order.

Local police and state troopers in Warren, O., arrested Gus Hall, CIO organizer, on charges of a plot to dynamite Republic's plant. Three CIO strikers were held under \$25,000 bail each following their alleged confession of the plot. Explosives and arms were found in a building housing CIO headquarters, according to Warren police.

Republic moved to halt alleged continual interference by CIO cohorts with homes and families of loyal employes, and posted the following notice: "Republic Steel Corp. will pay a reward of \$1,000 to the person or persons causing the arrest and conviction for felony of any person or persons intimidating or causing damage to the home of any employe of this corporation who has remained at work or desires to return to work, or personal injury to any such employe or members of his family."

Ten loyal workers were injured and 96 pickets and sympathizers arrested Wednesday when rocks were thrown at workmen entering Republic's Canton plant. Earlier in the day dynamite smashed a water main leading to the mill, and telephone lines were ripped down. Death of one picket was caused by acute dilation of the heart, according to a coroner's report.

A rapid recovery was being made

late last week from the sudden shutdown necessitated at the Bethlehem Steel Co.'s Johnstown, Pa., plant, when two main water lines were dynamited during the controversy with the CIO.

The interruption of water supply threw about 6000 men out of work again. Prior to the dynamiting the plant had been nearing full operations after Gov. George H. Earle had lifted his "modified martial law" order.

#### Mass Meeting Planned

Following the dynamite attack, Mayor D. J. Shields of Johnstown told union leaders he would no longer be responsible for their safety in the city, and advised them to leave as speedily as possible. The CIO appealed to Gov. Earle for a renewal of martial law. When the governor declined to accede to this demand, CIO officials announced that a "giant mass meeting" would be held July 4 because "we want to show the nation whether we can or cannot get 40,000 men into Johnstown."

Several investigations of the dynamiting were opened by state, county and city authorities. Bethlehem offered a reward of \$10,000 for information.

Emergency arrangements enabled the partial resumption of some operations.

At Beaver Falls, Pa., strike disorders in the early part of the week resulted in the death of one picket, felled near the entrance to the

Moltrup Steel Products plant by a tear gas projectile.

The CIO suffered a setback at the Union Switch & Signal plant, Swissvale, Pa., when recognition as the collective bargaining agency was granted to an independent union which had been favored by 60 per cent of the workers.

How Secretary Perkins tried to prevail on Gov. Davey of Ohio to keep steel plants closed—after the mediation board reported its inability to settle the dispute—was revealed last week by the governor. In a public statement he said:

"Now that reference has been made to the request of Secretary Perkins on Thursday evening (June 24) it is no doubt appropriate to quote her exact language, in part as follows:

"We must not let the efforts of the mediation board fail. We cannot let our labor friends think that we have let them down. I think you ought to keep those mills closed until a settlement is reached. Our lawyers have been studying your statutes and I understand you do not have the power to subpoena, but your industrial commission does have that power. I think you ought to have Tom Girdler and Frank Purnell subpoenaed to Columbus and keep them there until they reach an agreement."

The governor refused to accede, and said that the next day Secretary Perkins sent Assistant Secretary Edward F. McGrady to urge "the same general proposal." The governor again refused.

#### Loyal Workers at Cambria Defy Strikers, Resume Work



Nonstrikers at the Cambria plant of the Bethlehem Steel Co. at Johnstown, Pa., are shown leaving for their homes following their first shift after their return to work last week. Undaunted by steel strikers and United Mine Worker allies, many employes resumed, under the protection of state police. Subsequent dynamiting of a water-supply line forced 6000 out of work temporarily. Acme photo



# Production

THE national steelworks rate gained 3½ points last week to 77½ per cent, due principally to a sharp rise in the Youngstown district, following resumption of operations at plants of Youngstown Sheet & Tube Co. and Republic Steel Corp.

**Cleveland-Lorain**—Unchanged at 49 per cent.

**Birmingham**—Held at 83 per cent.

**Youngstown**—Gained 46 points to 75 per cent, with 63 of 83 open hearths, and all three bessemer's making steel. Twenty-five furnaces are expected to be shut down from Saturday to Tuesday in observance of the July 4 holiday, although Youngstown Sheet & Tube Co. and Republic Steel Corp. will push operations through the holiday.

**Pittsburgh**—Down 2 points to 80 per cent, the decline resulting from vacation schedules and the hampering of operations at Johnstown due to the dynamiting of water mains.

**Wheeling**—Down 1 point to 92 per cent.

**Chicago**—Inland Steel Co. resumed operations at Indiana Harbor works Thursday, but several days are required to warm up idle open-hearth furnaces. The ingot rate for this district showed a slight reduction to 63.4 per cent. Carnegie-Illinois Steel Co. is at 79.9 per cent, against 80 per cent the previous week, while Republic Steel continues at 85, and Wisconsin Steel Co. at 100 per cent. Carnegie-Illinois took off one blast furnace at Gary for relining, now having 9 out of 12 active there. It also is blowing 9 out of 11 stacks at South works. Interlake Iron Corp. has three Chicago district stacks active out of six, and Inland is putting the blast on two stacks at Indiana Harbor.

**Buffalo**—Eased off slightly to 87 per cent, due to withdrawal of one open hearth for relining. However there is prospect a furnace now being rebuilt will be ready for production soon after July 4.

**Detroit**—Up fractionally to 100 per cent, with all open hearths melting.

**Cincinnati**—Climbed to 93 per cent, after a brief dip to 86 because of required repairs.

**Central eastern seaboard**—Down 1 point to 66 per cent, on reduction in activity by one independent mill. Most mills curbed production over the weekend due to the holiday but the current rate is expected to show a resumption of the 66 per cent rate.

**New England**—Held at 92 per cent. A small open hearth will be taken off for repairs this week, resulting in a slight decline and making two units down.

**St. Louis**—Continued at 93 per cent. June shipments of steel cast-

## District Steel Rate

Percentage of Open-Hearth Ingot Capacity Engaged in Leading Districts

	Week ended		Same week	
	July 3	Change	1936	1935
Pittsburgh . . .	80	—2	62	20
Chicago . . . . .	63½	none	71	33
Eastern Pa. . . .	66	—1	46	21
Youngstown . . .	75	+46	64	26
Wheeling . . . . .	92	—1	65	40
Cleveland . . . .	49	none	71	16
Buffalo . . . . .	87	—1	84	29
Birmingham . .	83	none	58½	30
New England . . .	92	none	80	56
Detroit . . . . .	100	+1	90	78
Cincinnati . . . .	93	+7	65	†
St. Louis . . . . .	93	none	†	†
Average . . . . .	77½	+3½	66	31

†Not reported.

ings are expected to be the largest for any month this year.

## Basing Point Cited In Cement Complaint

The federal trade commission has issued a complaint against the Cement institute and 75 cement manufacturers charging combination to eliminate price competition.

The fact that a multiple basing system of quoting prices is cited as the chief means for effecting combination makes the case of general interest. The commission charges identical delivered prices to any given destination in the United States are quoted by every cement producer entering into the combination. Instances of identical bids by many producers to various federal and state agencies are set forth in the complaint.

## American Bridge Co. To Reopen Trenton Plant

American Bridge Co., Pittsburgh, will reopen its Trenton, N. J., fabricating plant as soon as it can be put in condition, probably about Sept. 1. Plant has been closed for approximately five years.

Initially 200 to 250 men will be employed with the number increasing to 400 or 450, according to present plans. H. L. Rankin, now manager of the American Bridge plant at Elmira, N. Y., will manage the Trenton plant.

## Blast Furnace Sets Record

A new record for pig iron production was established by "D" Furnace at Central furnaces of the American Steel & Wire Co., Cleveland, last week. This furnace in 24 hours produced 1001 tons of high silicon mer-

chant iron. Normal capacity is around 600 tons, and previous record was approximately 900 tons, when a different type of iron was produced.

## Scrap Consumers To Meet In Philadelphia, July 8

Independent Steel and Iron Producers' committee on scrap will hold a regional meeting at the Bellevue-Stratford hotel, Philadelphia, July 8 at 2 p. m. to inform companies interested in the progress of the committee's program to restrict scrap exports.

## Reduction of British Duty On Iron and Steel Rumored

The rumor that Great Britain plans to reduce its tariff on iron and steel imports cannot be substantiated officially by either the state or commerce departments, it was stated in Washington last week. Unofficially, it is said the British cabinet is considering the question and may eliminate or materially reduce the duty.

## Ban on Wooden Oil Barges Spurs Steel Construction

Steel construction of tank barges in the Pacific Northwest has been stimulated by commerce department regulations banning new wooden barges. A light draft all-welded oil carrier, designed by H. C. Hanson, Seattle naval architect, to comply with new federal requirements, is being received favorably.

Lacking data regarding tank barge construction on the Atlantic and Middle West rivers, Mr. Hanson evolved a new type. His design calls for carriers of 110 feet average length, 32 to 34 feet beam, with ¼ or 5/16-inch plates. Using lighter material and all-welded design, these barges require about 150 tons of steel and are 20 to 25 per cent lighter than the conventional type. They draw 10½ inches light and not more than 5 feet loaded, light draft being necessary for Columbia river.

Cost of steel in the light barge has been reduced to almost the level of wood construction, formerly popular in the Northwest where lumber is cheap.

From the Hanson design, the Columbia Steel Co. has built a scow for service on the Kushkokwim river, Alaska, and has contracts for the Olympia Oil & Wood Products Co., Olympia, Wash., and the Knappton Towing Co., Astoria, Wash. Nine other units are being designed for Columbia river service.

# Steel Industry To Use More Coal, A.S.T.M. Meeting Told

**B**ECAUSE no substitute for metallurgical coke has appeared, the coke oven industry will expand and consume more coal in accordance with metallurgical needs, which are affected greatly by the supply of iron and steel scrap. Few new installations for gas production can be expected in the near future because of the availability of natural gas.

This was emphasized by Dr. A. C. Fieldner, chief, technologic branch, bureau of mines, Washington, in presenting his address as president before the American Society for Testing Materials' fortieth annual meeting at the Waldorf-Astoria, New York, last week. The meeting, the first to be held in New York in many years, drew the largest attendance in the society's history.

Speaking on the subject of "Fuels of Today and Tomorrow," Dr. Fieldner stated that coal will continue to be the principal fuel used for the generation of public utility and major industrial power. While technologic improvements and new hydro-electric power will tend to reduce consumption, an increasing demand for energy and a decreased supply of cheap residual oil will increase the coal used.

## New Alloys Given Credit

Use of higher temperatures and pressures permitted by new alloys is one of the reasons for greatly increased and vastly improved yields of gasoline from crude oil, Dr. Fieldner continued. In discussing developments in the natural gas field, he said that many large cities can use natural gas today because of metallurgical research in making steel and fabricating it by electric or acetylene gas welding into virtually continuous pipes capable of transporting the gas at working pressures of 600 pounds per square inch and more with small leakage over distances of 1000 miles.

An unusual and impressive feature of the opening session was the awarding of honorary memberships to John A. Capp, engineer of materials, General Electric Co., Schenectady, N. Y.; Dr. Gulliam H. Clamer, president and general manager, Ajax Metal Co., Philadelphia; and Dr. Gustave W. Thompson, chief chemist and director, National Lead Co., Brooklyn, N. Y., all past presidents of the society. The only other living honorary member is Dr. Arthur N. Talbot, professor emeritus,

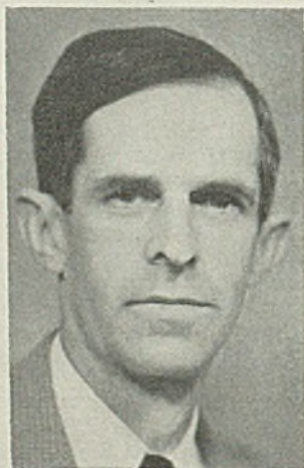


A. E. White  
New president, American Society for Testing Materials

tus, University of Illinois, Urbana, Ill., who was elected in 1925.

Dr. A. E. White, professor of metallurgical engineering and director of department of engineering research, University of Michigan, Ann Arbor, Mich., was introduced as the new president to succeed Dr. Fieldner. H. H. Morgan, manager, rail and fastenings department, Robert W. Hunt Co., Chicago is the new vice president.

Newly elected members of the executive committee are: P. H. Bates, chief, clay and silicate products division, national bureau of standards, Washington; H. F. Clemmer, engineer of materials, District of Columbia, Washington; G. E. F. Lundell, assistant chief, chemistry division, national bureau of standards, Washington; H. C. Mougey,



H. H. Morgan  
New vice president, American Society for Testing Materials

assistant technical director and chief chemist, research laboratories, General Motors Corp., Detroit; and R. L. Templin, chief engineer of tests, Aluminum Co. of America, New Kensington, Pa.

Presenting the report of the executive committee, Secretary-Treasurer C. L. Warwick stated that the society had just completed a year of exceptional accomplishments in committee work, both in research and standardization activities. Among several new committees now being organized is one designated as D-20 on plastics. One of the functions of this committee will be to deal particularly with methods of testing.

The executive committee also has authorized organization of a standing committee on thermal insulating materials—another field in which there is need for standard methods of testing. It is intended to exclude high temperature thermal insulating materials since committee C-8 on refractories covers that field.

The joint committee on effect of phosphorus and sulphur in steel, having completed all it could so far as present commercial demands are concerned, has been disbanded.

During the past year the society has effected an arrangement with the national bureau of standards for the establishment of standard samples as needs for these samples arise in connection with committee projects.

## Society Memberships Increase

Membership in the society now totals 4030, a gain of approximately 275 since the 1936 meeting. Mr. Warwick announced that the annual meeting in 1938 will be held in Atlantic City, N. J., the last week in June. The regional meeting and group meetings of committees will be held in Rochester, N. Y., next winter.

Report of committee E-9 on research was presented by P. H. Bates, national bureau of standards, Washington, and report of committee E-10 on standards by Cloyd M. Chapman, consulting engineer, New York.

The fourth exhibit of testing equipment and laboratory supplies was held in conjunction with the meeting, nearly 50 manufacturers being represented. In addition, several society committees sponsored exhibits of their work. Among these were committee A-5 on corrosion of iron and steel; B-7 on light metals and alloys, cast and wrought; E-4 on metallography; and the joint research committee on effect of temperature on properties of metals.

A report of technical sessions held in New York will be found on page 50 of this issue of STEEL.

# 12 Stacks Resume but June Iron Output Is Year's Low

**S**TRIKES at plants of three independent steelmakers starting in May and continuing through June impressed their mark upon June's pig iron production by dropping the rate from the highest attained this year to the lowest. Thus was broken the 10-month upward swing in output which started last August. A number of blast furnaces resumed late in June with the breaking of the strike, but resumption of activity came too late to boost production.

As reported in STEEL for June 7, strikes caused the banking of 20 blast furnaces in May. Of these, 9 stacks resumed in June, leaving 11 still idle as the month closed. Records indicate that up until July 1, over 700 days time was lost by these 20 furnaces; this being the equiva-

put in June, 1936, was 2,596,528 gross tons.

For the first half of 1937, production aggregated 19,770,691 tons. This was an increase of 45.6 per cent over the 13,580,002 tons made in

## AVERAGE DAILY PRODUCTION

	Gross Tons			
	1937	1936	1935	1934
Jan. ....	103,863	65,461	47,692	39,537
Feb. ....	107,857	63,411	57,675	45,385
March ...	111,951	66,004	57,120	52,438
April ....	113,354	80,316	55,719	57,873
May ....	114,360	85,795	55,986	66,370
June ....	103,822	86,551	51,949	64,563
July ....	.....	83,735	49,043	39,630
Aug. ....	.....	87,475	56,767	34,199
Sept. ....	.....	90,942	59,009	29,969
Oct. ....	.....	96,509	63,818	30,689
Nov. ....	.....	98,331	68,876	31,930
Dec. ....	.....	100,813	68,242	33,161
Ave. ....	109,230	83,832	57,694	43,774

## MONTHLY IRON PRODUCTION

	Gross Tons		
	1937	1936	1935
Jan. ....	3,219,741	2,029,304	1,478,443
Feb. ....	3,020,006	1,838,932	1,614,905
March ...	3,470,470	2,046,121	1,770,990
April ....	3,400,636	2,409,474	1,671,556
May ....	3,545,180	2,659,643	1,735,577
June ....	3,114,658	2,596,528	1,558,463
Tot. 6 mo.	19,770,691	13,580,002	9,829,934
July ....	.....	2,595,791	1,520,340
Aug. ....	.....	2,711,726	1,759,782
Sept. ....	.....	2,728,257	1,770,259
Oct. ....	.....	2,991,794	1,978,379
Nov. ....	.....	2,949,942	2,066,293
Dec. ....	.....	3,125,192	2,115,496
Total .....	30,682,704	21,040,483	

lent of two furnaces operating for a full year.

On the last day of June, 182 furnaces were making iron, this being a gain of 12 over the 170 active on May 31. The net loss for May was 16. In both months the demand for pig iron was sufficiently strong to offset partially the loss of furnaces at strike-bound plants.

Average daily production of coke pig iron in June was 103,822 gross tons, this being a loss of 10,538 tons, or 9.2 per cent, from the 114,360-ton rate of May. The June level, therefore, was slightly below the 103,863 tons made in January. In June, one year ago, daily output was 86,551 tons.

Total production in June was 3,114,658 tons, which, compared with the 3,545,180 tons in May, was a drop of 430,522 tons, or 12.1 per cent. June, however, was a one-day shorter month than May. Out-

the first six months of last year. The half-year output for 1935 was 9,829,934 tons.

Relating production to capacity, operations in June were at the rate of 76.6 per cent, as compared with 84.3 per cent in May, 76.6 per cent in January and 63.6 per cent in June, 1936.

The 182 active blast furnaces on June 30 compares with the year's high point of 186 on April 30. One year ago, 144 stacks were in production. During the month, 12 steelworks or nonmerchant units resumed and two were blown out or

## JUNE IRON PRODUCTION

	No. in blast last day of June		Total tonnage	
	June	May	Merchant	Nonmerchant
Ohio	36	26	83,947	430,850
Penna.	65	66	150,749*	957,687*
Alabama	18	15	94,705	118,581*
Illinois	14	14	52,873	258,846
New York	14	13	93,154	161,089
Colorado	3	3		
Indiana	12	13	25,966*	460,701
Maryland	6	5		
Virginia	1	1		
Kentucky	2	2		
Mass.	1	1		
Tenn.	0	1		
Utah	1	1	32,953*	192,537
West Va.	3	3		
Michigan	4	4		
Minnesota	2	2		
Missouri	0	0		
Total	182	170	534,347*	2,580,311*

\*Includes ferro and spiegeleisen.

banked. Of the merchant class, three resumed and one went out.

Furnaces resuming during June were: In Ohio: Brier Hill Nos. 1 and 2, Campbell A, B and C, and Hubbard, Youngstown Sheet & Tube Co.; Mary, Sharon Steel Corp.; Youngstown Nos. 2, 3 and 4, Republic Steel Corp. In Alabama: Ensley No. 3, Tennessee Coal, Iron & Railroad Co.; one City, Sloss-Sheffield Steel & Iron Co.; one Pioneer, Republic Steel Corp. In New York: One Buffalo, National Steel Corp. In Maryland: Maryland C, Bethlehem Steel Co.

Stacks blowing out or banking were: In Pennsylvania: Monessen No. 1, Pittsburgh Steel Co. In Indiana: Gary No. 2, Carnegie-Illinois Steel Corp. In Tennessee: Rockdale, Tennessee Products Corp.

## Ore Analysis Issued; Bessemer Shipments Drop

The Lake Superior Iron Ore association, Cleveland, has just issued a pamphlet giving analyses of Lake

## RATE OF OPERATION (Relation of Production to Capacity)

	1937 <sup>1</sup>	1936 <sup>2</sup>	1935 <sup>3</sup>	1934 <sup>4</sup>
Jan. ....	76.6	48.2	34.2	28.3
Feb. ....	79.5	46.6	41.4	32.5
March ...	82.5	48.5	41.0	37.5
April ....	83.7	59.1	40.0	41.4
May ....	84.3	63.1	40.2	47.5
June ....	76.6	63.6	37.2	46.3
July ....	.....	61.5	35.2	28.4
Aug. ....	.....	64.3	40.7	24.5
Sept. ....	.....	66.9	42.5	21.5
Oct. ....	.....	71.0	45.8	22.1
Nov. ....	.....	72.3	49.5	22.8
Dec. ....	.....	74.2	49.0	23.7

<sup>1</sup>Based on capacity of 49,512,737 gross tons, Dec. 31, 1936; <sup>2</sup>capacity of 49,777,893 tons, Dec. 31, 1935; <sup>3</sup>capacity of 50,845,741 tons, Dec. 31, 1934; <sup>4</sup>capacity of 50,975,561 tons, Dec. 31, 1933. Capacities by American Iron and Steel Institute.

Superior iron ores for the years 1927-1936. Tonnages of various grades from each range are listed.

Total tonnage of all grades in 1936 was 44,745,754 and contained an average of 51.45 per cent iron, 0.091 phosphorus, 8.62 silica, 0.81 manganese and 10.92 moisture. These analyses varied only slightly from the previous nine years.

Bessemer ores shipped in 1936 decreased to 19 per cent of total of all grades, compared with 23.1 per cent in 1935, 35.4 in 1932 and 23.6 in 1927.

Members of the Northeastern Ohio and other nearby chapters, American Foundrymen's association, will attend the Great Lakes exposition, Cleveland, Aug 12. National officers will speak at a dinner on the grounds. L. P. Robinson, Werner G. Smith Co., Cleveland, is in charge of arrangements.

# Farm Tractors Now Taking 400,000 Tons of Iron, Steel

**A**GRICULTURAL tractors, in the modern sense, date with the century and in three decades or less had proved a sufficient utility to constitute 42 per cent of agricultural equipment sales in 1936. Were other equipment depending on the tractor for power included, more than half of farm equipment sales would be covered.

While not competing with the automobile industry, which has had practically the same period of development, the tractor has become an important factor in industry and requires a substantial tonnage of steel and iron. For the estimated number of tractors now in farm service about 2,750,000 tons of steel and iron have been required and for the number produced in 1936 about 450,000 tons were consumed.

A study of the tractor industry has been made by Harry G. Davis, director of research of the Farm Equipment institute, Chicago. This includes statistics by the bureau of the census, *Farm Implement News*, Chicago, and the bureau of agricultural economics of the department of agriculture.

The idea of using mechanical power for farm work is much older than the modern tractor, says Mr. Davis. As early as 1849 a portable steam power plant was built and during Civil War days, with thousands of men withdrawn from productive farm work, some use was made of this mechanical aid. But these tractors were difficult to operate and keep in service.

In 1901 a practical tractor powered

by an internal combustion engine was built by C. W. Hart and C. H. Parr, Charles City, Iowa. In 1902 they built 15 such tractors. Large scale production did not come until 1906 and the rise of the industry really dates from that year.

At one time 505 concerns were engaged in building the new devices. In 1920 only 90 were in business and in 1936 these had been reduced to 22. By that time the tractor building industry had become somewhat standardized and mass production was the rule.

Early tractors weighed much more than at present. In 1908 at a contest of efficiency the average weight per horsepower of contesting machines was 537 pounds. In 1910 this had been reduced to 504 pounds. At present the average weight per horsepower is about 200 pounds. This reduction has been due to the use of heat-treated steel, alloys, antifriction bearings, oil seals and other factors which developed in this and the automobile industry.

## Recent Gains Increasing

While not spectacular, growth in the number of tractors in service has been striking. In 1920 some 246,083 were in farm service. In 1925 this had risen to 505,933 and in 1930 to 920,021. During the depths of the depression the number increased slowly but by 1937 it had reached 1,382,872 units. The percentage of gain over the preceding year has been rapid since 1934. In that year the gain was 1.2 per cent over 1933. The next year it was 3 per cent, the next

7.3 per cent and in 1937 it is 9.1 per cent over 1936.

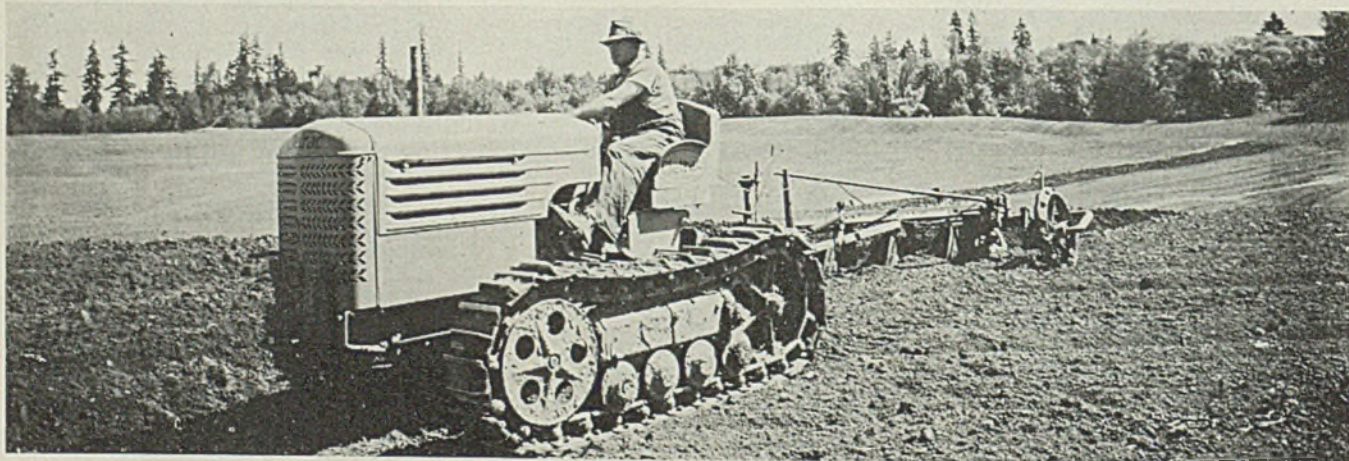
In 1929 the highest point was reached in tractor manufacture, with 223,081 units. Of these 206,628 were sold, 155,310 in the United States and 51,318 for export. In 1936 221,246 units were manufactured and 198,793 sold. While exports fell off from the 1929 figure to 19,557, the number sold for domestic use increased to a total of 179,236.

Figures of the census bureau show 6,812,350 farms in the United States in 1935, of which 4,117,924 contained over 50 acres. Tractors in use as of April 1, 1937 were 1,382,872, which is 336 tractors to each thousand farms of 50 acres or over. Of the remaining farms 2,700,000 are under 50 acres each and power needs are not sufficient to make use of the standard tractor. Recently development of a smaller type has opened the way for economic use of mechanical power on the smaller farms and a new field is being made for sale of tractors.

In addition to the large farms not yet using tractors and the new opportunities for the small type on smaller farms the replacement market is estimated to offer large prospects for the next few years.

Owing to small sales during the years when agriculture was at a low ebb the average age of tractors is estimated to be about seven years. This means that nearly 700,000 tractors are seven years old or older. Replacements will be necessary for a large portion of these machines within a short time. Probably farmers having used this type of power will not willingly revert to horses for their farm work.

With rising prices of farm products and better profits from their labor, farmers will be in a position to replace their outmoded equipment. Present conditions in the agricultural implement industry indicate that they are doing so and sales have



*Alloy steel and iron in this tractor, one of 1,382,872 in service on farms in the United States, has made large-scale agriculture possible at less cost. Tractors are going onto farms at the rate of more than 200,000 each year. Photo courtesy Cleveland Tractor Co.*

been at a continuing high rate for many months.

Another reason for believing that sales of new and replacement tractors will be high for the next few years may be found in the accompanying comparative chart which shows how much less farm produce was required Jan. 15, 1937, than Jan. 15, 1932, to buy the same quantity of agricultural machinery. It means that, as a matter of barter, disregarding dollar values on either side, the farmer now can buy his mechanical requirements for much less than two years ago, as expressed in his own products.

Continued improvements in tractors are being made as better steels are developed and other refinements are made. An illustration of the latter is found in the statement by the bureau of the census that in 1936 rubber tires were placed at the factory on 31 per cent of the 193,947 wheel-type tractors manufactured

that year. The similar survey for 1935 showed that 14 per cent of the 138,084 wheel-type tractors manufactured that year were so equipped at the factory. This is an increase of more than 100 per cent in the proportion of this type using rubber tires.

With the tractor industry fully established and in the hands of strong producers, the era of experimenting well past, sufficient statistics of performance at hand to make selling relatively easy, the saturation point far in the future and likelihood of replacement demand increasing for many years, enlarging production would seem assured. Demands on the steel industry for more and even better materials probably will grow heavier.

The foregoing figures and discussion has applied entirely to the tractor in agriculture. In addition a large field for tractors exists in other lines of activity, in grading, trans-

portation and construction, where ruggedness and concentration of power are essential.

## Financial

### STEEL CORP. PAYS \$2 ON ARREARS; ONLY \$1.25 LEFT

**D**IRECTORS of the United States Steel Corp. at the monthly meeting, June 29, declared a dividend of \$2 per share, applying against accumulated arrearages on its preferred stock, payable July 30, 1937, to preferred stockholders of record July 9.

With this declaration and payment of \$2 per share there remains unpaid on account of arrearages in dividends on preferred stock, \$1.25 per share, totaling \$4,503,514.

Dividends on the preferred stock of the Corporation had been regularly and uninterruptedly paid at the rate of 7 per cent per annum from the time of its organization in 1901 up to the last quarter of 1932.

At the directors' meeting in January, 1933, when dividend action was taken on earnings for the last quarter of 1932, the rate was reduced from 7 to 2 per cent per annum (50 cents per share per quarter). This 2 per cent rate remained in effect until July 28, 1936, when directors met for dividend action on earnings for the second quarter of 1936. At that time a dividend at the rate of 4 per cent per annum (\$1 for the quarter) was declared. At the directors' meeting of Oct. 27, 1936, at which dividend action was taken for third quarter, the regular rate of 7 per cent per annum was resumed and since maintained.

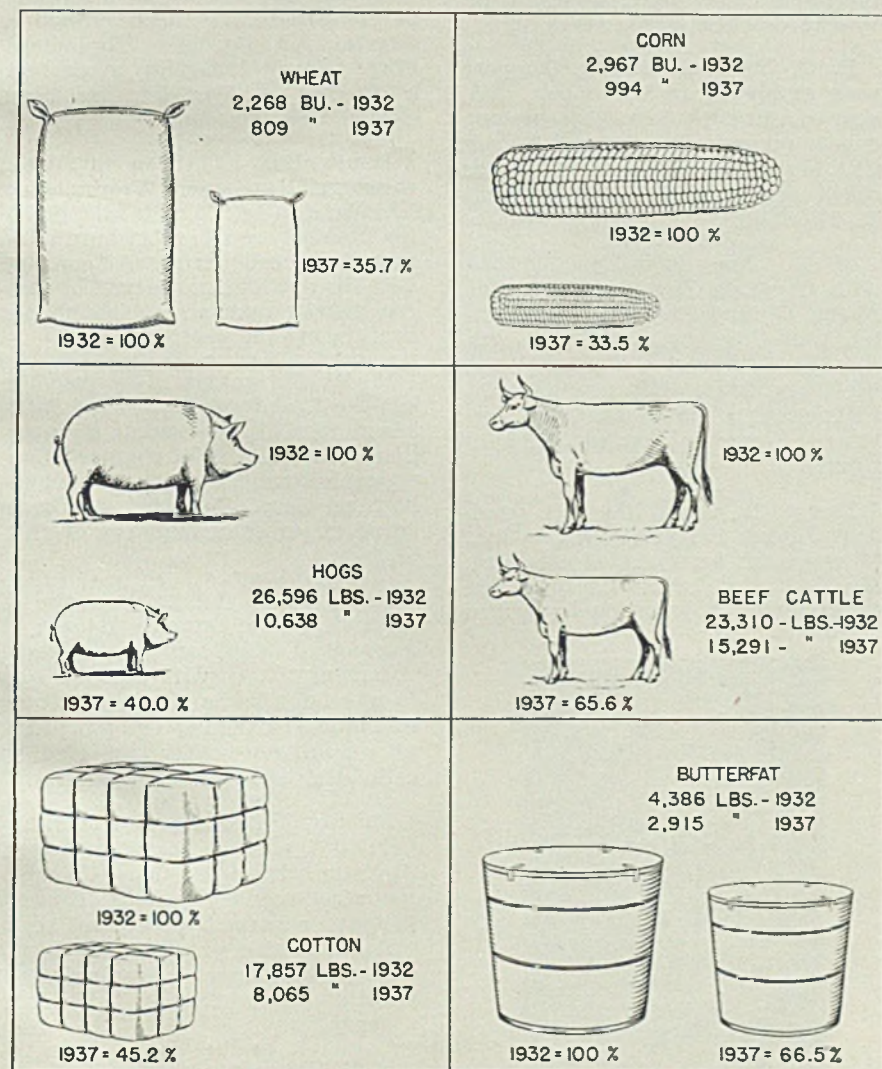
Dividend arrearages accumulated between the last quarter of 1932 and the third quarter of 1936 amounted to \$18.25 per share, a total of \$65,751,300.75 on 3,602,811 shares. The dividend declarations in reduction of these arrearages have been as follows:

Date	Per share	Total (on 3,602,811 shares)
Oct. 27, 1936.....	\$2.00	\$ 7,205,622
Nov. 24, 1936.....	7.00	25,219,677
Apr. 27, 1937.....	4.00	14,411,244
May 25, 1937.....	2.00	7,205,622
June 29, 1937.....	2.00	7,205,622
<b>Total arrearages paid</b> .....	<b>\$17.00</b>	<b>\$59,247,787</b>

### AMERICAN CAR & FOUNDRY REPORTS GAIN IN EARNINGS

For the fiscal year ended April 30, American Car & Foundry Co., New York, reports net profit of \$1,210,676 or \$4.18 a share on 7 per cent preferred. This compares with a loss of \$582,515 in the preceding year. Unfilled orders April 30 totaled approximately \$10,000,000.

## What \$1000 Tractor Cost in Produce, Then and Now



Tractors cost the farmer only 33 to 66 per cent as much in 1937 as in 1932, expressed in products of his farm. Agricultural prices have risen much faster from the depth of the depression than steel and manufactured products

# Men of Industry

**F**RED M. FULLER, former general sales manager, American Sheet & Tin Plate Co., has retired from Carnegie-Illinois Steel Corp., Pittsburgh. Born in Kent, O., Mr. Fuller's career started with the Falcon Iron & Nail Co. and the Falcon Tin Plate & Sheet Co. at Niles, O., in 1894. When the tin mills were consolidated in 1898, he went to the general office of American Tin Plate Co. in Chicago, and later was sent to New York. In 1904, when American Tin Plate and American Sheet Steel Co. were consolidated, he went to Pittsburgh as chief clerk in the contract bureau; in 1905 was transferred to the sales department; in 1909 was made assistant general manager of sales, tin plate division; in 1934 became general manager of sales, and in 1935 was made assistant to the president of American Sheet & Tin Plate.



Fred M. Fuller

Donald C. Bakewell, who recently became affiliated with Blaw-Knox Co., Pittsburgh, has been elected a vice president.

Charles W. Huse has been appointed director of public relations for Columbia Steel Co., with headquarters in San Francisco.

H. J. Kiener, Hickman, Williams & Co., St. Louis, has been elected president of the St. Louis chapter, Institute of Scrap Iron and Steel Inc.

A. G. Bradbury, Detroit representative of Roots-Connersville Blower Corp., Connersville, Ind., has established an office at 211 Curtis building.

A. Kirk Cameron, Montreal, Que., has been appointed president, Eastern Steel Products Ltd., Toronto, Ont., to succeed the late James Playfair. He was formerly vice president and general manager.

Francis Leslie and U. V. Westover have been appointed sales engineers in the New York territory for P&H Smootharc welders and weld rods, manufactured by Harnishfeger Corp., Milwaukee.

Van B. Hooper, advertising manager, Louis Allis Co., Milwaukee, maker of electric motors, has been elected president, Milwaukee Association of Industrial Advertisers, affiliated with the national association.

A. J. McCann has been appointed by Otis Elevator Co., New York, to take over sales activities in its Pittsburgh office, covering the

blast furnace fields. He succeeds the late Frank Smith, to whom he was an assistant some years ago.

R. G. Marshall, during the past year employed in the export division of Chrysler Corp., has become export manager of Covered Wagon Co., Mount Clemens, Mich., trailer coach manufacturer. He succeeds V. H. Wilcox, resigned.

M. B. Lane, formerly identified with Goodrich Tire & Rubber Co., Akron, O., and Norton Co., Worcester, Mass., is now associated with Bay State Abrasive Products Co., Westboro, Mass. His new position will be that of manufacturing supervisor of rubber bonded grinding wheels.

Everett D. Graff, first vice president, Joseph T. Ryerson & Son Inc., Chicago, has been elected president. Mr. Graff has been with the Ryerson company 31 years, having joined



Everett D. Graff

the company immediately upon graduation from college in 1906.

Edward L. Ryerson Jr. is chairman of the board of Ryerson and vice chairman of Inland Steel Co. W. F. Kurfess and V. H. Dieterich, assistant vice presidents, have been elected vice presidents. Ainslie Y. Sawyer, formerly assistant vice president, has been made assistant to the president.

Charles E. Trommer has been made resident manager at the new office, 1608 Walnut street, Philadelphia, opened recently by E. Arthur Tutein Inc., New York, eastern sales agent for Sloss-Sheffield Steel & Iron Co., Birmingham, Ala.

J. J. Barry has been named western representative of New Britain-Gridley Machine division, New Britain Machine Co., New Britain, Conn., builder of automatic machinery. He will have headquarters in Chicago.

Matthew C. Brush, former head of American International Corp. and an officer and director of a number of companies, has been elected a director of Dardelet Threadlock Corp. Henry J. Kuehls, at present a director of Dardelet, has been elected vice president.

H. F. Boe has been appointed commercial manager, Westinghouse Electric & Mfg. Co. He will divide his time between the Pittsburgh and New York headquarters and combine with his new duties the post of eastern district manager which he has held during the past year.

H. W. Fitzgerald, who recently left the Lackawanna plant of Bethlehem Steel Co., to assume the position of assistant chief engineer, Corrigan-McKinney division of Republic Steel Corp., Cleveland, has been advanced to chief engineer of that division.

Allan Philip Stern, graduate of Case School of Applied Science in mechanical engineering, Cleveland, is now associated with Colonial Iron Works Co., Cleveland, manufacturer of material handling equipment, in an executive capacity and also as estimating and contact engineer.

Murray J. Whitfield has been appointed general sales manager, Appleton Electric Co., Chicago, manufacturer of electrical conduit fittings, electrical extension reels and automotive products. He formerly was manager of sales, electrical division of Steel & Tubes Inc., Chicago.

H. W. Johnson, Greenlee Foundry Co., Chicago, has been elected chairman of the Chicago chapter, American Foundrymen's association, for the coming year. Other new officers

include: Vice chairman, L. H. Rudsill, Griffin Wheel Co.; secretary, W. G. Gude, Penton Publishing Co.; treasurer, C. C. Kawin, Chas. C. Kawin Co.

Harvey Demmon, heretofore master mechanic at the Farrell-Mercer works, has been appointed superintendent of maintenance of the Farrell works, Carnegie-Illinois Steel Corp., following the consolidation of Farrell steelworks and furnaces and the Farrell-Mercer sheet and tin mills July 1. He has been associated with the sheet and tin plate producing subsidiary of the United States Steel Corp. 17 years.

W. J. Adamson has been named manager of sales for the hot and cold-rolled strip division, Allegheny Steel Co., Brackenridge, Pa. He began his career about 27 years ago in the mills of West Leechburg Steel Co. Later he joined Trumbull Steel Co. at Warren, O., and shortly thereafter became assistant general manager of sales. He then was promoted to assistant vice president, which position he left to become sales manager of Acme Steel Co.

A. R. Kennedy, chairman, Pittsburgh District Independent Steel Traffic association, has been elected president, Traffic club of Pittsburgh. C. P. Schrecongost, traffic manager, Hillman Coal & Coke Co., has been named first vice president, and the following have been elected industrial governors: C. W. Trust, assistant traffic manager, United States Steel Corp. subsidiaries; F. M. Garland, general traffic manager, Pressed Steel Car Co.; L. G. Hulst, traffic manager, United Engineering & Foundry Co.; R. E. Jones, traffic manager, H. J. Heinz Co.

F. B. Quigley, general superintendent of the combined Farrell works of Carnegie-Illinois Steel Corp., announces the following appointments of supervisory personnel for that works: Charles Cricks has been made superintendent of open hearth department; A. A. Dow has been named assistant to Mr. Cricks; W. L. Beasley has become works auditor; O. W. Hassell, assistant works auditor. F. J. Brenner, formerly works auditor of Farrell-Mercer, has become works auditor at National works, Monessen, Pa., succeeding the late W. J. Holliday.

Harlow F. Wilson, secretary and auditor, Columbia Steel Co., San Francisco, a subsidiary of United States Steel Corp., has retired, after 48 years active association with the Steel corporation. His career in the industry began in 1889 when he secured a job with the Joliet Steel Co., a few months before it consolidated with Illinois Steel Co. Going to San Francisco as chief clerk for



Harlow F. Wilson

the Pacific works of American Steel & Wire in 1903, he was elected secretary and auditor, United States Steel Products Co. in 1911 and continued in that position when Columbia Steel Co. was organized.

Clare T. Redmond, assistant to Mr. Wilson since 1930, has been elected secretary and auditor. He has been associated with Columbia and other corporation subsidiaries for more than 17 years.

M. D. Howell, of New York, has been appointed a vice president, Carnegie-Illinois Steel Corp., effective Aug. 15. Mr. Howell's duties will cover a broad field, including the installation and supervision of new office procedure. He leaves an association with the Chemical Bank & Trust Co., New York, with which he has been identified since 1930 as vice president. Since graduation from the University of Michigan in 1912, Mr. Howell's entire career has been spent in the field of accountancy. He is a public accountant, certified by the state of New York. While with the Chemical Bank, he was a director of Doehler Die Casting Co., Valspar Corp., Northwestern Water & Electric Corp., and Community Water Service Corp.



M. D. Howell

## Died:

R. L. LLOYD, 67, well known metallurgical engineer, and vice president and a director of Dwight & Lloyd Sintering Co. Inc., and Dwight & Lloyd Metallurgical Co., New York, in New York, June 19. With Arthur S. Dwight he developed the system for roasting and agglomeration of fine ores known as the Dwight and Lloyd sintering process.

A. J. T. Bennett, 58, industrial engineer, in Chicago, June 22.

Raye M. Fisher, 42, treasurer, Midland Steel Products Co., Cleveland, in that city, recently.

Wilson Workman Butler, 75, Montreal, Que., president of Canadian Car & Foundry Co., in Montreal, June 18.

Ralph Byron, 35, manager, heater and oven division, J. O. Ross Engineering Corp., New York, in that city, June 29.

Fred I. Gaston, safety director of Republic Steel Corp. plants in Youngstown, O., in a Pittsburgh hospital, June 24.

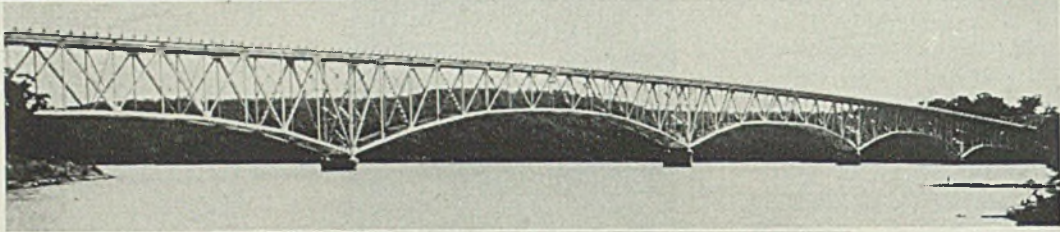
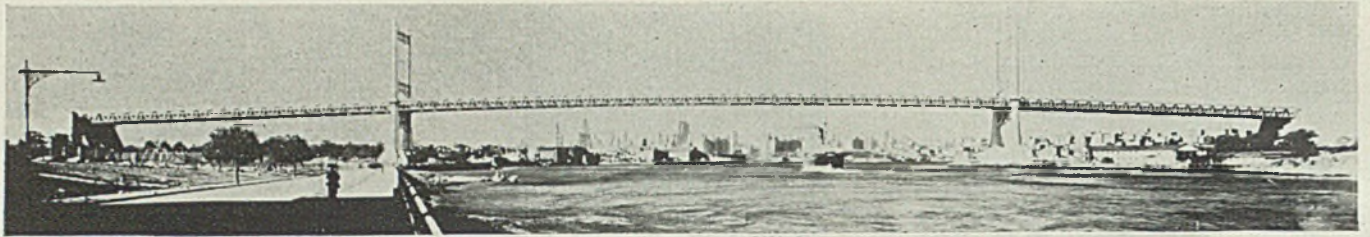
William David Reid, 69, director and former vice president and secretary, Follansbee Bros. Co., Pittsburgh, in Bellevue, Pa., June 23. Mr. Reid had been an employe of Follansbee for over 40 years.

James C. McCormick, employed in the Pittsburgh offices of Carnegie-Illinois Steel Corp. and for 43 years an employe of the United States Steel Corp., in Pittsburgh, June 23.

Harry C. Krider, of Pittsburgh, well known in the scrap business and for many years associated with Charles Dreifus Co. until his retirement last Dec. 31, in London, England, June 29.

Oscar Philipp, 53, president, Oscar Philipp & Co., New York, exporter of steel products, in New York, June 22. He previously had been general manager, export division of Koppel Industrial Car & Equipment Co., Koppel, Pa. He organized the company which now bears his name about 10 months ago.

Col. Hugh L. Cooper, 72, internationally famous hydroelectric engineer, in Stamford, Conn., June 24. He designed and supervised construction of the Wilson dam at Muscle Shoals and the Dnieprostroy dam and power station in Russia, among various other large projects. Colonel Cooper was president of Hugh L. Cooper & Co. Inc., New York, and was a member of numerous engineering societies.



**E**AST RIVER crossing, Triborough bridge, New York, at top, was adjudged the most beautiful of monumental size bridges entered in the American Institute of Steel Construction contest



**H**URRICANE DECK bridge, Lake of the Ozarks, Missouri, center, took top honors in the medium size class. Astoria boulevard bridge, over Grand Central parkway extension, New York, was judged most beautiful in the small span class

## Select Most Beautiful Bridges Built in 1936

Three bridges, designated as the most beautiful completed in 1936, will be decorated with stainless steel plaques by the American Institute of Steel Construction, New York. They are: East River crossing, Triborough bridge, New York; Hurricane Deck bridge, Lake of the Ozarks, Missouri; and Astoria boulevard over Grand Central parkway extension, New York.

An unusual number of monumental size bridges were entered in the institute's contest and three were accorded honorable mention. They are: Henry Hudson bridge, New York; West Bay crossing, San Francisco-Oakland Bay bridge; and Fore River bridge, Massachusetts.

A separate class for mechanical bridges, handicapped in competing with other types for beauty because of their heavy characteristics, will be set up next year, the tenth annual contest.

Judges were Harvey Wiley Corbett and Leonard Schultz, architects, Clarence W. Hudson and Robert Ridgway, consulting engineers, and A. Lawrence Kocher, editor, *Architectural Record*, all of New York.

## "World of Tomorrow"

Approximately four times the space used at the Chicago World's Fair will be occupied by the General

Electric Co. building at the New York fair in 1939, for which contracts were signed recently. The "House of Magic" idea will be amplified by a more comprehensive picture of electrical progress. Particular emphasis will be placed on electricity in the "world of tomorrow"—on farms, in the home, in industry and transportation, and in the social life of man.

## Reader Comments

(Concluded from Page 19)

Court have stated that no agreement need be made with a union and the court has added that an employer may consummate a unilateral agreement with the individual. In doing so he may make a bargain with this individual a little less favorable to the latter than he may have made with the union. Will not the board accuse him of oppressing the man because as an individual he is weak? Thus it will resort to the time-honored argument of those who originated this legislative gem.

On the other hand, if he gives the individual bargainer a little the better of it, will not the board call it discrimination against the union?

In either case it would seem that the employer does not possess the power to bargain freely.

Bargaining is a process of give and take and implies that the buyer has more than one source of supply

and that the seller has more than one market, and aside from the jargon of the sociologists, it presupposes absolute freedom for both parties.

It seems that the whole situation is a mess resulting from the efforts of the act's proponents to accomplish something on the shaky edge of equity and legality, and it is in all respects so clearly class legislation that it was impossible to reduce it to words in a manner to make its meaning and enforcement intelligible.

JOHN H. HERTNER

President, Hertner Electric Co., Cleveland

## State Sales Taxes Yield \$352 Million Revenue

State sales taxes, exclusive of those on particular products such as gasoline, produced a total revenue of \$352,000,000 in the fiscal year 1936, according to an analysis by the national industrial conference board.

Sales taxes of the retail or general type are now in effect in 24 states. The board's analysis indicates that a large part of the proceeds is used for relief and public school education. Selective sales taxes are also becoming an important source of state revenues. The gasoline or motor fuel tax, liquor taxes, and taxes on tobacco products are the most important.



# Activities of Steel Users and Makers

**B**ETHLEHEM STEEL CO. was an important exhibitor of steel in railway applications at the recent railroad show in Atlantic City, N. J. Its exhibit included three welded underframes, a center sill, a bolster and a section of a side of one of the key system electric cars, built for operation over the San Francisco-Oakland bridge. These cars are built of steel produced from the company's Mayari iron.

Walker & Downing, Pittsburgh, have moved their advertising offices into enlarged quarters at 532 Oliver building, Pittsburgh.

Syntron Co. has moved its general offices and works from 400 North Lexington avenue, Pittsburgh, to new and larger quarters in Homer City, Pa.

Rust Engineering Co., Pittsburgh, has been awarded a contract for the design and construction of two reinforced concrete carbon black storage bins for Cabot Shops Inc., Pampa, Tex. Construction will begin immediately.

Woodward Iron Co., Woodward, Ala., has placed an order with the Semet-Solvay Engineering Corp., New York, for a collector main,

equipped with liquor sealed uptake valves to replace present equipment on a battery of 38 coke ovens at its plant.

Crane Co., Chicago, manufacturer of plumbing and heating fixtures, valves, pipes and fittings, has opened a new plumbing and heating fixture display room at Madison and Fortieth street, New York. The former location of the Manhattan display room and offices was 19 West Forty-fourth street.

Paterson Foundry & Machine Co. has placed a contract with Allied Engineering Co., for a tunnel kiln to be built at its Porox division at East Liverpool, O. The company has also started construction of a large normalizing furnace at its steel fabricating department, also located at East Liverpool.

Thew Shovel Co., Lorain, O., and Universal Crane Co., Elyria, O., have been merged. The consolidation was effected to simplify business operations between the two companies which have been closely connected since 1923 when Thew Shovel purchased a majority of Universal Crane stock. No material change in plant operations will be made.

Designers for Industry Inc., Cleveland, industrial designers and product stylists, have established New York quarters in International building, Rockefeller Center. A designing staff will be maintained in the New York office which is in charge

of H. C. Gooding, who has been transferred from the Chicago office. George E. Henry, formerly associated with the business paper field, has been appointed sales promotion manager with headquarters in the New York office.

Monarch Machine Tool Co., Sidney, O., has opened a direct factory office at 3115 North Meridian street, Indianapolis. Hugh W. Robinson, associated with Monarch for 12 years, has been placed in charge of this office.

Monarch also announces the removal of its New York office to Newark, N. J. Charles L. Cannon and John W. Dunn continue in charge of this office.

Richard Thomas Ltd., Ebbw Vale, Wales, has purchased the first installation of Kemp immersion heating for a tin mill in Wales. This is in connection with its new continuous strip mill and tin house being erected under the direction of the United Engineering & Foundry Co., Pittsburgh. Fifteen pots and four industrial carburetors are being installed. The equipment is being built by W. C. Holmes & Co. Ltd., Huddersfield, England, British associate of C. M. Kemp Mfg. Co., Baltimore.

Billings & Spencer Co., Hartford, Conn., recently held a three-day sales conference attended by sales engineers and representatives from Texas, Virginia, Michigan, Illinois, Pennsylvania, New York, New Jersey and New England. The conference was addressed by W. A. Purcell, president; W. Roy Moore and H. E. Oberg, vice presidents; James Allison, factory manager, who discussed new products, commercial drop forgings and future developments based on the past year's research; and R. H. Young, advertising manager. Mr. Allison conducted an inspection journey through the plant.

Clark Bros. Co., Olean, N. Y., builder of gas engines and compressors, has been merged with S. R. Dresser Mfg. Co., Bradford, Pa., maker of flexible pipe joints. In recent years, Dresser has entered the gas engine field, and it is believed that the engine operations of both companies may be consolidated at Olean, N. Y., soon. The merger was effected by the exchange of Dresser class A treasury stock for the capital stock of Clark Bros.

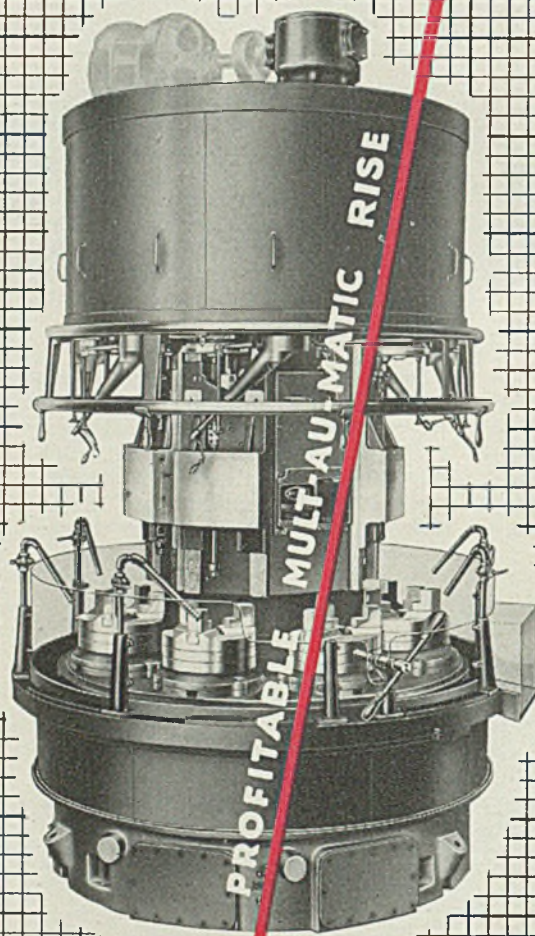
Officers of the Clark Bros. Co. are C. P. Clark, president; J. B. O'Connor, vice president; and of the Dresser organization, Fred A. Miller, chairman of the board, H. N. Mallon, president and M. N. Davis, executive vice president.

## Employees' Families Attend Foundry Open House



**A** PROCEDURE for obtaining the interest and co-operation of families of employes was illustrated by the Campbell, Wyant & Cannon Foundry Co., Muskegon, Mich., when it held an open house recently, attended by 7473 guests. Products and manufacturing methods of each department were displayed, and a contest was held in which points were awarded for order, cleanliness, material displayed and originality of display

**FIGURE  
OPERATING PROFITS  
IN TERMS OF THE  
MULT-AU-MATIC METHOD**



PROCLAIMED  
NORMAL

PRODUCTION  
PROFITS

PERIOD OF  
REPLACEMENT

RESULTS FROM  
OBSOLETE  
EQUIPMENT

RESULTS FROM  
EQUIPMENT REPAIRS

*The*  
**BULLARD COMPANY**

Bridgesport, Connecticut.



# MIRRORS OF MOTORDOM

DETROIT

**D**OWN the Detroit river about five miles from the foot of Woodward avenue, a corps of workmen is busy erecting the shell of a new 1000-ton blast furnace for Great Lakes Steel Corp. which not many months hence will reinforce the corporation's hot metal capacity by 2500 tons daily to fill the appetite of four new open-hearth furnaces under construction nearby. The new stack is located on Zug island between two smaller stacks now in operation.

The only other ironmaking capacity in this district is just a short haul up the Rouge river channel at the Ford plant. Here are two 800-ton blast furnaces of the Kennedy design which feed iron to Ford's nine open hearths. The "A" furnace was lighted in May, 1920, and the "B" stack in September, 1922. Originally of 700-ton capacity, the two stacks were rebuilt in 1934 and 1935 to bring the capacity up to the present 800 tons. As related in these pages last week, the open-hearth battery shortly will be enlarged to add about 9000 tons to the plant's present capacity of 45,000 tons of raw steel a month.

## Ford To Build New Blast Furnace

Still Ford must buy about one-third of his steel requirements in the open market and lately has felt the pinch severely in obtaining a sufficient supply of slabs for the continuous strip mill which spins out flat-rolled steel to satisfy the needs of 3000 cars daily. The new open-hearth furnaces partially will fill this deficiency, but it is believed Ford will continue to buy an appreciable tonnage from outside sources.

Expansion of open-hearth capacity in turn puts the pinch on hot metal supply, since available scrap tonnage is not high enough to make up the difference. Henry Ford soon will award contracts, if this has not already been done, for an additional blast furnace, of a reported 1200-ton capacity, which should ably fill the breach on hot metal requirements

BY A. H. ALLEN  
Detroit Editor, STEEL

for the open hearth as well as for increased demands for foundry iron.

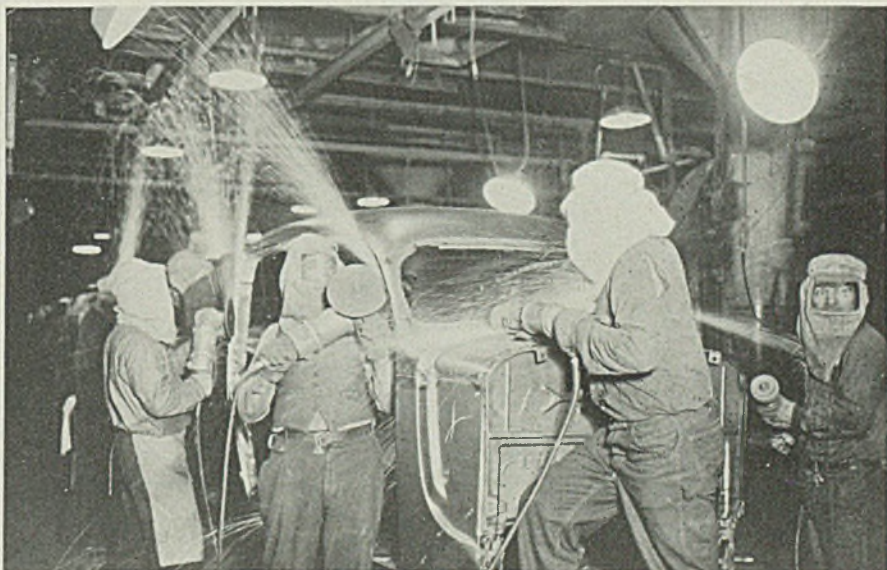
Looking still further into the future at the Rouge plant where considerable midnight oil is being burned to substantiate Mr. Ford's promise of "some real competition", probably within the next year details of a new body plant will have crystallized and the project started, to make Ford more self-sufficient on bodies. The present body plant is confined to production of two-door sedan models, with Murray and Briggs furnishing the balance of the line. To what extent the proposed new plant will absorb present production of these companies is not yet

known, but undoubtedly it will be an appreciable share. The Ford policy of integration pays handsome dividends in periods of lush automobile production, although ore mines, blast furnaces, open hearths and steel mills become somewhat of a liability when the production curve dips to 1932-33 levels.

**G**ENERAL opinion in Detroit today is that a number of important changes are in store for 1938 Ford models, especially for the "85". One report has it that new fenders will be considerably larger, and of the so-called pontoon type now used by many of the larger cars.

Some major revisions also are said to have been proposed for the Lincoln Zephyr which has been accorded a rousing reception by the buying public this year. Production cur-

## Fireworks Every Day for These Workers



**FIREWORKS** on a Fourth of July scale are part of the daily grind for these hooded workers at the Plymouth plant in Detroit who are smoothing the rough spots out of welded steel bodies before they reach the paint line. Both disks and wheels are used on high-cycle portable grinders for touching up rough edges and weld beads



## MIRRORS OF MOTORDOM

rently is at the rate of about 900 weekly, and the total for the first five months of the year reached 17,748, compared with 11,080 in the same period last year, an increase of 60 per cent. There is talk of a new convertible coupe to be added to the Zephyr line.

Machine tool interests are still busy figuring on inquiries from Dearborn for the Mattford plant in Alsace, while arrival of the manager of Ford's Japanese plant in Detroit has revived reports some expansion plans are being contemplated in the Orient. Some years ago this plant in Yokohama was active in car manufacturing, but exorbitant taxes levied by the Japanese government forced abandonment of manufacturing and at present cars are merely assembled from knockdown shipments.

**R**ECENTLY announced new plant projects which both Chrysler and General Motors have authorized seem to reflect the trend toward decentralization of manufacturing and assembly operations away from the state of Michigan. The obvious excuse which is heard concerns the labor difficulties experienced in this district in the past six months; but actually it is not likely divisions in this territory will suffer as a result of these new out-of-state plants which represent more of an expansion of capacity than a decentralization of capacity.

There is no disposition on the part of automobile producers to give up hope of conducting their operations on a satisfactory basis in this territory. For example, the latest proposal emanating from Chrysler planning departments involves a new Dodge truck plant. Site for this structure has been selected and proceedings for acquisition of the land launched. By the first of this week, barring entanglements, the deals will have been concluded for the property which is just inside the city limits about four miles east of Woodward avenue. It is understood operations in the present Dodge truck plant at Lynch road and Mount Elliott will be transferred to the new building, and a new assembly line for Plymouth set up in the present Dodge truck plant. This would provide additional capacity for Plymouth which now is finding its facilities taxed in present quarters on Mount Elliott.

### 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 5 .....		101,629
June 12 .....		118,798
June 19 .....		111,620
June 26 .....		121,032
July 3 .....		122,890

	Week ending	
	July 3	June 26
General Motors .....	50,490	46,190
Ford .....	27,210	28,890
Chrysler .....	28,775	28,775
All Others .....	16,415	17,177

†Estimated.

Furthermore, the Chrysler management has drawn up some ambitious schedules for its various divisions over the next few years, and to meet them, additional manufacturing space is essential.

The corporation has announced appointment of Ray Hurst as manager of the new Dodge transmission plant in Kokomo, Ind. Other personnel changes developing in the Chrysler organization include the transfer of A. C. Downey, president of the Fargo division, handling truck fleet sales, to the presidency of the Airtemp division at Dayton, O., manufacturing air conditioning equipment. R. L. Biggers, vice president of Fargo, has been appointed to succeed Mr. Downey.

**S**TEEL buying in this territory is holding at a good level, with district officials inclined to discredit any extensive switching of tonnages from strike-bound plants. Releases on steel for new models are becoming more frequent although, in gen-

eral production on 1937 lines will continue to the end of this month.

Mill deliveries on such items as hot-rolled sheets, for example, are as lengthy as 20-24 weeks, but, of course, reservations have been made on mill schedules for regular customers, even though orders have not been placed as yet. In most cases mills ask at least four weeks for shipments.

Packard has delayed releases on certain new model materials by 30 days, which was welcome news to rushed suppliers. The delay is ascribed partially to the loss of one week's production from recent labor trouble, and partly to delays in completing arrangements for new equipment. Production at Packard has resumed full speed and is currently well above the 3000-weekly mark. Sales are reported to be in sufficient volume to absorb the full quota of production.

Pontiac set an all-time production record June 17 when 1500 jobs moved from assembly lines at Pontiac, Linden, N. J., and Los Angeles. Current operations are strong at around 6500 weekly and the retail sales picture is unclouded. The 1938 Pontiac lines probably will have longer and wider hoods, according to present information, although the favorable public response to present styling probably will mitigate against any sweeping revisions in appearance.

**A**BNORMAL quiet seems to have dropped over labor activities in automobile plants, and all observers in this district have turned attention temporarily to the steel situation, since it is so closely related to the automotive industry. One explanation for the current calm among UAW members is offered by the fact union officials are anxious to demonstrate their control over the rank and file in order to make headway in a new agreement with General Motors.

Mr. Knudsen has demanded in no uncertain terms complete assurance against further "wildcat" strikes before he will have any part of a new discussion with UAW leaders. He also wants definite penalties for instigators of the 200-odd strikes which have plagued 48 different plants of the corporation in the past four months.

Homer Martin, president of the UAW, professes to have directed a thorough investigation of these disturbances, but as yet has not disclosed what steps he will or can take to prevent their recurrence and penalize the offenders.

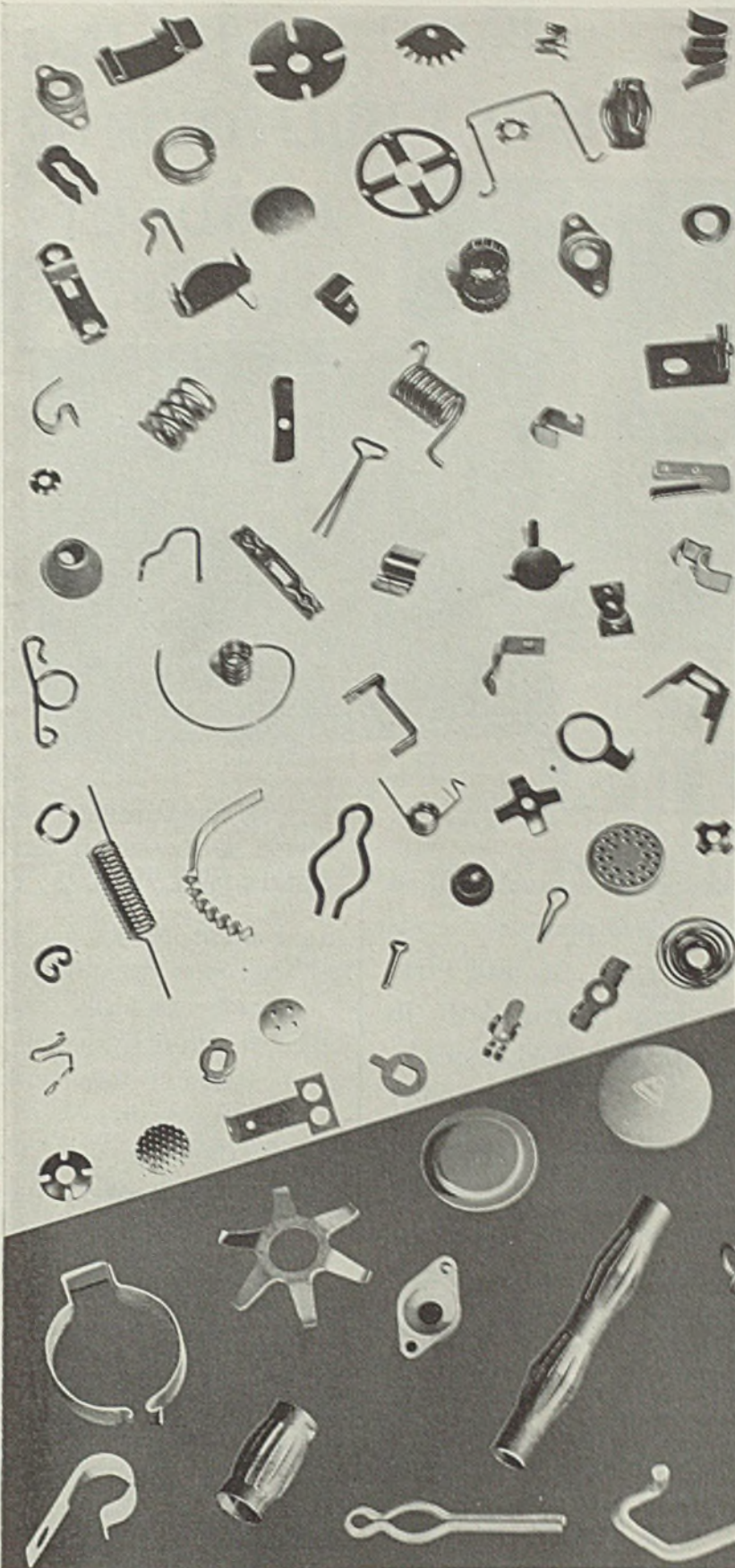
Much favorable comment is heard here on Senator Vandenberg's three proposed amendments to the Wagner act, which would (1) permit employers to call elections to determine  
(Please turn to Page 112)

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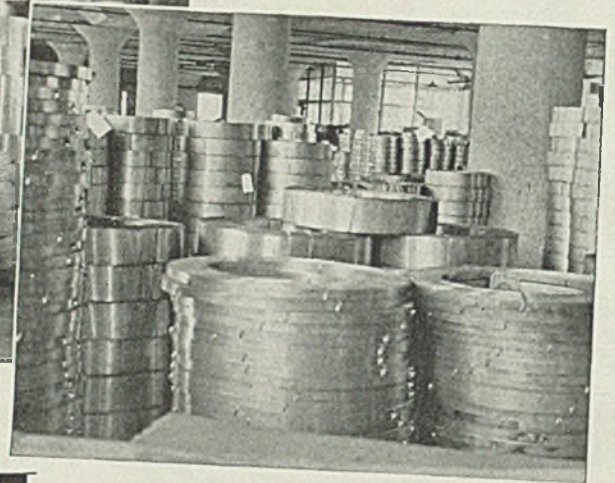
P. M. HUBBARD

J. A. HUBBARD, Secy.

**M. D. Hubbard Spring Company**

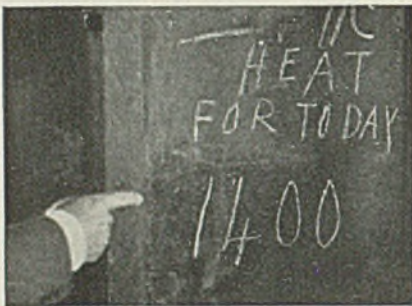
613 CENTRAL AVE., PONTIAC, MICH.

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- FLAT SPRING PARTS
- AND MANY OTHERS

# SPRING Steel



SPRINGMAKERS FOR MORE THAN THREE QUARTERS OF A CENTURY



# WINDOWS OF WASHINGTON

WASHINGTON

**T**HERE are still a number of bills on Capitol Hill of particular interest to the steel industry. One of the most important of these, of course, is the hours and wages bill. There is much speculation about this, especially in view of a statement made to newsmen the other day about the legislative situation by Postmaster General James Farley.

Farley told the correspondents that the President is insisting on a court reform bill and a government reorganization bill before adjournment. He made no mention of the hours and wages bill, and when specifically questioned on this point simply stated: "I don't know." That is taken, in many well-informed quarters to mean, that the President is not going to insist on this legislation. However, many advocates of labor at the capitol insist that the President will see that an hours and wages bill passes before adjournment.

## Broaden FTC and SEC

There are two so-called Lea bills in the house which are of great interest to business men. One would amend the securities and exchange commission act in such a way that it would be next to impossible for a big corporation to change its financial structure, because of the limitations put upon proxies and various other provisions. Strangely enough the corporate interests of the country have not taken much interest in this bill—probably because they do not realize just what it would mean to them. However, there are a lot of backfires from the financial interests of the country.

The other Lea bill would broaden the powers of the federal trade commission. The house committee on interstate and foreign commerce has been struggling with this bill for many weeks and it is understood that it has just about reached an agreement.

The bill gives the commission

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

more latitude in dealing with unfair trade practices. It removes the present requirement in the law that unfair trade practices must be shown to have injured a competitor before they can be stopped. It would make it possible for the trade commission to stop deceptive practices as evils in themselves, regardless of their direct effect on competitors. It is contended that this has always been hard to do.

## PRESIDENT IRRITATED AT EXTREME LABOR DEMANDS

The President at a press conference last week showed the first sign of breaking on the steel strike when he said that he had discussed the matter with Charles P. Taft, chairman of the steel mediation board, and that they both agreed on the Shakespearian quotation, "a plague on both your houses."

Newsmen for the past several weeks have persistently asked the President for some expression on the steel strike but have been able to "smoke him out" only once before and that was when he expressed the opinion that if an oral agreement could be reached that he saw no reason why there should not be a written agreement.

Last week, however, he quoted Shakespeare, and when asked for an interpretation at the conference refused to make any. However, following the conference, a White House attache took it unto himself, doubtless after a conference with the chief, to say that the President in that quotation referred to the extreme views on both sides of the fence. This should certainly be considered a break for the steel producers, because he had already knocked them as far as he could but he apparently could not ignore the undoubted change in public

opinion on the back-to-work movement among the mills.

In addition to going over the strike situation with the President, Mr. Taft had a long conference with Miss Perkins, during the course of which she insisted on a written report of what the board had done or tried to do. As this is written the report has not been made public but it is said that it will be shortly.

## SENATOR WOULD QUESTION FARLEY ON MAIL DELIVERY

Following the refusal of the senate post office committee to call Mr. Farley before it to question him on the Republic Steel non-mail delivery, Senator Bridges, republican, New Hampshire, issued a scathing statement to the press.

Bridges was asked by the committee what he wanted to ask Farley and naturally he refused to disclose his questions.

Later he told the press that "I wanted to inquire if this failure to receive and deliver mail was due to the demands, coercion and intimidation of the CIO labor organization headed by John L. Lewis. No acting postmaster general, no subordinate officer of Mr. Farley, could give an adequate and satisfactory answer to any such question. The American people were entitled and are now entitled to know from Mr. Farley himself the answer."

Senator Bridges said further, "I wanted to inquire, among other things, whether the fact that Mr. Lewis through the United Mine Workers, an affiliate of the CIO, contributed between four and five hundred thousand dollars to the last democratic campaign had anything to do with his order that food and clothing could not be sent through the mails to workers in the plants. . . . Also I wanted to inquire of Mr. Farley, the chairman of the democratic national committee, under what conditions he borrowed \$50,000 from Mr. Lewis' CIO affiliate, when he is compelled to pay

it, if compelled at all, and whether this order of Mr. Farley as postmaster general had anything to do with the loan."

### **SECRETARY PERKINS' STEEL ACTION MUCH CRITICIZED**

There was much talk again here last week about Madame Perkins and her latest fiasco, namely trying to get hold of Tom Girdler and making him sign a CIO agreement, as told by Governor Davey. Let it be said to the credit of some of the very rabid new dealers here that they had their say in the matter and it was not complimentary to Miss Perkins either.

No one here seems to quite understand just why the President keeps on putting up with the apparent errors that Miss Perkins continues to make, many times to the embarrassment of the administration. The answer seems to be personal. Both the President and Mrs. Roosevelt have known Miss Perkins through the years because of her social work in New York state and the President probably feels on this account that he cannot ask for her resignation. That and the undoubted fact that the President sticks by his friends through thick and thin account for the situation.

Mr. Taft is said to have told the secretary of labor that the only way he saw to straighten out the matter was to have a round table conference of steel executives and labor and, of course, this was impossible, due to the fact that the steel people refused to sit in on any such conference.

As this is written Miss Perkins still insists that the government is trying to find some way out of the difficulty or to find if some mediatory steps are not still possible.

### **BELGIAN TRADE AGREEMENT IS UNDER DISCUSSION**

Conversations were held here last week between the President, Secretary of State Hull and Prime Minister Van Zeeland of Belgium. They dealt particularly with the trade situation and also with disarmament.

In a statement given out at the White House at the conclusion of the talks it was stated that they discussed the trade agreement between the United States and Belgium.

"The results are a matter of great satisfaction," the statement said. "They are a clear demonstration that countries can develop an enlarged and mutually beneficial trade, serving to give employment and to improve the standard of living in both countries, without disturbing in any significant way the organization of their production. It is an example of what can be done

where fear, hostility, and aggressive intention are absent." On the question of disarmament the statement said that "beyond relations between Belgium and the United States they reviewed the questions of economic difficulties and the continuing armament race that are now creating so much anxiety in the hearts of peoples everywhere. Out of the conversations it was stressed that within the frame of traditional American policy it was the disposition of the United States to cooperate in the joint work of rebuilding international trade, continuing co-operation in monetary matters, and seeking arrangements whereby the burdens and dangers of overwhelming armaments might be reduced or the method of their employment safeguarded."

### **WEBB LAW EXPORTS RISE COMMISSION REPORT SHOWS**

An upward swing in exports in 1936 was shown by reports of associations filing papers with the federal trade commission under the Webb-Pomerene export act. This was due, says the commission, to improved conditions abroad, a lessening of trade restrictions in foreign countries, and strong association effort to increase sales in spite of foreign competition.

The figures made public by the commission show that in 1935, metal and metal product association exports were valued at \$20,250,000 and in 1936 they increased to \$40,507,335. This group under the export act included iron and steel products, metal lath, machinery, railway equipment, and pipes and valves.

There are now 45 associations on the commission's Webb law list, representing mills, mines, factories and processing plants in all parts of the country. Shipments are made to all parts of the world, although an association may be formed for sales to only one market, or for a limited number of products, if the members prefer.

### **LABOR RELATIONS BOARD ORDERS TOLEDO ELECTION**

Last week the national labor relations board directed that an election be held among the hourly rate employes in the Toledo plant of the Interlake Iron Corp. to decide whether they wish to be represented by the Amalgamated, affiliated with the CIO, or by the blast furnace union of the A. F. of L.

Also the board cited the Ford Motor Co. for alleged violation of three of the unfair labor practice provisions of the act.

In the Interlake case the board states that both the Amalgamated local and the blast furnace union claim to have the membership or applications of a majority of the hourly paid employes. With the

strength of the two unions, each so close to a majority, "the board finds that a dispute has arisen which can best be settled by a secret ballot." As a result of a board hearing held last May at Toledo before a trial examiner, Emmett P. Delaney, it was found impossible "to declare that either has a majority since each union submitted application cards signed by slightly less than half the employes."

In the case of the Ford company the board alleged it interfered with employes in the exercise of their rights to organize and bargain collectively; "domination of an employe organization, the Ford Brotherhood; and the discriminatory discharge of employes because of activities on behalf of the United Automobile Workers of America." Hearing is to be held in Detroit July 6 by a trial examiner, not named at this time.

### **SEES SCRAP EXPORT LAW AS SAFETY MEASURE**

While no hearing dates have been announced by either the house or senate military affairs committees dealing with the bills to prohibit export of iron and steel scrap except through licenses issued by the President, the committees have received a statement from Secretary of War Woodring in which he endorses the passage of such bills.

In his letter to the committees he called attention to the fact that "from data available at the war department it would appear that while exports of iron and steel scrap have become increasingly large in recent years there is not now, from the national defense viewpoint, a serious shortage of these scrap materials in the country. Because of the difficulty in making accurate estimates of scrap materials of this nature, however, no prediction as to how long the present situation will remain unchanged is warranted.

"Steel is one of the basic commodities of national importance in the event of war and the preservation of this industry and the conservation of the raw materials involved, are important considerations in our national defense," the secretary continued.

"Whether or not the immediate necessity of a restriction such as proposed exists at this time, is not considered as within the purview of this department, but in view of the uncertainty as to future developments which might be involved in the continuance or sudden increase in the export of steel scrap, the optional control by the President provided in the bill in question appears to be in the interest of national security and national economy, and the war department recommends that the legislation proposed be enacted into law."



# Editorial

## Settling Labor Disputes Without Blare of Trumpets

**M**ANAGEMENTS throughout industry, beset with strikes and labor strife, daily are counting the cost and wondering where it will end. Arbitrary union leaders, often with only a handful of members in a plant, are successful in stopping the wheels of industry and throwing into idleness hundreds who want to work.

Violence, coercion and intimidation are rampant. Inexcusable assaults upon nonunion workers, their families and their property are regularly brought to the attention of authorities who appear loath to act.

The Wagner act patently has amounted to little more than a convenient tool for the CIO to force recognition in plants where it has been able to corral a majority. The act effectively ties the hands of employers and loyal workers. It has brought only bitterness and strife in industry, to the gratification of CIO in its program of regimenting thousands of young, impressionable workers in an unamerican class warfare against their employers.

All this the public has come to know. All this Washington certainly can recognize. But what is to be done to correct the situation? How shall peace be restored?

A review of what Toledo, O., has accomplished in this direction may suggest an answer. Toledo once was a hotbed of industrial strife, interunion warfare and dispute. Today it is comparatively free from such troubles. How was it done?

### **Co-operation and Lack of Ballyhoo Aid Board In Making Settlements That Have Proved Binding**

Mainly by effective co-operation, through the agency of an industrial peace board consisting of eight representatives of labor, eight representatives of industry and eight leading citizens, supervised by a director. The first job was to reach an agreement with newspapers that labor disputes brought before it were not to be publicized. The reasoning was that such disputes were private affairs to be settled privately and not to be aired before a public with little understanding of the issues involved. Appreciating the civic value of the board's work, newspapers agreed to this plan and as a result Toledo newspapers have not carried front-page headlines every time a few workers engaged in an argument with a foreman.

All deliberations of the board likewise were to remain confidential until settlements were reached. This confidence likewise was and is being respected. This policy is in sharp contrast to federal mediation boards

and federal conciliators, whose first step in entering an industrial dispute is to call in photographers and reporters.

Furthermore, the CIO feeds and thrives on publicity. Its leaders spend much of their time feeding out inflammatory statements to the press, posing for pictures, and indicting officials of industry for the benefit of newspaper readers. The Toledo peace board has successfully combatted this practice and has been able to bring disputes to the plane of common sense, to thrash them out logically and to bring the opposing factions together on an agreement which, despite the fact it is only quasi-official, has carried more weight than a number of other agreements with unions reached through official intervention.

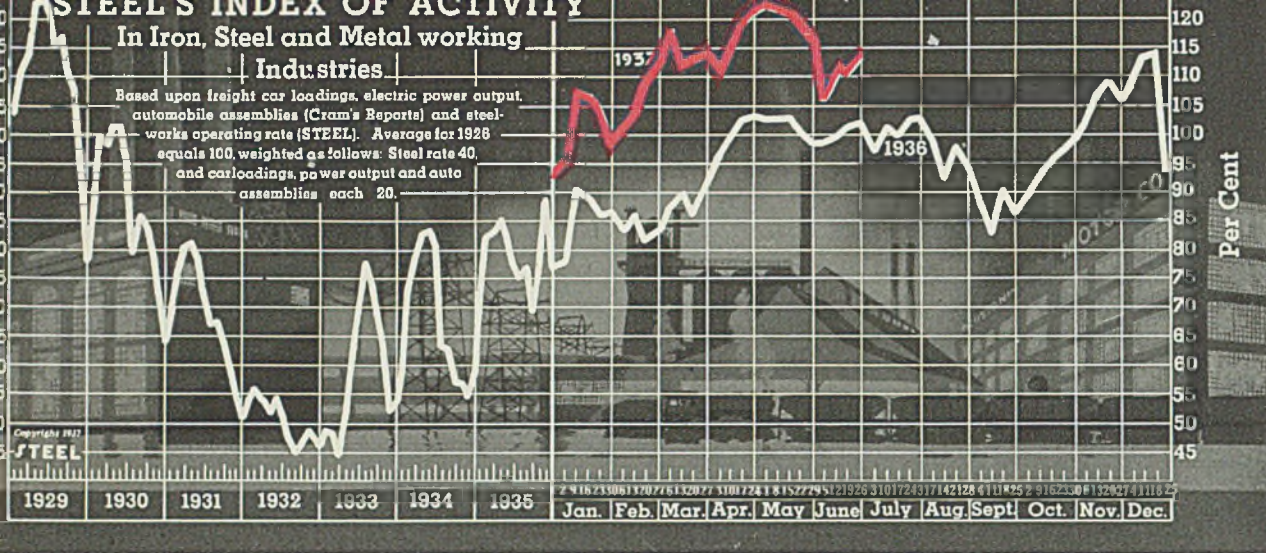
A number of jurisdictional disputes in Toledo have been settled by elections conducted by the board and not by the national labor relations board. Conflicting unions concerned in these disputes have abided by the elections, because they know if they fail to do so, the peace board will throw the entire negotiations open to the public eye, and will show just exactly how and where an organization has failed to live up to its promise. Public opinion does the rest.

### **Bias in Federal Mediation Bodies Prevents Fair Settlements; Politics, Publicity Enemies of Peace**

Other cities are now studying the work of the Toledo industrial peace board and several are about to set up organizations of a similar nature, apparently recognizing at last the inability of federal legislation, boards, mediators and other labor department machinery to accomplish any rational settlement of industrial disputes. Dismal failure of the federal mediation board to accomplish any settlement of the steel strike is a striking example of the ineptitude of such hastily formed and often strongly partisan boards.

Any agreement between unions and managements, is largely a matter of face saving, and an intelligent peace board selected from the community in which the dispute originates can arrive at some means to placate the demands of both management and labor unions before the breach has widened into community-wide violence and rioting which, after all, are simply measures which the union stages to require governmental intervention in a losing battle.

If politics and publicity are divorced from labor disputes, a settlement is not long in being achieved, where there is some legitimate cause for complaint on the part of labor. Industrial communities should recognize this fact and study the possibility of instituting conciliatory agencies such as the Toledo board, thus dispensing with any need for falling back on the Wagner act or federal intervention in strike troubles.



The

STEEL'S index of activity gained 2.3 points to 112.6 in the week ended June 26:

Week ending	1937	1936	1935	1934	1933	1932	1931	1930
April 24	122.0	103.6	84.9	87.5	59.5	52.3	80.6	103.7
May 1	123.9	103.2	84.6	86.0	60.3	52.5	87.7	103.3
May 8	123.5	103.0	79.4	84.4	62.5	54.7	79.7	102.8
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	112.6*	101.9	78.4	79.4	77.0	51.6	70.6	94.0

\*Preliminary. †Revised.

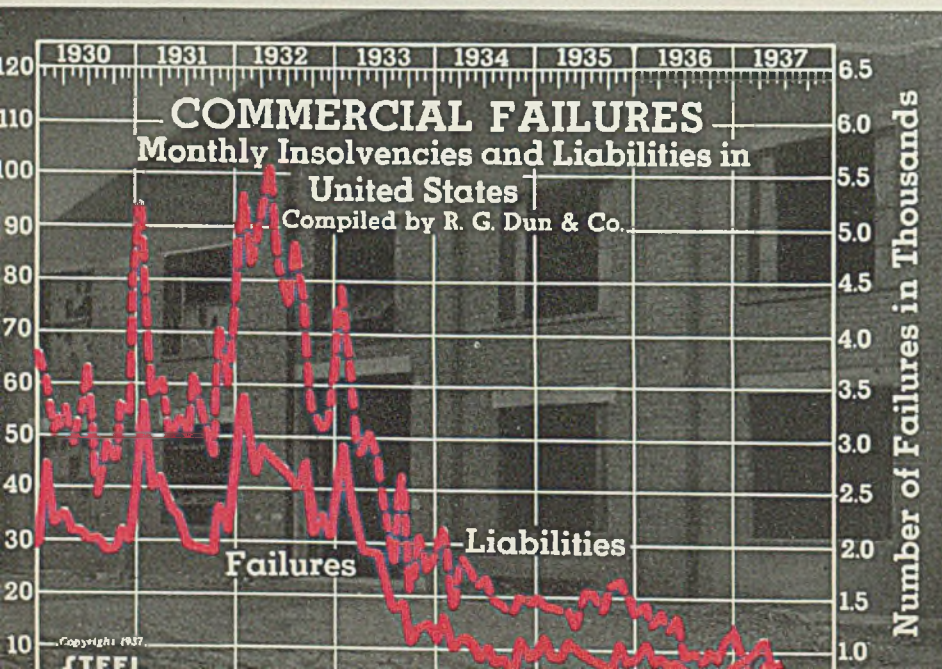
## Activity Remains Steady in Spite of Disturbances

**D**URING a period of industrial strife, such as that which prevailed throughout most of June, business barometers lose much of their normal significance. The wave of strikes—authorized and unauthorized—affected production in certain branches of major industries to the extent that established series of business records had little if any value in indicating the trend.

As a result of this disturbance, it has been impossible to discern from the ordinary data the extent to which industrial activity has suffered from seasonal

influences. Following the record-breaking figures in April and May, it was expected that an easier tendency would develop not later than Independence day. Whether this influence was felt in June is obscured by the distortion of barometers by the labor situation. Observance of a three-day holiday, July 3-5, will affect records for the weeks ending July 3 and July 10. Consequently, even if industrial peace should materialize promptly, indicative trends probably will not be discernible until late in July or early August.

Industrial activity has remained surprisingly steady, considering the interruptions of recent weeks. STEEL'S index for the week ending June 26 stands at 112.6, compared with 110.3 and 111.4 in the preceding weeks. Modest gains in electric power output, freight traffic and automobile production offset by a slight margin a one and a half point recession in steelworks operations.



	Failures, Number		Liabilities, Dollars (000 omitted)	
	1937	1936	1937	1936
Jan. ....	811	1,077	\$8,661	\$18,104
Feb. ....	721	856	9,771	14,089
March ...	820	946	10,922	16,271
April ...	786	830	8,906	14,157
May ...	834	832	8,364	15,375
June ...	.....	773	.....	9,177
July ...	.....	639	.....	9,904
Aug. ....	.....	655	.....	8,271
Sept. ....	.....	586	.....	9,819
Oct. ....	.....	611	.....	8,266
Nov. ....	.....	688	.....	11,532
Dec. ....	.....	692	.....	12,288

# BUSINESS TREND

## May Building Construction Registers Sharp Decline

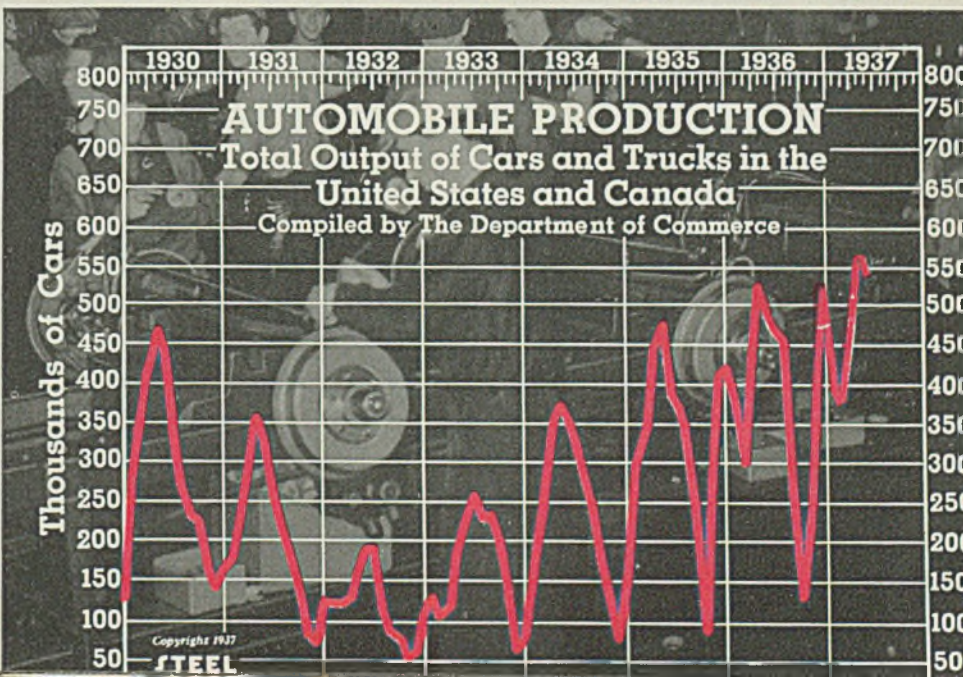
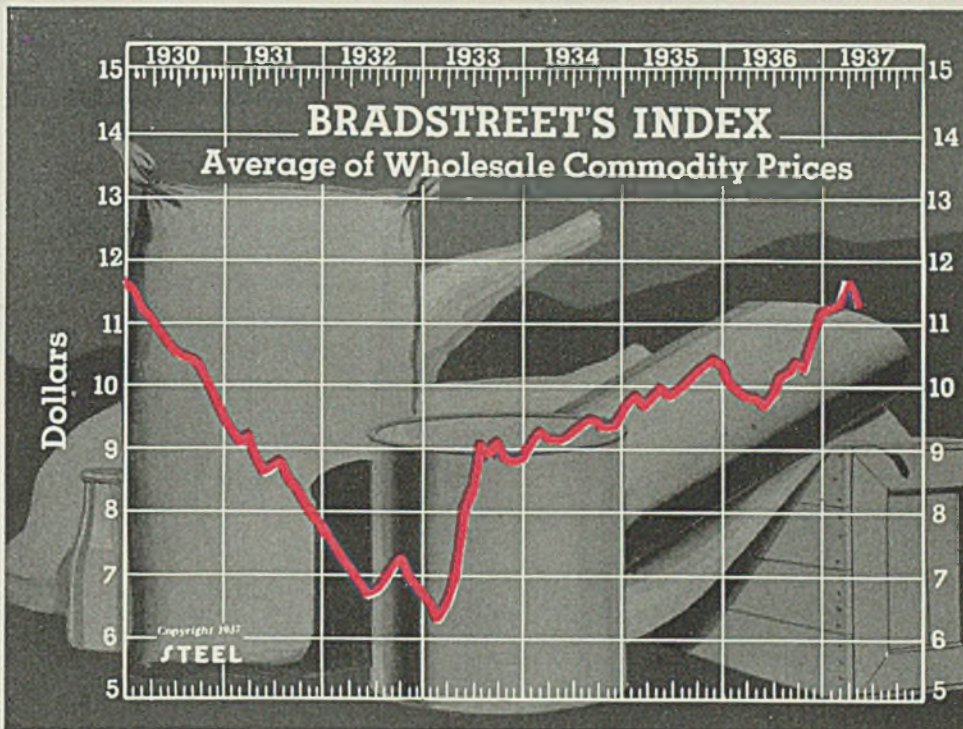
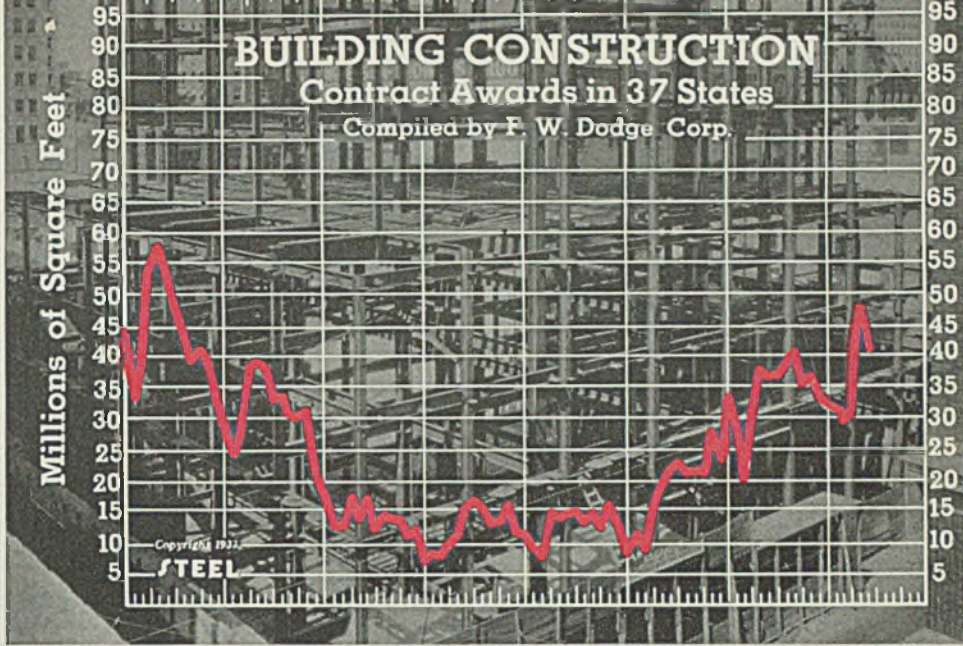
	Square Feet		
	1937	1936	1935
Jan. . . . .	33,470,000	27,053,300	11,245,100
Feb. . . . .	29,942,100	20,856,700	9,670,300
Mar. . . . .	41,567,800	31,257,900	15,845,300
Apr. . . . .	48,396,100	37,490,200	19,917,300
May . . . . .	40,287,900	36,362,100	22,276,200
June . . . . .	36,883,900	22,878,800	
July . . . . .	38,762,500	21,565,900	
Aug. . . . .	40,285,100	21,545,400	
Sept. . . . .	35,448,000	21,365,700	
Oct. . . . .	36,718,900	27,775,900	
Nov. . . . .	34,947,500	24,120,700	
Dec. . . . .	33,632,600	33,441,900	

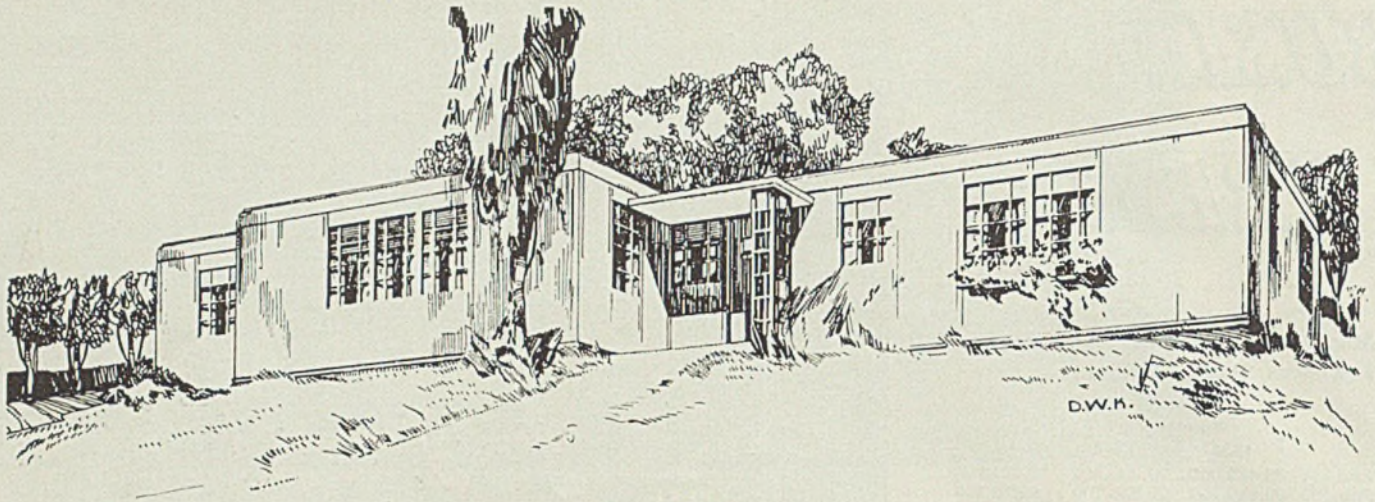
## Commodity Price Index Off Slightly on June 1

	1937	1936	1935	1934
Jan. 1 . . . . .	\$11.13	\$10.36	\$9.49	\$9.01
Feb. 1 . . . . .	11.23	10.02	9.78	9.26
Mar. 1 . . . . .	11.34	9.92	9.79	9.17
Apr. 1 . . . . .	11.81	9.85	9.66	9.16
May 1 . . . . .	11.51	9.81	9.79	9.14
June 1 . . . . .	11.33	9.73	9.90	9.24
July 1 . . . . .		9.85	9.84	9.32
Aug. 1 . . . . .		10.14	9.91	9.48
Sept. 1 . . . . .		10.19	10.00	9.45
Oct. 1 . . . . .		10.27	10.17	9.27
Nov. 1 . . . . .		10.22	10.28	9.29
Dec. 1 . . . . .		10.78	10.40	9.49

## May Automobile Output Shows Moderate Drop

	1937	1936
January . . . . .	399,634	377,244
February . . . . .	383,698	300,810
March . . . . .	518,977	438,943
April . . . . .	553,415	527,625
May . . . . .	540,357	480,571
June . . . . .		470,887
July . . . . .		451,474
August . . . . .		275,951
September . . . . .		159,785
October . . . . .		229,989
November . . . . .		405,702
December . . . . .		519,132





# Meeting the Steel Home

**P**ROBABLY no subject of interest to steelmen today carries such great potentialities as that of steel prefabricated homes. Currently throughout the country many types of homes are in the experimental stage, each type claiming to be the ultimate design for application to mass production of low and medium cost homes and only awaiting the arrival of a Henry Ford to jump to gigantic proportions and assume a position along with automotive production as a major use for steel. One of the most widely talked of units was the experimental building shown at the Century of Progress exposition in Chicago four years ago by General Houses Inc., of that city.

Since the original showing of that house, modifications and improvements have been introduced; a substantial number of units have been built and are now in use and, according to the company, have definitely brought this design out of the experimental class.

This house, as now designed, consists of a steel framework of special structural shapes supporting in-

sulated sections or panels for walls, ceiling and partitions and providing for doors and windows. Panel exteriors are of asbestos-cement and interiors of pine plywood. The steelwork is fabricated in Buffalo from 12-, 14- and 16-gage copper-bearing steel by special machinery; the panels are manufactured in Wisconsin. All steel parts are protected by a heavy coat of red lead.

This type of prefabricated house of average size requires from 10,000 to 12,000 pounds of copper-bearing steel, depending somewhat upon its floor layout and exterior walls, with a maximum variation of about 3000 pounds between the largest and the smallest sizes. Practically 86 per cent of the materials are savable if at any time it becomes desirable to move the house.

For efficiency, economy and practicability the design and construction of a modern prefabricated house require that:

1. The structural members and panels be of a limited number of sizes and design, but usable on a variety of types and floor plans of

buildings, and be fabricated in quantity production.

2. The assembly be simple and easy for any class of building labor.

3. The walls and ceiling provide high insulation value so as to be suitable for modern heating and air conditioning requirements.

4. The building have high durability and strength to resist wind pressure.

5. The parts have sufficient adaptability to permit re-use on salvage of the component units in case of changes or alterations.

## Standard Designs Prepared

To acquaint prospective homeowners with the possibilities and appearance of these houses, architects have designed 14 different floor plans for houses ranging from 4 rooms with single bath to 7 rooms with 2 baths; each with ample closet space, adapted to various family requirements and lot sizes. Each floor plan may be reversed and constructed with either flat or sloping roof, thus quadrupling the standard plans from an appearance standpoint. Many other

Steel homes for today's buyers are being built in a wide range of floor plans by General Houses of Chicago

# Problems of Production

designs are possible, however, through changing the location of windows in these plans.

Cost, not including lot and furnishings, varies from approximately \$3800 to \$8500, depending upon size and the cost of local labor. This cost compares favorably with other forms of building construction with an advantage where labor is high.

As the wooden house is built around a standard stud spacing of 16 inches center-to-center, so the modern steel house is designed with a spacing or module of 38 $\frac{3}{4}$  inches center-to-center between structural members. This spacing accommodates doors and windows without cutting into the structural framework. The entire house consists of multiples of this module. In some cases half modules are used, as in partitions.

## Method of Construction

The structural parts of a modern steel house consist of 14-gage vertical steel box columns, corresponding to the studding, 16-gage horizontal steel box beams, corresponding to the

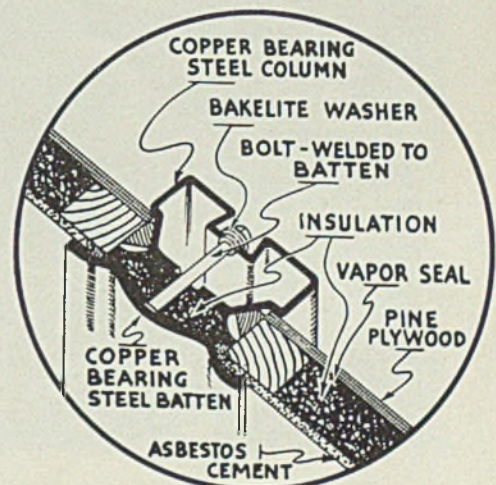
joists, 16-gage steel box spandrels to tie the vertical columns together at the top, and insulated panels held to the columns with a 12-gage steel batten. All steel shapes are of copper-bearing metal and of special design to facilitate fitting the units together with a tight joint. Joints are weatherproofed by a mastic cement.

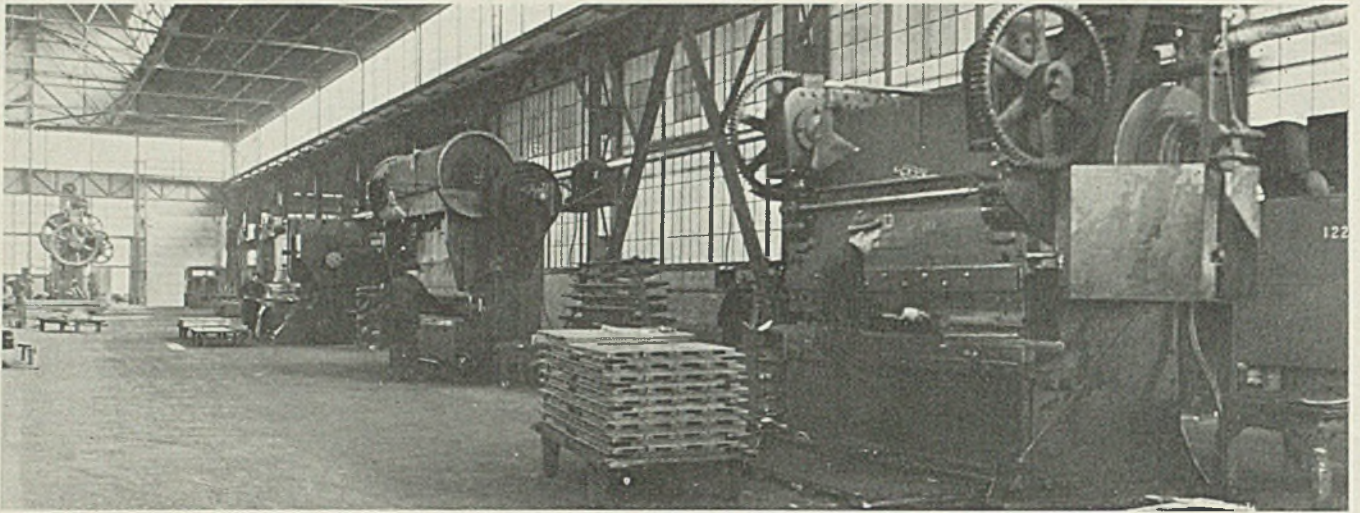
In houses without basements the supporting steel columns are rigidly bolted to a heavy reinforced concrete beam extending around the perimeter of the house above the ground level, which serves as a base for the panels. This concrete beam or foundation is supported on reinforced concrete posts about 10 feet apart and extending down below the frost line. A 4-inch concrete slab, reinforced with wire mesh over cinders or gravel base with tarred felt between, forms the floor.

In houses with basements the exterior vertical steel columns are fastened to the floor structure. The conventional double wooden flooring is supported by I-beams on round steel columns.

When the concrete floor slab has

set the vertical steel columns are placed in position by attaching them to bolts set in the concrete at the floor line. Next the spandrels tie the tops of the columns together and then the horizontal steel ceiling or roof beams are bolted in place. The positioning of the steel columns for





**F**INISHING operation on a typical part is performed on the brake press

partitions, which are similar to the building columns for the walls, complete the steel framework of the house. This structure is set up by local labor from the regular building trades.

Carpenters then place the insulated exterior panels in position and cover the joints (after filling with a mastic seal) with a steel batten or curved plate with bolts welded on the inside extending through the vertical columns. A bakelite washer insulates this batten bolt from the column to prevent the transfer-

ence of heat or cold from the outside. The bolts are covered by a snap-in channel-shaped trim piece.

The exterior wall panels consist of a 3-ply pine plywood on the inside backed by a vapor seal, a special blanket-type insulation and an asbestos cement board on the outside exposed to the weather. The insulation is packed into the panels in blanket form. Short panels and a wooden frame are used at windows and doors.

The ceiling panels consist of a waterproof plywood on the top

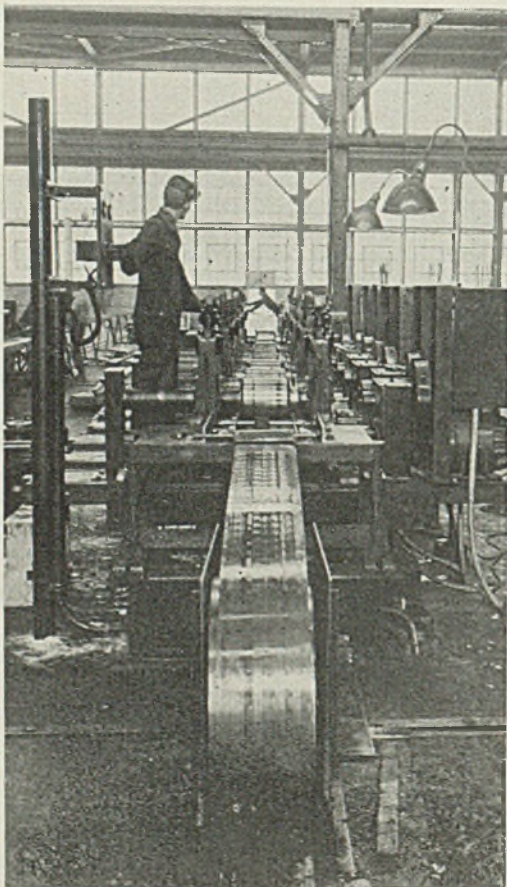
surface to stand weathering until the roof is applied, and pine plywood ceiling surface with the same insulation in the center to give resistance to heat and cold. The ceiling panels are bolted to the spandrels and beams which extend down from the ceiling and present a beamed-ceiling appearance. The flat roofs are waterproofed with 4-ply pitch and gravel and are designed to withstand a live load of 40 pounds to the square foot.

On flat-roof houses a 14-gage steel coping extends along the edge of the top of the panels, above the roof level, and down over the edge of the roofing to prevent water flowing down on the outside of the house and also to make a tight roof joint. Drains are cut through the coping to carry the water away. Sloping roofs are of conventional construction with gutters and downspouts.

Partitions consist of panels covered with 3/4-inch plywood set in vertical columns somewhat similar to the vertical columns used for the outside walls of the building. Bolt heads and nuts on columns are covered by a 14-gage steel channel-shaped snap-in trim piece. The finished assembly of the column on the inside forms a molding. Both interior and exterior surfaces receive a painted finish.

Steel window frames, which are so hinged that windows may be washed on both sides from the inside of the house, are set in wooden frames and sealed with mastic cement and sheet copper at the sills. Interior hinged window screens or storm sash provide added convenience in summer and winter.

One of the important advantages



**B**EAMS for supporting the roof and the ceiling are shaped on rolls as shown in this operation

of modern steel houses is the amount of space saved by thinner walls. In a house of four rooms, bath and utility storage room of about 22 x 42 feet outside, the walls and partitions occupy 31 1/4 square feet compared to 171 square feet for a house of the same size having masonry and plaster partitions. This saving in floor area amounts to over 120 square feet of floor space, or the equivalent of an extra 10 x 12-foot room.

#### Insulating Value High

The insulating value of the exterior walls is said to give about 60 per cent greater resistance to heat and cold than well-built frame houses and about 125 per cent greater than the common "jerry built" house. Other types of construction range between these values. In addition to the practically air-tight asbestos coating and the insulation, which is treated to resist fire, moisture, vermin and fungi, as well as decrease the transfer of heat, an asbestos-coated vapor seal behind the interior plywood surface protects the insulation against humidity. An extruded aluminum threshold and metallic weatherstripping also decrease drafts.

Heat is supplied from a winter air conditioning furnace located either in the basement or in the utility-storage room, which also contains the hot-water heater, laundry and storage facilities. Sheet metal ducts carry forced circulation of conditioned air throughout the house. Cold air returns are located under the floor slab.

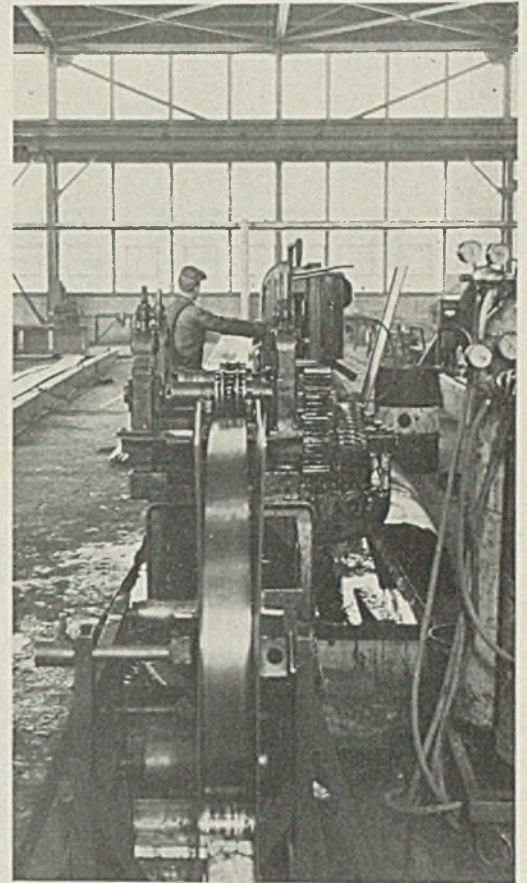
Practically all materials are de-

**A**S the vertical box columns are subject to side pressure, the open side has brace clips welded across the gap to hold shape

---

**B**ATTEN plates of 12-gage copper-bearing steel are rolled to shape from coils. The bolts are welded on later

---



tailed and prefabricated in standard lengths so that the house is assembled rather than built. The structural steel framework for the average 5-room house may be erected in 4 to 5 days and the entire house completed and decorated in approximately 4 weeks as there is very little time required for "drying out."

Structural steel parts are prefabricated from strip and coil copper-bearing steel on special rolling mills, or brake presses. Practically all standard forms such as coping,

studs, beams, spandrels and battens are rolled to shape. Only a relatively few special shapes are made on the brake presses, such as corner studs, fireplace and flue housings which are not required in large quantities. Practically all steel used in the framework except coping and battens is of box form for strength and lightness. As the vertical box columns or studs are subject to side pressure the open side has brace clips welded across the gap, to hold shape. Bolts are also welded to the battens.



# A. S. T. M. Reviews Standards and Specifications for Metals

**F**ATIGUE of metals, effect of temperature on metals, physical properties of steel and wrought iron, metallography, refractories, gaseous fuels, and plastics were among subjects considered at sessions of the fortieth annual meeting of the American Society for Testing Materials held at the Waldorf-Astoria, New York, June 28-July 2. Herewith are reported various sessions conducted early in the week; later sessions will be covered in the July 12 issue of STEEL. General aspects of the meeting are reviewed on page 28 of this issue.

Extensive discussions of creep tests featured the first section of a session on fatigue of metals and effect of temperature on metals. President-elect A. E. White, professor of metallurgical engineering and director, department of engineering research, University of Michigan, Ann Arbor, Mich., presided.

## Revisions Are Proposed

A progress report of the joint research committee on the effect of temperature on the properties of metals was presented by H. J. French, International Nickel Co. Inc., New York, and chairman of the committee. Included in this report was proposed revisions of the tentative method of test for short-time, high-temperature tension tests of metallic materials (E 21-34T). The revisions were accepted.

A report on long-time creep tests of 18 per cent chromium, 8 per cent nickel steel and 0.35 per cent carbon steel, prepared by Howard C. Cross and J. G. Lowther, Battelle Memorial institute, Columbus, O., where the tests were performed as a joint committee project, was presented by Mr. Lowther. The committee report also contained a paper,

"Discrepancies in the Load-Carrying Abilities of Carbon Steels at 850 Degrees Fahr.," prepared by H. W. Gillett, Battelle Memorial institute. This was reviewed by J. J. Kanter, Crane Co., Chicago.

An interesting comparison of working stress values was made in a paper, "A Comparison of the Methods Used for Interpreting Creep Test Data," by Joseph Marin, Rutgers university, New Brunswick, N. J. Another paper, "New Equipment for Creep Tests at Elevated Temperatures," by P. G. McVetty, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., described a creep testing machine which provides from 12 to 60 tests at different stresses in the same furnace. The furnace consists of a large cylindrical mass of alloy steel containing 12 vertical holes 30 degrees apart for the test specimen under stress, and a larger central hole for the pretreatment of specimens without stress. Two methods of creep measurement are provided.

In the final paper of the first portion of the program, John Boyd, Engineering Foundation, New York, discussed "Relaxation of Copper at Normal and Elevated Temperatures."

## Reports on Fatigue Work

H. H. Morgan, manager, rail and fastenings department, Robert W. Hunt Co., Chicago, and vice president elect of the society, presided at the second section of the session. Prof. H. F. Moore, University of Illinois, Urbana, Ill., submitted the report of the research committee on fatigue of metals. An appendix to this report discussed "Nomenclature of Various Ranges in Stress in Fatigue."

In a paper, "A Fatigue Machine

for Testing Metals at Elevated Temperatures," F. M. Howell and E. S. Howarth, Aluminum Co. of America, New Kensington, Pa., described in detail a fatigue machine for testing metals at elevated temperatures. The specimen used is part of a cantilever beam, one end of which is fixed in the electrically heated furnace, the deflected beam assembly extending outside the furnace and being revolved in a circle by a variable eccentric driven at 3600 revolutions per minute.

## Describes Testing Machine

Detailed description of a fatigue testing machine for testing materials at elevated temperatures was contained in a paper, "Fatigue Properties of Metals Used in Aircraft Construction at 3450 and 10,600 Cycles," prepared by T. T. Oberg and J. H. Johnson, Air Corps, Wright Field, Dayton, O., and presented by R. L. Templin, Aluminum Co. of America, New Kensington, Pa.

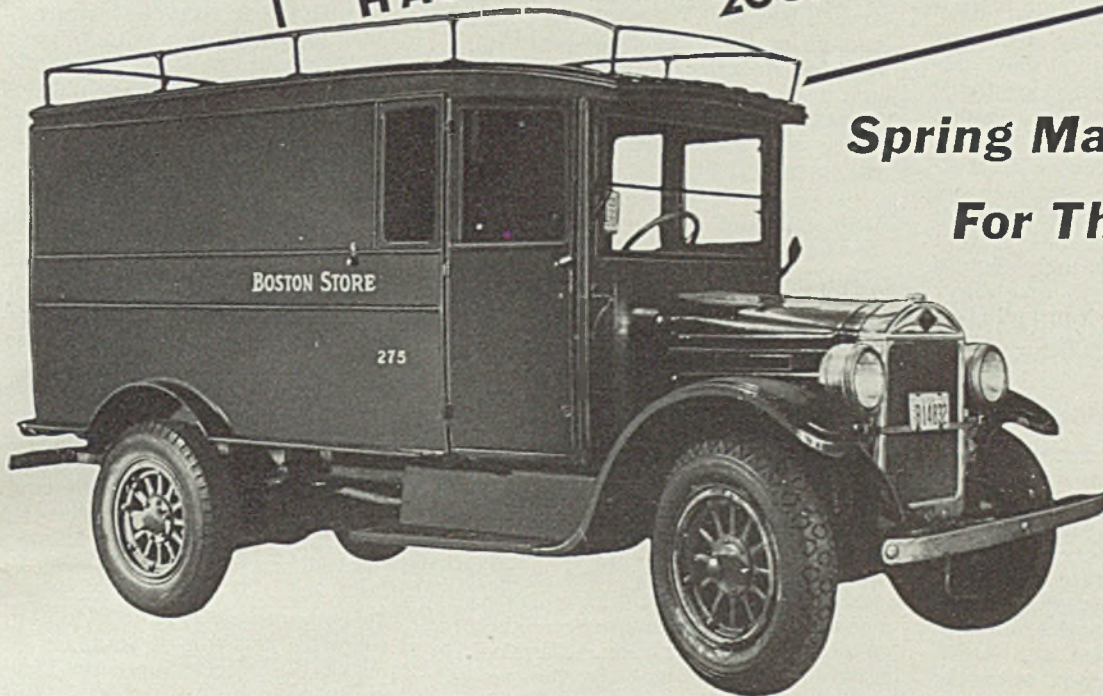
On several occasions during the session, exceedingly interesting comments on British practice and work were made by Dr. John H. Gough, superintendent, engineering department, National Physical Laboratories, Teddington, England.

One session was devoted to steel, wrought iron and metallography with N. L. Mochel, metallurgical engineer, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., serving as chairman. Report of committee A-2 on wrought iron was read by J. B. Young, engineer of tests, Reading Co., Reading, Pa., who stated that the society's standard specifications on uncoated wrought iron sheets and on zinc coated (galvanized) wrought iron sheets have been approved as standards by the American Standards association,



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THIS 11 YEAR OLD TRUCK  
HAS GONE MORE THAN  
200,000 MILES



**Spring Maintenance  
For Three Years**

**\$4<sup>95</sup>**

That's the whole story in a headline—except the fact that the springs are Chromium-Vanadium Steel, which accounts for the low maintenance cost.

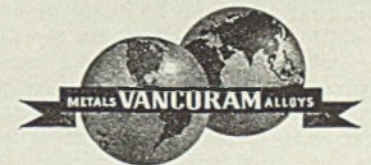
The truck is one of 123 operated by Boston Store, Chicago, Illinois. During 1936, Boston Store trucks covered a total distance of 1,048,516 miles, carried 2,376,439 packages and made 2,015,832 stops. But, spring maintenance was not a problem—for fifteen years all Boston Store trucks have been equipped with springs of Chromium-Vanadium Steel.

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# Vanadium Steels



FERRO ALLOYS  
of vanadium, silicon, chromium,  
and titanium, produced by the  
Vanadium Corporation of America,  
are used by steel makers in the  
production of high-quality steels.

**FOR STRENGTH • TOUGHNESS • DURABILITY**

and the standard on refined iron bars has been approved as a tentative standard by the same organization. Contained in the report also were numerous proposed revisions for both standard and tentative standard specifications for wrought iron.

Submitting the report of committee A-1 on steel, H. H. Morgan, Robert W. Hunt Co., Chicago, pointed out that the committee had been quite active during the past year. The committee recommended seven tentative standards for publication including those for seamless intermediate alloy steel still tubes for refinery service, seamless cold-drawn intermediate alloy steel heat exchanger and condenser tubes, carbon-silicon steel plates of ordinary tensile ranges for fusion welded boilers and other pressure vessels, chrome-manganese-silicon (CMS) alloy steel plates for boilers and other pressure vessels, low-carbon nickel steel plates for boilers and other pressure vessels, molybdenum steel plates for boilers and other pressure vessels, and iron and steel filler metal (arc welding electrodes and gas welding rods).

#### Changes in Specifications

This committee recommended change in status from tentative to standard of specifications for fabricated steel bar or rod mats for concrete reinforcement, welded steel wire fabric for concrete reinforcement, forged or rolled steel pipe flanges for general service, electric resistance welded steel and open-hearth iron boiler tubes, seamless low-carbon steel still tubes for refinery service, and seamless cold-drawn steel heat exchanger and condenser tubes. Withdrawal of specifications for steel suitable for fusion welding was recommended.

Final report of the research committee on yield point of structural steel was presented by M. O. Withey, professor of mechanics, University of Wisconsin, Madison, Wis., and recommended that speed requirement for determination of yield point be limited by rates of strain or stress, that the machines should be accurate within 1 per cent in the load range for the determination, that the drop of beam or halt in motion of the pointer on the dial are sufficiently accurate for determining yield point, locations for selection of specimens from different steel shapes, and further investigation on fundamental reasons for and magnitude of age effects on yield point.

Carl Kinsley, consulting engineer, New York, contributed a paper describing a nondestructive test for determining the uniformity of, or flaws in steel which involves electromagnetic measurements with a

dynamometer and subsidiary phase-shifting transformer. In discussion, one member stated that flaws often are not revealed in electromagnet testing and that precautions must be taken to be sure that they are not overlooked.

E. E. Thum, editor, *Metal Progress*, Cleveland, mentioned the use of magnetic testing for determining the proper heat treatment of razor blade strips, but stated that it is a comparative method using standard strips for comparison. Replying to this, Mr. Kinsley said that if hysteresis loops are examined carefully, the tests which he described are successful. First, however, enough of the steel must be examined to determine its characteristics, and then careful observation must be made of any changes in phase angle and amplitude of the wave employed.

"Weld Metal as an Engineering Material and Some Methods of Testing," was the title of a paper contributed by L. J. Larson, A. O. Smith Corp., Milwaukee. The author pointed out that due to the small section of weld metal available for testing it is necessary to modify the sections from those usually employed. He mentioned use of destructive tests in which the piece is broken and the fracture examined, and specific gravity determinations made for ascertaining solidity. Nondestructive determinations for the same purpose include stethoscopic examination which is not very sensitive, magnetic testing, and X-ray examination. Chemical examination, particularly the estimation of gases by vacuum fusion, is valuable in determining the differences in certain welds.

#### Test Specimens Studied

H. C. Mann, Watertown arsenal, Watertown, Mass., presented a paper dealing with a "Fundamental Study of the Design of Impact Test Specimens." Report of committee A-10 on iron-chromium, iron-chromium-nickel and related alloys was submitted by Jerome Strauss, Vanadium Corp. of America, Bridgeville, Pa., and report of committee E-4 on metallography by J. T. Norton, Massachusetts Institute of Technology, Cambridge, Mass.

Committee D-3 on gaseous fuels submitted its report at a session devoted to coal, coke and gaseous fuels. This committee, organized about two years ago, inaugurated its program during the past year and has disposed of many preliminary considerations. Membership of the committee now comprises a total personnel of 30, consisting of 11 producers, 10 consumers, and 9 representing general and scientific interests.

All detailed work has been assigned to seven subcommittees es-

tablished as follows: I on collection of gaseous samples; II on measurement of gaseous samples; III on determination of calorific value of gaseous fuels; IV on determination of specific gravity and density of gaseous fuels; V on determination of impurities of gaseous fuels; VI on determination of water vapor content of gaseous fuels; and VII on complete analysis or chemical composition of gaseous fuels. A. C. Fieldner, chief, technologic branch, bureau of mines, Washington, and retiring president of the society, is chairman of committee D-3.

In reporting its work for the year, committee C-8 on refractories recommended for publication as tentative a new "Methods of Test for Cold Crushing Strength and Modulus of Rupture of Refractory Brick and Shapes," "Methods of Chemical Analysis of Refractory Materials," and "Definitions of Terms Relating to Alumina-Diaspore Refractories."

#### Committee Recommends Action

Recommendation was made that the following tentative method and tentative definitions be referred to letter ballot for adoption as standard without revision: "Tentative Method of Panel Test for Resistance to Thermal and Structural Spalling of Super Duty Fireclay Brick (C 122-36 T)" and "Tentative Definitions of Terms Relating to Refractories (C 71-36 T)" to be added to the "Standard Definitions of Terms Relating to Refractories (C 71-36)."

The committee also asked adoption of tentative revision of standard as standard the "Definitions for Fireclay Refractories (C 27-35)" and recommended withdrawal of standard of "Methods of Ultimate Chemical Analysis of Refractory Materials (C 18-35)."

Properties of the different classes of plastics and particular applications were discussed by Dr. T. Smith Taylor, professor of physics, Washington and Jefferson college, Washington, Pa., is presenting the twelfth Edgar Marburg lecture. The speaker covered the advantage of certain materials for specific applications for both the thermoplastic and thermal setting materials.

He summarized test methods now available and used for certain materials and indicated that it probably will be necessary to develop specific methods of test for each class of materials to show their special properties. Attention was directed to development of test methods which now are in use and to ways and means by which tests can be developed to apply to materials for which present tests are not suitable. Dr. Taylor gave some consideration to the usefulness of test procedures from the standpoint of the producer and consumer including the significance of the tests to each.

# Stylish...

## in STEEL PLANTS

... more and more steel men are talking the performance of the KEMP ATMOS-GAS PRODUCER.

This Graph shows better than words what is happening. The KEMP ATMOS-GAS PRODUCER started at scratch at the close of 1935. By the end of '36 the cumulative capacity passed 40,000 cubic feet per hour. By the middle of June (when this is written) equipment in service and building passed the 136,000 mark.

The industry has been quick to take up this efficient adjunct to bright annealing because it combines flexibility, adaptability, dependability and economy.

It is available in a wide range of types and sizes with capacities from 1,500 to 15,000 cubic feet per hour, with various combinations of drying equipment. All units feature automatic visual rate of flow indication of fuel gas and air and on the larger units Atmos-Gas flow as well.

We believe you will want to know more about it, so we have prepared a special bulletin, No. 101.6. Shall we send it? Address The C. M. Kemp Mfg. Co., 405 East Oliver St., Baltimore, Md. or Oliver Building, Pittsburgh, Penna.

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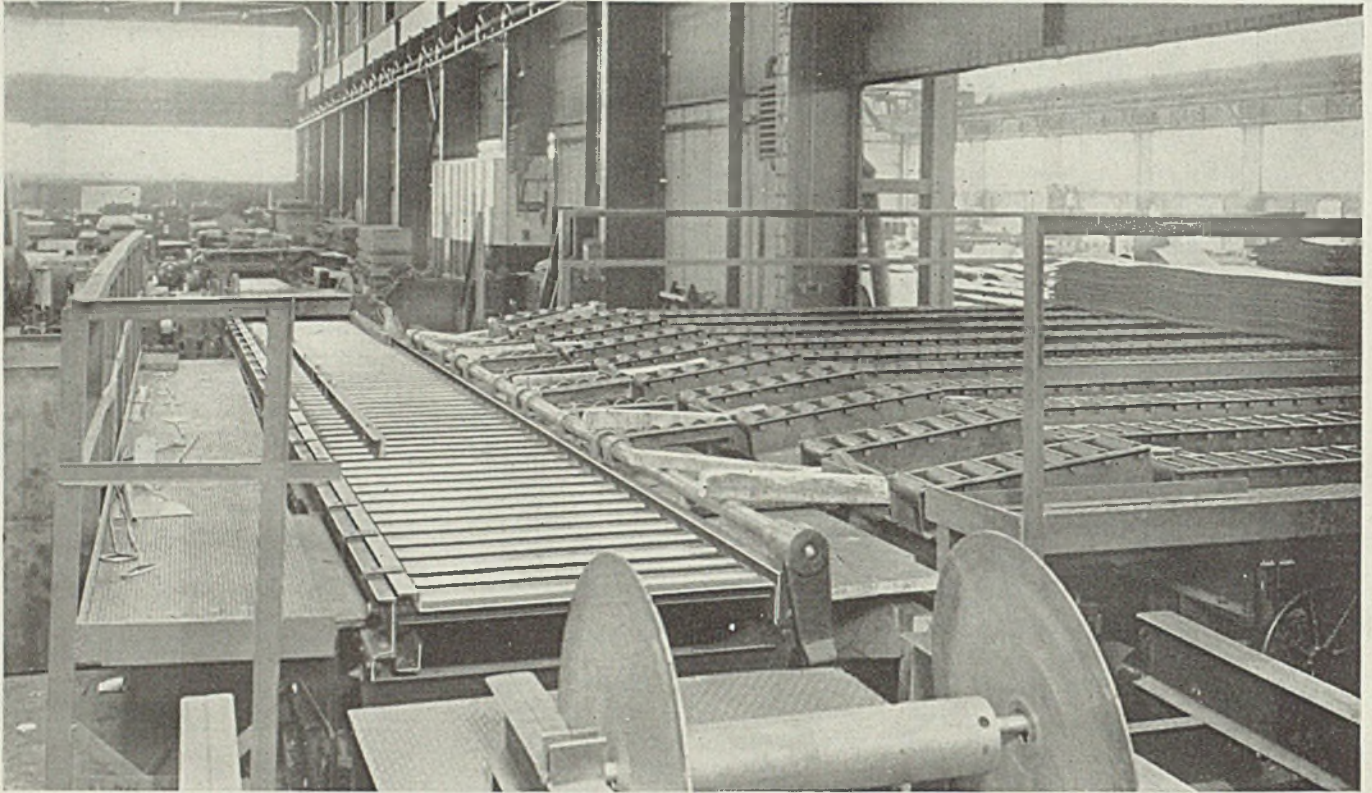
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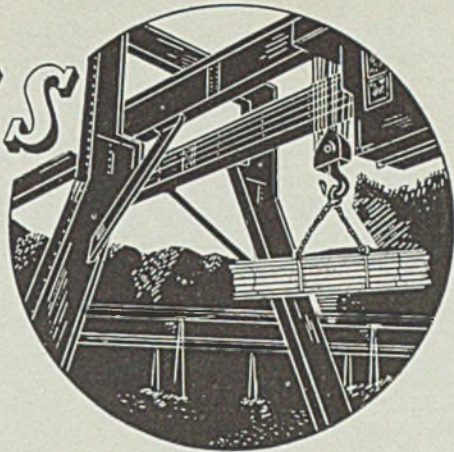


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# MATERIALS HANDLING



## Portable Conveyors Prove Economical For Handling Coal at Captive Mines

SO MUCH has been written about modern materials handling systems for moving parts and finished products within manufacturing establishments that it is easy to overlook the fact that back of nearly all industries is a line of raw materials and supplies, without which plants could not long operate. One such item is coal. In steel and related manufacturing activities particularly, the importance of this commodity is paramount. It is natural, therefore, that bulk coal handling equipment and methods should be developed to a high degree of perfection.

Most steel men have at least a working acquaintance with overhead bridges, cranes, clamshell buckets, motor-driven continuous belts, locomotive cranes and familiar units long utilized for handling coal and other bulk items around plant yards. Less familiar, perhaps, are some recent developments in facilities at captive mines which sup-

ply steel mills with a large share of their coal requirements. These improvements not only assure adequate coal supplies but at the same time promote a more constant rate of operation throughout the year.

### Provides Flexible Set-up

In one installation completed during the past year, a grouping of portable belt conveyors makes above-ground storage efficient and economical and illustrates that often a solution to a difficult problem need not entail great cost.

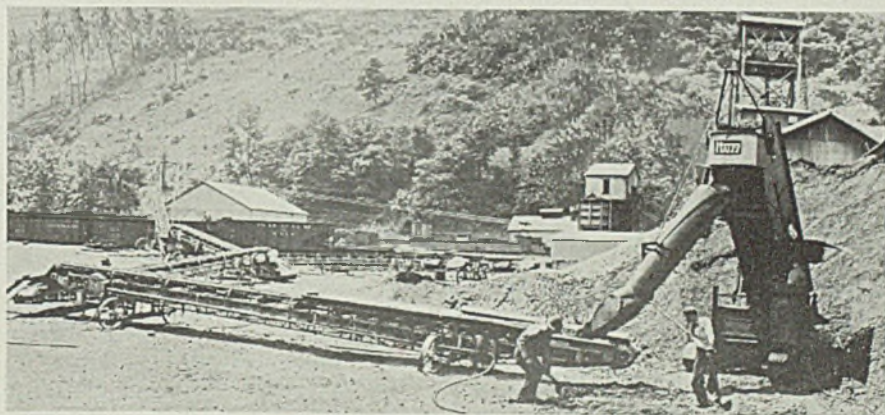
In this particular instance, the

storage space is a meadow just across the loading tracks from the tipp'e. A high platform has been built over the tracks, as shown in Fig. 1, and coal is placed in storage by a string of portable machines on the platform and carried over the top of the storage pile as the latter is built.

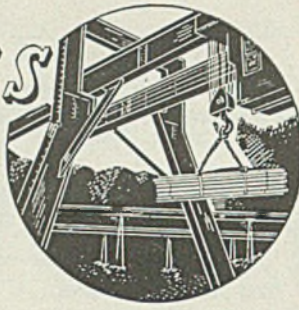
Averaging 55 feet high, a single pile containing 116,000 tons of coal was built last winter for summer reclamation. The coal is reloaded into cars by a mechanical loader and the same group of conveyors which is used for storage, as shown in Fig. 2. In all, there are seven 45-foot four-wheel transfer conveyors and two 60-foot two-wheel stackers, the loader being equipped with a long extended swivel chute.

Electric power is used to operate the equipment, the feed lines being carried in conduits attached to the

FIG. 1 (below)—Coal at captive mine is placed in storage by a string of portable conveyors which are mounted on high platform shown in background. Fig. 2 (right)—Coal being reloaded by mechanical loader and same group of portable conveyors used for storage



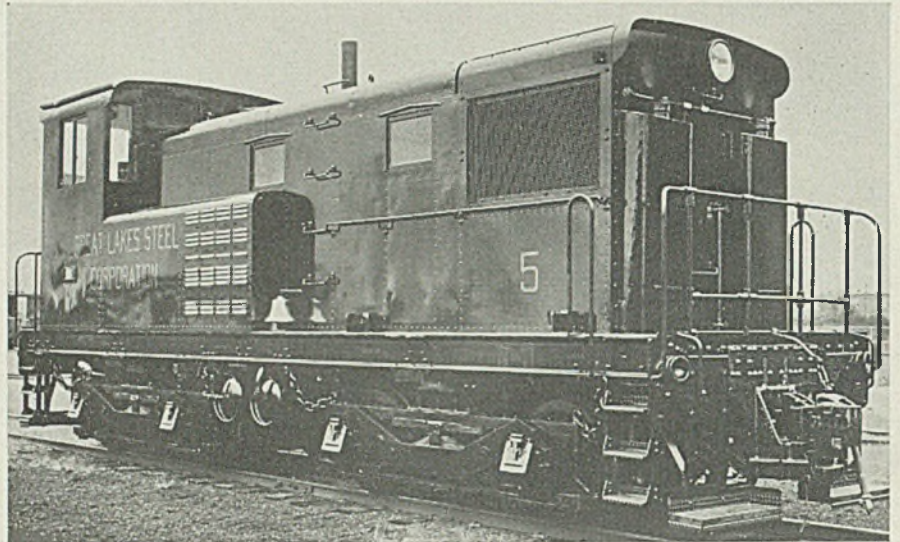
# MATERIALS HANDLING



important both to steel companies and to mine employes. Mine operation throughout the year and at as constant a rate as possible is a condition for which all operators are striving. A constant mining force, continuous use of equipment, minimum labor turnover, constant power demand, and regularity of employment also are sought.

Among the results claimed for

GREAT LAKES STEEL CORP., Ecorse, Mich., recently purchased from Westinghouse Electric Co., East Pittsburgh, Pa., three diesel-electric locomotives to handle its yard switching service. These locomotives, one of which is shown in the accompanying illustration, will perform interplant transportation, including the receipt of cars of raw materials and transfer of cars to common carriers. The units are designed for simplicity of operation and maintenance; each weighs 160,000 pounds and has a tractive force of 48,000 pounds



frame of each conveyor and by rubber-covered flexible connectors between units.

Coal is carried horizontally from the tipple into its position on the storage pile, the latter being built out from the tipple. During the re-loading operation, the coal is picked up by the loader at a point nearest the car being loaded and conveyed along the ground and into the car by a stacking conveyor. A 60-foot conveyor is good for approximately a 20-foot lift and a 90-foot conveyor for approximately 30 feet.

## Wide Belts Are Used

For an average duty of 200 tons of coal per hour, the equipment manufacturer's recommendation was 30-inch trough belts running at 300 feet per minute, without side boards and without cleats. That

quantity of coal, it is said, can be carried by a 24-inch wide belt with side boards at 350 feet per minute. The 24-inch belt will be less expensive and lighter, but the belting will be subject to greater wear and deterioration. In this instance, the wider belts are proving economical. Motors are mounted in the frames, out of the way. The foot ends of the conveyors are provided with low receiving and training hoppers.

Advantages derived from this method of storage at the mine are

this installation are: Low first cost; low operating cost; constant maximum speed of handling; flexibility of the system; absolute clean-up in re-loading; equipment under cover when not in use; minimum amount of permanent construction; and ease of extension should a need arise.

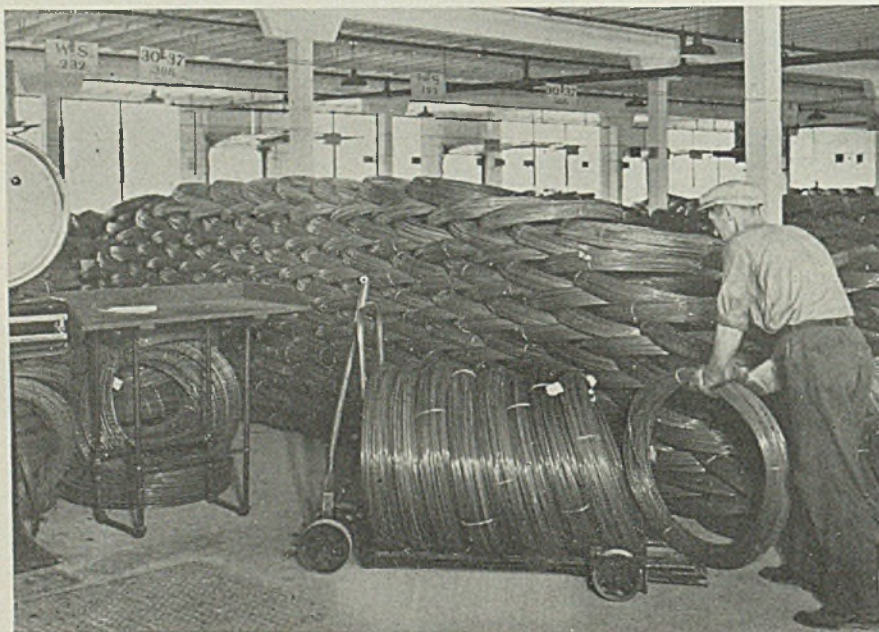
♦ ♦ ♦

## Size of Handling Units Has Effect on Economics

ECONOMIES in handling materials through the plant depend to a large extent upon the size of the container or unit handled. Observation in many plants indicates a somewhat common tendency to make these units too large rather than too small.

A tote box, for example, which requires two men to lift is not as economical as providing two boxes of smaller size which the operator can handle alone. If large quantities are produced, as on long continuous runs, which would require an ex-

*(Please turn to Page 85)*



COILS of wire in lots weighing up to 1600 pounds are being handled in a large Middle Western wire plant storage department by means of special coil trucks and lift jacks, as shown here. A truck load is pulled to a nearby industrial scale, platform of which is flush with warehouse floor, and thence to shipping platform. Low clearance permits easy rolling of coils onto the truck



BUILT BY **MORGAN**  
*Engineering* » »

*Two Morgan Cranes* IN A HOT STRIP MILL

● Two 60-ton, 79'8" span Morgan cranes serving a hot strip mill are shown here, youngsters in service now but because of traditional Morgan stamina of design and construction, sure to render many years of profitable service. Pioneer builder of heavy duty steel mill cranes, Morgan engineers are alert to accept the newest, proved advances in crane construction,

many of which originate with Morgan. Steel mill capital investment, such as the purchase of cranes represents, is based upon known factors of safety and efficiency—and the Morgan reputation for unswerving integrity. These requirements Morgan Engineering has always met and always will meet, with 55 years of experience as a background.



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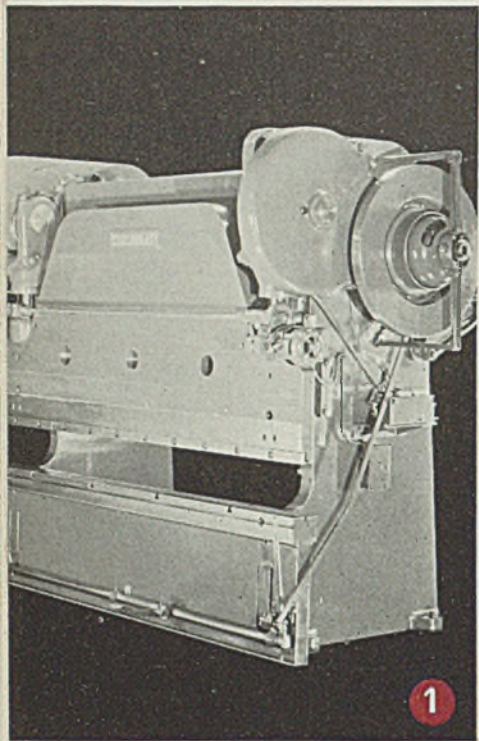
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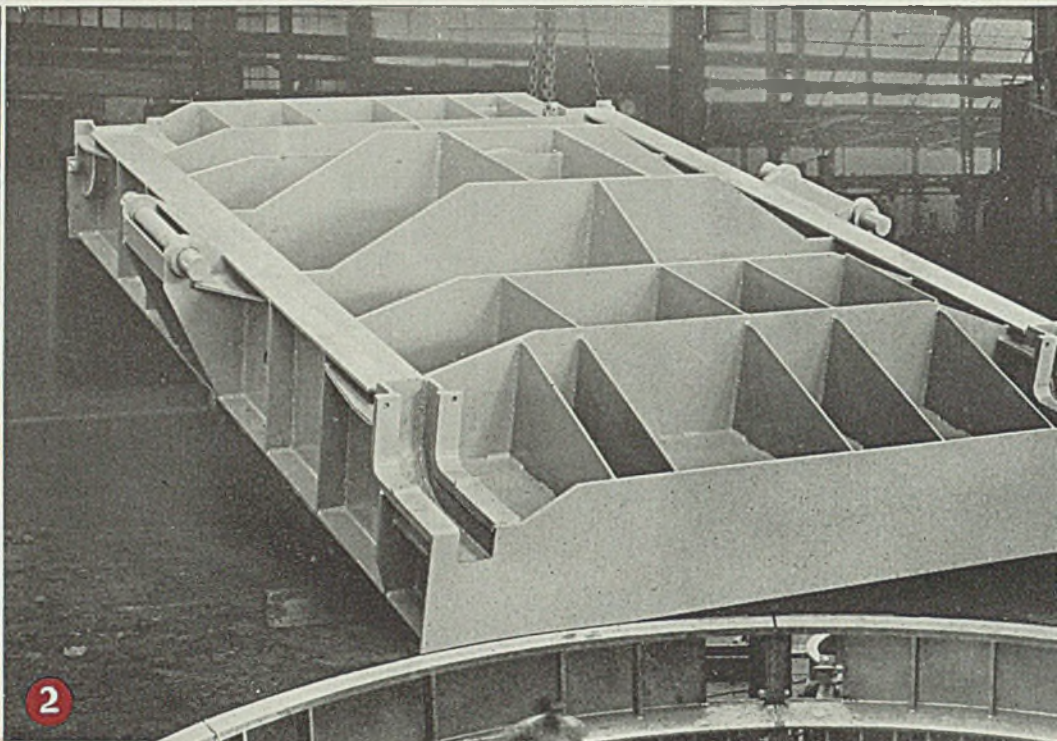


# PICK *Special* STEELS



1

(1) **COMPACT — MODERN.** This brake press illustrates the smooth, simple lines obtainable by rolled steel construction. Elimination of all non-essentials secures strength without bulk — reduces weight — conserves floor space — minimizes shipping costs.



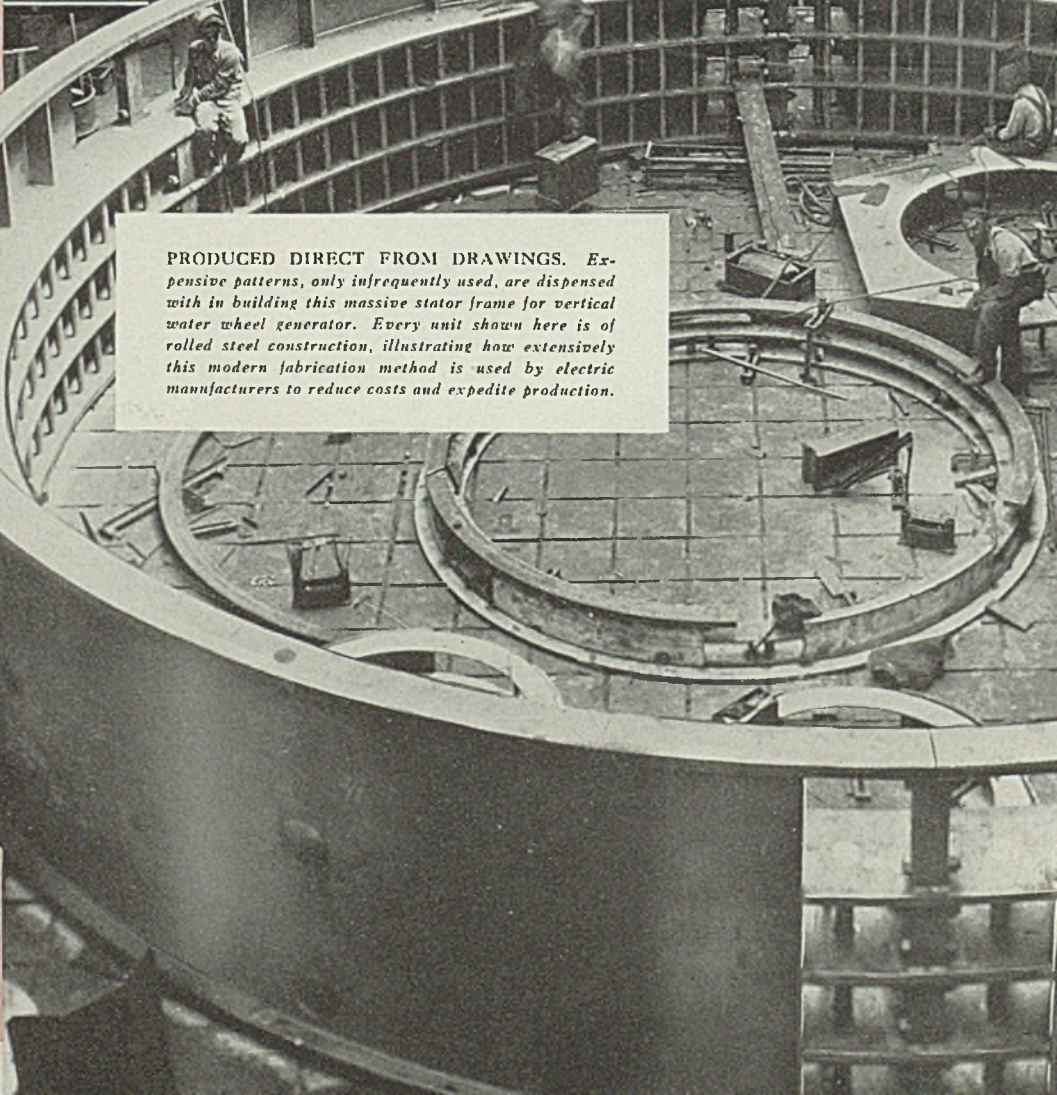
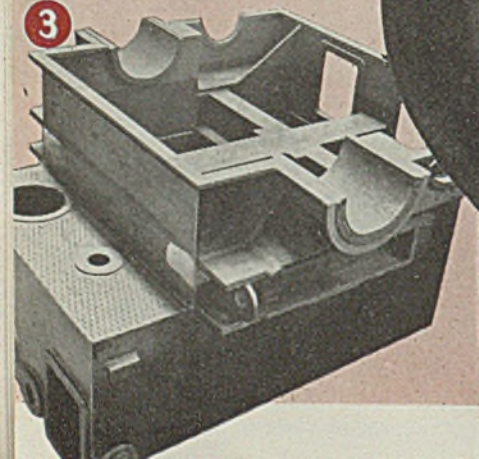
2

(2) **STRONG SAFE — LIGHT.** This all-welded one-piece trolley of USS MAN-TEN for the world's largest (200 ton) welded crane gives this important unit maximum safety with all excess weight eliminated. This crane and trolley of rolled steel construction will handle the same loads, faster, with smaller motors, and have an added factor of safety in that rolled steel has a consistency that is known, uniform and reliable. Decreased weight makes it possible to reduce weight of columns and outtings — an important item in building.

PRODUCED DIRECT FROM DRAWINGS. Expensive patterns, only infrequently used, are dispensed with in building this massive stator frame for vertical water wheel generator. Every unit shown here is of rolled steel construction, illustrating how extensively this modern fabrication method is used by electric manufacturers to reduce costs and expedite production.

(3) **STANDARD SHAPES SAVE MONEY HERE.** In this gear reduction case I-beams, plates, pipe, tubing, pipe fittings and floor plate are effectively combined at low cost by welding, to produce a complicated single structure.

3





# FOR *Special* JOBS

*Another advantage made possible by Rolled Steel Design*

**E**SSENTIALLY, rolled steel design is very simple.

It is merely the modern method of lightening heavy metal structures — machine frames, beds, bases, supports, housings, wheels, drums, cases, etc. — by building them up from individual parts, flame-cut from simple rolled steel shapes and then welded into one strong homogeneous unit.

In many cases, rolled steel design will eliminate the need for castings. In other cases, rolled steel combined with castings at strategic locations will be the best solution.

Ten important advantages of rolled steel design are listed in the panel below. Most important of all these

is the fact that rolled steel design enables you to *pick special steels for special jobs*. It opens the door to the entire range of modern metallurgy's special analysis steels. It provides you with special properties where you need them to overcome nature's many destructive forces. For example:

To carry tremendous bearing pressures safely, there are several special analyses of USS Carilloy Alloy Steels.

To provide high impact strength at low temperatures, there is USS Steel for Low Temperature Service.

To reduce abrasive wear and cut down replacements, there is USS Abrasion-Resisting Steel.

To endure temperatures disastrous to other metals, there is USS Heat-Resisting Steel (25-12).

To carry high unit stresses and reduce weight to a minimum, there are USS High Tensile Steels.

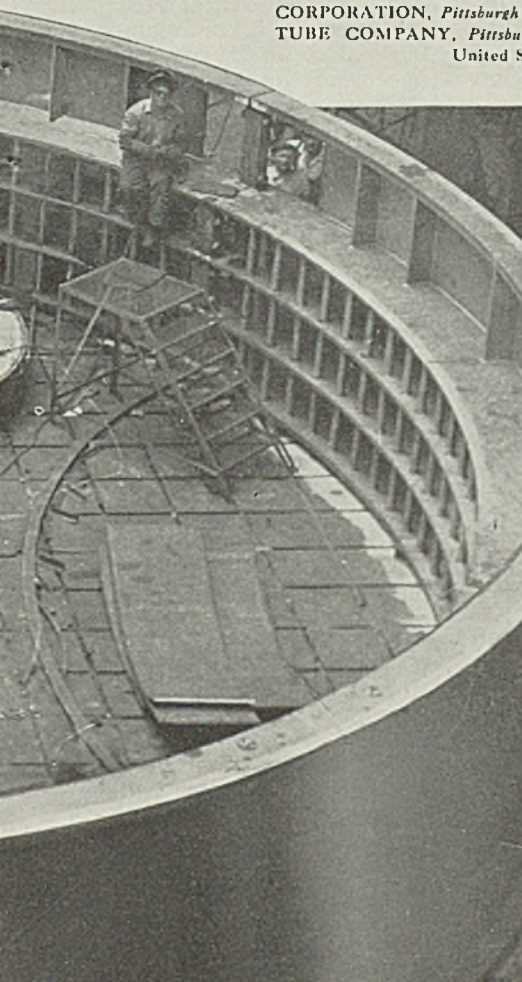
To resist corrosive environments, there are USS Stainless Steels in special analyses which can be welded with no loss in corrosion-resistance.

For virtually every special need, there are special rolled steels with special properties to make your equipment longer-lasting, safer and lighter.

Write us freely about any problem which you feel rolled steel design — or these special steels — might help you solve.

Our metallurgists have had wide experience in many fields. They will gladly work side by side with your own engineers . . . submit sound technical recommendations . . . solve these problems to your advantage.

AMERICAN STEEL & WIRE COMPANY, *Cleveland, Chicago and New York* · CARNEGIE-ILLINOIS STEEL CORPORATION, *Pittsburgh and Chicago* · COLUMBIA STEEL COMPANY, *San Francisco* · NATIONAL TUBE COMPANY, *Pittsburgh* · TENNESSEE COAL, IRON & RAILROAD COMPANY, *Birmingham*  
United States Steel Products Company, *New York, Export Distributors*



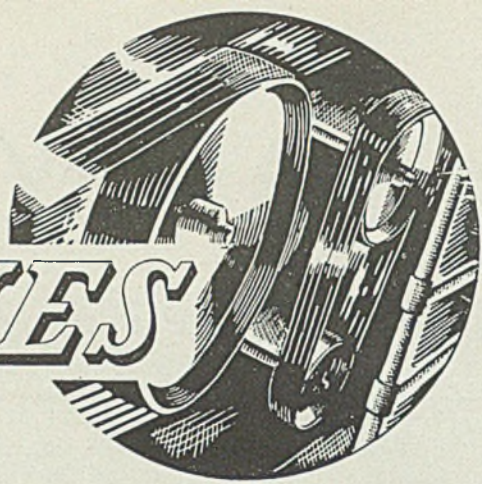
## TEN IMPORTANT ADVANTAGES OF ROLLED STEEL DESIGN

1. Rolled steel is highly uniform; it reduces the danger of blow holes, segregation, bad grain structure and internal stresses.
2. Rolled steel's physical properties are readily determined; once determined, they are constant and uniform throughout the metal.
3. Rolled steel is free from brittleness, possesses wide fatigue limits, is highly resistant to deformation.
4. Rolled steel design eliminates the costly pattern problem, the shrinkage problem, and the necessity of adapting designs for pattern draw and metal flow.
5. Rolled steel design trims off all excess weight, all metal not actually needed to carry stresses or provide rigidity. It often reduces dead weight by half and more.
6. Rolled steel design looks modern and is modern, eliminates useless ornamentation, employs straight lines and plane surfaces. It increases eye appeal and saleability.
7. Rolled steel permits machine design to be mobile and liquid; makes possible the quick incorporation of style changes, model changes and new improvements, without costly pattern write-offs.
8. Rolled Steel is available in many simple shapes — slabs, billets, plates, bars, pipe, tubing, forgings, structural sections, etc. — which simplify the cost and difficulties of fabrication.
9. In general, rolled steel design (economically combined with castings at strategic points) is the cheapest, strongest, safest, most eye-appealing method of machine construction.
10. IN ADDITION, and this is perhaps its most important advantage, it enables you to pick special steels for special purposes . . . to make full use of modern metallurgy's wide range of special-analysis steels.



# UNITED STATES STEEL

# POWER DRIVES



## Fitting Drive to Machine

### Cuts Cost on Quantity Production

**Q**UANTITY production of items for mail order houses, 5 and 10 cent stores, variety stores and other retailers, necessitates careful attention to every detail of layout and operation. Variations in small decimals of a cent in unit costs mount up when large quantities are produced. Therefore, as well-planned drives determine to a large extent the output of machines, it is essential that careful consideration be given to the selection and operations of the drives to obtain maximum production from the tooling and equipment.

Such is the problem in connection with the manufacture of tinplate kitchenware, bakers' pans, kitchen tools such as strainers, eggbeaters, stirring spoons, and can openers, and kitchen cutlery as manufactured by Edward Katzinger Co., Chicago, one of the largest producers of such articles. The tremendous quantity of such articles produced and used is not appreciated by those not contacting such industries. For example, last year this one company manufactured six strainers of various types for each family in the United States. Production of can openers runs into tons per year. Some articles are produced in such large quantities as to require continuous production of a small group of workers throughout the entire year. Other items are in continuous production with slight variations in style and type.

For economical production many special machines and dies have been designed to perform operations in as few steps and as nearly automatically as possible. With this concentrated production the drive becomes

of vital importance because even the best machine and tool will fall down in output if not properly driven. In this installation practically all machine tools are individually driven as each machine is considered and operated as a single unit. In this way the failure of any drive does not interfere with the operation of other machines except when two machines operate together. Also, any machine may be operated overtime, if necessary.

Freedom from interference with light and the absence of dust circulation are also considered of great importance by the management. These conditions are improved by the absence of overhead construction and contribute toward cleanliness and improved working conditions. These factors have a beneficial effect on satisfied employes and both quantity and quality of output.

#### Presses Made Safe

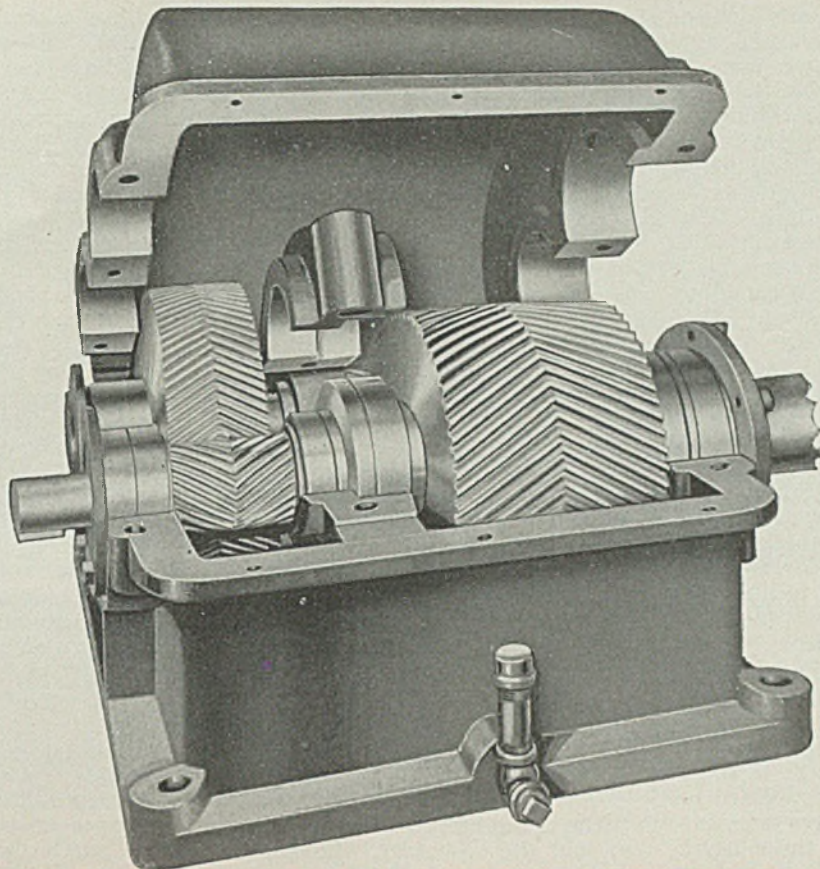
A large proportion of the work in this plant is performed on punch presses. Safety is considered of such paramount importance that each press is provided with every possible safeguard to protect the workers. Individual motor drives are provided on all presses which permits close interlocking of safety devices with operation. The accident rate is extremely low for such hazards with practically no major accidents and only minor cuts on sharp edges.

To provide a compact motor drive, which can be easily attached to the smaller individual presses and not occupy too much space, a special motor base, built with a speed reducer attached, is used. This base has

either a bracket for attaching to the press or a hinged plate with a turn-buckle brace to adjust tension. One of these drives, similar to those used in this plant, is shown in an accompanying illustration. Speed reducer, which is direct-connected to the motor, gives the proper reduction in speed to permit installing with an 1800-revolution per minute motor. The flywheel on the press is V-belt or flat belt connected on short centers to the sheave on the output shaft of the speed reducer. The flywheels are not grooved but are driven from the flat edge of the V-belt.

Many of these smaller presses are on continuous production and the compact drive permits setting them at the best operating speed for the work. Changes in this speed may be made by using a sheave of a difference diameter. Large presses, which are used in most cases on a variety of work, are provided with variable-speed units. This permits adjusting the speed to the complexity of the work or gage of metal. In most cases, and on all new installations, these variable speed transmissions are of the type, with the motor built in a case as a part of the variable-speed unit. These variable-speed drives are compact, easily connected up and entirely protected. Adequate lubrication is provided for all working parts and the anti-friction bearings. Variable-speed motors and change-gear reduction units with built-in motors are also used.

Tumblers for polishing and cleaning small parts before plating, such as stirring spoons, shoe trees, parts of can openers and many other



# LINK-BELT

## HERRINGBONE GEAR REDUCER

● Precision built and engineered — dependable, silent, durable — the Link-Belt Herringbone Gear Reducer is a worthy member of the Link-Belt positive drive group, which includes also reducers of the Worm and Motorized Helical Gear types, Silent and Roller Chain Drives, and Variable Speed Transmissions.

It is fully enclosed, compact, self-con-

tained — built in a variety of sizes in single, double and triple reductions, in a large range of ratios and horse powers. Ability to withstand shock loads and conservation of space are outstanding qualities of this unit.

Link-Belt Company, Philadelphia, Chicago, Indianapolis, Atlanta, San Francisco and Toronto. Offices in principal cities.

*Send for these Books*



Herringbone Gear Reducer Book No. 1519.



Motorized Helical Gear Reducer Book No. 1515.



Worm Gear Reducer Book No. 1524.

items, are also individually driven. In most cases the motors are mounted on the floor or at the base of the tumbler pedestal. The low operating speed is obtained through a special bevel gear arrangement direct connected. All tumbler drives are enclosed in wire mesh guards for safety. Even though large quantities of work go through this department the tumblers are relatively small to reduce the mass of tumbling parts and prevent bending. This necessitates a relatively large number of tumblers and individual drives. In this department, which is closed off from the remainder of the plant, light and freedom from circulating dust, as well as the independence of the tumbling units, are considered of greater importance than economy of installation of group driving. Also, floor space is less obstructed than if a lineshaft were set along the floor to drive the tumblers in a group.

Practically all other machines, even to small riveting units and similar light equipment, are individually driven, in the majority of cases by V-belt unless operating at a speed which permits a direct-connected or built-in motor. To leave a maximum of free floor space these drives are attached to the machines wherever possible, instead of mounting on the floor. The machines in the toolroom are entirely individually driven. Majority of these machines have the motor built in by the manufacturer. Others have been adapted

to individual drive by the shop. As the machine tools in this department operate irregularly and are idle during the setup time, individual drive is preferred.

#### Has Special Drives

Plant has, in addition, numerous special drives to meet unusual operating conditions. One such drive of interest is in connection with a tie-up of two presses to synchronize their operation. One press performs a blanking operation. The part is carried through to the next press, set in line, on a synchronized conveyor. As these blanked parts pass forward from the first, press helpers insert other parts in openings in the blank. The conveyor carries these forward to the second press which crimps the parts together. To synchronize operation both presses are belted to a lineshaft, which also drives another pair of presses similarly tied together. Cut sheets are fed to the first press automatically. As the press trips it also trips the crimping press. As the dies open, the conveyor moves the parts forward and feeds in a new sheet for the next cycle.

The crimping press is safeguarded so that the off-bearer, who also inspects, wraps and packs, cannot get his hands in the press. The conveyor feeds and positions the parts in the second press so that they do not need to be touched. Any of the four persons working on the press can stop everything instantly by

pulling a cord which releases the clutches and operates an air brake on the press. Also, if anything should get under the die, a shearing pin breaks and sets the air brakes. Thus the operators and press are carefully protected without interfering with a duplicate pair of presses on the same lineshaft. Many other ingenious connections of drives to perform special operations have also been developed by the engineers.

♦ ♦ ♦

By paying a little more for a high-grade wire rope, spliced endless at the factory for a rope drive, one plant obtained double the life received from any former drive. In addition to the extra life the cost of one installation expense was saved. No doubt good care and frequent lubrication helped prolong the life of this drive. However, first cost is a poor place to attempt to economize on any drive.

♦ ♦ ♦

The main distribution system should be of the highest voltage suitable for existing plant needs and probable growth. When planning plant extensions check possible advantages of increasing voltage before purchasing new power equipment or installing distribution lines.

♦ ♦ ♦

An ample number of outlets for attaching portable equipment are not only a convenience but they eliminate the nuisance of long extension cords which create a tripping hazard as well as increase the possibility of their being damaged.

♦ ♦ ♦

At one time transmission maintenance required much overtime work. With systematic inspection and servicing for emergency repairs or replacements should be held at a minimum.

♦ ♦ ♦

Where the existence of the maintenance department can be forgotten, in so far as daily operation is concerned, the department is well organized and profitable to the management.

♦ ♦ ♦

An economical power drive requires a careful balance of annual fixed charges which are based on first cost, and the cost of power, maintenance and servicing.

♦ ♦ ♦

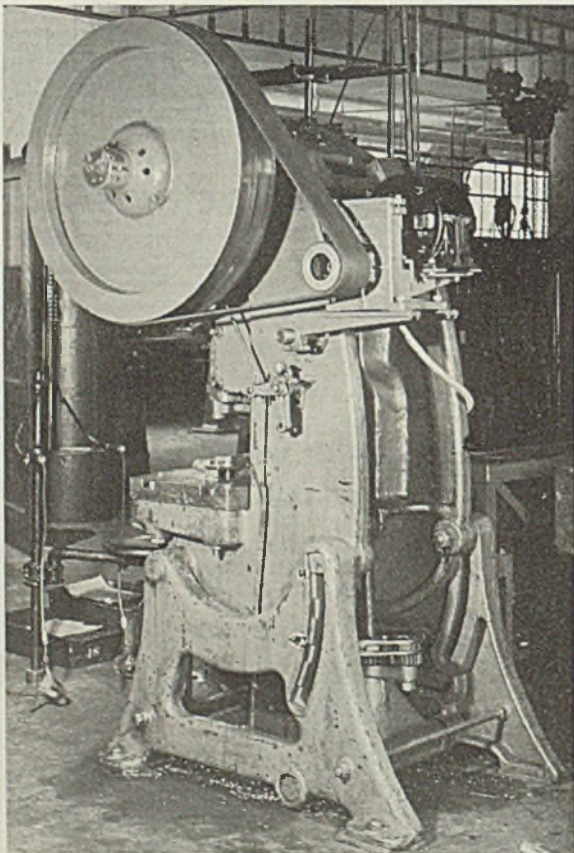
Where the men in the maintenance force take pride in freedom from emergency work resulting from failure of drives the record is usually good.

♦ ♦ ♦

Repairs or servicing made in haste often provide an early opportunity to do them over.

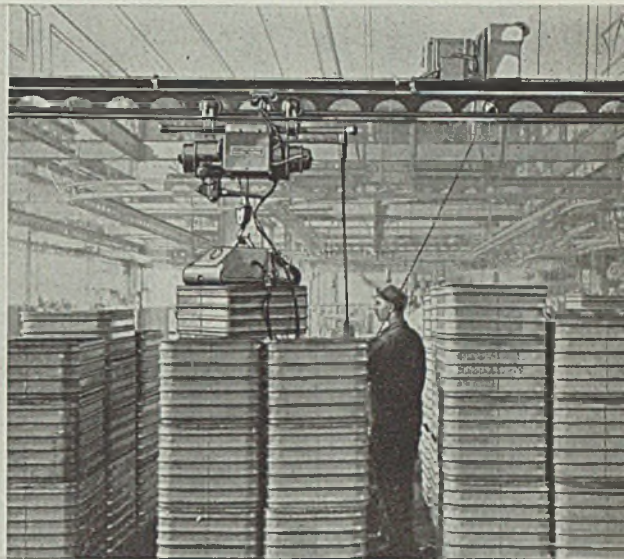
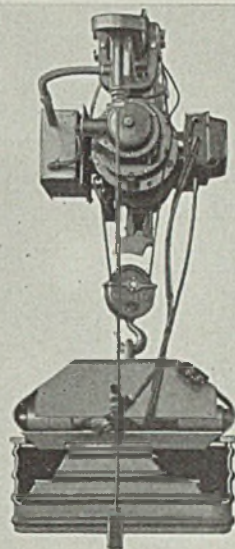
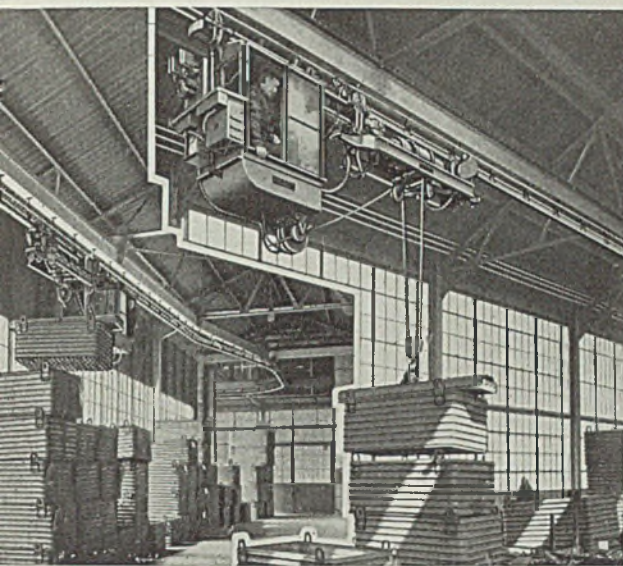
♦ ♦ ♦

Lubricate often and duplicate less often.



**S**PECIAL motor mounting with speed reducer of the type used in the Edward Katzinger plant. Photo courtesy Cullman Wheel Co., Chicago

# CLEVELAND TRAMRAIL MATERIALS HANDLING EQUIPMENT



Consult your 'phone directory under Cleveland Tramrail

Overhead Materials Handling via Cleveland Tramrail  
Combines  
SPEED with SAFETY

in Handling Materials or Product in Tote Boxes to and from  
the Production line, also for Storing, Weighing and Shipping.

● Cleveland Tramrail is overhead, it uses the ceiling, it takes  
Floor Repairs Out of Maintenance.

# CLEVELAND ALL WELDED CRANES FOR EVERY INDUSTRY

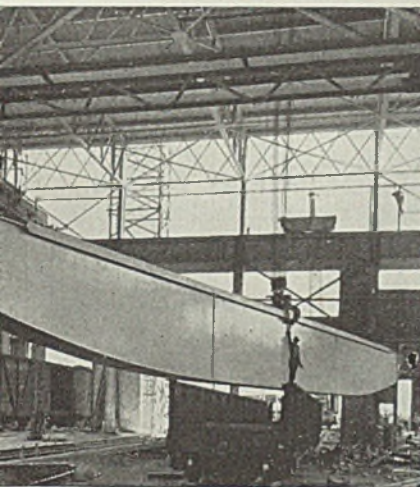


Photo 2101  
Placing one of the 37 ton Girders.

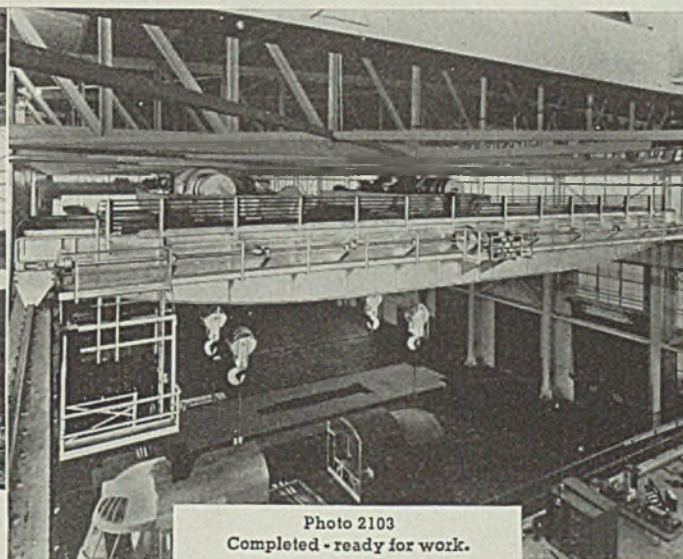


Photo 2103  
Completed - ready for work.

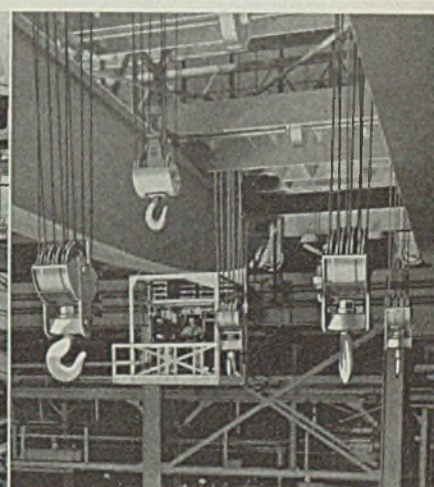


Photo 2149  
Looking up at the hooks.

● A 200 ton Cleveland Crane "All Welded."  
Span 100 feet — Total Weight 390,000 pounds:  
two 100 ton trolleys with double hooks.



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# THE CLEVELAND CRANE & ENGINEERING CO.

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WICKLIFFE OHIO

# Applications of Unit Heaters

BY FRED MERISH

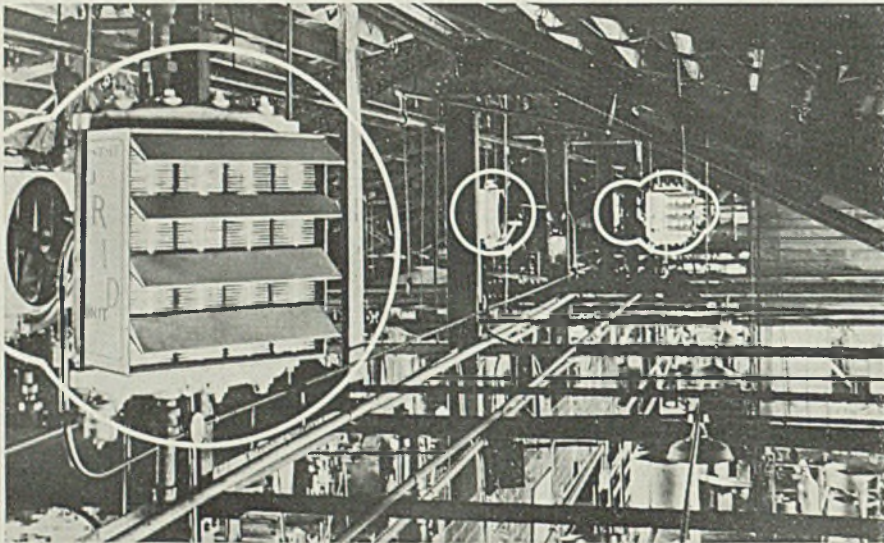
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**S**EE-SAW control gives the unit heater advantage over the conventional heating system. With unit heating, when temperature outside goes up, the heat inside goes down, and vice versa. The heating systems found in most plants are de-

signed to bring inside temperature to 65 degrees Fahr. when it is zero outside. We are now speaking about the efficient heating systems of the conventional type, of which there are less than 5 per cent in operation. Where plant conditions are ideal,

where buildings are small and ceilings are low the conventional system, if properly installed, and highly efficient, may maintain 65 degrees Fahr., when it is zero outside. But even under these conditions, such a system may burn up profits. The records show that the average winter temperature in 89 large American cities is only 41 degrees Fahr. Obviously, the maximum heating capacity of a system is not required during the greater part of the heating season. The ordinary heating system is therefore being operated at maximum capacity during many

*Photo courtesy Unit Heater & Cooler Co.*



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**P**RESENTED here is the second and concluding installment describing applications of unit heaters in metalworking plants, prepared at the request of the editors of STEEL by Mr. Merish. First installment of the current article appeared in the issue of June 28

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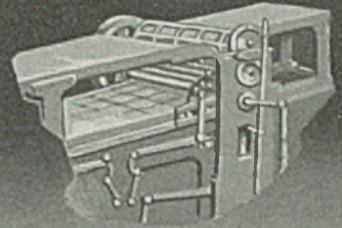
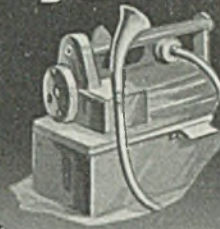
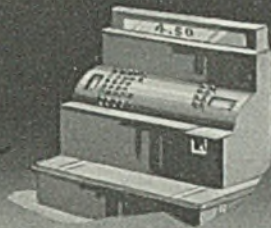


**T**OP view is an example of near-ceiling mounting used in a metalworking shop where ceiling is low enough to permit heating entire space. Bottom shows a foundry installation designed primarily to eliminate cold spots

*Photo courtesy Herman Nelson Corp.*

# STEEL

# *Goes to Business*



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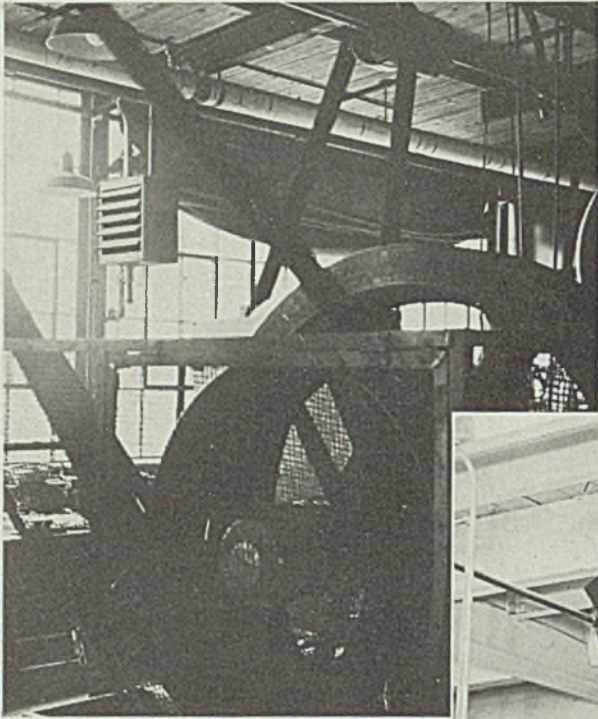
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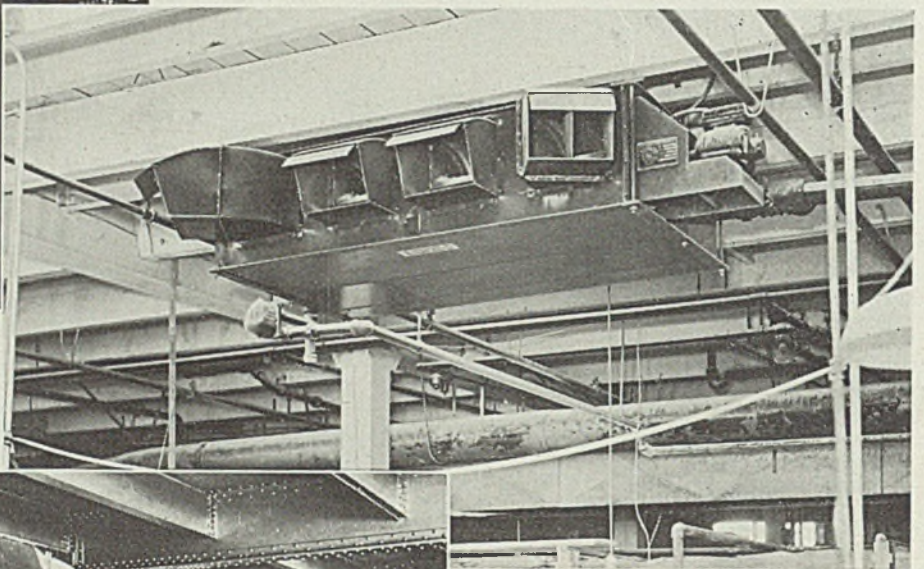
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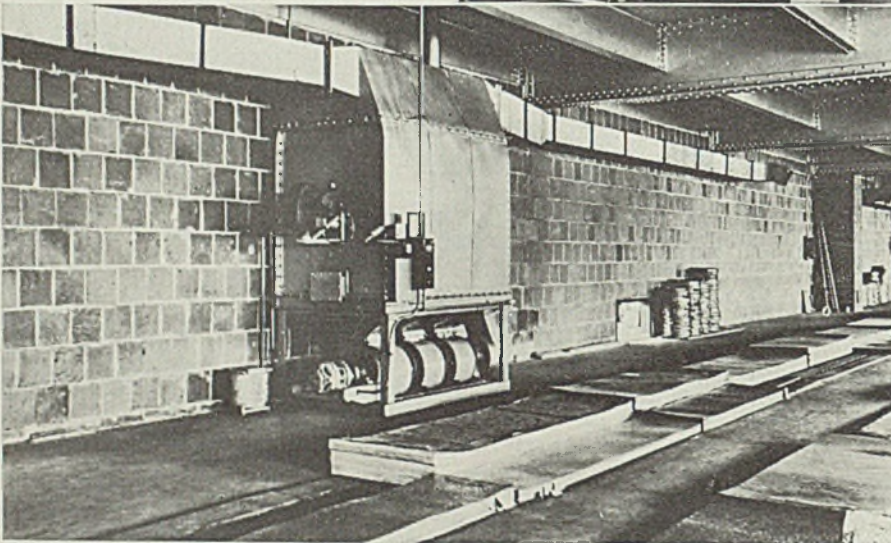
*Photo courtesy Fedders Mfg. Co.*

**I**NSTALLATION pictured at left is in a tool and die plant, where drafts from the windows had seriously impaired workmen's efficiency. Below is pictured a large horizontal-type unit with directional vents, installed in a furnace room where heating is notoriously "spotty" in cold weather

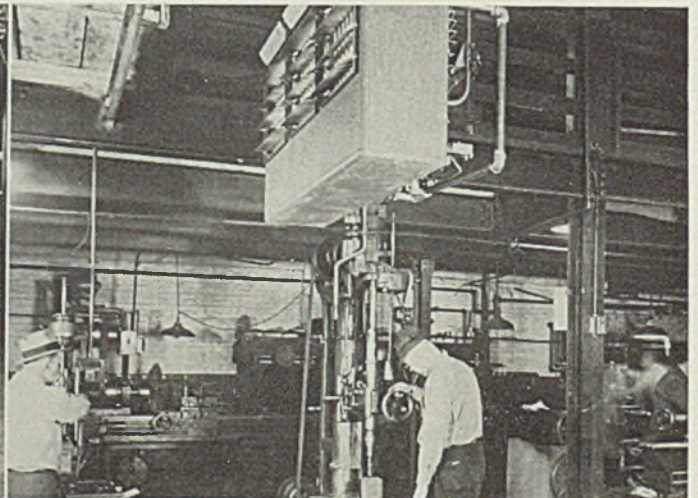
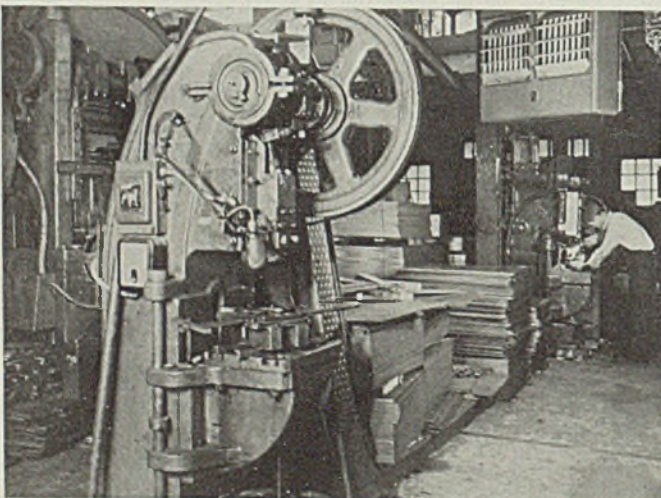


*Photo courtesy Dravo Corp.*

*Photo courtesy B. F. Sturtevant Co.*



**D**UCTS are used in the large floor-mounted unit shown at left to spread its heat over a larger area. This is a direct-fired unit in a warehouse, and is not dependent on the building steam system for its heat. Below left is a twin circulating unit installed in a press room, while at right is a triple-unit heater doing its work in a machine shop

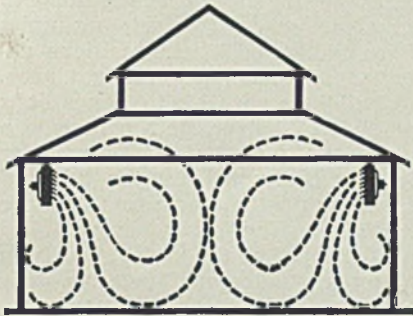


*Photos courtesy Bryant Heater Co.*



cold weather hours, resulting in excessive overheating and costly waste of fuel. With thermostatically operated unit heating, just enough warm air is circulated to balance heat losses from the building, thus preventing over-heating, which is uncomfortable and detrimental to worker health and production efficiency, sometimes as much as under-heating. In short, take it coming or going, unit heating is scientific industrial heating. It is to industry what air conditioning is to retailing—a profit-builder through bigger, better sales and lower cost per unit of output.

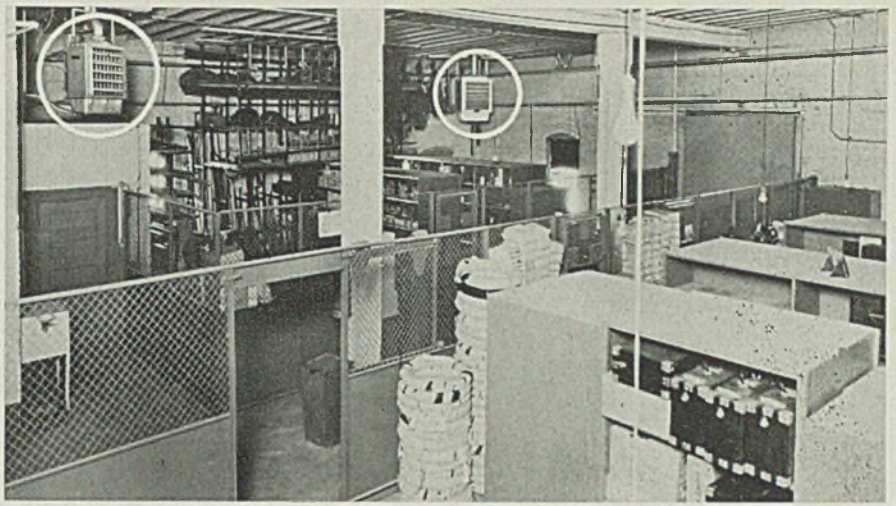
One very important feature of unit heating is its flexibility. It will meet any and all requirements in a plant. If the ordinary hook-up is inadequate, a revised procedure is simple.



*Courtesy American Foundry Equipment Co.*

**DIAGRAM** showing the principle of operation of unit heaters. Majority of the heat is spent in the working areas near the floor instead of rising directly to the ceiling

For example, a unit heating installation is designed to maintain comfortable temperatures at the breathing line. In some plants, however, higher temperatures are desired at



*Photo courtesy Buffalo Forge Co.*

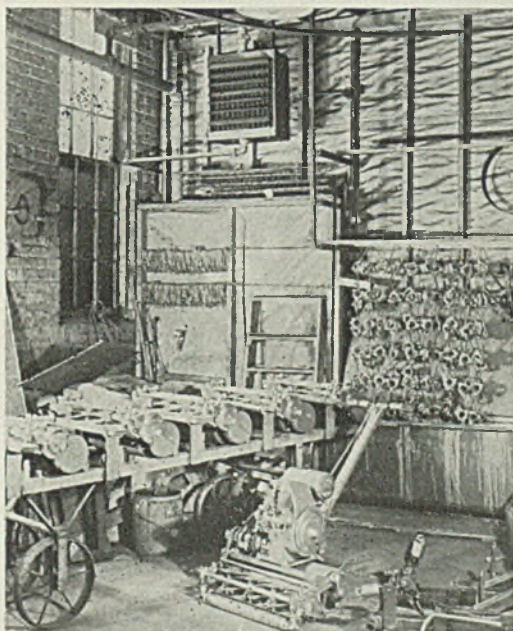
**G**AS heated units are used to keep this stockroom at the proper working temperature and to protect the equipment stored there

floor level, as on layout floors. This may be acquired by using a recirculating box in connection with the unit heater, which pulls the warm air from the breathing line and sweeps it across the floor. From our field work we can testify to the truth of the claim by unit heater manufacturers that their products will overcome any industrial heating problem. We have inspected direct fired unit heaters, indirect fired unit heaters, units operated manually and thermostatically, with gas, electricity or boiler room fuel, piping connections involving low pressure gravity systems, vacuum pump systems and high pressure systems, floor space heaters and suspended type unit heaters. These units were serving satisfac-

torily and users said they were profit-builders.

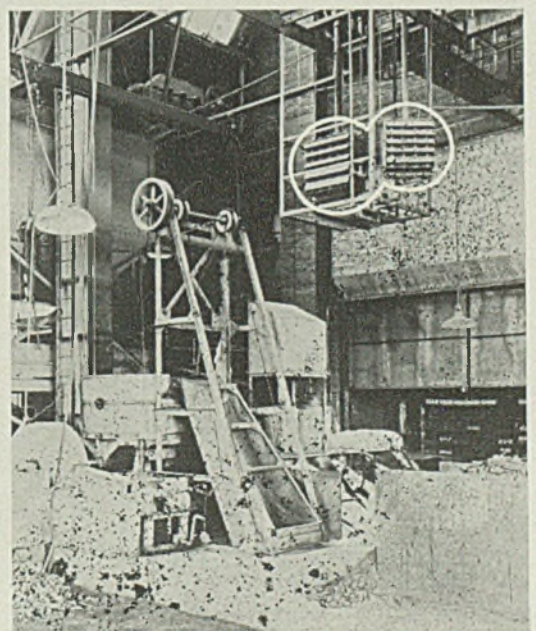
The flexibility of the unit heater has more advantages than adaptability to all plant conditions. The fact that units may be suspended from the piping, saves floor space, otherwise taken up with the older forms of heating equipment and makes it more practicable to locate unit heaters as close to the boiler as possible to cut down quantity of piping used, hence, installation costs. In multi-story warehouses or other buildings, it is also easier, due to the flexibility of unit heating, to locate the units on one floor directly above the units on the floor below, simplifying installation and piping work.

Today, many plants are remodeling or contemplating modernization. That may mean redistribution of production units, which may throw existing heating systems out of bal-



**I**SOLATED corners like the one shown in a metalworking plant at left are easily heated by single units

**S**TANDARD heating systems left the core room of an aluminum foundry, shown at right, too cold for efficient operation. The unit heater installation pictured solved the problem easily



*Photo courtesy Unit Heater & Cooler Co.*

*Photo courtesy Autovent Fan & Blower Co.*

ance. For example, in one plant a number of unit heaters had been installed facing north. New operations necessitated a new placement of certain machines, making it desirable to have the circulated heat directed toward the south. The unit heaters, which were suspended from the steam pipe line with a simple piping arrangement, were rotated toward the south by merely loosening the supply and return connec-

tions, turning the units about face, and tightening the connections. With older types of heating systems, any new placement of machinery or departments, changes in structural layout, new doorways built, or other re-alignments within the plant, may mean expensive adjustments to an existing heating system to maintain maximum comfort. In many cases these heating adjustments are not made for supposed economy's sake,

hence the heating efficiency of such remodeled plants is reduced as well as the working efficiency of the men, resulting in higher operating costs and lower profits.

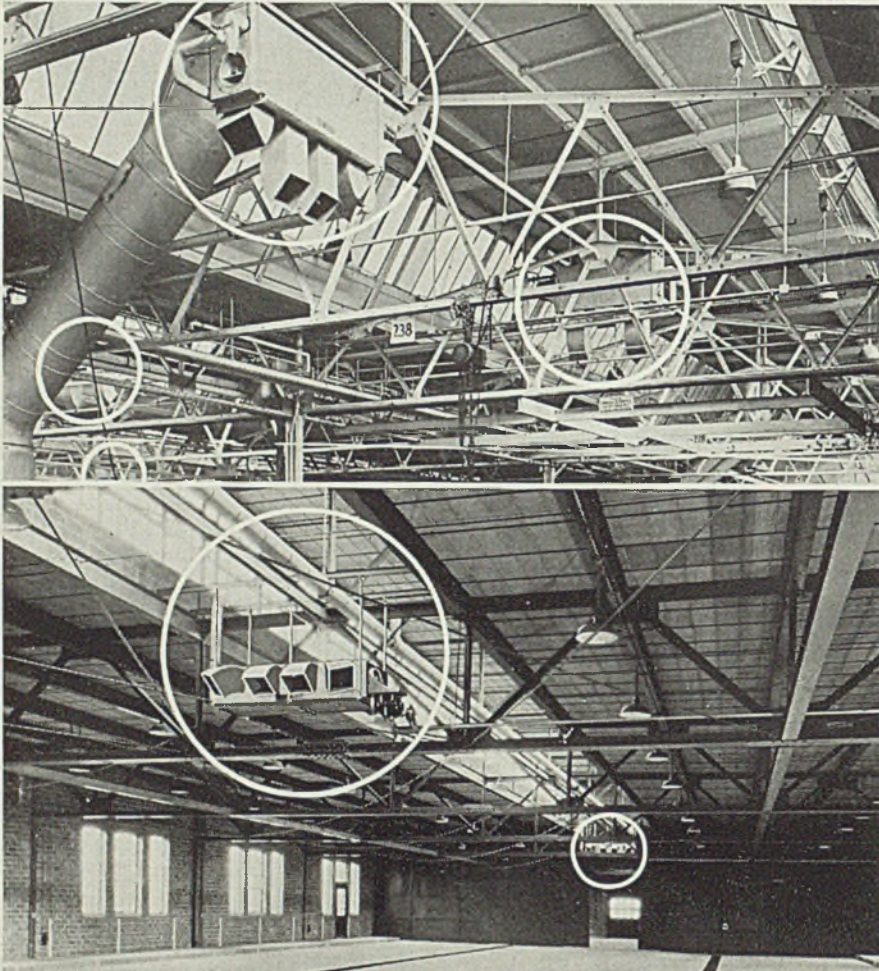
In other words, unless you modernize your heating system when you remodel your plant, the old heating system may offset the advantages of modernization, at least to some extent.

Today, many plants are enlarging as well as modernizing. All things being equal, the plant using unit heaters can enlarge for less money than the plant using old fashioned heating. We inspected plants where floor areas were enlarged by adding more footage, yet comparatively little was spent to heat the additional space. One or two unit heaters hooked into the steam line in many cases would have been sufficient. In some cases, the existing units were redirected, their positions adjusted to cover the enlarged area. In buildings with high ceilings, it is possible to deliver the warm air at a distance of from 175 to 200 feet after leaving the unit. Or the "throw" may be throttled down to a distance of 50 feet. The "throw" is controlled by the speed of the motor, which on many unit heaters have variable speeds. In the cases just mentioned where plants were enlarged without incurring additional heating installation expense, the added coverage was obtained by increasing the speed of the motors and getting longer "throw".

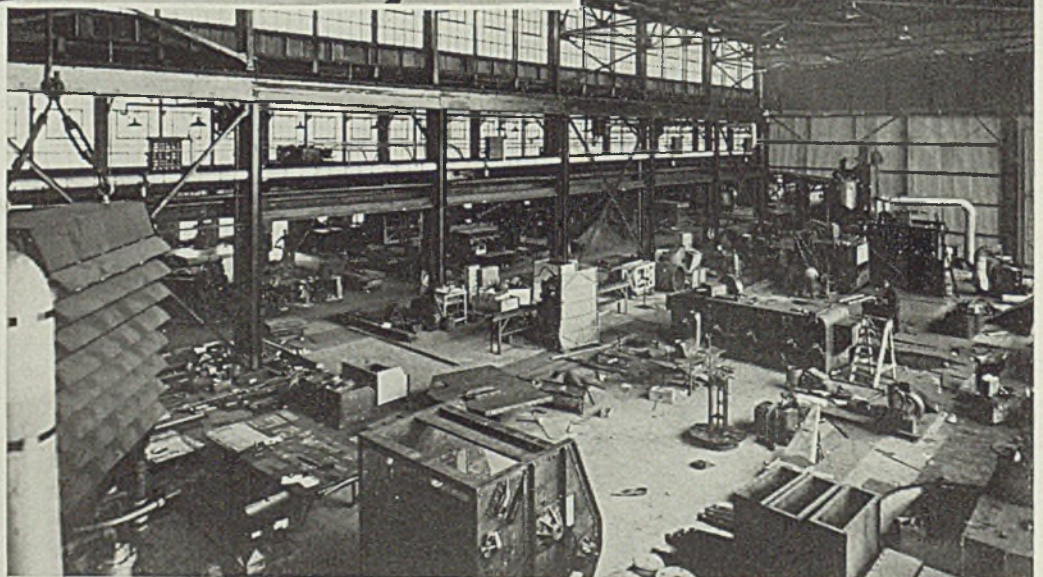
Even though an addition built on an existing plant be small, it usually is enough to throw an inflexible heating system of the older type out of

*(Please turn to Page 78)*

*Photos courtesy Buffalo Forge Co.*



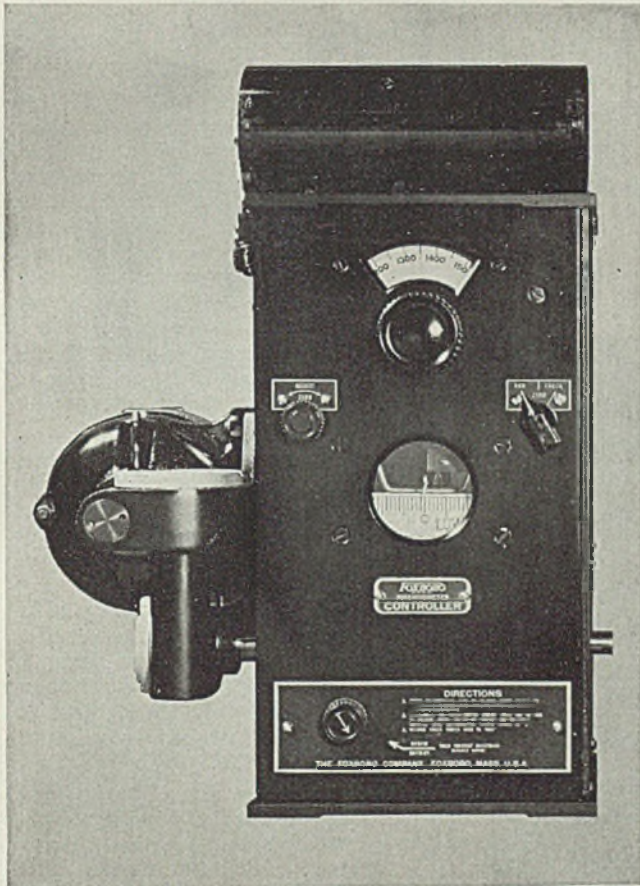
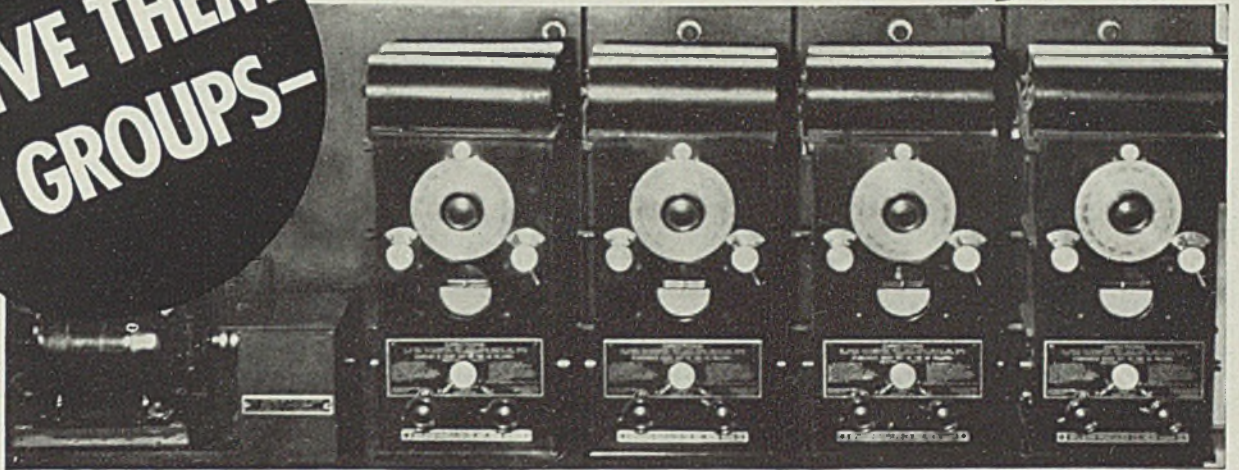
**T**OP view shows high velocity outlets on a large heater, designed for keeping heat at floor level in a large assembly plant. Center view shows a similar installation in a warehouse, where heating units on the floor would take up valuable space. Spotted at intervals around the walls of the metal-working plant shown at right, unit heaters provide constant circulation of warm air



*Photo courtesy American Foundry Equipment Co.*

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# WELDING, ETC.

BY ROBERT E. KINKEAD

## Engineers Dispute Over Residual Welding Stresses

PERIODICALLY the engineers of the welding industry indulge in a free-for-all battle over the question of whether residual stresses in welded structures are harmful. The arguments are vigorous and opinions very positive, as is usually the case where actual knowledge is scarce.

A battle is on at present. C. J. Holslag says there are no harmful, locked-up stresses in mild steel welding. If this is a conviction, no doubt Mr. Holslag would be willing to put a large amount of welding on one side of a heavily-loaded column. If Mr. Holslag is correct, there would be no harmful stresses and the column would not deform

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

and fail. Others on Mr. Holslag's side of the argument say that no one ever heard of a failure caused by residual stresses. It is also true that a good many people never heard of fatigue failures arising from stress concentrations at contour changes, but many such failures occur and other causes are given for them. Those who have had experience with welds made in locomotive frames can cite many cases of failures near the weld

## Vacuum Tower Head Is Welded



THIS head is part of a vacuum tower weighing 700,000 pounds now being erected by Wyatt Metal & Boiler Works, Houston, Tex., for a major oil company. The tower was fabricated at the company's plant, shipped knockdown and now is being erected, welded construction being employed throughout. The head was formed on a 500-ton hydraulic press, one of a number of new units recently installed by this company to enable it to do all types of fabricated steel plate work. The company also has installed a furnace for annealing vessels up to 7½ feet in diameter

caused by residual stresses set by the welding heat cycle.

The other extreme of the argument is that no weld is safe unless it is stress-relieved in a furnace. The furnace enthusiasts have a tough time of it. Probably 99 per cent of all the fusion welding done is not stress-relieved in a furnace but it is remarkably safe. One of the most devout furnace stress-relievers will repair any kind of a crack resulting from cooling after stress-relieving without putting the job back in the furnace, which would seem to indicate that his stress-relieving operation in the furnace might be more a means of bedeviling competitors who do not have furnaces than a means of improving the job.

The question of whether or not residual stresses are harmful cannot be answered by a yes or no.



## Steel Strike District Welders Doubt CIO Success

AMONG the welders of the Youngstown and Warren districts, John Lewis and CIO are not popular. The opinion is frequently expressed if CIO wins in the long run, the men will surrender their right to strike to international union officers who cannot possibly keep in touch with the facts. Most of the men know enough about what has happened to union labor in Germany and Italy to have a good many mental reservations about CIO.

Newspaper accounts of labor difficulties are usually biased by the fact that they are written by young reporters who are not personally acquainted with many union men. The great body of self-respecting union members will have a go at a strike if it promises definite results. But as soon as the hoodlum element takes over the strike, the main body of men is through with it. That is about the present status of the "little steel" strike.

John Lewis is about to become aware of the rapidity with which his great and good political friend can drop an unpopular cause. The wobblies have had their chance. The judgment of the welders we know is that the one big union scheme won't work; it does not win anything for the men. It will take more huffing and puffing than Mr. Lewis can do to make the New Deal politicians stay put when the masses of people lose confidence. The opportunity now exists for the government to step in with a plan far more democratic than the Lewis scheme. The present administration has not overlooked many opportunities to step into business and industry.

# Stymied by a MOUNTAIN of REJECTS



Read how Shell  
men helped this company  
cut rejects to a minimum!

A LARGE Southern machine-parts company was using three or four different types of sulphurized and lead-base cutting oils, and still the inspectors were rejecting work because of inaccuracy and finish!\*

Shell representatives were called in to make a complete study of the problem. Each cutting operation was analyzed . . . every tool and die examined.

Then the Shell men made their recommendation: A Shell Cutting Oil, especially compounded by Shell scientists to meet the severest test of cooling and pressure.

Today that Shell Cutting Oil is the standard lubricant in this shop! Lubricant costs have been reduced . . . tool life has been increased, "rejects" cut to a minimum.

The point to remember is this: That machine company's problem was solved when Shell scientists compounded this cutting oil. All the resources, ingenuity and cumulative experience of this great organization went into it. We call this "plus" in lubrication Shell's "Invisible Element!" It is ready to solve your lubrication problems—whatever they are, wherever you are. Call your nearest Shell office.

\*An actual case history from Shell's files.



**SHELL** *CUTTING* **OILS**



# *SURFACE TREATMENT AND FINISHING OF METALS*

## Simulated Wood Finishes on Metal Defy Detection by Light Instruments

ONE of the important divisions of the metal finishing industry is the production of simulated wood finishes on metal. Innumerable uses have been found for this type of material where the strength and permanency of metal are combined with the richness and warmth of a wood finish or combination of wood finishes. Prominent examples are interior work for automobiles such as instrument panels, compartment doors, garnish molding wall paneling for offices and homes, metal furniture, doors, windows and frames, and many others.

Three methods currently are in use for accomplishing these specialized finishes. One involves laborious hand work by skilled operators who are able to "streak" the metal to resemble a certain type of wood. This includes preliminary application and baking of a ground coat to the cleaned metal, then the hand streaking by use of special types of combs and brushes and finally a

clear finish coat of varnish or lacquer. This method is used widely where accuracy of the design is not so important and where production is not large enough to justify installation of equipment.

### Obtain Remarkable Effects

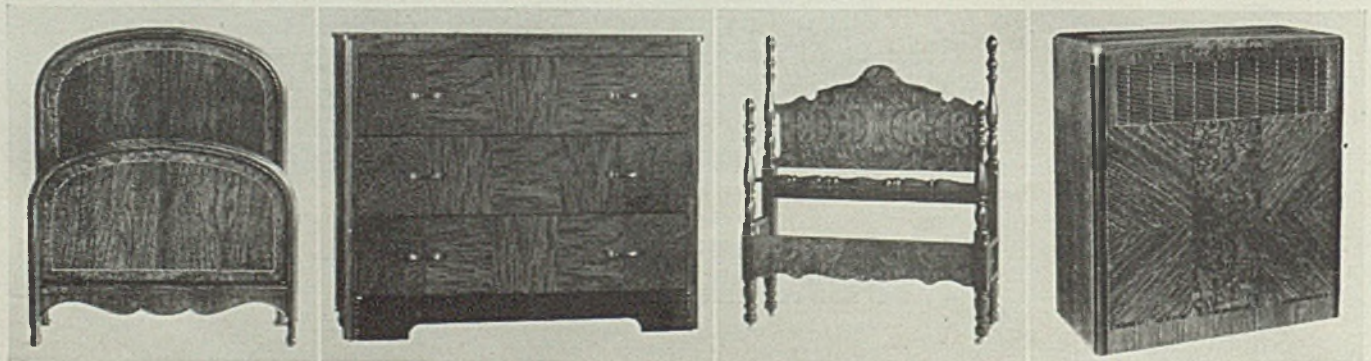
A second system involves the use of decalcomanias or transfers embodying the required design which are applied securely to the metal either with or without a ground coat and a finish coat. Preparation of the decalcomanias is rather expensive and their application must be done with care; however, some remarkable effects can be obtained, ranging all the way from special multicolored floral designs to simu-

**P**ROMINENT among the users of wood finishes on metal are furniture manufacturers. Wood reproductions on beds, chests, radiator covers and the like almost defy visual inspection to detect them as metal products

lated marble or stone finishes. Special types of transfers with an elastic varnish base have been developed which are claimed to permit fabrication of the metal after application of the design. (STEEL, June 4, 1934, p. 28.)

Probably the most accurate reproduction of wood finishes on metal, which has even defied the precision of light instruments attempting to detect the difference from the original, is the method which involves photographing the desired wood panel and producing a metal plate or cylinder. The design is transferred from the master metal plate or cylinder to a composition roll and then in turn to the metal being finished. There are a number of variations of this general procedure, chiefly in respect to shape and position of the rolls.

Pioneering in this field since its original development at the National Cash Register Co., Dayton, O., has been carried on by the Oxford Var-



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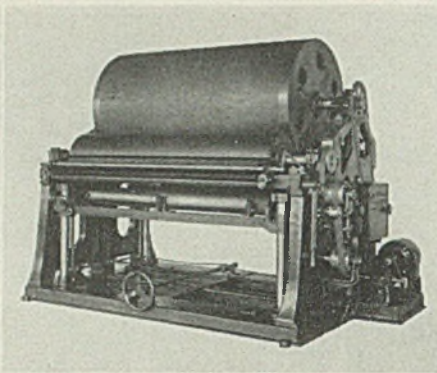
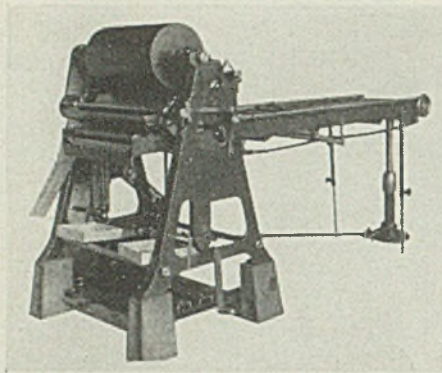
Zin-O-Lyte solution when once installed requires only the occasional addition of sodium cyanide and small amounts of brightener.

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**S**PECIALLY designed lithograph presses imprint the grain design over an undercoat of synthetic enamel, lacquer, varnish or even porcelain enamel. Presses shown here are for imprinting flat sheets; specially designed rolls are used for moldings and other shaped articles

sembled from various parts of the world, containing several hundred wood panels for selection. When a certain type of wood finish has been selected for a finish, a photograph is made, actual size, for use in the reproduction. Thus, if a large panel for a wall, say, is to be finished, a piece of wood the same size must be photographed to obtain the proper negative. These master negatives or portions of them naturally can be used indefinitely.

It is possible to use several colors by the process, although separate plates or cylinders must be prepared for each color. An interesting recent development in this work is that exact registration is not required. This is a comparatively simple matter making its application practical when color work is to be applied to fabricated sections.

Application of the finish is not confined to any particular material. The method has been used successfully with steel, copper, aluminum, Dowmetal, masonite, cast iron, wood and other materials. The only essential is a smooth surface, necessitating the use of fillers on rough surfaces such as castings.

Physical characteristics of the finishes have also been improved in recent years. Resistance to abrasion, light, weathering, heat and cold is now of a considerable higher order than formerly, and the finishes are claimed to outlast comparable natural wood finishes.

nish Corp., Detroit, which in 1927 took over the Vance Mfg. Co., the latter previously formed to take over the development from the National Cash Register Co.

In the past 15 years there has been steady development work in perfecting methods of application of this type of finish. Materials have been improved, photographic methods changed, special machines developed for applying the finish automatically, and the process has now spread to worldwide usage. But the most significant improvements have been made in recent months. Foremost among these is what is called the glow-wood development.

All woods have a characteristic grain and tone, as well as a characteristic sheen. The sheen is an optical illusion resulting from the angle at which the surface is viewed. Thus in some lights and at a certain angle a wood will appear light in color, compared with the darker appearance of the same wood when viewed at a different angle and under different illumination. Capturing the illusion in artificial finishes has not been a simple task; it has required mastery of the principles of diffraction, reflection, refraction, and diffusion of light in combination with color and their application to the photographic and other principles used in the work.

Another improvement recently effected has been the reduction in baking time for undercoats. Originally, two undercoats were required, using a low bake at about 200 degrees Fahr. Now it is possible to use only one undercoat, baking at 400 degrees Fahr. and with an oven time of only 17 minutes, making the process ideally suited to mass production industries.

Undercoats may be varnish, lacquer, synthetic or even porcelain enamel, according to the final effect

desired. A popular combination is synthetic undercoat and lacquer finish. They may be applied by either dipping or spraying.

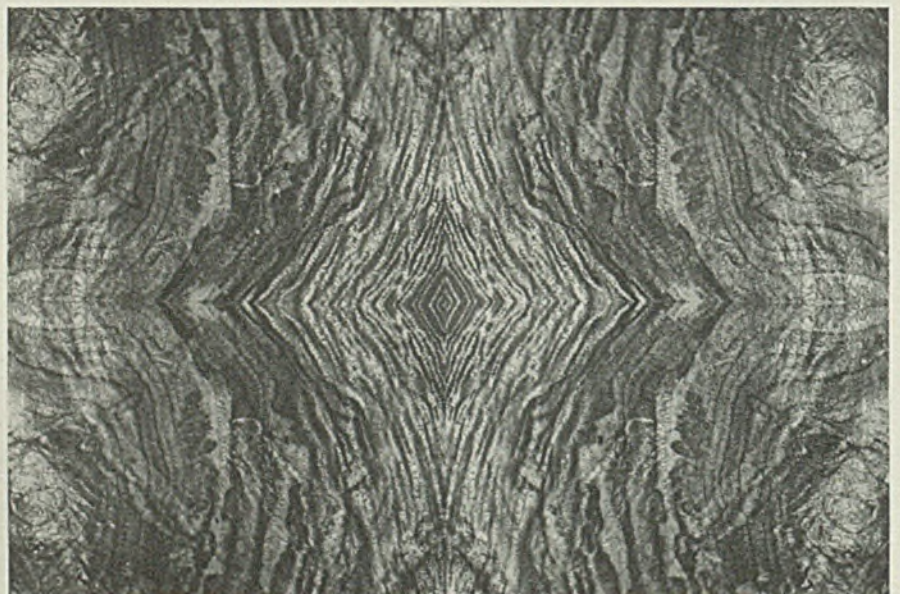
On medium to large production, machines have been developed which cut former labor costs by as much as 90 per cent. Ten types of machines so far have been designed for automatic application of these finishes, the most recent being a machine for handling automobile garnish moldings. The fabricated and cleaned molding, with ground coat applied, is clamped in a fixture, the machine started and the molding is passed through the rollers as the finish is applied rapidly, with no trace of overlap of the design.

#### Has Wood Collection

These machines are not standard in design. Each job is studied and specific recommendations made for suitable equipment. The buyer is licensed to use the process and special equipment, operating of course on certain basic principles, is assembled.

Oxford Varnish Co. maintains a staff of artists and designers who develop new ideas and combinations for special finishes. A complete library of wood also has been as-

**G**RAIN designs are obtained by photographing actual wood panels. A complete library of hundreds of wood panels, assembled from various parts of the world, is maintained for customers to select from





# Box-Spoke Driving Wheel Centers Reduce Track Wear

BY W. M. SHEEHAN  
General Steel Castings Corp., Eddystone, Pa.

**A** BETTER track including heavier rails, more substantial ballast, closer track alignment and more perfect rail joints are factors receiving much attention from railroad managements. But track maintenance represents a considerable part of the operating budget, and it is therefore essential to design locomotives and cars to conserve this more expensive track from which heavier loads, higher speeds and greater traffic density already are exacting a high toll.

Extent of this toll is multiplied and greatly augmented by the speed at which the locomotive is moving, and high speeds impose most severe strains on rail and track, as well as on the locomotive machinery and foundation. Punishment the track receives becomes great at certain times of the year due to the effect of weather and climatic conditions. Observations of many railroads point to a definite relation between high speeds and heavy maintenance of way and equipment.

## Wheels Are Central Factor

It is recognized by those familiar with the problem that the steam locomotive, to meet the existing and prospectively still higher speed requirements, must take advantage of every factor which will increase its speed, efficiency and availability. Locomotive speeds and tractive power are limited by the weights which can be placed on the rails by the driving wheels. Better balancing of the reciprocating and revolving parts, by contributing to lower dynamic augment at rail, tend to raise these weight limits. In addition to permitting higher driving wheel rail loads, the lower dynamic augment also reduces wear and tear on locomotive parts. The result of this lower dynamic augment is considered of great importance as it conserves the rails and track, and reduces the cost of maintenance of way. The necessity of having a higher degree of track perfection will receive increasing attention from all railroad men in the future.

Recognition of these factors has caused much attention to be paid to the design of the driving wheel center. Almost from the inception

of the steam locomotive, driving wheel centers have been of the solid individual spoke type, in general design an outgrowth of the old stagecoach wheel. Originally they were of cast iron, but in later years of cast steel. The tendency of the spoked wheel center to flatten at the rim and to crown transversely, both of which contributed to lower tire mileage, provided the incentive to obtain a better wheel construction.

Increasing weights at rail and the higher speeds being demanded of modern locomotives, coupled the desire for a stronger wheel with the recognized importance of a lighter wheel. The "Boxpok" driving wheel center manufactured by General Steel Castings Corp., Eddystone, Pa., aims to provide these required factors in combination. It presents pleasing appearance, will hold cylindrical contour and, due to its double plate construction, will prevent transverse crowning of the rim. This permits a tighter tire and gives not only more tire mileage but a greater freedom from flat rim spots.

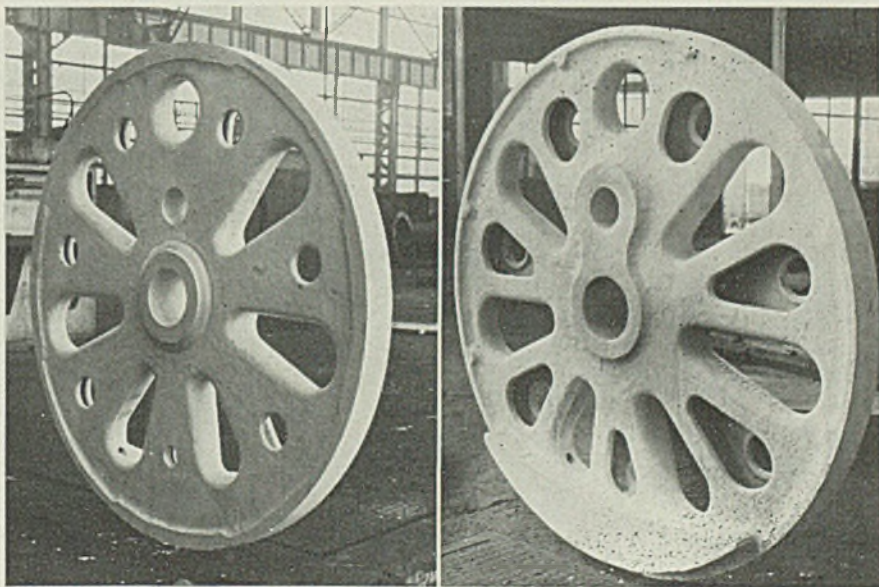
The box section principle of design is not only followed through the spokes but is also carried out at the rim and hub sections. The large openings between the box

spokes, as shown in the illustration, permit access for inspection and lubrication. Arches formed by the junctures of the transverse walls of the box sectioned spokes provide a strong support for the rim. Transverse strength also is much greater than would be obtained with plain solid spokes, and the cross walls of the box sectioned members give a higher degree of homogeneity to the composite cross section than can be obtained with other arrangements.

The wheel center can be made much lighter than the ordinary solid spoke centers, and it will allow, especially in the smaller diameters, a more perfect counter and cross balancing, thus reducing the dynamic augment and the resultant wear and tear on track structure and on locomotive machinery and foundation.

## Tin Cans Are Safe

Recently issued by the International Tin Research and Development Council as information circular No. 2 is "The Wholesomeness of Canned Foods" by H. B. Cronshaw in which reliable medical testimony is given to the effect that food preserved in tin cans is among the safest, if not safer even than fresh foods, which we eat. The circular, which also embodies four pages of illustrations on scientific control in the canning of foodstuffs, deals with the advantages of tin canning as the best method of preserving food indefinitely, weighs the vague evidence against the effect of tin cans on food, and describes unmistakable detection in rare instances of tin's affecting food.



Inner and outer faces of the 76-inch cast steel "Boxpok" (box spoke) locomotive driving wheel center for 84-inch driver

HOGGING DOWN HUGE FORGINGS OR  
MICROMETER MACHINING - - - - -

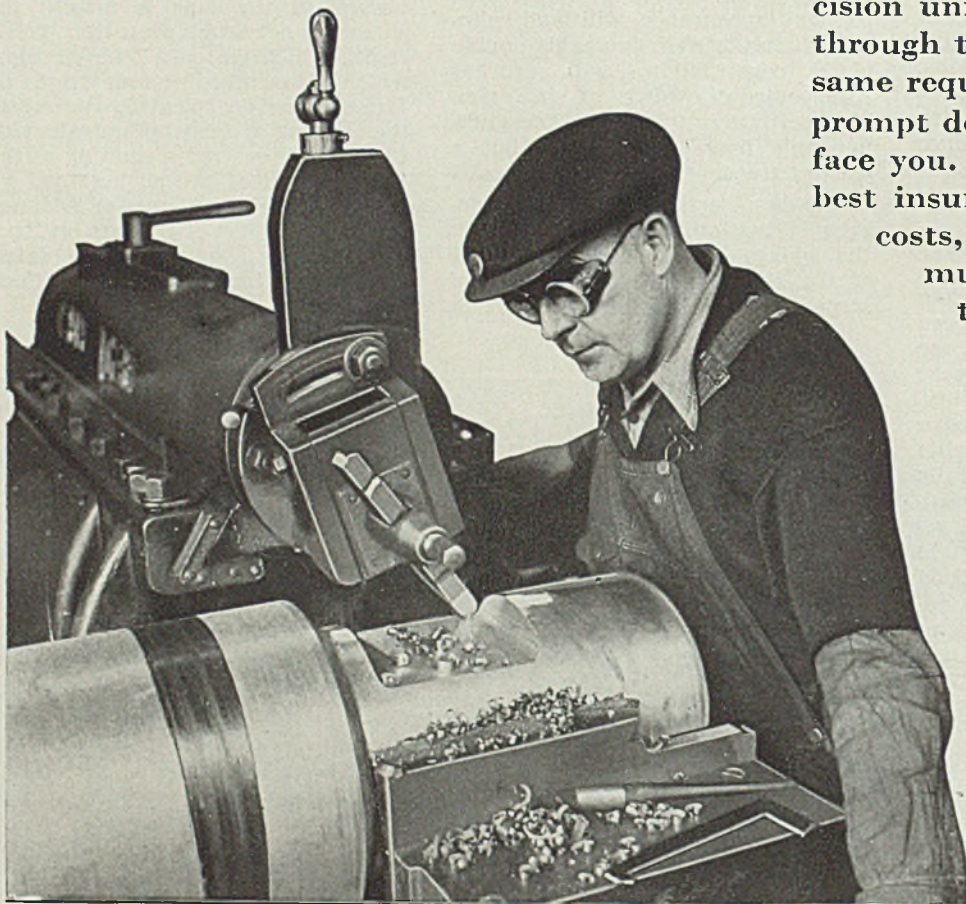
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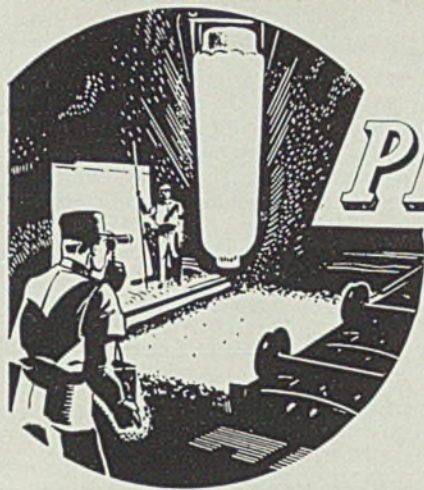
**T**O few shops come as varied machining problems as are met at Midvale. From straight carbon steel on through the various alloys, from giant forgings down to small precision units, all types of work go through the Midvale shops. Those same requirements of output and prompt delivery face Midvale that face you. And we have found the best insurance of low production costs, flow of work with minimum hold up—is the best tool steel we can give the man at the lathe.

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# PROGRESS IN STEELMAKING

## Sequence of Blast Furnace Charging Is Controlled Automatically

**T**WO installations of a new automatic blast furnace charging control system, developed by H. A. Brassert & Co., Chicago, recently have been applied to large blast furnaces. The system, which may be set for any desired sequence of operations, maintains this sequence indefinitely until a different sequence is desired and established. Designed to prevent the possibility of mistakes in blast furnace charging the system automatically controls the movement of stock from the scale car to the furnace, from the time the skip car is started on its way until the load is emptied into the furnace.

The control may be used with oil-electric, cylinder bell hoist, with air cylinders and with motor-driven bell hoists. It consists of motor-driven cam devices for actuating valves, a control panel, hatchway limit switches and necessary push buttons for operation of the bells.

### Use Geared-head Motor

For operating the bells two motor-driven cam devices are provided, one for the small bell and one for the large bell. Each drive consists of one geared-head motor coupled to a cam approximately 10 inches diameter, a 6-circuit rotating cam limit switch driven by the camshaft and a lever with a roller actuated by the cam to operate a valve which raises and lowers an air cylinder to open and close a bell.

As a geared-head motor rotates a circular cam, the valve operating lever remains stationary or is raised

and lowered as determined by the contour and spacing of the cam faces. By providing cams with different spacing between cam faces and adjusting contacts in the limit switches, the time delay in opening or closing the bells may be varied without the use of time relays. The normal arrangement of cams and limit switches in this system provides delays as follows: 1 to 3 seconds in opening the small bell; 1 to 7 seconds in holding the small bell open to clear; 1 to 3 seconds be-

tween closing of the small bell and opening of the large bell; 1 to 7 seconds in holding the large bell open to clear.

Geared-head motor drives, cam limit switches and valves are assembled completely in a steel cabinet approximately 4 feet 6 inches wide and 5 feet 2 inches high. This cabinet may be located wherever convenient but preferably in the same room with the control panel. The valves are equipped with nipples, elbows, and flange couplings

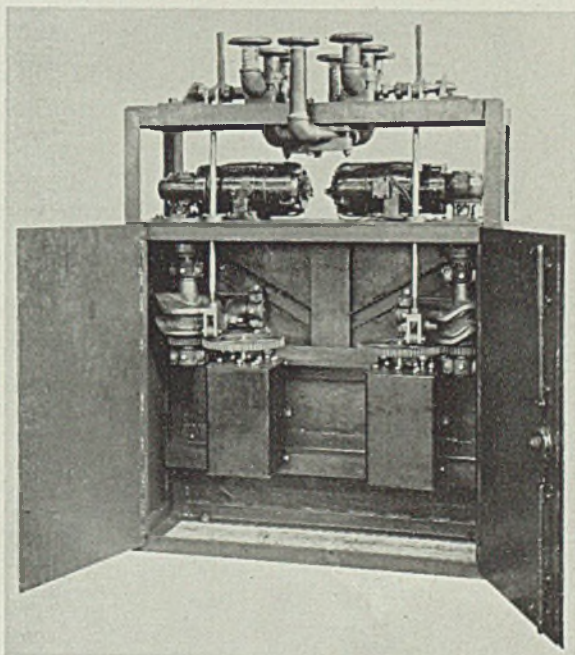


FIG. 1—Steel cabinet and assembly of motors and motor drives, cam limit switches and valves

ready for connection to the blast furnace pipe lines. The valves also are equipped with hand levers to permit manual operation when the normal operating levers have been disconnected from the cam drive. General arrangement of this equipment is indicated in Fig. 1.

On the control panel are mounted eight double pole, 50-ampere contactors, all duplicate and interchangeable, two double-pole, double-throw latching relays equipped with 100-ampere contacts, one load counting relay with tripping device, two geared-head motor-driven, 6-circuit, rotating cam limit switches, two 9-point selector switches, one double-pole, double-throw knife switch, one single-pole, single-throw knife switch and one 2-pole, single-throw, fused, main control knife switch. This arrangement is shown in Fig. 2. For control interlocking purposes there are six hatchway limit switches.

This control provides for the selection of any desired number of loads between one and nine, on each of two cycles. A lamp bank also is provided to indicate the number of loads counted during the current cycle. With the selector switches set for the desired cycles of operation, one lamp in the bank will glow at approximately half brilliancy. This lamp indicates the number of loads at which the large bell will operate. When the number of loads counted agrees with the selector setting this lamp glows at full brilliancy.

The first skip load is hoisted in the usual way. Just before the skip

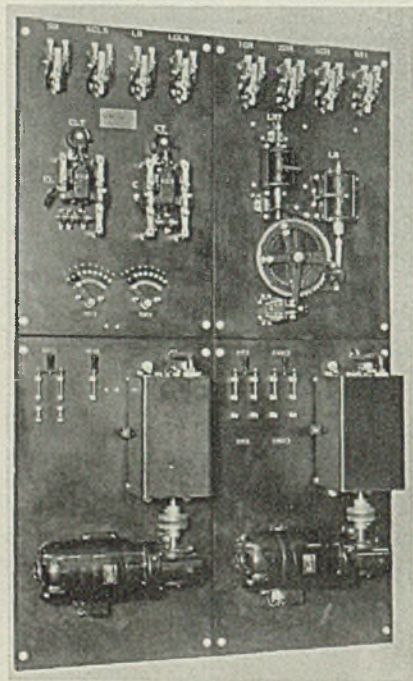


FIG. 2—Contactors, relays, motor-driven cam switches and other type switches are mounted on control panel

hoist stops, contacts in the skip hoist limit switches are opened to prevent hoisting the next load and contacts are closed to energize the bell hoist control. An interlock is provided for the rotating top control so that operation of the bell hoist control is held up until a successful operation of the rotating top has been completed. When this operation has been completed the small bell valve cam motor is energized. Due to the arrangements of the cam faces the cam rotates for two seconds before the valve is reversed to open the small bell. When the valve is reversed an amber lamp indicates. The cam continues to rotate until the valve lever roller is in a position to require approximately one second to reverse the valve.

In the meantime the air cylinder raises, allowing the small bell to open. When the small bell cylinder reaches its limit of travel the load is counted, the valve is reversed the amber lamp stops indicating and the skip hoist interlock is closed to permit the next skip load to ascend. The total delay is two seconds. If the small bell cylinder does not seat into position indicating a closed bell the skip hoist is stopped on a slow-down point. Also, the small valve cannot be operated again to open the bell unless the small bell cylinder has seated.

#### Short Circuit To Stop

Operation of subsequent loads is accomplished in the same manner. When a sufficient number of loads has been counted to agree with the setting of the first selector switch, the small bell interlock relay is short circuited, causing it to open its closed contacts and close its open contacts. This prevents further operation of the small bell until a complete opening of the large bell has been accomplished and in addition it initiates opening of the large bell by rotating the large bell control limit switch, raising the stock rod. When the stock rod is raised, the large bell valve cam motor is energized to rotate the large bell cam. Due to the arrangement of the cam faces, the cam rotates for two seconds before the valve is reversed; this time can be reduced to one second if desired. When the valve is reversed a red lamp indicates. The cam continues to rotate until the valve lever roller is in a position to require approximately one second to reverse the valve.

In the meantime the air cylinder raises to open the large bell. When the large bell cylinder reaches its limit of travel, the stock rod is lowered, the load counting relay is reset to the zero position and the large bell valve is reversed. Total time of this operation is five seconds. When the valve is reversed the red lamp stops indicating. If the large

bell cylinder does not seat, further operation of the small bell is prevented. This control equipment provides forced sequencing; that is, if operation fails at any point, subsequent movement of bells or skip hoist is suspended until the difficulty has been found and removed. Interruption of operations due to power failure or any other cause does not upset the sequence.

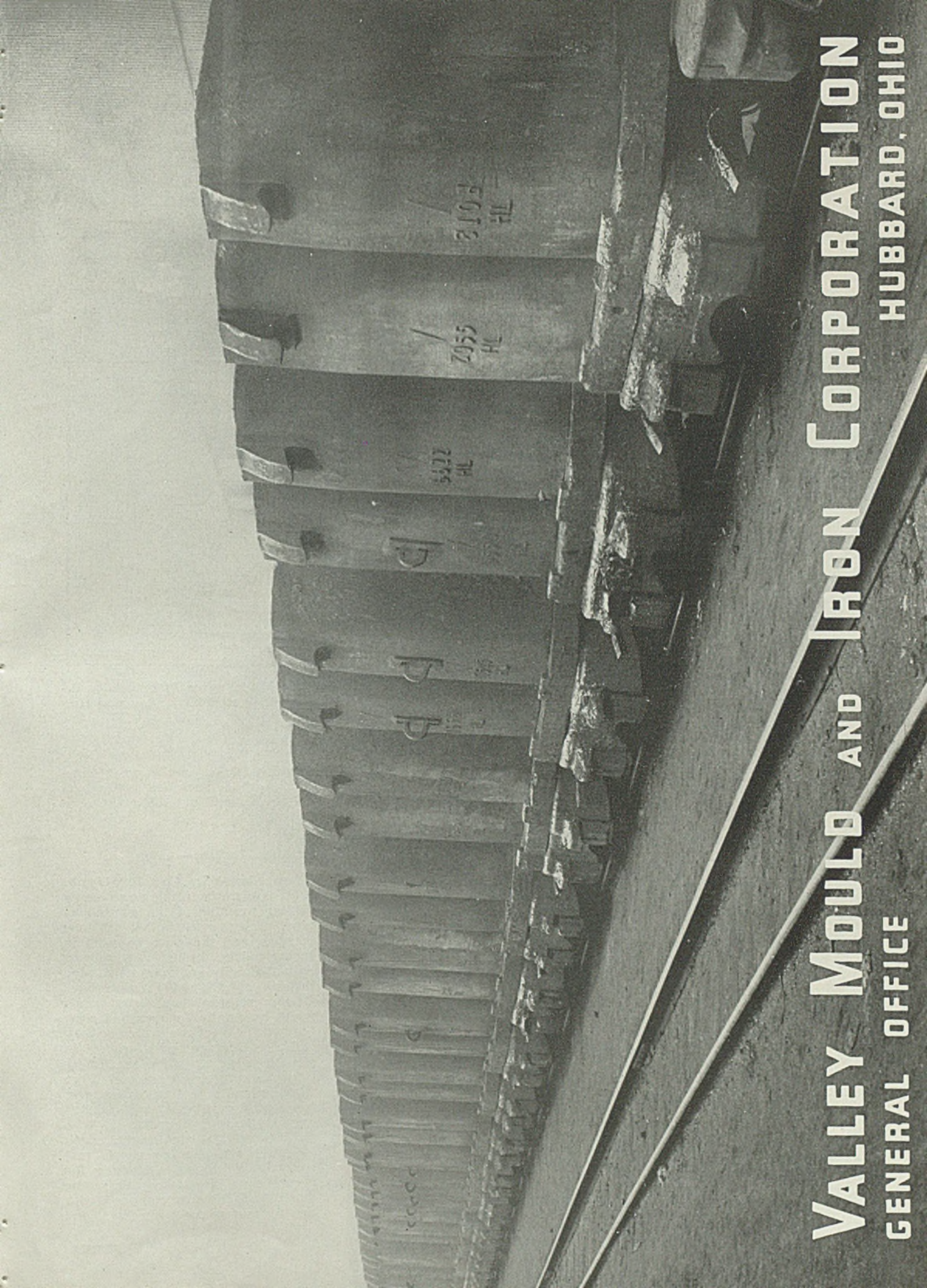
## Parts for Replacement Are Difficult to Obtain

More pressure is being put on steel plant maintenance these days than ever before. This is due to the demand for uninterrupted operation and to the fact that repair parts are harder to get. It is necessary to order repair parts at least two months ahead due to congestion of work at the plants making such parts. The stock of repair parts at steel plants is much larger, for this reason, than usual. There now is a strong tendency to specify better materials so that parts such as gears and pinions will last longer in service. While maintenance is much more costly under present conditions, the extra cost is regarded as fully justified because it prevents delays in production.

## Applications of Unit Heaters

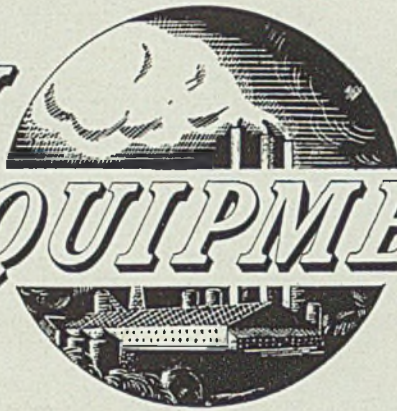
(Concluded from Page 68)

balance. A small addition without re-adjustment to an existing heating system may create a cold pocket or cause a drag on warmer sections of the plant, bringing about uneven temperatures—that great evil of old fashioned pipe coils or conventional heating systems, particularly in plants with wide-open interiors and high ceilings, such as those in the iron and steel producing industries. Plant managers and engineers interviewed lauded the even temperature provided so effectively by the unit heater as one of its biggest boons. Everyone knows that fluctuating temperatures are disconcerting, inside or outside, that one can stand cold better when it is continuously cold than when it is hot one day and cold the next. From interviews with heating engineers in steel plants we learned that the nature of their operations often produces extremes in interior temperatures, which have such a devitalizing effect on workmen that production is hampered, sometimes 50 per cent. No wonder the even, comfortable heat of the unit heater is what so many plant executives commend.



**VALLEY MOULD AND IRON CORPORATION**  
GENERAL OFFICE  
HUBBARD, OHIO

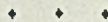
# NEW EQUIPMENT



## Nut Making Machine—

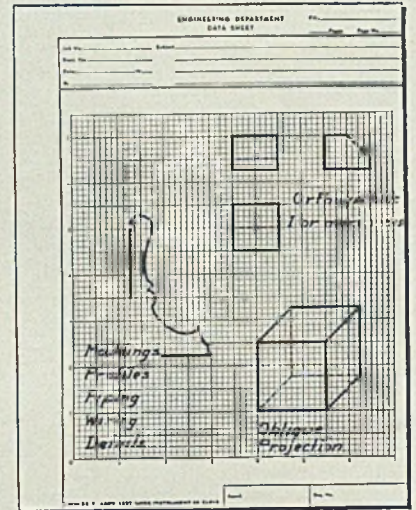
Waterbury Farrel Foundry & Machine Co., Waterbury, Conn., is manufacturing a new machine for use in the manufacture of the smaller sizes of hexagonal screw nuts from No. 0 to ¼-inch inclusive. Leaving a small amount of scrap, rough blanks are first cut from a coil of cold rolled steel or brass on a roll feed press equipped with gang tools. Blanks are squared up and forged on both faces to produce quickly and economically a smoothly-finished product. Machine will make double-chamfered blanks, or chamfered on one face only with either a washer face, flat face or special face on the other side, depending on the tooling. Double hopper feeds and chutes which are provided are arranged to work alternately and deliver the blanks to the tools at a rate of 200 a minute. Lower ends of the chutes are hinged and swing toward the center of the machine, to carry the blanks into line with the central trimming die. There is a chamfering punch in the gate at each side of the trimming die, as well as two

chamfering dies carried in a cross slide. By this arrangement, one blank is being trimmed while another is being chamfered at the right and a third feeding from the left-hand chute. On the next stroke, the chamfering and feeding are reversed. Machine will handle a maximum blank 3/16-inch thick and 7/16-inch across flats, different chutes and tools being used for each size nut. Scrap and work are delivered into separate boxes, while a force-feed coolant system is also provided. Taking a floor space of 47 x 52 inches, machine requires a 3-horsepower motor.



## Sketch Paper—

Wade Instrument Co., 2246 Brooklyn station, Cleveland, has announced a new form of paper for sketches and engineering data. Sketch sheets are 8½ x 11 inches with a 7 x 7½-inch drawing area laid out in ¼-inch squares and with identifying inch lines heavy and numbered. Also available with a 7 x 10-inch sketching area without other



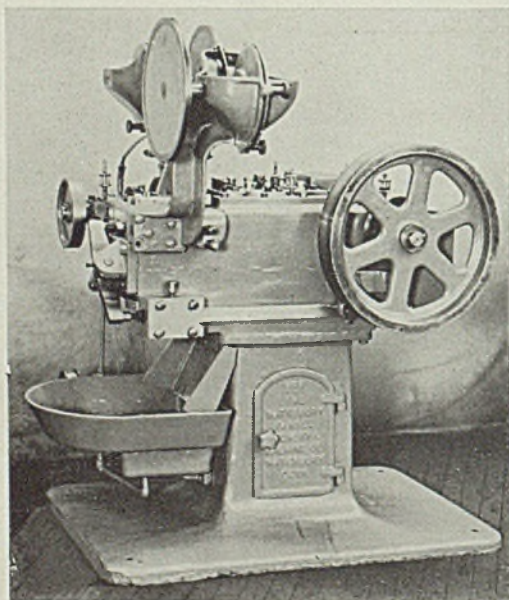
New Wade paper is especially designed for sketches and engineering data

printing, sheets make clear blue-prints, while black ink and pencil drawings stand out distinctly.



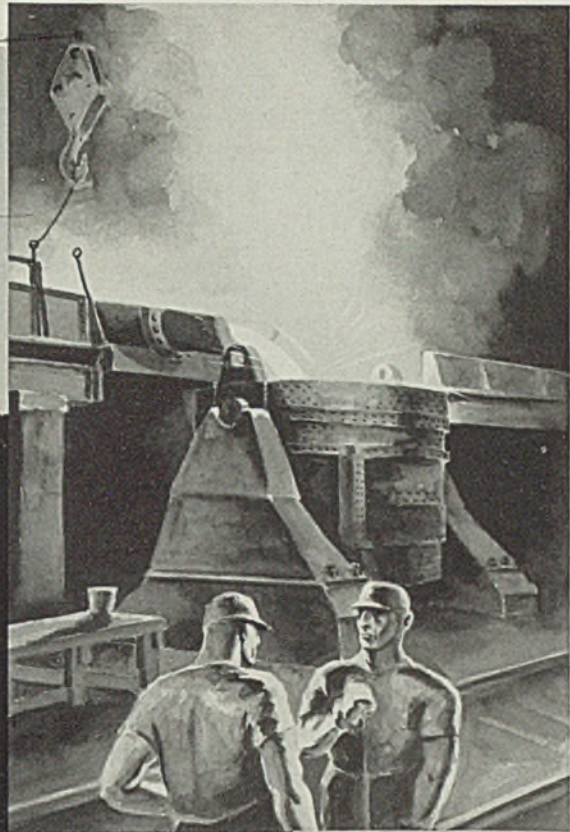
## Drilling Machine—

Langelier Mfg. Co., Providence, R. I., is manufacturing a cap screw drilling machine of the continuous type. Unit is constructed with four spindles, and the work chucked in spring collets. Spindles are mounted horizontally and work is rotated instead of drills being revolved. Carrier rotates about fixed cams which automatically open and close the chucks, eject the drilled screws, and also stop rotation of collets at loading position. Drills are fed by a fixed cam located at the end of the machine and a section of this cam is interchangeable to provide different depths of drilling for ¼, 5/16, ¾, 7/16 and ½-inch screws. Each spindle has a receding steady rest carrying a drill guide bushing for accurately starting the tools in the work. Machine is equipped with driving motors for both chuck and



New Waterbury Farrel machine is used in manufacture of smaller hexagonal screw nuts

# A MOTOR WRAPPED IN STEEL....



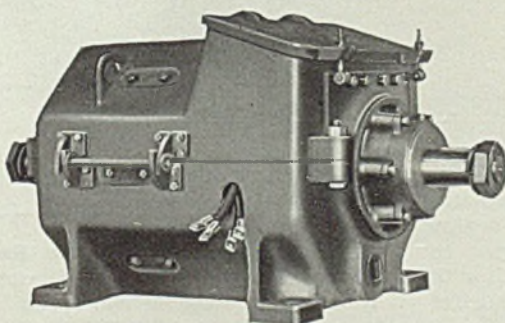
## ...for the Steel Industry

To withstand the most severe steel-mill duty, the Crocker-Wheeler form "SW" motor is completely enclosed in a tight thick steel housing. And within the motor additional precautions have been taken. Mica and asbestos insulate against heat. Vacuum impregnation with high-grade varnish protects the windings from corrosive fumes.

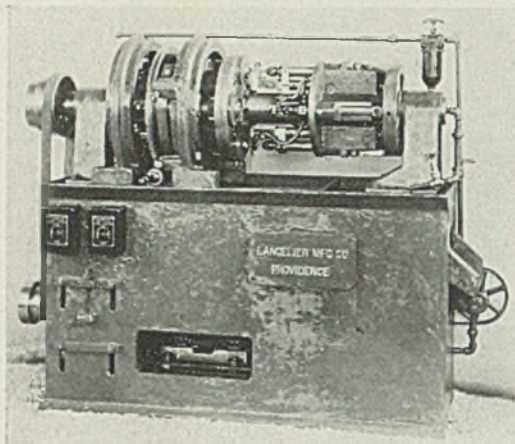
Used on cranes, hoists and steel-mill auxiliaries these motors help to prevent costly shutdowns — motors that can be installed and then forgotten.

### **CROCKER-WHEELER ELEC. MFG. CO.**

*Main Office and Works: AMPERE, N. J.*  
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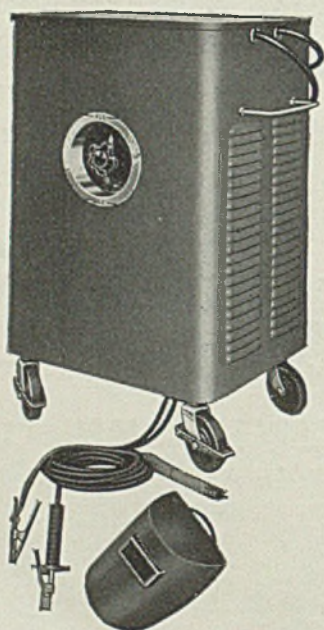


Langelier cap screw drill machine is of the continuous type

carrier drives, and a pump for supplying a cutting lubricant to the tools. A set of collets and a feed cam are furnished for each screw size. Production of the machine ranges from 2400 an hour in the ¼-inch size to 1600 an hour in the ½-inch size.

#### Arc Welder—

Pier Equipment Co., Benton Harbor, Mich., has announced a new series of the Ace alternating current arc welder, outstanding feature of which is a "synchro control" governing both the welding current and the voltage in a manner comparable to that used on successful motor-generator, direct current arc welders. The Ace has a specially designed transformer with reactance and employs a circuit that provides a stable, non-blasting arc without spatter loss, it is claimed. Made for fillet, hori-



Ace alternating current arc welder has control governing both welding current and voltage

zontal, vertical or overhead welding it can be used on materials ranging from 22-gage sheet metal up to heavy castings and provides an obedient arc without magnetic blow. These welders are designed for 220 or 440 volts alternating current, 60 cycles frequency, and are made in sizes from 15 to 250 amperes for use with from 1/16 to ¼-inch welding rod.

#### Bolt Threading Machine—

Oster Mfg. Co., 2057 East 61st place, Cleveland, has recently developed an improved No. 915 single spindle Rapiduction bolt threading machine built for high production on standard runs in bolt plants and for increased production on a wide variety of special work. Regular bolt range covers all sizes from ⅜ to 1½-inch, at spindle speeds of from 49 to 298 revolutions per minute. Timken bearings are used throughout and die-head is of high quality hardened and ground tool steel, while dies are of high speed steel. Spindle, of high carbon steel forgings, heat treated and ground, is mounted on pre-loaded tapered roller bearings that are adjustable for long wear. Driving and change speed gears are chrome nickel steel, heat treated and ground, and run in oil. Headstock shaft also is made from high carbon steel and is mounted in tapered bearings, automatically lubricated and adjustable for wear. Guards cover all moving parts of the machine that might cause injury.

#### Horn Press—

Niagara Machine & Tool Works, 637 Northland avenue, Buffalo, has announced the addition of a No. 17 horn press to its line of horn presses ranging from 2¼ to 4-inch diameter shafts. Included in the new design are rigid steel casting frame, 14 point engagement sleeve clutch with built-in single-stroke mechanism for more strokes per hour, double V-

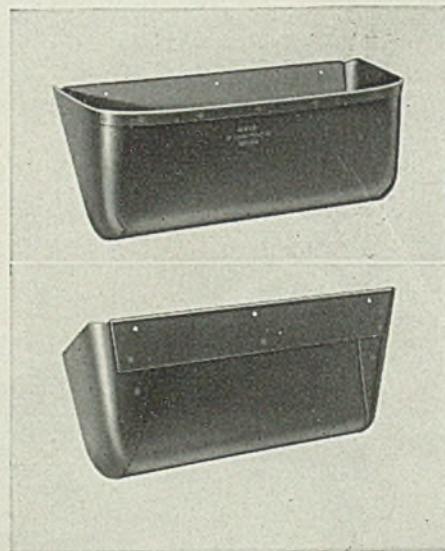
gibs, rigid slide with breech block die clamp and self-contained back gear assembly with anti-friction bearings, mounted as a unit within the frame for accurate alignment. Shaft, 4 inches in diameter, is mounted in bearings which are split at an angle of 45 degrees, thus transmitting thrust direct to frame rather than partly to bolted caps.

#### Block Bearing—

Fafnir Bearing Co., New Britain, Conn., has announced, as an improvement in its ball bearing rubber pillow block, the addition of the Fafnir wide inner ring ball bearing with exclusive self-locking collar, a feature making for easy installation. Shaft is slipped through the bearing unit, the self-locking collar is engaged and turned and the set screw tightened. Bearing is then firmly secured to the shaft, while removal is equally easy. Built to inch rather than metric dimensions, the bearings readily fit standard shafts without machining. Pillow blocks are offered in sizes ranging from ½ to 17/17-inch bore, providing for all shafts usually found in household heaters, air conditioning and general heating and ventilating applications.

#### Elevator Bucket—

Link-Belt Co., Chicago, has made improvements in the design and construction of its Salem steel elevator bucket. The new Super Salem bucket is reinforced at the digging lip, front corners and along back, the lip being a part of the metal body folded over and spot welded. The back reinforcing plate is

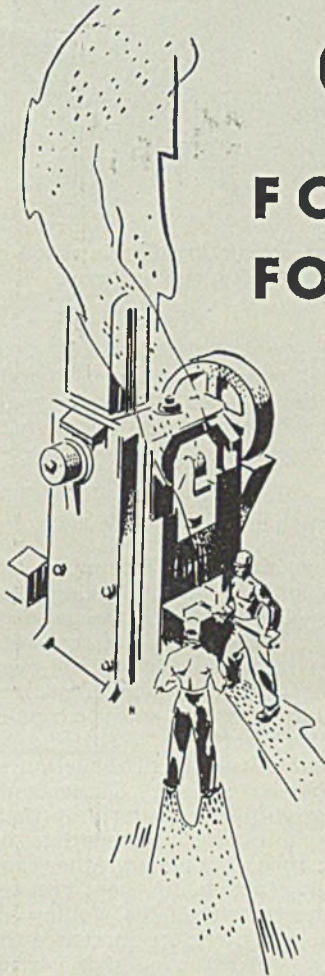


Reinforced lip of the new Super Salem elevator bucket is a part of the metal body folded over and welded



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also spot welded to the metal body and no rivets are used. The new buckets, made in 2½ x 2½-inch to 30 x 8-inch size, are interchangeable with the old, in 24 and 18 gage are claimed to be comparable to heavy construction of the standard Salem design, and can also be furnished in copper, brass, aluminum, Monel metal, or stainless steel.

♦ ♦ ♦

#### Gear Lapping Machine—

National Broach & Machine Co., Detroit, recently has announced the GLF, a new gear lapping machine designed to correct spiral angle, eccentricity, involute curvature and tooth spacing in gears. New unit has lap gear driving work gear. Rotation of the lap in one direction processes one side of the work gear teeth and changing the direction of rotation processes the other side. Machine table has a 15-degree swing and a vernier adjustment for close setting. Work gear spindle is carried on a cross slide which automatically reciprocates the work gear across the face of the lap. This cross slide movement is actuated and controlled hydraulically, which makes practically any lapping cycle easily available. Length, speed, and number of strokes may be varied at will. Any given number of strokes may be made before the direction of

lap rotation is changed, likewise any number after the change is made. Entire cycle is automatic, consequently each individual unit is processed uniformly. Machine will accommodate gears up to 8 inches in diameter, while maximum lap face is 3¾ inches.

♦ ♦ ♦

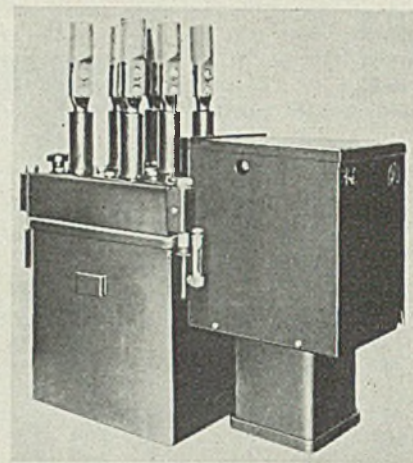
#### Heavy Duty Switch—

Delta-Star Electric Co., 2400 block, Fulton street, Chicago, has announced a new 4000 ampere, 23 kilovolt heavy-duty switch. The new unit is of outdoor form, multiple blade, straight line construction and equipped with blade locks and silvered contacts. One terminal is for use with heavy copper tubing, while the other is for flat bars.

♦ ♦ ♦

#### Circuit Breaker—

General Electric Co., Schenectady, N. Y., has announced a new oil blast circuit breaker, the type FK-45, rated at 75,000 kilovolt-amperes. This unit is a non-oil throwing breaker with plate steel rectangular tank with separating chamber, internal mechanism, silver to silver main contacts, easily renewable arcing contacts, oil blast baffles and Herkolite bushings. Available in three



Oil blast circuit breaker is rated at 75,000 kilovolt-amperes

current sizes, 600, 1200 and 2000 amperes, rugged tank construction of the unit makes it especially applicable where heavy duty and small space requirements are desired.

♦ ♦ ♦

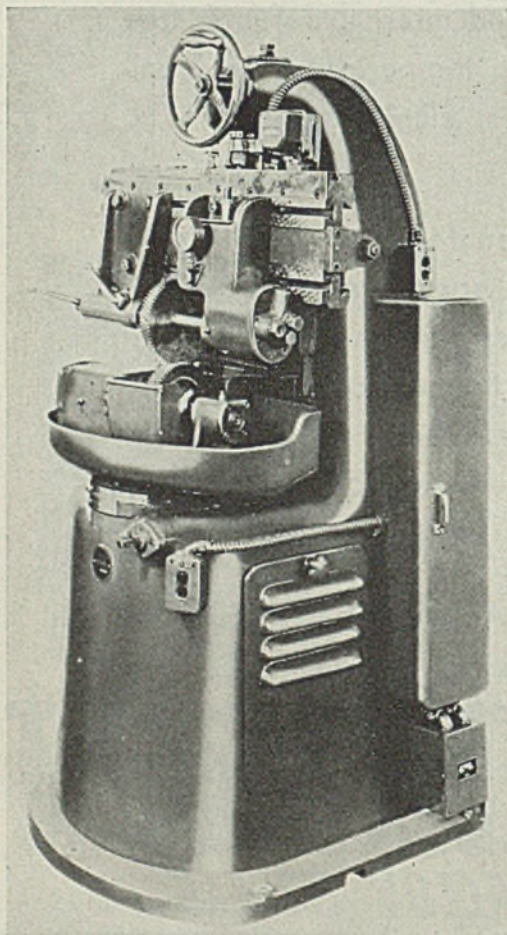
#### Coal Crusher—

Jeffrey Mfg. Co., Columbus, O., has announced a new single-roll crusher designed for the preparation of stoker and smaller size coal with a minimum of degradation and oversize. Its renewable segments carry thin, sharp pyramid and spear-point teeth, also insertable "Wejtite" feeder teeth for use where reduction of large coal is required. These teeth, together with the pattern of their spacing minimize degradation by causing a piercing action rather than a mashing action. A new breaker plate design eliminates boiling of the feed and therefore increases the capacity. An extended shoe carries the business zone farther along the roll to minimize oversize. These new features are also obtainable in replacement parts for change-over of the earlier type Jeffrey single-roll crushers.

♦ ♦ ♦

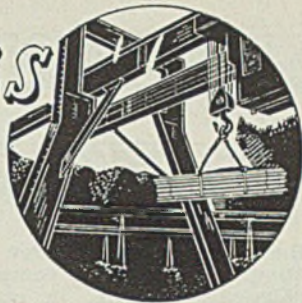
#### Spray Hose—

Eclipse Air Brush Co., 79 Orange street, Newark, N. J., is manufacturing a "du-al" spray painting hose that combines air and fluid hose in one unit, the tubes being united by a web of solid rubber moulded in one piece with the outer casing of the hose. The combination is said to be as flexible as a single line and to eliminate tangling and possibility of writhing or torque, even though different pressures are used on opposite sides. For making standard connections, enough of the web is removed to spread the hose to the required outlets, further splitting being prevented by a tightly fitting collar. The hose is available with ¾-inch fluid and 5/16-inch air passage.



Gear lapping machine corrects spiral angle, eccentricity, involute curvature and tooth spacing in gears

# MATERIALS HANDLING



## Size of Handling Units Has Effect on Economies

(Concluded from Page 56)

cessive number of small boxes or with parts too large for small boxes, using large boxes and providing mechanical means for handling is advisable, of course.

One plant engineer has adopted tote boxes of different sizes and has the standards engineers specify the particular box to use on the various products, endeavoring in each case to keep the loaded box at approximately 50 pounds. With this weight, the operator can lift without liability of strain or loss of time waiting for help.

In another plant where the work is handled at the machines in small tote boxes, some of the boxes are provided with a swivel caster at each end and two stationary casters in the center thus making it a small truck. Tote boxes without casters are stacked on top of this to a limit of four high. These stacks also are limited to a single production order or type of parts.

The travel to the next operation is short, about 20 feet as a maximum, and the stacked tote boxes are simply pushed across by hand. These boxes are used only at this one operation where the distance is short. Larger tote boxes and lift trucks are used on the longer hauls.

## By-Product of Handling

A BY-PRODUCT of straight-line production flow of work and well-planned materials handling, which results in a minimum of floor travel, is a decreased amount of floor maintenance. At the Diamond Chain & Mfg. Co., Indianapolis, floor movement has been decreased by the line-up of machines and the use of trolley conveyors for fixed paths of travel.

Trucks are necessary and used for items of irregular travel and for longer distances. As a result of this planning the maple floor is still in excellent condition with few replacements even in the trucking aisles after 19 years in service.

Another handling problem in connection with shifts of larger ma-

chines is simplified by the method of mounting. Large units, which do not fit into any production line-up but operate independently, are mounted on 6- or 8-inch channels, inverted over and bolted to 6- or 8-inch planks resting flat on the floor. These provide an even, firm, substantial base, as this mounting is used only with machines heavy enough to hold their position but not top heavy. Also, the mounting serves as a skid for easy movement of the entire machine. Another advantage is a wider distribution of the floor load.

## Meter Records Operating Time of Diesel Tractors

Proving its value during the past two years, an hour meter will now be standard equipment on all three, four and six cylinder Diesel engines produced by Caterpillar Tractor Co. Peoria, Ill. The hour meter registers one number for every hour the engine operates at standard rated speed and, as the speedometer on an automobile, serves for measuring the life and maintenance intervals

of the machine. Having a large, easily-read dial, it is attached to the rear of the fuel injection pump housing and is driven by the end of the shaft, fitting between the heads of the cap screws in the end of the fuel injection pump camshaft.

## New Bronze Has Ductility, Hardness and Strength

Especially recommended for use by the steel industry is a new bronze developed by Koppers Co., Bartlett Hayward division, Baltimore. Known as DHS, because of its high ductility, hardness and strength, it is intended for uses requiring wear and shock resistance, such as in screwdown nuts, lead screw nuts, housing nuts, trunnion bearings, block segments, slippers, worms and worm gears.

For these applications DHS No. 2 is recommended. This grade has the following minimum properties: Ultimate tensile strength 115,000 pounds per square inch; yield point 90,000 pounds per square inch; elastic limit 55,000 pounds per square inch; elongation 12 per cent; reduction of area 12 per cent in 2 inches; brinell hardness 225.

The new bronze also is made in three other grades with minimum properties ranging from 90,000 to 120,000 pounds per square inch ultimate tensile strength; 45,000 to 95,000 pounds yield point; 40,000 to 60,000 pounds elastic limit; 25 to 10 per cent reduction of area; 25 to 10 per cent elongation in 2 inches and 195 to 250 brinell hardness.

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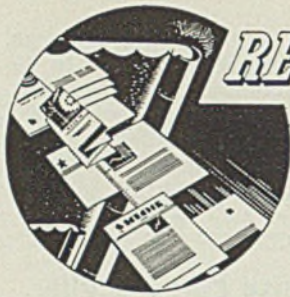
**Hemp Center**

**Wire Rope Center**

**Metallic Core**

**Seale - Filler Wire**

**Warrington**



# 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

**Regulators**—Hagan Corp., Pittsburgh. Bulletin D-R 34, describing operation of Hagan oil operated regulators.

**Disc Grinding**—Norton Co., Worcester, Mass. Booklet covering disc grinders, discs and plate mounted cylinders.

**Bearings**—Timken Roller Bearing Co., Canton, O. Folder of 32 pages in time-table size, illustrating the many applications of Timken bearings to railroad equipment.

**Wire Machines**—Lewis Machine Co., 3441 East 76th street, Cleveland. Bulletins No. 8-C-37 and 2-C, describing wire straightening and cutting machines.

**Safety Appliance**—Mine Safety Appliances Co., Braddock, Thomas and Meade streets, Pittsburgh. Illustrated bulletin describing MSA All-Service gas mask.

**Detachable Instruments**—Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. Catalog section 43-600, illustrating and describing new line of detachable instruments.

**Cement**—Pennsylvania Salt Mfg. Co., 1000 Widener building, Philadelphia. Pamphlet on Penchlor Asplit Cement, self-hardening, acid-proof product of unusual strength and toughness.

**Controls**—Mercoide Corp., 4213 Belmont avenue, Chicago. Bulletin devoted to a class presentation of Mercoide products, including thermostats, temperature limit controls, sealed mercury contact switches.

**Pyrometer**—Brown Instrument Co., Philadelphia. Bulletin No. 91-1, dealing with the Brown Optomatic system, an automatic pyrometer for measuring surface temperatures of hot bodies in motion or at rest.

**Bearing Service Manual**—Federal-Mogul Corp., Detroit. Booklet entitled "Engine Bearing Service Manual" and dealing with ways to diagnose and correct engine troubles caused by worn or cracked bearings.

**Electrical Equipment**—Bull Dog Electric Products Co., Detroit. Catalog covering a long line of safety switches, meter service switches, service equipment, panels, and other electrical equipment with prices listed.

**Electric Heating Equipment**—Harold E. Trent Co., 618 North 54th street, Philadelphia. Leaflet TA-104, describing an electric immersion heater for plating tanks and also

other Trent electrically heated products.

**Steel Sheets**—United States Steel Corp. Subsidiaries, Box 176, Pittsburgh. Booklet "USS Electrical Steel Sheets," released by Carnegie-Illinois Steel Corp. and containing latest factual information, development history, tables and other data.

**Lathe and Drill Chucks**—Westcott Chuck Co., 1400 East Walnut street, Oneida, N. Y. Catalog No. 537, covering Westcott lathe and drill chucks and containing current chuck prices and descriptions of lathe chucks in complete range of sizes and types for direct mounting on standard flanged spindle noses and on standard taper key drive spindle noses.

## Begins Manufacture of New Service Motorcycles

Simplex Mfg. Corp., recently organized, has taken over a 6-story industrial building at Baronne and Howard streets, New Orleans, and is now manufacturing motorcycles. Known as Servi-Cycles, these motorcycles are intended for use by all sorts of business and mercantile interests in making deliveries. They are the result of four years of experimenting by the organizers of the company to develop a motorcycle for business use which will be economical in operation and require minimum repairs. The new vehicle weighs 100 pounds, has a 1½-gallon gasoline tank, operates with a single-cylinder engine, has maximum speed of 30 miles per hour and develops as much as 100 miles per gallon of gasoline.

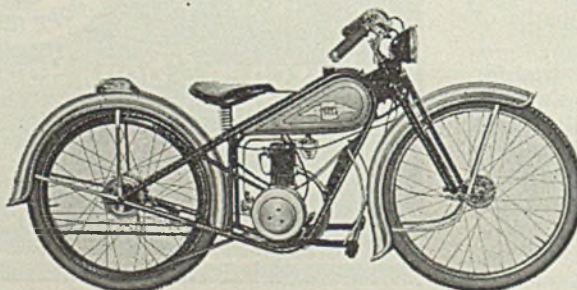
The frame is formed of seamless steel tubing while cold-rolled strip steel is used for the cross braces, hubs, tire rims, forks and other

parts. Mudguards are made from steel sheets of deep drawing quality. The gasoline tank is of terne plate. Wheels are provided with steel wire spokes and the seat with coiled steel springs. Motor crankcase is aluminum and the cylinder of cast iron. The crankshaft is a steel drop forging. The main bearings are Timken tapered roller while the connecting rod bearing is of the SKF type. Front and rear wheels are provided with separate brakes. Drive is through a heavy-duty V-belt. Lubrication through the bearings is of the forced draft type. All joints are welded by the oxyacetylene process. Synthetic enamel finish is employed largely, although many parts are plated with chromium or cadmium. The company performs all the operations in its own plant excepting forging, casting and plating.

W. Horace Williams, of W. Horace Williams Co. Inc., structural fabricator, New Orleans, is chairman of the Simplex Mfg. Corp. Other officers are President, J. P. Treen; vice president, Edwin L. Powell; secretary and treasurer, Roland A. Thomas.

## Develops Abrasive and Refractory Products

General Abrasive Co. Inc., Niagara Falls, N. Y., has added to its plant a department for the manufacture of a complete line of silicon carbide abrasives and refractories marketed under tradename Carbonite. Such abrasive grains and powders are used extensively in the granite, marble and glass industries for polishing and by the grinding wheel industry for production of grinding wheels and rub stones. The refractory grains are used for the manufacture of a wide variety of super-refractory ware such as tile, muffles and tubes. High heat conductivity of Carbonite adapts it particularly for application where transmission of high temperatures through refractory walls is desired. The company also has developed a Carbonite cement. Another new product developed by this company is an improved waterproof mixture of abrasive grains and a binder, known as Plastic Fut-Sur.



All joints in this steel motorcycle are welded by oxyacetylene process

# Steel Buying Less but Delivery Pressure Holds

## Scrap Moves Upward;

## Production in Gain;

## Iron Output Lower

**R**ESUMPTION of production by independent steel companies whose plants were closed by labor difficulties is proceeding as rapidly as circumstances will permit and the situation is clearing. Consumers of steel are besieging these producers for shipment of material as soon as possible, indicating need for steel for their products.

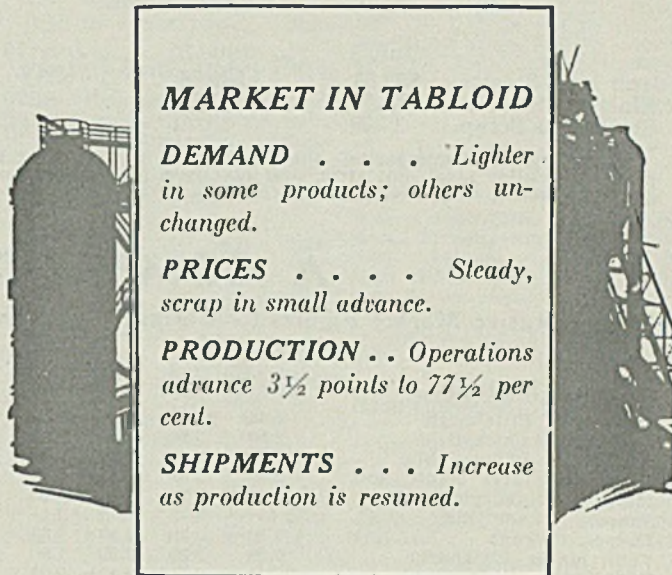
Buying has declined from the high rate of earlier months but in the eastern district June bookings were slightly better than those of May. Analysis of the situation reveals that demand for consumer goods like refrigerators and radios has met a fairly sharp reduction, which is attributed to curtailed buying power by workers who have suffered loss of income by idleness resulting from strikes in many lines of industry. Resumption of employment will tend to restore this restriction.

Inasmuch as steel production is entering third quarter with considerable backlogs and buying is at a good rate despite the shrinkage, in some cases at 75 per cent of shipments, most observers expect much less summer dullness than usual.

Hot and cold-rolled bars and strip feel the effect of the automotive seasonal lull as models are changed and lighter steel products for railroad use are also in less demand. Agricultural implements and tractors, on the other hand, are taking heavy supplies. Tubular goods are in good position and some makers have backlogs of eight weeks.

Production gained  $3\frac{1}{2}$  points over the preceding week as resumption of operations was started by plants idle from labor difficulties. This brought the national rate to  $77\frac{1}{2}$  per cent of capacity. Youngstown made the largest gain, 46 points to 75 per cent. Cincinnati gained 7 points to 93 per cent and Detroit 1 point to 100 per cent. Because of strike effects at Johnstown, Pa., the Pittsburgh district netted a loss of 2 points to 80 and Chicago lost 1 point to  $63\frac{1}{2}$  per cent because of the strike. Eastern Pennsylvania dropped 1 point to 66, Wheeling 1 point to 92 and Buffalo 1 point to 87. No change was made in rates at Cleveland at 49, Birmingham at 83, New England at 92 and St. Louis at 93.

Pig iron production in June suffered from strike interruptions and totaled 3,114,658 gross tons, a loss of 430,522 tons from the May output. This was 12.1 per cent under May. However, there was one day less than in May and the average daily rate of 103,822



**MARKET IN TABLOID**

**DEMAND** . . . Lighter in some products; others unchanged.

**PRICES** . . . Steady, scrap in small advance.

**PRODUCTION** . . Operations advance  $3\frac{1}{2}$  points to  $77\frac{1}{2}$  per cent.

**SHIPMENTS** . . . Increase as production is resumed.

tons showed a loss of only 10,538 tons, or 9.2 per cent from the June daily rate. For six months the total production was 19,770,691 tons, a gain of 45.6 per cent over the 13,580,002 tons made in the first half of 1936. The daily rate of production was the lowest during 1937, almost identical with the January average of 103,863 tons.

Automobile production last week was the best since the week of May 29, with a total of 122,890 compared with 121,032 the preceding week. General Motors made 50,490, compared with 46,190 the week before. Ford's production was 27,210, compared with 28,890 and Chrysler 28,775, identical with the previous week.

Although only 548 freight cars were placed in June, the smallest number since last August, the total for six months, 45,985 cars, is the largest for any similar period since 1929, and, with the exception of 1936, the largest for any whole year since 1929. In 1936 total cars placed numbered 28,109 for the first six months and 64,643 for the entire year.

A new steelworks by a company with capital of a million pounds sterling, through government aid, is projected for Jarrow, England, and two new blast furnace stacks are planned by French iron producers. British steelmakers in some instances are sold to the end of the year while others have small capacity left.

Previous indications that steel and iron scrap had touched bottom are borne out in developments of last week when strength asserted itself in advances of 50 cents per ton on various grades at several consuming points. The effect on steelmaking grades was to raise the composite price 8 cents, to \$17.08, the first advance since the decline started at the beginning of April. The composite now is exactly \$5 below the high point, \$22.08, for the first week in April. Strength in scrap also raised the iron and steel composite 5 cents, to \$39.83. The finished steel composite is steady at \$61.70.

# COMPOSITE MARKET AVERAGES

	July 3	June 26	June 19	One Month Ago June, 1937	Three Months Ago Apr., 1937	One Year Ago July, 1936	Five Years Ago July, 1932
Iron and Steel ....	\$39.83	\$39.78	\$39.80	\$39.82	\$40.39	\$33.49	\$28.87
Finished Steel ....	61.70	61.70	61.70	61.70	61.45	53.40	47.71
Steelworks Scrap ..	17.08	17.00	17.00	17.15	21.67	12.89	6.06

Iron and Steel Composite:—Pig iron, scrap, billets, sheet bars, wire rods, tin plate, wire, sheets, plates, shapes, bars, black pipe, rails, alloy steel, hot strip, and cast iron pipe at representative centers. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate, pipe. Steelworks Scrap Composite:—Heavy melting steel and compressed sheets.

## A COMPARISON OF PRICES

Representative Market Figures for Current Week; Average for Last Month, Three Months and One Year Ago

Finished Material	July 3,	June	April	July	Pig Iron	July 3,	June	April	July
	1937	1937	1937	1936		1937	1937	1937	1936
Steel bars, Pittsburgh .....	2.45c	2.45c	2.45c	1.95c	Bessemer, del. Pittsburgh .....	\$25.26	\$25.26	\$25.26	\$20.81
Steel bars, Chicago .....	2.50	2.50	2.50	2.00	Basic, Valley .....	23.50	23.50	23.50	19.00
Steel bars, Philadelphia .....	2.74	2.74	2.74	2.26	Basic, eastern del. East Pa. ....	25.26	25.26	25.26	20.81
Iron bars, Terre Haute, Ind. ....	2.35	2.35	2.35	1.85	No. 2 fdy., del. Pittsburgh .....	25.21	25.21	25.21	20.31
Shapes, Pittsburgh .....	2.25	2.25	2.25	1.90	No. 2 fdy., Chicago .....	24.00	24.00	24.00	19.50
Shapes, Philadelphia .....	2.45 1/2	2.45 1/2	2.45 1/2	2.11 1/2	Southern No. 2, Birmingham .....	20.88	20.88	20.88	15.50
Shapes, Chicago .....	2.30	2.30	2.30	1.95	Southern No. 2, del. Cincinnati ..	23.69	23.69	23.69	20.2007
Tank plates, Pittsburgh .....	2.25	2.25	2.25	1.90	No. 2X eastern, del. Phila. ....	26.135	26.135	26.135	21.68
Tank plates, Philadelphia .....	2.43 1/2	2.43 1/2	2.43 1/2	2.09	Malleable, Valley .....	24.00	24.00	24.00	19.50
Tank plates, Chicago .....	2.30	2.30	2.30	1.95	Malleable, Chicago .....	24.00	24.00	24.00	19.50
Sheets, No. 10, hot rolled, Pitts. .	2.40	2.40	2.40	1.95	Lake Sup., charcoal, del. Chicago .	30.04	30.04	30.04	25.2528
Sheets, No. 24, hot ann., Pitts. ....	3.15	3.15	3.15	2.50	Gray forge, del. Pittsburgh .....	24.17	24.17	24.17	19.67
Sheets, No. 24, galv., Pitts. ....	3.80	3.80	3.80	3.20	Ferromanganese, del. Pittsburgh .	107.29	107.29	99.79	80.13
Sheets, No. 10, hot rolled, Gary . .	2.50	2.50	2.50	2.05					
Sheets, No. 24, hot anneal., Gary .	3.25	3.25	3.25	2.60	<b>Scrap</b>				
Sheets, No. 24, galvan., Gary .....	3.90	3.90	3.90	3.30	Heavy melting steel, Pittsburgh ..	\$18.25	\$18.40	\$22.75	\$14.15
Plain wire, Pittsburgh .....	2.90	2.90	2.90	2.40	Heavy melt. Steel, No. 2, East Pa. .	15.25	15.25	19.06	11.50
Tin plate, per base box, Pitts. ....	\$5.35	5.35	5.25	5.25	Heavy melting steel, Chicago .....	16.00	16.00	20.75	13.25
Wire nails, Pittsburgh .....	2.75	2.75	2.75	2.10	Rail for rolling, Chicago .....	18.75	19.50	23.35	14.00
					Railroad steel specialties, Chicago .	18.75	19.50	23.75	14.75
<b>Semifinished Material</b>					<b>Coke</b>				
Sheet bars, open-hearth, Youngs. .	\$37.00	\$37.00	\$37.00	\$30.00	Connellsville, furnace, ovens .....	\$4.50	\$4.65	\$4.50	\$3.45
Sheet bars, open-hearth, Pitts. ....	37.00	37.00	37.00	30.00	Connellsville, foundry, ovens .....	5.30	5.30	5.05	4.25
Billets, open-hearth, Pittsburgh ..	37.00	37.00	37.00	30.00	Chicago, by-product foundry, del. .	11.00	11.00	11.00	9.75
Wire rods, No. 5 to 1/2-inch, Pitts. .	47.00	47.00	47.00	38.00					

# Steel, Iron, Raw Material, Fuel and Metals Prices

Except when otherwise designated, prices are base, f.o.b. cars.

<b>Sheet Steel</b>	<b>Tin Mill Black No. 28</b>	<b>Corrosion and Heat-Resistant Alloys</b>	<b>Structural Shapes</b>
Prices Subject to Quantity Extras and Deductions (Except Galvanized)	Pittsburgh .....	Pittsburgh base, cents per lb.	Pittsburgh .....
<b>Hot Rolled No. 10, 24-48 in.</b>	Gary .....	<b>Chrome-Nickel</b>	Philadelphia, del. ....
Pittsburgh .....	St. Louis, delivered ....	No. 302 No. 304	New York, del. ....
Gary .....	Granite City, Ill. ....	24.00 25.00	Boston, delivered .....
Chicago, delivered .....	<b>Cold Rolled No. 10</b>	27.00 29.00	Bethlehem .....
Detroit, del. ....	Pittsburgh .....	34.00 36.00	Chicago Chicago .....
New York, del. ....	Gary .....	Hot strip .....	Cleveland, del. ....
Philadelphia, del. ....	Detroit, delivered .....	21.50 23.50	Buffalo .....
Birmingham .....	Philadelphia, del. ....	Cold strip .....	Gulf Ports .....
St. Louis, del. ....	New York, del. ....		Birmingham .....
Granite City, Ill. ....	St. Louis, del. ....	<b>Straight Chromes</b>	Pacific ports, f.o.b. cars,
Pacific ports, f.o.b. dock	Granite City, Ill. ....	No. No. No. No.	dock .....
<b>Hot Rolled Annealed No. 24</b>	Pacific ports, f.o.b. dock	410 430 442 446	St. Louis, del. ....
Pittsburgh .....	<b>Cold Rolled No. 20</b>	18.50 19.00 22.50 27.50	
Gary .....	Pittsburgh .....	21.50 22.00 25.50 30.50	<b>Bars</b>
Chicago, delivered .....	Gary .....	26.50 29.00 32.50 36.50	<b>Soft Steel</b>
Detroit, delivered .....	Detroit, delivered .....	Hot strip 17.00 17.50 23.00 28.00	(Base, 3 to 25 tons)
New York, del. ....	Philadelphia, del. ....	Cold stp. 22.00 22.50 28.50 36.50	Pittsburgh .....
Philadelphia, del. ....	New York, del. ....		Chicago or Gary .....
Birmingham .....	St. Louis, del. ....	<b>Steel Plate</b>	Duluth .....
St. Louis, del. ....	Granite City, Ill. ....	Pittsburgh .....	Birmingham .....
Granite City, Ill. ....	<b>Enameling Sheets</b>	New York, del. ....	Cleveland .....
Pacific ports, f.o.b. dock	Pittsburgh, No. 10 .....	Philadelphia, del. ....	Buffalo .....
<b>Galvanized No. 24</b>	Pittsburgh, No. 20 .....	Boston, delivered .....	Detroit, delivered .....
Pittsburgh .....	Gary, No. 10 .....	Buffalo, delivered .....	Pacific ports, f.o.b. cars,
Gary .....	Gary, No. 20 .....	Chicago or Gary .....	dock .....
Chicago, delivered .....	St. Louis, No. 10 .....	Cleveland, del. ....	Philadelphia, del. ....
Philadelphia, del. ....	St. Louis, No. 20 .....	Birmingham .....	Boston, delivered .....
New York, delivered .....		Coatesville, base .....	New York, del. ....
Birmingham .....	<b>Tin and Terne Plate</b>	Sparrows Pt., base .....	Pitts., forg. qual. ....
St. Louis, del. ....	Gary base, 10 cents higher.	Pacific ports, f.o.b. cars,	
Granite City, Ill. ....	Tin plate, coke, (base	dock .....	<b>Rail Steel</b>
Pacific ports, f.o.b. dock	box), Pittsburgh .....	St. Louis, delivered .....	<b>To Manufacturing Trade</b>
	Waste-waste, 2.75c; .....		Pittsburgh .....
	strip .....		Chicago or Gary .....
	Long ternes, No. 24, un-		Moline, Ill. ....
	assorted, Pitts. ....		Cleveland .....
			Buffalo .....

**Iron**

Terre Haute, Ind. ....	2.35c
Chicago .....	2.40c
Philadelphia .....	2.64c
Pittsburgh, refined....	3.50-8.00c

**Reinforcing**

New billet, straight lengths, quoted by distributors	
Pittsburgh .....	2.55c
Chicago, Gary, Buffalo, Cleve., Birm., Young...	2.60c
Gulf ports .....	2.65c
Pacific coast ports, f.o.b. car docks .....	
Philadelphia, del. ....	2.84c
Rail steel, straight lengths, quoted by distributors	
Pittsburgh .....	2.40c
Chicago, Buffalo, Cleve- land, Birm., Young....	2.45c
Gulf ports .....	2.80c

**Wire Products**

Prices apply to straight or mixed carloads; less carloads \$5 higher; less carloads fencing \$5 over base column.

Base Pitts.-Cleve. 100 lb. keg.	
Standard wire nails....	\$2.75
Cement coated nails .....	\$2.75
(Per pound)	
Polished staples .....	3.45c
Galv. fence staples .....	3.70c
Barbed wire, galv. ....	3.40c
Annealed fence wire....	3.20c
Galv. fence wire .....	3.60c
Woven wire fencing (base column, c. 1.)... \$74.00	
Single loop bale ties, (base column, c. 1.)... \$63.00	

**To Manufacturing Trade**

Plain wire, 6-9 ga.....	2.90c
Anderson, Ind. (merchant prod- ucts only) and Chicago up \$1; Duluth and Worcester up \$2; Birmingham up \$3.	
Spring wire, Pitts. or Cleveland .....	3.50c
Do., Chicago up \$1, Worc. \$2.	

**Cold-Finished Carbon Bars and Shafting**

Pittsburgh .....	2.90c
Chicago .....	2.95c
Gary, Ind. ....	2.95c
Detroit .....	2.95c
Cleveland .....	2.95c
Buffalo .....	3.00c

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

**Alloy Steel Bars (Hot)**

(Base, 3 to 25 tons)

Pittsburgh, Buffalo, Chi- cago, Massillon, Can- ton, Bethlehem .....	3.00c
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Alloy			
S.A.E.	Diff.	S.A.E.	Diff.
2000.....	0.35	3100.....	0.70
2100.....	0.75	3200.....	1.35
2300.....	1.55	3300.....	3.80
2500.....	2.25	3400.....	3.20
4100 0.15 to 0.25 Mo.....	0.55		
4600 0.20 to 0.30 Mo. 1.50- 2.00 Ni.....	1.10		
5100 0.80-1.10 Cr.....	0.45		
5100 Cr. spring .....	0.15		
6100 bars .....	1.20		
6100 spring .....	0.85		
Cr. N., Van .....	1.50		
Carbon Van.....	0.85		
9200 spring flats .....	0.15		
9200 spring rounds, squares	0.40		

**Piling**

Pittsburgh .....	2.60c
Chicago, Buffalo .....	2.70c

**Strip and Hoops**

(Base, hot rolled, 25-1ton)	
(Base, cold-rolled, 25-3 tons)	
Hot strip to 23½-in.	
Pittsburgh .....	2.40c
Chicago or Gary .....	2.50c
Birmingham base .....	2.55c
Detroit, del. ....	2.60c
Philadelphia, del. ....	2.69c
New York, del. ....	2.73c
Cooperage hoop,	
Pittsburgh .....	2.50c
Chicago .....	2.60c
Cold strip, 0.25 carbon and under, Pittsburgh,	
Cleveland .....	3.20c
Detroit, del. ....	3.40c
Worcester, Mass. ....	3.40c
Cleve. Worces- Pitts. ter, Mass.	
Carbon	
0.26—0.50....	3.20c 3.40c
0.51—0.75....	4.45c 4.65c
0.76—1.00....	6.30c 6.50c
Over 1.00....	8.50c 8.70c

**Rails, Track Material**

(Gross Tons)

Standard rails, mill .....	\$42.50
Relay rails, Pittsburgh, 20—100 lbs. ....	32.50-35.50
Light rails, billet qual.,	
Pittsburgh, Chicago .....	\$43.00
Do., rerolling quality..	42.00
Angle bars, billet, Gary, Pittsburgh, So. Chicago	
Do., axle steel .....	2.80c 3.20c
Spikes, R. R. base .....	3.15c
Track bolts, base .....	4.35c
Tie plates, base .....	
Base, light rails 25 to 60 lbs.;	\$46.00
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, Bir- mingham, Chicago. Discounts to legitimate trade as per Dec. 1, 1932, lists:	
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**Carriage and Machine**

½ x 6 and smaller....	65-5 off
Do. larger .....	60-10 off
Tire bolts .....	50 off

**Plow Bolts**

All sizes .....	65-5 off
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**Stove Bolts**

In packages with nuts at- tached 72½ off; in packages with nuts separate 72½-5 off; in bulk 80 off on 15,000 of 3-inch and shorter, or 5000 over 3-inch.	
Step bolts .....	60 off
Elevator bolts .....	50-10-5 off

**Nuts**

S. A. E. semifinished hex.:	
½ to ⅝-1/8-inch .....	60-10 off
Do., ½ 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**

Structural, Pittsburgh,	
Cleveland .....	3.60c
Structural, Chicago .....	
¾-inch and smaller, Pitts., Chl., Cleve. ....	65-5 off
Wrought washers, Pitts., Chl., Phila. to jobbers and large nut, bolt mfrs. ....	
	\$5.75 off

**Cut Nails**

Cut nails, C. L., Pitts. (10% disc. on all extras)	\$3.60
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Do., less carloads, 5 kegs or more, no dis- count 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. 2½ less. Wrought pipe, Pittsburgh.

<b>Butt Weld Steel</b>			
In.	Blk.	Galv.	
½ .....	59½	49	
¾ .....	62½	53	
1—3 .....	64½	55½	
<b>Iron</b>			
¾ .....	26	8	
1—1½ .....	30	14	
1½ .....	34	16½	
2 .....	33½	16	
<b>Lap Weld Steel</b>			
2 .....	57	47½	
2½—3 .....	60	50½	
3½—6 .....	62	52½	
7 and 8 .....	61	50½	
9 and 10 .....	60½	50	
<b>Iron</b>			
2 .....	26½	10	
2½—3½ .....	27½	12½	
4 .....	29½	16	
4½—8 .....	28½	15	
9—12 .....	24½	10	
<b>Line Pipe Steel</b>			
1 to 3, butt weld .....	63½		
2, lap weld .....	56		
2½ to 3, lap weld .....	59		
3½ to 6, lap weld .....	61		
7 and 8, lap weld .....	60		
10-inch, lap weld .....	59½		
12-inch, lap weld .....	58½		
<b>Butt Weld Iron</b>			
¾ .....	25	7	
1 and 1½ .....	29	13	
1½ .....	33	15½	
2 .....	32½	15	
<b>Lap Weld</b>			
1½ .....	23½	7	
2 .....	25½	9	
2½ to 3½ .....	26½	11½	
4 .....	28½	15	
4½ to 8 .....	27½	14	
9 to 12 .....	23½	9	

<b>Line Pipe Steel</b>			
1 to 3, butt weld .....	63½		
2, lap weld .....	56		
2½ to 3, lap weld .....	59		
3½ to 6, lap weld .....	61		
7 and 8, lap weld .....	60		
10-inch, lap weld .....	59½		
12-inch, lap weld .....	58½		
<b>Butt Weld Iron</b>			
¾ .....	25	7	
1 and 1½ .....	29	13	
1½ .....	33	15½	
2 .....	32½	15	
<b>Lap Weld</b>			
1½ .....	23½	7	
2 .....	25½	9	
2½ to 3½ .....	26½	11½	
4 .....	28½	15	
4½ to 8 .....	27½	14	
9 to 12 .....	23½	9	

<b>Line Pipe Steel</b>			
1 to 3, butt weld .....	63½		
2, lap weld .....	56		
2½ to 3, lap weld .....	59		
3½ to 6, lap weld .....	61		
7 and 8, lap weld .....	60		
10-inch, lap weld .....	59½		
12-inch, lap weld .....	58½		
<b>Butt Weld Iron</b>			
¾ .....	25	7	
1 and 1½ .....	29	13	
1½ .....	33	15½	
2 .....	32½	15	
<b>Lap Weld</b>			
1½ .....	23½	7	
2 .....	25½	9	
2½ to 3½ .....	26½	11½	
4 .....	28½	15	
4½ to 8 .....	27½	14	
9 to 12 .....	23½	9	

<b>Line Pipe Steel</b>			
1 to 3, butt weld .....	63½		
2, lap weld .....	56		
2½ to 3, lap weld .....	59		
3½ to 6, lap weld .....	61		
7 and 8, lap weld .....	60		
10-inch, lap weld .....	59½		
12-inch, lap weld .....	58½		
<b>Butt Weld Iron</b>			
¾ .....	25	7	
1 and 1½ .....	29	13	
1½ .....	33	15½	
2 .....	32½	15	
<b>Lap Weld</b>			
1½ .....	23½	7	
2 .....	25½	9	
2½ to 3½ .....	26½	11½	
4 .....	28½	15	
4½ to 8 .....	27½	14	
9 to 12 .....	23½	9	

<b>Line Pipe Steel</b>			
1 to 3, butt weld .....	63½		
2, lap weld .....	56		
2½ to 3, lap weld .....	59		
3½ to 6, lap weld .....	61		
7 and 8, lap weld .....	60		
10-inch, lap weld .....	59½		
12-inch, lap weld .....	58½		
<b>Butt Weld Iron</b>			
¾ .....	25	7	
1 and 1½ .....	29	13	
1½ .....	33	15½	
2 .....	32½	15	
<b>Lap Weld</b>			
1½ .....	23½	7	
2 .....	25½	9	
2½ to 3½ .....	26½	11½	
4 .....	28½	15	
4½ to 8 .....	27½	14	
9 to 12 .....	23½	9	

**Boiler Tubes**

Carloads minimum wall seam-  
less steel boiler tubes, cut  
lengths 4 to 24 feet, f.o.b. Pitts-  
burgh, base price per 100 feet  
subject to usual extras.

<b>Lap Weld</b>			
Sizes	Steel	Char- coal	Iron
1½" OD x 13 Ga. ....	\$10.45	\$23.71	
1¾" OD x 13 Ga. ....	11.89	22.93	
2" OD x 13 Ga. ....	13.31	19.35	
2" OD x 11 Ga. ....	15.49	23.36	
2½" OD x 13 Ga. ....	14.82	21.68	
2½" OD x 11 Ga. ....	17.38	26.02	
2½" OD x 12 Ga. ....	17.82	26.57	
2¾" OD x 12 Ga. ....	18.86	29.00	
3" OD x 12 Ga. ....	19.73	31.36	
3½" OD x 11 Ga. ....	24.89	39.81	
4" OD x 10 Ga. ....	30.81	49.90	
5" OD x 9 Ga. ....	47.57	73.93	
6" OD x 7 Ga. ....	73.25	.....	
<b>Seamless</b>			
		Hot	Cold
		Rolled	Drawn
1" OD x 13 Ga. ....	\$ 8.41	\$ 9.46	
1¼" OD x 13 Ga. ....	9.96	11.21	
1½" OD x 13 Ga. ....	11.00	12.38	
1¾" OD x 13 Ga. ....	12.51	14.09	
2" OD x 13 Ga. ....	14.02	15.78	
2½" OD x 13 Ga. ....	15.63	17.60	

2¼" OD x 12 Ga. ....	17.21	19.37
2½" OD x 12 Ga. ....	18.85	21.22
2¾" OD x 12 Ga. ....	19.98	22.49
3" OD x 12 Ga. ....	20.97	23.60
4½" OD x 10 Ga. ....	40.15	45.19
3½" OD x 11 Ga. ....	26.47	29.79
4" OD x 10 Ga. ....	32.83	36.96
5" OD x 9 Ga. ....	50.38	56.71
6" OD x 7 Ga. ....	77.35	87.07

**Cast Iron Water Pipe**

<b>Class B Pipe—Per Net Ton</b>	
6-in. & over, Birm. ....	\$46.00-47.00
4-in., Birmingham....	49.00-50.00
4-in., Chicago .....	57.00-58.00
6 to 24-in., Chicago.	54.00-55.00
6-in. & over, east fdy.	50.00
Do., 4-in. ....	53.00
Class A Pipe \$3 over Class B	
Std. ftgs., Birm., base.	\$100.00

**Semifinished Steel**

<b>Billets and Blooms</b>	
4 x 4-inch base; gross ton	
Pitts., Chl., Cleve., Buf- falo and Young. ....	\$37.00
Philadelphia .....	42.30
Duluth .....	39.00
<b>Forging Billets</b>	
6 x 6 to 9 x 9-in., base	
Pitts., Chicago, Buffalo..	43.00
Forging, Duluth .....	45.00
<b>Sheet Bars</b>	
Pitts., Cleve., Young, Sparrows Point .....	37.00
<b>Slabs</b>	
Pitts., Chicago, Cleve- land, Youngstown ....	37.00
<b>Wire Rods</b>	
Pitts., Cleve., No. 5 to ⅝-inch incl. ....	
Do., over ⅝ to 1¼-inch incl. ....	47.00
Chicago up \$1; Worcester up \$2. Skelp .....	52.00
Pitts., Chl., Young, Buff., Coatesville, Sparrows Pt.	2.10c

<b>Price Per Net Ton</b>	
<b>Beehive Ovens</b>	
Connellsville, fur. ....	\$4.40-4.60
Connellsville, fdry. ....	5.25-5.50
Connell. prem. fdry. ....	6.00-6.50
New River fdry. ....	6.50-6.75
Wise county fdry. ....	5.75-6.00
Wise county fur. ....	4.75-5.00
<b>By-Product Foundry</b>	
Newark, N. J., del. ....	10.85-11.30
Chl., ov., outside del.	10.25
Chicago, del. ....	11.00
Milwaukee, ovens. ....	11.00
New England, del. ....	12.50
St. Louis, del. ....	11.00-11.50
Birmingham, ovens.	7.25
Indianapolis, del. ....	10.50
Cincinnati, del. ....	10.50
Cleveland, del. ....	11.00
Buffalo, del. ....	10.50
Detroit, del. ....	11.10
Philadelphia, del. ....	10.60

<b>Coke</b>	
<b>Price Per Net Ton</b>	
<b>Beehive Ovens</b>	
Connell	

## 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 Malle- Fdry. 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	24.50
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
Erie, 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	25.26	24.76	25.76
Akron, O., from Cleveland.....	25.26	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	.....
Philadelphia 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	.....

	No. 2 Malle- Fdry. 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

	Charcoal		
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

### First Quality

Pa., Ill., Md., Mo., Ky... 51.30  
Alabama, Georgia .... 51.30

### Second Quality

Pa., Ill., Ky., Md., Mo... 46.55  
Georgia, Alabama .... 41.80

### 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 Bal-  
timore bases (bags).. \$45.00

Domestic dead-burned  
grains, net ton f.o.b.

Chester, Pa., and Bal-  
timore bases (bags).. 43.00

Domestic dead-burned  
gr. net ton f.o.b. Che-  
welah, Wash. (bulk).. 25.00

### Base Brick

Net ton, f.o.b. Baltimore, Ply-  
mouth 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.

Palmerton, Pa., spot.. 33.00

Do., New Orleans ..... 33.00 || Do., 26-28%, Palmer- ton ..... | 39.00 |

Ferrosilicon, 50% freight  
allowed, c.l. .... 69.50

Do., less carload ..... 77.00 || Do., 75 per cent. .... | 126-130.00 |
| Spot, \$5 a ton higher. |  |

Silicomane, 2½ carbon.. 106.50

2% carbon 111.50; 1%, 121.50

Ferrochrome, 66-70 chrom-  
mium, 4-6 carbon, cts.

lb. del. .... 10.50

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

Ferrovandium, 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, electro-  
lytic, per ton c. l., 23-  
26% f.o.b. Anniston,  
Ala., 24% \$3 unitage

Ferromolybdenum, stand.  
55-65%, lb. .... 0.95

Molybdate, lb. cont.... 0.80

†Carloads. Quan. diff. apply

## Nonferrous

### METAL PRICES OF THE WEEK

Spot unless otherwise specified. Cents per pound

Copper				Straits Tin,		Lead		Zinc	Alumi- num	Antimony	Nickel
Electro, del.	Lake, del.	Casting, refinery	Spot	Futures	Lead East St. L.	Lead East St. L.					
June 26	14.00	14.12½	13.75	57.25	56.62½	6.00	5.85	6.75	20.00	14.50	35.00
June 28	14.00	14.12½	13.75	57.00	56.25	6.00	5.85	6.75	20.00	14.50	35.00
June 29	14.00	14.12½	13.75	56.25	55.62½	6.00	5.85	6.75	20.00	14.50	35.00
June 30	14.00	14.12½	13.75	56.62½	56.00	6.00	5.85	6.75	20.00	14.50	35.00
July 1	14.00	14.12½	13.75	57.75	57.00	6.00	5.85	6.75	20.00	14.50	35.00
July 2	14.00	14.12½	13.75	57.37½	56.65	6.00	5.85	6.75	20.00	14.12½	35.00

### 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..... 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

### OLD METALS

Nom. Deal, buying prices

#### No. 1 Composition Red Brass

New York ..... 8.50-8.75 || Cleveland ..... | 8.75-9.00 |
| Chicago ..... | 8.37½-8.62½ |
| St. Louis ..... | 8.25-8.50 |

#### Heavy Copper and Wire

New York, No. 1 ..... 10.50-10.75 || Cleveland, No. 1 ..... | 10.75-11.00 |
| Chicago, No. 1 ..... | 10.25-10.50 |
| St. Louis, No. 1 ..... | 10.00-10.25 |

#### Composition Brass Borings

New York ..... 8.00-8.25 |

#### Light Copper

New York ..... 8.75-9.00 || Cleveland ..... | 8.75-9.00 |
| Chicago ..... | 8.25-8.50 |
| St. Louis ..... | 8.25-8.50 |

Light Brass  
Cleveland ..... 5.75-6.00 || Chicago ..... | 5.25-5.50 |
| St. Louis ..... | 5.25-5.50 |

#### Lead

New York ..... 4.75 || Cleveland ..... | 4.50-4.75 |
| Chicago ..... | 4.75-5.00 |
| St. Louis ..... | 4.25-4.50 |

#### Zinc

New York ..... 3.00-3.25 || Cleveland ..... | 3.00-3.25 |
| St. Louis ..... | 3.00-3.50 |

#### Aluminum

Borings, Cleveland.. 9.25-9.50

Mixed cast, Cleve... 13.00-13.25

Clips, soft, Cleve... 15.00-15.50

Mixed, cast, St. L.. 13.25-13.75

### SECONDARY METALS

Brass, ingot 85-5-5-5, 1cl. 14.00

Stand. No. 12 alum. 18.50-19.00



# Warehouse Iron and Steel Prices

Cents per pound for delivery within metropolitan districts of cities specified

## STEEL BARS

Baltimore	4.00c
Boston††	4.05c
Buffalo	3.10c
Chattanooga	3.96c
Chicago (j)	3.85c
Cincinnati	4.05c
Cleveland	3.75c
Detroit	3.93½c
Houston	3.10c
Los Angeles	4.30c
Milwaukee	3.96c-4.11c
New Orleans	4.20c
New York† (d)	4.12c
Pitts. (h)	3.80c
Philadelphia	4.00c
Portland	4.50c
San Francisco	4.20c
Seattle	4.45c
St. Louis	4.09c
St. Paul	4.10c-4.25c
Tulsa	3.35c

## IRON BARS

Portland	3.50c
Chattanooga	3.96c
Baltimore*	3.25c
Cincinnati	4.05c
New York† (d)	3.65c
Philadelphia	4.00c
St. Louis	4.09c
Tulsa	3.35c

## REINFORCING BARS

Buffalo	2.60c
Chattanooga	3.96c
Cleveland (c)	2.55c
Cincinnati	3.75c
Houston	3.25c
Los Angeles, c.l.	2.975c
New Orleans*	3.24c
Pitts., plain (h)	2.55c
Pitts., twisted squares (h)	3.95c
San Francisco	2.97½c
Seattle	2.975c
St. Louis	3.99c
Tulsa	3.25c
Young	2.30c-2.60c

## SHAPES

Baltimore	3.90c
Boston††	3.92c
Buffalo	3.35c
Chattanooga	4.01c
Chicago	3.75c
Cincinnati	3.95c
Cleveland	3.86c
Detroit	3.95c
Houston	3.10c
Los Angeles	4.30c
Milwaukee	3.86c
New Orleans	4.10c
New York† (d)	3.97c
Philadelphia	3.90c
Pittsburgh (h)	3.70c
Portland (l)	4.25c
San Francisco	4.05c
Seattle (l)	4.25c
St. Louis	3.99c
St. Paul	4.00c
Tulsa	3.60c

## PLATES

Baltimore	3.90c
Boston††	3.93c
Buffalo	3.47c
Chattanooga	4.01c
Chicago	3.75c
Cincinnati	3.95c
Cleveland, ¼-in. and over	3.86c
Detroit	3.95c
Detroit, ⅜-in.	4.15c
Houston	3.10c
Los Angeles	4.30c
Milwaukee	3.86c
New Orleans	4.10c
New York† (d)	4.00c
Philadelphia	3.90c

Phila. floor	4.95c
Pittsburgh (h)	3.70c
Portland	4.25c
San Francisco	4.05c
Seattle	4.25c
St. Louis	3.99c
St. Paul	4.00c
Tulsa	3.60c

## NO. 10 BLUE

Baltimore	3.95c
Boston (g)	4.00c
Buffalo	3.72c
Chattanooga	3.91c
Chicago	3.85c
Cincinnati	4.00c
Cleveland	3.91c
Det. 8-10 ga.	3.93½c
Houston	3.45c
Los Angeles	4.50c
Milwaukee	3.96c
New Orleans	4.35c
New York† (d)	4.07c
Portland	4.25c
Philadelphia	4.00c
Pittsburgh (h)	3.75c
San Francisco	4.30c
Seattle	4.50c
St. Louis	4.39c
St. Paul	4.10c
Tulsa	3.80c

## NO. 24 BLACK

Baltimore*†	4.50c
Boston (g)	4.75c
Buffalo	3.35c
Chattanooga*	4.06c
Chicago	4.45c-5.10c
Cincinnati	4.75c
Cleveland	4.66c
Detroit	4.68½c
Los Angeles	5.05c
Milwaukee	4.56c-5.21c
New York† (d)	4.82c
Philadelphia	4.65c
Pitts.** (h)	4.75c
Portland	5.15c
Seattle	5.35c
San Francisco	5.15c
St. Louis	4.84c
St. Paul	4.75c
Tulsa	4.85c

## NO. 24 GALV. SHEETS

Baltimore*†	4.70c
Buffalo	4.10c
Boston (g)	5.30c
Chattanooga*	4.76c
Chicago (h)	5.10c-5.75c
Cincinnati	5.40c
Cleveland	5.31c
Detroit	5.40c
Houston	4.50c
Los Angeles	5.75c
Milwaukee	5.21c-5.86c
New Orleans*	5.75c
New York† (d)	5.47c
Philadelphia	5.30c
Pitts.** (h)	5.40c
Portland	5.90c
San Francisco	5.85c
Seattle	5.90c
St. Louis	5.49c
St. Paul	5.40c
Tulsa	5.20c

## BANDS

Baltimore	4.20c
Boston††	4.25c
Buffalo	3.52c
Chattanooga	4.16c
Cincinnati	4.25c
Cleveland	4.16c
Chicago	4.10c
Detroit, ⅜-in. and lighter	4.185c
Houston	3.35c
Los Angeles	4.80c
Milwaukee	4.21c
New Orleans	4.75c
New York† (d)	4.32c

Philadelphia	4.10c
Pittsburgh (h)	4.00c
Portland	5.00c
San Francisco	4.80c
Seattle	4.95c
St. Louis	4.34c
St. Paul	4.35c
Tulsa	3.55c

## HOOPS

Baltimore	4.45c
Boston††	5.25c
Buffalo	3.52c
Chicago	4.10c
Cincinnati	4.25c
Detroit, No. 14 and lighter	4.185c
Los Angeles	6.55c
Milwaukee	4.21c
New York† (d)	4.32c
Philadelphia	4.35c
Pittsburgh (h)	4.50c
Portland	6.50c
San Francisco	6.50c
Seattle	6.30c
St. Louis	4.34c
St. Paul	4.35c

## COLD FIN. STEEL

Baltimore (c)	4.50c
Boston*	4.65c
Buffalo (h)	3.70c
Chattanooga*	4.86c
Chicago (h)	4.30c
Cincinnati	4.50c
Cleveland (h)	4.30c
Detroit	4.30c
Los Ang. (f) (d)	6.85c
Milwaukee	4.41c
New Orleans	5.10c

New York† (d)	4.57c
Philadelphia	4.53c
Pittsburgh	4.15c
Portland (f) (d)	7.10c
San Fran. (f) (d)	6.80c
Seattle (f) (d)	7.10c
St. Louis	4.54c
St. Paul	4.77c
Tulsa	4.80c

## COLD ROLLED STRIP

Boston	3.845c
Buffalo	3.39c
Chicago	3.87c
Cincinnati	3.82c
Cleveland (b)	3.60c
Detroit	3.43c
New York† (d)	3.92c
St. Louis	4.54c

## TOOL STEELS

(Applying on or east of Mississippi river; west of Mississippi 1c up.)

Base	
High speed	69c
High carbon, Cr.	45c
Oil hardening	26c
Special tool	24c
Extra tool	20c
Regular tool	16c
Water hardening 12½c	
Uniform extras apply.	

## BOLTS AND NUTS

(100 pounds or over)	
Discount	
Chicago (a)	.55 to .60
Cleveland	.60-5-5
Detroit	70-10
Milwaukee	.60 to .65

New Orleans..	65
Pittsburgh....	65-5

(a) Under 100 lbs., 50 off.

(b) Plus straightening, cutting and quantity differentials; (c) Plus mill, size and quantity extras; (d) Quantity base; (e) New mill classif. (f) Rounds only; (g) 50 bundles or over; (h) Outside delivery, 10c less; (i) Under 3 in.; (j) Shapes other than rounds, flats, fillet angles, 0.15c higher.

On plates, shapes, bars, hot strip and blue annealed quantity extras and discounts as follows: Under 100 lbs., add \$1.50; 100 to 399 lbs., add 50c; 400 to 3999 lbs., base; 4000 to 9999 lbs., deduct 10c; over 10,000 lbs., deduct 15c. At Cleveland, under 400 lbs., add 50c, with \$1 minimum invoice.

†Domestic steel; \*Plus quantity extras; \*\*One to 9 bundles; †† 50 or more bundles; †New extras apply; †††Base 10,000 lbs., extras on less.

# Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, July 1

Export Prices f. o. b. Ship at Port of Dispatch—(By Cable or Radio)

	British gross tons U. K. ports	Continental Channel or North Sea ports, metric tons	
		Quoted in dollars at current value	**Quoted in gold pounds sterling
	£ s d	£ s d	£ s d
<b>PIG IRON</b>			
Foundry, 2.50-3.00 Silicon	\$29.64 6 0 0	\$32.60 4 1 0	3 17 0
Basic bessemer	19.39 3 18 6*	30.99	.....
Hematite, Phos. .03-.05	21.61 4 7 6		
<b>SEMIFINISHED STEEL</b>			
Billets	\$38.90 7 17 6	\$35.27 4 7 6	
Wire rods, No. 5 gage	53.48 10 16 6	56.42 7 0 0	
<b>FINISHED STEEL</b>			
Standard rails	\$50.02 10 2 6	\$48.36 6 0 0	
Merchant bars	2.43c 11 0 0	1.82c 5 0 0	
Structural shapes	2.35c 10 12 6	1.77c 4 17 6	
Plates, 1¼ in. or 5 mm.	2.55c 11 11 3	2.24c 6 2 6	
Sheets, black, 24 gage or 0.5 mm.	3.31c 15 0 0	3.09c 8 10 0††	
Sheets, galv., 24 gage, corr.	4.14c 18 15 0	4.37c 12 0 0	
Bands and strips	3.04c 13 15 0	2.37c 6 10 0	
Plain wire, base	3.20c 14 10 0	2.73c 7 10 0	
Galvanized wire, base	3.76c 17 0 0	2.91c 8 0 0	
Wire nails, base	3.09c 14 0 0	3.09c 8 10 0	
Tin plate, box 108 lbs.	\$ 6.05 1 4 6	.....	

British ferromanganese \$102.50 delivered Atlantic seaboard, duty-paid.

## Domestic Prices at Works or Furnace—Last Reported

	£ s d	French Francs	Belgian Francs	Reich Marks
Fdy. pig iron, Si. 2.5	\$24.94 5 1 0(a)	\$16.32 425	\$27.88 825	\$25.26 63
Basic bessemer pig iron	24.70 5 0 0(a)	9.56 275	14.70 435	27.87 (b) 69.50
Furnace coke	8.77 1 15 6	6.06 158	6.25 185	7.62 19
Billets	38.90 7 17 6	25.15 655	28.22 835	38.70 96.50
Standard rails	2.24c 10 2 6	1.70c 975	1.80c 1,200	2.38c 132
Merchant bars	2.53c 11 9 0	1.54c 885	1.46c 975	1.98c 110
Structural shapes	2.44c 11 0 6	1.49c 860	1.46c 975	1.93c 107
Plates, 1¼-in. or 5 mm.	2.59c 11 14 3	1.92c 1,105	1.87c 1,245	2.29c 127
Sheets, black	5.48c 15 15 0‡	2.52c 1,400	2.19c 1,460‡	2.59c 144
Sheets, galv., corr., 24 ga. or 0.5 mm.	4.51c 19 10 0	3.74c 2,150	2.85c 1,900	6.66c 370
Plain wire	5.20c 14 10 0	2.36c 1,360	2.48c 1,650	5.11c 175
Bands and strips	2.70c 12 4 0	1.74c 1,000	2.33c 1,550	2.29c 127

\*Basic. †British ship-plates. Continental bridge plates. ‡2½ in., †1 to 5 mm. basic price. British quotations are for basic open-hearth steel. Continent usually for basic-bessemer steel, a del. Middlesbrough. b hematite. ††Close annealed.

\*\*Gold pound sterling carries a premium of 65.36 per cent over paper sterling.

# Iron and Steel Scrap Prices

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

### HEAVY MELTING STEEL

Birmingham†	15.00-16.00
Bos. dock No. 1, exp.	16.00
N. Eng. del. No. 1	14.75
Buffalo, No. 1	18.00-19.00
Buffalo, No. 2	16.00-17.00
Chicago, No. 1	15.75-16.25
Cleveland, No. 1	17.00-17.50
Cleveland, No. 2	15.50-16.00
Detroit, No. 1	15.00-15.50
Eastern Pa., No. 1	17.00-18.00
Eastern Pa., No. 2	15.50-16.00
Federal, Ill.	13.00-13.50
Granite City, R. R.	15.00-15.50
Granite City, No. 2	13.00-13.50
New York, No. 1	†13.00-13.50
N.Y. dock, No. 1 exp.	15.00-15.50
Pitts., No. 1 (R. R.)	19.50-20.00
Pitts., No. 1 (dir.)	18.00-18.50
Pittsburgh, No. 2	16.00-16.50
St. Louis, R. R.	15.00-15.50
St. Louis, No. 2	13.00-13.50
Toronto, dtrs. No. 1	11.00-12.00
Toronto, No. 2	10.00-11.00
Valleys, No. 1	18.00-18.50

### COMPRESSED SHEETS

Buffalo, dealers	16.00-17.00
Chicago, factory	15.25-15.75
Chicago, dealer	14.50-15.00
Cleveland	16.00-16.50
Detroit	15.50-16.00
E. Pa., new mat.	17.50-18.00
E. Pa., old mat.	14.50
Pittsburgh	18.00-18.50
St. Louis	11.00-11.50
Valleys	17.00-17.50

### BUNDLED SHEETS

Buffalo	13.00-13.50
Cincinnati, del.	13.00-13.50
Cleveland	13.50-14.00
Pittsburgh	16.00-16.50
St. Louis	9.50-10.00
Toronto, dealers	8.00

### SHEET CLIPPINGS, LOOSE

Chicago	11.00-11.50
Cincinnati	11.00-11.50
Detroit	10.50-11.00
St. Louis	9.00-9.50

### STEEL RAILS, SHORT

Birmingham	17.00-18.00
Buffalo	23.50-24.00
Chicago (3 ft.)	19.50-20.00
Chicago (2 ft.)	20.00-20.50
Cincinnati, del.	20.00-20.50
Detroit	18.50-19.00
Pitts., 3 ft. and less	24.00-24.50
St. Louis, 2 ft. & less	18.50-19.00

### STEEL RAILS, SCRAP

Boston district	†14.00-14.25
Buffalo	19.50-20.00
Chicago	15.50-16.00
Cleveland	21.00-21.50
Pittsburgh	20.50-21.00
St. Louis	16.50-17.00

### STOVE PLATE

Birmingham	10.00-10.50
Boston district	†9.00-9.50
Buffalo	14.50-15.00
Chicago	10.50-11.00
Cincinnati, dealers	10.00-10.50
Detroit, net	11.25-11.75
Eastern Pa.	14.50
New York, fdry.	†10.00-10.50
St. Louis	11.25-11.75
Toronto, deal'rs, net	9.50-10.00

### SPRINGS

Buffalo	22.00-22.50
Chicago, leaf	19.50-20.00
Chicago, coil	20.50-21.00
Eastern Pa.	24.00-24.50
Pittsburgh	24.50-25.00
St. Louis	19.00-19.50

### ANGLE BARS—STEEL

Chicago	18.00-18.50
St. Louis	17.00-17.50

### RAILROAD SPECIALTIES

Chicago	18.50-19.00
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### LOW PHOSPHORUS

Buffalo, billet and bloom crops	22.00-23.00
Cleveland, billet, bloom crops	24.00-24.50
Eastern Pa., crops	22.50-23.00
Pittsburgh, billet, bloom crops	25.00-25.50
Pittsburgh, sheet bar crops	24.50-25.00

### FROGS, SWITCHES

Chicago	15.50-16.00
St. Louis, cut	17.00-17.50

### SHOVELING STEEL

Chicago	15.75-16.25
Federal, Ill.	13.00-13.50
Granite City, Ill.	13.00-13.50
Toronto, dealers	9.00-9.50

### RAILROAD WROUGHT

Birmingham	13.00-14.50
Boston district	†10.00-10.25
Buffalo, No. 1	16.00-17.00
Buffalo, No. 2	18.00-19.00
Chicago, No. 1 net.	15.00-15.50
Chicago, No. 2	15.50-16.00
Cincinnati, No. 2	14.25-14.75
Eastern Pa.	13.00
St. Louis, No. 1	13.00-13.50
St. Louis, No. 2	14.75-15.25
Toronto, No. 1 dir.	15.00

### SPECIFICATION FIFP

Eastern Pa.	16.50-17.00
New York	†12.50-13.00

### BUSHELING

Buffalo, No. 1	16.00-17.00
Chicago, No. 1	14.00-14.50
Cincin., No. 1, deal.	14.50-15.00
Cincinnati, No. 2	8.50-9.00
Cleveland, No. 2	12.00-12.50
Detroit, No. 1 new	14.50-15.00
Valleys, new, No. 1	16.50-17.00
Toronto, dealers	9.00

### MACHINE TURNINGS

Birmingham	7.00-8.00
Buffalo	11.25-11.75
Chicago	8.50-9.00
Cincinnati, dealers	9.00-9.50
Cleveland	11.75-12.25
Detroit	10.00-10.50
Eastern Pa.	12.50-13.00
New York	†8.50-9.00
Pittsburgh	13.50-14.00
St. Louis	7.50-8.00
Toronto, dealers	8.00-8.50
Valleys	13.00-13.50

### BORINGS AND TURNINGS

<i>For Blast Furnace Use</i>	
Boston district	†7.25-7.75

Buffalo	12.75-13.25
Cincinnati, dealers	8.50-9.00
Cleveland	12.00-12.50
Detroit	10.50-11.00
Eastern Pa.	12.00
New York	†8.00-8.50
Pittsburgh	14.50-15.00
Toronto, dealers	8.00-8.50

### CAST IRON BORINGS

Birmingham	8.25-8.75
Boston dist. chem.	†9.50-10.00
Boston dist. for mills	†9.00
Buffalo	12.75-13.25
Chicago	9.00-9.50
Cincinnati, dealers	8.50-9.00
Cleveland	12.00-12.50
Detroit	10.50-11.00
E. Pa., chemical	14.50-15.00
New York	†8.00-8.50
St. Louis	7.00-7.50
Toronto, dealers	9.00

### PIPE AND FLUES

Cincinnati, dealers	11.50-12.00
Chicago, net	13.00-13.50

### RAILROAD GRATE BARS

Buffalo	14.00-14.50
Chicago, net	12.00-12.50
Cincinnati	10.50-11.00
Eastern Pa.	14.50
New York	†9.50-10.00
St. Louis	11.50-12.00

### FORGE FLASHINGS

Boston district	†10.75
Buffalo	16.00-17.00
Cleveland	15.50-16.00
Detroit	13.50-14.00
Pittsburgh	16.00-16.50

### FORGE SCRAP

Boston district	†6.50-7.00
Chicago, heavy	19.50-20.00
Eastern Pa.	15.50-16.00

### ARCH BARS, TRANSOMS

St. Louis	18.00-18.50
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### AXLE TURNINGS

Boston district	†11.00-11.50
Buffalo	16.00-16.50
Chicago, elec. fur.	15.50-16.00
Eastern Pa.	16.00-16.50
St. Louis	12.00-12.50
Toronto	9.50

### STEEL CAR AXLES

Birmingham	19.00-20.00
Buffalo	22.00-22.50
Boston district	†20.00
Chicago, net	21.50-22.00
Eastern Pa.	25.00-26.00
St. Louis	21.50-22.00

### SHAFTING

Boston district	†18.00-18.50
New York	†19.00-19.50
Eastern Pa.	23.50-24.00
St. Louis	14.00-14.50

### CAR WHEELS

Birmingham	18.00-19.00
Boston dist., iron	†15.00-15.25
Buffalo, iron	18.50-19.50
Buffalo, steel	22.50-23.00
Chicago, iron	18.00-18.50
Chicago, rolled steel	18.50-19.00

Cincinnati, iron	18.00-18.50
Eastern Pa., iron	19.00-19.50
Eastern Pa., steel	22.50-23.00
Pittsburgh, iron	19.25-19.75
Pittsburgh, steel	24.50-25.00
St. Louis, iron	18.00-18.50
St. Louis, steel	19.00-19.50

### NO. 1 CAST SCRAP

Birmingham	15.50-16.00
Boston, No. 1 mach.	†14.50
N. Eng. del. No. 2	16.50
N. Eng. del. textile	18.50
Buffalo, cupola	17.50-18.00
Buffalo, mach.	18.50-19.00
Chicago, agri. net.	13.00-13.50
Chicago, auto	14.00-14.50
Chicago, mach. net.	14.50-15.00
Chicago, railr'd net.	14.00-14.50
Cincin., mach. cup.	15.00-15.50
Cleveland, mach.	19.00-19.50
Eastern Pa., cupola	19.00-19.50
E. Pa., mixed yard	17.00-17.50
Pittsburgh, cupola	18.50-19.00
San Francisco, del.	13.50-14.00
Seattle	12.00-13.00
St. Louis, No. 1	14.50-15.00
St. L., No. 1, mach.	14.00-14.50
Toronto, No. 1, mach., net	16.00-17.00

### HEAVY CAST

Boston dist. break.	†13.00-13.25
N. Eng. del.	15.00-15.25
Buffalo, break.	15.00-15.50
Cleveland, break.	13.50-14.00
Detroit, break.	13.50-14.00
Detroit, auto net.	14.50-15.00
Eastern Pa.	18.00-18.50
New York, break.	†14.00-14.50
Pittsburgh	14.50-15.00

### MALLEABLE

Birmingham, R. R.	12.50-13.50
New England, del.	20.00
Buffalo	20.00-21.00
Chicago, R. R.	18.50-19.00
Cincin., agri. del.	15.00-15.50
Cleveland, rail	20.50-21.00
Detroit, auto, net.	14.50-15.00
Eastern Pa., R. R.	19.00-20.00
Pittsburgh, rail	20.50-21.00
St. Louis, R. R.	18.00-18.50

### RAILS FOR ROLLING

<i>5 feet and over</i>	
Birmingham	18.00-19.00
Boston	†17.50-18.00
Buffalo	19.50-20.00
Chicago	18.50-19.00
Eastern Pa., R. R.	21.00-21.50
New York	†17.00-17.50
St. Louis	18.00-18.50

### LOCOMOTIVE TIRES

Chicago (cut)	20.50-21.00
St. Louis, No. 1	17.50-18.00

### LOW PHOS. PUNCHINGS

Buffalo	22.00-22.50
Chicago	19.50-20.00
Eastern Pa.	24.00-24.50
Pittsburgh (heavy)	22.00-22.50
Pittsburgh (light)	21.00-21.50

## Iron Ore

<i>Lake Superior Ore</i>	
<i>Gross ton, 51½%</i>	
<i>Lower Lake Ports</i>	
Old range bessemer	\$5.25
Mesabi nonbess.	4.95
High phosphorus	4.85
Mesabi bessemer	5.10
Old range nonbess.	5.10

<i>Eastern Local Ore</i>	
<i>Cents, unit, del. E. Pa.</i>	
<i>Foundry and basic</i>	
56.63% con.	9.00-10.00
<i>Cop.-free low phos.</i>	
58-60%	nominal
<i>Foreign Ore</i>	
<i>Cents per unit, f.a.s. Atlantic ports</i>	
<i>Foreign manganiferous ore, 45.55%</i>	

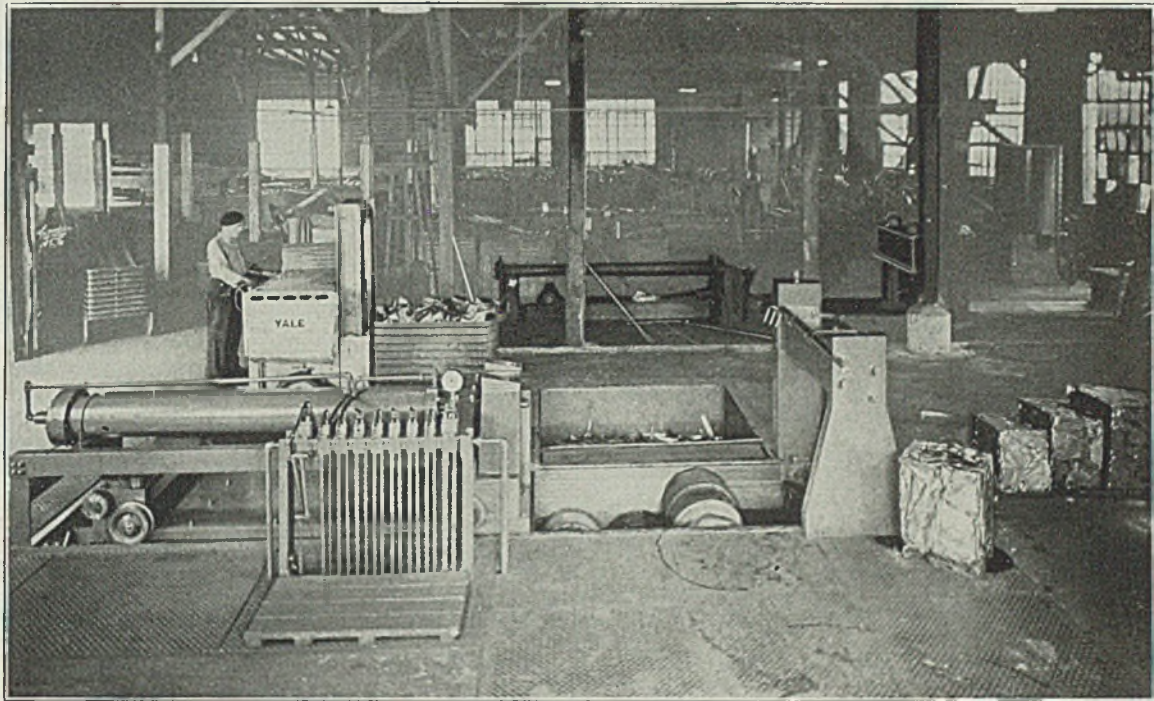
iron, 6-10% man.	*17.00
No. Afr. low phos.	17.50
Swedish low phos.	nominal
Spanish No. Africa basic, 50 to 60%	*16.00
Tungsten, spot sh. ton, unit, duty pd. nom.	\$25.00
N. F., fdy., 55%	7.00
Chrome ore, 48% gross ton, c.i.f.	\$25.50-26.50
*Nominal asking price for spot.	

## Manganese Ore

<i>(Nominal)</i>	
<i>Prices not including duty, cents per unit cargo lots.</i>	
Caucasian, 50-52%	46.00-47.00
So. African, 50-52%	Nominal
Indian, 50-52%	Nominal

# LOGEMANN

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The LOGEMANN line includes baling presses for all materials . . . . high pressure pumps . . . . hydraulic straighteners . . . . hydraulic presses and fittings. Write for descriptive bulletins.

## LOGEMANN BROTHERS COMPANY

3126 W. Burleigh St.

Milwaukee, Wis.

# Sheets

Sheet Prices, Page 90

**Pittsburgh**—June ended with buying of sheets fluctuating from week to week in close proportion to the amount of buying by the automotive industry. Backlogs, however, are substantially the same as one month ago, and from all indications, mid-summer activity of producers will be considerably better than in recent years. Requirements of mis-

cellaneous consumers are steady. Resumption of production in the strike areas has boosted operations of common black mills on the national scale to 73 per cent, while jobbing mills are at 54 per cent, full finished at 69, and galvanized at 70 per cent. Prices are steady.

**Cleveland**—Sheet mill operations remain at close to capacity on both hot and cold-rolled material, despite pressure for deliveries has eased considerably over the last 30 days. Backlogs on hot-rolled material is approximately 10 weeks and cold-

rolled about 5, although some mills are still further extended. Operations among most consumers are affected seasonally. This is particularly apparent in requirements from automotive sources. Prices remain firm.

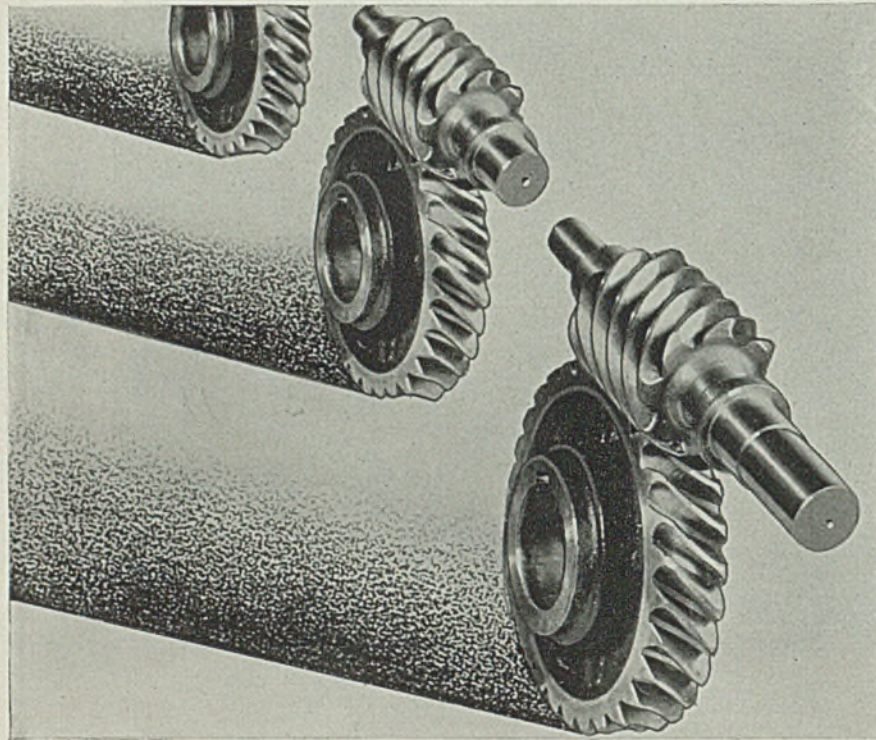
**Boston**—Although there has been moderate covering for third quarter sheet requirements, new buying has been below shipments, which are showing some improvement for a few finishes. Consumers have been pressing for material on order, notably jobbers, but diversion of business has been slight. Warehouse stocks are somewhat better balanced. There also has been a mild decline in consumption. Prices are steady and unchanged.

**New York**—A perceptible decline is noted in sheet business, which has shown more stubborn resistance to seasonal influences than most other major products. Most sheet producers quoted the New York Central on its recent Clayton act opening without stipulating that third quarter prices would apply only to shipments made during that period. Prices generally were at the published market, it is said. Sheet-makers, while having heavy backlogs, are offering slightly better deliveries, with one mill, for instance, offering cold-reduced sheets in two weeks; and another offering a fair variety of hot-rolled specifications in four weeks.

**Philadelphia**—The Reading Co. has distributed material for the superstructures of 600 box cars for the most part 13-gage sheets and smaller tonnages of bars plates and shapes. These cars are 40.6 feet long. The underframes were placed recently with the Bethlehem Steel Co. New business in sheets generally shows a further tapering, largely as a reflection of seasonal influences. Order backlogs, however, are fairly heavy with deliveries on cold-rolled averaging six to eight weeks and on hot-rolled eight to ten.

**Cincinnati**—All sheet rolling facilities in this district have been utilized throughout the second quarter, production unaffected by labor difficulties. The new quarter opens with heavy backlogs but books are not filled and a modest seasonal letdown may be incurred.

**St. Louis**—Seasonal influences and effects of steel strikes were reflected in a slight slowing down in sheet purchasing during the past week or ten days. Pressure for shipments, however, continues strong.



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## Bolts, Nuts, Rivets

Bolt, Nut, Rivet Prices, Page 91

A light volume of business is noted in nuts, bolts and rivets, some of which is seasonal. New structural

business for the summer does not appear to measure up to expectations and automobile builders seemingly are as yet not much interested in material for new models. For third quarter delivery nuts have advanced 5 per cent and small rivets 10 per cent.

## Strip

Strip Prices, Page 91

**Pittsburgh**—Most strip mill backlogs are well depleted. Automotive buying has been at a standstill, and although the requirements of other consumers are fairly steady, volume is insufficient to check the downward trend. However, there are no indications of unexpected fundamental weaknesses. Current seasonal condition was expected by producers and improvement will be in order soon. On the national scale, hot and cold strip mills are operating at around 63 per cent. Prices are steady.

**Cleveland**—Shipments of both hot and cold-rolled strip declined somewhat during June as some consumers were forced to cancel a portion of their previous orders or suspend shipments, due to labor trouble in their plants. To-date seasonal influences have also left their mark, particularly on automotive and household utilities manufacturers, although in the latter instance operations held up better than expected. Most mills can make deliveries within five weeks, but if a particularly attractive tonnage is offered, three weeks is obtainable in some instances.

**Boston**—Due to the holiday, incoming narrow cold strip volume has been slightly lower. With fair backlogs, several rollers will close down only until Tuesday, this week. Demand is still well diversified, although automotive requirements are smaller. Most current orders are for early delivery. Covering for late third quarter delivery has been light. Users of hot strip have substantial stocks in most instances.

**New York**—Most incoming cold strip orders are for early delivery, new volume being steady. Buying by most consumers appears to be at about the rate of consumption with somewhat less dependence on material in stock as mills are in a much better position for prompt shipment. Most sellers believe this trend will continue for the first half of the quarter with a substantial upturn in forward buying when last quarter prices will be a factor.

**Philadelphia**—New orders for strip are light but close to levels of past two or three weeks. Consumption

has eased further and many plants still are working down stocks bought earlier. Most sellers are able to offer comparatively early delivery, generally within two to three weeks.

## Semifinished

Semifinished Prices, Page 91

Reports are current at Buffalo that some Canadian users of semifinished steel are looking overseas for material for third quarter. It is understood they were unable to obtain

guarantees of delivery from American mills from which they have been buying and have turned to British and European sources. A large American trade in this material, not produced in Canada, has existed for the past year or two and loss of this business may be more serious than local representatives of the selling mills will admit.

Demand is well maintained for semifinished. Production, however, has been fluctuating in this district due to repairs, vacations, seasonal influences and one or two unexpect-

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ed interruptions. Shipments against large export orders booked last month are expected to begin soon. Wire rods, skelp, and sheet bars are in particularly good demand. Prices are steady.

## Tin Plate

Tin Plate Prices, Page 90

**Pittsburgh**—One tin plate producer reports a drop in recent releases, but this was evidently due to heavy shipments certain consumers had been receiving under their contracts. Mills

last week continued operating as high as 18 turns, except in the case of one, which has been remaining at 15. From all indications, producers will continue to be under great pressure for speedy shipments. Deliveries for packers' cans are heavy.

**New York**—Tin plate specifications remain heavy, although restricted somewhat by continued labor difficulties at plants of some small can-makers in this district. Foreign inquiry also is well sustained, although most producers have their tonnage for export shipment well allocated for several weeks. The ex-

port price continues about on a parity with the Pittsburgh domestic equivalent on new business. Continental Can Co. announces that it will start production on crown caps and seals for containers.

## Plates

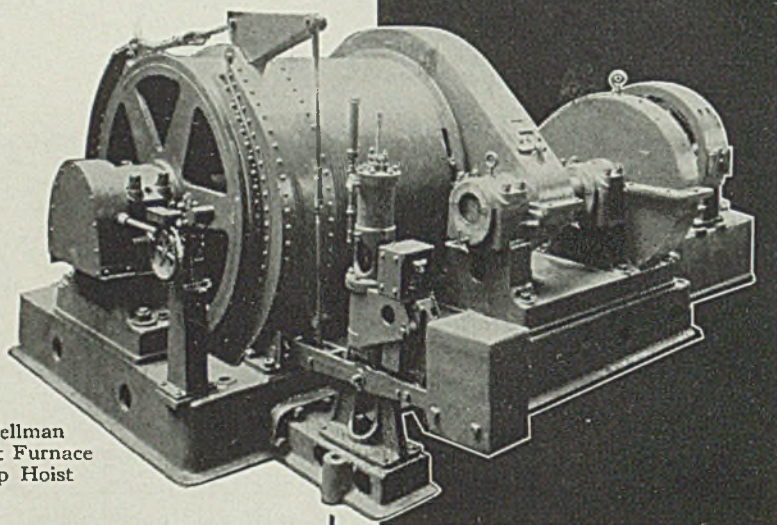
Plate Prices, Page 90

**New York** — Following a period when plate deliveries showed little or no improvement, schedules of eastern producers are again easing off. Specifications here over the past week were particularly light, reflecting not only seasonal conditions, but continuation of strikes at the metropolitan ship yards, where more than 15,000 employes are out. Not only are these labor disturbances holding up work already on schedule, but are diverting some fairly good sized ship repair jobs to other districts, so that, while plate producers have not as yet many, if any actual cancellations, they are definitely losing tonnage for work which normally would come here but which is now going elsewhere. Richfield Oil Corp., controlled jointly by the Consolidated Oil Corp. and the Cities Service Co., will require a substantial tonnage for a \$5,000,000 refinery at Watson, Calif. Awards are expected to be announced shortly on the construction, which will require about a year to complete. Certain oil companies, which recently held up construction programs, are again showing interest, a development due apparently to the less menacing labor situation, now that strikes at several of the leading independent steel plants have been checked.

**Pittsburgh** — Although plate demand is lighter at the start of the third quarter, backlogs are by no means entirely depleted. Tank fabricators, especially, are active here, as the result of recent sizable awards. Reports that leading makers of plates would grant a discount on quantities of 150 tons and over, effective July 1, are without foundation, according to sellers here.

**Cleveland**—Little headway has been made against backlogs despite the fact that mills, not affected by strikes, have been operating at practical capacity. Deliveries in most instances now range between from 12 to 14 weeks, whereas formerly 16 weeks was general. Most awards are confined to small lots from specialty manufacturers although some tonnage for minor structural projects has been reported.

**Chicago**—Plates placed in the past week totaled somewhat above the average in volume. Railroads have bought some plates but the new ton-



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nage is largely for structural projects. Plates are not gaining much on deliveries, which continue 12 to 14 weeks.

**Boston**—Plate tonnage for specified structural projects is meager, new buying being mostly for miscellaneous needs. Specifications by shipyards are steady. Boiler shop operations are spotty. Tank inquiry is small. Railroads and most volume consumers have covered for the quarter, but are releasing little tonnage. Deliveries of universal plates have improved slightly, but special and semi-fabricated material, heads, dished and flanged work shipments are about the same.

**Philadelphia** — Welding Engineers Inc. is low bidder on five barges for the Warner Co., Philadelphia, involving 700 tons of plates and a small tonnage of shapes. The Philadelphia navy yard is expected to inquire for a large tonnage for the battleship awarded to this yard recently. Producers report miscellaneous tonnage is off further. It is estimated that new business is coming in at the rate of about 70 per cent of production. Mills report deliveries ranging all the way from four to five up to ten to 12 weeks on plain material.

**San Francisco**—The only plate award of size went to an unnamed interest and called for 105 tons for shore pipe for the treasury department at Portland, Oreg. Pending inquiries are for lots of less than 100 tons. To date this year 27,957 tons have been booked, compared with 93,553 tons for the same period a year ago.

**Seattle**—New regulations of the bureau of navigation, and steamboat inspection service barring the use of wooden scows for transportation of oil have stimulated interest in steel construction and several carriers of this type have been built or are planned, materials furnished by the Columbia Steel Co. Local architects are designing a fleet of nine steel oil carriers for Columbia river service. These units average 150 tons of steel, 60 per cent plates and 40 per cent shapes. Tidewater Transportation Co., Spokane, is building two 160,000-gallon gas and oil storage tanks at Attalia, Wash.

### Plate Contracts Placed

275 tons (also 175 tons shapes) three oil scows for various interests, to Columbia Steel Co., Portland and Seattle.  
170 tons, 1,500,000-gallon all welded standpipe, Green Hill project, Cincinnati, to Chicago Bridge & Iron Works, Chicago, \$29,240; bids June 28.  
130 tons, steel pipe and gas holder, sewage plant, Lansing, Mich., to Taylor Forge & Pipe Works, Chicago.

### Plate Contracts Pending

850 tons (also 500 tons shapes) nine oil

scows for Tidewater Transportation Co., Spokane, Wash.; H. C. Hanson, Seattle, architect.

700 tons, five barges for Warner Co., Philadelphia. Welding Engineers Inc., Philadelphia, low bidder.

130 tons, plates and shapes, mostly former, Panama, Bethlehem Steel Export Corp., New York, low; bids June 25.

100 tons, bureau of supplies and accounts, navy, Norfolk, Va.; Alan Wood Steel Co., Conshohocken, Pa., low; bids June 29, schedule 996; same mill also low on floor plates, schedule 996, lot 156.

## Bars

Bar Prices, Page 90

**Pittsburgh**—New tonnage last month was less than the May volume and inquiry remains light. Backlogs continue to confront most producers. The easier tone is exactly what was expected at this time of year. Conditions are better than a year ago and the slack period is likely to be short. Reduced automotive and rail-

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road buying are the principal reasons for the current decline, but farm implement and tractor makers are busier than usual. Prices are steady.

**Cleveland**—Mills report a continued decline in commercial and cold-drawn carbon steel bars, resulting from seasonal influences and more particularly from absence of specifications from automotive parts-makers. Requirements from farm implement and tractor manufacturers are better than anticipated.

**Chicago**—A widely diversified line

of steel bar users have come into the market. Farm implement makers are exceptionally active and also some automobile partsmakers. However, auto builders apparently are not yet getting busy on their new models so far as placing steel orders. Chevrolet is extending its manufacture of 1937 models, due to further sustained demand.

**Boston**—Alloy and forging bars are relatively more active than commercial steel, but new buying is off about in line with a spotty curtailment in consumer operations. Several forging shops, however, con-

tinue at a high rate and makers of bolts and nut specialties are fairly active. Because of established third quarter prices, some buyers are not expected to release tonnage much beyond immediate needs for some weeks yet.

**New York**—Further tapering in demand is reflected in easier delivery schedules, which for a fortnight or so showed little change. Commercial bar consumers are now having little difficulty in obtaining deliveries on a fairly wide range of specifications within two weeks, although some producers still are able to do little under four weeks.

**Philadelphia**—Bar deliveries have been pared down to two weeks in some instances although no earlier than eight weeks can be had from other producers. Delivery largely depends on size and specifications. Some additional new business is reported but is not maintaining previous volume. Consumption is holding up well and probably will be reflected in a pickup in demand within the next few weeks.

## Pipe

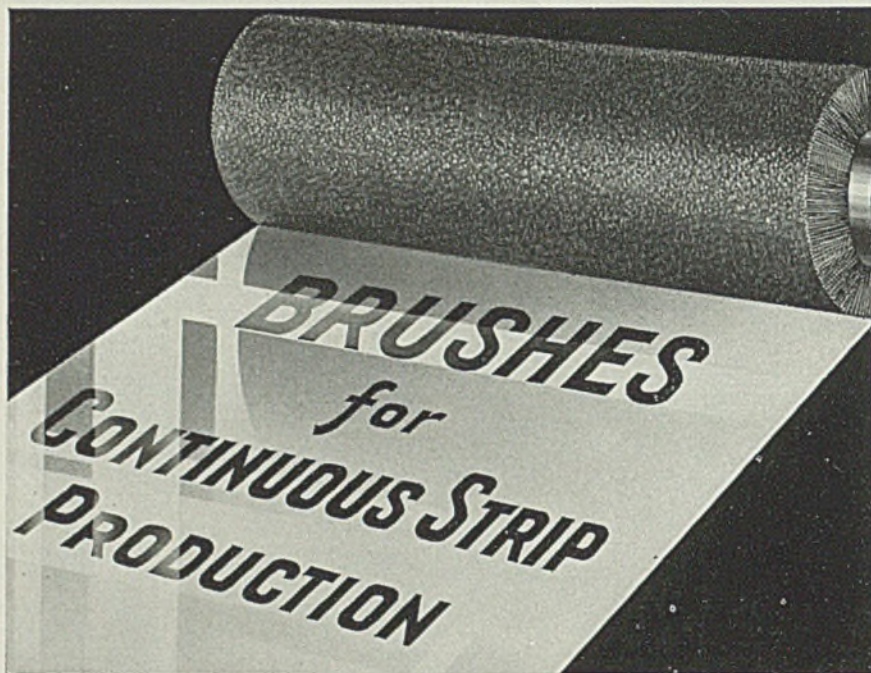
Pipe Prices, Page 91

**Pittsburgh**—Tubular goods bookings showed little change last week compared with the previous period. Some producers entered July with backlogs of eight weeks in seamless. The situation is considerably better than a year ago. Prices are steady.

**Cleveland**—A slight improvement in jobber turnover of standard steel pipe within the last 10 days is reported. This is particularly noticeable in requirements from industrial sources, despite the indefinite labor outlook. However, aggregate shipments during June were less than May, although considerably better than a year ago. J. B. Clow & Sons Co., Cleveland, also received the largest cast pipe award of the year, 11,000 tons, 4-16 inch, for water extension project, Akron, O.

**Boston**—Pipe buying has declined, demand for cast, steel and wrought slackening. Cast pipe shipments against contracts are substantial, partly from stock, and operations in some eastern plants are easing. Large tonnage projects taking steel pipe are few and merchant pipe buying is routine.

**New York**—Except for 1000 tons for New York city yard stocks, bids July 2, and a small tonnage of 24-inch for a Westchester county sewer, cast pipe inquiry is light. Buying is mostly for small fill-in lots. Few inquiries for more than 100 tons each are out. Foundries in some cases are easing operations.



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Including specials, Washington, D. C., commissioners close July 9 on close to 3000 tons of cast pipe, the largest active inquiry in the east.

**San Francisco**—Last week's cast iron pipe awards were the largest in more than two months and totaled 901 tons. This brought the year's aggregate to 17,852 tons, compared with 13,995 tons for the corresponding period in 1936. Largest letting called from 835 tons of 2 to 16-inch pipe for San Francisco.

**Seattle**—Lack of federal funds is retarding proposed water system improvements in the Pacific Northwest and demand for cast iron goods is correspondingly weak.

## Steel Pipe Pending

Unstated tonnage, 53,300 feet, 1½-inch black steel pipe, U. S. engineer, 2d district, New Orleans; bids July 6, schedule 623.

## Cast Pipe Placed

8000 tons, 10-inch, 70-mile pipe line, Shell Petroleum Co., to A. O. Smith Corp., Milwaukee.

1100 tons, 4 to 16-inch, water extension project, Akron, O., to J. B. Clow & Son Co., Cleveland.

835 tons, 2 to 16-inch, San Francisco, allocated as follows: 500 tons, 4, 8 and 16-inch, to United States Pipe & Foundry Co., Burlington, N. J., 317 tons, 6-inch, to Central Foundry Co., and 18 tons, 2-inch, to Pacific States Cast Iron Pipe Co., Provo, Utah.

400 tons, 6 and 12-inch, Westerly, R. I., to Warren Foundry & Pipe Co., Everett, Mass.

## Cast Pipe Pending

2500 tons, including 60,000 feet, 8-inch; 20,000 feet, 12-inch; 3000 feet, 16-inch; 2400 feet, 8-inch, double hub; and 840 feet, 12-inch, double hub; also 104.5 tons cast iron coated water pipe specials; district commissioners, Washington; bids July 9.

1000 tons, 12-20-inch, former yard stocks, New York, U. S. Pipe & Foundry Co., East Burlington, N. J., low; \$50.95 per ton del. yards, material cement lined; bids July 2.

400 tons, 6, 8 and 12-inch, Portland, Oreg.; bids July 7.

105 tons, 16-20-inch, fittings grade elimination, Akron, O.; bids July 12.

## Wire

Wire Prices, Page 91

**Pittsburgh**—Trends are mixed in manufacturers' wire. A number of buyers implied they are well stocked and, with the automotive industry slackening, material is not being used as rapidly as a month ago. Producers, however, note several heartening factors, such as numerous inquiries for third quarter contracts. Automotive parts makers are actively inquiring for needs for 1938 season. From the great number of newcomers, it appears the parts busi-

ness will be more widely spread than usual.

**Cleveland**—Wire mills continue close to capacity as backlogs in most instances extend into August. However, pressure for deliveries has eased considerably. This is particularly apparent in demand for manufacturing wire, from auto parts-makers and bolt, nut and rivet manufacturers. Some sellers report agricultural requirements have held firmer than anticipated.

**Chicago**—This is the usual dull period for wire and wire products

business, but currently, however, there is a little more activity than in corresponding periods of preceding years. Movement of wire products continues fairly well sustained.

**Boston**—Slight decline in wire buying is generally distributed over a wide range of products. Automotive demand appears to be holding up the best with some producers, but this is expected to go lower this month. Specifications for manufacturers' wire hold fairly well. Most mill backlogs are materially reduced and deliveries over the next few

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weeks will be reasonably prompt.

**New York**—While the tempo of wire buying has changed little, a slightly increased volume of some specifications has been diverted to mills able to make reasonably prompt delivery. This tonnage is not large and the more fortunate producers are not soliciting the trade.

**Buffalo**—Demand for wire has slowed considerably, probably due to seasonal factors. It is understood a

third open hearth at the Wickwire plant here, following repairs, is ready for production, but will not be lighted until demand improves.

## Transportation

Track Material Prices, Page 91

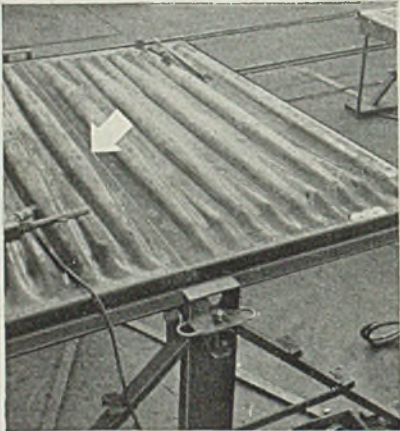
Domestic freight car awards in June, involving 548 cars, were by

far the lightest so far this year. They compared with the placing of 4732 cars in May, which was the second lowest monthly total, and brought bookings for the first half up to 45,985 cars, against 28,109 in the first half of last year, 6333 in the first six months of 1935 and 23,259 in the corresponding period of 1934. Further comparisons follow:

	1937	1936	1935	1934
Jan.....	17,806	2,050	24	152
Feb.....	4,972	6,900	806	19,725
March...	8,155	632	0	30
April....	9,772	4,427	350	800
May.....	4,732	8,900	2	717
June....	548	5,200	5,151	1,835
6 mos...	45,985	28,109	6,333	23,259
July.....	.....	7,229	500	19
Aug.....	.....	225	200	105
Sept....	.....	1,750	875	7
Oct.....	.....	2,210	1,250	75
Nov.....	.....	1,550	100	254
Dec.....	.....	23,450	10,050	110
Total..	.....	64,643	19,308	23,829



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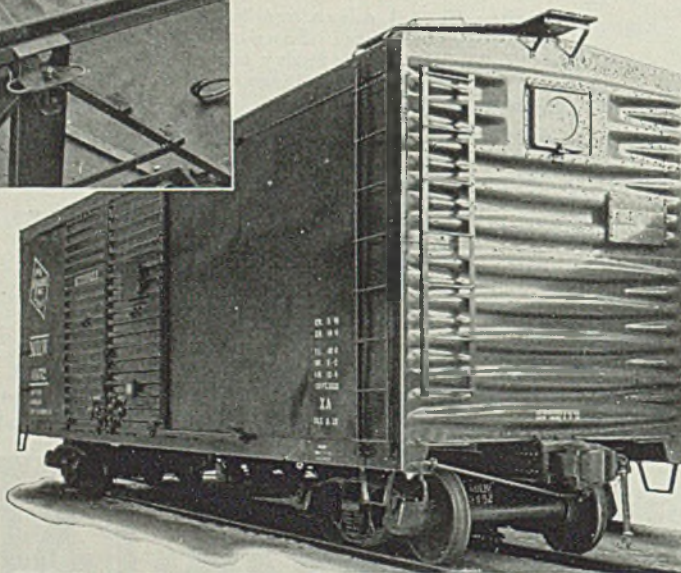
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Current demand is characterized by car builders as the lightest so far this year, with little in immediate prospect. Reading Co. has distributed the long-awaited tonnage for 600 box cars which it will build in its own shops. The tonnage was principally in the form of 13-gage sheets for car tops, sides and ends and went principally to mills on its lines. A relatively small tonnage of plates, shapes and bars also was involved. Additional material also was reported purchased for 50 flat cars.

Baltimore & Ohio has ordered two 3600-horsepower diesel electric locomotives from Electric-Motive Corp. Union Switch & Signal Co., Westinghouse Air Brake Co. subsidiary, has received an order from the Chicago, Burlington & Quincy for equipment for a centralized traffic control system on 105 miles of line.

### Car Orders Placed

Owens-Illinois Glass Co., 50 hopper cars, to General American Transportation Corp., Chicago.

### Locomotives Placed

Baltimore & Ohio, two 3600 horsepower diesel electric locomotives, to Electric-Motive Corp., La Grange, Ill.

### Locomotives Pending

Newburgh & South Shore, one or two 0-6-0 type locomotives.

### Buses Booked

J. G. Brill Co., Philadelphia, 30 trolley coaches for Honolulu Rapid Transit Co., Honolulu, T. H.

Buffalo Scale Co., Buffalo, has appointed E. J. Kelly, 2010 Locust street, St. Louis, distributor for its complete line of scales. His territory includes Missouri and southern Illinois.

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# Shapes

Structural Shape Prices, Page 50

**New York**—Award of 3679 tons for four New York city schools features lighter structural awards. Bids on the steel work, fabricating and erecting, were taken June 7. With 3500 tons, three schools closing July 9, active tonnage for such work now pending approximates 10,000 tons. Awards are down sharply from the recent volume while new work being figured is also lower.

**Boston** — Public works, taking small tonnages, are slightly more active. Numerous small bridges take a substantial tonnage, but most are stringer spans, requiring a minimum of shop fabrication. Awards are around 750 tons with active pending tonnage mounting slowly. Miscellaneous contracts under 100 tons sustaining district fabricating shops, although backlogs are reduced and in a few instances operations are down slightly.

Practically all structural fabricating shops in Boston Metropolitan district have closed because of strikes.

**Philadelphia**—McCloskey & Co., Philadelphia, is low bidder on the local courthouse job, involving 4500 tons of shapes and 900 tons of bars. The steel has not been placed but it is reported that it will go to a small local shop. Pending business includes the \$65,000,000 program for state college buildings, schools, hospitals, etc. The all-weather, Harrisburg-Pittsburgh tunnel highway, involving 50,000 tons of shapes and concrete bars may develop later this year inasmuch as disposal of bonds has been arranged.

**Pittsburgh**—Awards and inquiries have declined recently, but conditions are better than last year. Bethlehem Steel Co., Bethlehem, Pa., obtained 4400 tons for a Chrysler Corp. building in Detroit.

**Buffalo**—It is estimated that more than \$7,500,000 worth of public and private construction has reached or will shortly reach contract stage.

## Shape Awards Compared

	Tons
Week ended July 3 .....	34,782
Week ended June 26 .....	59,641
Week ended June 19 .....	22,080
This week, 1936 .....	46,249
Weekly average, 1936 .....	16,332
Weekly average, 1937 .....	27,625
Weekly average, June .....	32,510
Total to date, 1936 .....	582,698
Total to date, 1937 .....	745,869

Includes awards of 100 tons or more.

## Unit Steel Bids, Baton Rouge Bridge

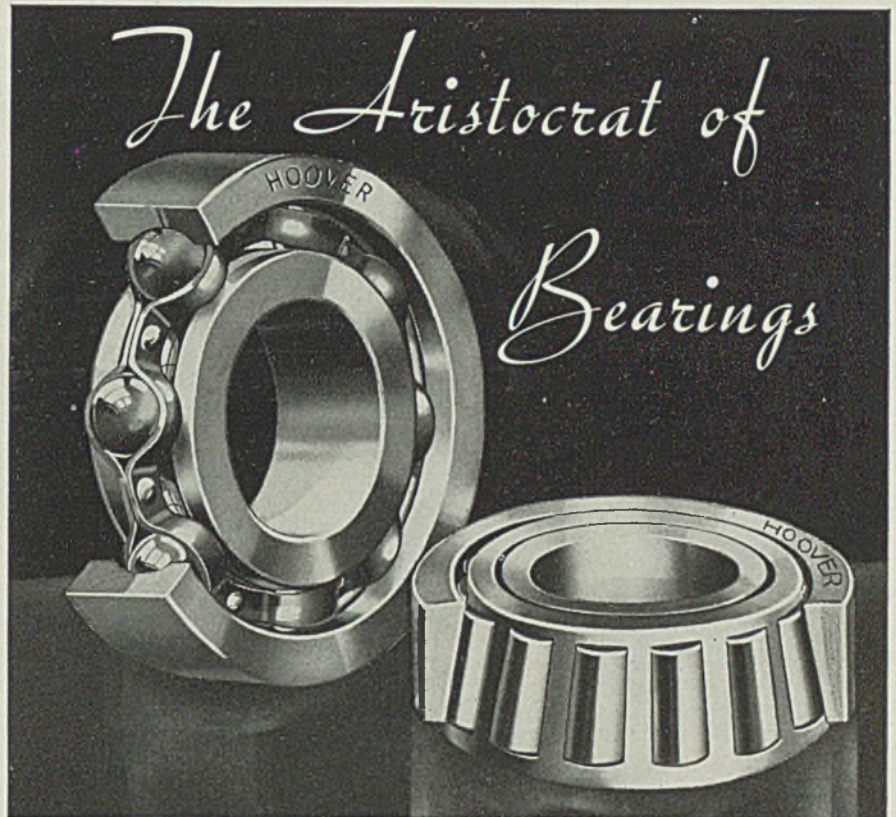
Main Span, Mississippi River Bridge, Baton Rouge, La., Bids May 26

Material	Superstructure Unit			Lowest Total
		A	B	
Fabricated structural carbon steel ..	7,000,000 lbs.	\$0.0798	\$0.086	\$558,600
Fabricated structural silicon steel ..	31,500,000 lbs.	0.0885	0.092	2,787,750
Steel castings .....	1,100,000 lbs.	0.13	0.127	139,700
Reinforcing steel .....	836,000 lbs.	0.063	0.065	52,668
Steel rails .....	355,000 lbs.	0.036	0.0375	12,780
Steel rail fastenings .....	120,000 lbs.	0.085	0.09	10,200

A—Bethlehem Steel Co., Bethlehem, Pa., awarded contract at \$3,705,855; B—American Bridge Co., Pittsburgh, \$3,865,835.50.

Material	Substructure Unit			Lowest Total	
		C	D		E
Reinforcing steel .....	3,533,000 lbs.	\$0.05	\$0.06	\$0.065	\$211,980
Structural steel .....	846,000 lbs.	0.10	0.16	0.10	84,600

C—Kansas City Bridge Co., Kansas City, Mo., awarded contract at \$2,421,980; D—Dravo Corp. and Missouri Valley Bridge & Iron Co., joint bidders, \$2,959,640; E—Siems-Helmets Inc., \$2,673,575. Harry B. Henderlitt, state highway engineer, Louisiana.



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This is counted on to give fabricators tonnage of sufficient size to warrant the prediction they will continue on the high production schedules they established this quarter.

**Chicago**—While the new inquiries and projects amount to about 900 tons of specified business, a number of small lots under 100 tons have come out, totaling about 4500 tons. Labor difficulties are appearing among Chicago fabricators, with some shops hampered as to operations and others actually down.

**St. Louis**—Activities were further hampered by strikes at five additional fabricating yards. This virtual tie-up of the industry has halted shipments.

**San Francisco**—Awards were largest in six weeks and aggregated 4901 tons, bringing total to date to 109,858 tons compared with 101,602 tons in 1936. Featuring the awards were 2875 tons for the San Francisco terminal facilities of the San Francisco-Oakland bridge, placed with Columbia Steel Co. New inquiries include 500 tons for five

gates for the Colorado aqueduct of the metropolitan water district, Los Angeles, up for figures July 8.

**Seattle**—Inquiry is slow and important projects are lacking. Unstated interests are reported to have taken 700 tons of shapes and steel piling for the Quartz Creek, Oreg., state bridge. Seattle will receive bids for the Ruby dam, involving 400 tons of structurals July 22.

## Shape Contracts Placed

4400 tons, building, Chrysler Corp., Detroit, to Bethlehem Steel Co., Bethlehem, Pa.

3000 tons, motor building, International Harvester Co., Indianapolis, to Gage Structural Steel Co., Chicago.

2875 tons, San Francisco terminal facilities, San Francisco-Oakland bridge, to Columbia Steel Co., San Francisco.

2670 tons, Lafayette high school, Brooklyn, N. Y., to Bethlehem Steel Co., Bethlehem, Pa.

2650 tons, Christopher Columbus high school, Bronx, N. Y., to Bethlehem Steel Co., Bethlehem, Pa.

1208 tons, public school 68, Manhattan, New York, to Harris Structural Steel Co., New York, \$117,500; bids June 7, board of education, direct, fabricating and erecting.

950 tons, building 242, Aluminum Co. of America, New Kensington, Pa., to American Bridge Co., Pittsburgh.

933 tons, public school 115, Bronx, New York, to Bethlehem Steel Co., Bethlehem, Pa., \$89,970; bids June 7, board of education, direct, fabrication and erecting.

930 tons, public school, No. 191, Brooklyn, N. Y., to Harris Structural Steel Co., New York.

930 tons, state highway bridge 1428, Fetterman, W. Va., to Pittsburgh-Des Moines Steel Co., Pittsburgh.

923 tons, public school 113, Manhattan, New York, to Lehigh Structural Steel Co., Allentown, Pa., \$89,100; bids June 7, board of education, direct, fabricating and erecting.

810 tons, building, Phillip Morris Co., Richmond, Va., to Bethlehem Steel Co., Bethlehem, Pa.

740 tons, highway bridge, Moline, Ill., to Trenton Bridge Co.

700 tons, including steel piling, Quartz Creek, Oreg., state bridge to unstated interests; L. H. Hoffman, Portland, general contractor.

645 tons, underpass, WPGM 524-A Carter county; bridge WPGH 151-A, Sequoyah county, and bridge WPGH 159-D, Creek county, Oklahoma to Capital Iron & Steel Co., Oklahoma City.

615 tons, addition, public school 131, Brooklyn, New York, to Bethlehem Steel Co., Bethlehem, Pa., \$59,170; bids June 7, board of education, direct, fabrication and erecting.

595 tons, vocational school, Toledo, O., to Whitehead & Kales, Detroit.

575 tons, bridge, WPMH 970-B, Apollo, Pa., to Pittsburgh Bridge & Iron Co., Pittsburgh.

570 tons, foundry building, for Key Co., East St. Louis, Ill., to Mississippi Valley Structural Steel Co., Decatur, Ill.

485 tons, bridge, route 17040 Clearfield county, Pennsylvania, to Pittsburgh-Des Moines Steel Co., Pittsburgh.

470 tons, manufacturing building, for Concrete Engineering Co., Cicero, Ill., to American Bridge Co., Pittsburgh.

460 tons, grade crossing, New York Central railroad, Tonawanda, N. Y., to R. S. McManus Steel Construction Co., Buffalo.

365 tons, flue support, American Smelt-

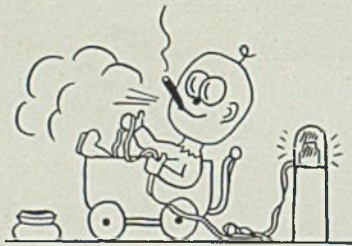
# Behind the Scenes with STEEL

## For You

**B**RAND new in this week's book is the space for all of you to speak your minds. On page 19 you'll find it, with room for all and sundry to agree, disagree or take issue with STEEL'S editors over any points from the weather to metaphysics. Long have we felt the need for space to print the many interesting letters we receive each week, both giving us a buildup and exploding verbal bombs under the chairs of our usually tranquil editors. For the moment, we'll have to be content with small space, says the vice-president in charge of doling out page numbers, so shell out early and we'll see to it that your pet peeve or favorite orchid gets a preferred position.

## Beware

**I**NVESTORS should be sure and watch carefully the birth rate, which is dipping and has dipped alarmingly in this country, according to one famous and con-



servative financial journal. In fact, according to this eminent authority, nobody, not even you or you or me, too, should ever get all tied up in any long term investment without first calling Winchell or some other eminent authority on the state and trend of the birth rate. People, naively exclaim the financial wizards, are getting older and this will undoubtedly affect the investment market. We'll bet the parents of the little tykes now being born never tell them just how important they are to the stock market men, fearing to spoil them. STEEL, with customary forethought, called this state of affairs to the atten-

tion of men in the industry for some time on the page opposite the inside back cover, declaiming to the world, "It's the little things that count." . . .

## Bang

**N**URSING a few burns as a result of the sun and some exceedingly finely divided nonferrous metallic powders, we come to you a day late this week but still happy and alive. Deep in contemplation over the holiday, we tried to ascertain the amount of aluminum, magnesium and the like sent up in smoke in celebration of our national birthday. Biggest fireworks occurred a bit previously, however, over in Johnstown, where in opposition to the traditional Johnstown occurrences, there was a water shortage in the Cambria plant of Bethlehem Steel.

## Bawhtubs Again

**F**ROM time to time in this space in the rear we have raised our voice in harangue concerning bathtubs—plain ones, fancy ones, cast ones and the new models from pressed steel. Thumbing through ancient American history the other day we ran across an item stating that in the early years of the nineteenth century, Anthelme Brillat-Savarin, the Lucius Beebe of his day in France, wailed to the winds because he failed to find even one fixed bath in the city of New York. Three quarters of a million tubs are being turned out in this country each year, according to estimates of the Plumbing and Heating Industries bureau. Next time we go slumming on Park avenue, we'll stick out our tongue and go "nyaaah" at the blueblooded stock, because we know their ancestors never owned a bathtub anyhow.

## Strugglebuggy

**J**UST PUFFED up to a stop on page 14 is a fine old trundlebug of 1911 caliber. In the very lines of the thing we can see veils and goggles, high button shoes and peg-top trousers—quite sentimental, but out of tune with the times, according to Anaconda Wire & Cable.

—SHRDLU

ing & Reifling Co., Garfield, Utah, to Minneapolis Steel Co., Minneapolis.

340 tons, Tenth street underpass, Fargo, N. Dak., to American Bridge Co., Pittsburgh.

300 tons, extension to foundry building, for Mesta Machine Co., Homestead, Pa., to Bethlehem Steel Co., Bethlehem, Pa.

300 ton. bridge, Monaca-Beaver counties, Pennsylvania, to Fort Pitt Bridge Co., Pittsburgh.

300 tons, pier casings, Seaboard Air Line Railroad Co., South Carolina, to Virginia Bridge Co., Roanoke, Va.

275 tons, bleacher additions, Wrigley field, Chicago, to Midland Steel & Equipment Co., Chicago.

270 tons, building, Majestic Laundry Co., New Haven, Conn., to Bethlehem Steel Co., Bethlehem, Pa.

265 tons, bridge RC-3877, Albany-Water-villet highway 977, Albany county, New York, to Mt. Vernon Bridge Co., Mt. Vernon, O.; Sheehan Contracting Co., Albany, general contractor.

250 tons, state highway bridge FAP-9-R-8, Loveland, Colo., to Minneapolis Moline Power Implement Co., Minneapolis.

250 tons, telephone building, Los Angeles, to Pacific Iron & Steel Co., Los Angeles.

250 tons, bridge, section 1F, Pike county, Illinois, to Worden Allen Co., Milwaukee.

245 tons, grade elimination, New York, New Haven & Hartford railroad, Maybrook, New York, to Bethlehem Steel Co., Bethlehem, Pa.

230 tons, bridge, FAP-370-D, Chester county, South Carolina, to Carolina Steel & Iron Co., Goldsboro, N. C.

220 tons, beams for warehouse, Arnold, Schwinn & Co., Chicago, to American Bridge Co., Pittsburgh.

200 tons, bulding, to Ingersoll Milling Machine Co., Rockford, Ill., to Mississippi Valley Structural Steel Co., Decatur, Ill.

200 tons, grade crossing elimination, section 108-F, Reading, Ill., to Joseph T. Ryerson & Son Inc., Chicago.

200 tons, addition, power house, Bridgeport, Conn., to American Bridge Co., Pittsburgh.

185 tons, bridge, 40 TR-FA-513-H, St. Louis county, Missouri, to Mississippi Valley Structural Steel Co., Decatur, Ill.

182 tons sheet piling, Standard Oil Co., for export to Persia, to Bethlehem Fabricators Inc., Bethlehem, Pa.

180 tons, shafts, Delaware river aqueduct, contract 334, board of water supply, New York City, to Jones & Laughlin Steel Service Corp., Long Island City, New York.

180 tons, outlet conduit crib, Detroit, to Whitehead & Kales Co., Detroit.

170 tons, bridge, section 650-B, Kendall county, Illinois, to Milwaukee Bridge Co., Milwaukee.

170 tons, Dominican high school, Jamaica, N. Y., to Richie & Penner, Brooklyn, N. Y.

167 tons, bridge at Oswego, Ill., by general contractor C. A. Swanson, Joliet, to Milwaukee Bridge Co., Milwaukee.

132 tons, Fisher river bridge, Lincoln county, Montana, to unnamed interest.

130 tons, novitiate arrochar, Staten Island, N. Y., to Schact Steel Construction Co., New York.

125 tons, theater alterations, 1603 Broadway, New York, to Bethlehem Fabricators Inc., New York.

125 tons, building, Sherwin-Williams Co., Chicago, to Joseph T. Ryerson & Son Inc., Chicago.

120 tons, bridges, Auburn and East Machius, Me., to Berlin Construction Co., Berlin, Conn.; bids June 30.

115 tons, highway work, in Clear Creek

and Chaffee county, Colorado, to unnamed interest.

107 tons, theater building, Shaker Heights, O., to Ingalls Iron Works, Birmingham, Ala.

100 tons, alterations to Safeway Store, Los Angeles, to Pennsylvania Iron & Steel Co., Los Angeles.

### Shape Contracts Pending

4500 tons, court house, Philadelphia, McCloskey & Co., Philadelphia, low; bids June 29.

Westinghouse Electric Elevator Co., Chicago, low on elevator plant.

2550 tons, Bryant high school, Queens, New York, bids July 9.

1250 tons, operating bridges over spillways for Chickamauga and Gunters-

ville dams, Tennessee valley authority, Knoxville, Tenn.; Duffin Iron Co., Chicago, low, \$118,800; bids June 16.

500 tons, five gates for upper end Colorado river aqueduct, for metropolitan water district, Los Angeles; bids July 8.

500 tons, factory building, American Art Works, Coshocton, O.

400 tons, switch structures, Pickwick Landing project, Tennessee valley authority, Knoxville, Tenn.; International Derrick & Equipment Co., Columbus, O., low, \$52,837; bids June 17.

467 tons, highway bridge, Boise City, Okla.

430 tons, addition to high school, Hyde Park, Chicago.

400 tons, Ruby dam, Seattle city light project; bids July 22.

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350 tons, curbing, for United States treasury, New York.  
 350 tons, state highway underpass, Louisville, Ky.  
 335 tons, bridges, Stockbridge and Pompanoosuc village, Vt.; bids July 16.  
 330 tons, state bridge, over Western Maryland railway, Glen Morris, Md.  
 325 tons, state bridge, Norwich, Conn.; bids July 6, Hartford.  
 300 tons, addition to gymnasium building, Rensselaer Polytechnic institute, Troy, N. Y.  
 300 tons, office building, Westinghouse Electric & Mfg. Co., Sharon, Pa.  
 300 tons, addition, public school 86, Bronx, New York; bids July 9.  
 275 tons, addition, public school 197, Brooklyn; bids July 9.  
 236 tons, six bridges, Woodbridge, N. J.; Weldon Construction Co., Westfield, N. J., low.  
 210 tons, steel arch bridges, Shelburne-Corlaine, Mass.; Charles I. Hosmer Inc., Greenfield, Mass., low.  
 165 tons, shapes and bars, grade crossing, Sewell station, Gloucester county, New Jersey; bids July 12.  
 150 tons, Tongue river dam, Mont.; bids in.  
 125 tons, state bridge, Mechanics Falls, Me.  
 105 tons, shapes and bars, library addition, naval war college, Newport, R. I.; New England Concrete Co., Providence, R. I., low, bids June 30.  
 103 tons, Santiam river bridge, Linn county, Oregon; bids July 16.  
 100 tons, sheet piling, spillway and culverts, Cumberland county, New Jersey; bids July 13. Walter M. Sharp engineer.

100 tons, Washington state highway projects; bids in.

## Reinforcing

Reinforcing Bar Prices, Page 91

**Pittsburgh** — Prices to jobbers continue firm, but some weakening in prices to contractors in certain districts is reported. Activity is decidedly better than last year, except perhaps on the Pacific Coast. Pending business includes 600 tons for a building for American Smelting & Refining Co. at Whiting, Ind.

**Cleveland**—Outstanding reinforcing bar tonnage of the year, 2000 tons, was awarded last week to Patterson-Leitch Co., Cleveland, for the Industrial Rayon Co.'s plant at Painesville, O. Republic Steel Corp., Cleveland, is expected to supply the steel. Otherwise awards during the week were limited lots well under 100 tons from private sources. Mills are able to make deliveries almost over night in most instances, and prices are firm although fabricated material continues to show some weakness.

**Chicago** — New business largely

have been confined to numerous small lots of 75 to 100 tons each. All bids have been held up for one week on the 2000-ton federal post office garage project.

**Boston**—Numerous small-lots are active, mostly bridges. Sizable building projects are being planned which will be out for bids shortly. Several hundred tons for Hartford, Conn., sewers remains to be placed. While prices on smaller tonnages are usually firm, buyers frequently secure concessions on attractive lots.

**New York** — Projects are fewer and awards have slumped. Approximately 8000 tons are pending with highway and bridge requirements in New Jersey slightly heavier. Small-lot buying is active.

**Philadelphia**—The only large job currently before the trade is 900 tons, for courthouse here, on which McCloskey & Co., Philadelphia, is low. A few small projects are reported but in general new business shows a definite slackening. Considerable work is ahead but is slow in developing.

**San Francisco**—Mills have worked down backlogs to 30 days. Awards totaled 2733 tons, bringing the aggregate to 44,896 tons, compared with 111,173 tons last year. Truscon Steel Co., Youngstown, O., took 428 tons for the San Gabriel dam No. 1 spillway, Los Angeles and Concrete Engineering Co. secured 415 tons for transition structures for the same project. New inquiries include 500 tons for the naval operating base, San Diego, Calif.

**Seattle**—Local mills will curtail operations next quarter unless sizable tonnages develop. Prices are steady. Washington state opened bids June 29 for two highway projects involving 650 tons.

## Reinforcing Steel Awards

2000 tons, plant, Industrial Rayon Corp., Painesville, O., to Patterson-Leitch Co., Cleveland, O.; Republic Steel Corp., Cleveland, will furnish the steel.

1000 tons, Brewster housing project, De-

## Concrete Awards Compared

	Tons
Week ended July 3.....	9,722
Week ended June 26.....	11,133
Week ended June 19.....	9,355
This week, 1936.....	22,414
Weekly average, 1936.....	6,005
Weekly average, 1937.....	5,741
Weekly average, June.....	9,596
Total to date, 1936.....	188,103
Total to date, 1937.....	155,012

Includes awards of 100 tons or more.

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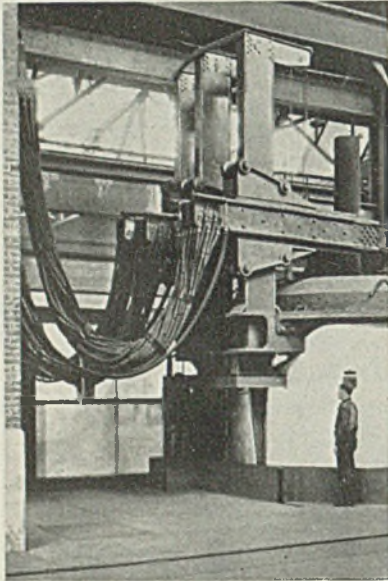
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have not been greatly curtailed by vacation schedules and the labor situation, and some producers will be able to enlarge stocks. Inquiries for export have dropped. The large inquiry recently circulated for shipment to France is reported to have been withdrawn. Carnegie-Illinois Steel Corp., Pittsburgh, has confirmed its intention of continuing in the commercial pig iron market. Prices are steady.

**Cleveland**—Pig iron sellers report shipments declined in June and some looked for a further recession during July, as many foundries usually close down during this period for vacations and inventory. While most foundries have specified full second quarter tonnage, many were forced to carry over a considerable portion into third quarter. Little third quarter tonnage has thus far been placed, although some sellers look for a marked change for the better in July.

**Chicago**—Producers of merchant pig iron continue to face a busy period through the summer. Shipments in June now appear to have tapered about 10 per cent from May but this seems normal under the circumstances. Foundry operations have been increasing and are expected to maintain a good pace into autumn. Such large single consumers as automobile partsmakers continue to accept iron from all producers but the balance between furnace output and actual active consumption is such that furnaces are not actively soliciting shipments. New business is coming along in routine fashion.

**Boston**—Pig iron buying is slack, mostly small lots for immediate delivery by foundries operating with relatively light stocks. This includes some of the smaller jobbing foundries who continue more active than most other casting producers. Heating equipment builders are also doing well. The current trend in buying is expected to continue for some weeks. Exports from this port against old orders are substantial.

**New York**—Many foundries are scheduled to remain down this week, and in some cases next week as well, for inventory-taking and vacations. This will be reflected considerably in pig iron specifications, with most sellers looking for little activity through most of July. There has been little third quarter contracting, except routine renewals affecting carry-over tonnage, and some producers report that they have had little or no carry-over tonnage. Foreign demand is confined to relatively small tonnages, with most inquiry coming from Europe. Japan, a heavy buyer this year, is practically out of the market.

**Buffalo**—Shippers report all sec-

ond quarter contracts were cleaned up in good shape. Last half of June was dull and merchants used the two weeks to pile iron for shipment to storage points. Canal rates continued to be a matter of much discussion as shippers endeavored to obtain concessions. This deferred iron movement although some tonnage has accumulated here recently. Steelworks continue to absorb bulk of own iron and are not active in seeking merchant outlets. There is little prospect of an early change in production.

**Philadelphia** — Further preliminary conversations relative to a possible advance in fourth quarter prices are heard. However, whether prices will advance at reported \$1a ton depends largely on future developments. Increased costs are said to justify advance and renewed strength in scrap market is supporting this stand. A little buying on a hand-to-mouth basis by smaller foundries is reported but many of the larger interests are well covered. Large pipe makers have sufficient iron, mostly foreign, for needs through the year.

**Cincinnati**—Shipments of Southern iron, against old contracts, have been fairly heavy in view of a July 1 deadline. Melt is down because of holiday suspensions and generally lighter jobbing demand.

**St. Louis**—June pig iron shipments will exceed those of May and also of April. Aggregate tonnage probably will be heaviest for any June since 1929. Mills and foundries are free from strikes here and are operating at near capacity. Backlogs are heavy and some tonnage has been transferred from strike-bound areas. Spot orders are in fair volume, ranging from carlots up to 500 tons. Implement and stove manufacturers continue to consume heavily.

**Seattle**—Price of Columbia iron, 1.75 to 2.25 silicon, has not been changed for third quarter. This grade is selling at \$22 gross ton base, Provo, Utah, having been advanced \$1 May 1. Foundry activity is steady and an increased volume is being bought. There is no competition from foreign pig iron, prices being out of line with the domestic product.

**Toronto, Ont.** — Producers have opened books for third quarter iron contracts and moderate booking is reported. It is expected that the next week or ten days will see most of those melters booked who placed forward delivery contracts. Spot pig iron sales are practically the same as in the preceding two or three weeks, approximately 1700 tons per week. Inquiries are appearing and producers are maintaining production at a new peak level of around



75,000 tons per month, of which about 15,000 tons was foundry and malleable iron for June. The daily melt continues at approximately 75 per cent of capacity.

## Scrap

Scrap Prices, Page 94

**Philadelphia**—The eastern Pennsylvania market has developed further strength with several principal grades up 50 cents a ton. No. 1 steel now is quoted \$17 to \$18 a ton, against \$16.75 to \$17 recently. A substantial tonnage of this grade has been reported sold for nearby Philadelphia delivery at the top of the range, representing an advance of 50 cents. A leading maker of auto bodies here is reported to have disposed of its monthly accumulation of about 3000 tons of new compressed sheets at \$18. This interest also disposed of 625 tons of miscellaneous material. The Baltimore & Ohio closes on 14,000 tons of scrap July 6, including 6300 tons of No. 1 steel and 2000 tons of rails. One vessel left Girard Point last week with a cargo of scrap for abroad and another from Port Richmond. Some tonnage still is owed against export contracts which will be cleaned up as soon as bottoms are available. No new export sales are reported here.

**Pittsburgh**—A definitely stronger tone was apparent in the scrap market here last week. Activity was confined to only a few small sales, however, pending the outcome of the railroad lists, one of which was reported to have brought around \$20 per ton for rail steel. Small dealers were reluctant to sell No. 1 heavy melting at \$18.50, and this situation was reflected in many other grades.

**Cleveland**—Increasing resumption of steelworks activities in plants interrupted by labor blockades is bringing inquiry for scrap in this district and the Valley. An important buyer in the Youngstown area is inquiring for No. 2 heavy melting steel, which seems about \$1 per ton stronger than a week ago. Buyers are offering \$17, with few takers.

**Chicago**—First definite signs of improvement in the scrap market are found in an advance of 25 cents in heavy melting steel and compressed sheets, due to resumption by a leading consumer, and removal of embargoes on shipments by another. Further strength is expected to follow.

**Boston**—A few signs of additional strength have appeared for several grades of scrap, including stove plate and chemical borings, but on the whole prices are nominal and dull-

ness prevails in the domestic market. For export prices are steady, holding better than bids by domestic consumers, which in most cases continue too low to attract tonnage.

The unusual situation has arisen where heavy melting steel for export at Boston is selling above the New York price. This results from the requirement for shipping permits, which enhances competition for material to fill cargoes.

**New York**—Buying of steelmaking grades of scrap is slightly heavier, with two eastern Pennsylvania mills taking better shipments at unchanged prices. While this activity is slight it represents improvement over recent weeks. Prices generally are unchanged although sales of rails for rolling have strengthened that grade \$1. Stove plate also tends to be firmer. Buying for export is steady against orders.

**Buffalo**—The scrap market is stagnant. Local melters think suspension of operations in other districts will force scrap to Buffalo in such volume as to further depress the market here. Dealers entertain no such ideas and are not interested in current bids. As a result buying is at a standstill although heavy shipments continue on orders. Dealers have satisfactory backlogs to begin the new quarter.

**Detroit**—Sentiment alone finally has brought an upward turn in prices here, several grades, including melting steel, borings, bundles and turnings, being marked up 25 cents. Opinion of dealers is that the market has touched bottom and has started upward. With August a low month from the standpoint of supplies, and higher prices forecast for September, renewed buying is anticipated this month.

**Cincinnati**—Prices of iron and steel scrap are unchanged but the shrinkage in supplies and some evidence of accumulation lend strength. Mills have continued as heavy consumers and although avoiding tonnage commitments are covered for early needs. Foundry grades are in lighter demand at unchanged prices.

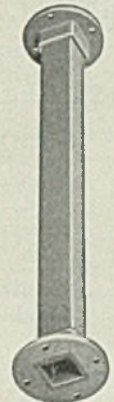
**St. Louis**—There has been a fair volume of scattered buying of iron and steel scrap, almost exclusively, however, for prompt shipment, mainly to complete mixtures and for fill-in purposes. The market as a whole is firmer, this view being based on the fact that for two weeks there has been no decline on any item, and in some instances it is harder to obtain material at current quotations.

**Seattle**—Dealers are marking time, expecting little improvement before September when Japan is likely to buy in volume again. Meanwhile the

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Orient is not interested, as it is difficult to obtain import permits. Local mills have storage facilities crowded and shippers have been asked to postpone consignments, although railroads have not declared an embargo. The market has dropped accordingly, No. 1 being now quoted at \$7 to \$8. Old commitments are still being forwarded to Japan but steamship space is much easier and rates have dropped.

**Toronto, Ont.**—Conditions in iron and steel scrap remain unchanged. Demand is high, with the more popular lines in limited supply. Local

dealers state that they have many inquiries for machinery cast which they are unable to fill, while some are importing cast from the United States. Mills are pressing dealers for delivery of heavy melting steel and turnings and yard holdings are being depleted as a result.

## Warehouse

Warehouse Prices, Page 93

**Cleveland**—Warehouse distributors report aggregate tonnage fell off 30 per cent in some instances during June, and some do not expect improvement during July, due to labor unrest and adverse seasonal influences.

**Chicago**—Following seasonal trend for June, warehouse business last month was somewhat under May. Volume of business was not much affected by strike conditions although a shortage of some materials has developed, mostly sheets. Generally market is strong and steady, with less dislocation of warehouse trade due to strikes than usual. Some slight readjustment is being made in quantity differentials on structural rivets.

**New York**—With practically all lines affected, notably structurals, warehouse volume in June declined from May, the slump starting about the time of the mid-west steel strike. Buying during the last two weeks has been of a hand-to-mouth nature, and some jobbers were aided last month by sizable backlogs. Sheet deliveries are improving. While there are some scattered reports of shading, warehouse prices in the main are firm.

**Philadelphia**—Except for a few instances, no business has come to local warehouses as reflection of Mid-west steel mill strikes. Slight easing in total business is reported. Number of orders shows little decline but are smaller individually.

**Cincinnati**—June sales from warehouse were equal to preceding two months, mill conditions enabling resistance to customary seasonal declines. Orders for structurals are individually small. Jobber stocks are better fortified with most difficulty in obtaining plates.

**St. Louis**—Strikes have had little effect on warehouse business. Volume continues heavy, and June is expected to show nothing of the usual seasonal recession. Sheets and plates still lead current buying.

**Seattle**—Business is spotty and confined to small tonnages, there being little mill buying. Deliveries are improving. Public works buying is less active. Price schedule is firm and generally maintained. June's

volume is reported about equal with May, but less than April.

## Steel In Europe

Foreign Steel Prices, Page 93

**London**—(By Cable)—Many producers of finished steel are completely booked for last half while others are accepting new tonnage for October and November in limited quantities. Persistent inquiry is being made by structural, automobile, engineering and shipping concerns. Supplies of semifinished steel are inadequate in all districts. The government promises to make arrangements for a greater tonnage of imports. A government loan will help build a new steelworks at Jarrow and aid in formation of a company with £1,000,000 capital.

The Continent reports the market is quiet and delivery delays are shortening. Two additional stacks are projected by the French iron industry. Output of German steel is increasing.

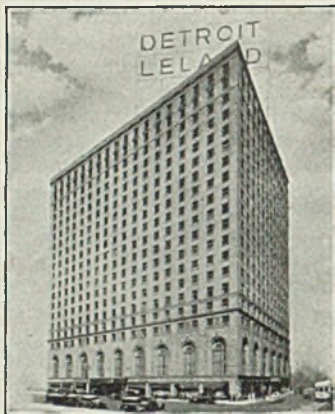
## Iron Ore

Iron Ore Prices, Page 94

**New York**—Prices have been advanced on chrome, tungsten and manganese ores. Turkish producers of chrome have made a general upward revision while Indian producers have increased one grade, with indications that advances in other grades will be made shortly, particularly in view of impending higher ocean freight rates. Rates from India advanced approximately 100 per cent early in the year and according to present indications are due for another 25 per cent increase.

Strength in Turkish chrome reflects not only a strong demand abroad, but the continued good inquiry here for metallurgical purposes and an increase of about 50 cents a ton over the past month in rates from Turkish ports of origin.

Marked scarcity is the principal factor in a further increase in Chinese wolframite, which is now holding nominally at around \$25 per short ton unit for spot delivery. This spot price, however, represents more a theoretical differential above the future price than a price based on sales, for there is little or none available for nearby. At the moment, in fact, Chinese sellers are offering little for delivery before December, a position they are now quoting at \$23. This added strength in ore prices is expected to be reflected shortly in higher prices on ferrotungsten which for the moment continue at \$1.80 to \$1.85 per pound of



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tungsten contained, freight allowed, in car lots.

**Cleveland**—Total shipments of iron ore from the upper lakes during June were 10,107,883 tons, compared with 10,043,856 tons in May, and 6,608,320 tons in June, 1936. The amount carried this year up to July 1, was 23,922,294 tons against 11,677,510 tons in 1936, an increase of 104.8 per cent.

Shipments from upper lake ports for the season to July 1, as tabulated by the Lake Superior Iron Ore association follows:

Port	To July 1 1936	To July 1 1937
	Escanaba .....	662,349
Marquette .....	1,188,382	1,851,167
Ashland .....	1,193,153	1,876,066
Superior .....	4,263,158	8,151,535
Duluth .....	3,000,761	6,881,747
Two Harbors .....	1,369,707	3,924,913
<b>Total .....</b>	<b>11,677,510</b>	<b>23,922,294</b>

## Ferroalloys

Ferroalloy Prices, Page 92

**New York**—Since July 1 ferro-manganese shipments have dropped off sharply and the expectation is that deliveries will continue light for at least another fortnight. This decline reflects heavy protective covering by contract customers, who were confronted with a \$7.50 increase July 1.

The movement in spiegeleisen is also expected to be quiet for the time being, for the same reason, as contract consumers, protected last April at prices \$3 a ton below the current levels of \$33, Palmerton, Pa., for 19 to 21 per cent material, and \$39 for 26 to 28 per cent, specified freely against their contracts which ran until the end of June.

Spiegeleisen, although the decline in consumption is expected to be far less than normal, as the steelmaking operations are expected to hold in the seventies throughout the greater part of the summer.

## Metallurgical Coke

Coke Prices, Page 91

While the contract price on Connellsville beehive coke has been holding there has been little spot buying recently. Reflection of the resumption of operations at steel plants which had been hampered by labor troubles, has been slow. Despite the banking of many ovens, conditions generally are far better than a year ago. Some operators anticipate an upturn in requirements in possibly another six weeks. Most plants are operating over half a week. One company which very much reduced its shipments two weeks ago has been slowly expanding them again. Prices of by-prod-

uct coke are being extended into third quarter at the same level as for second quarter.

## Nonferrous Metals

Nonferrous Metal Prices, Page 92

**New York**—Sentiment in nonferrous metal markets improved markedly last week due to a lessening in the tension created by the French financial crisis and American labor troubles. Prices advanced on the London Metal Exchange but generally held unchanged here.

**Copper**—Increased buying by independent fabricators combined with steady demand from affiliated companies boosted sales sharply early in the week with those for the first four days alone amounting to 14,144 tons, or about 40 per cent of the 33,396-ton total for all of June. Export copper closed around 14.12½c, c.i.f. European ports, compared with 13.75c around midweek. Electrolytic was quoted firm here at 14.00c, Connecticut.

**Lead**—Offerings were reduced by a sit-down strike at a New Jersey refinery but demand was only moderate. Shipments during July are expected to increase from the estimated 45,000-ton total for June.

Prices held at 5.85c, East St. Louis, and 6.00c, New York.

**Zinc**—Consumers continued to buy lightly while drawing rather heavily on previous commitments. The market was supported at the firm 6.75-cent level for prime western by the strong statistical position. Spot supplies remained tight in both foreign and domestic markets.

**Tin**—Although a reduction in stocks had been expected, the report of a drop of 1242 tons in world visible for June created bullish sentiment and resulted in a price advance, to 57.75c. Easiness on Friday dropped the market to 57.37½c.

**Antimony**—Prices held unchanged on the basis of 14.50c for spot until Friday when a reduction of ¼-cent was posted on American spot to 14.12½c, New York. Fresh buying continued dull.

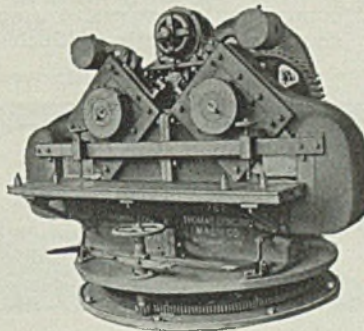
## Cold-Finished

Cold Finished Prices, Page 91

**Pittsburgh**—June ended with cold-finished shipments about 25 per cent ahead of new business. Total specifications last month, however, were better than during May, according to some producers, and at present are considerably improved over last

PUNCHES • SHEARS • SPACING TABLES

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year. Pressure is noted for shipments in some sizes. Textile and other machinery and farm equipment manufacturers, office equipment, and fabricators of household equipment continue active.

### Three Hundred at Steel Club's Outing

Three hundred members and guests, representing steel producers and consumers, attended the Steel Club of Philadelphia's annual outing at Aronomink country club, Newton Square, Pa., June 25.

After a day of golf and other sports, a dinner was served at which L. L. Caskey, manager of Philadelphia sales for Republic Steel Corp., presided.

H. H. Merriman, manager of Philadelphia sales for the Alan Wood Steel Co., headed the committee on arrangements and was assisted by H. H. Zeising, sales manager, Midvale Co.; H. E. Richardson, manager of Philadelphia sales, Youngstown Sheet & Tube Co.; R. H. McCracken, Philadelphia manager, Central Iron & Steel Co.; S. J. Cotsworth, assistant manager of Philadelphia sales for Carnegie-Illinois Steel Corp.; and Thomas Ham, Philadelphia manager, Jones & Laughlin Steel Corp.

Officers of the club, in addition to Mr. Caskey, are Mr. Zeising, vice president, and F. L. Shants, secretary. Mr. Shants is in charge of Philadelphia sales for the Lukens Steel Co.

## New Shape Extras Are Put in Effect

Effective July 1, leading producers of structural shapes are applying new quantity differentials which long have been under consideration.

The extras apply to total theoretical weight of an order of specified quantities and sizes placed at one time for unrestricted shipment to one destination, (any additions will be considered as separate orders) as follows:

	Cents Per Lb.
Under 6000 lbs. to 4000 lbs., incl.	0.25
Under 4000 lbs. to 2000 lbs., incl.	0.75
Under 2000 lbs. ....	1.25

Coincident with the application of the new quantity extras, a revision in length extras also is announced by leading producers. These are as follows:

80'-0" to 8'-0", incl. ....	BASE
Under 8'0" to 5'0", incl. ....	0.10
Under 5'0" to 3'0", incl. ....	0.15
Under 3'0" to 2'0", incl. ....	0.25
Under 2'0" to 1'0", incl. ....	0.50
Under 1'0" ....	1.55
Over 80'0" to 90'0", incl. ....	0.10
Over 90'0" to 100'0", incl. ....	0.15
Over 100'0" ....	0.15, plus 0.05 for every additional 5'0" or fraction thereof. Applicable only to those sizes that can be furnished in lengths over 100 feet.

Cutting extras for lengths under 5 feet are set up to cover a normal amount of such cutting on any one order. They do not apply on orders comprising an excessive amount of short length cutting. Such orders

are subject to special arrangement and pricing.

The new cutting extras are being put into effect only by some of the mills. Others are understood to be holding the schedule under advisement.

The new cutting schedule calls for an extra of 15 cents on lengths from three to five feet, compared with the current charge of 10 cents as observed by some mills and a brand new charge of 10 cents on lengths ranging from five to ten feet. The flat stopover charge of three cents in connection with milling-in-transit will be charged to the fabricators instead of being absorbed by the mills. This latter, it is pointed out, will be a return to the practice which prevailed prior to the steel code.

### University of Minnesota Issues Mining Directory

The Mining Directory of Minnesota, annual bulletin of the mines experiment station, University of Minnesota, 1937 edition of which has just been published, contains much valuable statistical information on the iron ore industry.

Included in the 238-page bulletin are maps showing location of all operating mines, exhausted and reserve properties, and beneficiating plants. Mines or mining properties that have shipped ore or contain reserve ore are listed, as are the various mining companies and a list of men associated with the industry.

General statistics include: Historical data; iron ore reserves of Minnesota, Michigan and Wisconsin; shipments of beneficiated ore; shipments by ranges; average analyses; ore loading docks; capacity of lake ore freighters; iron ore prices and values; Minnesota mining costs; taxes on industry in Minnesota; cost of common labor; domestic iron shipments; and foreign iron productions.

### Mirrors of Motordom

(Concluded from Page 38)

bargaining representatives; (2) mete out penalties to union officials for strikes in violation of contracts, such penalties taking the form of suspension of dues-collecting privileges; and (3) require all union officials to be citizens of the United States.

The last of these proposals would eliminate a large part of the communistic element which runs throughout the CIO and the UAW. It is unfortunate for industry that it has taken so long for state and fed-

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eral government representatives finally to become acquainted with the history of communistic affiliations of many of John L. Lewis' lieutenants.

**P**RODUCTION for the first five months of the year is officially announced as 2,396,081. Add to this an estimated June production of 477,200 and the six-month total becomes approximately 2,873,300, leaving a balance of 2,126,700 for the last half of the year, if the 5,000,000-mark is to be reached. Judging by last year, when production for the July-December period totaled 2,021,929, the industry should be able to make its goal easily, especially in view of anticipations for a good month for July.

Significant feature of production figures for the first six months is that the industry was able to better last year's total in spite of the inroads of sitdowns, slowdowns, skips and the myriad other forms of labor disturbances. It will be difficult for analysts in years hence to discern any effects of strikes on the month-by-month production statistics, since each month bettered the total for the same month in 1936 by a wide margin.

**S**AFETY campaigns in Toledo, O., industries are estimated by Ohio industrial commission officials to be saving the plants \$5,000,000 yearly—\$1,000,000 in lower premiums on industrial compensation insurance and the balance in decreased spoilage of material, breakage of machinery and lost time. . . First auto trailer coach plant for Toledo is the Hargo Mfg. Co., recently incorporated, and planning to be in production by the first of next month in one of the buildings formerly occupied by a Willys-Overland department. The company will employ 200. . . General Motors claims to have produced its one-millionth vehicle in the current model series on June 25, just seven working days after the date when No. 1,000,000 appeared in 1936. The millionth car, so the Corporation's public relations office avers, was a Chevrolet master deluxe sedan which rolled from the assembly line at 3 in the afternoon. . . As an index to the upswing in truck and commercial car sales, it is interesting to note Studebaker sales of such vehicles in the first five months of this year bettered the total for the same period last year by almost 76 per cent.

## Equipment

**Boston**—Decline in orders is welcomed by some builders as it will enable them to reduce backlogs be-

fore late in the year. Inquiries are still heavy, notably foreign, one list including 30 grinders for abroad. Most machine shops in this district close over the holiday only, resuming Tuesday.

**Pittsburgh**—Machine tool manufacturers continue busy against orders. B. F. Goodrich Tire & Rubber Co., Akron, O., is expected to spend around \$500,000 in modern machinery and equipment for its Philadelphia rubber works.

**Cleveland**—Dealers' orders continue light although manufacturers

are still working against heavy backlogs booked earlier. Strikes are considered the predominant cause for drop in new business. A fair amount of inquiries for export trade and from the automotive industry is current. Deliveries have started to show some improvement as result of decrease in business during past two months.

**Seattle**—Road machinery, mining, automotive and logging equipment continue in strong demand. Electrical supply items and pumping units also are active.

## PEABODY GAS SCRUBBER

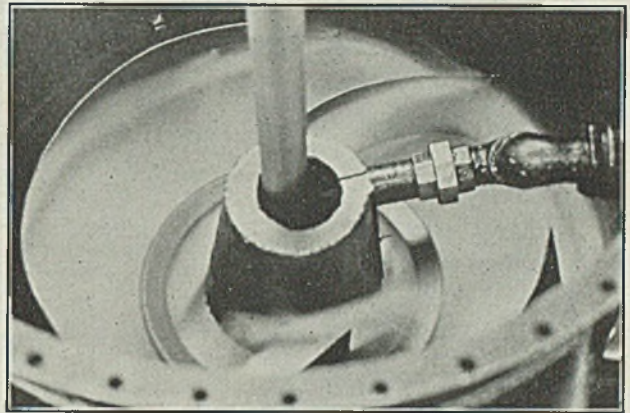
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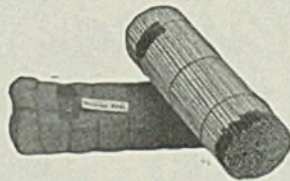


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# Construction and Enterprise

## Ohio

COLUMBUS, O. — Columbus Casting Co., Olentangy river road, manufacturer of iron castings, plans one-story foundry building, 72 x 135 feet, costing about \$50,000 with equipment.

CUYAHOGA FALLS, O.—City, K. L. Ewart, service director, will take bids until July 12 for furnishing and install-

ing 1500-gallon per minute turbine centrifugal pump.

DAYTON, O.—Fire recently destroyed the buildings of the Hoban Brass Foundry Co. here and officials announce that they will resume operations as soon as a new site can be obtained and a foundry fitted with the necessary machinery and equipment.

DAYTON, O.—Buckeye Iron & Brass

Foundry Co., William P. Huffman, president and treasurer, sustained severe damages by fire recently. Mr. Huffman reports the heavy machine shop portion of the foundry will have to be completely rebuilt and the machinery reconditioned or replaced.

GALLIPOLIS, O.—City, John Gwinn, city manager, is considering construction of sewage disposal system and incinerator, costing about \$400,000.

LANCASTER, O.—South Central Rural Electric association, care of farm bureau, Columbus, O., has plans nearing completion and will take bids soon for primary and secondary lines totaling 100 miles, with outdoor power substations and service facilities. Fund of \$105,000 is being secured through federal aid.

MAGNOLIA, O.—United States engineers office, J. D. Arthur Jr., Lieutenant, Zanesville, O., takes bids about July 6 for furnishing and installing motor-driven pumping unit, 5000 gallons per minute capacity, including all necessary appurtenances; also for two gasoline-driven pumping units of 11,000 gallon per minute capacity.

NEW BOSTON, O.—City, Douglas E. Bowling, mayor; Roy Canter, service director, plans waterworks system, costing about \$250,000.

SANDYVILLE, O.—United States engineers office, J. D. Arthur Jr., Lieutenant, Zanesville, O., will invite bids July 6 for furnishing and installing motor-driven pumping unit, 2000 gallons-per-minute capacity, including motor, starting equipment and piping and accessories; also for two gasoline engine-driven pumping units of 5000 gallons per minute capacity.

TOLEDO, O. — Hall Mfg. Co., maker of valve seat grinders and cylinder hones, has purchased a three-story steel building adjacent to its plant. Plans to spend \$25,000 for equipment.

## Connecticut

HARTFORD, CONN. — Elias Glass Co., Corbin avenue, New Britain, Conn., has plans completed by Mylchreest & Reynolds, 238 Palm street, for erection of 100 x 160 foot steel factory building, costing about \$45,000.

MERIDEN, CONN. — Connecticut Gas Products Co. Inc., G. J. Fouse, vice president, New Haven, Conn., has plans for construction of factory unit, costing \$100,000.

MERIDEN, CONN. — International Silver Co., 48 State street, is preparing plans for erection of four-story, 40 x 145 foot plating and finishing factory unit. Estimated cost \$75,000.

## Massachusetts

FALL RIVER, MASS. — Lamport Mfg. Supply Co., 511 Broadway, New York, has acquired the former plant building of American Printing Co. and will purchase and install loading and handling equipment. Estimated cost about \$40,000.

MANSFIELD, MASS.—Mansfield Japanery Lacquer Products Co. is altering and repairing its plant at a cost of about \$45,000.

## Maine

LEWISTON, ME. — City, G. Z. Bernier, superintendent of water department, is preparing plans for municipal pumping and street lighting plant, additions and alterations to present pumping station, pumps, generators, and diesel engines. Cost \$228,000. Whitman & Howard, 89 Broad street, Boston, engineer.

NEW PORTLAND, ME. — Clark &

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Atwood Co., West New Portland, Me., plans to build a woodworking plant. Cost about \$40,000, with equipment.

**New York**

**BROOKLYN, N. Y.** — Bureau of yards and docks, navy department, receives bids for equipment and power house at naval hospital here, including water tube boilers, oil burning equipment, pumping machinery, storage tanks, and combustion control apparatus; specification 8418.

**BUFFALO**—United States Corrugated Fiber Box Co., Indianapolis, has leased a plant at 180 Hopkins street here and will begin production of fiber boxes shortly. Machinery is being moved from Indianapolis.

**NORTH TONAWANDA, N. Y.**—General Plastics Inc. has begun construction of an addition to its plant, costing approximately \$150,000.

**SYRACUSE, N. Y.** — O. S. Cane, purchasing agent for Onondaga county, county court house, plans to purchase a 150-pound pressure boiler and appurtenances. Maturity in July.

**New Jersey**

**NEWARK, N. J.** — Schnefel Bros., 684 South Seventeenth street, plans erection of plant, to cost \$50,000.

**TRENTON, N. J.** — E. F. Fisher, general manager, Fisher Body division, General Motors Corp., Detroit, plans one and two-story plant here. A power plant will also be erected. Cost to exceed \$5,000,000.

**VINELAND, N. J.**—South Jersey Foundry Co. has recently been formed with \$125,000 capital stock. Harry Bastian is agent.

**Pennsylvania**

**AMBLER, PA.** — Keasby & Mattison Co. plans erection of manufacturing plant, to cost about \$600,000. United Engineers & Construction Co. Inc., 1401 Arch street, Philadelphia, engineer.

**LEBANON, PA.**—Lebanon Steel Foundry plans erection of foundry building. General contract awarded to J. H. Greiner & Co., 826 Walnut street, Lebanon. Estimated cost \$50,000.

**NEW BRIGHTON, PA.** — W. H. Elverston Pottery Co. sustained severe damage to its main fabricating plant recently. Plant will be rebuilt.

**Michigan**

**DETROIT**—Detroit Automatic Machine Co. has been formed to develop automatic screw machines, by George D. Hayden, 12380 Wisconsin avenue.

**DETROIT**—Cadillac Tool & Die Co., 8016 Prairie avenue, has been formed with \$10,000 capital to deal in dies and tools, by Earl H. Harrison, Joseph Evans and Alex Vitovitch.

**DETROIT** — Perfection Mold & Machine Co., 2822 Union Guardian building has been incorporated with \$20,000 capital by Walter V. Helmel, Grosse Pointe Park, to deal in steel.

**MONROE, MICH.**—Monroe Steel Castings Co. has awarded contract to Benning & McKinstry Co., Detroit, for an addition to its machine and carpenter shops.

**MUSKEGON, MICH.**—Muskegon Pipe & Mfg. Co., 283 Ionia avenue, has been incorporated with capital of \$10,000, to deal in pipe products, by Vitus P. Houha, Chicago.

**PONTIAC, MICH.** — City plans municipal electric plant, including three oil burning diesel engines, panels, wires and distributing apparatus.

**PONTIAC, MICH.** — American Forging & Socket Co. has had plans drawn by L. J. Heenan, 609 Peoples State building, for a one-story, 170 x 280 foot steel factory. Estimated cost \$75,000.

**ZEELAND, MICH.**—Work has begun on the new \$85,000 municipal electric light and power plant here. Peter Brill, Zeeland, is contractor.

**Illinois**

**CHICAGO**—Illinois Machinery Mfg. Co.

has been organized. Joseph D. Daley, Title and Trust building, is correspondent.

**CHICAGO** — Binks Mfg. Co., 3124 West Carroll avenue, has plans prepared for erection of a two-story factory addition, to cost approximately \$75,000.

**CHICAGO** — Chicago Pump Co., 2336 West Wolfram street, plans to build a two story factory unit at 4700 Foster avenue.

**CHICAGO** — Adams Machinery Co., 134 South Clinton street, maker of machinery and parts, has purchased the machine shop building of Hansell-Elcock Co., Twenty-fourth and Canal streets,

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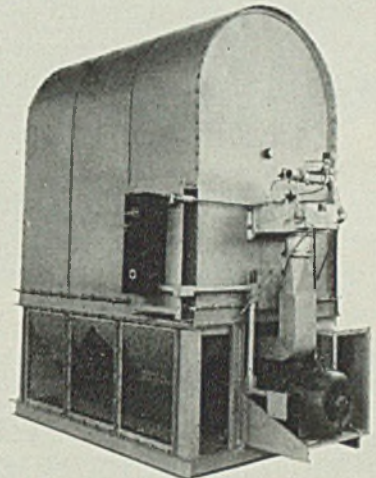
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Standard Machine Screws — Machine Screw Nuts  
Interchangeable bolts and nuts made strictly to A.S.M.E. tolerances

for purpose of expanding its operating facilities.

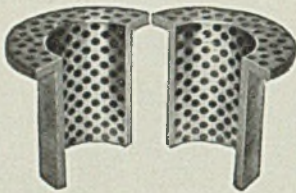
**KANKAKEE, ILL.** — Florence Stove Co. has awarded contract to L. Balkin Builder Inc., 2020 North Austin street, Chicago, for one-story addition. Estimated cost \$50,000 with equipment. Frank D. Chase Inc., 307 North Michigan avenue, Chicago, architect and engineer.

**Indiana**

**WHITING, IND.** — Globe Roofing Products Co., A. Coburn, president, 176 West Adams street, Chicago, plans one-story, 40 x 304-foot factory, one-story, 45 x 93 foot storage building; one-story 40 x 100-foot warehouse; boiler house, and machine shop.

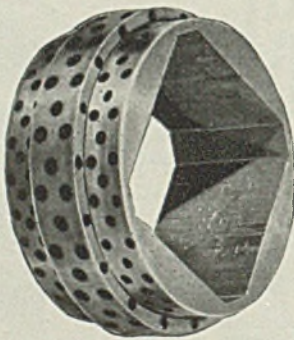
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**Alabama**

**BIRMINGHAM, ALA.** — Birmingham Paper Co., Fifth avenue, South, and Twenty-first street, plans installation of motors and controls, conveyors, loaders and other equipment in new multi-story addition to paper converting plant. Cost close to \$170,000.

**Virginia**

**PEARISBURG, VA.**—American Cellulose & Chemical Mfg. Co. Ltd., 180 Madison avenue, New York, plans to spend approximately \$30,000,000 for erection of rayon plant here. Initial expenditure estimated at \$5,000,000.

**Missouri**

**ST. LOUIS**—Socony-Vacuum Oil Co. Inc., 26 Broadway, New York, plans to build a \$200,000 cracking plant on South street and Louis waterfront here.

**Texas**

**GOLDSMITH, TEX.** — Phillips Petroleum Co., Bartlesville, Okla., will install motors and controls, air compressors, motor turbine pumping machinery, conveyors, and other equipment in new gasoline refining plant. Power house will also be built. Project will cost close to \$1,500,000.

**HOUSTON, TEX.**—Pittsburgh Valve & Fitting Corp., Chenevert and Commerce streets, has awarded contract to W. E. Woodruff, 6000 Greenbrier street, for constructing an addition to its plant.

**HOUSTON, TEX.**—Shaffer Tool Works is building a plant at 6006 Navigation at Greenwood streets, 60 x 120 feet, to be used as an office and shop. Total cost, including equipment, \$50,000. Sam D. Cook, 3769 Farbar street, general contractor.

**HOUSTON, TEX.**—Rheems Mfg. Co., 1401 Lockwood street, has \$75,000 expansion program under way. Two additional buildings are being erected which will triple size of present plant. William A. Brunet, Shell building, general contractor.

**Wisconsin**

**MILWAUKEE** — C. A. Krause Milling Co., South Forty-third and West Burnham streets, plans replacing mill recently destroyed by explosion. Cost of rebuilding and purchase of new equipment estimated at close to \$1,000,000.

**Kansas**

**RUSSELL, KANS.**—City will vote July 12 on a \$127,000 bond issue to finance construction of a pumping house and two supply lines. Black & Veatch, 4706 Broadway, Kansas City, Mo., consulting engineers.

**South Dakota**

**BROOKINGS, S. DAK.**—South Dakota State college, C. W. Pugsley, president, is taking bids to July 10 for purchase and installation of one steam turbine and generator unit of 350-kilowatt capacity, with necessary switchboard panels and accessories.

**Iowa**

**BOONE, IOWA** — Chicago & North Western Railroad Co., C. T. Dike, chief engineer, 400 West Madison street, Chicago, plans to install a water treatment plant here, including 200,000-gallon storage tank. Estimated cost \$40,000.

**CHEROKEE, IOWA**—State board of control, E. H. Felton, chairman, State House, Des Moines, Iowa, has been allotted \$62,000 for construction of a new boiler house with equipment at the Cherokee State hospital.

**DAVENPORT, IOWA**—Eastern Iowa Light & Power Co-operative is taking bids to July 21 for constructing 93 miles of rural transmission lines in Muscatine and Cedar counties. John P. Hand, Davenport, consulting engineer.

**DES MOINES, IOWA**—Iowa Light & Power Co., C. A. Leland, president, will construct an addition to its generating plant, including installation of a 47,000-horsepower steam turbine generating unit, and has awarded general contract for the building to Arthur H. Neumann and Bros. Total cost of project is \$1,500,000.

**HARLAN, IOWA**—City, Leo Billings, city clerk, is planning to purchase and install a water softener, to cost be-

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Single                  Double                  Twin-Bedded



tween \$30,000 and \$40,000. Currie Engineering Co., Webster City, Iowa, consulting engineer.

**OTTUMWA, IOWA**—Iowa Southern Utilities has let general contract to Federal Engineering Co., Davenport, Iowa, for construction of a power plant addition, including two boilers with 60,000 pounds of steam per hour, water softening plant and water heater. Cost is \$150,000.

**WOODWARD, IOWA**—State board of control, E. H. Felton, chairman, State House, Des Moines, Iowa, has been allotted \$50,000 by state legislature to purchase and install new boiler, generator and engine, and laundry equipment for Woodward State school.

**Nebraska**

**AINSWORTH, NEBR.**—City is planning construction of a sewage disposal plant costing \$30,000. Scott & Scott, Bankers Life building, Lincoln, Nebr., consulting engineer.

**COLUMBUS, NEBR.**—Loup River Public Power district, C. B. Fricke, president, takes bids until July 22 for furnishing substation at Columbus hydroelectric power plant and for substations at Monroe, Fremont, Lincoln and Norfolk. Contract is divided into six parts: Power transformers; power and station service transformers; oil circuit breakers; disconnecting switches, fuse mountings and fuses; lightning arrestors; instrument transformers. Harza Engineering Co., 205 West Wacker drive, Chicago, consulting engineer, and D. J. Boer is in charge on site.

**OMAHA, NEBR.**—Nebraska Power Co., J. E. Davidson, president; Clarence Minard, company engineer, Seventeenth and Harney streets, is constructing a plant addition to its substation at 4302 Leavenworth street, to cost about \$35,000. General contract awarded to John Lof & Sons, Omaha.

**OMAHA, NEBR.**—Nebraska Power Co. J. E. Davidson, president, Seventeenth and Harney streets, has awarded contract for construction and assembling of equipment to the Phoenix Engineering Co., New York. The power company will purchase all the machinery and equipment and the engineering firm will assemble it. Approximate cost \$1,000,000.

**Idaho**

**SHOSHONE, IDAHO** — Idaho Power Co., Boise, Idaho, plans new steel tower transmission line from generating station at Hagerman, Idaho, to point near Shoshone Falls. Cost about \$300,000.

**New Mexico**

**ALBUQUERQUE, N. MEX.** — Albuquerque Gas & Electric Co. is drawing plans for installing new electric steam generating equipment, costing \$300,000. R. E. Thompson, care of owner, is engineer.

**Pacific Coast**

**OAKLAND, CALIF.** — Acting supply officer, United States forest service, government island, Oakland, is taking bids for three 1½-ton hoists. Specification 4842.

**DAYTON, WASH.** — City officials are considering construction of a disposal plant.

**CLARKSTON, WASH.** — Washington Water Power Co., Spokane, plans new power substations at Clarkston in connection with proposed transmission line

between here and Asotin. Cost about \$45,000.

**VANCOUVER, WASH.** — California Packing Co. is improving its plant, extending boiler house capacity and building a warehouse addition.

**Canada**

**AMHERSTBURG, ONT.** — Church & Dwight are erecting and equipping an additional factory building. Cost \$100,000. Special equipment is being installed.

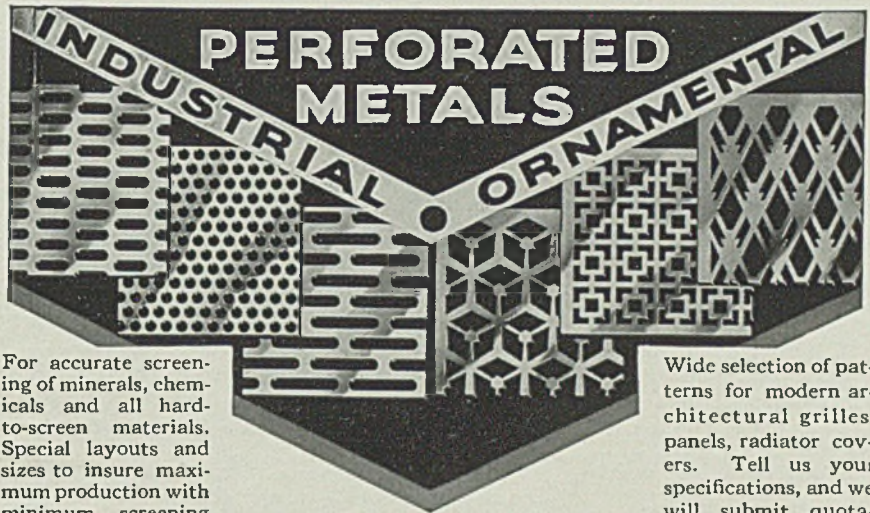
**AYLMER, ONT.** — Aylmer Chemical Co. Ltd., J. C. Legg, manager, is making plans for construction of manufacturing and refining plant, to cost \$50,000.

**TORONTO, ONT.** — Aluminum Co. of Canada, 158 Sterling street, plans constructing a plant. Cost to exceed \$40,000.

**WINDSOR, ONT.**—Work will start shortly on an extension to the automobile plant of Chrysler Corp. of Canada Ltd. Cost of new building estimated between \$2,000,000 and \$3,000,000.

**MONTREAL, QUE.** — Canadian Tube & Iron Steel Co. Ltd. will build a 60 x 100-foot extension to its plant.

**SHAWINIGAN FALLS, QUE.**—Canadian Industries Ltd., Montreal, will construct a plant here for the manufacture of caustic soda and chlorine, to cost in excess of \$2,000,000.



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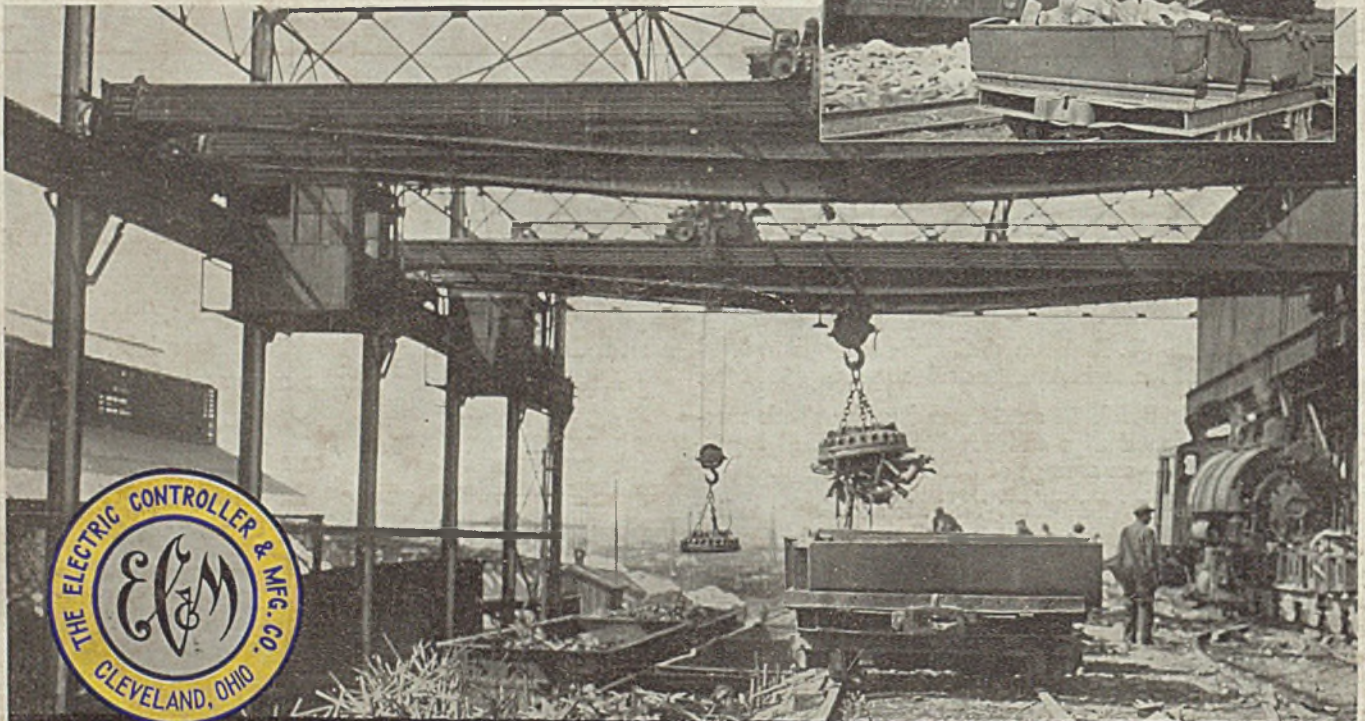
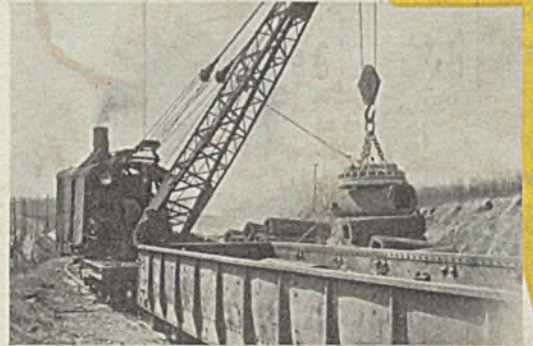
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