

# STEEL

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For forty-eight years—IRON TRADE REVIEW



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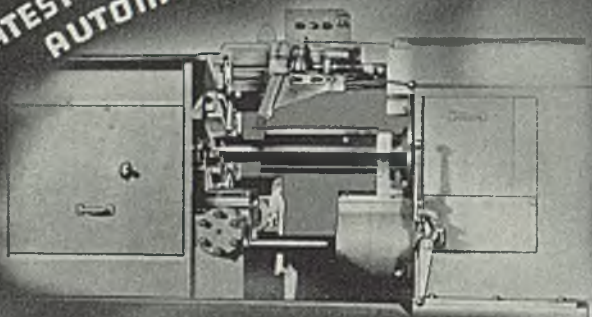
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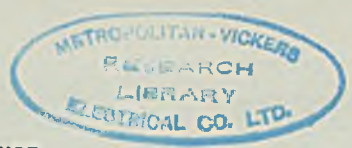
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## As the Editor Views the News

**F**LOOD conditions in the Ohio and Mississippi valleys have far exceeded the limits of reasonable expectancy. While the damage tops that of last year's floods, the effect upon industrial operations probably will be less marked than in the case of the disaster last March. At that time high waters cut the steel operating rate from 57.5 to 50 per cent of capacity. Last week the rate dropped from 80 to 76 per cent (p. 29), the four-point decline being largely due to flood conditions. The present experience, coupled with that of last March, will focus more attention upon flood control.

• • •

The challenge of unruly rivers can be met satisfactorily if the nation will attack the problem with determination. Organization and unity of purpose, in which red tape, jurisdictional disputes between states and other restrictive factors are eliminated, are essential. Industry, of course, has a substantial stake in the problem of flood control. It is gratifying to know that its representatives (p. 27) are joining with other agencies to seek a remedy. It is incongruous that a nation which prides itself upon its engineering and scientific achievements in so many lines of endeavor, has made so little progress in controlling the behavior of its inland waterways.

### Flood Control Is Challenge

• • •

Annual reports of earnings of industrial companies, now being released, are exceedingly gratifying, not only to stockholders but to the millions of other persons who benefit directly and indirectly when industry is in a prosperous condition. Profits of six leading steel producers in 1936 (p. 25) were up 264 per cent from the profits of the preceding year. The 1936 tax law, penalizing undistributed profits, undoubtedly was responsible for the disbursement of a more than normal portion of these earnings in the form of dividends. But in spite of this cir-

### Annual Reports Are Gratifying

cumstance, the steel producing industry at present has authorized the expenditure of \$290,000,000 in 1937 for improvement and expansion of facilities. Unfortunately, smaller companies cannot indulge in rehabilitation as readily as these large corporations. Many of them lack the necessary reserves. The penalties which retard them should be removed.

• • •

Two national associations last week advocated constructive reforms in the relations of the federal government with industry. The National Association of Manufacturers (p. 30) asked Washington to modify its policies to facilitate the transfer of unemployed from federal PWA or relief rolls to jobs—temporary or permanent—in private business. The present system encourages unfortunates to remain as federal charges. It should be modified promptly. The United States Chamber of Commerce asks repeal (p. 31) of the Walsh-Healey bill pertaining to wages, working conditions, etc., in plants engaged on work on government contract. This bill not only has proved to be futile, but it is defeating the purpose for which it was enacted.

### Two Worthy Reforms!

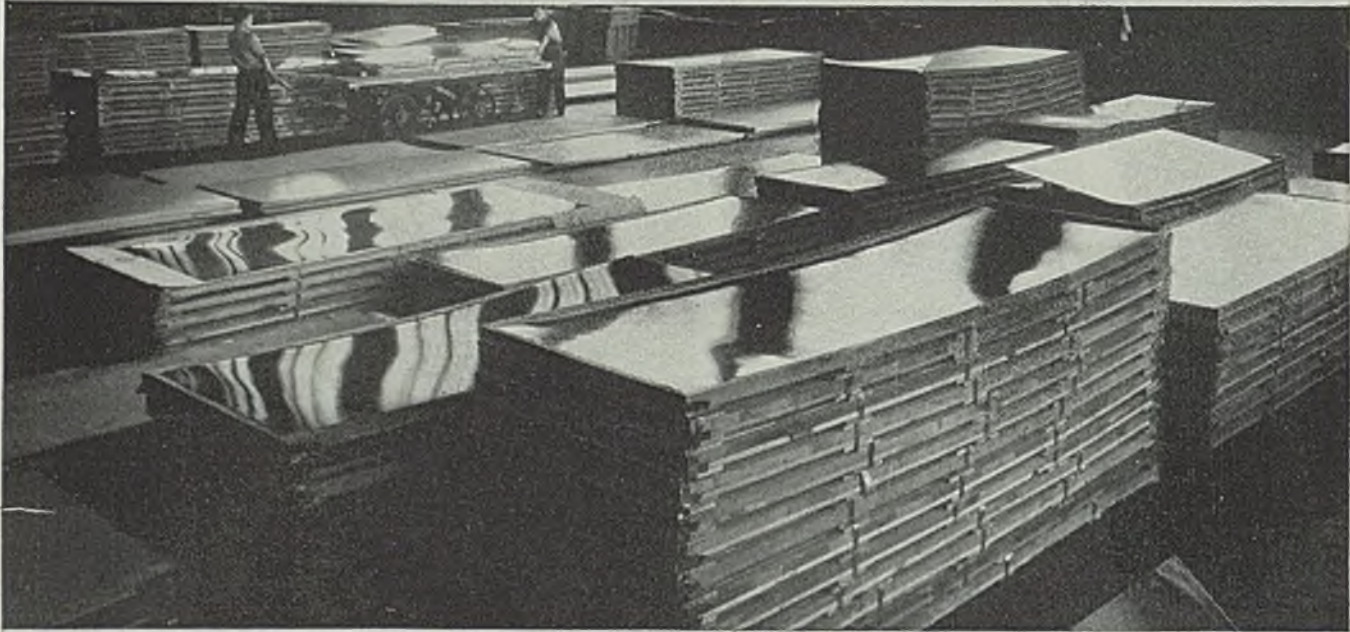
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Interest in the potentialities of products made of stainless steel is mounting. Much of the literature on these alloys refers to the rolled products, but the fact should not be interpreted to mean that progress is lagging in the field of castings and forgings. Indicative of the advances in the former is the utilization of hollow-electrode furnaces (p. 46) for melting and refining stainless steel and heat resisting steel castings. Developments in the production and application of alloy steel castings are worthy of more attention than has been accorded them during the past few years. . . . Applying stainless-clad steel linings to tanks and kettles (p. 64) illustrates an interesting economy which has been adopted in the food, chemical and other process industries. . . . A brief success story in welding (p. 66) can be told in two words—"hard work".

### New Progress In Stainless

*E. L. Shaner*

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**RYERSON**

# Steel Profits Up 264%; Industry Spending \$290,000,000 for Improvements

**N**ET profits in 1936 for six leading iron and steel companies which reported last week increased in aggregate 264 per cent over 1935.

These six—United States Steel Corp., Bethlehem Steel Corp., Youngstown Sheet & Tube Co., Inland Steel Co., Gulf States Steel Co., and National Steel Corp., represent approximately 64 per cent of total ingot capacity.

Their profits for 1936 total \$101,801,791, compared with \$27,731,020 in 1935. Profits for the same interests in the final quarter of 1936 amounted to \$38,409,065 in contrast to \$14,679,319 in the fourth quarter of 1935. Earnings generally showed a consistent rise throughout 1936.

While these companies were reporting, the American Iron and Steel institute issued a summary of data from 85 iron and steel companies, representing more than 90 per cent of the industry's total capacity, showing that expenditures for new construction and equipment in 1937 will exceed \$290,000,000.

These include the three new blast furnaces, the continuous rolling mills, and the new coke ovens with an aggregate annual capacity of more than 1,000,000 tons, as recently announced in STEEL.

The amount represents an increase

of about 45 per cent over the total of \$200,000,000 estimated a year ago to be spent during 1936. Tabulation of the actual expenditures during 1936 for capital improvements shows the estimates made a year ago proved about \$16,000,000 too low.

## BETHELEHEM'S UNFILLED ORDERS LARGEST SINCE WAR

Fourth quarter profits of \$5,291,492—more than for the entire year of 1935—and best quarterly showing since 1930, were announced by Bethlehem Steel Corp. Profits for 1936 were \$13,901,006, more than triple those of 1935—\$4,291,253.

Unfilled orders of \$123,690,462 at the beginning of 1937 were the largest since the war, according to E. G. Grace, president. New business has been sufficient to maintain the huge backlog. Current production is approximately 82 per cent of capacity. During the fourth quarter of 1936 production averaged 75 per cent, compared to 69 per cent in the third period. For 1936, production averaged 64 per cent, compared to 39.8 per cent in 1935.

Last quarters profits were equal to \$1.08 a common share after deduction of dividends on preferred stocks. Profit for the year was equal to \$2.09 a common share.

The volume of new business booked during 1936 — \$337,729,073

—in addition to exceeding the total of 1935 by more than 50 per cent, fell only a little short of the \$369,500,000 booked in 1929.

The company's average billing price for 1936 was \$1.08 less than in 1935. Mr. Grace indicated that much of this was due to the unsettled market which prevailed in the first quarter, especially in the light products.

Mr. Grace was optimistic over the outlook. He said that nothing in current buying smacks of sporadic requirements. The company has not felt the effects of the automotive strike to any appreciable extent.

Of the \$38,000,000 required to complete construction authorized and in progress, Bethlehem will probably spend \$25,000,000 to \$30,000,000 during 1937.

He estimated roughly that that company's undistributed surplus profit tax for last year amounts to about \$250,000.

## NATIONAL STEEL'S EARNINGS HIGHEST IN ITS HISTORY

National Steel Corp. reports preliminary net earnings for the final quarter of 1936 of \$4,628,729.44, equal to \$2.14 per share on 2,162,277 outstanding shares of capital stock, after all charges, including interest, taxes, depreciation and depletion, but before provision for the federal

**W**HHEELING STEEL CORP.'S plant at Portsmouth, O., was among the steel mills most seriously affected by the flood waters early last week. In the upper left are the stacks from the ten open hearths; the building extending to the right houses the sheet mills. Owing to the fact that all the steel producers whose plants were affected have other mills, steel consumers noted practically no interruption in deliveries. See article page 27.  
Wide World photo



undistributed profits tax. This compares with net earnings for the final 1935 quarter of \$2,532,693.09, equal to \$1.17 per share on 2,156,977 outstanding shares.

Preliminary earnings for the year 1936, before provision for the undistributed profits tax, are \$13,171,148.80, equal to \$6.09 per share, which compares with \$11,136,451.78, equal to \$5.16 per share reported for 1935. The earnings for the fourth quarter and the entire year of 1936 are the highest quarterly and annual earnings, respectively, in the history of National corporation.

After deduction of the undistributed profits tax provision for 1936, which is \$629,306.96, equal to 29 cents per share, net earnings for the year at \$12,541,841.84, equal to \$5.80 per share.

### STRONG RISE IN YOUNGSTOWN SHEET & TUBE EARNINGS

Youngstown Sheet & Tube Co. and subsidiary companies show net earnings for 1936, after all charges, including taxes, interest, depletion, and depreciation, of \$10,564,501, compared to net earnings of \$1,597,521 for 1935, according to the preliminary consolidated income account.

Depreciation and depletion charges for 1936 were \$6,837,763. In 1935 they were \$5,683,843. Common shares of the company outstanding Dec. 31, 1936, totaled 1,384,752, on which \$7.03 per share was earned during the year.

### U. S. STEEL'S YEARLY NET PROFIT BEST SINCE 1930

United States Steel Corp. reports net profit of \$50,525,684 for 1936, best for any year since 1930, although much below the net of \$104,421,571 in that year. Profits for 1936 are equal to \$2.90 a common share after preferred requirements, and compare with 31 cents per share on the preferred during 1935.

Earnings for the fourth quarter topped all others for the year, \$30,650,730, against \$13,636,177 in the third quarter of 1936 and \$5,388,207 in the fourth quarter 1935.

The quarterly dividend of \$1.75 on preferred was voted by the directors at their regular quarterly meeting, to be paid Feb. 27 of record Jan. 30. The last dividend on its common stock was made March 30, 1932, amounting to a mere 50

cents a share. The regular quarterly rate of \$1.75 on preferred was maintained until Nov. 29 of that year when it was put on a 50 cent basis where it has remained until last year.

In 1936, the net earned for capital stock was equal to the full current year's cumulative rate of 7 per cent on preferred, and 2.9 per cent on common, the latter amount, however, being applied almost entirely for payment on Dec. 24, 1936, of \$7 per share of arrearages on preferred stock of previous years, leaving still unpaid account of arrearages on preferred stock \$9.25 per share.

The comparative earnings and income statement shows:

	Fourth quarter		Year ending Dec. 31	
	1936	1935	1936	1935
Earnings	\$36,594,063	\$20,520,928	\$112,380,082	\$60,536,812
Net income earned for capital stock	20,650,780	5,388,207	50,525,684	1,146,708
Dividends paid:			(7%)	(2%)
On preferred, for current year			25,219,677	7,205,622
for account arrearages			25,219,677	.....
Surplus			\$86,330	*\$6,058,914

\*Debit.

Operations for the fourth quarter averaged 66.2 per cent of capacity of finished products, being at the highest rate reached in any quarter for the year. For the entire year the finished product output equaled 59.4 per cent, the highest annual ratio since 1930.

On Nov. 15 an increase was made in wage rates which averaged 10 per cent for all employees except in case of higher salaried employees, the average increase for all employees being around 9 per cent. The employment and pay roll statistics for year 1936 compared with preceding year were as follows:

	1936	1935	Per cent Increase
Number of employees	222,372	194,820	14.1
Total payroll	\$338,865,662	\$251,576,808	34.7
Average number of hours worked per employee per month	172.4	147.2	17.1
Average earnings per employee per hour worked	\$0.74	\$0.73	....

The average earnings per employee per hour for month of December were 77.8 cents.

Expenditures during 1936 for additions and betterments and in payment of maturing subsidiary company bonds and other capital obligations totaled approximately \$70,000,000. The unexpended balances for authorizations for new

installations now aggregate \$157,000,000.

Finished steel shipments in 1936 totaled 10,825,132 tons, compared with 7,347,549 tons in 1935.

### INLAND'S NET UP \$3,400,000

Inland Steel Co., Chicago, reports net profit of \$12,888,647 for the year ending Dec. 31, 1936. This compares with \$9,417,818 in 1935 and equals \$8.59 per common share on the 1,499,000 shares outstanding. In the fourth quarter last year the company showed a profit of \$3,867,625 compared with \$3,788,199 in the preceding quarter and \$2,749,309 in December quarter of 1935.

A dividend of \$1 per share payable March 1 to stock of record

Feb. 15 was declared. Last year 75 cents a share was paid in each quarter and on Dec. 17 an extra of \$1.50.

### DIVIDENDS DECLARED

Jones & Laughlin Steel Corp., Pittsburgh, declared a dividend of \$1.75 per share on preferred stock, payable April 10 to stock of record March 26. With this payment arrearages on preferred will amount to \$24.50 a share.

U. S. Pipe & Foundry Co., East Burlington, N. J., has declared four quarterly dividends of 75 cents each on common stock payable March

	1936	1935	Per cent Increase
Number of employees	222,372	194,820	14.1
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Average earnings per employee per hour worked	\$0.74	\$0.73	....

20, June 19, Sept. 20 and Dec. 20 to holders of record Feb. 27, May 31, Aug. 31 and Nov. 30 respectively. The company previously paid 37½ cents a quarter.

Vanadium Alloys Steel Co., Latrobe, Pa., has declared a dividend of 60 cents a share, payable March 2 to holders of record Feb. 20. Similar amounts were paid Dec. 2 and Sept 2, 1936.

International Harvester Co., Chicago, declared a regular quarterly dividend of \$1.75 a share on preferred, payable March 1 to record Feb. 5.

Ludlum Steel Co., Watervliet, N. Y., has declared a dividend of 25 cents a share on the common stock, payable Feb. 15 to holders of record Jan. 30. On Dec. 22, an extra of 25

### Quarterly and Annual Earnings Statements Summarized

	Fourth quarter 1936	Fourth quarter 1935	Year 1936	Year 1935	Ingot Capacity Gross Tons
United States Steel Corp.	\$20,650,780	\$5,388,207	\$50,525,684	\$1,146,708	26,657,000
Bethlehem Steel Corp.	5,291,492	2,396,026	13,901,006	4,291,253	9,360,000
Youngstown Sheet & Tube Co.	3,719,115	1,493,734	10,564,501	1,597,521	3,120,000
Inland Steel Co.	3,867,625	2,749,309	12,888,647	9,417,818	2,000,000
Gulf States Steel Co.	251,324	119,350	660,112	141,269	480,000
National Steel Corp.	4,628,729	2,532,693	12,541,841	11,136,451	2,700,000

Note: Yearly totals for 1936 in some instances are based on quarterly reports. All figures are profits.

cents was paid and a quarterly of the same amount paid Nov. 16, 1936.

#### INTERLAKE TO REFUND BONDS IN MAY

Interlake Iron Corp., Chicago, plans to redeem on May 1 this year \$4,600,400 of By-Products Coke Corp. 5½ per cent first mortgage bonds and \$4,129,500 of its own 5 per cent first mortgage bonds, with the proceeds resulting from the sale of \$10,000,000 of convertible debentures. The new debentures will be underwritten, but stockholders will be offered the right to subscribe on a pro rata basis according to their holdings. Among the proposals to be considered at the stockholders' meeting, Feb. 11, in New York, is the reduction of the capital of \$52,169,503 as shown on its books, to such amount as approved by the stockholders.

#### G. N. ORE PROFITS UP

Trustees for the Great Northern Iron Ore Properties report net profit of \$709,928 for the year ended Dec. 31, 1936, equivalent to 47 cents a share on 1,500,000 shares. This compares with \$533,771, or 35 cents a share in 1935. Distributions during the year totaled \$1,875,000. On Jan. 4 this year a distribution of \$1,125,000 was also paid. Shipments from the company's iron ore properties during 1936 were 6,698,638 tons compared with 4,528,114 in 1935.

# Movement for Flood Control Is Gathering Momentum

**S**TEEL and metalworking plants in the Ohio river districts last week were making a rapid recovery from the effect of the floods.

As only a few steel works were forced to suspend—temporarily—and as all the producers have other mills which were unaffected, practically no delay was encountered in making deliveries.

Steelworks operations in the Wheeling district—which bore the brunt of the flood—averaged only 41 per cent last week, compared with 93½ per cent in the week preceding. The Pittsburgh district was off only ½-point to 81 per cent. When the flood hit Pittsburgh last year, production there fell from 43 per cent to 18 per cent.

With the disastrous floods of March, 1936, still in memory, industrialists and others saw in the raging waters a constantly recurring threat to industry, commerce, general property and human lives. A strong sentiment has resulted for an effective flood control program. Industrialization of the river valleys has placed on the lowlands tremendous

property values, in steel mills, power plants and other investments.

Start on the long-needed flood control program in the Pittsburgh area is likely to be made next summer with construction of two dams on the Allegheny river watershed at Crooked creek and Tionesta. These will cost the federal government approximately \$10,000,000 and the state of Pennsylvania \$3,000,000 to \$4,000,000. However, it is estimated that for adequate protection, at least ten dams are needed in the two watersheds, at a probable construction cost of \$30,000,000. During the past year nearly 850 men have been working under the direction of United States engineers, making field surveys, building model dams and doing other preliminary work. A large amount of money must still be appropriated by congress if the work is to be continued.

Tremendous loss of life and property, especially in the lower Ohio valley, probably may spur the federal government toward putting through a flood prevention program.

Creation of an Ohio valley authority with an appropriation of \$150,000,000 for flood control of the Ohio river and tributaries was proposed in congress by Rep. Robert T. Secrest, Ohio.

#### Pittsburgh Is Fortunate

When the vast extent of the Allegheny watershed—more than 11,580 square miles—is considered, the Pittsburgh district considered itself fortunate to escape so easily after the steady rains. Even though last week's water did invade river front yards, the inflow of mud and debris did not equal the 1936 flood, nor were there ice blocks to contend with this time.

Most of the lowlying steel plants were temporarily hampered, such as the Soho and South Side works of Jones & Laughlin and the Eliza blast furnaces; the Etna, Laughlin and Mingo works of Carnegie-Illinois; the Park, Labelle and Spring plants of the Crucible Steel Co. Further down the river at Wheeling, Toronto, Steubenville and other points, a similar situation prevailed. At Parkersburg, W. Va., advance preparations to meet the high water were made by Parkersburg Iron & Steel Co. and other plants. Wheeling Steel Corp.'s Steubenville and Portsmouth, O., mills were down temporarily.

In the Cincinnati district where

## Heavy Welded Steel Plates Used in Snow Loader



**H**EAVERY steel plates welded form the loading mechanism of this snow loader manufactured by the Joy Mfg. Co., Franklin, Pa. Pressed heat-treated steel is used for the chassis frame. The loader is designed to load snow and ice into trucks at a rate of 10 to 20 cubic yards per minute. The channel up which the snow passes is provided with a swing mechanism at the rear which may be swung 45 degrees to their side. Separate motors power the loading mechanism and the truck chassis

the flood reached a stage of almost 80 feet, production fell sharply when power was shut off and transportation disrupted. Steep river banks at Cincinnati proper kept the inundated area small compared to that in other lower Ohio valley cities. Plants of the Andrews Steel Co. and the Newport Rolling Mill Co. bordering on the Licking river, Kentucky tributary of the Ohio river, were flooded.

Lesser flood damage was caused in the industrial district of Millcreek valley by backwaters. The new union railroad station in this district was under water and transportation disrupted. Also in this district occurred a fire causing \$1,000,000 damage, destroying a warehouse and refrigerator assembly plant of the Crosley Radio Corp., buildings of the Cincinnati Iron Fence Co. and the Triumph Mfg. Co. and damaging buildings of the Oberhelman-Ritter Foundry Co. Several warehouses and scrap yards on the river front were under water.

The Ashland, Ky., plant of the American Rolling Mill Co. was forced to close temporarily when high waters prevented employes from reaching the plant. The company's Middletown, O., plant was protected by the Miami valley conservancy district system of dams and channel improvements built after the 1913 flood. Operations at the plant were voluntarily curtailed, however, to conserve power for use in homes and in the flooded districts. Sixty per cent of the power used in the plant is generated at the plant and certain operations were continued with this power. The company's Hamilton, O., subsidiary was asked to continue operations by Columbia Gas & Electric Co. officials. Millions of feet of gas are produced daily in the Hamilton plant coke ovens and provides fuel for Cincinnati and other southern Ohio towns.

Enforced recesses in some plants were used to make repairs originally scheduled for next month.

#### STEEL COMPANIES RIVER BOATS AID IN RELIEF

River boats owned by some of the Pittsburgh steel companies have been aiding flood sufferers along the Ohio river.

The towboat THOMAS MOSES, owned by the Carnegie-Illinois Steel Corp. and commanded by Capt. Clayton Adams, has been helping refugees in southern Indiana. Captain Adams tied up his tow of barges at Henderson, 12 miles below Evansville, Ind., and with his crew of 25 men and two chambermaids began transporting homeless people, furniture, cattle and supplies to safety.

The steamer VESTA, owned by Jones & Laughlin Steel Corp., loaded cans of milk upon one of its

barges and carried them from Gallipolis, O., to Huntington, W. Va. Another J. & L. steamer, the HENRY LAUGHLIN, was reported to have been impressed into service by the government 90 miles above Memphis.

The steamers were unable to return to Pittsburgh, anyway, because of the high water under bridges and the torrents pouring over Emsworth dam.

## December Steel Exports Up; Imports Decline

December exports of steel manufacturers were valued at \$3,606,000, compared with \$2,450,000 in December, 1935. Iron and steel semi-manufactured goods exported in December were valued at \$7,875,000, compared with \$5,786,000 a year previously.

Imports of iron and steel mill products in December were valued at \$1,683,000, compared with \$1,804,000 in December, 1935. December ferroalloys imports were valued at \$2,015,000, compared with \$1,003,000 in December, 1935.

## Steel Bridge Design Contest Is Announced

Students of engineering and of architecture have been invited to participate in the ninth annual design competition offered by the

American Institute of Steel Construction. Competitors are asked to submit their designs not later than April 12, 1937. A jury of nationally known authorities will be named to make the selections on or about April 20.

There will be three cash prizes instead of the two prizes offered in previous years. The design selected as the best will receive an award of \$150, the second best, \$100, and the third \$50.

The subject of the competitive design is a steel highway bridge. The superstructure must be of steel throughout and the abutments and piers of stone-faced masonry.

## Construction of Marine Floating Equipment Gains

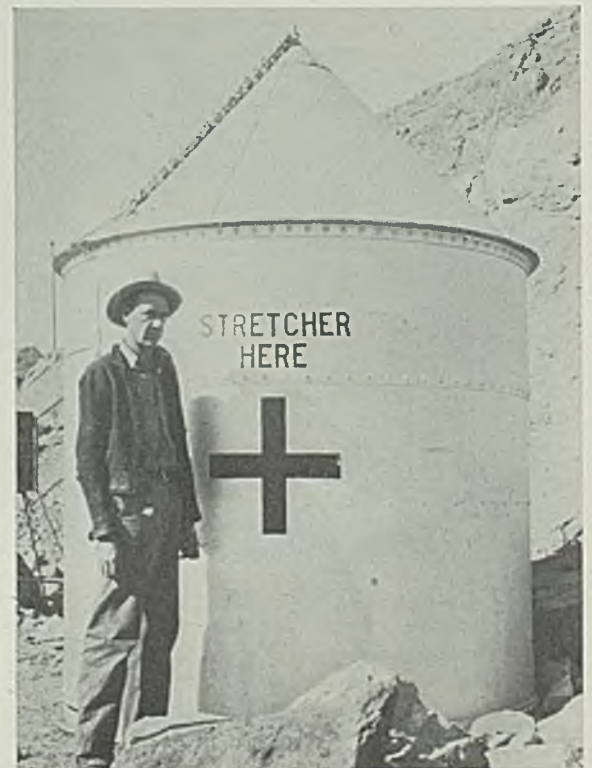
Expanding industrial activity resulted in a sharp spurt in production of marine floating equipment last year and gave the engineering works division of the Dravo Corp. greatest tonnage since 1929. The organization produced 104 vessels with a total tonnage of 47,786, compared with 35 vessels and a tonnage of 15,439 in 1935.

Leading companies reporting in the United States built 719 vessels with an aggregate of 277,240 tons in 1936, compared with 374 vessels of 122,313 tonnage in 1935.

Dravo Corp. had orders Jan. 1 for the construction of 39 vessels with a tonnage of 18,529.

## Steel "Pill-Box" Shelters Workers from Flying Rocks

*THIS steel "pill-box" is not a war-time outpost, but a shelter hut in which workers seek protection from flying rocks during blasting operations at the mines at Ajo, Ariz. It can be moved to different locations by a hoist grasping the steel chain on the top. Wide World photo*





# Production

**S**TEELMAKING averaged 76 per cent last week, a decline of 4 points, due principally to suspensions of operations in the flooded areas. Details follow:

**Youngstown**—Valley mills operated most of the week at 79 per cent, but for the full week averaged 77 per cent, down 2 points, largely because Youngstown Sheet & Tube Co. suspended operations at its 11 Campbell open hearths Monday, only to resume again Tuesday.

**Cleveland-Lorain** — Declined 2 points to 76 per cent. Corrigan, McKinney division of Republic Steel Corp. operated 12 furnaces through Thursday, and 11 the remainder of the week; National Tube Co., Lorain, took one furnace off Tuesday for repairs, to operate 10, and Otis Steel Co. continued with all 8 in production.

**Chicago**—Advanced 1 point to 78 per cent, a new high for recent years. Heavy backlogs assure a continuation of output at around the present rate during the balance of this quarter. Twenty-eight of 38 stacks are active.

**Central eastern seaboard**—Unchanged at 53 per cent, with no immediate fluctuation expected.

**Wheeling**—Down 5½ points to 41 per cent due to suspensions caused by last week's flood conditions. During the worst part of the high water only 12 out of 37 open hearths were in operation. Recovery is expected to be rapid, however.

**Pittsburgh**—Down ½ point to 81 per cent as a result of precautions taken during last week's high water. No damage was sustained and the furnaces were rapidly restored to operation.

**New England**—Down 5 points to 83 per cent, with indications of a further decline of several points this week due to repairs on one small open hearth.

**Detroit**—Steelmaking continues to be unaffected by strike conditions, although the rate has dropped to 90 per cent, occasioned by 2 open hearths being down for repairs, and leaving 19 units active.

**St. Louis**—Advanced 4 points to 80 per cent, with 25 open hearths producing.

**Birmingham**—Held at 76½ per cent. Eighteen furnaces are active, and indications point to this rate holding for some time to come.

**Buffalo**—Gained 2 points to 86 per cent. The lighting of a third of the six new open hearths at Lackawanna brought the number of producing units to 35. The rate is expected to rise to 87 per cent this week. The three incompleting furnaces of the

## District Steel Rates

Percentage of Open-Hearth Ingot Capacity Engaged in Leading Districts

	Week ended		Same week	
	Jan. 30	Change	1936	1935
Pittsburgh . . . . .	81	— ½	39	44
Chicago . . . . .	78	+1	52	66
Eastern Pa. . . . .	53	None	36½	30
Youngstown . . . . .	77	—2	60	64
Wheeling . . . . .	41	—52½	78	95
Cleveland . . . . .	76	—2	59	78
Buffalo . . . . .	86	+2	32	45
Birmingham . . . . .	76½	None	51	32
New England . . . . .	83	—5	83	52
Detroit . . . . .	90	—10	88	100
Cincinnati . . . . .	21	—47	75	†
St. Louis . . . . .	80	+4	†	†
Colorado . . . . .	88	†	†	†
Average . . . . .	76	—4	50	54½

†Not reported.

new battery will be ready for operation by mid-February.

**Colorado**—With 14 open hearths melting, steelmaking is estimated at 88 per cent.

## Otis Steel Co. Will Widen Two Mills, Install Another

Expansion and improvements at Otis Steel Co.'s Riverside works, Cleveland, will include widening of 72-inch continuous hot strip mill to 77 inches, widening of 72-inch cold sheet mill to 77 inches, installation of a four-high stand sheet mill and improvements in the blooming mill, open hearth and blast furnace departments. This is according to tentative plans set forth in a prospectus for \$15,000,000 bond issue offered last week. Nearly \$3,000,000 of the issue is to be spent for expansion.

## Carnegie Preparing Another Cleveland Stack

Carnegie-Illinois Steel Corp., subsidiary of United States Steel Corp., Pittsburgh, started relining operations last week on its D furnace at the Central plant, Cleveland, preparatory to making iron for the merchant trade. This unit has been down since 1931. Capacity is 750 tons daily.

Early last year B furnace was relined after being down since 1933 and operated for the merchant market. Originally there were four furnaces in operation at the Central furnaces but in 1934 A and C were dismantled.

American Steel & Wire Co. will resume operating shortly two of its four batteries of coke ovens at its Harvard avenue and East Twenty-second street plant, Cleveland.

The by-product plant also will be operated. The coke plant has been down four years. Its daily capacity is 1350 tons of coke.

## Steel Corporation Technologists Meet

**M**ORE than 50 technologists of the United States Steel Corp. and its subsidiaries gathered in Pittsburgh, Jan. 28 and 29, for a discussion of current practices, research studies and experiments in the manufacture and development of steel and steel products. The meeting was called by R. E. Zimmerman, vice president of the corporation, New York.

Purpose of the meeting was in part to review progress made in various branches of metallurgical research by corporation technologists during recent months and in a sense to point the directions which much of the experimentation will follow during the coming year.

Subjects covered in detail included "Aus-tempering," a new method of heat treatment by direct transformation to produce results combining additional strength and toughness; controlled cooling and end-hardening of rails; the new electrolytic process of tin plating; and fabricating steel for modern house construction.

## Wire Makers Report Gains In Employment, Production

Manufacturers of wire and wire products in the United States reported substantial increases in employment and production in 1935 as compared with 1933, according to census figures just released.

The number of wage earners in 1935 was 46,716, an increase of 44.7 per cent over 32,289 reported for 1933. Their wages were \$49,877,968, exceeding the 1933 figure, \$28,475,915, by 75.2 per cent.

The value of plain wire made in 1935 was \$122,728,405, an increase of 44.1 per cent over the 1933 value of \$85,181,290. Value of fabricated wire products in 1935 was \$224,741,173, against \$147,983,565 in 1933, a gain of 51.9 per cent. Production of plain iron and steel wire in 1935 totaled 2,349,143 tons; that of copper wire, 428,712,543 pounds; and that of brass and bronze wire, 74,815,030 pounds. These quantities exceeded the corresponding 1933 figures of 1,962,076 tons, 278,523,060 pounds, and 62,506,499 pounds, by 19.7 per cent, 53.9 per cent, and 19.7 per cent, respectively.

# Government Is Urged To Encourage Acceptance of Private Employment

**E**MPLOYMENT was 106.1 per cent of 1929 levels in manufacturing plants employing 2,689,086 persons—approximately a third of those in manufacturing activities, according to returns on a questionnaire reported last week by the National Association of Manufacturers.

These figures include the entire automobile industry, which reported employment as 16 per cent above 1929, and the steel industry where employment was up 1.4 per cent.

"The figure of the steel industry was particularly encouraging because of its dependency upon activity within the durable goods industries," said William B. Warner, the association's newly elected president.

"The actual figures show that employes in those manufacturing industries which reported numbered 2,535,659 in 1929 and 2,689,086 at the end of 1936.

"Re-employment of those who desire to work is still the foremost problem before the nation, and members of the association have dedicated themselves to the task of providing work as rapidly as possible.

"This questionnaire develops clearly the points where employment has been increased. The next step is to find out where it still exists so that the entire country can concentrate its efforts in that direc-

tion. To obtain this vital information, a federal census of the unemployed is absolutely essential."

Mr. Warner suggested modification of the federal policy so that unemployed on relief will feel more free to accept private employment without facing hardships in regaining their places on the relief rolls should the employment be temporary. He will appoint a committee to discuss the matter with federal relief officials in Washington at the earliest possible time in an effort to speed the re-employment of the idle.

At the same time Mr. Warner suggested that in every community an analysis of the abilities of those on the relief rolls be made so that employers seeking additional employes might know the type of workers available. As soon as such breakdowns of relief rolls have been made, Mr. Warner suggested that all members of the association be asked to work with local relief officials in curtailing the number on relief.

## Kane & Roach Inc. Marks Fiftieth Anniversary

Kane & Roach Inc., Syracuse, N. Y., manufacturer of bending and straightening rolls and special machinery, is celebrating in February the fiftieth anniversary of its found-

ing by William E. Kane. Mr. Kane is still active after half a century. He is president and treasurer and is assisted by his two sons, Robert C. P. Kane, vice president and chief engineer, and Howard W. Kane, secretary and director of sales.

Starting with manufacture of machinery for wagonmakers the company soon saw opportunities in growing use of steel and brought out a straightening machine, followed by a cold roll forming machine and a wrapping-type bender. Most of its production is in these and in special machines for various purposes.

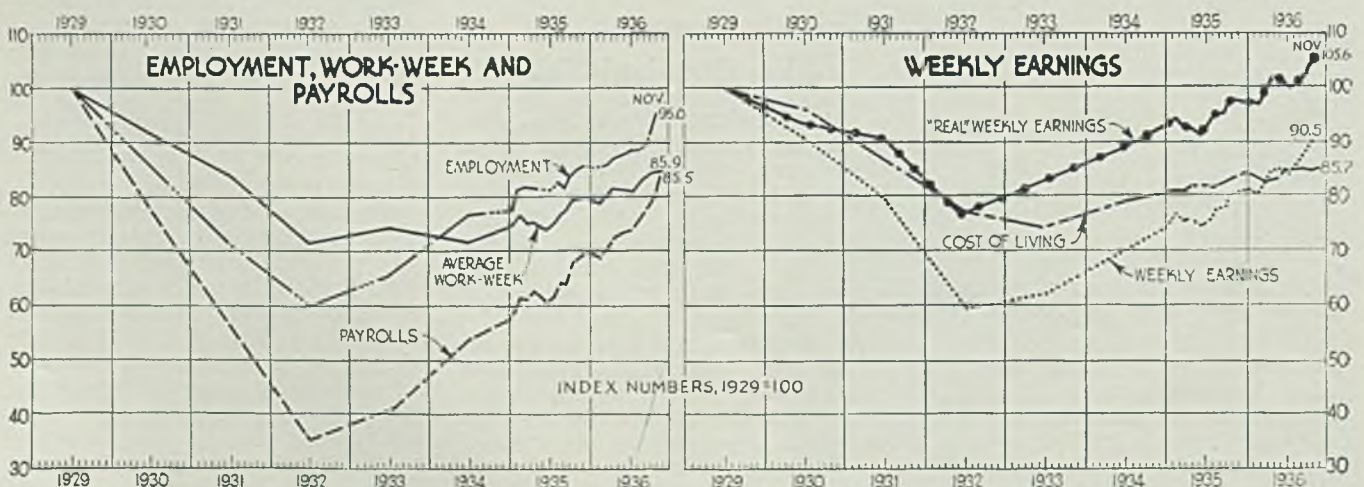
A booklet is being issued telling of the formation growth and accomplishments of Kane & Roach in the half century, pointing to its growth and the consistent policy which has avoided indebtedness and labor difficulties.

## Minnesota May Make Iron Pavement Test

Minnesota may give iron pavement a trial in a heavily traveled highway in ore-producing St. Louis county if the test can be made without additional cost to taxpayers, according to N. W. Elsberg, state highway commissioner.

The project involves 4369 square yards of paving surface and would entail additional expense of approximately \$7000. St. Louis county, which requested change in specifications to permit use of iron paving, has appropriated \$15,000 for the test. If the manufacturers of iron pavement will share the expense, a request to change the specifications will be made to the United States bureau of public roads, Elsberg said.

## Wages of Industrial Workers Buy More Per Dollar than in 1929



**P**URCHASING power of average weekly earnings of workers in manufacturing industries is 5.6 per cent higher than the average in 1929. The average work week is 14.5 per cent shorter than in 1929. These facts are based on reports from 25 manufacturing industries to the National

Industrial Conference board. Weekly earnings at the close of 1936 were 90.5 per cent of the 1929 level while the cost of living was 85.7 per cent of that prevailing in 1929. Employed workers in 1936 were 95 per cent of the number employed in 1929.

# Demand Repeal of Walsh-Healey Act

**P**PROMPT repeal of the Walsh-Healey act and restoration of unrestricted bidding on government contracts is advocated in a report of the committee on manufacture of the Chamber of Commerce of the United States to be considered at the organization's annual meeting, April 26-29.

Members of this committee include: William W. Holloway, president, Wheeling Steel Corp., Wheeling, W. Va.; Eugene C. Clark, president, Chambersburg Engineering Co. Inc., Chambersburg, Pa.; B. C. Heacock, president, Caterpillar Tractor Co., Peoria, Ill.; R. I. Ingalls, president, Ingalls Iron Works Co. Inc., Birmingham, Ala.; Daniel H. Kelly, vice president, Electric Auto-Lite Co., Toledo, O.

"The direct effects of the Walsh-Healey act are of such character as to demonstrate the impracticability as well as the impropriety of any legislation of this character," the committee reports. "Examination of the act and consideration of the first experience under it would seem to lead inevitably to the conclusion that the law should be repealed and nothing else of the kind attempted.

## Assumptions Not Correct

"The act is predicated upon the assumption that under a system of unrestricted competitive bidding, it is difficult, if not impossible, for enterprises maintaining high labor standards to obtain government contracts. This assumption is not supported by facts. Among regular suppliers of manufactured goods to the government on contracts obtained through competitive bidding are large numbers of industrial enterprises that have consistently provided favorable terms of employment and wholesome working conditions for employes. This they can do because of higher skill of their workmen, greater efficiency of their production methods, and superior quality of their products.

"This act rests upon the further assumption that any advantage taken of employes by contractors under the long-established purchasing policy of the federal government can be corrected by eliminating certain kinds of firms from eligibility to bid on government contracts and by prescribing terms of employment controlling those to whom contracts are awarded. The practical difficulty of such procedure seems already demonstrated through official interpretation excluding from government contracts suppliers about whose methods there is no question.

"If there is a purpose in the new law to prevent irresponsible concerns from obtaining government contracts, the provisions requiring adherence to minimum wages and maximum hours prescribed by fed-

eral authority are not appropriate for the end in view.

"As the NRA experiment demonstrated, restriction effected by centralized government control over hours and wages of private enterprises produced serious obstacles to expansion in production, employment and payrolls. Such expansion immediately followed the invalidation of codes and this occurred without any general lowering of labor standards."

## Sheet & Tube Adopts Life Insurance for 22,000

Following requests by employe representatives, the Youngstown Sheet & Tube Co. has adopted a plan of group life insurance, making possible the coverage of approximately 22,000 employes for \$30,000,000 in the Youngstown and Chicago districts, Frank Purnell, president, announced last week.

The company assumes part of the cost of the insurance. The plan is designed to supplement the present benefit associations of the employes which provide death, sick, accident, and hospitalization benefits and which have been maintained by the employes themselves.

## Form Finance Group To Defend Company Union

Carnegie-Illinois Steel Corp. employe representatives have organized a finance committee to raise funds to carry on the representatives' fight against the CIO. The first piece of literature, paid for by employes, issued by the employe union was distributed last week in the 18 plants of the corporation in the Pittsburgh district.

The folder says: "Those of us who are on the defense committee are convinced without a shadow of doubt that with very little expense to us, without a closed shop and without strikes, we can secure with our own organization more than we can attain with Mr. Lewis' CIO."

## Hot Dip Galvanizing One Hundred Years Old

*IT IS just 100 years ago, in 1837, that hot dipped galvanizing was first invented by an Englishman, named Crawford. And it was a very valuable achievement, judging by the wide use of galvanized products from Greenland's Icy Mountains to India's Coral Strand, for in these 100 years galvanized iron and steel has literally covered the earth.*—Bennett Chapple, vice president, American Rolling Mill Co., in radio broadcast.

# President 'Inclines' To Subpoena Power

**W**HILE President Roosevelt at his press conference last week would not state definitely he is in favor of the subpoena power for the labor department, as requested by Secretary Perkins in communications to both houses of congress, those close to him indicated he is inclined toward it.

The President called attention to the difference between industrial conciliation and settlement. The labor department's conciliation board carries on that angle of controversies, while settlements are made through the national labor board. The latter, he pointed out, has subpoena powers, adding that there are a good many conciliation features in which the government should be able to get facts, and this might require the subpoena.

Secretary Perkins' suggestion resulted from President Sloan's refusal to attend a joint conference with John L. Lewis, so long as strikers continue to "sit down" in General Motors plants (see page 37.)

Representative O'Brien, Michigan, introduced a bill to appropriate \$100,000 for a committee to be appointed to investigate the strike.

Hearings last week in Washington before the LaFollette civil liberties committee and Trial Examiner Charles A. Wood, acting for the national labor relations board, were unproductive of much ammunition for organized labor.

The LaFollette committee is asking an additional appropriation of \$50,000 to continue its work, and it is anticipated this will be granted.

The inquiry under the direction of a labor relations board dragged along, with several steel plant employes testifying.

## Plumbing and Heating Markets Are Analyzed

Markets for plumbing and heating facilities in residences are analyzed in market research series, No. 12, by the bureau of foreign and domestic commerce of the department of commerce, Washington. It is an analysis of real property inventory in 64 cities and is designed to offer factual aid to marketing executives of manufacturers and wholesalers and to help local retail merchants and contractors in many fields. This is the second and final publication based on the real property inventory, the first dealing with electrical and gas facilities.

# Men of Industry

**G**EORGE A. SLOAN, prominent in the textile industry, has been elected a director, United States Steel Corp., New York, for the term expiring in April, 1937. A graduate of Vanderbilt university in 1916, he was secretary, Copper and Brass Research association from 1922 to 1926. In the later year he helped organize and became first secretary, Cotton Textile institute, of which he was president from 1929 to 1935. In 1931 Mr. Sloan and the late Walker D. Hines, then chairman of the Cotton institute, spon-



George A. Sloan

sored the first general shorter work-week movement in that industry. The following year the institute's board, with Sloan as chairman, was instrumental in bringing about the discontinuance of night employment of women and minors.

Wilbur Henry Adams, industrial designer, Cleveland, has moved offices from 2341 Carnegie avenue to 10565 Carnegie avenue.

James A. Cook, formerly general sales agent, Standard Forgings Corp., Chicago, has been appointed vice president in charge of sales.

William C. Wallis has taken over the duties of assistant general manager of the Steubenville, O., works, Wheeling Steel Corp., Wheeling, W. Va., succeeding Charles A. Krals, who recently resigned.

K. L. Ames Jr. has been elected president, Automatic Products Corp., Chicago. He succeeds George C. Fleener who becomes vice president and treasurer. Vincent Bendix continues as chairman.

William J. Daring, Syracuse, N.

Y., has been appointed vice president and a director, Precision Castings Co., with plants in Fayetteville and Syracuse, N. Y., and Cleveland. He has been associated with the company 14 years.

Leland H. Hill, assistant engineer in charge of the transformer division, Allis-Chalmers Mfg. Co., Milwaukee, has been promoted to chief engineer to succeed the late Louis C. Nichols. Mr. Hill was manager of the transformer division, American Brown Boveri Co. at the time it was absorbed by Allis-Chalmers.

Samuel L. Shober Jr., former resident manager of the Philadelphia office, Hickman, Williams & Co., has been appointed eastern manager of the company. He is succeeded by John M. Robb Jr., as Philadelphia resident manager. Norman E. Craig continues as resident manager at New York.

L. A. Shea, formerly Chicago district manager, Hevi Duty Electric Co., has joined the Lindberg Engineering Co., Chicago, in the capacity of assistant sales manager. Mr. Shea had been with the Hevi Duty company for 11 years, spending most of his time in the engineering department.

Archie T. Colwell, director of engineering, Thompson Products Inc., Cleveland, has been named a vice president. He will supervise the company's engineering activities in Cleveland, Detroit and St. Catharines, Ont. He joined the company in 1922 as a junior salesman. He is a member of the Society of Automotive Engineers.

Gaetan M. Zucco, structural engineer, Bethlehem Steel Co., Seattle, has been elected president, Engineers Club of Seattle, succeeding M. O. Sylliaasen, former city engineer, who has been named chairman of the board. Other officers include: Vice president, J. A. Dunford, city bridge engineer; secretary, F. B. Lee, sales engineer; treasurer, Paul Bliven, patent lawyer.

G. H. Armstrong, dean, International Business Machines school, Endicott, N. Y., has been named sales manager, International Time Recorder division, International Business Machines Corp. He has been succeeded as dean by Garland B. Briggs, vice chairman of International Business Machines board of education. Walter B. O'Donnell, western district manager of the re-

corde division, has been promoted to assistant sales manager of the division.

G. A. Ruehmiling has become associated with Jewett F. Schrumn in the Schrumn Process Co., Providence, R. I., builder of controlled atmosphere furnaces for bright annealing, brazing and special metal treating processes. He formerly was manager of sales and engineering, General Plate Co., Attleboro, Mass. In his new position, Mr. Ruehmiling will supervise the manufacture and sale of the company's equipment.

E. A. Hurme has become associated with the Treadwell Engineering Co., Easton, Pa., as special field engineer. He joined Westinghouse Electric & Mfg. Co., East Pittsburgh,



E. A. Hurme

Pa., in 1914, and for the next 13 years was engaged in steel mill engineering and sales work. Since 1927 he has been associated with the Clark Controller Co. He is a member of the Association of Iron and Steel Engineers.

O. L. Holcombe has been appointed district manager of the Philadelphia office, Clark Controller Co., Cleveland, succeeding E. A. Hurme, who has resigned to become affiliated with Treadwell Engineering Co., Easton, Pa., as special field engineer. Mr. Holcombe is a former member of the sales department and operated in the Philadelphia district.

Robert H. Hoge, for several years connected with the General Electric Co. and during the past several months associated with the Gee Electric Co., Wheeling, W. Va., has joined the sales force of Clark Controller, with headquarters in the New York office.

J. W. Hammann, heretofore connected with the New York sales office, has been transferred to Pittsburgh to assist G. W. First, district manager.

W. R. Uffelman, for the past several months located in the sales en-

gineering department at Cleveland has been transferred to Detroit. S. J. Nogosek, sales engineer at New York, has been transferred to Cleveland in a similar capacity.

R. P. M. Carmody has been placed in charge of the Buffalo district, superseding W. S. Gain, resigned.

I. Glueck has been appointed manager in charge of New York, Newark and Perth Amboy operations of the Federated Metals division, American Smelting & Refining Co., New York. He formerly was with the Great Western Smelting & Refining Co., now a part of Federated.

Max Robbins has been appointed manager of Chicago operations. He has been with Federated the past nine months, and before that was associated with Master Metals Co. which became part of National Lead Co. a few years ago.

Dr. Frederick Gardener Cottrell, president, Research Associates Inc., Washington, has been chosen to receive the Washington award for 1937, for his "social vision in dedicating to the perpetuation of research the rewards of his achievements in science and engineering," by the Washington award commission. Western Society of Engineers, American Society of Civil Engineers, American Institute of Mining and Metallurgical Engineers, American Society of Mechanical Engineers and the American Institute of Electrical Engineers administer the endowment which provides the award.

Erwin A. Wendell has been named district sales manager at St. Louis by Link-Belt Co., Chicago, with headquarters at 317 North Eleventh street. Mr. Wendell had been connected with the Link-Belt Pershing road plant in Chicago since 1918 and for a number of years served as sales engineer in metropolitan Chicago. In his new position he succeeds Howard L. Purdon, who has been transferred to Chicago, to assume sales responsibilities in the Chicago territory.

Ralph J. Cordiner, formerly manager, radio sales division, and chairman of the radio management committee, General Electric Co., Schenectady, N. Y., has been made assistant manager, appliance and merchandise department. This department includes radio sales division, household appliance sales division, specialty appliance sales division and construction material sales division.

Clifford E. Hood, vice president in charge of operations, American Steel & Wire Co., Cleveland, has been appointed to the newly-created position of executive vice president. M. W. Reed, assistant to vice

president and chief engineer, succeeds Mr. Hood as vice president in charge of operations.

H. B. Jordan, heretofore manager of Cleveland district mills, has been named assistant to the vice president, and G. H. Rose, construction engineer, has been promoted to chief engineer. B. H. Gedge has been appointed manager of Cleveland district mills, succeeding Mr. Jordan, and W. F. Munford becomes superintendent of the Cuyahoga works.

R. I. Schuppener, for the past ten years department sales manager, Wheeling Corrugating Co., Wheeling, W. Va., has been made general sales manager of the new building products division, Berger Mfg. Co.,



R. I. Schuppener

Canton, O., a subsidiary of Republic Steel Corp. A complete line of building products under the Berloy blue label line trade mark will supplement the company's line of sheet metal products. Mr. Schuppener was once sales manager, Milcor Steel Co., and later was identified with the Klauer Mfg. Co., Dubuque, Iowa.

Robert J. Tully, assistant general superintendent of the Clairton steel-works and coke by-products plant, Carnegie-Illinois Steel Corp., Pittsburgh, has been appointed assistant general superintendent for the Youngstown, O., district, in charge of industrial relations. Mr. Tully has been continuously employed by subsidiaries of the United States Steel Corp. since 1895. In his new capacity he will have charge of employment, safety and welfare at the McDonald, upper and lower and Ohio mills.

## Died:

JOHN W. SEENS, 55, president of the Canadian Bridge Co. Ltd., Walkerville, Ont., and the Canadian Steel Corp. Ltd., subsidiaries of the

United States Steel Corp., in Detroit, Jan. 25. He started as a draftsman with the Bridge company in 1904; in 1911 was appointed manager of the Structural Steel Co. Ltd., Montreal; in 1918 returned to Canadian Bridge as sales manager at Montreal; was elected a director in 1922, vice president in 1926 and president in 1927. In 1932 he was made president, Canadian Steel Corp., and at the time of his death was also president, Essex Terminal Railway Co., Walkerville. He was a member of the Engineering Institute of Canada, American Iron and Steel institute, Canadian Society of Civil Engineers.

William Bowman, 68, vice president and treasurer, John A. Roebling's Sons Co., Trenton, N. J., in New York, Jan. 23, after a short illness. He was also president, Durable Wire Rope Co., Boston. Mr. Bowman had been affiliated with the Roebling organization, bridge builder and wire rope manufacturer, since 1892. In that year he opened a branch office in Cleveland, and remained as manager until 1909. Transferred to New York, he was elected vice president and treasurer.

Andrew A. Devoto, 61, well known Pacific coast steel fabricator, at his home in San Anselmo, Calif., Jan. 20. Associated with Dyer Bros. Structural Steel Co., San Francisco, for many years, he organized the Central Iron Works, San Francisco, in 1904 and sold out to McClintic-Marshall Co. in 1908.

George William Eisenbeis, formerly treasurer, Union Steel Casting Co., in Pittsburgh, Jan. 22.

Frank O. Baldwin, 83, former Chicago manager, durable iron rope division, John A. Roebling's Sons Co., Trenton, N. J., in Evanston, Ill., Jan. 24.

Harry Morrison, associated with the former Illinois Steel Co., Chicago, for 54 years until his retirement in August, 1935, of heart attack, in Chicago, Jan. 25. He began as a clerk at the old North works in 1881. In August, 1925, he became auditor and a director, which offices he held until his retirement.

Louis Peterson, 51, a superintendent at the warehouse of the Bethlehem Steel Co., at Clearing, Ill., Jan. 25.

William K. Hawks, 40, assistant operating engineer, Weatherhead Co., automobile products maker, Cleveland, in that city, Jan. 26. He was a graduate of Rensselaer Polytechnic institute, Troy, N. Y., 1918, with the degree of chemical engineer. He was a member of the American Society for Metals.

# Activities of Steel Users and Makers

**B**ETHLEHEM Steel Co., Bethlehem, Pa., has opened a reinforcing bar fabrication shop and warehouse to serve the New York metropolitan area. The warehouse, located at Front and Marshall streets, Elizabeth, N. J., carries a complete stock of reinforcing bars with the necessary machinery for fabricating work.

Alabama Pipe Co., Anniston, Ala., has reopened its Agricola plant, idle since 1930. The company has employed 200 men and will soon be running at capacity.

Canton Forge & Axle Co., Canton, O., subsidiary of Poor & Co., has been absorbed by the parent company and will be known as the Canton Forge & Axle Works. It will continue to operate as heretofore, with no change in management or personnel.

Edwin E. Bartlett Co., Nashua, N. H., has changed its name to Greenerd Arbor Press Co., principally to affiliate the name of the company more closely with its product. The stock of the company is held by the same owners and the management and personnel are unchanged.

Precision Scientific Co., Chicago, announces that it is now the sole manufacturer of Freas and Thelco constant temperature laboratory equipment formerly built and sold by the Freas Thermo-Electric Co., Irvington, N. J., and Chicago. The good will, trade marks, patents and designs are now the property of the Precision organization.

General Rivet Co., recently incorporated by Clark McConnell, president and treasurer; W. H. Schwab, vice president and general manager, and B. B. Johnson, secretary, has leased a plant at 1313 West Eightieth street, Cleveland. The company will produce a complete line of hollow rivets of steel, copper and bronze, used chiefly by the automotive and leather goods industries.

National-Standard Co., Niles, Mich., has purchased the physical assets of the Athenia Steel Co., Clifton, N. J., and will operate the plant as the Athenia Steel division. The personnel of this division will remain unchanged. The Athenia plant, which specializes in tempered and polished steel for clock, watch, mo-

tor and typewriter springs, has an annual rolling capacity of 4000 tons of cold-rolled strip.

Mesta Machine Co., Pittsburgh, reports unfilled orders on Jan. 1, 1937, of approximately \$18,000,000. This compares with less than \$10,000,000 the same date last year and about \$10,500,000 last July. At present the company is operating at capacity despite a recently completed expansion program, increasing manufacturing capacity 20 per cent. The marked improvement in steel operations during 1936, has naturally resulted in a corresponding gain in replacement roll business.

H. W. Burritt, vice president in charge of sales, Kelvinator division, Nash-Kelvinator Corp., Detroit, reports an increase of 29.8 per cent in total shipments of Kelvinator refrigeration products for the first three months of the fiscal year beginning Oct. 1. Shipments were 53,607, compared with 41,270 units for the corresponding period last year. An increase of 47.5 per cent in shipments of Kelvinator commercial refrigeration units for December, 1936, as compared to December, 1935, was announced by J. A. Harlan, manager of commercial sales.

Mills Novelty Co., Chicago, has within the past year acquired two new factories for production of refrigeration equipment and products. One plant, which contains 75,000 square feet of floor space, will be

devoted to the manufacture and assembly of a complete line of counter ice cream freezers and hardening cabinets, and automatic, electrically-cooled, coin-operated bottle dispensing machines. The other plant, containing 160,000 square feet, will be devoted to manufacturing a complete line of refrigeration compressors and condensing units.

## Koppers Co. Buys Control Of Virginian Railway

Koppers Co., Pittsburgh, its associates and The First Boston Corp. have acquired 40 per cent of the voting stock of the Virginian Railway Co.

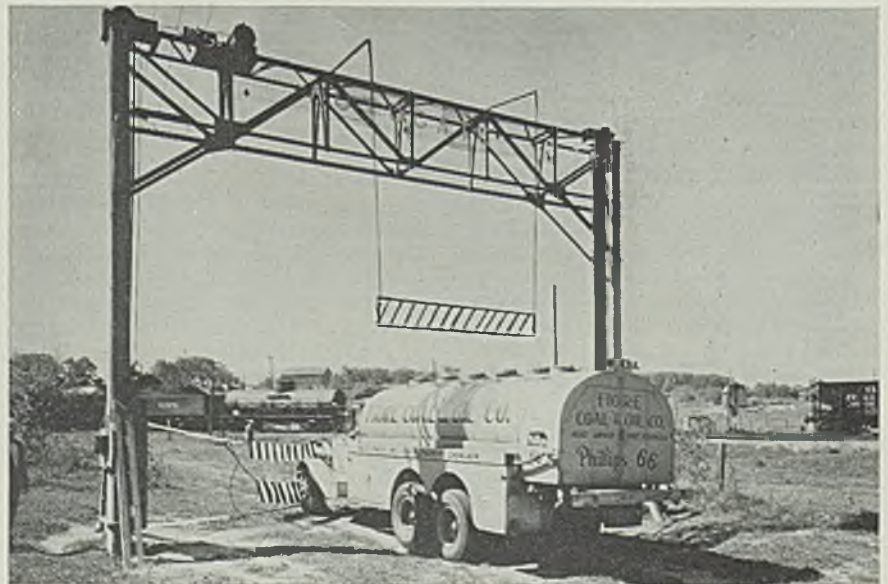
The property is important as a heavy railroad carrier link between the West Virginia coal fields and eastern ports, through steamship lines.

The sale was made by the estate of Henry Huddleston Rogers, former Standard Oil of New Jersey official, and other estates, including that of his son.

There are outstanding 279,550 shares of 6 per cent cumulative preferred stock, \$100 par value, and 312,715 shares of common stock. The two types have equal voting power. The stock earned \$7.89 in 1935, compared with \$5.89 in 1934.

The sale will unite the Eastern Gas & Fuel Associates with its subsidiary steamship line on the coast at Norfolk, Va.

## Wire Rope Forms Barrier in Traffic Safety Device



*EXPERIMENTS* are being conducted in Wisconsin with the "autogate," a device invented by E. Banschbach, engineer, Madison, Wis., using wire rope and a signal system supported by steel structural members. Through an electric wiring system the gate is raised or lowered, in accordance with the traffic signal. Automobiles and heavy trucks are said to be stopped smoothly and without recoil

# Meetings

## PROGRAM FOR DEL MONTE STEEL CONFERENCE

Included among subjects to receive major consideration at the thirteenth annual conference of the Iron, Steel and Allied Industries of California to be held at Del Monte, Calif., Feb. 11-13, are important developments in the steel industry, labor relations, effects of federal enactments on steel distribution, state tax proposals, meeting problems of foreign competition, merchandising for profit, and administrative problems of the state unemployment reserves act.

In addition to the formal sessions which will be held on all three days of the convention, a program for various group meetings has been arranged, at which particular problems will be taken up. Group gatherings are scheduled for the following fields: Foundries; manufacturers, traffic men, purchasing agents, merchant steel; reinforcing; structural; and tubular.

## STEEL ENGINEERS TO VISIT YOUNGSTOWN STRIP MILL

Association of Iron and Steel Engineers announces a national meeting to be held Feb. 25 at the Ohio hotel, Youngstown, O. The program will consist of a technical session in the morning and a plant visitation in the afternoon to the Campbell works of the Youngstown Sheet & Tube Co. to inspect the continuous hot and cold strip mills and other late installations which have been made at this plant.

Subjects scheduled for discussion at the technical session are: Manufacture and use of rolls in the steel industry; Ward Leonard control for blooming mill auxiliary drives; and continuous pickling tank construction.

## WILL HOLD FIFTH FOUNDRY CONFERENCE IN LANSING

The fifth annual sectional foundry conference sponsored by the American Foundrymen's association and the Detroit chapter of the association in co-operation with Michigan State college is to be held at the college in East Lansing, Mich., April 9-10. This annual meeting, designed to appeal primarily to those connected with gray iron production in the automotive casting field, has established a splendid reputation for bringing together leading authorities in the foundry field with discussions on metallurgical and operating problems.

Papers on the tentative program include: "Testing of Metals with Particular Regard to Cast Iron," by

R. Schneidewind, University of Michigan, Ann Arbor, Mich.; "Artificial Molding Sands," by Dr. R. A. Smith, Michigan geological survey; and "Core Making," by R. E. Aptekar, American Brake Shoe & Foundry Co., New York.

The following will discuss wear testing in a symposium on "Adaptability of Gray Iron as an Engineering Material": W. E. Jominy, General Motors Corp., Detroit; S. C. Massari, Association of Manufacturers of Chilled Car Wheels, Chicago; and P. S. Lane, American Hammered Piston Ring division, Koppers Co., Baltimore.

C. C. Carlton, Motor Wheel Corp., Detroit, will address the dinner attendance on the evening of Friday, April 9.

## MACHINERY CREDIT MEN TO MEET IN CHICAGO

Machinery manufacturers have scheduled a series of meeting of the credit men of the industry during the forthcoming seventh credit congress of industry, which will be held in conjunction with the forty-second annual convention of the National Association of Credit Men which will be held at Hotel Stevens, Chicago. June 21-25.

This group of credit executives is headed by H. E. Kay, credit manager, Industrial Brownhoist Corp.,

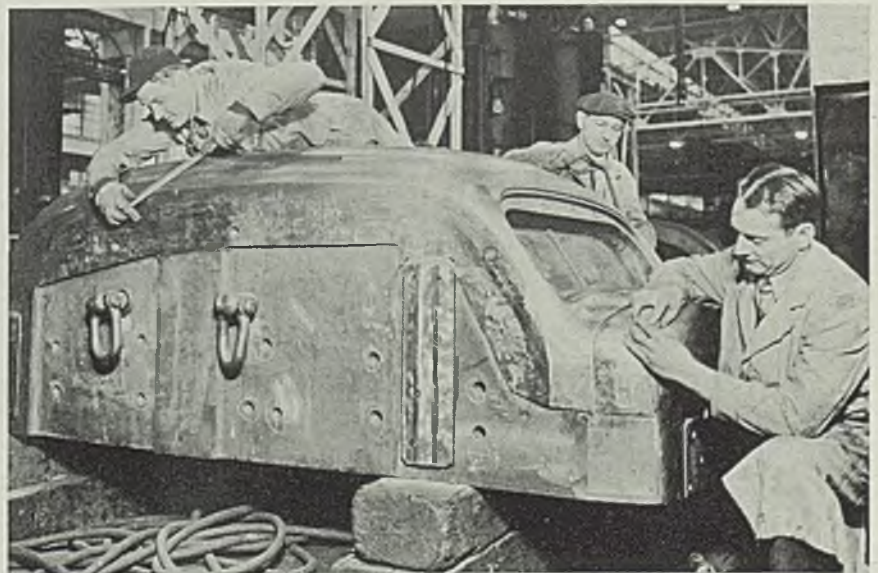
Bay City, Mich., as national chairman. In addition to a constructive program pertaining to credit ills, there will be round-table discussions of experiences of machinery manufacturers with the Robinson-Patman and the social security acts.

## Steel Founders Elect Directors and Officers

Newly elected directors of Steel Founders' Society of America recently re-elected F. A. Lorenz Jr., American Steel Foundries, Chicago, as president. Col. M. G. Baker was reappointed executive vice president and R. L. Collier, secretary-treasurer.

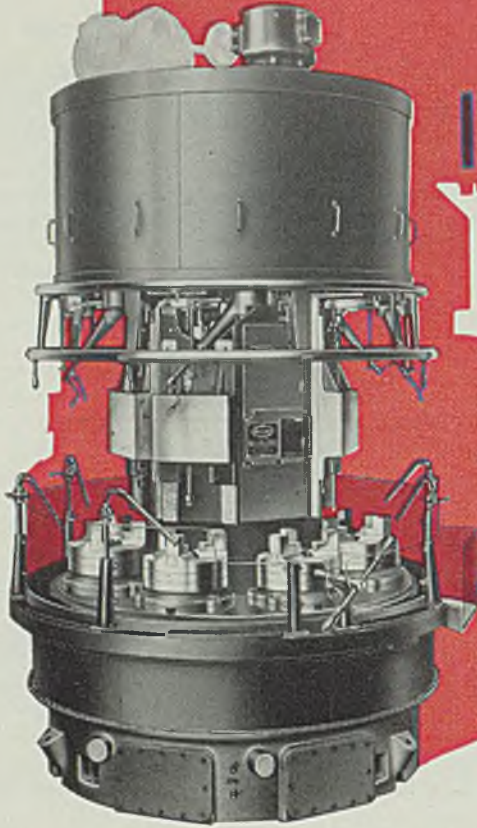
Directors for 1937 include: Division 1—Clarence Tolan Jr., Dodge Steel Co., Philadelphia; Division 2—G. H. Chisholm, Atlas Steel Casting Co., Buffalo; Division 3—F. M. Robbins, Ross-Meehan Foundries, Chattanooga, Tenn.; Division 4—D. C. Bakewell, Continental Roll & Steel Foundry Co., Duquesne division, Pittsburgh; Division 5—A. H. Anthony, Massillon Steel Casting Co., Massillon, O.; Division 6—A. K. Reading, Zimmerman Steel Co., Bettendorf, Iowa; Division 7—Burtner Fleeger, Oklahoma Steel Castings Co., Tulsa, Okla.; Division 8—J. P. Arnoldy, Warman Steel Casting Co., Huntington Park, Calif.

## Twenty-Ton Body Die Receives "Beauty" Treatment



*THIS 20-ton die is receiving a smoothing and polishing treatment preparatory to shaping new Plymouth seamless steel tops, which now include the cowl and windshield and the back panel as far as the trunk. Nine miles of steel an hour, in 6-foot wide strips, moves through the giant presses in one body plant alone. A full set of dies weighs more than 124 tons, and before being put in operation, each set undergoes polishing and grinding representing 45,000 man-hours of work. The steel is squeezed under pressure of 3,000,000 pounds, causing it to flow into the exact body contour*

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**BULLARD**





# MIRRORS OF MOTORDOM

**T**HAT cars will be rolling from at least some of the closed General Motors assembly lines within the next few days is not a bad bet. Quietly and firmly the corporation is returning men to their jobs, last week over 40,000 marching back to their posts at ten scattered plants. Full-page ads in papers here called both day and night shift employes of Chevrolet gear and axle, forge, and spring and bumper plants to report for work Wednesday.

If any retaliatory measures by the union were anticipated, they did not materialize. Work in the plants for the present may be on a reduced time basis, and production can be used only to build up inventories of parts, but at least the men will be earning something toward replenishing the family larder. Effect of this partly tactical move on the U. A. W. strikers and other employes kept from their jobs by sit-down strikes is being watched with interest.

## President Maneuvers

General Motors, throughout the entire affair, has operated most adroitly in the opinion of many observers, and the so-called "presidential rebuke" to Mr. Sloan following his refusal to attend negotiations until strikers evacuated the plants they are holding was not taken seriously by those who interpreted the remark as an "offset" to the earlier statement by the President in which he let loose a light jab at John Lewis. The amazing thing about the President's "excoriation" of Mr. Sloan is that by deploring the latter's refusal to come to Washington the President inferentially condoned the strikers' illegal occupation of the Flint plants.

On the heels of the summons to work came another statement from Mr. Sloan, posted on all bulletin boards in General Motors plants and reproduced in newspapers. Thrusting right at the heart of the situation, Mr. Sloan pointed out that the only thing involved was that General Mo-

tors should turn its employes over, body and soul, to Mr. Lewis for exploitation. And he added, significantly, "... have no fear. Do not be misled. General Motors will never let you down."

A lamentable sidelight of the entire difficulty has been the impotency of the administration's labor secretary, Frances Perkins. Reporters got a big kick out of one conference with her in which she read a letter which she had written to Mr. Sloan, but had not mailed, because of a last-minute change of mind. Drawing freely on the Ten Commandments and other Biblical references, she implored Mr. Sloan to do more than to show any concern over "old legalistic concepts."

## Finish Now in Sight

At Anderson, Ind., 2000 persons descended on a union meeting with ripe eggs and decayed fruit, forced their way into the hall, broke up the meeting and actually ran union organizers out of town. One of the organizers promptly went to the governor and requested him to call out the state militia. The governor did not accede.

Police overcame resistance of pickets at the Cadillac plant in Detroit to allow executives and clerical workers admission. At Flint, a mass meeting of 8000 jammed the auditorium there to discuss "direct and forceful action" to return men to work.

These straws in the wind may be the beginning of the end of the General Motors tie-up and may indicate that when Americans are denied their inalienable right to work they will take matters in their own hands if authorities will not listen to their demands.

How widespread are the ramifications of a shut-down in the automotive industry is shown in some figures prepared by General Motors public relations experts. A total of 6,055,736 employes are either directly or indirectly affected, this figure being the number employed by industries active in the building of

automobiles or supplying material or services for them.

**L**ABOR troubles not being enough of a headache for auto plants, nature took a hand last week and unloosed unprecedented floods which meant more worry for Detroit. Cessation of operations in Cincinnati plants, including the machine tool builders, put many a dent in new equipment programs. Add this to the fact that deliveries on numerous types of machine tools now are anywhere from 12 to 20 weeks, and it can be appreciated that a serious crimp has been put in plans for retooling in connection with new models. Of course, there are other sources of machine tools besides Cincinnati, but this city is one of the leading centers.

In former years, it has been customary to release specifications for body dies ahead of machinery, but this year the picture is different, primarily because of deferred deliveries on machine tools. Despite the fact that 1938 models are still more than nine months away from their first showing, there is concentrated activity in laying the groundwork for their design and manufacture. Furthermore, many plants are finding equipment obsolete and inefficient. One leading producer is reported not to have undertaken any extensive machine tool replacement in the last ten years.

## Machinery Picture Bright

With wage rates and material costs rising, engineers are going to be under steady pressure to trim manufacturing costs. Installation of new machinery to do a better job in less time is perhaps a time-worn answer, but still a good one.

If any major change in design of cars is to be adopted, such as automatic transmissions or engines in the rear, it will call for an appreciable amount of new machinery and tools. Both of these developments are being talked of currently, and probably will make their appearance



## MIRRORS OF MOTORDOM

within the next year or two. So the machinery interests are wearing broad smiles these days when they think of prospective sales possibilities, but their smiles turn to frowns when they consider the difficulties which beset their own plants. Skilled labor, especially fitters, is practically impossible to obtain. As machines become more complicated in construction and required to turn out work within increasingly precise limits, the need for skilled workmen to build them becomes more urgent. All builders are faced with this problem, and it is causing no little concern.

**R**ELEASES are expected this week on body dies for at least two new models—Graham and Packard. Apparently these interests are anxious to get this work placed before the heat is turned on the tool and die shops as the season progresses. It is reported that these two builders will have their 1938 models ready for production considerably in advance of show time.

Packard is logically planning to adopt solid steel tops for next year. Lines of the body in general will not be changed appreciably, although the trend toward the tear-drop or true streamlined design will be accentuated. Naturally the traditional lines of the Packard hood and radiator will be retained. It is understood that the top for the large 12-cylinder model will be made in two stampings, welded together at the center; this to avoid the excessive die costs involved in a single stamping of this large size.

Packard continues to install additional equipment for the pressed metal shop, and has ordered more presses, which will not be received until April. Production currently is at the rate of 480 cars per day, five days per week. About half of these are sixes, the balance including the 120, super-eight and twelve.

### Superchargers Popular

Graham is having considerable success with its supercharged models, current sales being about 45 per cent equipped with superchargers. Releases for the 1938 model indicate it may be ready by Aug. 1. Body lines are said to be little changed from this year's cars. Graham engineers claim to have eliminated much of the piston wear arising

from cold weather starting by means of plating pistons with bearing metal and special pressure lubricating system wherein oil is fed directly into the cylinder and picked up by a groove in the piston.

Specifications for the 1937 Auburn will be ready in about 30 days, according to reports here, with cars scheduled for appearance in the late summer. It will be a custom-built job, priced somewhere in the neighborhood of \$2500. Many refinements associated with cars in the higher price class have been planned. Cord production is increasing steadily, about 250 being the total for January, the bulk having been made in the latter half of the month.

Work is scheduled to begin shortly on plans for the new Chrysler lines, as well as Plymouth. Designers and draftsmen are at a premium in Detroit these days, one report being that Fisher Body is hiring every such man they can lay hands on. With General Motors claiming to be 160,000 cars behind normal production as of Feb. 1, it is likely there will be some reflection of this delay on new models. In fact it may mean fewer changes

on 1938 GM models than were originally planned.

**S**ETTLEMENT of the 43-day strike at Libbey-Owens-Ford gives glass workers an 8-cent hourly increase in wages, which means they will have to work 88 weeks of five 8-hour days to make up wages lost during the strike. In other words, assuming the men work steadily for the next two years, it will be about Oct. 1, 1938, before they start to realize any profits from the wage increase.

Libbey-Owens-Ford and Pittsburgh Plate Glass between themselves account for about 90 per cent of all the automotive safety glass produced. Within two weeks ample supplies will be available from these two producers, but if the General Motors tieup is not adjusted by that time, layoffs probably will be necessitated in the glass plants. Reports are heard in Detroit that some of the foreign safety glass installed in cars in recent weeks falls below safety requirements of certain states. This will mean car builders may be required to replace the foreign glass with American-made material as soon as the latter is available.

Chrysler plants felt the glass pinch last week and the week before, being forced to shut down for one day of the week. Four carloads of glass either from small independent glass plants or from brokers who had cornered a supply of the material were received at Chrysler early last week; this was reported to be sufficient to continue operations through Thursday.

## Automobile Production

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

	1935	1936	1937
Jan. ....	300,335	377,306	*341,230
Feb. ....	350,346	300,874	.....
March. ....	447,894	438,992	.....
April. ....	477,059	527,726	.....
May. ....	381,809	480,571	.....
June. ....	372,085	469,355	.....
July. ....	345,297	451,474	.....
Aug. ....	245,075	275,951	.....
Sept. ....	92,728	139,785	.....
Oct. ....	280,316	229,989	.....
Nov. ....	408,550	405,702	.....
Dec. ....	418,317	519,132	.....
Year. ....	4,119,811	4,616,857	.....

†These totals have been revised to include figures for Canadian production, inasmuch as the bulk of Dominion assemblies is from parts supplied by car builders in this country. Weekly figures below also include Canadian assemblies.

\*Estimated.

Calculated by Cram's Reports

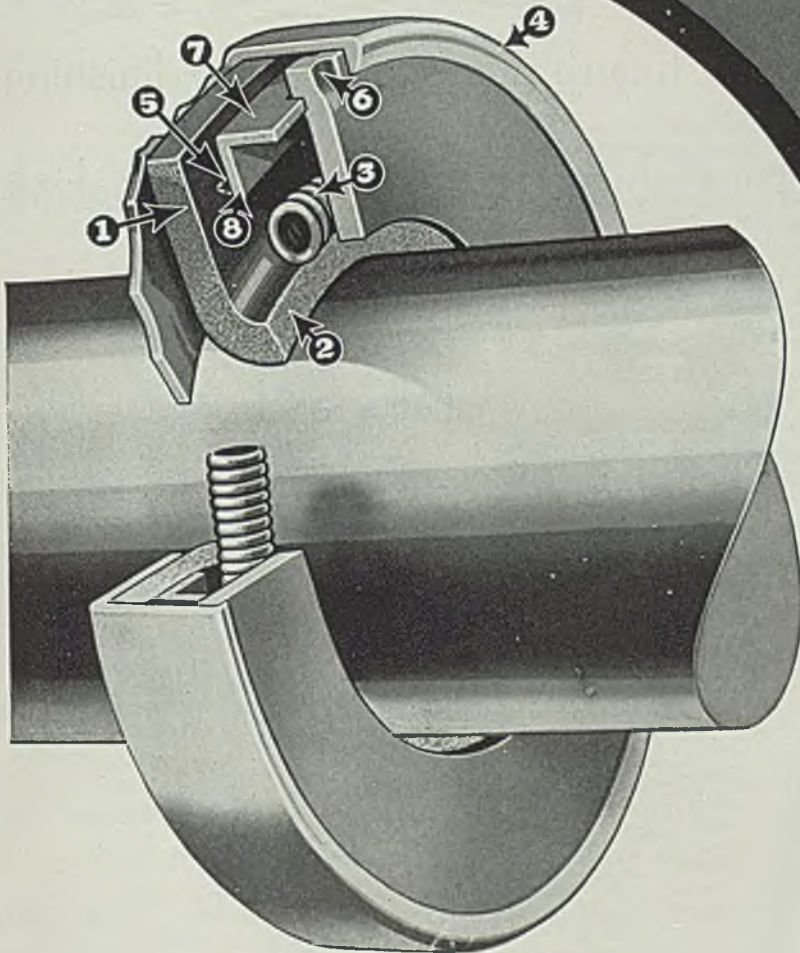
Week ended:	
Jan. 2. ....	71,800
Jan. 9. ....	96,780
Jan. 16. ....	91,685
Jan. 23. ....	81,395
Jan. 30. ....	71,373

**A**UTOMOBILE production eased further for the week, totaling 71,373. This represents further drying up of General Motors output and restriction in Chrysler production, as mentioned above. Ford productions continues strong with no appreciable change in the offing.

Department of commerce figures for December factory sales show 519,132 passenger cars and trucks, including Canadian production. This compares with 418,317 for December, 1935, and 156,318 for December, 1934. Total automobile production for last year amounted to 4,616,857.

Estimated production for January of this year is 341,230, compared with 377,306 for the same month last year. Assume a shortage of possibly 100,000 General Motors cars and it is seen the industry as a whole would have operated at a rate considerably ahead of the same time last year. To what extent General Motors can make up this deficiency by the end of the year is a question which production men would like answered.

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**1 PACKING MEMBER**—Leather continues to prove its superiority as an oil sealing material. Self lubricating, non-abrasive, durable, unaffected by oils or greases, it is flexible, yet non-plastic. Perfect Oil Seals are also furnished with compound packing members but only for those isolated applications where high static temperatures (higher than 250° F.) or the chemical reactions of fluids being sealed, are incompatible with leather.

**2 WIPING LIP** effectively prevents passage of lubricant or the entrance of foreign matter.

**3 TENSION SPRING** exerting pressure at wiping edge holds packing member on the shaft and automatically takes up any wear. Shaft contact is thus maintained even with shaft misalignment. Spring tension scientifically developed for speeds and pressures of the individual application.

**4 OUTER CUP** encloses the entire assembly in one solid unit for a close press fit into housing assembly. Outside diameter centerless ground for accuracy.

**5 INNER SHELL** carries sharp bosses which penetrate the leather of the packing member to prevent its rotation with the shaft—an exclusive feature of the "Perfect" Oil Retainer.

**6 LUG** on the cover washer drops into a notch in the inner shell to further prevent rotation of internal members.

**7 INNER SHELL** properly spaces cover washer and the flange of the packing member to permit free action of the tension spring.

**8 FOOT OF INNER SHELL** positively clamps flange of packing member in the outer cup.

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- Corset Wire
- Heddle and Drop Wire
- Curtain Spring Wire
- Bobby Pin Wire
- Paragon Wire
- Knife Blade Steel
- Lock Spring Wire
- Piston Ring and Expander Steel
- Tempered and Polished Tape
- Line Steel
- Scoring and Cutting Rule Steel
- Oil Tempered Regulator Spring Steel
- Clock and Motor Spring Steel
- Round Untempered Low and High Carbon Spring Wires
- M B Grade
- H B Grade
- Extra H B Grade
- Hard Drawn Electric Spring Wire
- Rope Wire
- Music Spring Wire
- Flexible Shaft Wire
- Brush Wire
- Fish Hook Wire
- Bobbin Ring Wire
- Chrome Vanadium Wire
- Valve Spring Wire

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# WINDOWS OF WASHINGTON

## WASHINGTON

**I**NTERESTING speculation has been rife here the past week as to whether Washington news men correctly interpreted a recent statement of the President at a press conference in which the latter apparently took John L. Lewis to task for one of his statements during the course of the General Motors negotiations here.

To go back a few days, during the course of some of the automobile negotiations held here Lewis made a statement intimating that the President was certainly going to uphold the laboring man, his friend. It was rather a dumb statement for Lewis to make and so regarded quite generally here at that time.

The following morning at a bi-weekly press conference, one of the newsmen asked the President if he had anything to say about the automobile strike situation. In effect the President said that headlines, statements, etc., were out of place at that particular time.

### Maybe He Meant Sloan

No sooner was that statement made than one of the correspondents said: "We know what you mean, Mr. President." Everyone immediately jumped to the conclusion that the President was striking at the Lewis statement and all of the stories were printed in just that way.

However, here is something that was overlooked. The U. P. (United Press) has tickers in many places in Washington and one is in the White House. This is watched closely all day at the executive mansion, and especially just before a press conference there. It so happened that about an hour before that particular press conference there was a statement on the ticker showing that at 1 o'clock that day Sloan would release a strike statement in New York. It is possible that the President might have had that in mind also but no one cared to take that view.

There is a feeling in many quar-

ters close to the President that Lewis overstepped himself at that time and there was talk that perhaps the President has been giving Lewis all the rope he wants with the well known thought that Lewis might hang himself. Many of the President's admirers feel that he is going to let Lewis and his crowd go just so far and then pull them up with a jerk, if it isn't too late.

However, the President's statement Tuesday that refusal by President Sloan of General Motors to accept the Perkins invitation to a conference with labor representatives was an "unfortunate decision," is in line with the usual attitude of the administration toward business and labor.

### MERIT SYSTEM SOUGHT FOR FOREIGN COMMERCE SERVICE

American exporters will be much interested in a bill introduced in the upper house by Senator Copeland of New York at the request of the department of commerce, which will make for more efficiency in the foreign service by putting it under a merit system.

Under this proposed new system, which has been worked out by the department over a period of several years, it would be quite impossible to make such wholesale dismissals of the foreign service personnel as was done at the conclusion of the Hoover administration, when many of the oldest foreign service officers were thrown out of the service for political reasons only.

Credit for getting action in the introduction of the bill goes to Dr. Alexander V. Dye, director of the bureau of foreign and domestic commerce, who really knows what it is all about, having come up from the ranks of the commerce department foreign service and having also seen service under the state department previously to that.

It is reported that all officials of the commerce department including Secretary Roper, Assistant Secretary Draper, in direct charge of the for-

ign service work and needless to say Dr. Dye, are all enthusiastic for the bill, which it is expected would make for much more efficiency through greater stabilization of personnel. It now remains to be seen just how fully Senator Copeland will get back of the bill and get it through the senate and on to the house, where a similar bill will be introduced.

### TRADE AGREEMENT BOOSTS COMMERCE WITH CUBA

Figures have been made public by the state department showing increased trade between the United States and Cuba during the first two years that the trade agreement has been in effect.

The department calls attention to the fact that "a variety of metal products on which duty reductions were granted experienced larger shipments to Cuba. In this category, the principal increases during the second agreement year as compared with the last pre-agreement year were in iron and steel bars, by \$105,000; galvanized sheets, by \$148,000. structural shapes, by \$149,000; pipes and fittings, by \$129,000; wire and manufactures, by \$96,000; nails and bolts by \$70,000. Exports of barbed wire, on which Cuba assured free entry if for fences, showed an increase of \$87,000. Shipments to Cuba of tin plate and related products, not included among the agreement items, were greater by \$242,000 during 1935-1936 than during 1933-1934."

Dealing with the ore situation, the state department shows that there was a notable increase in exports of ores from Cuba to this country in which category the department includes iron ore and concentrates, manganese ore and chrome ore. It is admitted by the department that this resulted "in part, from the revival of industrial activity in the United States." These ores have long been imported free of duty from Cuba and the trade agreement merely bound the free entry.

In this connection the department

says that "our imports of Cuban iron ore and concentrates are governed chiefly by the quality and cost of the ore and upon freight charges. Such imports doubled in quantity and value during the second agreement year as compared with the pre-agreement period, after increasing from \$318,000 in the pre-agreement year to \$547,000 during the first year under the agreement.

"A similar situation is presented in the case of chrome ore, for which we are almost entirely dependent upon imports. Cuba for some years has furnished comparatively limited amounts of a grade used largely for making refractory brick and related products, as distinguished from the higher grades, chiefly of Rhodesian origin, which are used for making chromium alloys and the salts for chromium plating. Imports of Cuban chrome ore during the first agreement year increased by \$87,000 over the pre-agreement year, while the imports in 1935-1936 amounted to \$243,000 or \$33,000 more than in 1933-1934.

"The duty free entry of Cuban manganese ore, by virtue of the former reciprocity treaty, was continued under the trade agreement. Manganese ore with more than 10 per cent manganese content, imported from all other countries, was dutiable under the tariff act of 1930 at one cent per pound of manganese content, until this rate was reduced by one half under the Brazilian trade agreement, effective Jan. 1, 1936. Imports of manganese ore from Cuba during the first agreement year, recorded a gain of \$420,000 over the pre-agreement period.

#### **Less Cuban Manganese Ore**

"The large purchases of the first year, however, were followed by a decline during the second year, of \$384,000 compared with 1933-1934. It should be noted that manganese imported from Cuba in the pre-agreement period represented purchases at least five or six times larger than those for several years back, which averaged less than \$100,000 annually. In addition, the much larger shipments of slightly more than \$1,000,000 during the first agreement year appear as unusual, especially since they were principally entered at a Gulf port, whereas in most previous years the Cuban ore entered chiefly at Atlantic ports. During the second agreement year, shipments entering at the Atlantic ports practically disappeared and manganese entries into the Gulf ports declined materially. It is reported that the principal Cuban manganese ore treating plant was in process of alteration during 1936, and that production was curtailed pending installation of new machinery, which part-

ly explains the reduced recent shipments to the United States.

#### **TRADE AGREEMENT BILL BEFORE HOUSE FOR ACTION**

The house ways and means committee Thursday favorably reported the bill extending the foreign trade agreement act for three years from June 12. The report was by a strict party vote. Passage by Congress is forecast as the President is strongly pressing for its enactment.

John W. Hooper, of the American Machine & Foundry Co., Brooklyn, appeared before the ways and means committee urging extension of the act. He represented the National Association of Manufacturers.

Mr. Hooper told the committee that "the National Association of Manufacturers believes that tariff agreements should be negotiated with specific countries where substantially corresponding benefits both to the United States and the foreign country are exchanged."

#### **NEW RUSSIAN TRADE RULES**

There have been some changes in the method of doing business with the soviet government which are evidently much to the disadvantage of American firms, according to current reports.

For a number of years, as is well known, all business was transacted through the Amtorg Trading Corp., New York. However under a comparatively recent rearrangement all negotiations are carried on direct with the Soviet Importing Agency in Moscow. Also, instead of payment being made when the shipment leaves this country, under this rearrangement payment is made 45 days from date of shipment. Still further, it is stated, transplanting of trade transactions to soviet territory is accompanied by a stipulation that arbitration of disputes be submitted to an all-soviet commission set up and functioning in Moscow only.

#### **MAJOR BERRY CLAIMS MORE THAN FACTS BEAR OUT**

While it is true that no one is taking Major George L. Berry very seriously it seems too bad that he is allowed to go around the country making speeches and saying things which are obviously untrue and is allowed to get away with it.

Just as a typical example he made a speech last week in which he said that the industrial council which he heads "represents more than 52 per cent of the total of our national industrial enterprise and embraces not only the investor and management, but labor."

He has made some very extravagant statements since he has been trying to make the front page of the

newspapers but he has probably never made any quite the equal of this. No matter what way you take the 52 per cent, his council does not represent that in production, wages, selling or any other way. It is absolutely true that his organization does not include in its membership any of the large industries, such as steel, lumber, automobile and many others and therefore it would be impossible for his council to take in 52 per cent of anything.

In his speech last week he said that he doubted if this country could survive another panic such as we went through in 1929. In this connection he said: "There is doubt in the minds of some as to whether our form of government could endure another catastrophe such as visited itself upon us beginning in 1929. I join in that doubt."

#### **CLAIMS FEDERAL LICENSE WOULD LIBERATE BUSINESS**

Hearings were held last week before the senate committee on the judiciary in connection with the O'Mahoney bill (S. 10) to provide for federal licenses and charters.

Senator O'Mahoney was one of the chief witnesses. He stated that "the purpose of this bill is to set business free, not to restrain or hinder it."

"I am aware," he said, "that a stream of misapprehension and misinformation with respect to the theory and purpose of this measure is flowing out of Washington to all parts of the country. Persons who have apparently not taken the time either to read the measure or any of the statements I have made with respect to it have jumped to the conclusion that it would set up in Washington rigid bureaucratic control over all business.

"It is precisely from that sort of control that this bill will liberate business. I am opposed to giving discretionary authority with respect to the regulation of commerce and industry to any group of men. It was on that rock that the NRA foundered. It was that rock which has wrecked every effort heretofore made by congress to prevent monopolistic practices. We cannot hope for success so long as we cling to the theory that regulation of commerce can be made effective by placing unrestrained power in the hands of officials."

The senator made a long presentation during the course of which he mentioned the General Motors strike and called attention to the harm that it is causing to all industries "including steel, that mounts to almost 10 per cent of the entire output of the steel industry," which is so far from the facts as to cast doubt on his source of information.

## Tide of Public Opinion Turns Against Labor Lawlessness

**F**AIR-MINDED industrialists should be mildly encouraged by the recent indications that some of the more liberal-minded newspapers and columnists are beginning to recognize the sinister aspects of the present labor situation. It may be said with some truth that the ruthlessness of John Lewis and his associates has been a more potent factor in awaking the public conscience to the threat of labor dictatorship and its attendant evils than the numerous warnings issued persistently by employers since the new deal-professional labor union alliance assumed control in Washington in March, 1933.

Some of these newspapers and their featured writers have assumed a marked change in attitude during the past 10 days. Before that time, some of them seldom lost an opportunity to attack employers, to impugn the motives of management or to magnify the alleged wrongs visited upon workers by their "bosses." In view of this consistent attitude of hostility toward employers in industry, it was real news when last week certain of these papers and writers expressed themselves in no uncertain language upon the injustice of the tactics of Mr. Lewis and upon the danger of the mass indifference to lawlessness which the public has been exhibiting recently.

### Labor Relations Legislation Is Being Abused by Minorities To Win Autocratic Authority

It is fortunate that these few liberals have come to their senses. It is time that the public awake to the crimes that are being committed under that cloak of sanctity which new dealers and professional labor leaders have called "collective bargaining."

Undoubtedly many who sponsored labor legislation in the last session of congress and who will introduce labor bills in the present session are actuated by an honest desire to create machinery for insuring improved labor relations. Without question, many conscientious persons are anxious to establish a true basis for collective bargaining.

But these earnest souls must be shocked by the extremes to which the cause of collective bargaining has been stretched to enable rival professional union leaders to wage their jurisdictional feuds. They should stand aghast at the manner in which collective bargaining has been used as an instrument to impose ruthless racketeering upon innocent victims. Above all, they should be alarmed at the way in which the legitimate cause of collective bargaining has been utilized to break down public respect for law and order.

Hoodlums in many cities are capitalizing upon the knowledge that public opinion is on the side of the employe, regardless of whether he is right or wrong. In Pennsylvania, miners steal coal and sell it at any price. Public opinion is such that no officer will arrest the thieves, no jury will convict them and the governor of the state will do nothing to curb the outrage. Instead the governor is called a great administrator, and foolish newspapers and clever politicians hail him as a likely candidate for the presidency of the United States.

San Francisco is in the hands of a labor dictator and Seattle is governed by a czar, who, according to a recent article in the *Saturday Evening Post*, seems to be using the tactics of an Al Capone or a Huey Long. In the automobile manufacturing centers, small groups of CIO members are keeping thousands of members of other unions and employes who belong to no union from their jobs, at the same time occupying the premises of their employers unlawfully.

### Evidence of Crimes Committed in Name of Collective Bargaining Arouses Public Conscience

It is an old adage that sometimes things have to get worse before they can get better. Perhaps we have reached that stage in labor relations. Possibly it was necessary for somebody like John Lewis to go far beyond the limits of reason to awake public opinion to the enormity of the abuses of the cause of collective bargaining.

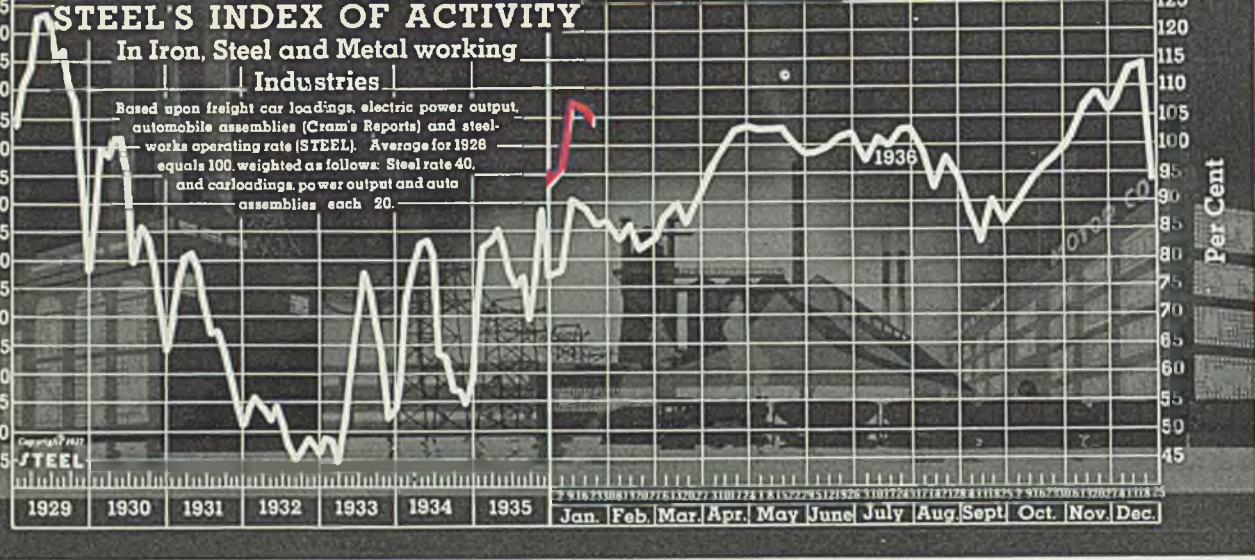
If this is true, Mr. Lewis unwittingly has performed a public service which employers tried to perform but failed miserably. By his arrogance and thirst for power, he seems to have aroused the ire of publicists who were deaf to the warnings of industrial employers.

But what of the federal administration? Will it take advantage of this unintentional service which Mr. Lewis has done? Will it take brisk measures at this opportune time to spike the trend toward lawlessness?

Apparently the answer is "No." Knuckling down abjectly to the dictates of political expediency, the administration plays both ends against the middle. The President implants a polite slap on the wrist of Mr. Lewis, and several days later, joined by the Secretary of Labor, sends a stiff uppercut to the jaw of General Motors.

This is all very nice. Undoubtedly it is the essence of finesse and political diplomacy. In Washington it is the sort of thing which causes the old-time politicians to say: "Isn't it genius?"

But to the long suffering public, it is a pain in the neck. To the man in the street it does not promote "collective bargaining" and it does not serve the ends of simple justice.



STEEL'S index of activity declined 2.8 points to 103.9 in the week ending January 23:

Week ending	1936	1935	1934	1933	1932	1931	1930	1929
Dec. 19 .....	114.8	91.9	64.4	58.0	46.9	52.3	67.3	79.7
Dec. 26 .....	93.3	77.3	60.8	53.7	42.9	46.8	52.3	64.9
Jan. 2 .....	96.6	78.2	65.4	53.6	45.3	48.8	58.5	74.3
Jan. 9 .....	107.8	90.2	73.8	58.1	48.6	55.8	69.2	88.1
Jan. 16 .....	106.7†	89.3	78.1	60.9	49.8	56.2	72.1	91.8
Jan. 23 .....	103.9*	86.0	79.5	62.3	50.8	55.8	72.9	96.3

†Revised. \*Preliminary.

## Business Indexes Begin to Reflect Effect of Flood

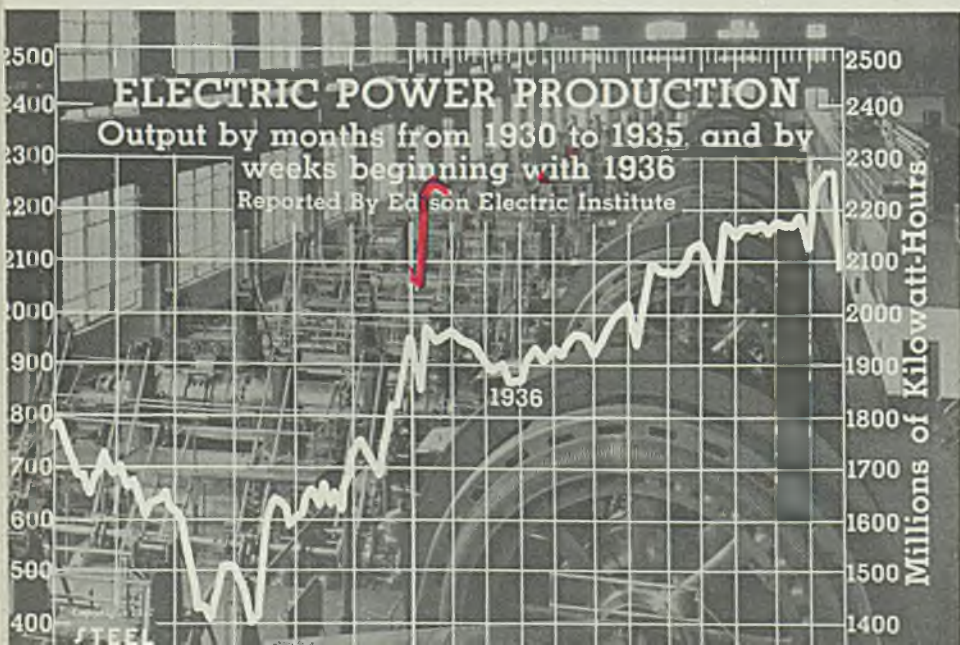
ACTIVITY in the iron, steel and metalworking industries eased off slightly in the week ending Jan. 23. STEEL'S index receded from 106.7 to 103.9, the second consecutive decline since the week ending Jan. 9.

Two factors were responsible for the most recent drop. Automobile output declined from 91,685 to 81,395, reflecting further effects of labor difficulties. Revenue freight car loadings were off moderately, the recession being most pronounced on roads serving the

Ohio valley where high water was just beginning to interfere with freight traffic. The full effect of the flood will be reflected more clearly in the reports for the weeks ending Jan. 30 and Feb. 6.

Electric power output in the week ending Jan. 23 showed only a slight change from that of the preceding week. Steelworks operations were up one point to 80 per cent of capacity. According to STEEL'S compilation, this was the highest percentage touched since the week ending Feb. 22, 1930.

Electric power output and steelworks operations, as well as freight car loadings, undoubtedly will register declines in the week ending Jan. 30, owing to flood difficulties. Last year in March STEEL'S index of activity suffered a drop of 3.7 in the week of the St. Patrick's day floods.



	1937	1936	1935	1934
Jan. 23.....	2256	1955	1781	1611
Jan. 16.....	2264	1949	1778	1625
Jan. 9.....	2244	1970	1772	1646
Jan. 2.....	2069	1854	1668	1564
Dec. 26.....	2080	1847	1650	1539
Dec. 19.....	2274	2002	1787	1657
Dec. 12.....	2278	1983	1767	1644
Dec. 5.....	2243	1969	1743	1619
Nov. 28.....	2133	1876	1683	1554
Nov. 21.....	2196	1953	1705	1608
Nov. 14.....	2169	1938	1691	1617
Nov. 7.....	2169	1913	1675	1617



# BUSINESS TREND

## December Machine Tool Orders Highest on Record

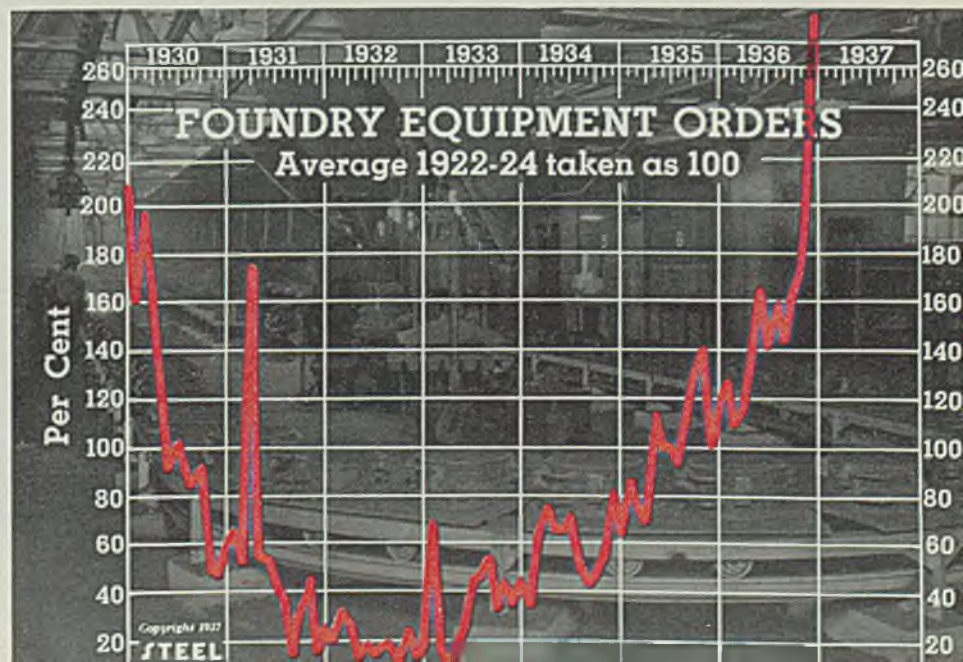
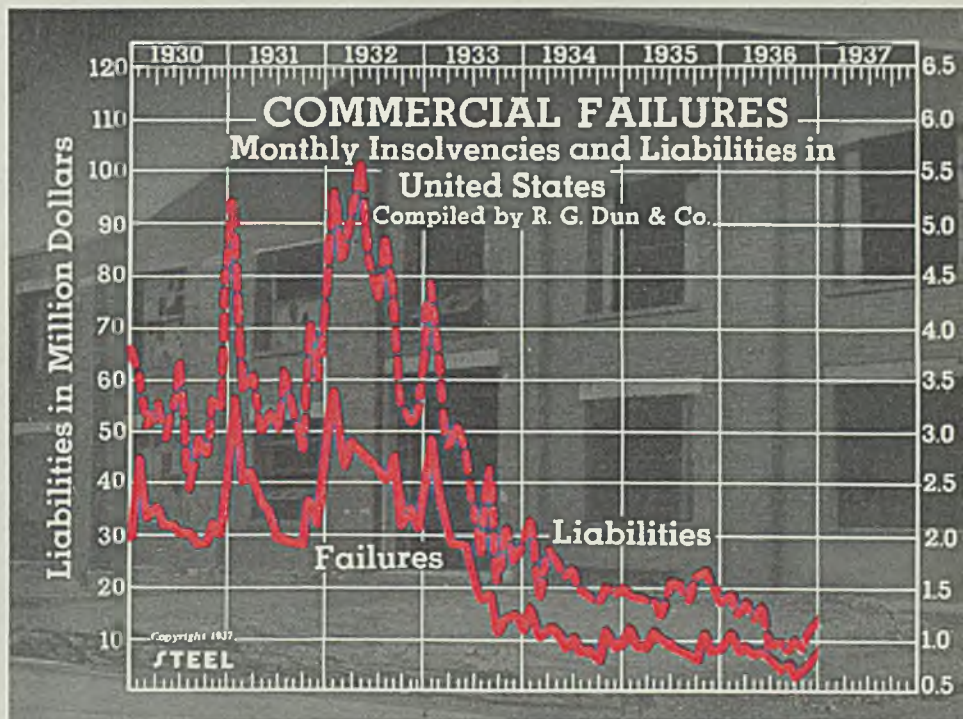
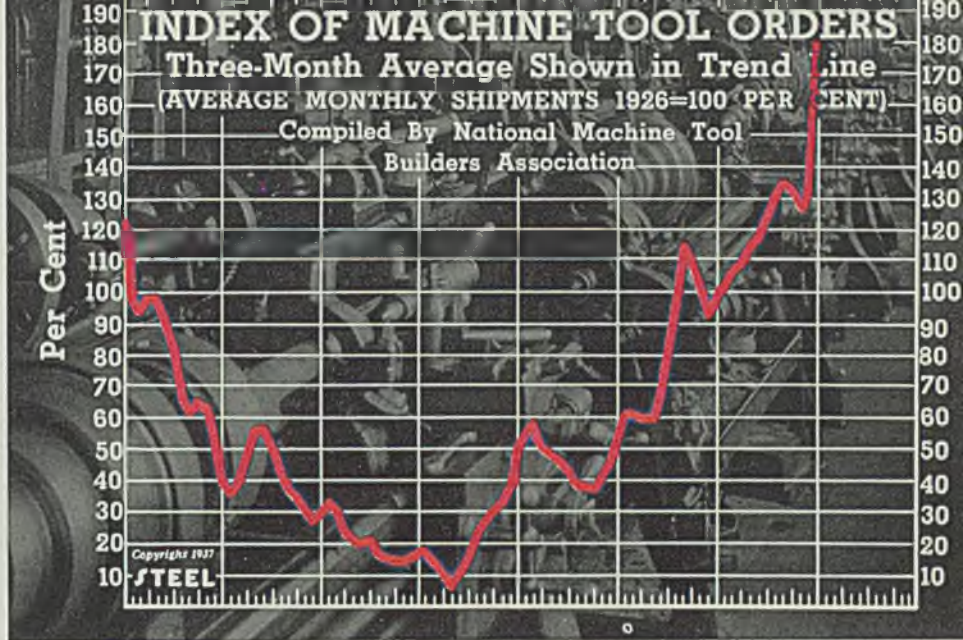
	Three-Month Average			
	1936	1935	1934	1933
Jan.....	102.6	61.3	56.5	18.3
Feb.....	107.1	61.5	58.2	15.2
March....	109.4	60.3	50.9	11.1
April.....	114.4	60.3	48.5	8.3
May.....	116.6	67.1	46.8	10.6
June.....	124.5	76.7	42.6	15.5
July.....	132.6	94.7	38.6	22.4
Aug.....	135.5	112.2	37.1	27.9
Sept.....	132.0	108.5	37.4	30.9
Oct.....	127.5	102.9	40.5	33.3
Nov.....	134.0	93.8	44.2	38.0
Dec.....	180.4	99.9	54.1	51.0

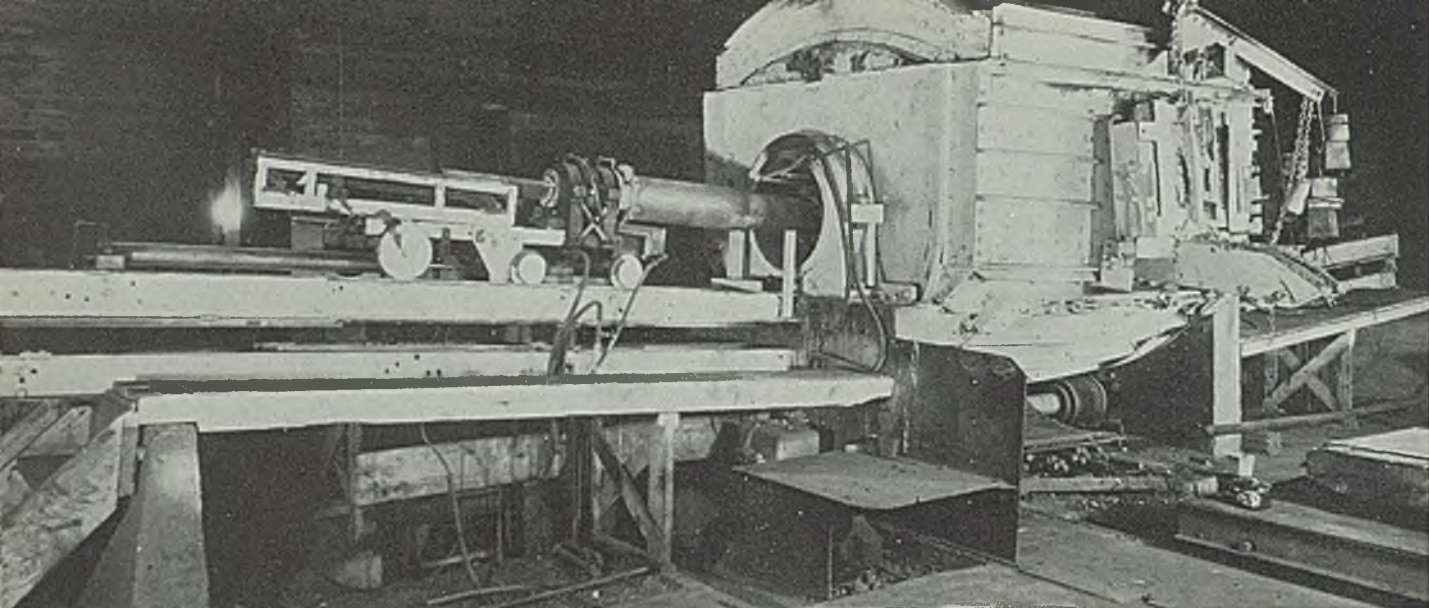
## Commercial Failures and Liabilities Up in December

	Failures, Number		Liabilities, Dollars (000 omitted)	
	1936	1935	1936	1935
Jan.	1,077	1,146	\$18,104	\$14,603
Feb.	856	956	14,089	15,217
March	946	940	16,271	15,361
April	830	1,083	14,157	16,529
May	832	1,004	15,375	14,339
June	773	944	9,177	12,918
July	639	902	9,904	16,523
Aug	655	884	8,271	13,266
Sept.	586	787	9,819	17,002
Oct.	611	1,056	8,266	17,185
Nov.	688	898	11,532	14,384
Dec.	692	910	12,288	15,686

## Foundry Equipment Orders At 8-Year Peak

	Per Cent			
	1936	1935	1934	1933
Jan.....	127.0	76.6	37.2	68.4
Feb.....	110.4	75.7	65.8	16.1
March....	115.0	69.4	75.4	9.8
April.....	134.0	113.2	67.9	19.4
May.....	165.4	100.7	66.5	25.6
June.....	141.4	100.2	70.4	45.5
July.....	159.6	94.0	50.7	48.8
Aug.....	144.8	113.0	43.1	56.3
Sept.....	161.0	128.5	46.4	34.9
Oct.....	173.8	140.0	55.3	42.5
Nov.....	200.4	100.4	80.4	36.6
Dec.....	283.3	118.1	66.9	43.8





**G**ENERAL plan of construction of the hollow electrode furnace used in producing castings of stainless and heat resisting steel is shown in this photograph from the Ludlum plant

# Hollow-Electrode Furnace for Melting And Refining Stainless Steel Castings

**U**TILIZATION of the hollow electrode type electric steel melting furnace has culminated in the recent announcement of a complete line of Silcrome stainless and heat resisting steel castings. Research experts of the Ludlum Steel Co., Watervliet, N. Y. have made this newest contribution to industry.

For more than one year before publicly announcing this new phase of service, experiments were made during which castings of many different types and designs were produced in a production manner and innumerable tests conducted in consumers' plants, as well as in the laboratory, to determine the quality and utility of the products. As a consequence, there has been demonstrated that stainless and heat resisting steel castings can be produced covering a wide range of controllable analyses, having excellent characteristics, unusually free from

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and  
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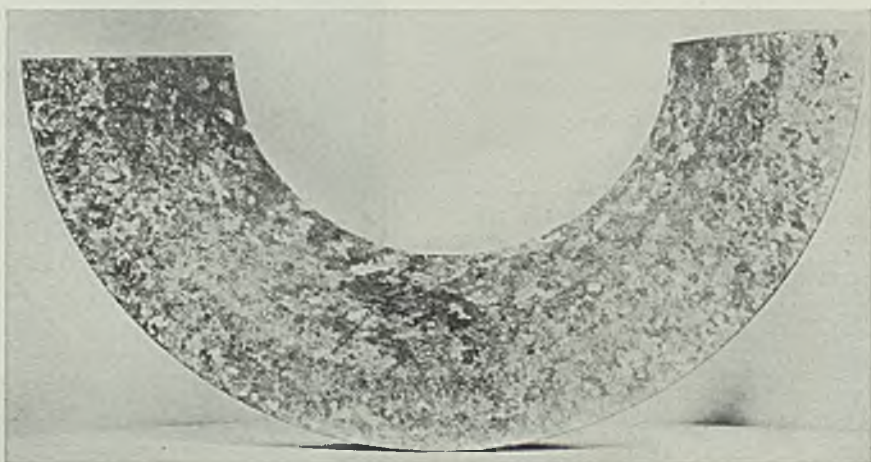
porosity, possessing excellent corrosion resistance, and generally meeting the diversified demands which

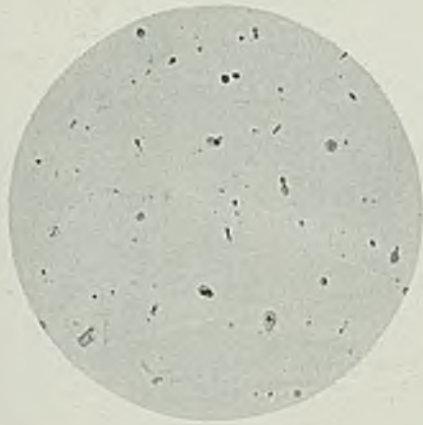
have grown up around stainless and heat resisting steel as a whole.

The hollow electrode furnace is an indirect arc type, with rotating, hollow, horizontal graphite electrodes, inclined slightly toward the arc, to permit the reagent placed in the electrodes to flow freely from the arc ends. The arc impinges on the bath, but the bath does not become part of the arc circuit.

The furnace being operated is a single phase type, using 10-inch electrodes with 4¼-inch diameter holes

**M**ACROSTRUCTURE of an 18-8 stainless steel casting made from metal annealed in the hollow electrode furnace, etched 50 per cent hydrochloric acid 35 minutes, 160 to 180 degrees Fahr.





**L** EFT and center—As cast condition, 19 per cent chromium, 29 per cent nickel, no etchant used. This shows type and dispersion of inclusions. Left 100X, center 500X. Right—Same steel etched in aqua regia glycerine. 100X

bored through the center. The interior of the furnace is 72 inches in diameter and will produce heats from 1000 to 6000 pounds. The tilting is necessarily, about the center of the electrodes, so that they do not require withdrawal for tapping. The furnace is supported by heavy trunnions to which water-cooled electrode bushings are fastened. Scrap and alloys to be melted and refined are charged on the furnace hearth through a door in the same manner as in standard electric furnaces, in order to use conventional charging equipment.

#### Hollow Electrode Is Main Feature

Thus, the essential feature of the furnace is the use of hollow electrodes. These rotate at a very slow speed to insure an even wear of the arc ends, and permit the production of refining reagents by means of smelting ores and carbon within them during the melting and refining of the bath. The refining reagents are smelted at the very high temperatures attainable at the arc ends of the electrodes, in the presence of the desired refining oxides, before the metal drops into the bath. The smelting produces a continuous volume of carbon monoxide in such a quantity as to create a furnace atmosphere more completely com-

posed of CO than is possible in standard arc furnaces.

The refining reagents which are fed through the hollow electrodes are in the form of briquet made by mixing a suitable ore with pulverized coke. The briquets are baked to eliminate moisture.

Those used in the Ludlum foundry are 4-inches in diameter and 30-inches in length. They are pushed through the electrodes by means of a continuous looped chain equipped with pusher lugs at 31-inch intervals. The velocity of the briquet through the electrodes is regulated to produce the desired temperature of the smelted metal issuing from the arc ends of the electrodes. The ore used is one containing an oxide of the metal which requires protection from oxidation in the bath that is to be refined. In the case of stainless steels, the briquets would be made from chrome ore and carbon. If low carbon ferromanganese from manganese carbide is to be made,

the briquets would be made of manganese ore and carbon.

There are no limits to the initial carbon content of the charge in the melting and refining of a heat of stainless steel. The refining reagent consists of superheated ferrochromium (reduced from the chrome ore carbon briquets) containing a substantial amount of chromium oxide in solution, which is sprayed continuously on the bath by the arc, and becomes well dispersed throughout the bath. The net result of the reaction with the bath is the oxidation of carbon, silicon, manganese and other oxidizable impurities from the bath and a simultaneous increase in chromium content. As a consequence, stainless steels have been produced with a carbon content as low as 0.03 per cent, but usual carbon analysis for castings is maintained between 0.06 and 0.10 per cent unless otherwise specified. Since both silicon and manganese are reduced, it is customary to raise the amounts to usual percentages to obtain higher fluidity in pouring, especially, of thin section castings.

#### Chrome Oxide Leaves Inclusions

Dispersion of the chromium oxide throughout the bath results in the retention of inclusions therefrom in the cast steel, although they can be reduced and removed by the usual slag and deoxidizing methods. However, these oxides have been found to exert a definite influence by improving machinability and are often retained for this reason. Furthermore, it has been found that these inclusions do not have a deleterious effect on corrosion resistance, and also possess some ductility in the event that the steel is to be forged.

Another important characteristic



**C**ASTINGS of 18-8 made from metal melted and refined in the hollow electrode furnace demonstrating feeder and riser practice, as well as surface conditions of such castings



of stainless steel melted and refined in the hollow electrode furnace is the freedom from porosity. This is no doubt due to the excessive oxidizing of the bath with chromium oxide, the continuous removal of all furnace gases, and by the constant and easy maintenance of high pouring temperatures. It should be kept in mind that in maintaining these high temperatures there is no change in the amount of carbon pickup in the bath.

#### Various Alloys Produced

The completely gas free metal pours quickly and with consequently less tendency to cut sand molds, which behavior results in cleaner castings. Power consumption in the making of stainless steels in the hollow electrode furnace has averaged approximately 550 kilowatts per hour.

Practically all alloy specifications containing 10 per cent or more of chromium are produced. The principal types are:

Chromium Per cent	Nickel Per cent
18	8
20	10
18	0.5
18	2
12	2
25	12
25	20
15	35

All the above types are made below the average in carbon content, that is, in contrast to general cast-

**L** EFT and center—As-cast condition 18-8. Etchant aqua regia glycerine to show average structure and type of inclusions, which include chrome oxides and silicates. Left 100X, center 500X. Right—As-cast condition, etchant sulphuric acid plus potassium permanganate, washed with oxalic acid, to show chrome oxide. Malleable type chrome oxide has been attacked by etchant and eaten out. 500X

ing procedures as followed in the trade.

The final analyses of a few typical heats are shown in Table I:

**Table I**  
**Analysis of Heats**

Heat No.	C.	Si.	Cr.	Ni.
G-3 ...	0.29	0.22	16.6	35.2
G-7 ...	0.08	0.43	19.5	8.7
G-9 ...	0.09	0.20	19.8	11.3
G-19 ..	0.05	0.21	19.5	9.8
G-24 ..	0.38	...	16.5	(Ingot Heat)

It may be of interest to note regarding the making of Heat G-3, that during the melting there was a carbon drop from 0.29 per cent to 0.10 per cent in 15 minutes. It was necessary to recarburize the bath for final pouring. During the making of heat G-9, the carbon content

was dropped from 0.37 per cent to 0.05 per cent in 20 minutes.

Conventional sand mold practice of the steel foundry is being used. Molds are baked or skin dried as necessary. There is a marked lessening of the tendency of the metal from the hollow electrode furnace to cut and scab in contrast to similar steel from conventional electric arc furnaces.

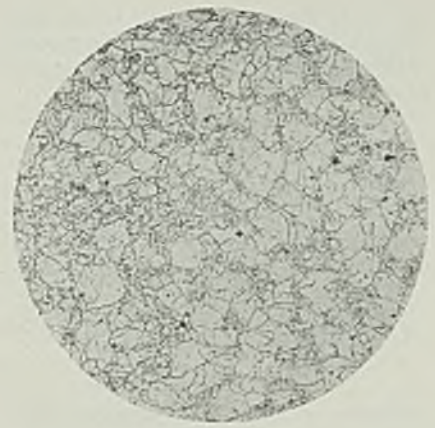
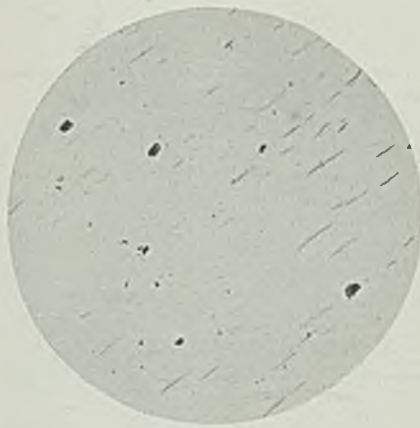
Because the metal is so completely gas free, it has been found essential for good results to increase the size of feeders and risers on castings. An example of feeder and riser practice is shown on page 47. The castings are known as cream separator bowls, made to standard 18-8 analysis. The one to the extreme left of the photograph shows a casting as it came from the mold. The two center ones have had feeder and riser portions removed, and have been sand blasted. The sectioned casting at the lower right corner of the photograph has been polished only after sand blasting.

#### Stainless Brings Problems

There are a number of metallurgical and engineering problems in the production of stainless steel and heat resisting castings, which are not met with even in the production of castings of ordinary and even low alloy content steels. Surface continuity, freedom from porosity and pipping, and cleanliness, are

**TABLE II**  
**Machining Tests**

Steel			State	Machining Operation	Type Tool	S.F.M.	Feed	Depth of Cut, Inches	Remarks
C.	Cr.	N.							
0.17	18.04	7.64	As-cast	Turning	18-4-1 HS.	140	1 1/4" per min.	0.06	Surface smooth. No porosity nor sand spots. Tool O.K.
0.11	18.88	7.64	As-cast	Turning	7% Co. HS.	127	0.015"	0.025	Surface good. No porosity. No sand holes. Tool O.K.
0.11	18.88	7.64	As-cast	Drilling	H.S. 1/2" Rd.	55	1 3/8" per min.		Drill O.K. Surface holes smooth. Clean. No porosity. No sand holes.
0.17	18.66	8.07	As-cast	Turning	7% Co. HS.	104	0.010"	0.013	Surface good. No porosity. No sand holes. Tool O.K.
0.17	18.66	8.07	As-cast	Drilling	H.S. 1/2" Rd.	55	1 1/4" per min.		Drill O.K. Surface holes smooth, clean. No porosity. No sand holes.
0.19	19.01	29.29	As-cast	Turning	18-4-1 HS.	69	0.030"	☆	Tool O.K. Finish good. No porosity. No sand holes.
0.19	19.01	29.29	As-forged	Turning	18-4-1 HS.	76	0.020"	☆	Tool O.K. Finish good. No porosity.
0.11	19.68	9.99	As-cast	Turning	18-4-1 HS.	69	0.005"	☆☆	Tool O.K. Finish good. No porosity. No sand holes.
0.11	19.68	9.99	As-forged	Turning	18-4-1 HS.	107	0.030"	☆	Tool O.K. Finish smooth. No porosity.



vitality important where stainless steels are involved.

In order to obtain even relative freedom from bad surfaces, porosity and the like, there has been a general tendency in the trade to increase carbon content to secure more fluidity with necessarily lower metal temperatures, increasing the chromium content in the case of carbon-chromium steels, and increasing both chromium and nickel content in steels such as 18-8 so as to insure better corrosion resistance to offset the higher carbon content. Since the metal produced in the hollow electrode furnace is made without the difficulty of control of carbon, high temperatures of the metal are easily maintained, and the metal is virtually free from gases, and pours quietly, surface cleanliness and freedom from porosity are secured.

#### Characteristics Are Shown

Evidences of the fact that stainless steel castings made from metal produced in the hollow electrode furnace, especially when there has been no attempt made to eliminate the oxides of chromium from the bath, possess good machining characteristics are shown in Table II on page 48.

It should be kept in mind that commercial 18-8 bar stock is not often machined with good tool life if surface speeds are much over 60 surface feet per minute. The so-called EZ types of stainless steels of the 18-8 types are machined with fairly good tool life and good surface at somewhat higher speeds, in

**L** EFT and center—Forged condition, 19 per cent chromium, 29 per cent nickel. No etchant was used. These photos demonstrate the malleability of one type chrome oxide segregate. Silicates also present and elongated. Black particles are non-malleable chrome oxide. Left 100X, center 500X. Right—Same steel etched in aqua regia glycerine. Note the refinement of structure. 100X

general about 30 per cent over the regular type.

Samples secured from various heats, carefully polished with carborundum, and subjected to 20 per cent sea salt spray tests at room temperature for periods up to 72 hours, have shown splendid resistance to corrosive attack. This has been true not only when the samples were in the as-cast state, but after heat treatments and forging as well. There have been several different types so tested to date, including 18-8, 20-10, 16-18 chromium, and 20 chromium-30 nickel.

Samples exposed to atmospheric attack in the vicinity of the Ludlum Steel Co.'s research laboratory, Watervliet, N. Y., have shown no effects of rusting, pitting, or anodic type of corrosive attack after thirteen months time.

Samples of steel containing 19 per cent chromium-39 per cent nickel-0.19 per cent carbon have been tested in the as-cast state in 25 per cent sulfuric acid at 160 degrees Fahr., and after 152 hours weight losses per square inch per hour amounted to 0.00370-gram.

KA2-S steel made in the standard

electric arc type of furnace and hot rolled in the conventional manner was completely dissolved in 130 hours in a similar test, showing a weight loss of 0.06889-gram per square inch per hour. Similar analysis steel castings made from metal melted in the hollow electrode furnace, and containing considerable amounts of oxides of chromium were completely dissolved in 25 hours time with a weight loss of 0.51966-gram per square inch per hour.

#### Corrosion Tests Show Equality

Intergranular corrosion tests using copper sulphate-sulphuric acid solution have demonstrated that the 18-8 types of steel made in the electric furnace are about equal to commercial 18-8 hot rolled or forged steels, providing that the castings are given heat treatments, usually air or water quenching from 1850 to 1950 degrees Fahr. Mixed acid corrosion tests, using the sulphuric acid-nitric acid mixtures commonly employed, tend to show that the 18-8 types made in the hollow electrode furnace are best after being heat treated, although it has been found that initial attack, that is, during the first hour of test, on samples in the as-cast condition, was generally much less pronounced than in the case of 18-8 or other stainless steels made in the usual type of electric arc furnaces and hot forged and rolled to shape.

Generally speaking, the corrosion resistance of the stainless steels made in the hollow electrode furnace has been good. Naturally, there

**TABLE III**  
**Tensile Tests**

Steel			State	Temp. Test, degrees Fahr.	Proportional Limit Lbs./sq. in.	Yield Point Lbs./sq. in.	Tensile Strength Lbs./sq. in.	Elongation % 2"	Red. of Area %	Brinell Hardness
C.	Cr.	Ni.								
0.17	18.04	7.64	As-cast	70	22,500	31,500	36,500	3.5	15.2	159
0.18	19.01	29.29	As-cast	70	20,000	29,000	67,250	20.5	22.3	131
0.18	19.01	29.29	As-cast	1700	—	16,150	16,850	19.0	26.4	—
0.11	19.68	9.99	As-cast	70	12,500	26,500	69,500	41.0	37.2	140
0.18	19.01	29.29	Forged	70	13,500	53,500	93,500	22.0	17.7	207
0.18	19.01	29.29	Forged	1700	—	—	22,750	16.0	45.4	—
0.11	19.68	9.99	Forged	70	52,500	71,000	97,000	38.5	49.1	196
0.11	19.68	9.99	Forged-Treated 1850°F. Air cooled	70	16,000	31,500	84,750	53.0	57.0	—

has been insufficient time to garner many results in actual service application, although there is a customer report as follows—

"After 74 days in 63 per cent nitric acid during which time approximately 2,500,000 pounds of acid has flowed over it, the castings\* being entirely submerged, the sample shows no loss in weight. There also is no indication of change of structure. In fact, the sample does not seem to have been affected in any way."

#### Tensile Strength Shown

There certainly is no question but that the freedom from porosity, and sand spots in the castings made from stainless steels melted and refined in the hollow electrode furnace have been distinctly favorable from the standpoint of resistance to corrosive attack.

Some typical tensile tests made on stainless steel castings in the as-cast condition as well as after some forging work from metal made in the hollow electrode furnace are shown in Table III.

The types of inclusions that have been found most prominently in the stainless steels made in the hollow electrode furnace have been (a) the brittle refractory nonmalleable chrome oxide  $Cr_2O_3$ ; (b) another type of chrome oxide not precisely identified as to exact composition which is somewhat ductile at forging temperatures, and reacts quickly to sulphuric acid (c) silicates sometimes entrapping iron sulphide, which type of segregate possesses good malleability at forging temperatures, and often tend to form envelops around dendritic areas especially near the feeder points of the casting.

Tests for iron oxide, manganese

\*18-8 type.

**B**ELOW is shown a group of castings made from metal melted and refined in the furnace. The chain is cast from 18-8 stainless steel and is 18 feet in length. All castings were sand blasted

oxide and manganese sulphide have generally produced negative results. The well defined dendritic pattern found in the cast steel is necessarily indicative of relatively high pouring temperatures and probably has some adverse effects on the elongation and reduction of area properties. However, the steels react favorably to heat treatment and the dendritic patterns are apparently largely dispersed thereby, while the elongation and reduction of area properties are greatly increased.

## Results of Spectrographic Analysis of Tin Published

Work on the spectrographic analysis of tin carried out by the British Non-Ferrous Metals Research association has now been extended to include the quantitative determination of aluminum, cadmium and zinc in tin. These researches were carried out by the association with the aid of funds provided by the International Tin Research and Development council which has now published them under the above title as technical publication Series A, No. 46.

D. M. Smith, B.Sc., A.R.C.S., D.I.C., divides his report into four sections. Section I gives a summary of previously published work on the spectrographic analysis of tin. Section II deals fully with the determination of small amounts of aluminum, cadmium and zinc and contains the greater part of the new work. A revision of the analytical tables for the determination of impurities in tin by means of spark spectra photographed under the standard conditions previously adopted, forms the subject matter of section III. Section IV gives a general summary of the work done on the spectrographic analysis of tin and the conclusions reached with regard to technique and analytical methods.

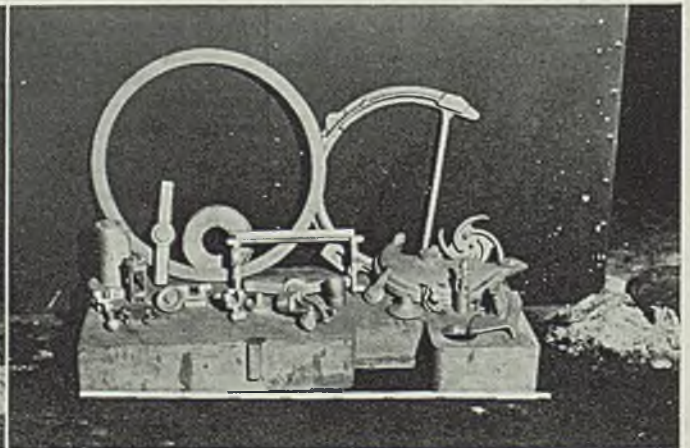
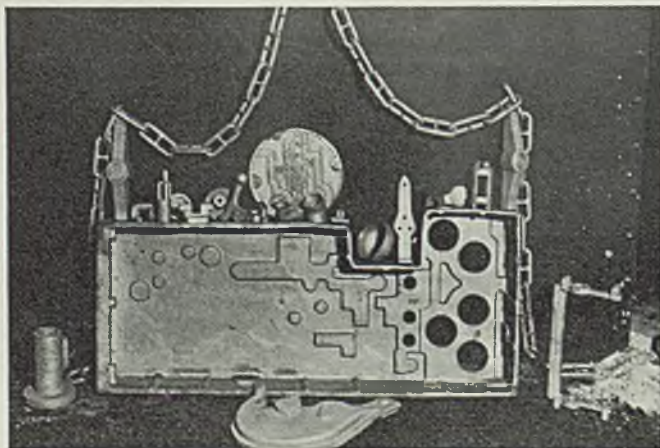
Arc and spark methods were investigated for the quantitative determination of impurities in tin over

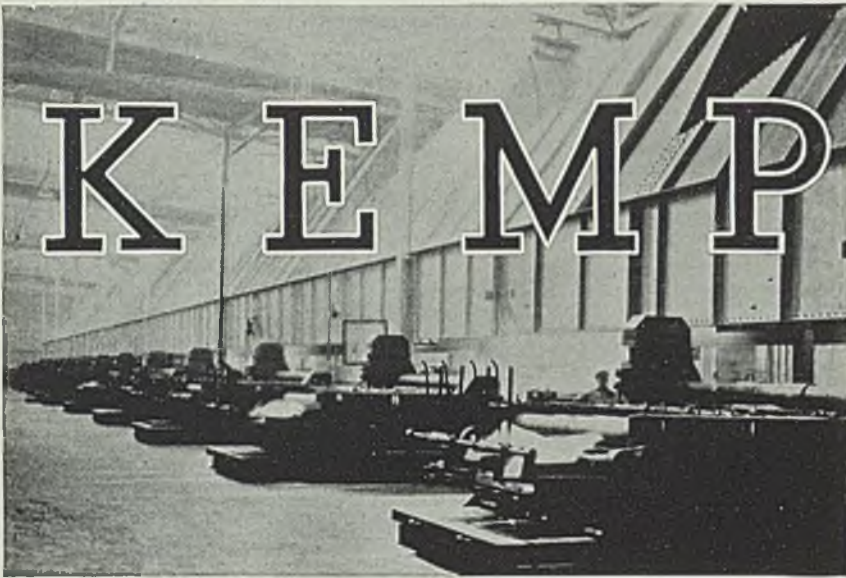
the range from 0.001 to 1.0 per cent. As an appendix to the paper there is a description of the electrolytic method of refining tin in the laboratory for the purposes of obtaining spectrographically pure tin for use in the preparation of standard alloys containing very small amounts of the alloying constituents.

Copies of the above publication may be obtained free of charge from the International Tin Research and Development Council, L. J. Tavener, U. S. Representative, 149 Broadway, New York City.

## Motor Generator Operates On Natural Gas Fuel

Engineered for 100,000 hours of continuous operation, a new gas motor generating unit built by the Lycoming Mfg. Co., Williamsport, Pa., is automatic in operation, requires little attention and is as easy to install as any gas appliance, requiring the connection of a gas pipe to the motor. Sizes range from 10 to 60 kilowatts generating either alternating or direct current. For the smaller user of electric energy a single motor unit is available. For continuous service a dual-motor unit composed of two motors and one generator, is offered. Either motor on this latter unit can be operated singly or both together, one motor automatically cutting off when the additional driving power to carry the electrical load is not needed. The gas motor which has been developed by Lycoming for use in this light and power plant is quiet, clean and vibrationless. It produces no smoke or odor and runs so cool that the hand may be placed on the exhaust manifold without a burn. The unit is engineered to use natural or manufactured gas only and is in no way an adaption of a gasoline engine to use gas. In the gas motor generating unit, the motor, generator and base are built together into one unit.





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# Water Cooled, Underfeed

## Stokers Effect Economies

### In Generation of Steam

**T**HE ideal toward which we are striving in boiler room design is the generation of steam at the lowest possible cost without sacrifice of lower first cost. To save money in boiler room operation two things can be done. The first is the use of coal that costs less in the bunkers. A coal costing \$4 a ton, for example, is cheaper to use than \$5 coal provided no more expense is created in burning the low priced fuel. One of the difficulties here in the past was that the cheaper grade or low fusion ash coals created so many troublesome and costly difficulties that users were glad to go

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BY J. G. WORKER  
American Engineering Co.,  
Philadelphia

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back to the higher priced coal. There is a distinct possibility for saving in this direction, however, because there are vast resources of these low fusion ash coals.

The second way to save money in the boiler room is to use equipment which gets the maximum amount of

steam out of the boilers. If a plant is providing 150,000 pounds of steam per hour, for example, and there is need for 275,000 pounds per hour, and if that yield can be obtained by speeding up without loss in economy or convenience, it is obvious that money is saved.

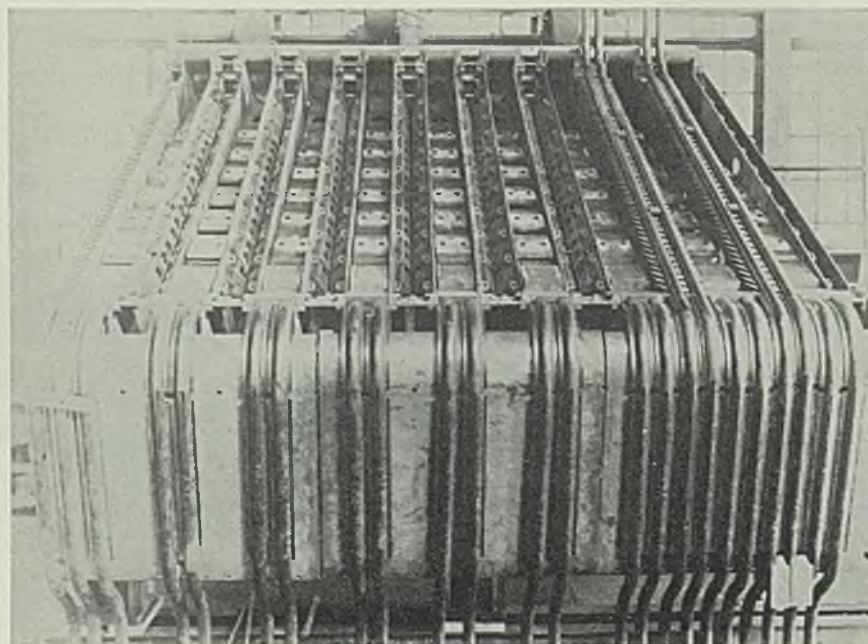
Extensive recent experience indicates that both these objectives may be obtained simultaneously through the use of the underfeed method of stoker firing. Through recent developments, such equipment makes it possible to burn cheaper and low fusion ash coals just as satisfactorily as the better grades of coal and to burn these cheaper grades at high coal burning rates per foot of area with a resulting increase in the quantity of steam. The improved equipment also performs this job with marked abatement of the smoke and fly ash nuisances.

One of the important features of the improved underfeed stoker is that it is water cooled. In older designs soft ash sometimes chilled at a level above the air openings in the grate. When this happened it acted as a binder in the fuel bed, reducing the area of fire through which air could pass. Water cooling of the stoker provides a means for equalizing and controlling the burning rate over the entire area of the stoker. Water cooling instantaneously chills the ash in small pieces with the result that the fuel bed on a water cooled stoker is more homogeneous and the burning rates are better equalized. In recent designs of underfeed stokers water cooling has been extended to cover the entire top surface of the fuel supporting area of the stoker. This step has had far reaching results in preventing closing of air ports and reducing the cost of maintenance.

#### Better Tuyeres Developed

Another important feature of the improved underfeed stoker is the development of better tuyere design. This restricts the flow of excess air to weak points in the fuel bed and results in better distribution of air flow through the entire fuel bed. There is a marked betterment in the behavior of the fuel bed. In actual practice the maximum combustion rate in spots is limited, with a consequent increase in the average for the whole fuel bed, so that increases of 30 per cent or more in the average coal burning rate easily can be maintained.

The practical value of this feature is obvious; it means that the output from a stoker of given grate area can be increased materially with a corresponding improvement in efficiency all along the line. This air control feature, with resultant



Water cooled underfeed stoker partially erected in the fabricating shop, showing a number of the cooling tubes in place



control of fuel bed conditions, has been worked out in a particularly noteworthy way at the Connors Creek station of the Detroit Edison Co. In this installation the surface of the stoker is divided into a large number of small areas and the flow of air to each area separately measured and controlled. Such control may be manipulated manually or automatically as desired.

With such control of the fuel bed the ability of the underfeed type of stoker to follow the steam demand up and down quickly is further enhanced. It is of interest to note that ignition can be adjusted and maintained at all ratings regardless of the amount of water cooling. The operator gets a continuous picture of conditions throughout the fuel bed by means of visible gages measuring the air flow to the individual areas of the stoker. Premature admission of air to the fuel is prevented by a sealing of retorts below the tuyere area, by better alignment and fit of the parts resulting from the increased use of welded steel

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THIS article is an abstract of a paper recently presented by Mr. Worker before the Engineers' Society of Western Pennsylvania

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construction and by better machining methods.

Due to these recent improvements, the water cooled, underfeed stoker is adaptable to a wide range of boiler and furnace design. It may be used to meet the most suitable design dictated by particular conditions in individual applications. Heating plants, in particular, are using the underfeed method with much satisfaction. A feature of the water cooled stoker is that the ash discharge is somewhat smaller in size and more uniform so that it frequently finds a market for grading and fill. The small amount of fly ash discharged from a stoker fired steam generator is not objectionable and is of such size that it can be collected with comparative ease and at low expense. An advantage of the improved underfeed stoker is that a large furnace is not essential for complete combustion of the fuel; it makes possible the production of a large quantity of steam with a relatively small consumption of space and volume.

As to obsolescence, the underfeed principle always has been considered to be highly efficient and has remained fundamentally the same from the time of its inception, with modifications in design to keep pace with developments in the art of fuel

burning. There are numerous examples where boilers installed 20 years ago have been equipped with new underfeed stokers from time to time during that period. For instance, a large roller bearing company just has completed a modernization program by replacing old underfeed stokers, installed in 1918, with modern underfeed stokers. The new stokers are in service under the same old boilers.

Altogether, 14 of these water cooled underfeed stokers now are being built or are in service.

## Develops Hard Facing for Tipping Metalworking Tools

Three new hard-facing metals known as the Numbered Stoodites have recently been developed by the Stoody Company, Whittier, Calif. These metals are numbered 45, 54 and 63, the numbers indicating the hardness of each metal on the Rockwell C scale. Since these metals resist both heat and corrosion as well as abrasion, they are being used chiefly in the metalworking industry. Stoodite 54 and Stoodite 63 are being used extensively for application to metal-cutting tools. Stoodite 45 is being used for application to dies, valves and the like. According to the company, Stoodite 54 is best suited for general shop use, while Stoodite 45 is especially suited for applications which require red hardness such as drop and trip-hammer dies. Stoodite 63 can be ground and finished much the

same as a good grade of tool steel. Its ability to retain its hardness while at red heat adapts it to taking a fine cut from hard materials or for cutting softer materials at high speeds.

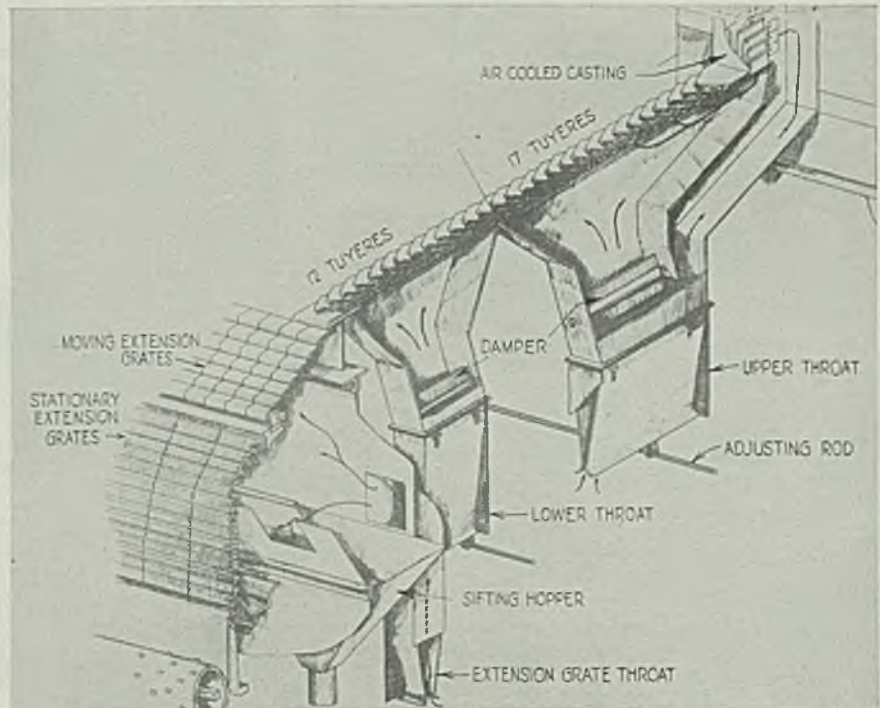
## Application of Power in Industry To Be Discussed

First meeting of the National Power conference in 1937 will be held in Chicago, Feb. 16, taking as its subject "Power and Its Applications in Industrial Plants." The meeting, held in the interests of power production and application men, will last throughout the day and will consist of three sessions.

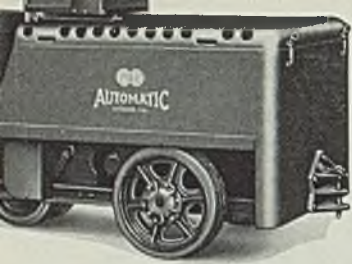
Power applications as denoted by belt, gear, group drives and other methods will form the basis of the first session to be held in the morning. Subject of the second session will be industrial power generation. Purposes and costs of power plants in industry will be covered, together with a discussion on advantages and disadvantages of power generation within the plant.

In the evening the session will be devoted to motor drives and applications where electric drives can best be utilized. Costs and methods of speeding up production by means of drives of this type will form the central topics of discussion.

During the noon hour a luncheon will be held, featuring short addresses by industrial leaders on manufacturing problems involving power and power uses.



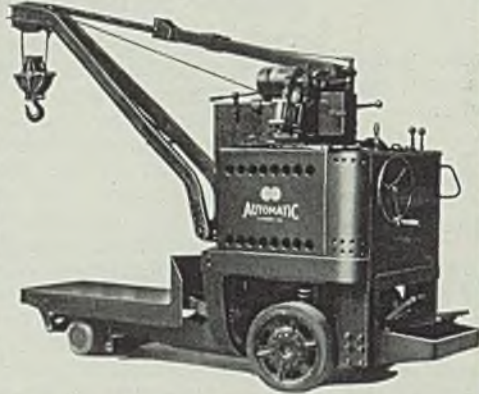
Water cooled underfeed stokers are provided with an air control system whereby the surface of the stoker is divided into a number of small areas and the flow of air to each area separately measured and controlled



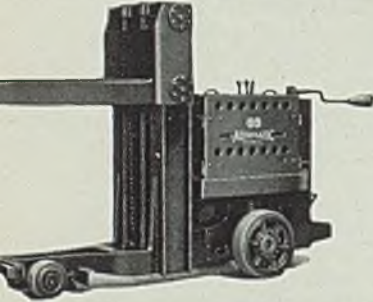
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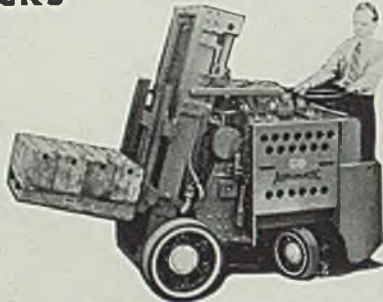


## 2. LOW LIFT TRUCK WITH CRANE



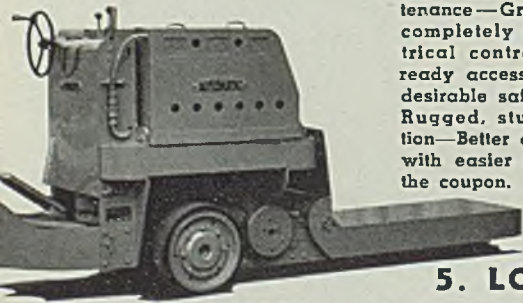
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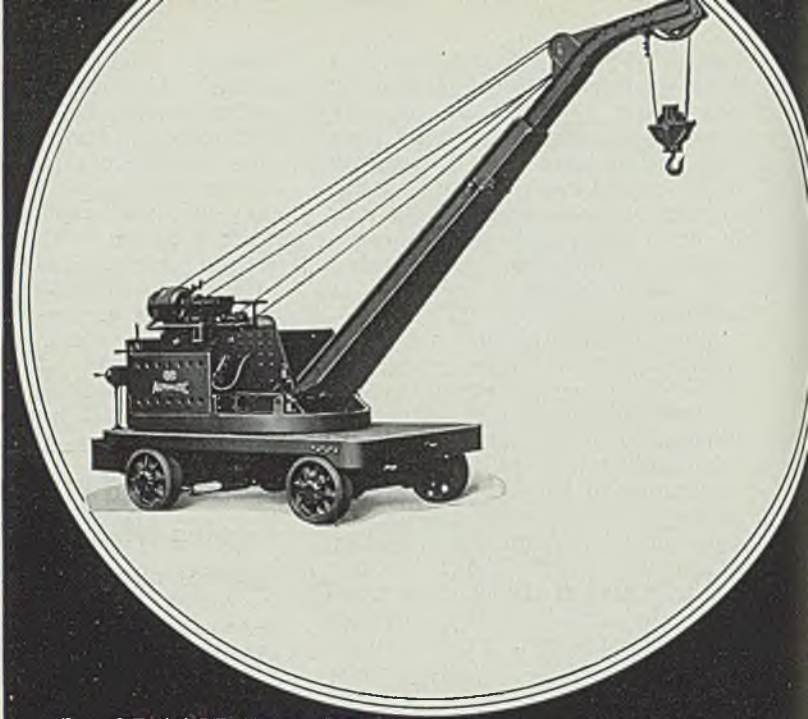
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**ELECTRIC AND GAS-ELECTRIC**  
**MATERIAL HANDLING EQUIPMENT**

**ONE OF THE LEADING MANUFACTURERS OF POWER TRUCKS - TRACTORS & CRANES**

# Materials

# Handling

## Automatic Handling of Coke Proves Economical Practice in Steel Plant

**M**ECHANICAL methods of handling coke from quencher cars to screening plant have recently been instituted by Bethlehem Steel Co., Bethlehem, Pa. A 7½-horsepower motor now operates a coke gate formerly operated manually, the apparatus being part of unloading equipment on the wharf. It is operated in conjunction with an automatic quenching station and not only does away with the manual operation of the gate, a job that was dirty, dusty and hot, but it also performs the work much more efficiently. One resulting economy is in saving clean-up work.

When the gate was operated by hand there was constant trouble from over-loading of the belt, especially during the night shift, necessitating almost daily the removal of the coke that had fallen from the belt. The uneven loading also resulted in uneven delivery to the screening plant and was a factor causing excessive wear of the belt. The automatic quenching equipment that was developed to operate in conjunction with the automatic gate affords a further gain in more efficient quenching of the coke, reducing the hazard of "hot cars," and also lengthening belt life because it burns it so much less frequently with hot coke. The automatic quenching also makes it possible to control the moisture content of the coke more accurately.

### How Equipment Operates

The automatic gate, which is 120 feet long and has a capacity of 2200 tons per 24 hour day, is operated by a main shaft which in turn operates five intermediate shafts equipped with cams each of which successively opens 16 individual gates. These gates, which are of similar construction of those employed in manually

operated wharves, are 18 inches wide.

Since this equipment dispensed with manual operation of the gates, it also became desirable that the coke should be completely quenched before dumping on the wharf. Otherwise it would have been necessary to have a man on duty to hose down any of the coke unloaded in a hot condition. To meet this problem an automatically controlled quenching station was provided.

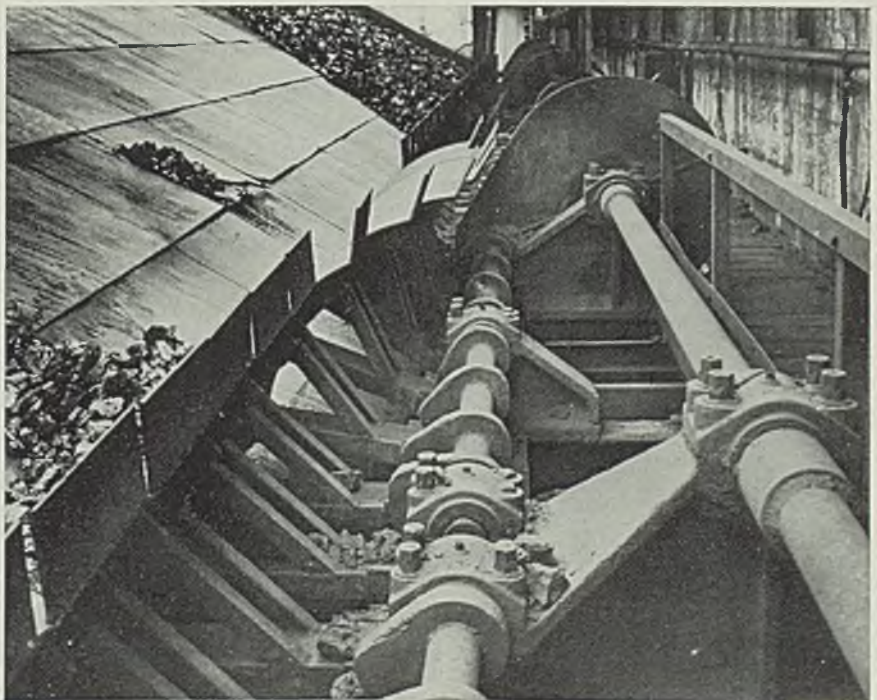
An elevated tank which had been

relied upon to provide water pressure was scrapped, and a powerful pump substituted for it. This was cheaper than a tank of sufficient capacity and of sufficient elevation to do the job effectively, and it also obviated trouble from frozen valves in cold weather. Electrical controls were then provided which automatically stop the quenching car when it comes to the quenching station, turn on the water for a predetermined length of time, then turn it off and again start the car for the unloading wharf.

### Quenching Made Uniform

Automatic control insures loads being quenched for the length of time that the amount of wind or other conditions make desirable. Hence there can be no such thing as the operator hurrying a car a

*Photo courtesy Bethlehem Steel Co.*



*Coke gates at the Bethlehem plant are operated by a main shaft which in turn operates five intermediary shafts equipped with cams. A 7½-horsepower motor is the power source*

# MATERIALS HANDLING

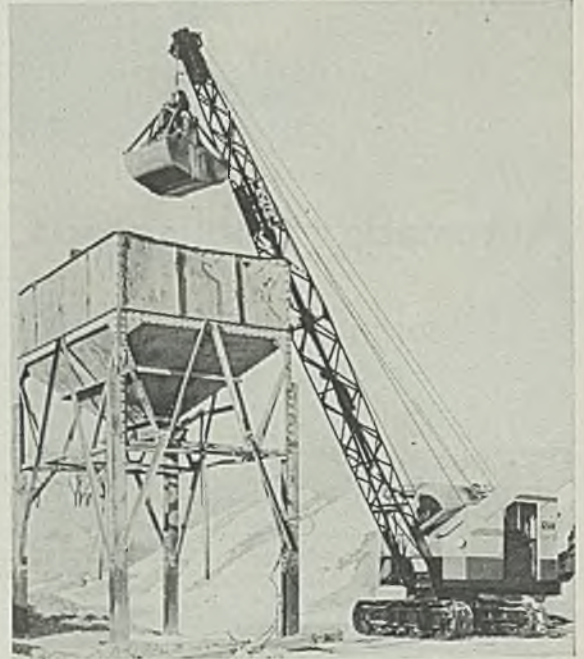
little now and then, for any reasons, and more uniformly quenched coke results with the accompanying advantages that have been described in this article.

## Conveyor Handling In a Steel Mill

CONVEYORS are performing many interesting and unique operations in modern steel mills. Examples of this are found in recent installations in one of the country's large mills manufacturing welded steel pipe.

One of the conveyors is shown in Fig. 2. Over the surface of this table from the head end of the pinch rolls are strung two adjustable steel wires, adjustment being in the crosswise position. When a special order for pipe is received, the department draws from stock a coil of strip of approximately the correct width. The coil, as it comes from the hot mill and not yet cut

AT the top and front of the cab of this crawler crane is a "skylight" which the operator can open and look through when he is placing loads far overhead. Other features of the unit include streamlining, air conditioning, complete ventilation, full visibility and ready accessibility to main machinery. The machine is full revolving, weighs 16 tons and is available for gasoline, diesel or electric power. This crane is one of the principal additions which the Bucyrus-Erie Co., South Milwaukee, Wis., made to its line last year



to exact width, is placed in a decoiler unit, decoiled and roller leveled and then run out to its full

length on the table, as shown in illustration.

With the strip thus placed, the guide wire is located to the proper width and the slitting shears, in the background, are set to conform to this width. To salvage as much as possible of the entire width, the strip is lined up under the wires and passed through the shears until the shear disks run out at the point of minimum width. When this point is reached, the strip is cut by torch,

(Please turn to Page 83)

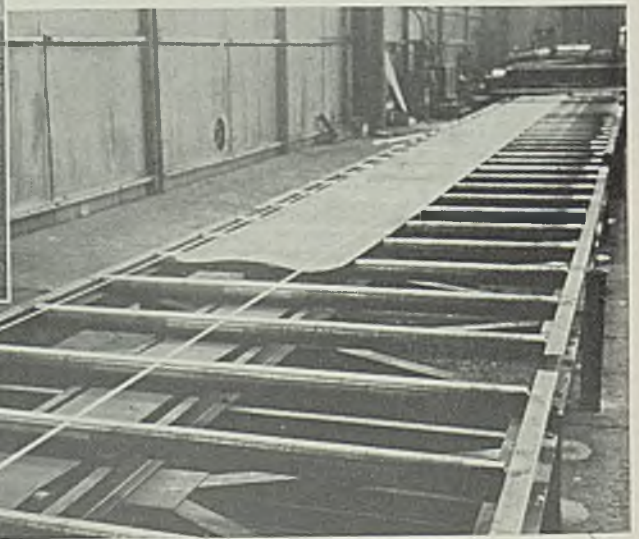
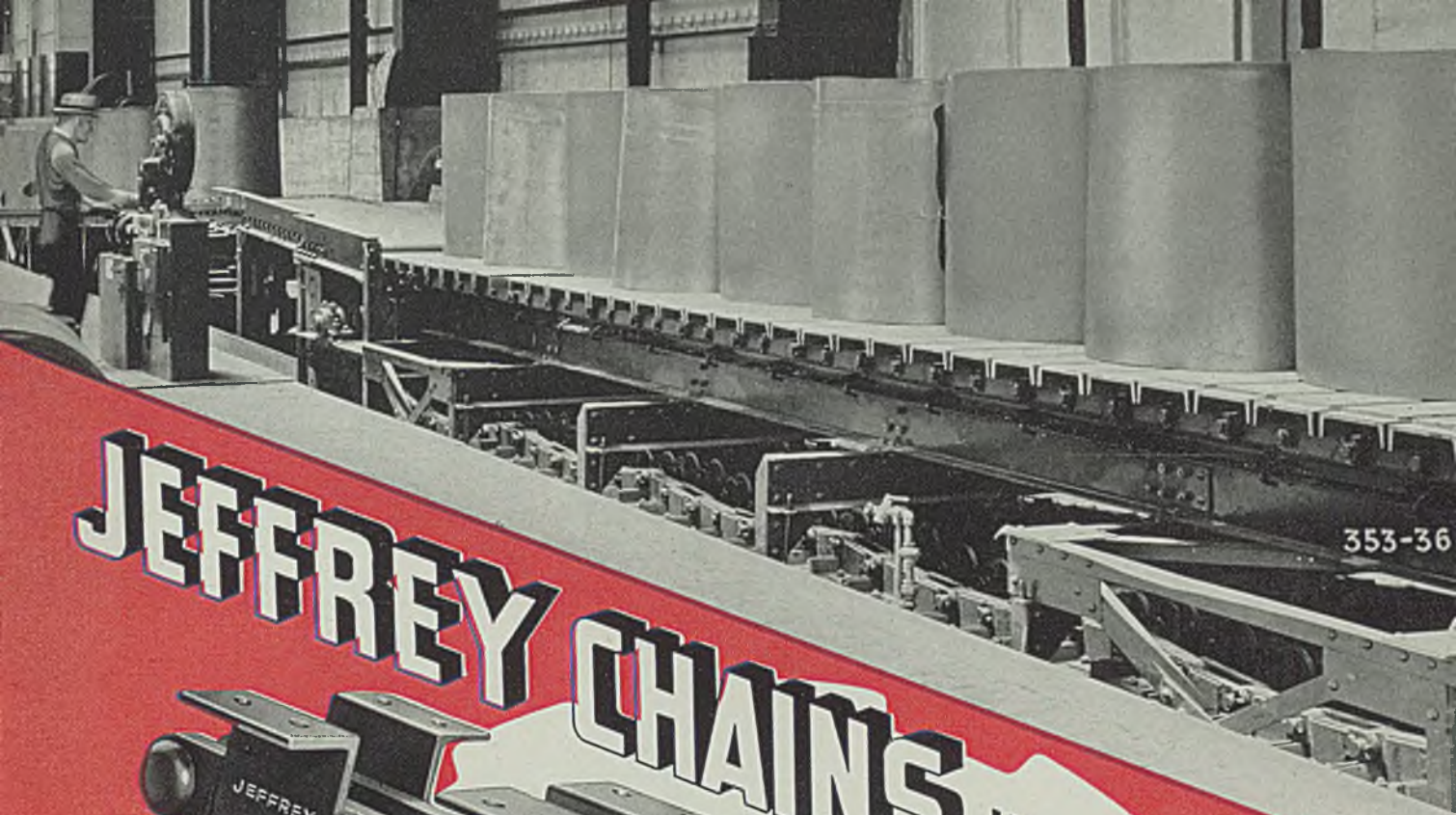


FIG. 1 (above)—A 1100-foot gravity conveyor which handles steel pipe sections 40 feet long and weighing up to 9600 pounds each. Fig. 2 (right)—Use of this conveyor table is said to have effected savings in the shearing of strip. Photos courtesy Mathews Conveyor Co.



# JEFFREY CHAINS IN THE STEEL MILL



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**"I** CAN tell right here if the tube is OK," says this experienced boiler maker. He knows boiler tubes. Hundreds have passed through his skillful hands in the thirty years he has been building boilers. He knows just about what to expect from a tube the first time he puts a tool to it. Listen to what he says about NATIONAL Seamless Tubes:

*"They go in without trouble."* That's because NATIONAL Seamless Boiler Tubes are straight, true to gauge, smooth, clean and round. Exacting mill tolerances insure their dimensional accuracy. They slide through the tube sheet more easily. Each one is exactly like the other.

*"They're fast and easy to install."* NATIONAL Seamless Boiler Tubes can be

easily flared, rolled and headed into flue sheets because they are exceptionally ductile and because every tube is completely annealed. That means fast installation and low labor cost for you.

*"I've never seen one split yet."* No, for the very good reason that NATIONAL Boiler Tubes are seamless — pierced from a solid billet of steel — without welds that might split or fail during installation or when "rattled" to remove scale.

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# UNITED STATES STEEL

# SURFACE TREATMENT

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## Utility Supersedes Appearance As Reason for Applying High Finish to Ax Blades

**M**ANUFACTURE of high grade axes involves several careful grinding and polishing operations, which must, of necessity, be hand operations. It has not been possible up to the present to adapt automatic machinery to this purpose. The high polish seen on woodsmen's axes is applied not to please the eye but with the intention of reducing friction and increasing penetration of the cutting edge into the wood. The methods of the Warren Axe &

Tool Co., Warren, Pa., described in this article are typical examples of best American practice in ax production.

The axes as they come from the forging operations are rough and irregular and the first operation is to grind and outline the final shape of the ax. This is known as edging or scribing and requires skill as the workman relies wholly on his hands and eyes to shape the outline correctly. As can be seen in the ac-

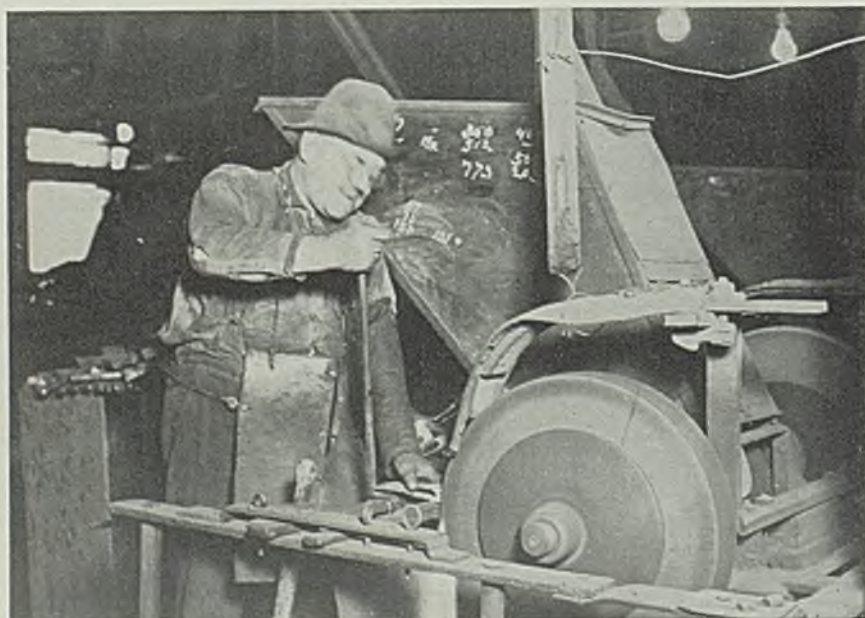
companying illustration the operator uses a lever to exert pressure in holding the work against the wheel.

The wheel is manufactured alumina 36 grit, 30 inches in diameter, 4-inch face, operated at a surface speed of 8000 feet per minute. This somewhat excessive speed is necessary to cause a rubber-bond wheel to cut effectively. The wheel revolves toward the operator as in ordinary grinding practice. At one time, vitrified bond wheels were used for edging but the rubber bond wheel has proved more satisfactory as the comparatively small ax surface presented to the wheel has a decided wearing action. Further, for this particular class of work, the rubber-bond wheel is safer than the vitrified.

### Grinding Operations Are Manual

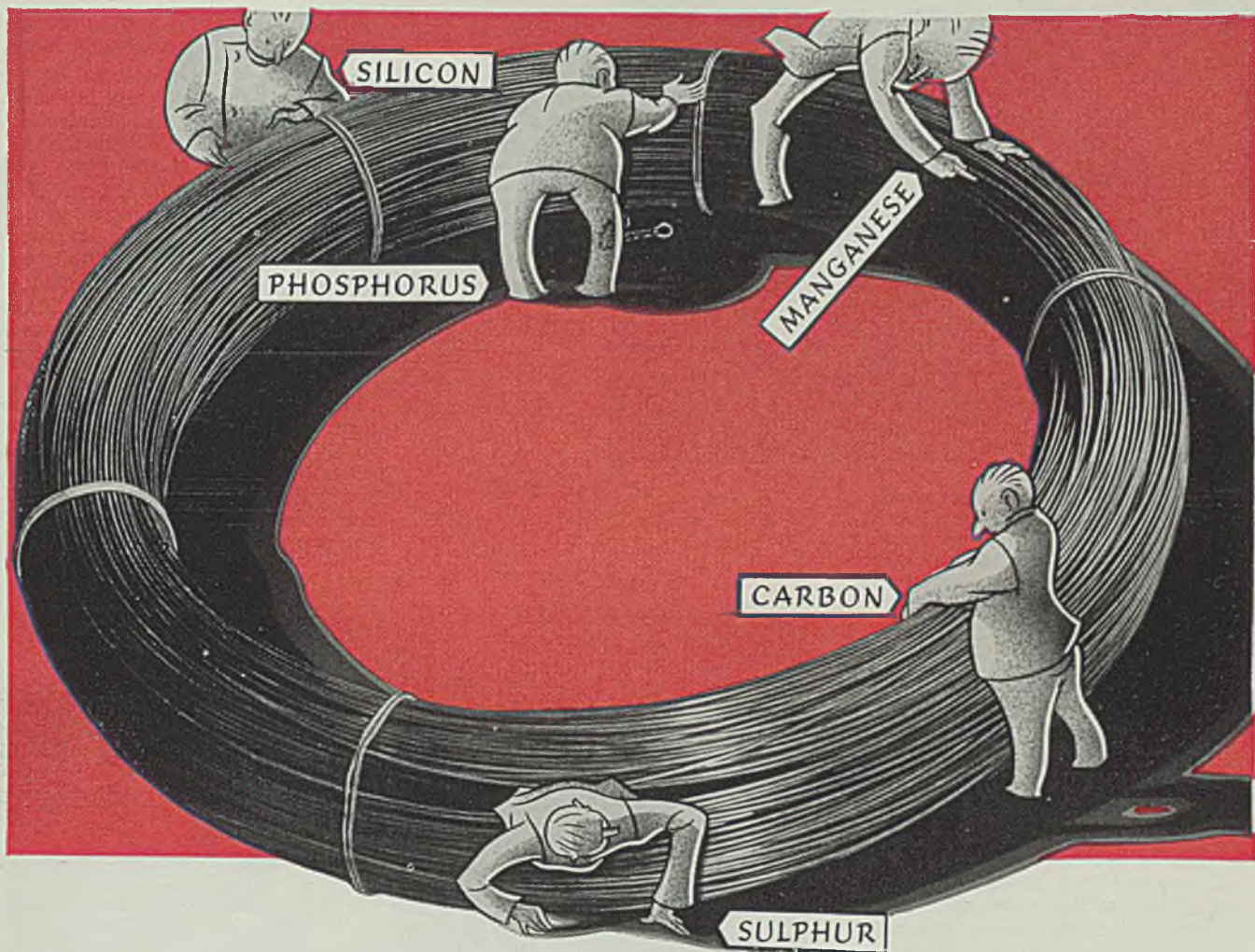
After the ax is edged the flat surfaces are ground to their final shape. This operation is shown in an accompanying illustration. The wheel used is manufactured alumina, 30 inches in diameter, 4-inch face, safety flange shape, operated at a surface speed of about 5500 feet per minute. As the illustration shows, it revolves away from the operator who rides a "horse" which utilizes his weight to press the ax against the wheel. In this operation the operator grasps a wood holder inserted through the ax eye. In this manner he can manipulate the ax readily and keep it in constant rocking motion over the face of the wheel. Since the operation is performed dry, an exhaust system is provided to carry away the abrasive dust. Following this operation the ax is finish ground in the same manner on a finer grit wheel. The grits used are, 36 for roughing and 60 for finishing. Both wheels are medium hard.

Until recent years the above grind-



Grinding the outline of the ax is the first operation which follows forging. Rubber bond wheels operating at high speed are used. Note bar used by operator to obtain necessary leverage





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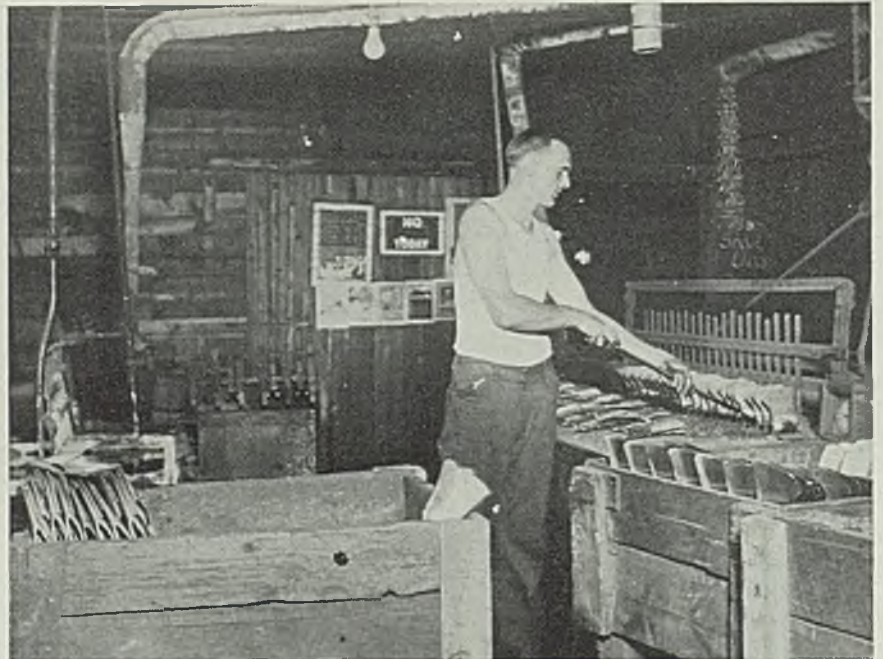
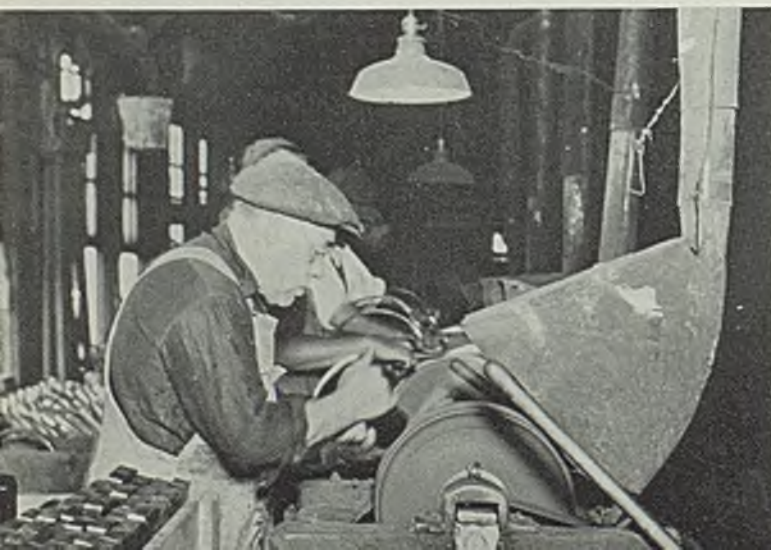


The entire ax surface is ground on a manufactured alumina wheel as illustrated here. The operator keeps the ax in constant motion and exerts the necessary grinding pressure by the weight of his body

ing operations were carried out on wet grindstones. These stones were about six feet in diameter and had a 1-foot face. The average life of one of these stones was about three weeks and the expense of resetting was high. The wet grinding process on natural stones was a "messy" operation at best and much silica dust was created with attendant dangers of silicosis to the operators. Manufactured abrasive wheels gradually have replaced grindstones in the majority of ax factories.

The axes are now ready for heat treating which is one of the most important operations in ax manufacture. Rule of thumb methods of hardening and tempering axes in open fires have disappeared along with the wet grindstone. Open fires have been replaced by modern equipment in which the temperature of

Axes are polished on stitched canvas wheels 18 inches in diameter and running at a surface speed of 8000 feet per minute. The wheel spindles run in wood center blocks



Modern heat treating equipment permits the hardening of axes without the formation of scale or variations in hardness

the heating baths for both hardening and tempering are rigidly controlled.

A section of the heat treating department of this company is shown in an accompanying illustration. Here the axes are heated to the critical temperature of the steel in a lead bath and quenched in brine. The molten lead is covered with granulated charcoal to prevent oxidation. As shown in the illustration, the axes are placed in adjustable holders so only the bits are heated. Drawing is carried out in a salt bath using adjustable holders as in the case of hardening.

Polishing operations are similar to those used in other industries. The wheels used are stitched canvas, 18 inches in diameter, with a 4-inch face. They are operated at a surface speed of approximately 8000 feet per minute. These wheels are

mounted on conical end spindles, the conical ends running in wood blocks. The polishing abrasive is manufactured alumina. Rough polishing is done on wheels set up with 60 grit. Next comes dry fining with 80 grit, followed by oil fining with 120 grit. In the final oil fining operation, emery cake is also applied to the wheel. This results in a highly finished surface. While the majority of axes are sold in this highly polished state, the attractive blue finish resulting from drawing the temper is also in demand. When this finish is desired the temper is drawn after polishing. The axes are then ready for labeling and packing for shipment.

# IS THERE A Plus IN LUBRICATION?



## IT'S SHELL'S "Invisible Element"\*

WHEREVER a wheel turns or metal rubs against metal . . . in coal mines or steel mills or logging camps . . . there Shell engineers have set for themselves the task of developing the best lubricants that experience, research and refineries can provide!

Plant superintendents, owners and purchasing agents all over the world have learned the dollar-and-cents value of Shell's "Invisible Element."\* They see it demonstrated daily, when they observe how successfully Shell Lubricants are meeting the needs of industry in hundreds of varied ways.

Shell welcomes every challenge to

solve a difficult lubrication problem. Have *you* such a problem?

A request to Shell's Industrial Lubricants Division, Shell Building, San Francisco; or Shell Building, St. Louis; or 50 West 50th St., New York, will bring a representative to your office at no obligation to you.

**\*SHELL'S "INVISIBLE ELEMENT"** is a combination of Shell's unmatched world-wide resources, decades of cumulative experience and research by Shell's engineers and scientists, Shell's modern laboratories and refineries. It is the determination to make lubrication more efficient, more economical for you!



From a recent issue of DIESEL PROGRESS we quote excerpts of an article on the ferry boats, CHIPPEWA (shown above) and KALAKALA, which ply between Seattle and Bremerton, Washington:

"Neither engine has had new liners, has been rebored, has had new pistons, or any grinding done . . .

"Lube oil is centrifuged six times per day . . . and the original oil\* in the Chippewa, placed there five years ago, is still there!" . . . The only additional lube oil placed in the system was to make up feed.

\*Shell Argus Oils for Marine Diesels

# SHELL



# INDUSTRIAL LUBRICANTS

# How to Install Linings of Stainless-Clad Steel in Tanks and Kettles

**I**N RECENT years substantial tonnage of stainless-clad steel has been used for lining tanks, vats and soap kettles. This type of lining has been used widely in the soap industry to give corrosion-resistant coating to the walls of both new and old soap kettles; and there have been numerous applications of stainless-clad steel linings in the food and other process industries.

Ingersoll Steel & Disc division, Borg-Warner Corp., Chicago, has developed a procedure for the installation of these linings on new or old steel tanks. The procedure is low in cost and affords complete protection from corrosion at the areas of the tank or kettle which require such protection. With this method it is possible to line the entire vessel, or only a portion of it, such as

*Soap kettle room at plant of a large soap manufacturer. Kettles and fume stacks are lined with welded stainless-clad steel*

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BY W. B. KEELOR  
Engineer, Ingersoll Steel & Disc division, Borg-Warner Corp., Chicago

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the upper courses, all depending upon the areas affected by corrosive attack. For example, one of the leading soap manufacturers lines the entire walls of soap kettles, but not the bottom, whereas another manufacturer lines only the upper portion of the kettles, to avoid corrosion above and at the liquid level line.

In almost every instance, 16-gage stainless-clad steel has been used for these linings. The material, known as IngAclad, has a layer comprising 20 per cent of the total sheet thickness of 18-8 chrome-nickel stainless steel. This layer is welded to a foundation layer of mild

steel by the patented "cast-in-the-ingot" process developed some years ago by the Ingersoll organization. The clad steel costs approximately one-half as much as solid 18-8 stainless and, therefore, is more economical than the latter for linings.

It will be noted from the accompanying sketches that the lining material is readily adaptable to lining a riveted tank, although a welded tank would require less fabricating work.

In laying out sheet sizes for a lining, it is well to confine the sheets to one size insofar as possible, as this will result in maximum economy in purchasing the stainless-clad steel. The more individual sizes, the greater will be the cost. To overcome fit-up difficulties, lap welds are used throughout as indicated in sketch A. A 1-inch lap is suggested.

Butt-welded tank construction can be stainless-clad lined, using lap welding throughout. For lining riveted structures it is advisable to attach formed strips over riveted seams to avoid a gap between the lining and the wall of the structure. See sketches B, C and D.

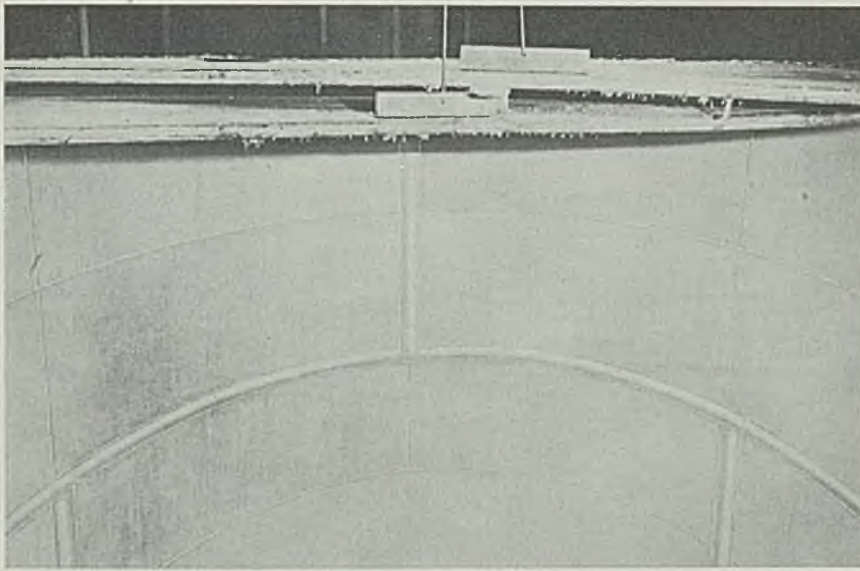
## Sheets Spot-Welded To Wall

In using stainless-clad sheets it is not necessary to roll the sheets to the radius of cylindrical structures. Sheets of these thicknesses can be pushed into place manually. Flanging over angles at the top of open tanks can be done after the top sheets are in position. See sketch B.

As sheets are placed in position, they are spot-welded to the wall of the structure. They should be attached around the top of the tank first and then each succeeding course applied, working downward. This procedure makes most desirable welding conditions.

Electric metallic arc welding must be used. Motor generator welders





Section of soap kettle lined with 16-gage stainless-clad steel, showing lap welded seams and method of forming strips to cover existing rivet heads

of 50 to 300 amperes capacity have proved satisfactory. All welds not exposed to corrosive media may be made with mild steel welding rods of  $\frac{1}{8}$ -inch diameter, preferably. Exposed welds subject to corrosion in the vessel should be made with 18-8 chrome-nickel or higher coated welding rods of  $\frac{3}{32}$ -inch diameter. About 300 inches of weld may be expected from a pound of a good  $\frac{3}{32}$ -inch rod of this analysis. For stainless welds, welding amperage must be high enough to give good arc characteristics, but not so high as to cause overheating of the welding rod with its resulting deleterious effects.

Vertical welds are made easily provided proper amperage is used and short arc is maintained. If the walls of an old structure are rusted severely, it is desirable to grind or chip the rust away where the welds are applied to provide an uncorroded base.

Lined structures should be free from grease, dirt, scale, oxides and other foreign matter to assure best results. Oxides and discoloration in the weld area may be removed by pickling with an acid solution, but in many cases conditions do not demand pickling after installing the lining.

#### Cost Depends on Material, Labor

The cost of a stainless-clad steel lining depends chiefly upon the cost of the material and labor. Stainless-clad steel costs from 45 to 55 cents per square foot in 16-gage thickness, depending upon quantity of sheets required. Labor costs vary considerably with the design of structure being lined, as well as with local labor conditions. Figures taken from a recent kettle lining installation may serve as a guide for other

similar jobs which will be undertaken in the future.

In placing a lining in a soap kettle of riveted construction 12 feet in diameter and 10 feet deep, 100 man hours were required. This included time and labor to move material to the job, erect scaffold, form sheets and strips over rivets, weld and clean.

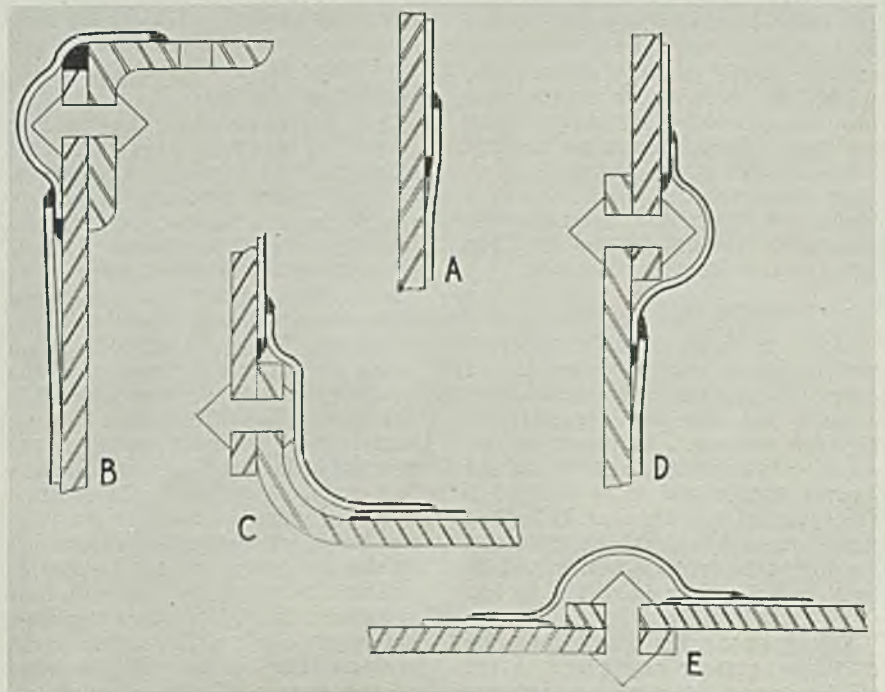
This general procedure is, of course, flexible and may be applied to old or new tanks, kettles, vats or hoppers, regardless of whether they are cylindrical or rectangular in shape.

## Redesigns Welded Steel Heating Boilers

Bass Foundry & Machine Co., Fort Wayne, Ind., has redesigned its line of welded steel boilers for use in heating systems. The new boilers have special grate assembly which may be installed or taken out after the boiler has been set up, thus making the boiler adaptable to any type fuel. In the new design heated air is mixed with the gases of combustion at the hottest point in the boiler, promoting complete burning of the gases. A scientifically designed refractory arch prevents the burning gases from coming in contact with the water cooled surfaces of the boiler until these gases have been completely burned and their heat energy released. An anti-priming plate prevents water from leaving the boiler with the steam, thus maintaining a stable water line and preventing possible siphoning of the water from the boiler. The company now is working on a complete residence series of boilers.

## Totals Should Be Revised

In tabulating iron and steel company by-product coke plants in the Jan. 11 issue, page 48, an error was made in the totals. The total number of ovens should be 10,020, the annual capacity of coal 73,213,025 net tons and the annual capacity of coke 52,900,410 net tons.



Sketches illustrating welding detail involved in installing sheets of stainless-clad steel as tank lining. Note how formed strips are placed over rivet heads

# WELDING, etc.

by Robert E. Kinkead

## Success in Welding is the Old Story—Hard Work

RECENT appointment of a new welding engineer by one of the leading welding rod manufacturers calls attention to the fact young men of spirit and determination do get ahead in the world in spite of the difficulties. This particular man we know started out in life from high school as a mail room boy in the plant of one of the electrical manufacturers. He pestered everyone in the place, including this writer until he went into the welding school. He stayed there about four times as long as the usual student, but he found out what it was all about. Then he set to work pestering everyone who had anything to do with the matter to send him out as a demonstrator. He worked at that job for several years. He was not particularly brilliant but he was always there on the job and always ready and willing to work. Finally a manufacturer who wished to build boiler drums took him on as welding engineer. With his usual thoroughness he went at that job and made a success of it. Now recognition of his ability by a leading welding rod manufacturer means he has one of the fifty top jobs in the welding industry.

### Training Not Necessary

From 18 to 38 is twenty years—and this man worked every day of every year. He started from scratch and was never fired from any job he held. Assuming an average year's pay to be \$1500, he has earned \$30,000 and is probably better educated for life than if he had gone through a technical college. He might have done better had he been technically trained, but he has done well as it is.

Young gentlemen who are having difficulty getting any place in the welding industry whether they are technically trained or not would do well to ponder these facts. We do not know that this man had any

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

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particularly fancy curves, but he certainly stayed in every game and pitched. Perhaps that is more important than making the ball do tricks.

## Welding Low Alloy Steels

GOOD welding quality is being obtained in some, but not all, of the new group of low alloys being used for weight and costs reduction. Excessive air hardening is an undesirable quality if the metal is to be welded. Too much gas evolution at fusion temperatures results in porosity.

But assuming that the welding properties of a new alloy under consideration for a structure are satisfactory, there are other matters which require more careful attention than would be necessary if low or medium carbon steel were to be used. Warping, for instance, tends to increase as the thickness of metal decreases. Warping of a built up beam section in the direction of the load may be equivalent to preloading the beam. Eccentricity of a built up and welded column reduces the amount of load the column will safely carry. Further, consideration must be given to the fact the plastic range of deformation of most of the low alloys is of the order of one-half that of the common low carbon steels. Wide range of plastic deformation is a safety factor which compensates for lack of knowledge of the degree of stress concentration at critical points. Ordinary low carbon steel is a safe reliable metal because of this wide plastic

range. Use of the low alloy means that a more accurate knowledge of stress concentrations is necessary.

Far from being arguments against the use of the low alloys, the above statements are made to indicate there is sufficient knowledge of the problems involved to make the use of these remarkable metals entirely safe. Paying twice as much for one-half the amount of metal is an even stand off.

## Warping in Welded Parts

ALL it is necessary to know about deformation of welded assemblies can be written on the back of an envelope for anyone to do as well with controlling the situation as well as it can be controlled with the present state of the art of welding.

Equal weights of weld metal applied so as to oppose each other before the yield point is reached will produce an equilibrium of forces with no misalignment. This is a problem of design and sequence of welding operations.

Weld metal will always contract and exert a system of forces. If the parent metal is completely inhibited from motion, both the parent metal and the weld metal will be stressed until an equilibrium is reached. If this equilibrium results in exceeding the yield point, there will be very little warping when the inhibition to movement is removed. The simplest application of these principles is illustrated when the welding operator holds the assembly on a stiff slab or floor plate to keep it from warping.

Structures which have more welding on one side than on the other may be straightened by application of heat and subsequent contraction or by application of mechanical force to exceed the yield point. These principles are simple. In their application the welding man will learn something new every day.



## Whitey Sez:

*"Monkeying with welding electrodes of an unknown analysis is a bad practice. It's bound to lead into complications all along the line — and in the end, runs away with not only time and money...but frequently a customer."*

\* THE CAGE BARS  
ARE THE REAL McKOY!

MAURATH, INC., CLEVELAND  
BUILDER OF BETTER WELDING ELECTRODES IN ALL ANALYSES

February 1, 1937

# POWER DRIVES

## Removing Seized Shafts

**R**EMOVING "seized" shafts for replacement because of worn bearing surfaces often presents unusual problems, either because of this inaccessibility or the lack of capacity of the arbor press. With hubs of moderate bore and length the cutting torch usually offers the quickest and most economical solution.

An unusual application, in which the pin to be removed from a large sprocket measured  $4\frac{1}{2}$  inches in diameter by 16 inches long, was beyond the capacity of the 200-ton arbor press and also could not be handled by the cutting torch. The master mechanic had about decided to junk the unit as the shaft bearings had worn so the chain would not run in line.

On the advice of a welding service engineer the oxygen lance was applied. The plant welder used 152 cubic feet of oxygen to cut out the pin which was then removed in the arbor press with 3 tons pressure. A new pin was immediately installed and the old sprocket replaced in service. Removing the old pin required  $1\frac{1}{2}$  hours, including preparation time. Obtaining a new sprocket would have required at least 2 days.

♦ ♦ ♦

## Guards for Men and Drives

**S**AFEGUARDS are primarily designed to protect the workman but also have a function in protecting the drive or machine. A guard on open gears, for example, keeps hands out and also wards away stray or flying pieces of metal or the proverbial monkey wrench which might cause serious damage to the gears.

Also, an oiler cannot be blamed for neglecting a bearing if exposed to serious accident hazards while performing his duty. Safety codes and insurance inspections require that such dangerous hazards be pro-

tected. At the same time the assurance that the bearing or equipment is serviced regularly prevents unnecessary maintenance later. Any change to a better method of lubrication, which permits servicing from a safe distance (such as pressure or automatic systems), or the use of antifriction bearings, which require only periodic attention, are also safeguards to the equipment.

To obtain full advantage of this dual function of safeguards to men and machines, including the drives, necessitates care in original design and construction.

♦ ♦ ♦

## A Layout Drafting Kink

**M**ANY plants make a practice of drawing up layouts of machines, electrical circuits, and air, water and gas lines. It is often desirable to put all of these on one tracing. This, however, "piles" so many lines across each other that minor changes, which ordinarily should not necessitate redrawing, cannot be made because of the large amount of erasing and redrawing necessary.

Draftsmen in one plant put the layout of machines on one side of the tracing cloth and draw the feeder lines on the back. Then either can be changed without interfering with the other.

When working on the back, the "bottom" of the tracing is placed at the top of the board. Thus the draftsman draws from left to right as usual but works upside down and backwards. The machines laid out on the other side of the tracing help him keep his bearings. Ordinarily few, if any, dimensions are used. These must be lettered backward.

♦ ♦ ♦

## To Make or To Buy

**B**EFORE the depression many plants had come to realize that the repair shop for electrical and

mechanical equipment was not a manufacturing plant and purchased and carried in stock standard repair and replacement parts. Making up a part was resorted to only in emergencies.

To a considerable extent the depression changed this. Parts were made because authorizations for purchase were restricted. Few plants carry sufficient varieties of materials for all purposes and, therefore, in many cases the part was made from whatever was on hand. Frequently the cost, especially considering shorter life and greater trouble, had exceeded that of a standard replacement unit.

With increased plant activity many plant engineers will profit by returning to the former practice of stocking and using standard parts for replacement and repair work.

♦ ♦ ♦

## Belts As Safety Links

**T**HE ability of a belt to slip is sometimes an advantage. On machines liable to sudden stoppage due to executive feeding, improperly inserted material or accidents, the ability of the belt to slip and run off the pulleys prevents more serious damage to the machine or tool. Thus the belt is a safety link.

Where belts are to be used as such safety "fuses," the pulley should be without, or with a minimum, of crown so that the belt will run off more quickly. To prevent the belt from catching, ample space is necessary on the shaft between pulley and bearing.

With the development of electrical control and safety features, as well as of mechanical safety break pins, the use of a belt for this purpose is not so necessary as in times past.

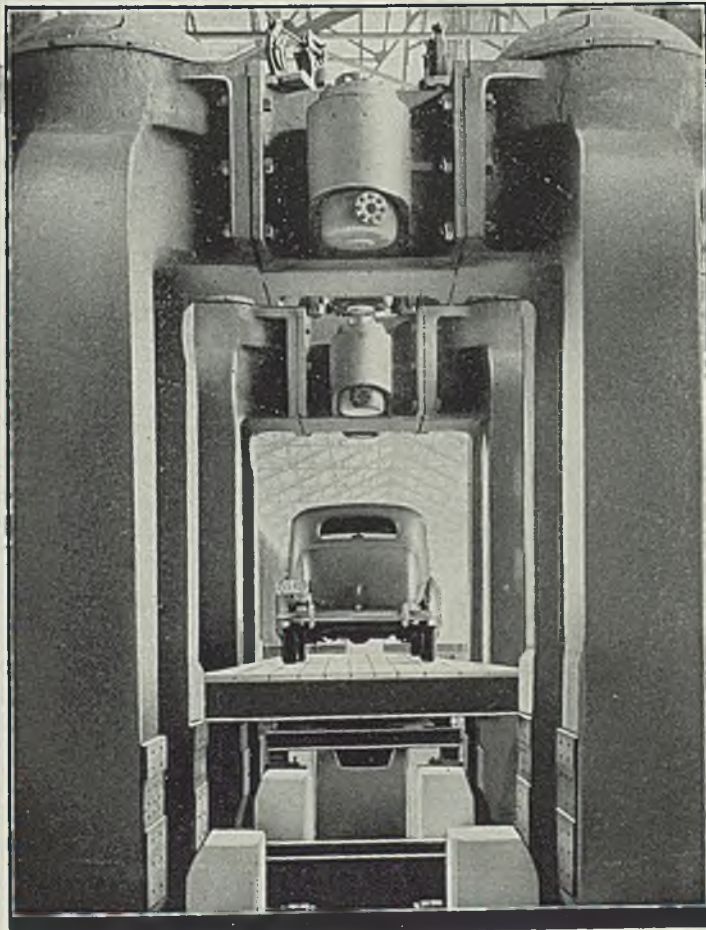
♦ ♦ ♦

*Starting the lubricant on its way to a bearing is only the first step; the lubricant must get to its destination to serve its purpose.*



# NEW GIANT MILLS

*Produce* . . . A WIDER RANGE  
OF FINER STEELS



*Granite City Steel Company* is now operating one of the largest continuous mills in the United States. A large investment in new buildings and latest-type equipment enables this company to increase the quality and range of its steel products, with *better service for all customers.*

With new equipment replacing the old, qualities are more closely controlled. Plates and sheets have greater strength-for-weight, more uniformity, better finishes and more accurate gauges.

Better steel and better service for the Mississippi Valley, the West, and the Southwest.

*One of the largest continuous mills in the United States*

**GRANITE CITY STEEL CO.**

**Granite City, Illinois**

**GALVANIZED SHEETS**

**STEEL SHEETS**

**PLATES AND**

**TIN PLATE**



# PROGRESS IN STEELMAKING

## Protects Metallic Surface

Thermatically processed oils are the basis of a recently marketed waterproofing liquid. The material is designed to prevent the oxidation of metals and serves as a protective coating for iron and steel in warehouse or in transit to the ultimate consumer.

♦ ♦ ♦

## Fuel Consumption Is Low

Seamless steel tubing with walls ranging from 3/32 to 1/8-inch thick now is being annealed and normalized in a continuous roller hearth furnace on an average consumption of 815 cubic feet of natural gas per ton, based on a two-month operating period. The furnace, 88 x 6 feet inside the brickwork, is fired through 66 nozzle-mix burners in five zones,

each zone being fired over and under the work from each side to provide uniform temperature distribution. Material in transit through the furnace is carried on 29 cast alloy rollers. Hot rolled tubing has no visible change in surface appearance; cold drawn material has a tight, thin scale. Because of the uniformity of the scale produced, no scale pattern is formed in pickling—a decided advantage in the manufacture of cold drawn mechanical tubing. Maximum production has reached 224 net tons per 24 hours or 9.33 tons an hour.

♦ ♦ ♦

## Develops Signaling Device

Nonsynchronous trumpet blasts are made to penetrate noises in shops, warehouses, rolling mills, power plants, etc., by a new signal-

ing unit intended for paging or coding in iron and steel plants and iron ore mines. The mechanism is enclosed in a cast-iron weatherproof housing and has concealed terminals in a compartment equipped with three 1/2-inch threaded conduit entrances. A swivel arrangement on a mounting bracket permits pointing the horn in any direction.

♦ ♦ ♦

## Output Surpasses Rating

All air used for combustion in slab heating furnaces serving an Ohio broad strip mill is preheated to about 650 degrees Fahr. in twin recuperators equipped with carbo-frac tubes. This arrangement affords high thermo conductivity, freedom from cracking and spalling under rapid temperature changes, high physical strength, speed of raising air temperature and complete inertness to furnace gases. Maximum production per hour from one furnace so far has been 75 gross tons of steel heated to the rolling temperature. Average output per furnace per hour under normal operating conditions is about 50 tons. Maximum fuel consumption since initial operation is 85,000 cubic feet of natural gas per hour per furnace. Draft loss across the recuperator under this condition is 0.5-inch water column per hour.

♦ ♦ ♦

## Open-Hearth Charging Boxes Made of Alloy Steel

*SOLUTION to the problem of breakage of steel charging boxes has been found in the use of a special design of head and a box made of alloy steel. A steel company, which frequently had been having trouble with breakage of boxes in charging heavy grades of scrap, placed in service a trial lot of 20 boxes made by the Union Steel Casting Co., a subsidiary of the Blaw-Knox Co., Pittsburgh. The boxes, provided with special heads, were made of Univan steel, a nickel vanadium composition which has been used for many years in locomotive main frames and crossheads, rolling mill pinions, and other heavy-duty applications. Later the steelmaker added 180 alloy boxes making a total of 200. After 15 months of usage, none of the alloy boxes cracked; some carbon steel boxes bought at the same time, however, cracked all the way through the pan. A total of 60 charging boxes of this type recently was placed in service at plants of three other steel companies*



## Reveals Defects in Steel

Standard mercury tube lights in combination with incandescent lamps are employed at the small bar inspection benches of an eastern producer. The mercury lights operate on 25-cycle current and the incandescent lamps on direct current, both affording from 15 to 20 foot candles on the inspection tables. This type of lighting reveals any hair crack flaws in the steel. With the lighting system formerly used the inspectors complained of headache and eye trouble by midafternoon but under the new system of lighting their efficiency is unimpaired even at the close of the turn.

# Unobstructed Floor Space And Other Novel Features Distinguish New Plant

**A** NUMBER of unusual features are reflected in the construction of the new assembly building of the Boeing Aircraft Co., Seattle, designed and constructed by the Austin Co., Cleveland. Floor space of the building, 204 x 304 feet, is entirely unobstructed to a height of 35 feet. This distinguishing characteristic was provided by the installation of seven 44-ton, flat type trusses, each 204 feet long, for supporting the roof structure. Each is designed to sustain a live and dead weight of 250 tons. The intermediate roof structure includes 66 trusses, each 50 feet long and spaced at 20-foot intervals between the main trusses.

This unobstructed floor space permits simultaneous assembly of nine 4-engine Boeing YB-17 army bombers, weighing 16 tons each. They are the largest land planes ever built in this country. The building also is suited for assembly of the large new Boeing clipper ships which now are under construction at the company's main plant. The new plant is approximately a mile from the main plant, being adjacent to Boeing field, Seattle. Parts which are too bulky to be transferred from the main plant by truck are transported on barges through the Duwamish waterway and to facilitate receipt of such shipments the new assembly plant has a 50 x 75-foot barge dock. The new plant also is served by a railroad spur.

## Work To Include Final Assembly

Work carried on in the new building will include final assembly of the component parts of the planes, including wings, control surfaces, landing gear, tail wheels, installation of flight controls, electrical equipment and wiring, running of conduit and fuel and oil tubing and nacelle and cowling installations. To handle motors and other parts,

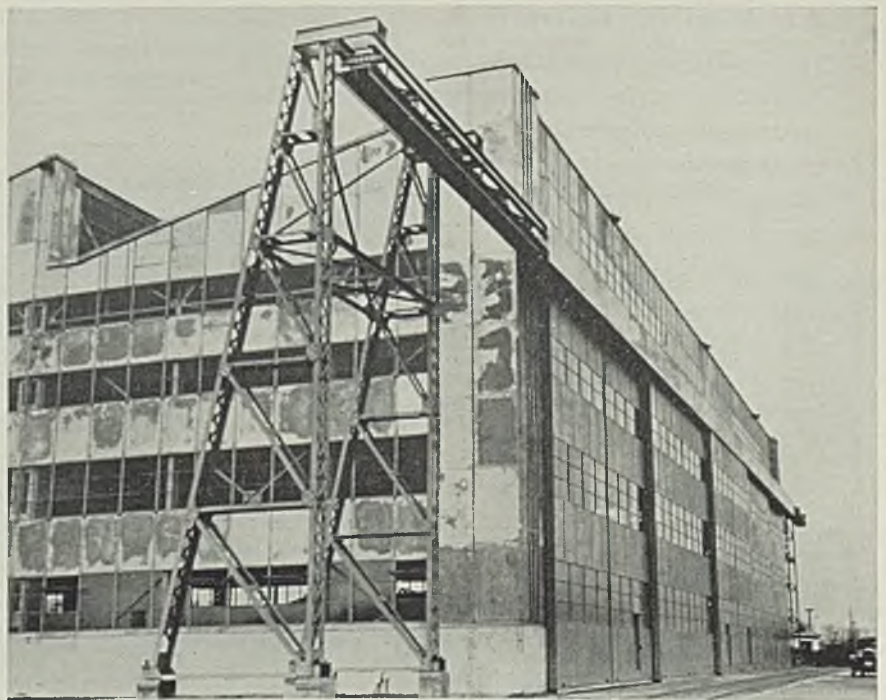
a monorail system will be suspended from the roof trusses in such a way as to be readily adjustable to meet any set of requirements. A frame catwalk along the sidewalls just below the trusses gives access to the framing so that adjustments can be made and lighting facilities can be cleaned or bulbs replaced. The roof trusses, described above, were designed to minimize the height of the building, an important factor in view of the proximity of the building to the airport.

The roof is of the saw-tooth type, affording ample daylight. Ventilating transoms, each 200 feet long,

are located in each of the five saw-tooth monitors of the roof. They are operated by motor driven tension type units, with push button controls at the floor and with limit switching for automatic stopping at the closing point and full opening. Control buttons also permit them to be stopped at any desired intermediate opening. General illumination inside the building is provided by eighty-four 750-watt lamps arranged in diamond patterns, with lights spaced every 30 feet in rows across the building and with 25 feet between rows, in line with the bottom chord of the roof trusses. This artificial lighting provides 16-foot-candle intensity at the bench level throughout the building. Lighting for concentrated work is provided by special fixtures on jigs and portable working lights fed from the floor outlets.

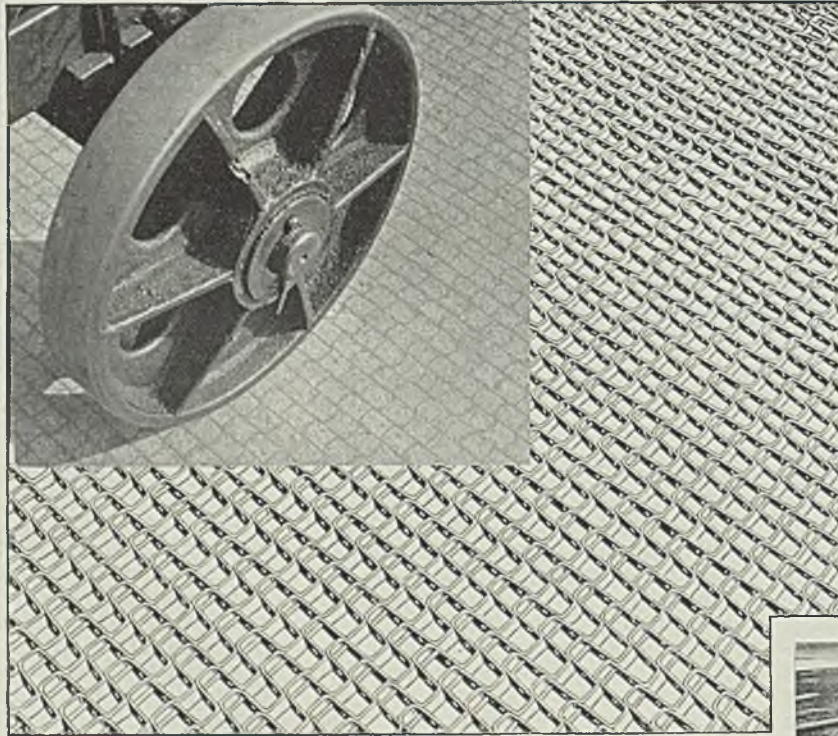
## Base Portions Are Brick

The base portion of the rear and sidewalls of the building are brick, 6½ feet high and 8 inches thick. The remainder of the siding consists of two thicknesses of galvanized steel sheet with a 1-inch layer of insulating material between calculated to afford temperature protection equivalent to that of a 12-inch brick wall. Although the building is complete for present requirements, it was designed with a view to possible future expansion in any or all of three directions. To facilitate future expansion, bolts have been used to attach steel girts



"Front door" of new airplane assembly plant is 195 feet wide and 35 feet high and is made up of ten 20-foot steel doors which operate on an outrigger track system so that the whole front of the building may be thrown open

# A NEW Floor



*Permanent Flooring  
Economically  
Installed*

*Rolling Acme Floor-  
steel on sub-floor in  
sections, joined by pins  
into one continuous  
mat. Filling material  
is then placed and  
troweled.*



## 8 YEARS AGO and as good as new today

### *A testimonial by the manufacturer*

The steady flow of tow trucks heavily loaded with Acme Superstrip made frequent floor repairs necessary at our plant at Riverdale, Illinois. After trying practically all types of floors and reinforcing materials, we developed one of our own—and named it Acme Floorsteel.

That was eight years ago. Today our floors show little wear—floor maintenance costs have been eliminated and substantial savings effected. Since then Acme Floorsteel has been installed in hundreds of other plants where floor problems are now permanently solved.

For new buildings as well as for the improvement or repair of present floors, Acme Floorsteel is easily

and economically installed. Imbedded (flush with the top of the floor) in concrete, asphalt or other suitable floor surfacing material, the small mesh in combination with light sections of cold-rolled steel provides floors that remain smooth and even during the life of the building.

Acme FLOORSTEEL is designed to take the brunt of rolling loads. It makes possible a permanently smooth, quiet and non-skid surface. It is shipped in standard one-piece rolls 47½" or 60" wide and 25 ft. long. Special sizes furnished at no extra cost. Mesh is 1¼" x 1¼"—⅝" deep formed of strip steel .065 in thickness. Investigate how little Acme FLOORSTEEL costs in terms of years of protection. Write for complete information and free sample section today.

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ACME FLOORSTEEL  
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to the columns around the three sides and to attach steel sash and insulated siding to these girts. There are four continuous bands of horizontal steel sash surrounding the building on all sides, including the steel front doors. Chain operated transoms in the sidewall sash supplement ventilation through roof transoms. In all, there are 22,100 square feet of glass in the building.

The front door is 195 feet wide and 35 feet high, made up of ten 20-foot steel doors operating on an outrigger track system in order to lay open the entire front side of the building. Despite the extreme size and weight of these doors it is possible for one man to roll them open. It also is of interest to note that the 8-foot steel fence which completely encircles the plant is provided with a 200-foot gate opening which is located directly in front of a 100 x 209-foot concrete apron at the front of the building to facilitate receipt of materials and the movement of the assembled planes to the adjacent airport. The gate opening is served by two 100-foot steel gates that roll across a concrete track and thence along suspended rollers until the maximum opening is reached.

#### Service Facilities Accessible

Extreme accessibility of service facilities throughout the floor area is an outstanding feature. Electricity, steam, compressed air, water and gas lines enter the building through a large underground concrete tunnel leading from a nearby power house. Six tributary tunnels branch from this main tunnel beneath the floor with access openings every 20 feet and outlets for electricity and compressed air every 40 feet. The main tunnel is 360 feet long, 7 feet wide and 6 feet 9 inches



Electrical, compressed air and other connections are obtained through access openings spaced at regular intervals throughout the plant. When not in use these openings are covered with cast iron floor plates

high, located alongside the building just outside the building line, so that its concrete roof would be flush with the adjoining floor if the building should be expanded in that direction. Inside the tunnel are a 5-inch steam main, a 3-inch air main, a 4-inch water main, a 1½-inch gas main, a sewer line, telephone lines and conduit for wiring. The smaller concrete tunnels, 15 inches wide and 2 feet high, carry compressed air, electricity and steam return lines.

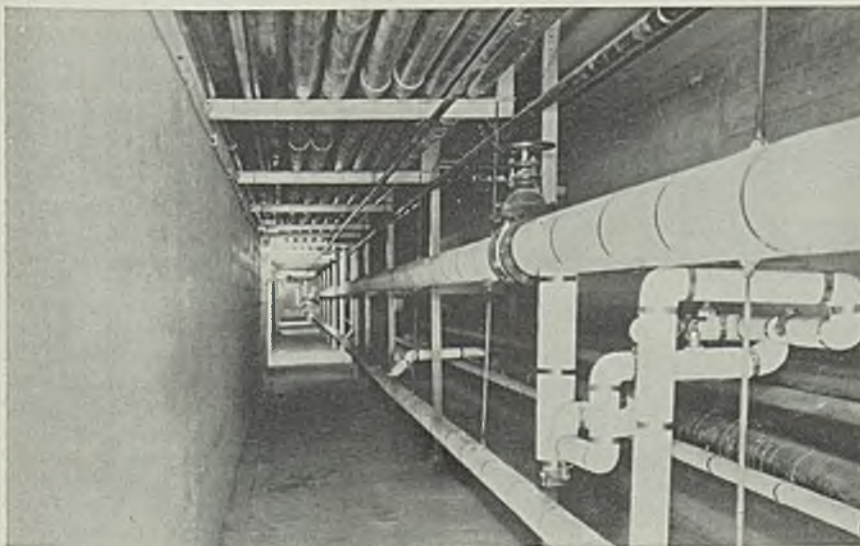
The 30 x 50-foot power house is located just opposite one of the rear corners of the main building in such a position that it would be located centrally in the event of future expansion of the new plant. All switches, oil circuit breakers, disconnect switches, bus bars, instrument transformers, watt hour meters and a graphic recording watt meter are enclosed in a single "dead front switch board" cubicle. Incoming 4300-volt power enters the

power house by way of the concrete tunnel and is led directly to the center section of the cubicle, through main disconnect switches, main oil circuit breakers and 4300-volt bus bars, and to the lighting section of the cubicle at the right and the power section at the left. The lighting section of the cubicle serves three 250-kilovolt-ampere power transformers, reducing current to a 120-208-volt, 3-phase, 4-wire, distribution system. The power cubicle serves two 100-kilovolt-ampere power transformers which step down the current to a 440-volt, 3-phase, 3-wire, power distribution system. When any of the doors to the cubicle are opened, automatic limit switches cause the oil circuit breaker to open, thus killing the current in all exposed conductors. Over-current and under-voltage protective devices trip out the oil circuit breakers in case excessive current or deficient voltage should occur.

#### Power Panel Near Compressor

From the power section of the cubicle, the circuit leads to a power distribution panel stationed close to the air compressor in the power house and to an outlet plug in a corner of the main building where such equipment as arc welders may be attached to 440-volt, 3-phase power. Low voltage current from the lighting transformers is carried by means of three feeders through the main tunnel to three distribution centers on columns on the wall of the assembly building. Each of the feeders is a 4-wire system with three hot and one neutral wires. Through these distribution centers floor outlets are furnished with single-phase, 120-volt current, each floor tunnel containing 10 circuits and each circuit provided with two 20-ampere receptacles for 3-wire polarized plugs, the third wire serving as a ground for drills and electric tools in operation. Plugs are

(Please turn to Page 76)



Electrical, water, steam, compressed air, sewer and sprinkler lines are in a concrete trench 6 feet wide, 7 feet deep and 425 feet long stretching along one side of the building, with smaller lateral trenches leading off into the building

# Texas Metalworking Plant Classifies Country Mixed Scrap in Its Own Yard

**L**OCATED in a territory where so-called "country mixed" is the grade of scrap iron and steel most frequently offered, Alamo Iron Works finds it distinctly worthwhile to engage in the scrap business on a sizable scale at its San Antonio, Tex., plant.

Mixed country scrap available in that district comprises items of great variety, including oil district scrap, automobile motors and parts, old printing presses, scrap cotton compresses, all sorts of agricultural scrap, old beer keg hoops, railroad scrap and many other different varieties which in the iron and steel-making districts of the country would be sorted out by dealers and sold as classified scrap. This mixed scrap is available at a low average price as compared with prices on classified scrap so that the company has found it profitable to set up a complete scrap yard.

## Classification Made

When scrap is received at the yard and unloaded from railroad cars or trucks, it first is sorted into cast iron, steel and nonferrous scrap. The cast is separated into heavy, medium and light grades, and kept for use in the company's own foundry department. The nonferrous scrap also is classified for use in the company's nonferrous foundry.

Steel scrap is separated more extensively. First, all new scrap, mainly steel bars, plates, shapes, etc., is sorted out and transferred to the

raw material racks in the forge and machine shops of the company for use in subsequent manufacturing operations. Short lengths of new pipe scrap and salvaged pipe are sent to the pipe shop to be manufactured into pipe nipples. The scrap yard is equipped with a flue rattler which is used for cleaning boiler tubes, pipe, bars, etc., for further use. It also is equipped with a washer machine which, from old beer keg hoops and other light gage scrap, forms washers for use in connection with bolts up to 1½ inches in diameter.

## Handling Equipment Listed

Scrap yard equipment includes a steel derrick with 75-foot boom for handling scrap. This is provided with a crane magnet. It also operates drops which are three in number and weigh, respectively, 1000, 2000 and 4000 pounds; they are used for breaking up machinery scrap. They fall inside a circular enclosure made of heavy steel plate so as to keep workmen from being struck by flying pieces. Through the use of 12 commodious scrap bins, made from steel plates and shapes, it is easy to store the scrap so that the yard presents an orderly appearance.

Steel scrap is used to some extent in the company's melting operations. It always maintains a stock of structural steel scrap for use in producing semisteel castings in its foundry. It also keeps a stock of sheet steel clippings, steel turnings

and punchings and other steel scrap for use in the cupolas for the production of cheap castings such as sashweights.

Steel scrap to be sold is classified into the usual commercial grades, such as No. 1 and 2 melting steel. Some of it is shipped to export, while much of it goes to such steel-making destinations as Kansas City, Birmingham, Ala., Sparrows Point, Md., etc.

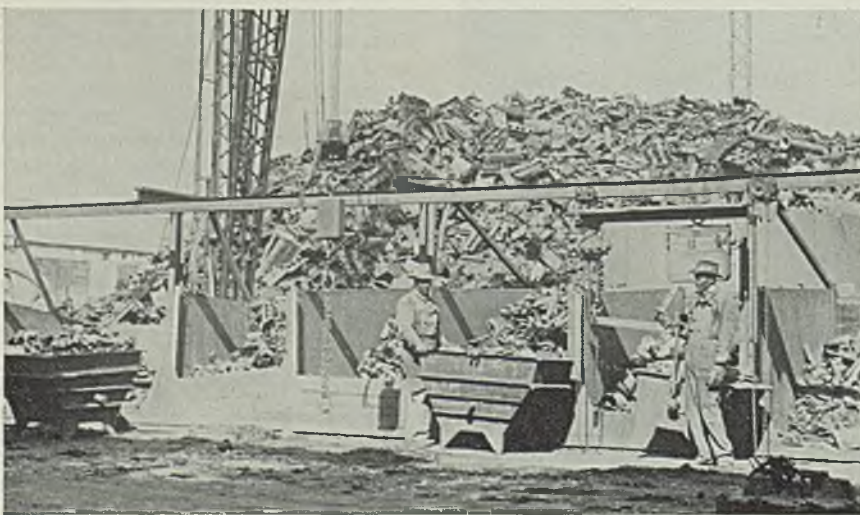
Pig iron also is stored by the company in its scrap yard and all cupola charges are prepared there to the specifications of the melting department. Charges are made up in lots of 2000 pounds each and placed in charging buggies which are mounted on trucks running on industrial railroad track. As required, the buggies are elevated by an electric hoist to the charging floor where they are handled to the cupola charging door by a lift truck.

In addition to the profit resulting from the operation of the scrap yard, the company enjoys another decided advantage. By handling a large quantity of scrap, it can get at nominal cost a much higher grade of scrap for its own use than otherwise would be the case. Of the scrap that it buys, approximately 75 per cent is sold.

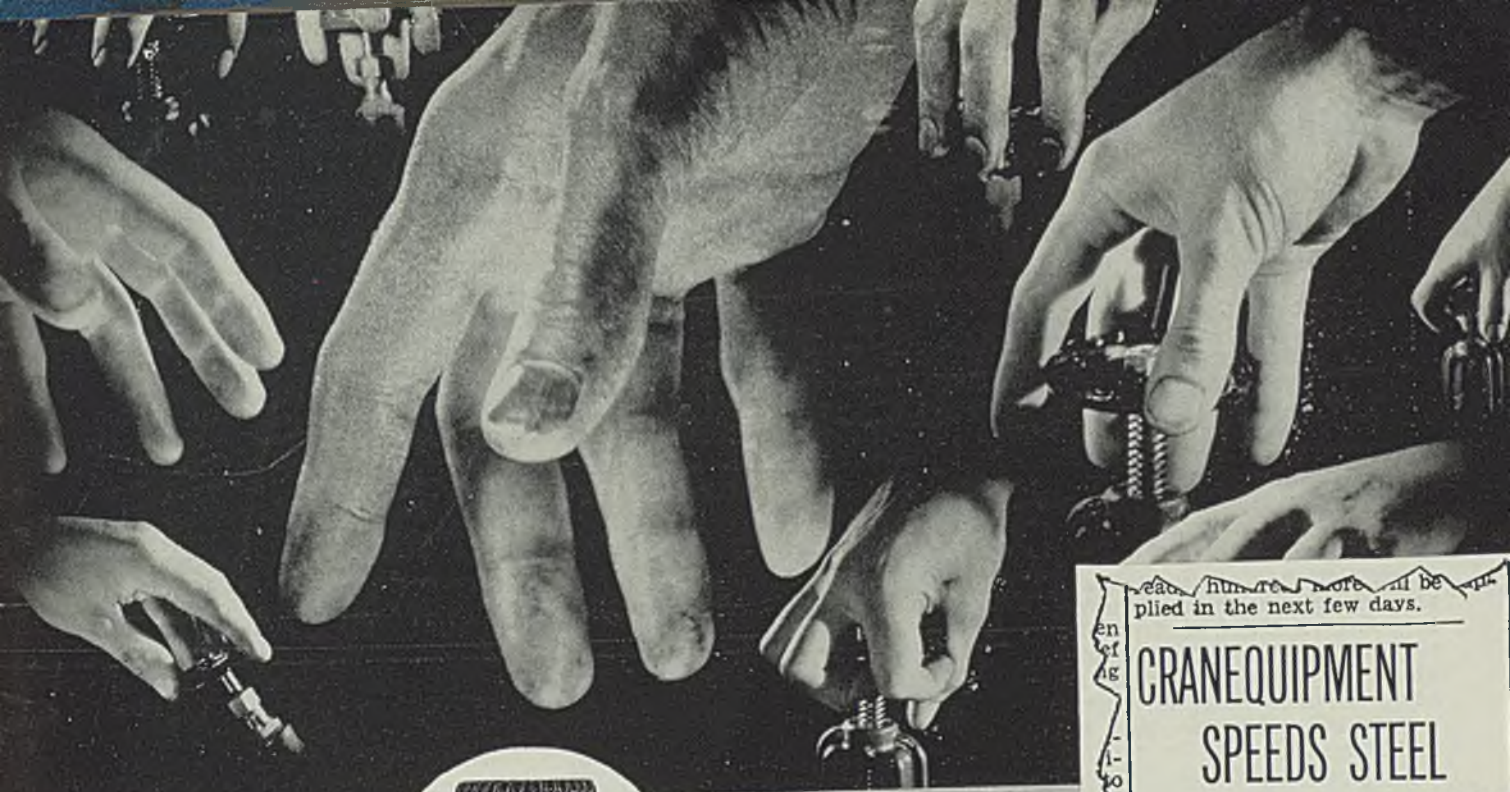
An essential feature of the company's policy in regard to scrap is that it must always be ready to buy all the country mixed scrap offered, and at a fair price, so as to encourage a constant flow of scrap to its yard. As a rule the scrap on hand at the San Antonio plant of the company aggregates between 3000 and 5000 tons.

## Farm Machinery Must Be Redesigned for Electricity

Very little of the farm machinery in use today is designed to take full advantage of electric power as most of it is designed for horse, tractor and steam and gas engine power, said G. C. Neff, president, Wisconsin Power & Light Co., in an address before the American Society of Agricultural Engineers recently held in Chicago. Farm machinery must be redesigned to fit the new kind of power before real efficiency is obtained and the fullest measure and advantage of the new power is realized. Mr. Neff said he expected that electric power will make the same kind of revolution in farming as the internal combustion engine has accomplished in transportation. He warned that the present rush in rural electrification will result in insufficient and poorly planned wiring installations and in badly designed and makeshift devices and that careless expenditures might necessitate later costly corrective measures.



The various grades of scrap iron and steel and pig iron are stored in classification bins. These are provided with a traveling scale for use in making up cupola charges which are loaded in charging buggies for transfer to the cupola department



*Big hands..... Little hands*  
*Lean hands..... Fat hands*  
**TWIST AND TURN TO FIND THE RIGHT VALVE WHEEL!**

Big-handed shop men . . . skinny little men . . . sinewy outdoor men . . . men with "bay windows" . . . left-handed and right-handed men . . . stepped up to the valves that Crane was testing. One by one they turned those valves, while laboratory watchers measured the "pull" that each exerted.

Why? By that test, Crane learned things about valve wheels, valve stems and valve design that helped to make better Crane valves for you.

Details aren't merely details—to Crane. No problem is too small—or

too big—if its solution promises to make a Crane valve better. For 82 years Crane has tested the details of valve construction and operation in the factory and in the field.

For most "new" valve problems Crane has a solution, proved and ready for use. Look in your Crane No. 52 Catalog for the details regarding 38,000 items, tested in the laboratory and in the field. Use it whenever you need valves, fittings, pipe or accessories. CranEquip for satisfaction.

# CRANE

CRANE CO., GENERAL OFFICES: 836 S. MICHIGAN AVENUE, CHICAGO, ILL.  
*Branches and Sales Offices in One Hundred and Sixty Cities*  
 VALVES, FITTINGS, FABRICATED PIPE, PUMPS, HEATING AND PLUMBING MATERIAL

eat. hundreds more will be supplied in the next few days.

## CRANEQUIPMENT SPEEDS STEEL PRODUCTION



PITTSBURGH, PA., Jan. 18—When furnaces and mills are being strained for top production, as at present, the CranEquip plant stands the gaff in a way that brings joy to a steelman's heart.

That's because Crane valves, fittings and piping accessories are built with such a generous extra strength that they can take heavy, continuous operation in their stride.

Many of the Crane products now used so actively have stood guard through the long shutdowns without damage or deterioration. In fact, the CranEquip plant has many advantages gained through buying the highest quality from a single source. Inventories of replacement parts can be kept at a minimum. Crane branches and distributors carry such complete stocks of valves needed around furnaces and mills that emergency equipment can be obtained in short order. Responsibility for service is clearly defined.

Begin to CranEquip your furnaces and mills now. Crane has the valves and fittings you need for every service from blast furnace to inspection bed. Power plants, blowing room stoves, by-product department open-hearth or Bessemer furnaces, blooming and finishing mills—anywhere and everywhere you can use CranEquipment and know that you can get no better.

See Crane Catalog for Details

Your Crane No. 52 Catalog gives you the details of 38,000 items. Use it to make up your requisitions in every department. If you have a special problem or need additional information, call Crane. CranEquip

# Parking Meters of Metal Construction

## Show Rapid Growth in Popularity

**L**ARGE quantities of metals are consumed as a result of the installation of parking meters in the congested sections of many cities. When the motorist parks his car along the curb, he drops a nickel in the meter at the edge of the sidewalk and this entitles him to the use of the space for periods ranging from 20 to 60 minutes, depending on the location.

Installation of these meters has progressed with particular rapidity in Southern cities, such as Houston and San Antonio, Texas, Miami, Fla., and numerous others. Many additional cities have arranged for their installation or have such moves under consideration.

As gatherers of income for the municipal coffers, the meters are said to be highly effective. Houston, Texas, ordered 1400 of them and by the time 1000 had been installed, they were taking in an average of \$400 a day.

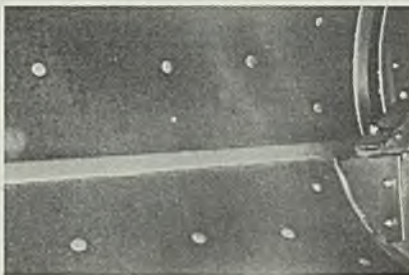
### Meters Similar in Design

In general, these meters are of approximately similar design and construction. That shown in the accompanying illustration, made by the Parkrite Corp., Houston, Tex., has an aluminum, sand-cast base provided with reinforcements which lock into a concrete foundation. The standard is a 2-foot length of 2-inch steel pipe. The meter housing, which encloses a coin and timing mechanism and shows the time elapsed since the coin was deposited, is an aluminum alloy die casting. The meter is equipped with a

red flag which automatically is elevated after the allowed time has expired. The arrangement on which these meters is sold is that payment for them is to come entirely out of their earnings.

## Rubber Lining Extends Life Of Metal Tumbling Barrels

Foundry equipment of Perfect Circle Co., Hagerstown, Ind., includes a number of 36-inch mechanical tumbling barrels used for



*Portion of the rubber lining in a tumbling barrel after three years' service*

cleaning light castings. Equipped with  $\frac{1}{2}$ -inch steel liners, average life of the shells was about 13 months and casting breakage more than 2 per cent.

In 1933 the company installed a  $\frac{1}{4}$ -inch lining of Armorite rubber, supplied by B. F. Goodrich Co., Akron, O., for test purposes. This

product is a soft elastic rubber possessing high tensile strength and resistance. It was supplied with a fabric-fiber backing which provided suitable anchorage for the heads of the attaching bolts. In the accompanying photograph is a view of the lining after three years' service. According to the Perfect Circle Co. the lining has been instrumental in reducing casting breakage to less than 0.5 per cent.

## Many Novel Features Are Installed in New Plant

*(Concluded from Page 73)*

of the twist-lock type to prevent accidental detachment.

The heating system of the new plant centers in a 250-horsepower boiler with steam-atomized oil burner. A steam driven pump brings the fuel oil from the storage tank, heats the oil and builds up its pressure for the burner. Compressed air may be used for atomizing the oil when starting the furnace. Steam is carried through the tunnel system to 12 blower type unit heaters in the assembly plant; each delivers 4500 cubic feet of warm air per minute.

A leanto houses lavatory facilities which include five circular wash basins operated by foot controls and each capable of serving 10 men simultaneously. A separate building serves as an employee's lunchroom. Fire protection in the main building is provided by an automatic sprinkler system which includes a 150,000-gallon emergency sprinkler tank that may be called upon in the event of failure of the city water supply. A water pump, driven by a 125-horsepower motor, automatically switches on and pumps water from the emergency tank into the sprinkler system when the pressure in the sprinkler main drops to a predetermined low point.

## Iron and Steel Plants Are Listed in Directory

*Directory of Iron and Steel Plants*, 1937 edition; imitation leather, 456 pages, 5 x 7 $\frac{1}{2}$  inches; published by Steel Publications Inc., Pittsburgh; supplied by STEEL, Cleveland, for \$10, plus 15 cents for postage; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London.

This directory lists all companies operating blast furnaces, steel plants, rolling mills, by-product coke plants, structural steel plants, boiler and tank plants and allied industries in the United States and Canada.

Name and address of the company are given, with its subsidiaries, products, capital, equipment and officials. Each division is also indexed.



*In many cities of the south and west parking meters such as these installed in Houston, Texas, have found an appreciative citizenry accepting them. Constructed largely of metals, the meters indicate by a red flag a car parked overly long*



# NEW EQUIPMENT

## Excavator—

Bucyrus-Erie Co., South Milwaukee, Wis., announces its new 19-B  $\frac{3}{4}$ -yard excavator, which offers easy mobility, compact design, high speed cycle and convenient convertibility features which have made the 10-B popular, according to company claim. The new machine weighs 16 tons and offers a travel speed of 1 $\frac{1}{4}$  miles per hour; a swing



New Bucyrus-Erie  $\frac{3}{4}$ -yard excavator weighs 16 tons and has an air conditioned cab

speed of 4 $\frac{1}{2}$  revolutions per minute; and a hoist line speed of 184 feet per minute. It is available for gasoline, electric or diesel power. A special trailer has been designed for moving the 19-B from job to job. Its air conditioned, streamlined cab provides full visibility and complete ventilation for the operator and also quick accessibility to the main machinery. Narrow overall width and short tail swing of the machine permits operation in tight quarters or close to a wall or bank. Seven types of front-end are available, making it possible to convert this machine quickly and easily to the type of operation best suited to the job. It can be changed from shovel to drag line, clam shell,

lifting crane, drag shovel, skimmer or back filler.

♦ ♦ ♦

## Pyrometer—

Tamms Silica Co., Chicago, has recently introduced a new Pyramid pyrometer which works on the thermo-electric principle and features convenience of adjustment. Calibration is maintained through a thumb screw adjustment on the face of the dial. The instrument is provided with a flexible end, adjustable to 180 degrees. Electrical parts and connections have been enclosed for positive protection. Thermocouple tip for use in obtaining temperatures of either brass or aluminum can be supplied.

♦ ♦ ♦

## Double Seamers—

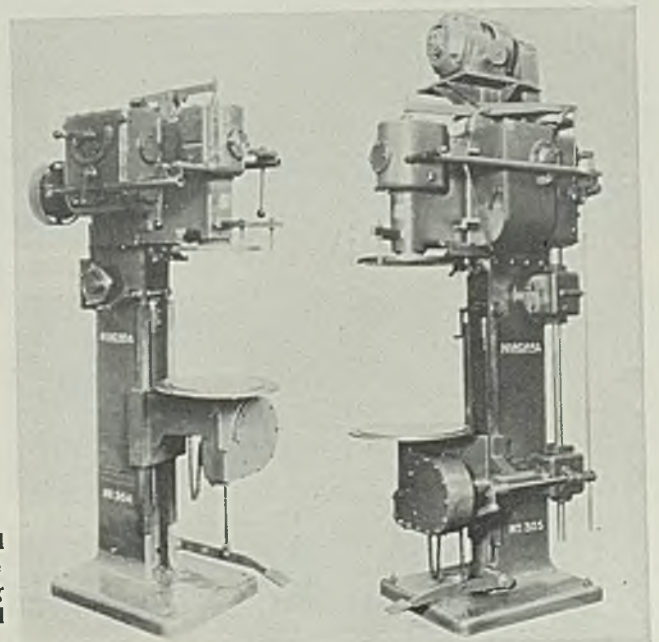
Niagara Machine & Tool Works, Buffalo, N. Y., announces the addition of two new vertical single end double seamers for semiautomatic double seaming of heads in metal containers. One model han-

dles 24 gage, the other 22 gage. Included in their features are variable cams for changing the ratio of feed with which the rolls are fed. Pick-off gears make it possible to vary the ratio between spindle and seaming rolls. Machines are available with or without quick change gears for four speeds.

♦ ♦ ♦

## Pull Rod Jack—

Templeton, Kenly & Co., 1020 S. Central avenue, Chicago, has recently introduced a new pull rod jack for use in oil fields and similar locations where pull rods must be pulled together in a straight line without kinking the rod. The device is known as the No. 436 Simplex pull rod jack and has a capacity of 7 tons. The double chain construction with the central rack bar pull plus the large gripping area of the slips eliminates kinking or bending of the pull rod. Powerful geared mechanism makes it possible to pull the deepest central oil wells with very little effort according to

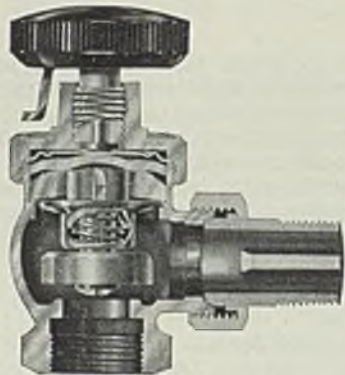


Niagara vertical single end double seamers for closing seams on metal containers

company claims. The jack is furnished complete with 2 8-foot lengths of 5/16-inch special heat-treated chains, 1 30-inch lever bar and 1 set of tooth slips, which are available in four sizes ranging from 5/8 to 1 inch.

◆ ◆ ◆  
**Packless Valve—**

Trane Co., LaCrosse, Wis., announces a new hermetic radiator valve designed for service with convection heaters, radiators or other



New packless radiator valve recently placed on the market by the Trane Co.

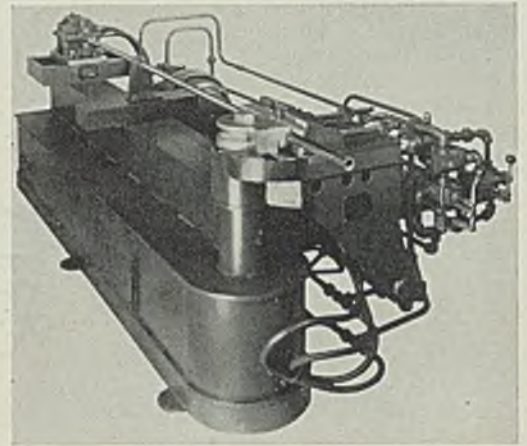
equipment used on 2-pipe vapor, vacuum or steam systems. The valve receives its motion through a sealed diaphragm from a pressure button on the end of the valve stem.

◆ ◆ ◆  
**Wallace Supplies Mfg. Co. has recently introduced this new hydraulic tube bending machine designed for simplicity in operation**

Operating mechanism of the valve works through multiplying levers which increase the travel of the diaphragm more than three times. Valve body is of cast brass with forged brass bonnets and collars. A disk of durable composition closes tightly against a flat raised seat. The standard pattern is provided with a wheel handle of bakelite which is water and heat proof. Other styles are available in the key operated lock and shield pattern, lever handle or wheel and chain type for ceiling installations.

◆ ◆ ◆  
**Bending Machine—**

Wallace Supplies Mfg. Co., 1310 Diversey Parkway, Chicago, has recently placed on the market a new hydraulic tube bending machine de-

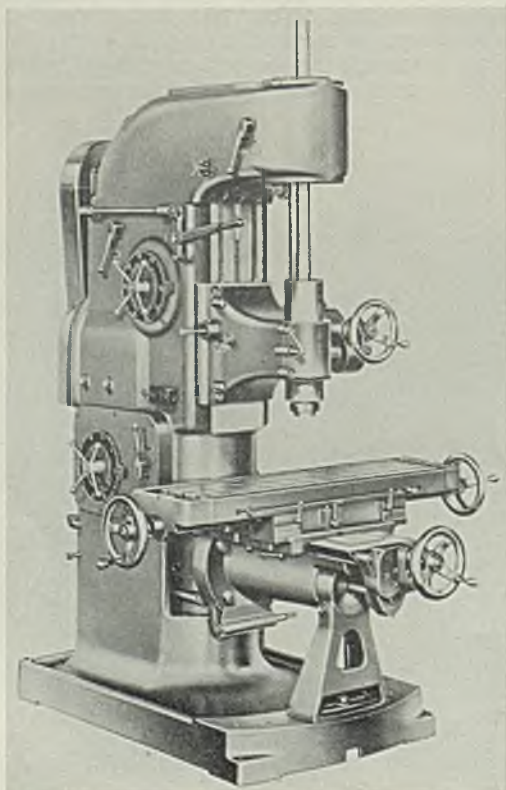


signed with emphasis on simplicity of operation. A single hand lever controls the forward cycle and all subsequent operation up to and including the unloading of the machine. A foot valve is employed for the return of the bending arm. The machine will bend tubing up to and including 2 1/2 inches in diameter. The bending cycle is completely automatic, requiring the operator to load and unload only.

◆ ◆ ◆  
**Milling Machine—**

W. B. Knight Machinery Co., 3920 West Pine boulevard, St. Louis, has recently placed on the market a new universal vertical milling machine designated as the No. 40. Speeds and feeds of the new machine are arranged to meet with requirements of modern practice. The spindle has 16 changes of speed covering a wide range from 40 to 1400 revolutions per minute. A dial is provided to make it possible for the operator to select any spindle speed at a single glance. There are four spindle feed changes ranging from 0.002-inch to 0.010-inch. Spindle has power vertical speed in the spindle head of 8 inches in either direction. Sixteen table speeds ranging from 1/2 to 12 3/4 inches are provided and are controlled by a dial similar to the spindle speeds. Drive is attached to the spindle through a multiple disk clutch and the main drive shaft is equipped with a brake which stops the spindle immediately.

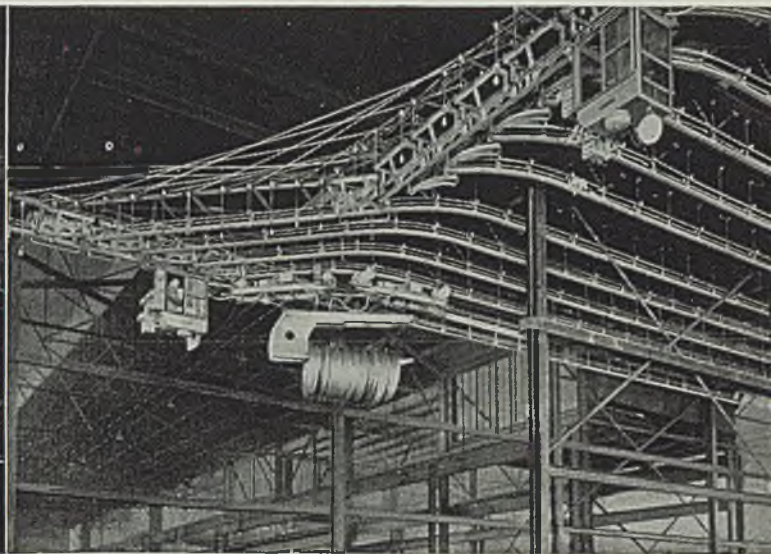
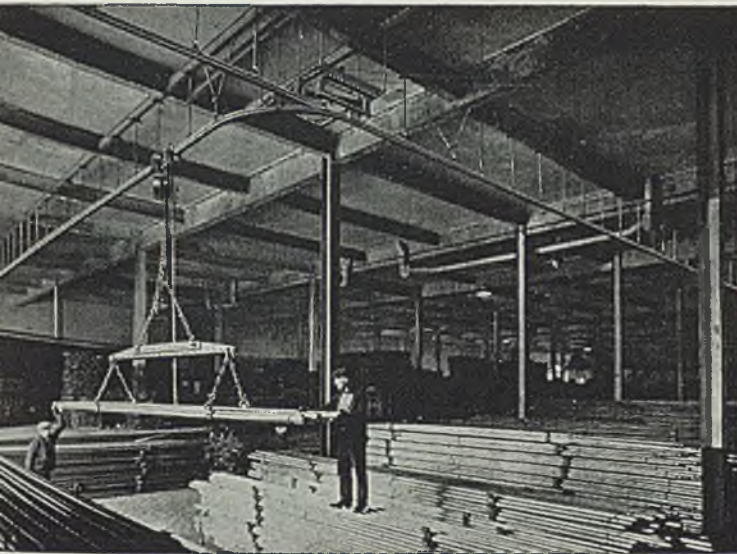
◆ ◆ ◆  
**Knight No. 40 universal vertical milling machine equipped with 16 changes in spindle speeds**



◆ ◆ ◆  
**Hydraulic Hoist Brakes—**

Euclid Crane & Hoist Co., 1361 Chardon road, Euclid, O., has adopted a hydraulic brake for travel movement on the new 10-ton mono-rail electric hoist manufactured by this company. A foot pedal similar to an automotive brake controls this unit. Additional new features embody the use of arc welded struc-

# CLEVELAND TRAMRAIL MATERIALS HANDLING EQUIPMENT

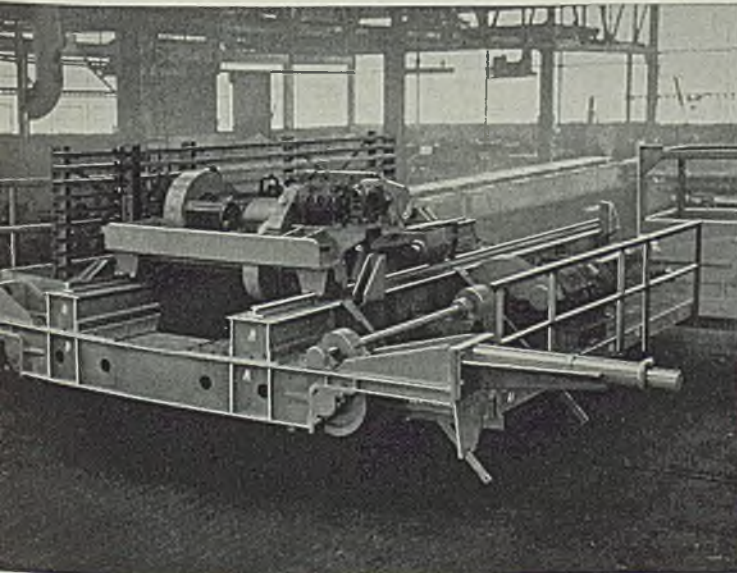


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- For an installation of one length of rail and a hand propelled carrier to systems consisting of miles of rail, dozens of switches, cranes and high speed motor operated units, there is Cleveland Tramrail to fit all industry.
- By reason of their years of progress in materials handling practice the Cleveland Tramrail organization can be of much assistance in your planning.

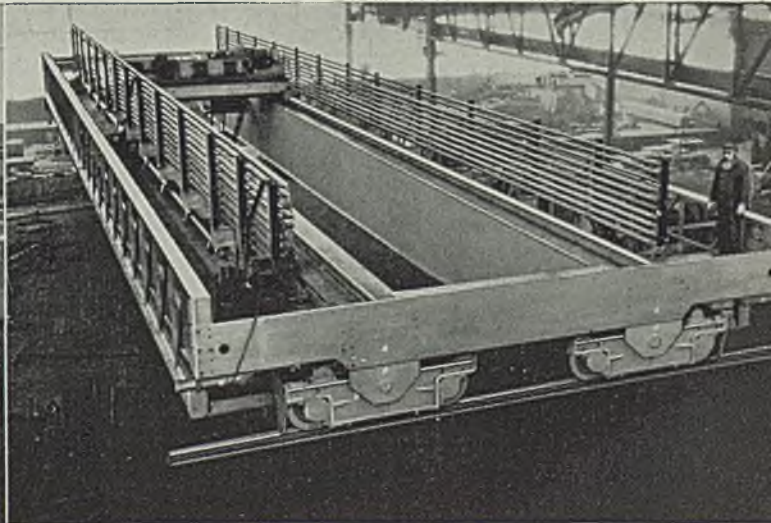
# CLEVELAND ALL WELDED CRANES FOR EVERY INDUSTRY



10 Ton 3 motor 26' Span

All welded cranes were pioneered and developed to their present high efficiency by Cleveland. They are now in service all industry where heavy duty cranes are required.

The Cleveland Crane Engineers can give you, as a purchaser, the benefit of this background of successful progress.



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tural steel for added strength and lightness. Reduction in weight is accompanied by less wear on the new brake unit. The block is fully



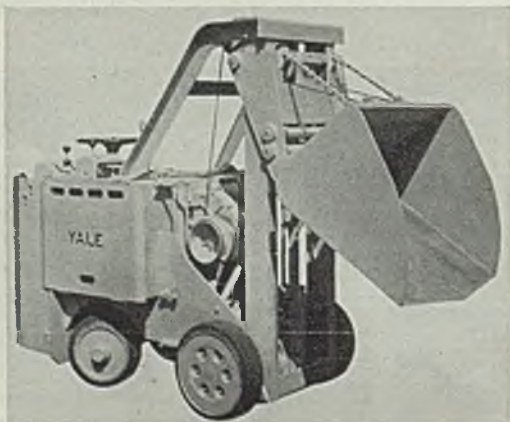
Hydraulic brakes control the movement of this 10-ton Euclid monorail hoist

enclosed and the gear case is split horizontally for accessibility. Roller bearings are used throughout the entire structure, and cable drum flanges are recessed into end plates to add to compactness and eliminate any possible fouling of lift cables, it is claimed.

♦ ♦ ♦

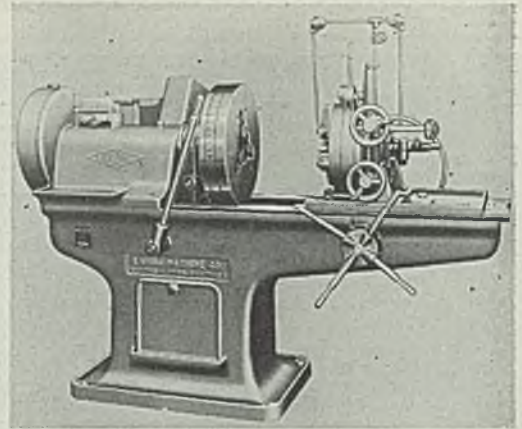
#### Arc Welder—

Dongan Electric Mfg. Co., Detroit, has recently introduced a new alternating current arc welder which has been designed for operation with coated rod. This welder is equipped with a special type of reactor which tends to stabilize the current flow and to maintain the arc under all conditions. Secondary current output is handled by a series of specially designed push and pull switch controls. Switches themselves are fully concealed to reduce danger of damage to machine or injuries to operators. Switches provide a range of precise heat adjustments controllable in steps of 10 amperes. The new machine is being manufactured in four sizes of 100, 200, 300 and 400 amperes capacity. A high



Dumping shovel scoop truck recently announced by Yale & Towne Mfg. Co.

#### Improved pipe threading and cutting machine of heavier design now being manufactured by Landis Machine Co.



frequency generator with which uncoated rod may be used is furnished as an accessory when desired.

♦ ♦ ♦

#### Scoop Truck—

Yale & Towne Mfg. Co., 4530 Tacony street, Philadelphia, has recently designed a new dumping shovel scoop truck which is capable of shoveling into a pile of sand, glass batch, coal and other miscellaneous loose materials, picking up 10 to 15 cubic feet at one shot for transportation to destination where the load can be elevated and dumped at any height. This unit has been designed for easy operation in close congested quarters and is capable of scooping up materials from the inside of a freight car for transportation to point of usage.

♦ ♦ ♦

#### Pipe Threading Machine—

Landis Machine Co., Waynesboro, Pa., announces a new improved pipe threading and cutting machine. The new machine is more rigid and will weigh more than the older type machine which it replaces. Bed has been made heavier and stronger, ways are covered by steel guards attached to the cross-rail and telescoping under the headstock, and wipers are provided to clean the ways at the opposite end. Machine

is equipped with an 8-feed built-in gear box with single pulley drive. Speeds available are 30, 40, 52, 67, 72, 90, 125 and 163 revolutions per minute of the chuck. Speed of the main drive shaft is 425 revolutions per minute. Speed change gears are made of chrome nickel steel, hardened and burnished, and run in oil. Gears are mounted on antifriction bearings of large proportion on heat treated shafts. Headstock sets directly on the bed instead of on raising strips as on the old machine. The new unit has a capacity for threading pipe from ½-inch to 2 inches inclusive, and has a carriage travel of 14 inches. A 3-horsepower motor of approximately 1200 revolutions per minute either alternating or direct current is required for driving the machine.

♦ ♦ ♦

#### Pneumatic Tired Truck—

Saginaw Stamping & Tool Co., Saginaw, Mich., is the manufacturer of a new small millwright or elec-



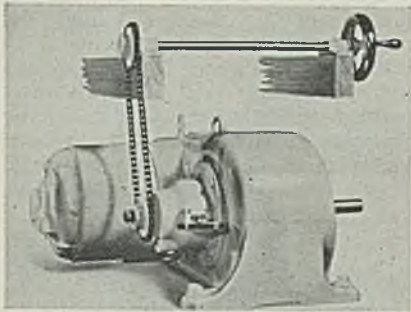
Pneumatic tires are a feature of the electrician's truck built by Saginaw Stamping and Tool Co.

trician's truck made entirely of steel and using pneumatic equipped wheels. This new truck can easily be taken into offices or drawn be-

tween individual buildings in a large manufacturing concern, as the pneumatic wheels will not harm highly polished floors and will not create unnecessary noises, and will enable the operator to use the truck over rough surfaces. The unit has been designed especially for maintenance work.

**Remote Speed Control—**

U. S. Electrical Motors, Los Angeles, announce a new line of standardized parts for obtaining remote



U. S. Electrical Motors recently announced a new line of parts for remote control of variable speed regulators

mechanical control of variable speeds. This new line has been developed for use with the U. S. Vari-drive motors. Bearing support, shafting, sprockets and chains have been standardized so that the user can obtain variation of speed on the driven machine conveniently and economically. Speed control is positive as there is no slippage in the control mechanism.

**Rail Grinder—**

Mall Tool Co., 770 South Chicago avenue, Chicago, has recently developed a new outrigger rail grinder equipped with a 5-horsepower variable speed gas engine and heavy duty flexible shafting which has been designed for many different rail maintenance applications. The grinder has a standard pneumatic



Outrigger rail grinder equipped with 5-horsepower gas engine built by the Mall Tool Co.

wheel mounting and an outrigger or extension arm has been added for mounting the grinder on the rail. The unit can be moved from the right-of-way by one man. Flexible shaft and mounting are completely insulated to prevent interference with the signal system. All working parts are properly guarded to prevent injury to the operator.

**Spiral Quencher—**

G. S. Blakeslee & Co., Nineteenth street and Fifty-second avenue, Chicago, is now manufacturing a spiral quencher and washer for oil or wa-

ter operation on heat-treated parts. A machined fit from hopper to spiral opening eliminates catching. The spiral operates at the proper speed to give enough time for quenching or cleaning, and speed may be varied according to requirements. Angle of elevation of the spiral is correct for absolute and positive discharge of parts. The spiral rotates on steel rollers with end thrust by tapered roller bearings. A cleanout door is provided for the removal of dirt and other foreign matters. Units may be placed in tandem formation for automatic quenching and washing. Motor is mounted high away from moisture. A copper

# NON-FLUID OIL SAVES MONEY

## For BIG STEEL MILLS!

Here's what the Master Mechanic of a big mill wrote us a few weeks ago:

*"I cannot say enough for NON-FLUID OIL. It has proven quite a saving to us, particularly on crane and shop motors and on M. G. sets, where we had some trouble keeping oil in bearings".*

This Master Mechanic points out one of the chief reasons why NON-FLUID OIL saves money. Because it does not drip or leak, it stays in bearings, outlasting liquid oil 3 to 5 times.

Oil cost and lubrication cost are reduced and cleaner and more dependable lubrication results in better service from all equipment—at lowest upkeep expense.

Send for testing sample today—prepaid—NO CHARGE!

### NEW YORK & NEW JERSEY LUBRICANT CO.

Main Office: 292 MADISON AVENUE, NEW YORK

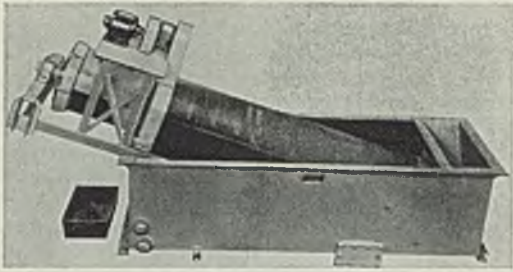
WAREHOUSES:

- |                   |                    |                   |
|-------------------|--------------------|-------------------|
| Chicago, Ill.     | Detroit, Mich.     | Atlanta, Ga.      |
| St. Louis, Mo.    | Spartanburg, S. C. | Charlotte, N. C.  |
| Providence, R. I. |                    | Greenville, S. C. |



MODERN STEEL MILL LUBRICANT

**Better Lubrication at Less Cost per Month**



Blakeslee spiral quencher and washer designed for oil or water operation on heat treated parts

overflow has been built into the device for recirculating and oil cooling purposes.

♦ ♦ ♦

#### Finish Boring Machine—

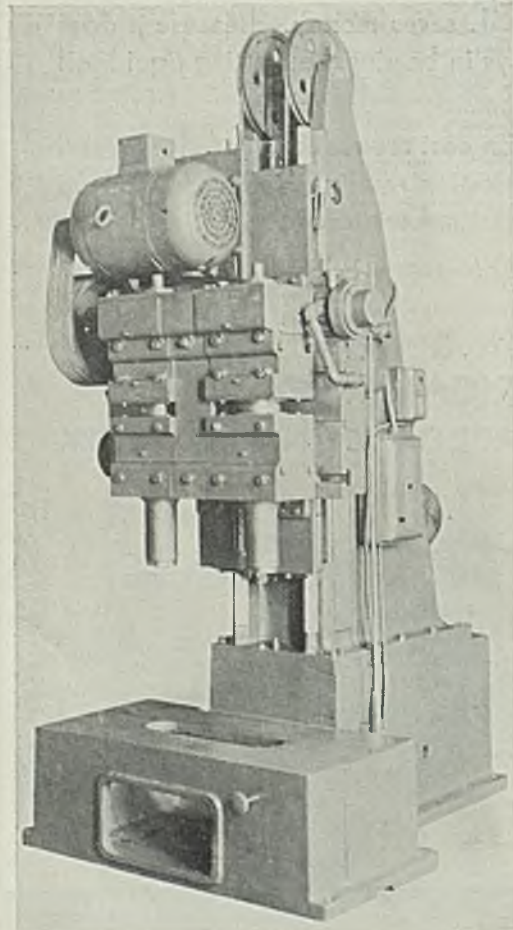
Moline Tool Co., Moline, Ill., has recently placed on the market a new finish boring machine of the type commonly called "diamond boring" machines. Head is driven by V-belt direct from a 15-horsepower motor. Spindles are driven by means of a spiral of steel running from a bronze worm gear. Surface feet per minute for a single point tungsten carbide tool is 225 feet per minute on a 4 1/8-inch bore. Feed can be adjusted from 0.006 to 0.020 per revolution of the spindle. Housing containing the boring spindle is built in two sections. Top section has a 4 1/2-inch alloy steel spindle mounted on pre-

cision bearings, while the lower section which carries the boring tool is 2 9/16 inches in diameter and rolls on ball bearings of less than 0.0001-inch eccentricity. Feed is by means of hydraulic pump and an especially constructed feed cylinder is used. A circulating oil system provides ample lubrication for the spiral gear and the driving mechanism.

♦ ♦ ♦

#### Laboratory Oven—

Paul Maehler Co., 2216 West Lake street, Chicago, is offering to the trade a new laboratory type oven of the gas-fired recirculating type. The unit incinerates the volatiles given off by the finishes, according to the company. An automatic temperature cycle controller can be furnished where bakes require varying degrees of heat in regular cycles.



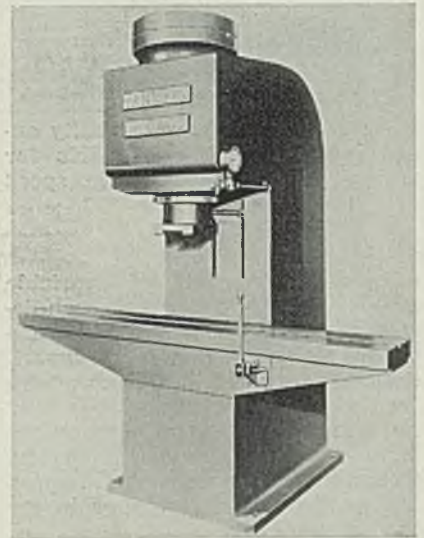
Finish boring machine designed for use in fine boring of automotive cylinder blocks by the Moline Tool Co.

In the event of gas failures, the unit automatically shuts down and vents for a period of five to fifteen minutes before operation can be resumed. Fan failure produces the same result. Flow circulation produces a uniform heat throughout the oven. Temperature variation is held to less than 5 degrees in any two parts of the oven. Thermostatic control maintains the temperature at any predetermined setting, range is up to 500 degrees Fahr.

♦ ♦ ♦

#### Straightening Press—

Hannifin Mfg. Co., 621 South Kolmar avenue, Chicago, has recently placed on the market a new hydraulic press of 75 tons capacity especially designed for straightening operations on airplane propellers and similar work requiring accurate straightening. The press is built largely of welded plates and



Hannifin 75-ton hydraulic straightening press designed for accurate work on airplane propellers and similar straightening jobs

shapes. A single lever controls the entire operation of the ram, with a sensitive proportional control action. When the control lever is moved in either direction, the ram will move a proportional distance and then stop, and simultaneously the operating valve shifts to neutral. When in neutral the pump idles at zero pressure. Slight and accurate ram movements, either up or down, may be obtained according to company claims. Hydraulic power unit with constant delivery type rotary pump is built into the base of the press. Ram delivers 75 ton pressure and may be fitted with any type of fixtures required for handling the parts to be straightened. Ram stroke is 12 inches, while speeds are 24 inches per minute on the power stroke and 40 inches per minute on the return stroke.

# MATERIALS HANDLING

**S**AFETY is the cardinal feature required in this steam locomotive (right) which hauls high explosives at the Picatinny arsenal in New Jersey. Of the geared fireless type, built by H. K. Porter Co., Pittsburgh, it is claimed to be the smallest ever built in the United States. Under 10 feet in length, the unit weighs 7300 pounds. Drive is from a high-speed steam engine through gears and roller chains. Charging is done by high-pressure steam into a boiler filled 80 per cent with water, the boiler being charged until the water reaches the temperature of the charging steam. Tractive force under 60 pounds steam pressure is about 1000 pounds



## Conveyor Handling in Modern Steel Mills

(Concluded from Page 56)

relined up and under the guide wires recut to match the front of the strip and then rewelded into a continuous strip. This operation is said to have effected a sizable saving in the cost of shearing.

Another interesting installation is the gravity conveyor unit approximately 1100 feet in length, shown in Fig. 1. This is used by one of the pipe mills to convey pipe from one end of the mill to the other. Sections of pipe conveyed on this unit are 40 feet long and weigh up to 9600 pounds each.

## Deplores Lack of Planning

**L**ACK of materials handling planning in advance of industrial building construction is deplored by C. E. Schirmer, chief engineer, hoist and crane division, Robbins & Myers Inc., Springfield, O. In a recent statement to STEEL, Mr. Schirmer states that "altogether too often one finds a splendid factory being erected only to discover that no provision has been made for cranes, hoists, conveyors or floor trucking facilities".

Elaborating on this subject, he asserts: "Real ingenuity in building or plant design can be demonstrated only when such structures

contribute in every reasonable way to a smooth flow of materials through the various steps necessary in the manufacture of the product. Expensive machinery often is not permitted to effect maximum cost reductions because of improperly chosen materials handling equipment. In some instances, a special design of handling apparatus will justify its additional cost. Many

such designs are available by using combinations or modifications of standard units.

"Whether the fault lies with the engineers or architects, or with their clients is a debatable question. The penalty of such shortsightedness is an increase in overhead costs, which in many instances represents the only profit available on business at competitive prices."

For all Purposes

LESCHEN

WIRE ROPE

ESTABLISHED  
1857

A. Leschen & Sons Rope Co.

5909 Kennerly Avenue  
ST. LOUIS, MO.

New York . . . . . 87 to 90 West Street  
Chicago . . . . . 810 W. Washington Blvd.  
Denver . . . . . 1554 Wazee Street  
San Francisco . . . . . 520 Fourth Street

Round Strand  
Flattened Strand  
"P. F. S."  
Non-Rotating  
Preformed  
Steel Clad  
Locked Coil  
Regular Lay  
Lang's Lay  
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.

**Unit Heaters**—Modine Mfg. Co., Racine, Wis. Bulletin No. 936, discussing in detail the advantages of unit heating and illustrating installations in various plants.

**Motors**—Century Electric Co., 1806 Pine street, St. Louis. Folder describing its repulsion start induction,  $\frac{1}{2}$  to 40 horsepower, brush lifting, single phase motors.

**Shears**—Canton Foundry & Machine Co., 6400 Breakwater avenue, Cleveland. Circular describing its new streamlined all-steel alligator shears, with modern improvements.

**Drilling Rock**—Ingersoll-Rand Co., 11 Broadway, New York. Booklet No. 2304, covering characteristics and uses of jackbits for drilling rock, giving dimensions and prices.

**Shield-Arc Welder**—Lincoln Electric Co., Cleveland. Bulletin No. 317, describing its shield-arc "SAE" welder, belted or direct-driven models of 200, 300, 400 and 600 amperes.

**Electric Tools**—Chicago Pneumatic Tool Co., 6 East Forty-fourth street, New York. Catalog No. 899, illustrating and describing portable electric tools, giving detailed specifications.

**Handling Packages**—Acme Steel Co., Chicago. Handbook offered as a solution of many shipping problems; typical case histories are given with definite savings which were made possible.

**Manganese Steel**—American Manganese Steel Co., Chicago Heights, Ill. Folder describing its manganese steel foundry and illustrating many uses of manganese steel under stiff operating strains.

**Screen**—Robins Conveying Belt Co., 15 Park Row, New York. Folder No. 99, describing and illustrating its horizontal elliptical-stroke screen, claiming uniform elliptical action and efficient feeding and screening.

**Plate Steel Construction**—William B. Pollock Co., Youngstown, O. Folder illustrating tie plate and housing for 100-inch plate shear also an hydraulic pump frame using rolled steel materials throughout.

**Shield-Arc Welder**—Lincoln Electric Co., Cleveland. Bulletin No.

315, describing the company's shield-arc SAE welder, portable unit, alternating current motor driven models.

**Plastic Packing**—Crane Packing Co., 1800 Cuyler avenue, Chicago. Folder describing resilient, dry-graphite lubricated plastic packing, suitable for steam, air, hot and cold water, oils and acids.

**Oxygen Lance**—Linde Air Products Co., 205 East Forty-second street, New York. Booklet No. 3019, with diagrams and illustrations on the oxygen lance, describing what it is, how it is used and what it will do.

**Magnetic Engineering**—Stearns Magnetic Mfg. Co., Milwaukee. Hand book compiled as a standardized catalog containing technical data, illustrations and description of the various phases of magnetic engineering.

**Flexible Lacquers and Enamels**—Roxalin Flexible Lacquer Co. Inc., 800 Magnolia avenue, Elizabeth, N. J. Index standard filing envelope including comparison chart of its flexible lacquers and lacquer enamels.

**Power Presses**—Colonial Broach Co., 147 Jos. Campau avenue, Detroit. Bulletin No. 104-9F, illustrating power presses for heavy duty broaching. Bulletin No. 104-9C, describing dual ram surface broaching machines.

**Manganese Steel**—Manganese Steel Forge Co., Richmond street and Castor avenue, Philadelphia. Bulletin No. R-65, describing Rol-Man manganese steel, offered as a remedy for maintenance difficulties due to abrasion or breakage of metal parts, and also available in welding rods.

**Regulator**—American Transformer Co., 178 Emmet street, Newark, N. J. Bulletin No. 1177, illustrating its type "TH" transtat regulator, a simplified form of transformer-commutator regulator, for controlling alternating current circuits of relatively low voltage and limited capacity.

**Sprayed Metal Coating**—Metals Coating Co. of America, 495 North Third street, Philadelphia. Folder

No. 1206, showing photographs of typical sprayed molten metal coatings both for maintenance and production, as well as a complete description of the sprayed molten metal process and equipment required.

**Heat Treating Control Instruments**—Brown Instrument Co., Wayne and Roberts avenues, Philadelphia. Illustrating how accurate measure and control in heat treating of metals can be accomplished through efficient use of Brown temperature controllers and Minneapolis-Honeywell control systems.

**Industrial Heating**—James Campbell Smith Inc., 16374 Euclid avenue, Cleveland. Booklet describing an automatic indirect coal-fired industrial air heater for use in connection with ovens or for space heating. The unit is also adapted to both summer and winter air conditioning.

**Mechanical Rubber Goods**—Diamond Mechanical division of B. F. Goodrich Co., Akron, O. Catalog, No. 7818 G. M., containing illustrations and descriptions of mechanical rubber products and accessories, such as transmission and conveyor belting, hose and fittings, tubing, packing, cements, valves and matting.

**Supply Catalog**—Wellman Products Co., 1444 East Forty-ninth street, Cleveland. Catalog No. S-16, describing many of its products listing specifications and prices, such as pattern and tablet letters; supplies, equipment and machinery for pattern shop; band and circular saws, machine knives; and turret lathes and screw machine products.

**Floor Clip**—MacLean-Fogg Lock Nut Co., 2649 North Kildare avenue, Chicago. Bulletin describing its lock-tight floor clip, combining both a non-turning and a nut locking feature, locking itself in place; bulletin illustrating its three styles of lock nuts with corresponding specifications; bulletin describing its water-tight bolts and speed lock nuts for car flooring, running boards, sheathing, and all other points where bolt heads contact wood.



# Heavy Order Backlogs Buttress Mill Position

## Shape Awards in Sharp Rise; Scrap Reaches New High

**F**LOOD and strike have had relatively little effect on the steel industry's production, contrasting strongly with the situation in March, 1936, when high water brought the Pittsburgh district from about 43 per cent of capacity to 18 per cent. Most steel operations interrupted by water have resumed.

Due to flood conditions and some necessity for repairs the operating rate is off four points to 76 per cent of capacity. Eastern Pennsylvania and Birmingham districts showed no change from the previous week. St. Louis gained four points, Buffalo two and Chicago one. The greatest loss was at Wheeling which declined 52½ points to 41 per cent; Detroit dropped from 100 to 90 because of two furnaces off for repair; Pittsburgh lost half a point, Youngstown and Cleveland two points each and New England five points.

Heavy backlogs of unfilled orders at the beginning of the year have not been reduced by large shipments through January, current new buying being sufficient to offset efforts to reduce book tonnage.

Six leading steel producers making financial reports the past week, representing 64 per cent of ingot capacity, show 1936 net profits 264 per cent above 1935. All companies report heavy backlogs of unfilled orders.

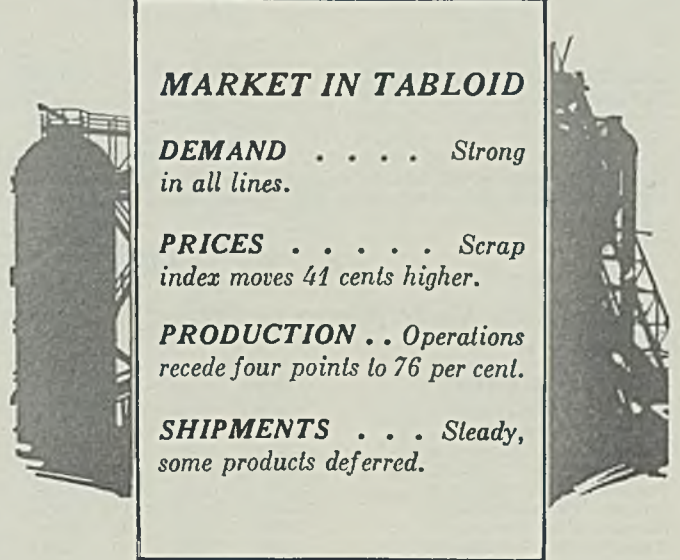
American Iron and Steel institute reports improvements and extensions so far authorized for 1937 exceed \$290,000,000.

Surmises as to second quarter prices are beginning to appear and are backed by protective action by producers. An early sign appears at Chicago where sheet capacity to April 1 is fully sold. Producers there are accepting orders for second quarter delivery with the proviso that the price be that prevailing at time of delivery. Other signs indicate belief that an advance may be made in at least some products, wire and nails being among these.

Need for additional coke supplies in view of sustained high steel production is being met. American Steel & Wire Co. is relighting two batteries at Cleveland after long idleness and the Frick company is starting production in 700 beehive ovens in the Connellsville region, making 2000 tons per day.

Bolt and nut interests are considering the largest inquiry in at least two years, for 1875 tons for the Queens-Midtown tunnel at New York.

Shipbuilding offers prospects of considerable plate tonnage, with the usual proportion of other steel. Bids



### MARKET IN TABLOID

**DEMAND . . . . .** *Strong in all lines.*

**PRICES . . . . .** *Scrap index moves 41 cents higher.*

**PRODUCTION . .** *Operations recede four points to 76 per cent.*

**SHIPMENTS . . .** *Steady, some products deferred.*

have been called for April 1 on a liner for United States Lines, taking 15,000 tons or more. Panama Railway Steamship Co. is about to ask bids on two or three ships requiring about 5000 tons each of hull steel and bids will be taken in New York Feb. 10 on three packet ships requiring about 400 tons each.

Railroads continue to be an important factor in spite of some tendency to await decision on new rates and its effect on income. Two western roads have placed 25 and nine locomotives and are in the market for eight more. A total of 7500 cars were placed last week and several thousand are still pending. Some rail tonnage is appearing also.

Strike effects on General Motors and shortage of glass for Chrysler cars cut automotive production for the week ending Jan. 30 to 71,373 units, a drop of about 10,000 cars from the preceding week. Total production in 1936 was 4,616,857 units, close to 500,000 over 1935.

Structural awards were dominated by placing of 28,000 tons by the Pennsylvania railroad for electrification work from Harrisburg to Paoli, Pa., divided between a number of fabricators. This brings the total for the week, to 64,988 tons, compared with 13,751 tons the week ending Jan. 23, and 29,346 tons in the week of Jan. 16.

Strength in all markets, more especially in the East where export demand is a factor, has raised scrap quotations sharply, the composite price for steelmaking grades reaching \$18.70 per ton, a rise of 41 cents from the preceding week. Domestic and export quotations on the Atlantic seaboard have become misaligned and will require correction. This is the fifth consecutive weekly rise, the gain from the first week in January being \$1.12 per ton.

Scrap strength has increased the iron and steel composite price 5 cents, to \$36.62. The finished steel composite is unchanged at \$55.80.

# COMPOSITE MARKET AVERAGES

	Jan. 30	Jan. 23	Jan. 16	One Month Ago Dec., 1936	Three Months Ago Oct., 1936	One Year Ago Jan., 1936	Five Years Ago Jan., 1932
Iron and steel ....	\$36.62	\$36.59	\$36.55	\$35.15	\$34.67	\$33.34	\$29.65
Finished Steel ....	55.80	55.80	55.80	53.90	53.90	53.70	47.28
Steelworks Scrap..	18.70	18.29	18.16	16.92	16.44	13.15	8.03

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	Jan. 30,	Dec.	Oct.	Jan.	Pig Iron	Jan. 30,	Dec.	Oct.	Jan.
	1937	1936	1936	1936		1937	1936	1936	1936
Steel bars, Pittsburgh .....	2.20c	2.05c	2.05c	1.85c	Bessemer, del. Pittsburgh.....	\$22.31	21.8132	20.8132	20.81
Steel bars, Chicago .....	2.25	2.10	2.10	1.90	Basic, Valley .....	20.50	20.00	19.00	19.00
Steel bars, Philadelphia .....	2.49c	2.36	2.36	2.16	Basic, eastern del. East Pa.....	22.26	21.8132	20.8132	20.81
Iron bars, Terre Haute, Ind. ....	1.95	1.95	1.95	1.75	No. 2 rdy., del. Pittsburgh.....	22.21	21.3132	20.3132	20.31
Shapes, Pittsburgh .....	2.05	1.90	1.90	1.80	No. 2 rdy., Chicago .....	21.00	20.50	19.50	19.50
Shapes, Philadelphia .....	2.25 1/4	2.11 1/4	2.11 1/4	2.01 1/4	Southern No. 2, Birmingham....	17.38	16.88	15.50	15.50
Shapes, Chicago .....	2.10	1.95	1.95	1.85	Southern No. 2, del. Cincinnati..	20.69	20.44	19.44	20.20
Tank plates, Pittsburgh .....	2.05	1.90	1.90	1.80	No. 2X eastern, del. Phila.....	23.135	22.6882	21.6882	21.68
Tank plates, Philadelphia .....	2.23 1/4	2.09	2.09	1.99	Malleable, Valley .....	21.00	20.50	19.50	19.50
Tank plates, Chicago .....	2.10	1.95	1.95	1.85	Malleable, Chicago .....	21.00	20.50	19.50	19.50
Sheets, No. 10, hot rolled, Pitts....	2.15	2.10	1.95	1.85	Lake Sup., charcoal, del. Chicago	26.54	26.2528	25.7528	25.25
Sheets, No. 24, hot ann., Pitts....	2.80	2.75	2.60	2.40	Fray forge, del. Pittsburgh .....	21.17	20.6741	19.6741	19.67
Sheets, No. 24, galv., Pitts.....	3.40	3.35	3.20	3.10	Ferromanganese, del. Pittsburgh.	84.79	82.65	80.13	90.13
Sheets, No. 10, hot rolled, Gary... 2.25	2.25	2.25	2.05	1.95					
Sheets, No. 24, hot anneal, Gary... 2.90	2.90	2.90	2.70	2.50					
Sheets, No. 24, galvan., Gary..... 3.50	3.50	3.50	3.30	3.20					
Plain wire, Pittsburgh .....	2.60	2.60	2.50	2.30					
Tin plate, per base box, Pitts..... \$4.85	\$4.85	5.25	5.25	5.25					
Wire nails, Pittsburgh .....	2.25	2.20	2.05	2.40					

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

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

Sheet Steel	Tin Mill Black No. 28	Corrosion and Heat-Resistant Alloys	Structural Shapes
Prices Subject to Quantity Extras and Deductions (Except Galvanized)	Pittsburgh .....	Pittsburgh base, cents per lb.	Pittsburgh .....
Hot Rolled No. 10, 24-48 in.	Gary .....	Chrome-Nickel	Philadelphia, del. ....
Pittsburgh .....	St. Louis, delivered .....	No. 302 No. 304	New York, del. ....
Gary .....		Bars .....	Boston, delivered .....
Chicago, delivered .....		Plates .....	Bethlehem .....
Detroit, del. ....		Sheets .....	Chicago .....
New York, del. ....		Hot strip .....	Cleveland, del. ....
Philadelphia, del. ....			Buffalo .....
Birmingham .....			Gulf Ports .....
St. Louis, del. ....			Birmingham .....
Pacific ports, f.o.b. cars, dock .....			Pacific ports, f.o.b. cars, dock .....
Hot Rolled Annealed No. 24			
Pittsburgh .....			
Gary .....			
Chicago, delivered .....			
Detroit, delivered .....			
New York, del. ....			
Philadelphia, del. ....			
Birmingham .....			
St. Louis, del. ....			
Pacific ports, f.o.b. cars, dock .....			
Galvanized No. 24			
Pittsburgh .....			
Gary .....			
Chicago, delivered .....			
Philadelphia, del. ....			
New York, delivered .....			
Birmingham .....			
St. Louis, del. ....			
Pacific ports, f.o.b. cars, dock .....			
Tin and Terne Plate			
Gary base, 10 cents higher.			
Tin plate, coke base (box) Pittsburgh .....			
Do., waste-waste .....			
Do., strips .....			
Long ternes, No. 24 unassorted, Pitts. ....			
Do., Gary .....			



## Pig Iron

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

Basing Points:	No. 2 Fdry.	Malle-able	Basic	Besse-mer
Bethlehem, Pa. ....	\$22.00	\$22.50	\$21.50	\$23.00
Birdsboro, Pa. ....	22.00	22.50	21.50	23.00
Birmingham, Ala.†	17.38		16.38	21.50
Buffalo ....	21.00	21.50	20.00	22.00
Chicago ....	21.00	21.00	20.50	21.50
Cleveland ....	21.00	21.00	20.50	21.50
Detroit ....	21.00	21.00	20.50	21.50
Duluth ....	21.50	21.50		22.00
Erie, Pa. ....	21.00	21.50	20.50	22.00
Everett, Mass. ....	22.75	23.25	22.25	23.75
Hamilton, O. ....	21.00	21.00	20.50	
Jackson, O. ....	20.25	20.25	19.75	
Neville Island, Pa. ....	21.00	21.00	20.50	21.50
Provo, Utah ....	18.50		18.00	
Sharpsville, Pa. ....	21.00	21.00	20.50	21.50
Sparrows Point, Md. ....	22.00		21.50	
Swedeland, Pa. ....	22.00	22.50	21.50	23.00
Toledo, O. ....	21.00	21.00	20.50	21.50
Youngstown, O. ....	21.00	21.00	20.50	21.50

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

Delivered from Basing Points:				
Akron, O., from Cleveland ....	21.76	21.76	21.26	22.26
Baltimore from Birmingham....	22.58		21.46	
Boston from Birmingham ....	23.37		22.87	
Boston from Everett, Mass. ....	23.25	23.75	22.75	24.25
Boston from Buffalo ....	23.25	23.75	22.75	24.25
Brooklyn, N. Y., from Bethlehem	24.27	24.77		
Brooklyn, N. Y., from Brmghm....	24.05			
Canton, O., from Cleveland....	21.76	21.76	21.26	22.26
Chicago from Birmingham ....	21.22		21.10	
Cincinnati from Hamilton, O....	20.82	21.58	21.08	
Cincinnati from Birmingham....	20.69		19.69	
Cleveland from Birmingham....	21.12		20.62	
Cincinnati from Hamilton, O....	21.07	21.79	20.07	
Mansfield, O., from Toledo, O....	22.76	22.76	22.26	22.26
Milwaukee from Chicago ....	22.00	22.00	21.50	22.00
Muskegon, Mich., from Chicago,				
Toledo or Detroit ....	23.90	23.90	23.40	24.40
Newark, N. J., from Birmingham	23.01			
Newark, N. J., from Bethlehem..	23.39	23.89		
Philadelphia from Birmingham..	22.38		22.26	
Philadelphia from Swedeland, Pa.	22.76	23.26	22.26	
Pittsburgh district from Neville				
Island ....	\$1.21	switching charges		
Saginaw, Mich., from Detroit....	23.25	23.25	22.75	22.75
St. Louis, northern ....	21.50	21.50	21.00	

Delivered from Basing Points:	No. 2 Fdry.	Malle-able	Basic	Besse-mer
St. Louis from Birmingham ....	†21.12		20.82	
St. Paul from Duluth .....	22.94	22.94		23.44

†Over 0.70 phos.

### Low Phos.

Basing Points: Birdsboro and Steelton, Pa., and Standish, N. Y., \$25.50, Phila. base, standard and copper bearing, \$26.63.

### Gray Forge

Valley furnace	Lake Superior fur.	Charcoal
.....	\$20.50	.....
Pitts. dist. fur. ....	20.50	do., del. Chicago .....
		Lyles, Tenn. ....

### Silvery†

Jackson county, O., base: 6-6.50 per cent \$24.50; 6.51-7—\$25.00; 7-7.50—\$25.50; 7.51-8—\$26.00; 8-8.50—\$26.50; 8.51-9—\$27.00; 9-9.50—\$27.50; 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. ....	First Quality	Pa., Ill., Md., Mo., Ky....	Second Quality	Pa., Ill., Ky., Md., Mo....	Georgia, Alabama ....	First quality	Intermediary	Second quality	Malleable Bung Brick	All bases	Silica Brick	Pennsylvania	Joliet, E. Chicago	Birmingham, Ala. ....	Ladle Brick	(Pa., O., W. Va., Mo.)	Dry press	Wire cut	Magnesite	Imported dead-burned	grains, net ton f.o.b.
.....	.....	\$58.90	.....	\$45.60	.....	40.85	36.10	\$40.85	38.00	29.45	.....	54.15	\$45.60	54.15	45.60	.....	.....	\$25.00	23.00	.....	.....	.....	

Chester, Pa., and Baltimore bases (bags).. \$45.00

Domestic dead-burned grains, net ton f.o.b. Chester, Pa., and Baltimore bases (bags).. 42.00  
 Domestic dead-burned gr. net ton f.o.b. Chewelah, Wash. (bulk).. 24.00

### Base Brick

Net ton, f.o.b. Baltimore, Plymouth Meeting, Chester, Pa.  
 Chrome brick ..... \$47.00  
 Chem. bonded chrome.. 47.00  
 Magnesite brick ..... 67.00  
 Chem. bonded magnesite 57.00

## Fluorspar, 85-5

Washed gravel, duty paid, tide, net ton... \$23.00  
 Washed gravel, f.o.b. Ill., Ky., net ton, carloads, all rail ..... \$18.00  
 Do., for barge..... \$19.00

## Ferroalloys

Dollars, except Ferrochrome

Ferromanganese, 78-82% tidewater, duty paid.. 80.00  
 Do., Baltimore, base.. 80.00  
 Do., del. Pittsburgh.. 84.79  
 Spiegeleisen, 19-20% dom. Palmerston, Pa., spot. †26.00  
 Do., New Orleans .... 26.00  
 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.. 89.00  
 2% carbon, 94.00; 1%, 104.00  
 Ferrochrome, 66-70 chromium, 4-6 carbon, etc. lb. del. .... 10.00  
 Ferrotungsten, stand., lb. con. del. ....130-140  
 Ferrovandium, 35 to 40% lb., cont. ....2.70-2.90  
 Ferrotitanium, c. l., prod. plant, frt. all., net ton 137.50  
 Spot, 1 ton, frt. allow., lb. .... 7.00  
 Do., under 1 ton, lb.. 7.75-8.25  
 Ferrophosphorus, per ton, c. l., 17-19% Rockdale, Tenn., basis, 18%, \$3 unitage ..... 58.50  
 Ferrophosphorus, electrolytic, per ton c. l., 23-26% f.o.b. Anniston, Ala., 24% \$3 unitage.. 75.00  
 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			Strait Tin		Lead		Zinc	Alumi-num	Antimony	Nickel
Electro, del. Conn.	Lake, del. Midwest	Casting, refinery	New York	Futures	Lead N. Y.	East St. L.				
Jan. 23 13.00	13.12½	12.70	50.90	50.65	6.00	5.85	6.00	*19.00	14.25	33.00
Jan. 25 13.00	13.12½	12.70	50.00	49.80	6.00	5.85	6.00	*19.00	14.25	35.00
Jan. 26 13.00	13.12½	12.70	50.35	50.12½	6.00	5.85	6.00	*19.00	14.25	35.00
Jan. 27 13.00	13.12½	12.70	50.10	49.90	6.00	5.85	6.00	*19.00	14.25	35.00
Jan. 28 13.00	13.12½	12.70	50.10	49.90	6.00	5.85	6.00	*19.00	14.25	35.00
Jan. 29 13.00	13.12½	12.70	50.10	49.90	6.00	5.85	6.00	*19.00	14.25	35.00

\*Nominal range 19.00 to 21.00c.

### MILL PRODUCTS

F.o.b. mill base, cents per lb. except as specified. Copper brass products based on 13.00.

Copper	
Conn.	Midwest
Sheets	
Yellow brass (high)....	18.12½
Copper, hot rolled .....	20.37½
Lead, cut to jobbers.....	9.50
Zinc, 100-lb. base .....	10.50
Tubes	
High yellow brass .....	20.87½
Seamless copper .....	21.37½
Rods	
High yellow brass .....	16.12½
Copper, hot rolled .....	17.12½
Anodes	
Copper, untrimmed .....	17.87½
Wire	
Yellow brass (high)....	18.37½

### OLD METALS

Deal. buying prices, cents lb.

No. 1 Composition Red Brass	
*New York .....	8.75- 9.00
*Cleveland .....	9.75-10.00
Chicago .....	9.25- 9.50
St. Louis .....	9.00- 9.50
Heavy Copper and Wire	
*New York, No. 1 .....	10.50-10.75
Chicago, No. 1 .....	10.75-11.00
*Cleveland, No. 1 .....	10.75-11.00
St. Louis, No. 1 .....	10.62½-11.00
Composition Brass Borings	
*New York .....	7.75- 8.00
Light Copper	
*New York .....	8.75- 9.00
Chicago .....	9.25- 9.50
*Cleveland .....	8.75- 9.00
*St. Louis .....	9.00- 9.50

### Light Brass

Chicago	Cleveland	St. Louis	New York	St. Louis	Chicago	St. Louis	New York	St. Louis	Cleveland	Aluminum	Borings, Cleveland.	Mixed, cast, Cleve.	Mixed, cast, St. L.	Clips, soft, Cleve.
.....	6.00- 6.25	.....	.....	.....	.....	.....	.....	.....	.....	.....	9.75-10.00	13.25-13.50	13.25-13.50	15.00-15.25

SECONDARY METALS  
 Brass, ingot 85-5-5, 1cl. 14.00  
 Stand. No. 12 alum. 17.50-17.75





# Bars

Bar Prices, Page 86

**Pittsburgh** — With deliveries still extended, hot bar mills are operating at a higher rate under strong pressure from many consumers for shipments. Considering all circumstances, the slight falling-off in new specifications the past week is not unexpected. The effect of the automotive industry's suspension orders has not been as noticeable yet as was expected. Carbon bar prices are steady at 2.20c, base, Pittsburgh.

**Cleveland** — New business has proved considerably better than many anticipated. The auto strikes have had little effect on mill operations because of heavy requirements from nut and bolt concerns, and farm and road making equipment manufacturers. However, operations in the alloy divisions have been retarded somewhat. Because of close to capacity schedules in commercial steel bar mills, backlogs have been considerably reduced.

**Chicago**—Bar shipments continue heavy, aided slightly by releases from General Motors Corp. upon the resumption of operations at some of the latter's plants last week. Requirements of other automotive interests remain heavy, while specifications from miscellaneous users also are well maintained. Consumers are pressing mills for shipments to accommodate the high rate of consumption, and producers are experiencing difficulty in increasing deliveries. Farm implement and tractor plants continue to enjoy excellent schedules, holding operations moderately above the rate a year ago.

**New York**—Commercial steel bar sellers are having difficulty in clearing orders booked before the price advance. Jan. 31 was set by most sellers as the closing date for these contracts. New demand is easier but commitments are heavy at the close of January against identified work, principally for railroads.

**Philadelphia** — Commercial steel bar schedules are easing but in the alloy grades schedules are more extended than ever. In some lines, certain producers are oversold to the extent that they can make few promises of delivery before June. Despite the effort of producers to work off commercial bar tonnage booked at \$3 under the current price, some carryover into this month will be made.

Jewett Refrigerator Co., Buffalo, plans to begin production of domes-

tic refrigerators on a large scale. Heretofore, the company specialized in large unit commercial refrigerators.

of this district, but the flood situation has temporarily delayed action on inquiries which were expected to materialize into awards during the past week. The outlook for the immediate future is still good. Wheeling Steel Corp. has awarded 25 barges to Dravo Contracting Co., Pittsburgh, requiring 2900 tons of plates.

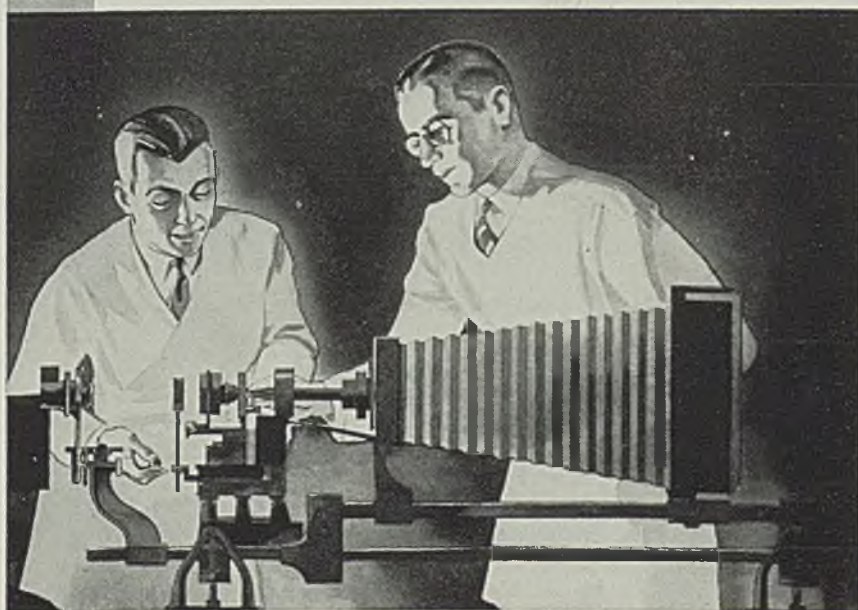
**Cleveland**—New business is confined to small lots for light structural projects and specialty jobs. However, mills are active, unable in

# Plates

Plate Prices, Page 86

**Pittsburgh** — The high water caused no damage in barge yards

THOUSANDS of BARS  
HUNDREDS of ANALYSES  
*only one type is best suited  
for your requirement*  
*Let* **WYCKOFF**  
METALLURGISTS HELP YOU  
SELECT *the* RIGHT ONE



## WYCKOFF DRAWN STEEL COMPANY

General Offices: First National Bank Bldg., Pittsburgh, Pa.  
Mills at Ambridge, Pa. and Chicago, Ill.  
Manufacturers of Carbon and Alloy Steels  
Turned and Polished Shafting, Turned and Ground Shafting  
Wide Flats up to 12' x 2'

many cases to satisfy urgent demand of customers. Considerable interest has been aroused through possibility of two lake freighters being built and the much needed boat repair work. While new tonnage is small this was expected in view of the many jobs which received price protection before the first of the year. Prices are firm.

**Chicago** — Plate contracts from railroad equipment builders and railroad shops have been heavy lately, while shipments to these interests have been expanding.

Freight car building will continue at an active rate for a number of months and plate shipments will be affected similarly. Plate demand from structural fabricators is slightly heavier, and miscellaneous users are providing fairly substantial business. Specifications for material on which protection at old prices was accorded are to be received within the next 60 days. The market on new business is 2.10c, base.

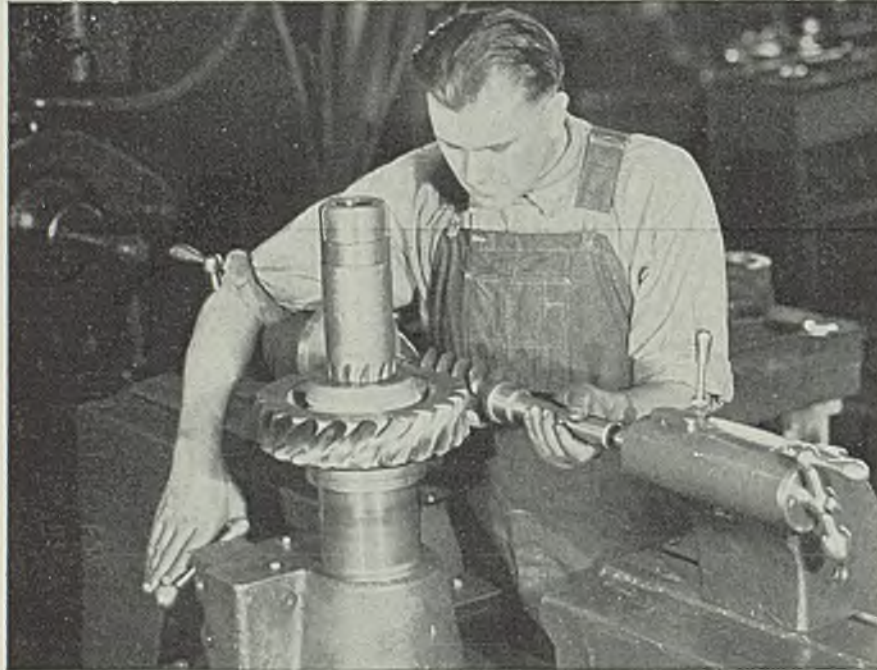
**New York**—With protections on identified work and February a short

month, platemakers look for a falling off in bookings. However, additional railroad work is under consideration, and ship work is more promising, particularly in view of the probability that the Maritime commission will be brought to its full complement shortly by the appointment of two additional members, and that question of subsidy will be handled more speedily.

Specifications are expected out momentarily on either two or three boats for Panama Steamship Railway Co., requiring about 5000 tons of hull steel each, as noted in a recent issue, and Theodore Ferris, naval architect, has plans prepared for three packet boats on which bids will be opened Feb. 10. These will take about 400 tons of plates each. Ship yards expect to receive plans any day for the new steamer for the United States Lines, on which bid will be opened April 1.

There will be two alternates, with at least 15,000 tons of hull steel required, depending upon the type finally selected. Also in prospect are four boats for the Grace Line, involving more than 30,000 tons of steel. Bids were opened Jan. 26 by the Commissioner of Lighthouses in Washington on the construction of lightship No. 118.

**Philadelphia**—Following the lead of two district platemakers early this month, a large eastern mill has put new quantity extras into effect. This is expected to be followed by others, who have been awaiting developments. Miscellaneous demand is spotty, although last-minute coverage on identified projects brought bookings for the past week up to heavy volume. Releases by railroad equipment manufacturers contributed substantially to this business. District shipyards are figuring on three packet boats with bids to be opened Feb. 10. Theodore Ferris, New York, architect, prepared the plans. April 1 has been set as the opening date on new bids for the steamer for the United States Lines, requiring at least 15,000 tons of hull steel and possibly more, depending upon which one of two alternates is selected. The New York Shipbuilding Corp., Camden, N. J., builder of two similar boats for the United States Lines, is the designer of one set of plans on which bids will be asked. Gibbs & Cox, New York, are the designers of the other plans.



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## THE HORSBURGH & SCOTT CO.

GEARS AND SPEED REDUCERS

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### Contracts Placed

3000 tons, eight 80,000-gallon steel tanks and several smaller, for Pan American Petroleum Corp., for Texas City, Tex., refinery, to Chicago Bridge & Iron Works, Chicago.

650 tons, seven tanks for Shell Oil Co.



Seattle, to Western Pipe & Steel Co., San Francisco.  
 560 tons, 10 and 12-inch water supply line for St. Maries, Idaho, to unnamed interests.  
 300 tons, observatory dome, Palomar Mountain, San Diego county, California, to Consolidated Steel Corp., Los Angeles.  
 220 tons, steel pipe water line, Meadow Park, Flushing, N. Y., to Alco Products Inc., Dunkirk, N. Y.  
 180 tons, 20-inch i.d. penstock line, Polson, Mont., to Chicago Bridge & Iron Works, Chicago.  
 100 tons or more, lightship, bureau of lighthouses, Washington; to Rice Bros., East Boothbay, Me., at \$223,900.

## Contracts Pending

390 tons, bureau of supplies and accounts, navy department, Washington, bids Feb. 9.

# Sheets

Sheet Prices, Page 86

**Pittsburgh**—A steady flow of specifications continues from consumers other than General Motors. Shipments are heavy and pressure for deliveries is still strong. During the automotive labor controversy mills have been able to give attention to tonnages which under the circumstances prevailing at the start of the year could not otherwise have been handled so advantageously. Production in this district was unaffected by last week's high water. Operations for the entire country, however, showed a decline, due to the temporary suspension of some mills in other districts. Galvanized operations at the start of the week were down about 5 points to 69 per cent as a result of flood conditions, while aggregate operations of full finished and jobbing mills also declined about 5 points. Pittsburgh base prices on sheets are unchanged.

**Cleveland**—Backlogs remain extended well into March in spite of stop orders from General Motors plants and heavy shipments to other consumers throughout the month. Enameling and stainless sheets are in strong demand, with recent sales limited to relatively small tonnages. As deliveries now stand many feel that a sudden termination of labor difficulties will bring about severe complications in shipping schedules. Some mills are reported building up a small stock of auto sheets because of this.

**Chicago**—Sheet mill capacity for the balance of this quarter is sold out and producers are accepting business for future delivery with the understanding that prices to be determined later for second quarter shall apply. Some releases have accompanied reopening of certain Gen-

eral Motors plants, while shipments to other automotive interests continue heavy. Mills are under pressure to meet delivery requirements of buyers of various grades of sheets as a consequence of the high rate of consumption.

**Philadelphia**—Except for one or two grades, sheet deliveries continue well extended, in some cases into May. No. 10 hot-rolled is available in some quarters in three weeks and less, and cold-rolled sheets in three and four weeks. Local demand in

the past few days appears to have stepped up, following easing off a week or 10 days ago. Prices are firm.

**St. Louis**—Specifications on steel sheets continue at a high rate, with miscellaneous demands leading in new orders and shipping directions. During the past week or ten days there has been a moderate improvement in new business, with orders for special sheets running proportionately higher than standard products.



Schematic section of a typical CUNO FILTER, showing direction of flow. Your substance enters the filter case and passes under gravity, pressure or suction head through the closely spaced filtering discs which catch the suspended solids. Then, rotation of the entire element, either manual or mechanical, against the stationary cleaning blades, combs out the filter and drops the unwanted substance to the ample sump below. The filtered and cleaned substance rises through the interior of the cartridges and passes out through the outlet indicated.

CUNO Continuously Cleanable FILTERS are doing a BIG economy job throughout the steel and metal working industries. They speed up and make a continuous operation of the filtration of soluble cutting oils and coolants, lubricating oils and greases, fuel tar and oils. And . . . they do an equally effective service guarding against clogged descaling spray and roll body coolant nozzles.

Peak production schedules and sensible economy demand positive filtration without the delay and nuisance of "Stop-Clean-and-Go" filtering. CUNO Auto-Klean FILTERS provide the positive escape from this needless expense and wasteful delay with Continuously Cleanable units to suit your particular need. Above, is a battery of 3 twelve inch pipe size CUNO Type SV-4 FILTERS, installed at a Youngstown, Ohio, Hot Strip Mill. These large capacity filters in service on recirculating scale pit water for roll body and furnace skid coolant contain four cartridges each and are continuously cleaned by direct motor drive.

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 City and State . . . . .

# Pipe

Pipe Prices, Page 87

**Pittsburgh**—Specifications in January have been almost even with December, with oil country goods in great demand and most tube mills operating close to capacity. Favorable weather and the fact that jobbers have been increasing inventories are two reasons for the January activity. Shipments to railroad equipment manufacturers have been

well maintained. Prices are steady.

**Cleveland**—Jobbers report an encouraging rate of stock turnover, particularly in medium and smaller forms of tubing. Plant and general construction work has been aided considerably by the unusually mild weather. City of Cleveland is considering a water main improvement requiring approximately 3½ miles of 24-inch steel pipe. The Garfield, O. project is expected to be re-advertised Feb. 4.

**Chicago** — Cast pipe is slow both in orders and inquiries. Shipments

have been interrupted in some instances by the flood, though deliveries already had been reduced materially compared with those of a few months ago. Some pick-up in buying is looked for within the next 30 to 60 days. Few major projects are pending.

**Boston** — Inquiry for 500 tons of large size electrically welded steel pipe for a Hartford, Conn., project is outstanding. Bids close Feb. 1. Cast pipe buying and inquiry is light. Merchant steel pipe and wrought are moving in fair volume.

**New York** — Cast pipe buying continues light. Foundries are less active with smaller backlogs. Fill-in lots make up the bulk of volume. Bids go in this week on 215 tons in connection with work on the Manhattan mid-town tunnel. New York City is expected to inquire about Feb. 20 on close to 5500 tons for yard stocks.

**Buffalo**—Sellers of tubular products look for a good year. There are several good sized water works projects for which PWA appropriations are sought. Principal use of pipe will come in the nearby natural gas and oil fields. Extensive drilling and piping projects are planned. In the Bradford oil fields new wells will be drilled and pressure plant construction also is planned. In the case of the oil fields, construction involves not only the purchase of pipe but also large tonnages of tank plates.

**Seattle** — Prospects are somewhat improved as many municipalities plan improvements and extensions to water systems. Taholah Indian Agency, Wash., opened bids Jan. 29 for 5000 feet of 2 and 4 inch cast pipe and accessories. Milwaukie, Oreg., plans extensions and improvements, using cast pipe. Whitestone Reclamation district, Loomis, Wash., will open bids Feb. 5 for a \$35,000 domestic and irrigation water system. White Salmon, Wash., on the same date, will take bids for a 10 and 12-inch supply line, either wood or steel.

## Steel Pipe Pending

Unstated tonnage, 7120 feet, 30½-inch o. d. steel pipe and specials, district commissioners, Washington, bids Feb. 16.

## Cast Pipe Placed

128 tons, 6-inch, class 150, East Bay municipal utility district, Oakland, Calif., to Pacific States Cast Iron Pipe Co., Provo, Utah.

120 tons, 4 to 24-inch, class 150, South Pasadena, Calif., to United States Pipe & Foundry Co., Burlington, N. J.

## Cast Pipe Pending

600 tons, mostly 8-inch, Washington; United States Pipe & Foundry Co., low.

OTHER "A. W." QUALITY PRODUCTS

Blue Annealed Sheets & Strip  
Hot Rolled Annealed Sheets  
Sheared Steel Plates  
Bullets, Blooms & Slabs  
"Swede" Pig Iron  
"A. W." "70-90"  
Super Strength Steel

**"A.W." ROLLED STEEL FLOOR PLATE**

The one pattern which assures a completely SAFE tread — from every possible angle—under any condition. Write for new literature.

**ALAN WOOD STEEL COMPANY**  
CONSHOHOCKEN, PA.

BRANCHES:

Philadelphia, New York, Boston, Detroit, Los Angeles, San Francisco, Seattle, Houston



**111 YEARS' IRON AND STEEL-MAKING EXPERIENCE**

500 tons, 48 and 54-inch electrically welded, with fittings, metropolitan district, Hartford, Conn.; bids Feb. 1; also approximately 45 tons, cast pipe, same sizes.  
 296 tons, 4 to 12-inch, class 150, South Gate, Calif.; bids opened.  
 215 tons, various sizes, North tube, mid-town tunnel, Manhattan, N. Y.; bids Feb. 2.  
 100 tons, 6 and 8-inch treasury department, procurement division, Northport, N. Y.; bids in.

Missouri-Kansas-Texas Railway Co. of Texas; in addition the company will place with independent car builders 225 automobile cars, 25 chair cars, three diners and one lounge car.  
 Nashville, Chattanooga & St. Louis, 500 allsteel box cars, to Pullman-Standard Car Mfg. Co., Chicago.

American Locomotive Co., New York. Union Pacific, 25 Mallet type freight locomotives, to American Locomotive Co., New York; in addition to 15 recently placed with this builder.

### Car Orders Pending

Northern Pacific, 1000 gondola cars, 500 box cars and 500 flat cars.  
 St. Louis-San Francisco, 10 chair cars, bids asked.

### Locomotives Pending

Missouri Pacific, six diesel electric switch engines, bids asked.  
 Northern Pacific, eight passenger locomotives, type 4-8-4.

### Buses Booked

Twin Coach Co., Kent, O.: Four 31-passenger for Central Illinois Electric & Gas Co., Rockford, Ill.; three 35-passenger for Woodlawn & Southern Mo-

## Transportation

Track Material Prices, Page 87

Expiration of protection periods on steel going into cars and locomotives drove in considerable business last week, some 34 locomotives and 7500 freight cars being placed with builders.

Union Pacific awarded 25 freight locomotives and Northern Pacific nine. The latter road has eight still on inquiry. The Union Pacific order makes a total of 60 locomotives placed with one builder in the past year.

Car awards totaled 7500 in lots of 500 to 3100, with a considerable number still on inquiry. This has resulted in builders closing options on a heavy tonnage of steel for delivery as construction progresses.

Rail mills are increasing their output somewhat to meet needs of railroads for spring track work. There is some difficulty in obtaining sufficient tonnage of ingots for rail mills as other products require heavy service in this respect and there is almost a shortage of ingot and semi-finished steel.

Plans by the Pennsylvania to electrify its line from Philadelphia to Harrisburg give promise of large steel requirements. This is to be completed in 18 months.

### Rail Orders Pending

10,000 tons, Northern Pacific; included in betterment budget.

### Car Orders Placed

Baltimore & Ohio, 2000 seventy-ton gondola cars, to Bethlehem Steel Corp., Bethlehem, Pa.; as indicated last week this supplants a previously noted award of 1500 gondolas to this company.

Illinois Central, 3100 freight cars, of which 800 auto box and 300 are refrigerator cars have been placed with the General American Transportation Corp.; 500 hopper cars with Pressed Steel Car Co., Pittsburgh; 500 hopper cars with the Ryan Car Co., Chicago. 500 auto box with Pullman-Standard Car Mfg. Co., Chicago; and 500 with the American Car & Foundry Co., New York.

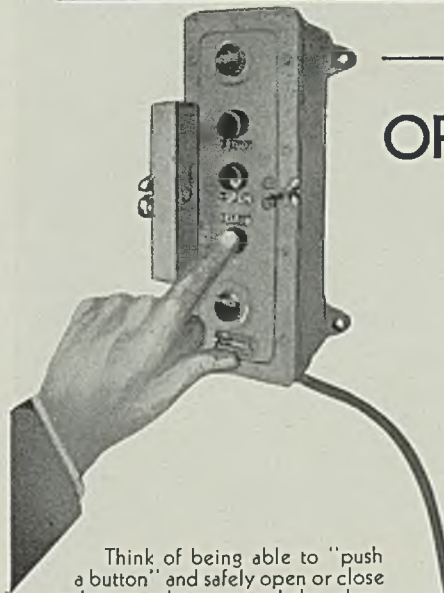
Louisville & Nashville, 900 hoppers, to Pullman-Standard Car Mfg. Co., Bessemer, Ala.

Missouri-Kansas-Texas, 500 gondola and 500 stock cars, to its own subsidiary.

### Locomotives Placed

Northern Pacific, 9 locomotives, to the

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 —and it has many uses in and around STEEL MILLS

Think of being able to "push a button" and safely open or close valve anywhere around the plant, particularly in those inconvenient or out-of-the way places.

LIMITORQUE is the correct principle of valve operation. It *automatically limits* the torque applied to the valve stem, and thus offers *positive protection* against breakage or damage to valve or valve mechanism . . . and the torque may be varied at will, by simple adjustment.

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Philadelphia Gear Works  
 Industrial Gears and Speed Reducers  
 Erie Avenue and "G" Street  
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tor Coach Co., Allquippa, Pa.; two 23-passenger for Washington, Virginia & Maryland Coach Co., Clarendon, Pa.

## Strip

Strip Prices, Page 87

**Pittsburgh** — Specifications for strip are well maintained from such consumers as electrical appliance manufacturers and others. These orders have lessened effect of the automobile industry's suspension

orders and enabled aggregate bookings in January to compare favorably with November, although considerably behind December. Hot strip is in good demand. Strip continues at 2.15c, base, Pittsburgh, for hot-rolled and 2.85c, base, either Pittsburgh or Cleveland, for cold-rolled.

**Cleveland**—New business is still active despite heavy forward buying before the price advance. Because of this backlogs have remained practically unchanged throughout January. Present requirements are in

most cases confined to jobbers, small farm tools and electrical equipment manufacturers. Shipments during January are expected to compare favorably with December, for mills have been operating close to capacity throughout the month.

**Chicago**—New business in strip steel is well maintained and shipments continue at the active rate prevailing during the past several weeks. The movement of automotive material is steady and fortified by a brisk rate of consumption among miscellaneous users. While backlogs are less extensive than in sheets, producers anticipate fairly heavy schedules for the balance of this quarter. Prices are steady.

**Boston**—Suspension of some shipments to the automotive industry has not affected high operations in cold-rolled strip mills. Hot-rolled strip deliveries are at three to four weeks but they show improvement. Most cold strip rollers are well covered. Cold strip is steady at 3.05c, Worcester, 0.25 carbon and under. There is talk of another advance for next quarter.

**New York**—Narrow strip specifications are active despite continued suspensions by automotive accessory plants. Current demand is highly diversified.

## Wire

Wire Prices, Page 87

**Pittsburgh** — Specifications in nearly all lines are well maintained. At present there is no general trend toward resumption on material affected by suspension orders from the automobile industry. Many lines are involved directly or indirectly, but among the first likely to benefit would be such parts makers as manufacturers of engine and body bolts and suppliers of spring wire. Demand from other sources is good and shipments are strong.

**Cleveland**—Sales this last month have kept mills at peak production levels. Stop orders from those partsmakers seriously affected by General Motors labor difficulties have naturally curtailed operations on some products, but the general miscellaneous demand has in most cases more than taken up the slack. No weakness in prices has been reported.

**Chicago** — Wire shipments are heavy and represent practically the limit of production facilities. New business in both manufacturers' wire and merchant products is fairly active, with shipments of the latter expected to increase during February as distributors add more extensively to stocks. Manufacturers'



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wire is experiencing heavy consumption among miscellaneous users, with automotive needs still substantial despite restricted operations. Steady prices generally prevail on new business.

**Boston** — Wire mills are being pushed to meet deliveries. Incoming orders are down and there have been some suspension of shipments to the automotive trade. Specialties are in active demand, notably for use in consumer manufactured products. Plain wire is firm at 2.80c, Worcester, to the manufacturing trade.

**New York**—Wire demand is brisk with increasing orders from abroad. American nails and barbed wire are now moving to South America and South Africa at prices substantially higher than the domestic market. Only a few months ago foreign nails were demoralizing domestic prices. Wire rods for Japan have sold at premiums and junk rods for Turkey recently sold above new rods in the domestic market.

## Shapes

Structural Shape Prices, Page 86

**New York**—Structural awards are heavier, with district buying approaching 5000 tons, and about 20,000 tons of new work figured or about to be closed within a week. More plain material is being taken by fabricating shops at 2.30 1/4 c, delivered New York, although such volume is not large as recent buying has been largely against specified projects, bid before the advance.

December bookings of fabricated structural steel, according to tabulations of the American Institute of Steel Construction, proved largest in the year with the exception of July. Shipments were seasonal and lower than average. Bookings during 1936 were 51 per cent larger than 1935 and shipments about 41 per cent greater. Totals were: Bookings 1,609,016 tons, and shipments 1,548,205 tons.

## Shape Awards Compared

	Tons
Week ended Jan. 30.....	64,988
Week ended Jan. 23.....	13,715
Week ended Jan. 16.....	29,346
This week, 1936.....	26,510
Weekly average, 1936.....	21,764
Weekly average, 1937.....	31,666
Weekly average, December	21,351
Total to date, 1936.....	123,797
Total to date, 1937.....	158,329

**Boston**—Inquiry for structural steel is heavier, lead by approximately 1400 tons for Maine state bridges. Awards are light following fairly heavy buying against specified projects which came out before the first of the year. A Cambridge, Mass., shop has booked another bridge at Manchester, N. H. Plain material for new work is steady at 2.43 1/2 c, Boston. Most district shops have fair backlogs.

**Cleveland**—One fabricator reports backlogs ranging from six to eight weeks and because of this is out of

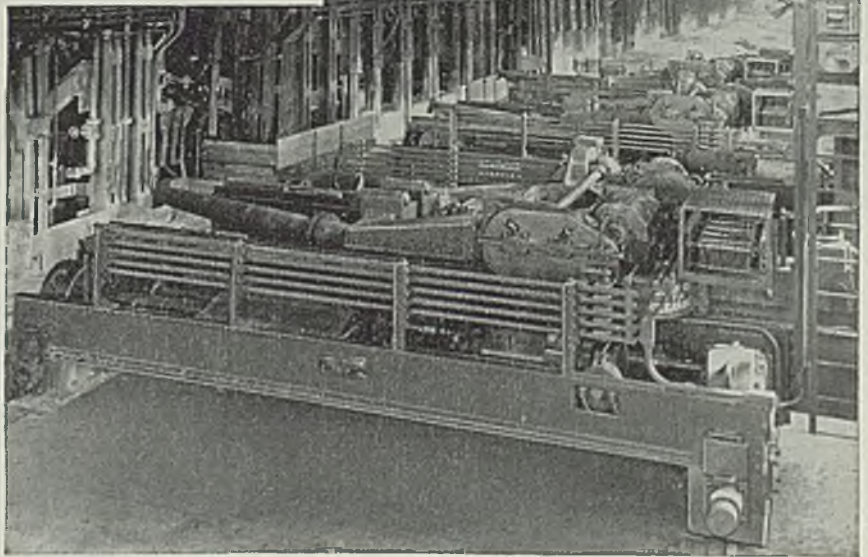
the market on jobs requiring quick delivery that cannot be supplied out of stock. Aside from the Reeves Mfg. Co. plant extension involving 500 tons at Dover, O., which went to Burger Iron Co., Akron, O., awards last week were limited to small tonnages. However, considerable tonnage is pending in the Main street bridge and the Lorain avenue bridge, this city, on which bids are expected to be advertised soon.

**Chicago**—Awards are headed by 5100 tons of plates, shapes and piling for the New Boston, Ill., dam.

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Bookings of smaller tonnages are fairly numerous, while inquiries include 2100 tons for four power plants. Operations of structural fabricators have increased slightly, with further gains in prospect.

**Pittsburgh**—Awards for shapes during the past week included 4600 tons for a plant extension, for Glenn L. Martin Co., Baltimore, to Bethlehem Steel Corp.; 3165 tons for part of the New York Central railroad express highway in New York City, placed with American Bridge Co., and 4300 tons for an office building,

Washington, placed with Fort Pitt Bridge Works, Pittsburgh. The Eleventh avenue viaduct from West Thirty-fourth to West Thirty-seventh streets, New York, involving 1900 tons, was placed with American Bridge Co., Pittsburgh. Inquiries include 1000 tons for a pump station and rock grit building for the city of Detroit.

**Birmingham, Ala.**—While fabricating shops are going at a steady pace, new business is lagging. However, several sizable contracts are pending. Local need will soon call

for considerable fabricating. Recent awards are small.

**San Francisco**—Important awards aggregating 2608 tons brought the total this year to 13,817 tons as compared with 8827 tons last year. Bids open Feb. 25 for a shop and repair docks at the Government airport, Sacramento, Calif., involving from 5000 to 6000 tons.

**Seattle**—New business is developing slowly, due to seasonal and other conditions, but the month's awards to date are more than a year ago. Unnamed interests have taken 850 tons for Oregon state projects.

## Shape Contracts Placed

28,000 tons, electrification work between Paoli, Pa., and Harrisburg, Pa., for the Pennsylvania railroad, distributed among the Bethlehem Steel Corp., Bethlehem, Pa., reported to have received about half, Carnegie-Illinois Steel Corp., Pittsburgh, the Fort Pitt Bridge Works, Pittsburgh, Lehigh Structural Steel Co., Allentown, Pa., and the Shoemaker Bridge Co., Pottstown, Pa.

5100 tons, Mississippi river dam, New Boston, Ill.; 3000 tons of fabricated steel to R. C. Mahon Co., Detroit, 2100 tons of piling to Inland Steel Co., Chicago.

4600 tons, airplane plant addition, for Glenn L. Martin Co., Baltimore, to Bethlehem Steel Corp., Bethlehem, Pa.

4300 tons, Apex building, Washington, through McCloskey & Co., Philadelphia, general contractors, to Fort Pitt Bridge Works, Pittsburgh.

3165 tons, viaduct, express highway, St. Clair Place to West 135th street, New York, to American Bridge Co., Pittsburgh; George F. Driscoll Co., Brooklyn, general contractor.

1900 tons, Eleventh avenue viaduct from West Thirty-fourth to West Thirty-seventh streets, New York, for New York Central railroad, to American Bridge Co., Pittsburgh.

1400 tons, pulp plant, for Kleckhefer Paper Co., Plymouth, N. C., to Bethlehem Steel Corp., Bethlehem, Pa.

1100 tons, bridge over Chemung river, Corning, N. Y., to Lackawanna Steel Construction Corp., Buffalo.

1100 tons, mill buildings, for National Carbon Co., Columbia, Tenn., to Bethlehem Steel Corp., Bethlehem, Pa.

965 tons, bridge, Atchafalaya river, Simmesport, La., to Virginia Bridge & Iron Co., Roanoke, Va.

900 tons, building, North American Aviation Co., Inglewood, Calif., to Bethlehem Steel Corp., Los Angeles.

808 tons, grade separation, Masen and Meanard counties, Illinois, to Midland Structural Steel Co., Chicago.

800 tons, four sound stages, for Metro-Goldwyn Mayer, Culver City, Calif., to Consolidated Steel Corp., Los Angeles.

665 tons, bridge FAP 68, Gonzales county, Texas, to Virginia Bridge & Iron Co., Roanoke, Va.

555 tons, bridge reconstruction, New York Central tracks, Bronx, N. Y., transit commission project, to American Bridge Co., Pittsburgh; Murphy & Richmond Co., general contractor.

550 tons, horticultural building, Syracuse, N. Y., to Smith & Caffrey Co., Syracuse, N. Y.

540 tons, plant building, Marshall Stove Co., Lewisburg, Tenn., to Ingalls Iron Works Co., Birmingham, Ala.

520 tons, plant extension, Reeves Mfg. Co., Dover, O., to Burger Iron Co., Akron, O.



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Executive Offices: Oliver Bldg., Pittsburgh

495 tons, field house and gymnasium, Maywood, Ill., to Mississippi Valley Structural Steel Co., Decatur, Ill.

455 tons, public school 108, Bronx, N. Y., to Weatherly Steel Co., Weatherly, Pa.; James F. Rice Building Corp., New York, general contractor.

450 tons, observatory dome, Palomar Mountain, San Diego county, California, to Consolidated Steel Corp., Los Angeles.

450 tons, public school 104, Queens, N. Y., to Dreier Structural Steel Co., Inc., through Lundin & Halwer Corp., New York.

430 tons, state highway bridge, Eckman, W. Va., to Virginia Bridge & Iron Co., Roanoke, Va.

428 tons, educational center building, Stanford university, Palo Alto, Calif., to Judson-Pacific Co., San Francisco.

400 tons, Hickory street bridge, Johnstown, Pa., to Bethlehem Steel Co., Bethlehem, Pa.

390 tons, state bridge Tillamook county, Oregon, to unnamed interest; Philpott Bros., Portland, general contractor.

300 tons, building, 78 East Fifty-sixth street, New York, to Bethlehem Fabricators Inc., Bethlehem, Pa.; Hegeman-Harris Co., general contractor.

300 tons, main tower platforms, Baytown, Tex., for M. W. Kellogg Co., to Belmont Iron Works, Philadelphia.

287 tons, fieldhouse, Jefferson, Ind., to H. J. Baker & Co., Indianapolis.

250 tons, bridge control project, 59-5-4, Shelby county, Texas, to Austin Bros., Dallas.

250 tons, transmission towers, Clinton-Alcoa line, Clinton, Tenn., for Tennessee Valley Authority, to Blaw-Knox Co., Blawnox, Pa.

220 tons, state bridge over Clear creek, Denver, to Midwest Steel & Iron Co., Denver.

220 tons, state bridge over Horse creek, Sugar City, Colo., to Midwest Steel & Iron Co., Denver.

205 tons, fishway, Bonneville dam, to unnamed interest; King Bros., Portland, general contractor.

200 tons, hospital, Luzerne county, Pennsylvania to Wilkes-Barre Iron & Wire Co., Wilkes-Barre, Pa.

200 tons, bridge, control project, 218-6-4, Cass county, Texas, to Mosher Steel Co., Houston, Tex.

200 tons, two public schools, Philadelphia, awarded through McCloskey & Co., Philadelphia, to Fort Pitt Bridge Works, Pittsburgh.

185 tons, school, Odessa, N. Y., to Gene-see Bridge Co., Rochester, N. Y.

185 tons, state highway bridge, WPGM-2591-A, Troup county, Georgia, to Virginia Bridge & Iron Co., Roanoke, Va.

170 tons, bridges 12 and 37, Pittsburgh & West Virginia Railway Co., Bridgeville, Pa., to American Bridge Co., Pittsburgh.

170 tons, bridge and viaduct, Raccoon river, Des Moines, Iowa, to Des Moines Steel Co., Des Moines, Iowa.

155 tons, heat treating building, Harvey, Ill., to Mississippi Valley Structural Steel Co., Decatur, Ill.

140 tons, bridge, WPGM 233-F, Ouachita county, Arkansas, to St. Louis Structural Steel Co., East St. Louis, Ill.

140 tons, garage and office building, Potter Lumber Co., Washington county, Pennsylvania, to Gulbert Steel Co., Pittsburgh.

135 tons, underpass, department of highways, Florida, to Virginia Bridge & Iron Co., Roanoke, Va.

135 tons, Sierra street bridge, Reno, Nev., to Moore Drydock Co., Oakland, Calif.

130 tons, bridge, control project, 75-2-2, Pecos county, Texas, to North Texas Iron & Steel Co., Fort Worth, Tex.

125 tons, state bridge, contract No. 2,

Manchester, N. H., to the Boston Bridge Works Inc., Cambridge, Mass., Arute Bros. Inc., general contractors.

120 tons, H piling, postoffice, Ketchikan, Alaska, to Bethlehem Steel Corp., Seattle; Warrack Construction Co., Seattle, general contractor.

100 tons, plant addition for Kimball Glass Co., Vineland, N. J., to Bethlehem Steel Co., Bethlehem, Pa.

### Shape Contracts Pending

6000 tons, shop building and repair docks for Government airport, Sacramento, Calif.; bids Feb. 25.

3200 tons, steel sheet piling, East River

drive, Grand to East Twelfth street, New York; bids Feb. 2.

1250 tons, state bridge, Deer Isle, Me.

1000 tons, municipal pump station and rock grit building, Detroit.

750 tons, building addition, Hartford Electric Light Co., Hartford, Conn.

650 tons, four-span through steel truss and two-span I-beam bridge, Armstrong and Westmoreland counties, Pennsylvania; bids to state highway department, Harrisburg, Pa., Feb. 5; included, 65 tons plain steel bars.

600 tons, Knik river bridge, Alaska Railway; Wisconsin Bridge & Iron Co., Milwaukee, low.

600 tons, foundry building, Lewisburg, Tenn.

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600 tons, power house, Bay City, Mich.  
 550 tons, mill building, Phelps-Dodge Corp., Yonkers, N. Y.  
 550 tons, Missouri river bridge, reconstruction of Central roadway, Sioux City, Iowa.  
 500 tons, power house, Peoria, Ill.  
 500 tons, power house, West Pittsburg, Pa.  
 500 tons, power house, Kalamazoo, Mich.  
 500 tons, state bridges, Indiana; bids Feb. 9.  
 400 tons, fertilizer plant, for Peters Mfg. Co., New Martinsville, W. Va.  
 400 tons, turbine room, etc., for San Diego Consolidated Gas & Electric Co., San Diego, Calif.  
 400 tons, 13-story building, for Rodney & Stuart Unz, New York.  
 360 tons, building, Lima Locomotive

Works, Lima, O.; bids in.  
 260 tons, senior high school building, for board of education, Norristown, Pa.  
 260 tons, garage building, Minneapolis, for Dayton Co.  
 250 tons, through truss bridge, Warren county, Pennsylvania bids to state highway department, Harrisburg, Pa., Feb. 5; included, 28 tons plain steel bars.  
 229 tons, state bridge, Mesa county, Colorado; bids Feb. 3.  
 110 tons, post office, South Norwalk, Conn.  
 108 tons, Brand boulevard bridge, Los Angeles, for United States Engineer office, proposal 249; bids opened.  
 102 tons, state bridge, Bent county, Colorado; bids Feb. 3.  
 100 tons, revolving boom crane, Speci-

fication 8340, Pearl Harbor, T. H.; bids Feb. 17.  
 100 tons, public school, Sixty-sixth street, Philadelphia; bids Feb. 2.

## Reinforcing

Reinforcing Bar Prices, Page 87

**Pittsburgh**—Activity in concrete reinforcing bars is slightly better than expected, considering tonnages booked before prices advanced. Low bidders on the general contract for the Albemarle Sound, N. C., bridge, a project involving 1400 tons, are understood to be Tidewater Construction Co. and T. A. Loving.

**Cleveland**—Requirements for reinforcing steel bars continues to be confined to tonnages of 25 to 50 tons on the average, and no work of consequence is pending. However, mills are fairly active for awards have aggregated considerable tonnage. Prices are generally firm but no real test has been offered.

**Chicago**—While concrete bar shipments against contracts remain in fair volume, orders for larger tonnages are few. For the New Boston, Ill., dam, 600 tons have been ordered. Several large lots for public projects still are pending. The tendency in prices is toward firmness.

**Boston**—Bridges and public engineering work account for most of reinforcing steel awards. Prices are still unsteady, even on new business, 3.50c being low on a Vermont highway project taking a moderate tonnage. This price was for material in place by a contractor-bidder who incidentally is not low on the contract.

**New York**—Reinforcing concrete bar purchases approximate 1000 tons with an increasing volume bought at 2.68c, delivered to the job, New York. Shading of this price, however, has not disappeared, even on new business. Inquiry gradually improves with more public engineering projects out for bids, about 2500 tons being active, exclusive of an encouraging number of small lots.

**Philadelphia**—Award of 765 tons

### Concrete Awards Compared

	Tons
Week ended Jan. 30	3,191
Week ended Jan. 23	1,424
Week ended Jan. 16	4,316
This week, 1936	24,196
Weekly average, 1936	6,005
Weekly average, 1937	3,122
Weekly average, December	3,560
Total to date, 1936	60,419
Total to date, 1937	15,611



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for two public schools here and an inquiry for 400 tons for a third school, on which bids will be opened Feb. 2, are outstanding in the local reinforcing bar market. The bars were principally rail steel giving little test of the new prices on billet steel bars. A local contractor, McCloskey & Co., placed 380 tons of rail bars for the Apex building, Washington.

**San Francisco**—Only one award in excess of 100 tons was reported placed. Unnamed interests secured 171 tons for two specifications at Potholes, Calif., for the bureau of reclamation, invitations A-42, 169-A and 170-A. While coast mills are booked practically solid for the first quarter, considerable work is being held up due to the inability of getting eastern made building products and equipment via water. Bids open on Feb. 15 for the placing of 2231 tons in addition to 1074 tons of sheet steel piling and 214 tons of shapes for the All-American canal, Boulder Canyon project, Arizona, specification 708.

**Seattle**—Backlogs are keeping local mills in capacity operation but new business is developing slowly. Recent awards have been in less than 100 ton lots and pending tonnage are unimportant. About 200 tons for state jobs remained unplaced.

### Reinforcing Steel Awards

- 600 tons, Mississippi river dam, New Boston, Ill., to Inland Steel Co., Chicago.
- 415 tons, public school Philadelphia, awarded through McCloskey & Co., general contractor, that city, to Sweet Steel Co., Williamsport, Pa.
- 400 tons, viaduct, St. Clair Place to West 135 street, New York, to Carroll-McCreary & Co. Inc., through George F. Driscoll Co., New York.
- 380 tons, Apex building, Washington, awarded through McCloskey & Co., Philadelphia, general contractors, to Sweet Steel Co., Williamsport, Pa.
- 350 tons, public school, Philadelphia, awarded through McCloskey & Co., that city, to American Steel Engineering Co., Philadelphia.
- 340 tons, preliminary work, world's fair project, Flushing, N. Y., to Bethlehem Steel Corp., Bethlehem, Pa.
- 180 tons, coast guard station, Floyd Bennett field, New York, to Bethlehem Corp., Bethlehem, Pa., through Graves-Quinn Corp., New York.
- 171 tons, bureau of reclamation, invitation A-42, 169-A and A-42, 170-A, Potholes, Calif., to unnamed interest.
- 150 tons, sewage disposal plant, Haverford township, Pennsylvania, through Stewart Bros., Philadelphia, to Bethlehem Steel Co., Bethlehem, Pa.
- 105 tons, bridge, Willimantic, Conn., to Concrete Steel Co., New York.
- 100 tons, building, Yardley Limited, Union City, N. J., to Jos. T. Ryerson & Son Co. Inc., Chicago, through Wigton-Abbott Inc., New York.

### Reinforcing Steel Pending

- 1400 tons, bridge, Albemarle sound, N. C.; Tidewater Construction Co. and

- T. A. Loving low bidders.
- 1350 tons, Mid-town tunnel project, New York; taking bids.
- 1000 tons, building, Coca Cola Co., Kearny, N. J.
- 700 tons, building, Universal Atlas Cement Co., Hudson, N. Y.
- 400 tons, public school, Sixty-sixth street, Philadelphia; bids Feb. 2.
- 211 tons, building, Modern Malting & Manufacturing Co., South San Francisco; bids opened.
- 200 tons, East river drive, Grand to East Twelfth street, New York; bids Feb. 2.
- 126 tons, state bridge and retaining wall, Deer Creek, Oreg.; bids at Portland Feb. 4.
- 125 tons, firewall and tank foundations, Shell Oil Co., plant, Seattle; Rumsey

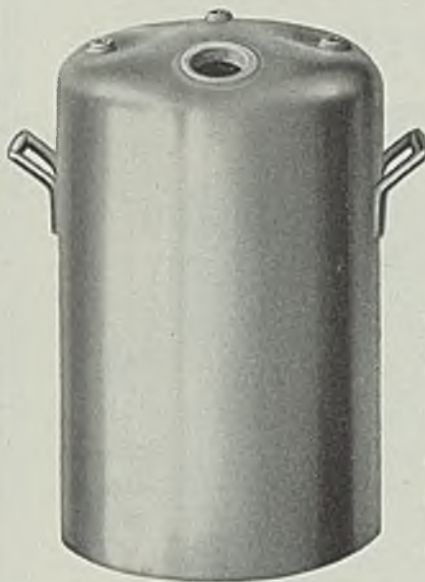
- & Co., Seattle, general contractors.
- 100 tons, 256-foot state span, Salmon River, Ida.; Olaf Nelson, Logan, Utah, general contractor.
- 100 tons, three buildings, Government airport, Sacramento, Calif.; bids Feb. 19.
- 100 tons, state bridge, Mesa county, Colorado; bids Feb. 3.

### Tin Plate

Tin Plate Prices, Page 86

**Pittsburgh**—While specifications are still heavy, tin plate operations temporarily show a slight decline

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## DEEP DRAWN SHELLS AND SHAPES

to 88 per cent of capacity, due to precautionary measures preceding last week's high water. Actual damage caused by the flood was negligible. Heavy demand for beer, oil, and other cans features this market. Tin plate is quoted at \$4.85 per base box, Pittsburgh.

**New York**—Manufacturers of general line cans are said to be buying tin plate at the heaviest rate in years. This domestic business, combined with insistent demands from abroad, despite premiums for export, is extending deliveries sharply.

# Pig Iron

Pig Iron Prices, Page 88

**Pittsburgh** — Pig iron shipments were only slightly affected by last week's high water, and only a few foundries temporarily were hampered by flood conditions. As a precautionary measure, some stacks were banked. Requirements continue to be made up of small lots, but the advanced market is being maintained and new sales are pro-

ceeding on the basis of \$21 for No. 2 foundry and malleable, \$20.50 for basic, and \$21.50 for bessemer. Producers do not anticipate any decided pick-up in orders for several weeks.

**Cleveland**—Producers report that shipments last month fell a little behind December. Stocks are considerably below those of the comparable date last month, due to relatively little new business in contrast to heavy shipments, resulting from extensive forward buying before Jan. 1. The recent price increases in scrap and the \$1 advance on pig iron in the Canadian markets has started rumors that another general price advance for second quarter is likely.

**Chicago**—January pig iron shipments showed a small gain over the heavy December volume and producers' backlogs are sufficient to assure continuation of an active movement during February. While new business has been restricted by forward coverage last quarter, a moderate amount of small-lot buying has appeared. Restricted automotive schedules still are without a major effect on foundry operations.

**Boston** — New buying of pig iron is light, and in small lots at steady, unchanged prices. Foundry melt by textile equipment builders is high, and most machinery casting foundries are also active. Foreign sales are light, with prices fairly well in line with domestic quotations.

**New York** — Pig iron shipments continue brisk. Sellers appear to have cleaned up their carryover from last year. New demand is spotty, as most consumers have contracted for requirements for this quarter.

**Buffalo** — Sellers of pig iron express fear that long continuation of the automotive strikes may cut into sales. So far consumers have been taking regular deliveries, but it is not known how much longer foundries catering especially to automobile manufacturers can continue on present schedules. There is no thought of curtailing production as all interests would like to add to present stocks.

**Philadelphia**—Pig iron sellers declare that they have now practically cleaned up deliveries against orders placed at prices \$1.50 under the current market, and are now shipping against orders placed at prices 50 cents under the present market, shipments which will likely continue throughout the remainder of this quarter. There is little new buying, but with the melt continuing heavy, shipments are brisk.

**St. Louis** — Melt of pig iron has moved steadily upward since the

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first week in January, and the rate now is equal to that of mid-December, which marked the peak of 1936. Shipments have been on a large scale, and tonnage delivered so far this month practically assures a total for the full period slightly above December, and the largest for any January since 1929. Specifications are of large proportions, motivated by apprehension of labor troubles, as well as actual need, immediate and prospective, for the iron.

**Birmingham, Ala.** — Purchases of pig iron are not so lively as a few weeks ago, but shipments continue heavy. Smaller consumers are still buying in car lots for prompt shipment. Fifteen blast furnaces are in operation.

**Toronto, Ont.** — Announcement of large awards for rolling stock and rails by the Canadian railroads and general improvement in activities in the iron and steel industry are having a stimulating effect on sales of merchant pig iron. New business is increasing and awards now are running well above 1200 tons weekly. Inquiries also are more numerous.

## Scrap

Scrap Prices, Page 90

**Pittsburgh**—The market in general is still strong although activity has been quiet, partly due to conditions resulting from high water. A Pennsylvania railroad list closing Feb. 3 includes 1850 net tons of No. 1 railroad cast, 1730 tons of malleable, and 12,000 tons of No. 1 heavy melting steel. A Baltimore & Ohio railroad list closing Feb. 1 includes 2000 gross tons of No. 3 rail steel, 1500 tons of No. 1 heavy melting steel, and 2500 tons of destroyed steel cars and tenders. Railroad specialties are still in great demand because of comparative scarcity. One of the largest wrecking operations in several years is under way at the 38-year-old plant of Pressed Steel Car Co., north of here on the Ohio river. Approximately 9000 tons of scrap are involved. The old mill, which covers 26 acres, has been bought by the United Iron & Metal Co.

**Cleveland**—Further strength is developing in scrap and supplies of heavier grades are tighter. Yet important mill consumers show little interest as they are well covered. However, small purchases are being made by at least one consumer which is said to have paid close to the top quotation.

The Youngstown, O., market also continues to strengthen, with all grades about 25 cents higher.

**Chicago**—Scrap is strong here and most prices have advanced further. Heavy melting steel is up 50 cents at \$18.50 to \$19, while some private sales of this grade have brought even higher. Chicago Surface Lines sold 15,000 tons of heavy melting steel at \$19.35, delivered. Supplies continue restricted and flood conditions have tended to curtail the amount of old material moving here from southern points.

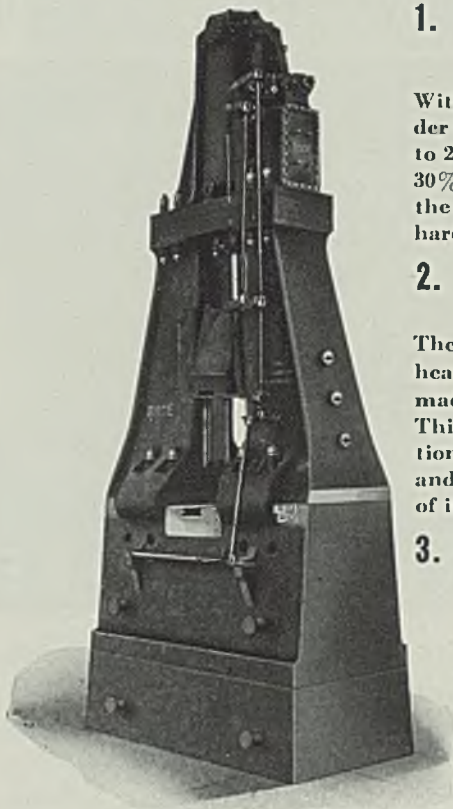
**New York**—Heavy melting steel scrap prices are strong, up 50 cents a ton for both export and domestic

shipment. No. 2 steel scrap is considerably more active. Most eastern steel mills are taking steady shipments against contracts and buying further material moderately. No. 1 machinery cast for domestic shipment is up 25 to 50 cents a ton, brokers paying \$14.75 to \$15.25. f.o.b. New York. Specification pipe has advanced sharply to \$12.00 to \$12.50. Export demand is increasing with Japan and Italy doing most buying in this territory.

About 85,000 tons of iron and steel scrap is included in 27 ships

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With the same ram, the cylinder bore was reduced from 27" to 23". The old hammer was 30% larger in cylinder area but the new hammer is faster, hits harder.

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In spite of the smaller cylinder bore, it has been possible to cut down the steam pressure below that previously used. This is important for shops that want to operate their hammers on compressed air, or on low steam pressure.

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# ERIE

to be wrecked by private yards, bids Feb. 1 to United States maritime commission. Seventeen are at Eustos, Va., seven at New Orleans and three at Staten Island.

**Buffalo**—A lull has come in scrap buying as dealers seek to line up tonnage for shipment on orders. Much additional material could be sold if available but losses incurred in recent short sales have taught their lesson. The larger dealers continue a conservative selling policy.

**Philadelphia**—Scrap prices, due primarily to export demand and cer-

tain domestic purchases, some apparently of an emergency character, have advanced so sharply of late that the more conservative trade interests are moving cautiously in expectation of a possible reaction.

At the moment the export and domestic markets here are out of line. No. 1 steel for domestic consumption has been purchased at around \$19 and No. 2 steel, quite a large tonnage, at \$18, whereas No. 1 steel for export is still being quoted at \$18, dock, and No. 2 steel at \$17, with no change in the latter

prices in more than a week. Recent high prices here for steel have attracted shipments from farther inland than at any time in recent years, it is said. The Pencoyd, Pa., consumer has been the principal domestic buyer of No. 1 steel, and the Conshohocken, Pa., consumer the leading buyer of No. 2 steel in the immediate district. Several other grades have been advanced for domestic account, including both old and new compressed sheets, railroad malleable, railroad grate bars, specification pipe, stove plate, axle turnings and No. 1 wrought.

**Detroit**—Good demand, coupled with scarcity of some items, has reacted to move prices upward on a number of grades, by 50 cents to \$1 per ton. While scrap from auto plants is reduced by General Motors shutdown, sufficient coverage of needs by mills and available tonnage of home scrap have avoided any severe tightening of the market.

**St. Louis** — Considerable activity obtains in the market for iron and steel scrap, sales of all grades during the past week or ten days totaling approximately 20,000 tons. Mills and foundries are eagerly seeking supplies, and will purchase within reason anything offered by dealers. Prices continue to rise.

**Birmingham, Ala.** — Scrap iron and steel prices are unchanged, demand is fairly good and dealers are making prompt delivery. Heavy melting steel at \$12.50 and \$13.50 still commands attention.

Specification pipe and stove plate, f.o.b. Boston, for domestic shipment are stronger, dealers advancing buying prices 25 to 50 cents a ton. Heavy melting steel purchasing by New England consumers is comparatively light with most activity on these grades being done for export and shipment to Pennsylvania.

**Toronto, Ont.**—Trading in iron and steel scrap is holding at a high level and shipments are running into large tonnages. Both Hamilton and Montreal mills show interest and are taking delivery freely. Offerings of scrap are limited.

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CORPORATION  
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## Warehouse

Warehouse Prices, Page 89

**Pittsburgh**—Sales are slightly better than usual at this time of the year and some warehouse interests report that tonnage in January will run ahead of last month, but probably will not equal the November volume. Flood conditions had some slight temporary effect upon business last week.

**Cleveland**—Warehouse distributors report an active month, only

slightly affected by General Motors labor troubles. In some cases stock turnover was better than in December, one of the best months last year. Stocks are substantial in spite of difficulty in getting reasonably prompt shipments from the mills. Prices are firm.

**Chicago**—Sales continue active at a rate of 10 per cent or more ahead of January last year. Buying is well diversified. Prices are steady.

**New York**—Higher warehouse prices effective since Jan. 1 are fairly steady with some scattered shading. Mill deliveries have not materially improved. Seconds are becoming a less important factor in this market. Demand for cold-finished, notably in the New Jersey district from producers of screw machine products, is active.

**Philadelphia**—While one leading distributor looks for January business to exceed that of December, most distributors look for a reduction. One stimulating factor was purchases by consumers, who, apparently for the first time felt the pinch of mill deliveries. Another factor contributing to the January showing was billings against orders placed before the general price advance Jan. 1, which could not be shipped at the last minute.

**Detroit**—Recession in demand for warehouse products is beginning to be felt, although not as seriously as at first anticipated. Business from sources other than automotive continues good and building hardware suppliers are active.

**St. Louis** — Sales of iron and steel from store continue at a rate commensurate with the best achieved in December. Demand is well diversified. Considerable inquiry has developed from the railroads and other sources for repairs and replacements in the flood area. Prices hold firm.

**Seattle**—Effective Jan. 25 jobbers advanced plates and shapes from 3.95c to 4.05c to bring these items in line with recent advances on bars. Portland dealers are expected to follow suit. Under a changed setup in effect at all Pacific coast centers, boiler tubes have been advanced \$10 a ton to offset the differential between rail and water shipment and this increase may be held after shipping is resumed.

imately 2000 tons daily. The ovens, 400 at Phillips, 264 at Kyle, and 120 at Crossland, have been idle for some time since the company suspended its coke making in the district a number of years ago, with the exception of a short period when a few ovens operated at Kyle. Employment for 600 men is provided by the new operations. Approximately 3120 independent ovens were in operation at the start of last week.

American Steel & Wire Co. will start production shortly in two of its four batteries at Cleveland, after

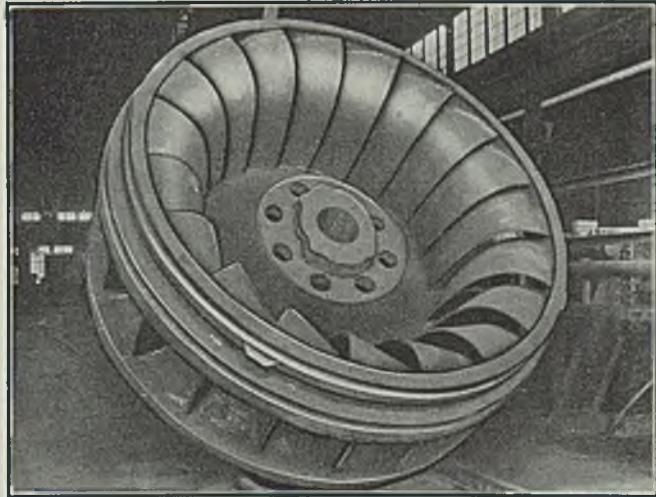
they have been idle about four years. Shortage of metallurgical coke caused resumption.

## Bolts, Nuts, Rivets

Bolt, Nut, Rivet Prices, Page 87

The largest bolt inquiry in the East in two years, 1875 tons, will be bid Feb. 2 for the New York city tunnel authority for the Queens-Midtown tunnel. Three items are involved, comprising 280,000 bolts, 1½ inches in diameter and 8¼ inches in

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BRAND

## Metallurgical Coke

Coke Prices, Page 87

H. C. Frick Coke Co., United States Steel Corp. subsidiary, is firing more than 700 beehive ovens in the Connellsville, Pa., district, and it is expected that the region's production will be increased by approx-

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length; 139,200 bolts, 1½ and 1¼ inches; and 5400 bolts, 1 and 1¼ inches. Notwithstanding substantial suspensions from the General Motors Corp. due to labor difficulties, eastern bolt and nut plants are operating at around 70 per cent of capacity, it is reliably estimated, with at least one large plant at close to 80 per cent. The average operating in the east in recent weeks has been the heaviest since 1929, it is said.

Bolt, nut and rivet shipments continue fairly heavy, though restricted somewhat by the General Motors shutdown. Railroad shops and

freight car builders are taking large lots, and farm implement and tractor builders are accounting for heavier shipments than a year ago. Rivet requirements of structural fabricators show small gains. New business in bolts and nuts still is restricted by heavy buying of last quarter.

## Cold Finished

Cold Finished Prices, Page 87

**Pittsburgh**—From some sources demand for cold-finished bars could

be heavier, but in general the market is still strong. In one or two instances difficulty has been encountered in obtaining shipments from hot mills. Resumption of operations by General Motors would result in release of considerable material. Cold-finished bars continue at 2.55c, base, Pittsburgh.

## Iron Ore

Iron Ore Prices, Page 90

**Cleveland**—Receipts of iron ore at lower lake ports for this season to Jan. 1, shipments to interior furnaces and dock balances follow:

Port	Receipts	Shipments	Dock Bal. Jan. 1, '37
Buffalo	3,792,876	29,252	2,065
Erie	1,536,884	1,551,983	83,785
Conneaut	6,773,428	6,759,500	1,625,341
Ashtabula	4,479,943	4,691,666	1,479,454
Fairport	898,389	887,979	403,818
Cleveland	9,061,815	7,242,778	494,618
Lorain	2,677,341	1,282,677	13,533
Huron	704,976	805,174	236,164
Toledo	1,512,232	820,870	40,875
<b>Total</b>	<b>31,437,884</b>	<b>24,071,879</b>	<b>4,379,653</b>

Year ago 19,907,228 14,250,469 5,093,441

Receipts at other than Lake Erie ports for current season to Jan. 1 follow:

Port	Season
Detroit	1,536,442
Indiana Harbor	2,167,432
Gary	3,241,428
So. Chi. (Loc. front.)	5,372,170
Sault Ste. Marie, Ont.	117,001
Hamilton, Ont.	465,594

Total 12,900,067

Year ago 28,078,724

With an increase in mining cost due to wage advances, some believe higher ore prices are in prospect. An earlier buying movement than for several years is predicted and because of this consumers would like to have the price question settled early in the season.

## Ferroalloys

Ferroalloy Prices, Page 88

**New York**—Ferromanganese shipments during January showed little decline from the high rate of previous weeks. Prices are strong at \$80, duty paid, Atlantic seaboard. Domestic spiegeleisen, 19 to 21 per cent, also is moving well, with prices at \$26, Palmerton, Pa.

## Semifinished

Semifinished Prices, Page 87

Pittsburgh mills are pressed to meet demand for semifinished material. Any consumer hoping to come into the market for additional

# Behind the Scenes with STEEL

### Minimag

**P**OCKET-SIZE magazines are all the rage these days, a new one making its appearance about every month. Our pockets are now full, so we hope no more new publications are born for a while. One of the newest efforts is *Business Digest*, edited by Henry A. Palmer of Chicago. Patterned after *Reader's Digest*, it takes its material from a wide list of business papers.

In the first issue, for example, are two articles abstracted from recent issues of STEEL. One is Editor E. L. Shaner's observations on small homes as the next mass market for steel. The second is an excerpt from our Power Drives department, discussing winter protection for lubricants.

Welcome to the fold, B.D.; may you enjoy a long life and a merry one.

### Impressive

**A**NOTHER alert contemporary—not a new one, however—our old friend *Business Week*, reports in its Jan. 6 issue: "As befits the first issue of a bright new year, the magazine STEEL clothes its impressive annual review number with a new moisture-proof, soil-proof, scuff-proof high gloss cover. It looks like a particularly good 'varnish' job; it proves to be an application of Duplex, under a heat-pressure process where by sheet cellophane overlies the printing and sticks like a brother. . . ."

Like a brother, did you say, B.W.? More like an insurance salesman, we'd say.

We are still hearing congratulatory comments on this gleaming cover of STEEL'S Yearbook issue. Perhaps we should emit a belated accolade to Russ Jaenke of the business staff for his foresight in realizing the possibilities of the treatment and in helping to put it across for this issue.

### Knowledge Is King

**T**HIS apparently being magazine week in this department, we are passing along a few questions which Watson Davis, director of *Science Service*, has asked us, but which we're damned if we can answer. To wit: "Why do bakers freeze bread? What should you

eat for a fifth meal each day? How do Indians conduct psychic duels? Will a butterfly pick a fight? What is the medical value of the male sex hormone? Who transplanted an infant's eye? Why did hazelnut butter keep 2700 years? How does one tribe of savages avoid the mother-in-law quarrel?"

These are all too tough for us, but maybe among our readers there will be some well-posted gentlemen who can give Mr. Davis the answers. We would like to know whether a butterfly will pick a fight, though.

Maybe Mr. Davis is slyly trying to sell us something. We'll read his letter over more carefully and find out.

### Long and Short of It

**A**LL you linguists will be interested to learn that Miss Ada Ey was married the other day to Mr. Bartholomew C. Pfaiffenschlageringer in Brooklyn. The groom's middle name is rumored to be Cincinnatus, although there is no confirmation of this. The bride is reported to be instigating a movement to have her husband's name changed to Bart Pff.

Wonder if that boy has to have oversize bank checks?

### Inventions

**Y**OU can buy radio interference eliminators to hook on your electric razor, in case your chin mower makes a buzzing noise while you're listening to Bing Crosby. All we need now is a combination radio and electric shaver, so that each morning as your razor glides over the stubble, the gentle strains of "I Get a Kick out of You" will be wafted from the instrument to your receptive ears.

### Solace

**I**N THE face of sit-down strikes, floods, fires, influenza and other public harassments, it is comforting to realize that Smackers Inc. is not an organization of "hired General Motors thugs" but is merely a manufacturer of baking devices, according to Dun & Bradstreet.

—SHRDLU

tonnage beyond that already booked would have difficulty finding available extra supplies. Most nonintegrated mills, however, were generally well covered before the price advance. Billets and blooms, sheet bars and slabs are quoted at \$34, base, Pittsburgh; and common wire rods, \$43 and \$45.

## Steel in Europe

Foreign Steel Prices, Page 89

**London—(By Cable)**—Supplies of pig iron in Great Britain are slightly easier and with an additional blast furnace stack restarted a limited tonnage for export is available. Scarcity of steel continues and makers are unable to meet increasing export demand. Needs of domestic producers for semifinished steel are barely being satisfied. A large volume of domestic demand continues to come from railroads and shipyards for new construction.

The Continent reports quieter export business owing to congestion of order books, most works being booked to the end of April.

## Nonferrous Metals

Nonferrous Metal Prices, Page 88

**New York**—Floods in the midwest and prolongation of the automobile strike weakened sentiment in nonferrous metal markets last week. Although prices held fairly steady in domestic markets, an easier tone developed abroad. Activity in the markets turned quiet as both sellers and buyers awaited developments.

**Copper** — After dipping to 12.27½c, c.i.f. European ports, early in the week, export copper appeared fairly steady at around 12.62½c at the weekend. Electrolytic copper was firm here at 13.00c, Connecticut. Current levels are supported by a strong statistical position and prospects of continued active consumption. Consumers are well covered on immediate needs.

**Lead**—Buying interest among consumers is expected to increase materially on Monday following a quiet week as March books will be opened at that time. January shipments are expected to be reported below the previous month's total, indicating that stocks likely will show an increase. Prices held at 5.85c, East St. Louis.

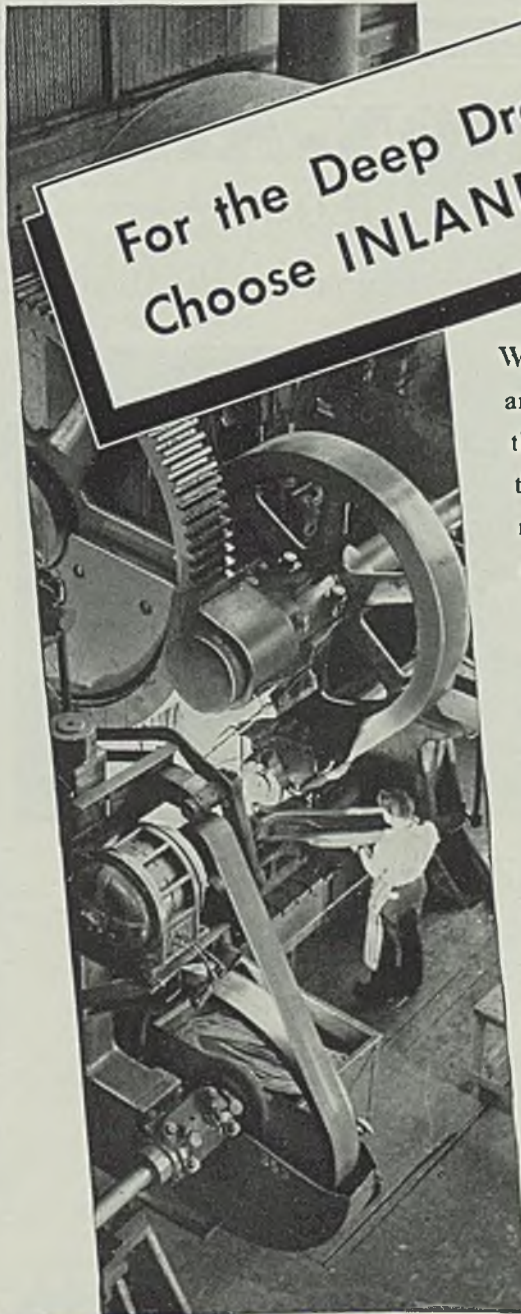
**Tin**—Prices tended lower on the prospects of heavier supplies in the near future. Consumers showed buying interest only at the bottom of the price swings. Straits spot closed around the 50-cent level.

## Equipment

**New York**—Machine tool sales in January were unexpectedly high despite heavy purchasing during the last two months of 1936, when volume was materially increased by pending price advances on practically all lines. These advances average about 10 per cent and are now in effect generally. Practically all buying is for replacement. From

eight to 12 weeks is required by most builders for delivery on the lighter types of standard tools. Heavier equipment, including boring mills, in some instances cannot be delivered until September and October.

Practically all orders are for specialty equipment of automatic or semiautomatic types, industrial users continuing to move away from the strictly standard type of machine.



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# Construction and Enterprise

## Ohio

CLEVELAND — Dougherty Lumber Co., T. Dougherty, president and treasurer, 1053 East 152nd street, plans construction of a creosoting and dry kiln plant at 4300 East Sixty-eighth street, at a cost around \$40,000. Plans will mature in the summer.

CLEVELAND — General Rivet Co. has been formed to manufacture hollow rivets of steel, copper and bronze, chiefly

for use by the automotive and leather goods industries. Clark McConnell is president and treasurer, and plant headquarters will be at 1313 West Eightieth street, in the former Folberth building.

DAYTON, O.—Materiel division, Air Corps. Wright field, will take bids until Feb. 10 for a motor-driven air compressor to be operated on alternating current of 220 volts, 3-phase, 60-cyle.

DEFIANCE, O. — Northwestern Elec-

tric Co-operative Inc., Arthur Sherman, Hicksville, O., president, plans erection of rural electric transmission lines in DeLance and Williams counties. Total cost of \$285,000 has been granted by REA. Engineer is Carl Frye, 620 East Broad street, Columbus.

FINDLAY, O. — North Central Rural Electric Co-operative Inc., L. B. Keller, Tiffin, O., president, plans erection of rural electric transmission lines in Hancock, Seneca, Wyandotte and Crawford counties. Cost will be \$800,000, and funds have been allotted by REA. Engineer is Carl Frye, 620 East Broad street, Columbus.

LIBERTY CENTER, O. — Village will ask bids about Feb. 15 for construction of waterworks plant to cost \$55,851. Engineer is Champe, Finkbelner & Associates, 1025 Nicholas building, Toledo.

LIMA, O. — City plans expansion of waterworks system, to include construction of new pumping station, at a cost of \$400,000, financed through bonds. A. L. Metheany is mayor, and E. E. Smith is waterworks superintendent, City Hall.

MANCHESTER, O. — City plans construction of a municipal power plant to cost \$30,000, cost to be met through federal aid. Bids will be asked soon.

MARION, O. — Cayonelle Products Co. plans to build a 1- and 2-story, 60 x 160-foot plant costing \$40,000. Engineer is E. G. Hoefler, 5005 Euclid avenue.

MINSTER, O. — Village plans waterworks improvements, including an elevated steel tank and tower and installation of pumps. Council is asking WPA for aid. L. A. Drees is mayor, Champe, Finkbelner & Associates, 1025 Nicholas building, Toledo, engineers.

OHIO CITY, O. — City will ask bids soon for construction of a municipal power plant estimated to cost \$40,000, to be financed through a federal grant and loan. Carl J. Simon, Van Wert, O., is engineer.

OHIO CITY, O. — Village is taking bids due Feb. 5 for construction of a power and light plant to cost \$44,900. One 150-horsepower and one 75-horsepower diesel engine and auxiliaries will be installed. PWA has loaned \$25,000 and granted \$19,000.

PIQUA, O. — City will ask bids soon for auxiliary equipment for the light plant, to include auxiliary stoker, two motor-driven condensate pumps and a drive unit. Total cost is estimated at \$16,000. F. R. Buechner is service director.

REPUBLIC, O. — Village plans construction of waterworks system, to include elevated tank, at a total cost of \$48,000. Application has been made to PWA for \$22,000, and election will be held to vote on bonds for remainder of cost. Champe, Finkbelner & Associates, 1025 Nicholas building, Toledo, are engineers.

SIDNEY, O. — City plans additions to waterworks plant, to include erection of 500,000-gallon steel elevated tank, and installation of diesel engine-driven generator set and appurtenances. Bids will be asked around March 1.

TOLEDO, O. — City will ask bids late in February for waterworks pumping equipment to cost \$200,000. George N. Schoonmaker is service director, and W. G. Clark is city engineer, division of water, 110 Cherry street.

WELLSVILLE, O. — City plans waterworks construction, to include a 2,000,000-gallon filtration plant, at a total cost of \$106,000. Bids will be asked about March 15. A PWA grant of \$47,700 has been sought.

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## Connecticut

BRIDGEPORT, CONN. — Bridgeport Brass Co., Housatonic avenue, plans to build an addition to its brass and copper casting shop and will install electric casting equipment. Cost will be around \$40,000. W. R. Webster is vice president.

HAMDEN, CONN. — Connecticut High Test Sand & Gravel Co. plans to rebuild and replace manufacturing buildings and equipment recently damaged by fire. Company manufactures cement pipe.

NEW LONDON, CONN. — Hawthorne Sash & Door Co. plans to construct a manufacturing building to replace one recently destroyed by fire. Cost of the new plant is estimated at over \$45,000.

## Massachusetts

BOSTON, MASS. — Boston Plate & Window Glass Co., 287 A street, South Boston, is taking bids for repairing its fire-damaged plant, and for construction of a new factory building at Wormwood and A streets. Total cost will be about \$40,000. C. W. Dimick is president, and architect in charge is H. B. Prescott, 259 Summer street.

WORCESTER, MASS. — Pullman-Standard Car Mfg. Co., Mountain street, is considering rebuilding its power plant which was recently destroyed by fire.

## Rhode Island

PROVIDENCE, R. I. — Soluol Corp., 123 Georgia avenue, will let contracts soon for construction of a 2-story plant addition. Architects are Barker & Tur-off, 739 Grosvenor building.

## New York

BINGHAMTON, N. Y. — Universal Instruments & Metal Co. Inc., 24 Wall street, plans construction of a factory on Whitney avenue, at a cost of \$40,000.

BUFFALO, N. Y. — Bliss & Laughlin, steel fabricator and manufacturer of cold steel bar products, will erect a \$125,000 addition to its works at Hopkins and Colgate streets.

BUFFALO, N. Y. — National Aniline & Chemical Co., Abbott road, plans a major expansion program and additional equipment will be purchased.

CLYDE, N. Y. — Stuart Hallaghan Upholstery Co., Newark, N. J., plans to build a factory costing \$40,000, with equipment.

NEW ALBANY, N. Y. — Indiana Veneer & Panel Co., S. E. Stout, president, plans to construct a new veneer mill and office at Silver street and the Pennsylvania railroad, to replace one recently destroyed by fire. Cost will be about \$150,000.

NEW YORK — Washburn Wire Co. will build a 5-story plant at 537 East 118th street.

NEW YORK — J. Herbert Bate Co. Inc., 50 Church street, is looking for two 100-horsepower, 125-pound working pressure return tubular boilers.

NEW YORK — R. C. Stanhope Inc., 101 West Thirty-first street, dealer, is in the market for a generator set, 125 kilowatts, 3-phase, 60-cycle, 2300-volts.

NEW YORK — Leicester Contracting Corp., 875 Sixth avenue, is in the market for an air compressor, 800 to 1300-foot capacity, 100-pound pressure, belted or electrically driven.

NEW YORK — R. C. Stanhope Inc., dealer, 101 West Thirty-first street, is in the market for three 50-ton bridge cranes with about 60-foot spans, direct current motors.

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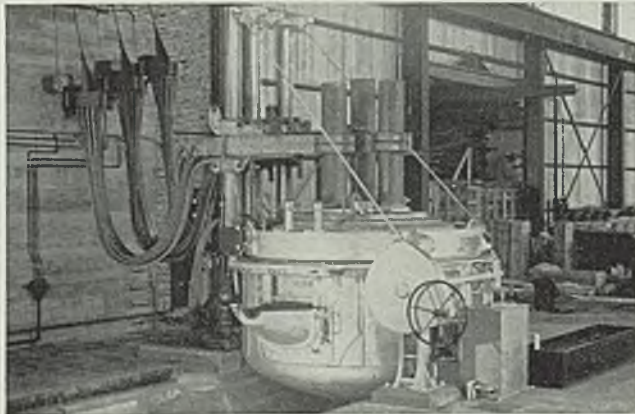
## SANKEY FOOT GUARDS ARE TESTED TO WITHSTAND 4900 POUNDS AVERAGE FORCE

**I**N the layman's language this means that a weight of one hundred pounds is dropped on a Sankey Foot Guard from a height of three feet in a drop-hammer or guillotine testing machine, causing an indentation of three-quarters of an inch in the guard. Figured mathematically it reads 100 lbs. times 3 ft. divided by  $\frac{1}{4}$  of a foot, or  $\frac{3}{4}$  of an inch plus 100 lbs. (the weight itself) equals 4900 lbs. average force.

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Ten ton raise and swing roof - quick top charge type basic LECTROMELT - used to make plain carbon billet size ingots for merchant mill rolling. The production of billet size ingots is varying from 50 to 300 tons per day in plants using LECTROMELTS for making their steel.

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STANDARD SIZES 25 POUNDS TO 50 TONS

NIAGARA FALLS, N. Y. — Carbide & Carbon Chemical Corp., Forty-seventh street, will take bids soon for construction of a plant addition estimated to cost \$40,000.

### New Jersey

MAHWAH, N. J. — Ramapo Apex Corp., 230 Park avenue, New York, will let contract soon for construction of an addition to its factory on Ramapo Valley road.

SOMERVILLE, N. J. — Borough is taking bids Feb. 5 for construction of a sewage treatment plant. Engineers are Remington & Goff, 509 Cooper street, Camden, N. J.

### Pennsylvania

BRADDOCK, PA. — Borough secretary, John C. Mansfield, Municipal building, will receive bids until Feb. 19 for construction of a filtration and water softening plant. Engineers are Chester Engineers, 1050 Century building, Pittsburgh.

PITTSBURGH — United States Engineers office will receive bids until Feb. 1 for a new standard, full-diesel engine-driven crawler type convertible crane. Bids will be taken until 11 a. m. Feb. 11 for three internal combustion engine electric generating units for the Emsworth lock and dam, Ohio river.

### Michigan

BATTLE CREEK, MICH. — Rich Mfg. Corp. plans an expansion program.

BAY CITY, MICH. — Aetna Portland Cement Co. plans plant improvements costing \$45,000. Engineer is S. Firestone, 59 South avenue, Rochester, N. Y.

BENTON HARBOR, MICH. — City plans to install motor-driven pumping machinery and other power equipment in its waterworks plant. Cost will be around \$170,000, part to come from federal aid. Ayres, Lewis, Norris & May, Ann Arbor, are engineers.

CONSTANTINE, MICH. — City plans construction of municipal power plant to cost \$100,000, with equipment. Frank F. Van Tuyl, Ann Arbor, is engineer.

DETROIT — Service Pattern & Mfg. Co. was recently incorporated to manufacture patterns. Correspondent is James Patterson, 4832 McClellan avenue.

DETROIT — Metal Process Corp. has been organized to treat metals. David E. Roberts, 544 Buhl building, is correspondent.

DETROIT — Department of public works is taking bids due Feb. 5 for construction of a pumping station for the proposed new Detroit sewage disposal plant.

ECORSE, MICH. — Ecorse Foundry Co. is starting a remodeling program to cost \$150,000. Arthur Anderson is general manager.

ECORSE, MICH. — Bowen Products Corp., 2760 West Warren street, manufacturer of metal stampings for lubricating devices, is starting construction of a new plant at Ecorse. General contract has been awarded to the O. W. Burke Co., Detroit.

GRAND RAPIDS, MICH. — Mueller Furniture Co. 600 Monroe street, Northwest, is completing plans for construction of a plant addition.

HUDSON, MICH. — City plans construction of sewage disposal plant to cost \$151,000, and city council has authorized \$41,000 revenue bonds as city's share of cost. Remainder will come from PWA.

IRONWOOD, MICH. — Republic Iron Co. plans making additions to power

plant, to include construction of new engine house, at a cost of over \$30,000.

### Illinois

CHICAGO — National Adhesives Corp., 1940 Carroll avenue, plans construction of a 2-story factory at Washtenaw avenue and West Thirty-sixth place, to cost \$155,000. Wigton-Abbott Corp., Plainfield, N. J., is engineer.

JOLIET, ILL. — American Steel & Wire Co. steel cooper shop was destroyed recently by fire.

### Indiana

BLUFFTON, IND. — Board of Public Works plans to purchase equipment for the municipal light and power plant, including a 2500-kilowatt turbine, condenser, circulating pumps and other pumps, and a 400-horsepower water tube boiler and stoker. Total cost will be \$97,000. B. H. Freeland is city engineer, City Hall.

INDIANAPOLIS — Indiana Farm Bureau Co-operative association, I. H. Hull, manager, 309 West Washington street, plans construction of a 2-story oil refining plant at Kentucky avenue and Henry street. Cost is estimated at \$125,000.

MISHAWAKA, IND.—American Foundry Equipment Co., 555 South Byrkit avenue, plans to build an addition to its plant, and general contract has been awarded to Peter Schumacher & Sons, Mishawaka.

MUNCIE, IND. — EMCA Corp., reported in STEEL, Dec. 28, 1936, to have been organized to engage in general manufacturing, was instead formed only to liquidate the assets of the Acme Machine Products Co. The Serrick Corp., Muncie, purchased the business of the Acme Co., manufacturer of cold-headed cap screws and automatic screw machine products, and is now carrying on these operations at 1300 Batavia avenue, under the name Acme Machine Products. C. R. Poole is general manager.

### Alabama

MONTGOMERY, ALA. — Barton R. Blever, Pottsville, Pa., has completed plans for establishment of a \$150,000 paper box manufacturing plant near Maxwell field.

### Maryland

BALTIMORE — Consolidated Gas, Electric Light & Power Co. has allotted \$7,042,602 for construction during 1937, about \$5,000,000 to be spent for construction of substations and transmission lines.

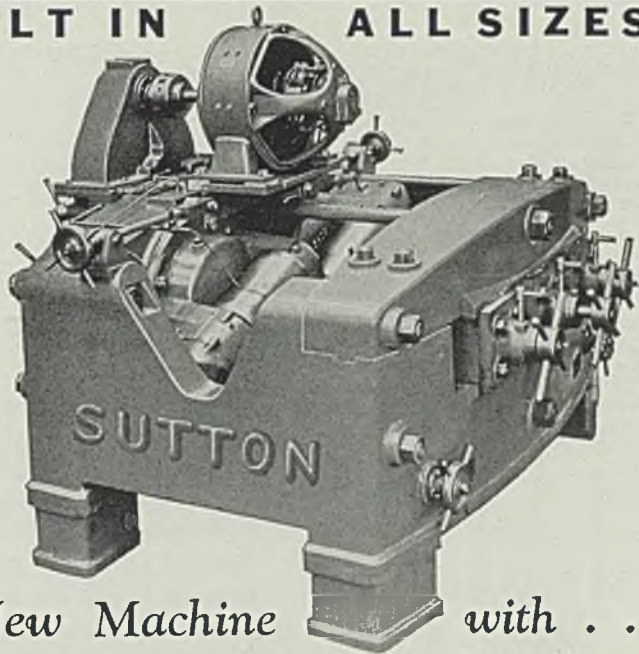
MIDDLE RIVER, MD. — Glenn L. Martin Co., airplane manufacturer, plans to spend \$2,000,000 on expansion program to double present capacity. Taylor & Fischer are architects, 1012 North Calvert street, Baltimore.

### District of Columbia

WASHINGTON — Bureau of docks and yards, Navy department, will take bids until Feb. 17 for a revolving boom crane for erection on a pontoon at the navy yard at Pearl Harbor, Hawaii. Estimated cost is \$40,000.

WASHINGTON — Bureau of supplies and accounts, Navy department, will take bids until 10 a. m. Feb. 2 for a motor driven turbocompressor, schedule 9870, for delivery Brooklyn; until Feb. 5 for steel forgings, schedule 9854, and copper-nickel alloy forgings, schedule 9855, for delivery Newport, R. I.; until Feb. 9 for a motor driven milling machine, schedule 9843; a motor driven tool room lathe, schedule 9844; a motor driven rotary

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swedging machine, schedule 9845; a motor driven bench type lathe, schedule 9846; a motor driven woodworking machine, schedule 9849; and a motor driven woodshaper, schedule 9865, all for delivery various east and west coast points. The bureau will take bids until 10 a. m. Feb. 12 for miscellaneous diesel generator sets, schedule 9875, for delivery various coast points.

**Georgia**

SAVANNAH, GA. — Resin Products Corp., recently formed, care of the Industrial Committee of Savannah Inc.,

Savannah Bank & Trust building, plans construction of a steam powerhouse at a new soap manufacturing plant in the Hermitage plantation district. Cost is estimated at \$100,000.

ST. MARYS, GA. — Mayor J. F. Bailey Jr. is negotiating to bring a \$5,000,000 pulp manufacturing plant to city.

**Louisiana**

BATON RAUGE, LA. — North Baton Rouge waterworks plans construction of new pumping plants to cost \$625,000, \$281,300 to come from a federal grant.

E. G. Blakewood is engineer, Baton Rouge.

BENTON, LA.—Village is considering installation of waterworks system, and an election may be held to vote on bonds.

MINDEN, LA.—City has voted issuance of \$120,000 bonds for financing construction of addition to light and water plant.

NEW ORLEANS — Sewerage and water board, A. G. Moffatt, secretary, City Hall, will receive bids soon for construction of auxiliary water pumping station on Panola street, and new equipment will be installed.

NEW ORLEANS — New Orleans Public Service Co. Inc. plans to spend \$2,800,000 for additions and extensions to its Market street power plant. A 35,500-kilovolt ampere turbine and boiler will be installed, with the necessary appurtenances.

**Tennessee**

COLUMBIA, TENN. — National Carbon Co. Inc., 30 East Forty-second street, New York, plans construction of a carbon electrode plant in Columbia. P. P. Hubbard is president.

ELIZABETHTON, TENN. — National Tire & Rubber Corp., East Palestine, O., will ask bids about Feb. 5 for construction of three factory buildings for its proposed \$225,000 plant at Elizabethton.

MEMPHIS—Lehon Co., A. G. Leonard, president, Union Stockyards, Chicago, will build a \$200,000 asphalt roofing and asbestos shingle plant.

NASHVILLE, TENN. — General Shoe Corp., Gallatin avenue, will let the contracts soon for construction of a 2-story, 77 x 290-foot manufacturing plant. Robert & Co., engineer, Bona Allen building, Atlanta, Ga., is in charge.

**Mississippi**

CLEVELAND, MISS.—City plans construction of three electrically operated pumping stations at the municipal sewage disposal plant. A fund of \$227,000 has been set aside.

OXFORD, MISS. — City plans extensions and improvements to municipal power plant, to include installation of a 750-horsepower engine-generator unit and accessories. A bond issue of \$55,000 is probable.

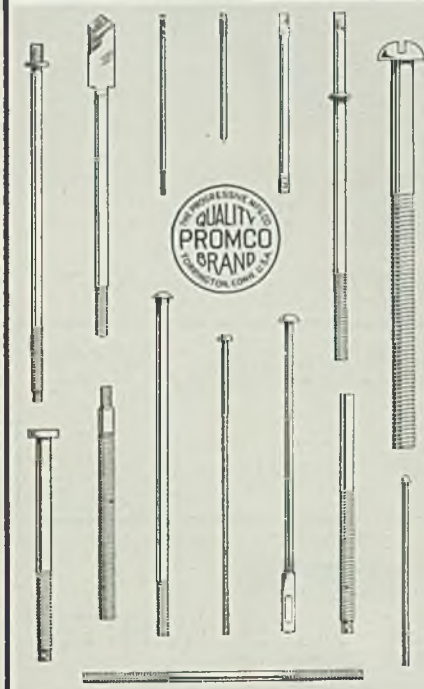
**Oklahoma**

ANADARKO, OKLA. — City plans construction of addition to municipal power plant to include installation of 1000-horsepower diesel engine, a 700-kilowatt generator and all appurtenances. Robert O. Bradley & Co. is engineer, Chickasha.

PONCA CITY, OKLA. — City will ask bids soon for extensions and improvements to municipal electric light plant, to include installation of a 1500-kilowatt diesel unit and accessories, at a cost of \$175,000. Burns & McDonnell Engineering Co., 107 West Linwood avenue, Kansas City, Mo., is engineer.

**Texas**

DALLAS, TEX. — Magnolia Pipe Line Co., subsidiary of Magnolia Petroleum Co., Dallas, will install two 80,000-barrel steel tank units at Tilden, Tex., in connection with its proposed plan to build a welded steel pipe line and booster



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pumping stations from Tilden to Corpus Christi. Total cost is estimated at \$800,000.

**EDCOUCH, TEX.** — Continental Can Co., 105 North Greenwood street, Houston, has purchased a site in Edcouch and plans to build a 1- and 2-story can manufacturing plant costing around \$37,000.

**HOUSTON, TEX.** — Major Edward A. Kelley has acquired the Tennison Mfg. Co., 1901 Franklin street, and plans expansion.

**PLAINVIEW, TEX.** — City is completing plans for construction of \$100,000 waterworks system. H. N. Roberts, Lubbock, Tex., is engineer.

#### Wisconsin

**MADISON, WIS.** — Oscar Mayer & Co. is taking bids for construction of a 2-story packing plant addition, 140 x 150 feet, to cost about \$100,000. Peter H. Henschien, 59 East Van Buren street, Chicago, is architect.

**SUPERIOR, WIS.** — Union Sash & Door Co. plans to purchase a building and remodel it for manufacturing sashes and doors. The Union Co.'s former plant was recently destroyed by fire. Considerable new machinery and equipment will be necessary.

**WEST ALLIS, WIS.** — Heat treating department of the Wehr Steel Co. was damaged by fire recently.

**YUMA, WIS.** — City will rebuild partially burned municipal power plant and install new equipment.

#### Minnesota

**BARNESVILLE, MINN.** — City is considering installation of a diesel engine power plant.

**COOK, MINN.** — Village is considering construction of a waterworks plant and system to cost \$70,000. E. Johnson, Virginia, Minn., is engineer.

**DULUTH, MINN.** — Hugo Mfg. Co., manufacturer of camp stoves and other camping equipment, and its subsidiary, Duluth Culvert Co., manufacturer of corrugated metal culverts, plan im-

mediate rebuilding of factory recently destroyed by fire. H. W. Clark is general manager.

**MONTEVIDEO, MINN.** — Minnesota Valley Co-operative Light & Power Co. is seeking a \$300,000 REA allotment for construction of 300 miles of rural transmission lines in Chippewa, Yellow Medicine and Lac Qui Parle counties. W. W. Cutcliffe, 739 Johnson street, Northeast, Minneapolis, is engineer.

**WINONA, MINN.** — Nebraska Fiber Corp., Omaha, Nebr., has purchased the plant of the Union Fiber Co., Winona, and will remodel buildings and install new machinery for processing hemp.

#### Kansas

**IOLA, KANS.** — Allen County Co-operative Power & Light Co. will take bids Feb. 15 for erection of rural transmission lines. L. R. Toman, Lincoln, Nebr., is engineer. Cost will be about \$58,500.

**KANSAS CITY, KANS.** — Fruehauf Trailer Co., 721 West Pennway street, plans to build a trailer body manufacturing plant costing \$300,000. C. E. Keyser, Merriam building, is engineer and architect.

**WHITE CITY, KANS.** — City plans construction of sewage disposal plant costing \$52,000, and PWA aid is being sought. Paulette & Wilson, 311 Farmers' Union building, Salina, Kans., are engineers.

#### North Dakota

**KINDRED, N. DAK.** — Southern Cass County Electric Co-operative has received a \$200,000 REA allotment for construction of 241 miles of rural transmission lines in Cass, Richland and Barnes counties. Power probably will be furnished by the municipal power plant at Valley City.

#### South Dakota

**FLANDREAU, S. DAK.** — City plans construction of a municipal power plant costing \$168,770. Federal aid has been secured.

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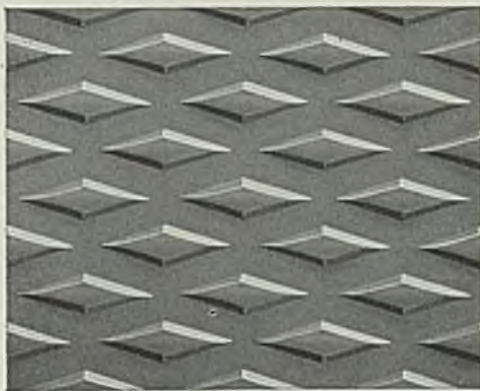
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**Iowa**

ACKLEY, IOWA — City plans extensions and improvements to municipal power plant, including installation of a generating unit and accessories.

DAVENPORT, IOWA — City will take bids due Feb. 15 for construction of a sewage disposal plant to cost approximately \$235,000. Townsend & Quinlan, 757 North Broadway, Milwaukee, are engineers.

ROCK RAPIDS, IOWA — Lyon County Rural Cooperative association, R. J. Cloverdale, president, has been allotted \$67,000 for construction of rural transmission lines in Larchwood, Sioux, Logan, Allison and Centennial townships.

STORM LAKE, IOWA — Buena Vista County Rural Electric Co-operative has been allotted \$100,000 by REA for construction of 317 miles of rural transmission lines.

**Nebraska**

HASTINGS, NEBR. — Southern Nebraska Rural Public Power district, Glenn Wallace, president, has been allotted \$428,000 by REA for erection of rural transmission lines in Phelps, Adams and Kearney counties.

IMPERIAL, NEBR. — City clerk, B. Fouls, will take bids until Feb. 10 for construction of a sewage disposal plant to cost \$26,000. Black & Veatch,

2706 Broadway, Kansas City, are engineers.

OMAHA, NEBR. — Fontenelle Brewing Co. is starting a \$250,000 expansion program, which will include installation of three new boilers of 800 horsepower and a new bottling unit of 150 bottles per minute capacity.

**Montana**

HARDIN, MONT. — Holly Sugar Corp., Colorado Springs, Colo., plans construction of a powerhouse at its new multi-unit beet sugar mill at Hardin. Total cost will be around \$1,000,000.

**Pacific Coast**

ALAMEDA, CALIF. — Santa Cruz Oil Co., 311 California avenue, San Francisco, plans to build a vegetable oil producing plant at the foot of Mulberry street, Alameda. Cost is estimated at \$500,000. Engineer, care of owner, J. J. Coney is vice president.

LOS ANGELES — National Automotive Fibres Inc., 4-220 General Motors building, Detroit, plans construction of a \$250,000 plant.

SAN FRANCISCO — Sacramento Valley Utility Co., 943 Russ building, plans construction of a hydroelectric power plant on the Upper Narrows dam, Yuba river, Nevada county. Cost will be over \$650,000.

SAN FRANCISCO — T. A. Brooks, city purchasing agent, City Hall, will take bids soon for two sets of steam turbine-driven centrifugal boiler feed pumps for installation in the San Francisco hospital.

EVERETT, WASH. — Stockholders of Soundview Pulp Co. will meet in San Francisco Feb. 16 to consider proposed construction of a third unit to the local plant, estimated to cost \$1,330,000. The proposed addition would raise daily capacity 450 to 470 tons of bleached sulphite pulp.

SEATTLE — Steel Buildings Inc., 103 Securities building, has been organized by H. F. Stewart and associates.

SEATTLE — Seattle Gas Co. plans construction of a blower house, 22 x 31 feet, at its plant, 2000 Northland avenue.

SEATTLE — Markey Machinery Co. is building an addition to its plant at 85 Horton street to accommodate equipment for manufacturing marine machinery.

**Canada**

BRANTFORD, ONT. — Brantford Refrigerator Co. Ltd., Gladstone street, plans construction of a plant addition for manufacturing commercial refrigerators.

BRANTFORD, ONT.—Canadian Duren Abrasives Ltd., Canal road, and 154 Pearl street, Toronto, plans construction of a 4-story, 90 x 200-foot plant addition, to cost \$160,000. Bids will be asked soon. Engineers and architects are Prack & Prack, 1311 Pigott building, Hamilton, Ont.

CHATHAM, ONT. — Libby, McNeill & Libby of Canada Ltd. plans extensions to plant, at a cost of \$50,000. Architects care of company.

ST. TIMOTHY, QUE. — Canadian Explosives Ltd. will let contract soon for construction of explosives manufacturing plant at Valley field. Cost will be over \$40,000.

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