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STEEL

FOR FORTY-EIGHT YEARS—IRON TRADE REVIEW

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December 27, 1937

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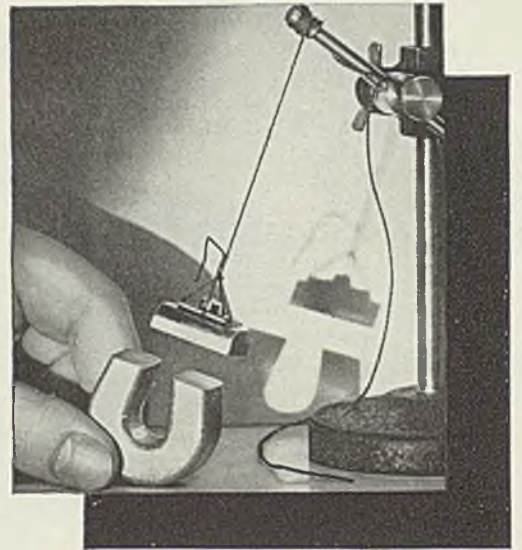
PRODUCTION • PROCESSING • DISTRIBUTION • USE



HIGH NICKEL ALLOYS

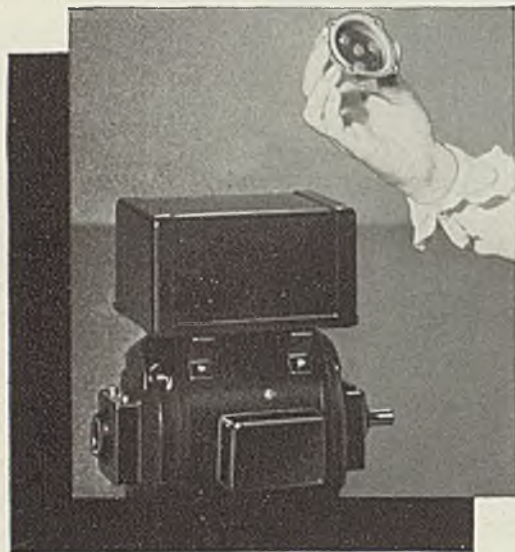
RAISE EFFICIENCY AND LOWER COSTS
...in scores
of special
applications

HIGH MAGNETIC QUALITIES... The magnet pictured here is small, but extraordinarily powerful—capable of lifting 60 times its own weight. This particular type, made of a new alloy rich in Nickel, is used for damping magnets in the polyphase meters of the Duncan Electric Co., Lafayette, Ind. Not only do these alloys of high Nickel content effect substantial savings in weight (in this case 80%) but they also have a higher permanency factor than other commercially available magnetic materials and are practically immune to the effects of magnetic disturbances caused by short circuits and lightning. Manufacturers who employ magnetic materials in their products will find these new alloys of Nickel profitable to investigate.

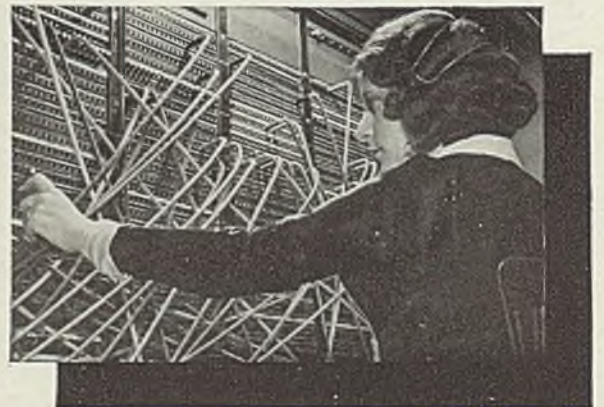


HIGH AND LOW EXPANSION PROPERTIES...

One of the most valuable metallurgical developments in recent years has been the production of thermostatic metals for operating automatic control devices. Pictured here is one employing a bi-metallic disc made of two alloys of Nickel, one having a high degree of expansion and the other low expansion properties. It guards the Westinghouse refrigerator motor, disconnecting it when it gets too hot and reconnecting it when it cools off. Principle upon which these thermostatic metals operate is based on a differential in the expansion properties of the two constituent metals. Changes in temperature cause them to deflect and this in turn acts on the control device. Alloys of Nickel can be produced for applications requiring extremely low expansions as well as for service where specific expansion characteristics may or may not be low.



IMPROVED PERMEABILITY... When you make your long distance telephone call or send a cable, a highly magnetic Nickel-Iron alloy of improved permeability containing up to 80% Nickel helps to deliver your message. Impulses sent over long circuits have a tendency to drag their "tails" behind them, upon which succeeding impulses tread. But through the use of loading coils made of a high Nickel alloy, and spaced at regular intervals along the circuit, transmission is speeded up and your words made intelligible. The high magnetic permeability of these alloys is also depended upon to increase the efficiency of submarine cables and various parts of radio, telephonic and telegraphic installations. We invite consultation on the use of the Nickel alloys in your equipment.



THE INTERNATIONAL NICKEL COMPANY, INC., NEW YORK, N. Y.

STEEL

PRODUCTION • PROCESSING • DISTRIBUTION • USE

As the Editor Views the News

AN EARLY revival in shipbuilding may result in sizable orders for steel and equipment in 1938. Programs involving 12 cargo merchant ships and eight to 12 tankers, if adopted, will require more than 100,000 tons of steel. These and other developments on the Atlantic seaboard (p. 18) point to increased activity in commercial and government shipbuilding in the near future. It is estimated that the tonnage of seagoing vessels constructed in 1937 will surpass that of any year since 1921 when the wartime program was completed. The prospect of improvement in this hard-hit durable goods industry is encouraging.

• • •

New materials and new methods introduced during the long period of slackened activity in ship construction should prove advantageous in the new programs. In this respect, the experience in shipyards should be somewhat similar to that in car and locomotive building establishments. In the latter, lightweight low alloy steels and other new materials, improved methods of fabrication and radical changes in design have contributed to revolutionary advances in the efficiency, utility and attractiveness of the equipment. By employing the same facilities shipbuilders today should be able to construct vessels far superior to their counterparts of the wartime era.

Selecting Materials

Ships and Trains

Point is given to the foregoing statement by recent progress in the design and construction of streamlined trains. Typical of the latest developments in this field is the City of Los Angeles (p. 21), a 17-car train just completed for Chicago-Pacific coast service. Study of the details of construction shows a careful selection of rolled, cast and forged ferrous materials. In power plant, trucks, superstructure, trim and accessories are numerous illustrations where competitive materials have been employed side by

side in the same assembly—each having been selected for the purpose to which it is believed to be best adapted. This is not an “aluminum” train, nor a “steel,” nor a “welded,” “riveted” or “cast” train. It is a project in which the results of development in many lines have been co-ordinated and combined into an efficient whole.

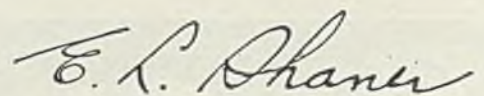
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The question arises occasionally as to whether the development of new designs can be effected best by individual effort or through the co-operation of several interested companies. The recent advance in street railway cars was the result of co-operative sponsorship. American Rolling Mill Co., Bethlehem Steel Co., Carnegie-Illinois Steel Corp., Edgewater Steel Co. and Standard Steelworks Co. (p. 16) have just formed the Technical Board of the Wrought Steel Wheel Industry to study technical problems, collect information on wheel performance, etc. The work of the board will be supported by the research and manufacturing facilities of the wrought wheel industry. One wonders whether industry has fully explored the possibilities of this kind of co-operation.

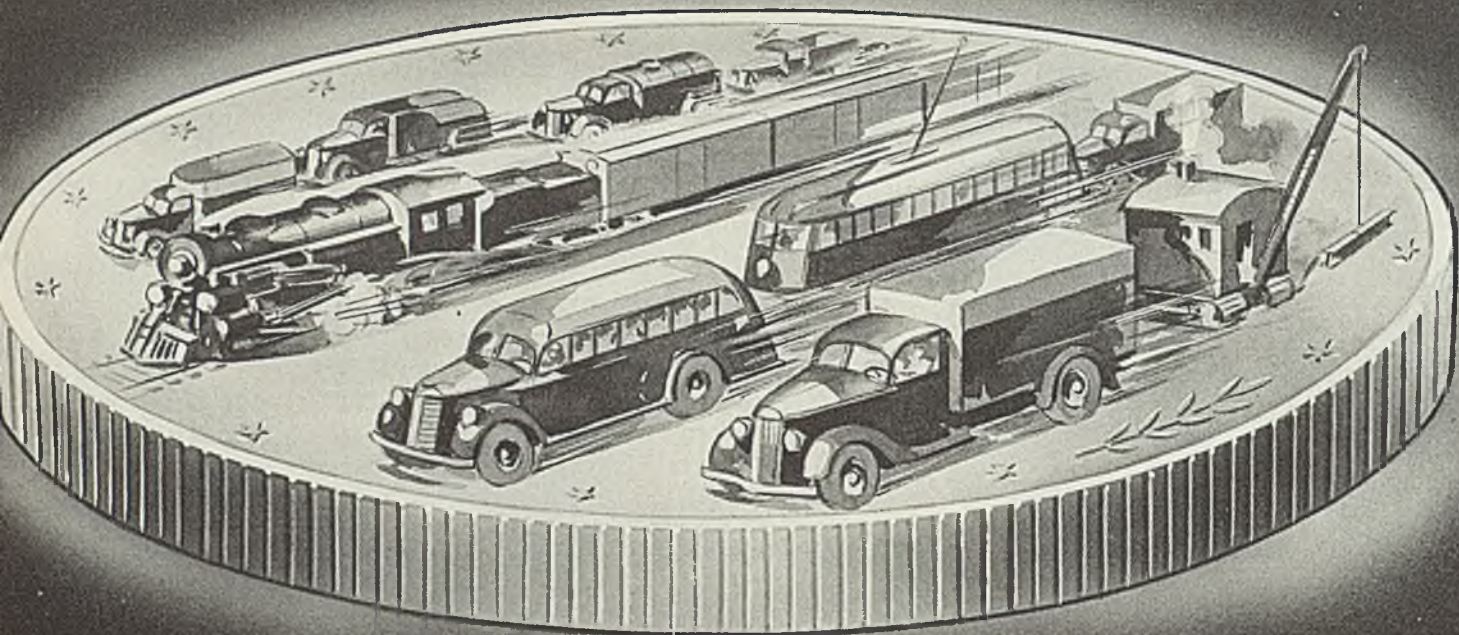
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Congress adjourned its special session (p. 29) without having passed any of the legislation on its agenda. Its failure to take up revision of the tax laws was offset in a degree by its action in turning thumbs down on the wage and hour legislation. . . . For a concise statement of the record of the steel industry in 1937, we commend the review prepared by Walter S. Tower (p. 17), executive secretary of the American Iron and Steel institute. . . . Five new presidents will assume offices Jan. 1 (p. 15) in the United States Steel Corp. and its subsidiaries. C. F. Hood, executive vice president of American Steel & Wire Co., will become its president New Year's day. . . . For inspiration, and as an appropriate prelude to 1938, read “God's Country” (p. 31).

Read “God's Country”



You Can Move Anything FARTHER On A Dollar



When the Pay Load Is Increased **BY INLAND HI-STEEL**

● Inland Hi-Steel was developed for the equipment manufacturer who wants to make *mobility* and *low operating costs* important sales features of his product.

With Inland Hi-Steel he can greatly reduce structural weight without loss of strength . . . and this open hearth alloy also has much greater resistance to atmospheric corrosion even than copper bearing steel.

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Send for Bulletin No. 10 which fully describes Inland's low alloy, high strength Product

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◆

President of U. S.
Steel Corp.—
Then, and Now

◆



Charles M. Schwab
At the age of 39, when he became the corporation's first president in 1901



B. F. Fairless
Who at the age of 47 will become president Jan. 1

U. S. Steel and Subsidiaries Start Year with Five New Presidents

■ FIVE new presidents will assume offices in the United States Steel Corp. and subsidiaries Jan. 1.

Latest to be elected is C. F. Hood, now executive vice president, American Steel & Wire Co., as president of that company, succeeding C. F. Blackmer, who resigned.

Previously announced were the elections of B. F. Fairless as president, United States Steel Corp. of New Jersey, and United States Steel Corp. of Delaware; J. L. Perry, now president, Tennessee Coal, Iron & Railroad Co., as president of Carnegie-Illinois Steel Corp., succeeding Mr. Fairless; Robert Gregg, now a vice president of the parent organization, as president of the Tennessee Coal, Iron & Railroad Co.; Harry M. Moses as president, H. C. Frick Coke Co., succeeding his father, Thomas Moses, who will become vice president in charge of raw materials in the Delaware corporation.

William A. Irvin will vacate the presidency of the parent company to become vice chairman of the board.

Mr. Hood, who is 43 years of age, was named last week to head Steel & Wire, the Cyclone Fence Co. and the Standard Fence Co. He was born in Monmouth, Ill., attended school at Galesburg, Ill., majored in electrical engineering at the University of Illinois where he was graduated in 1915.

His entire work since leaving col-

lege has been in the wire industry. He started first with the Packard Electric Co., Warren, O., as sales engineer and assistant cable sales manager; in 1927 joined the wire company at Worcester, Mass., as an operating clerk. With the exception of an interval from 1917 to 1919 when he was with the United States army he has since been with the company, moving up through the ranks as foreman, assistant superintendent, superintendent, district manager and vice president in

charge of operations. Recently he was elected a director and member of the executive committee, United States Steel Corp. of Delaware.

Mr. Blackmer's resignation followed almost 40 years of service with the wire company and one of its predecessors, the Washburn Moen Mfg. Co., which he joined in Waukegan, Ill., in 1898. He also resigned as president of Cyclone Fence Co. and the Standard Fence Co., affiliates of the wire company, and



C. F. Hood
Executive vice president, American Steel & Wire Co., who was elected president, succeeding C. F. Blackmer



C. F. Blackmer
Resigned as president and director of American Steel & Wire Co., ending nearly 40 years' service with the company and its predecessors

relinquished directorships in these companies.

Born in Worcester, Mass., April 1, 1879, Mr. Blackmer attended public school there and at Colorado Springs, and later was graduated from Colorado college. After joining the wire company he worked through various positions and was elected president in 1933.

M. W. Reed, vice president of the wire company, last week was elected a director of that company

PITTSBURGH CELEBRATES, 1200 AT FAIRLESS BANQUET

■ B. F. FAIRLESS was saluted as president-elect, United States Steel Corp., by 1200 steel and other industrial and civic leaders at a testimonial dinner in William Penn hotel, Pittsburgh, Dec. 20.

The banquet climaxed celebration of Steel Day, proclaimed by the city to mark return of Big Steel's management headquarters to Pittsburgh. Whistles atop steel mills shrilled greetings to Mr. Fairless and other executives.

At the banquet, sponsored by the chamber of commerce, Mr. Fairless heard himself lauded by Pittsburghers, was presented an engraved wrist watch, acknowledged the tribute.

"It is a source of personal gratification to me that I am to remain a citizen of Pittsburgh and be permitted to take an active part in affairs which are for the good and welfare of this community."

Officers and employes of the United States Steel Corp. of Delaware, the operating and management organization, will be housed on the twelfth, thirteenth, fourteenth and fifteenth floors of the Koppers building, he announced. This apparently indicated no change in location of Carnegie-Illinois Steel Corp. offices and other subsidiaries now in the Frick and Carnegie buildings. The new quarters will be ready for occupancy about Feb. 1.

"Organization of the United States Steel Corp. of Delaware," said Mr. Fairless, "does not destroy the individuality of the subsidiary companies. In its essentials, it is a single step, taken to accomplish a closer co-operation and better coordination of activities, while preserving autonomy of the operating companies."

Other Cities Lose Nothing

Major operations of the corporation's subsidiaries in the Pittsburgh and Youngstown districts were briefly reviewed. But broad as are these activities in the greater Pittsburgh area, he said, "The step that has been taken does not in any way diminish the great importance of the activities of the subsidiary companies in Chicago, Cleveland, Birmingham, Duluth and San Francisco. These and other key cities have lost none of their prestige, their vitality and their significance by the recent change."

Myron C. Taylor, who will retire

as chairman of the corporation next April, was a guest at the speakers' table.

G. C. Kimball, executive vice president, Carnegie-Illinois Steel Corp., and a director of the Delaware management corporation, will continue his offices in Chicago, it was stated.

Steelmakers Join In Wheel Study

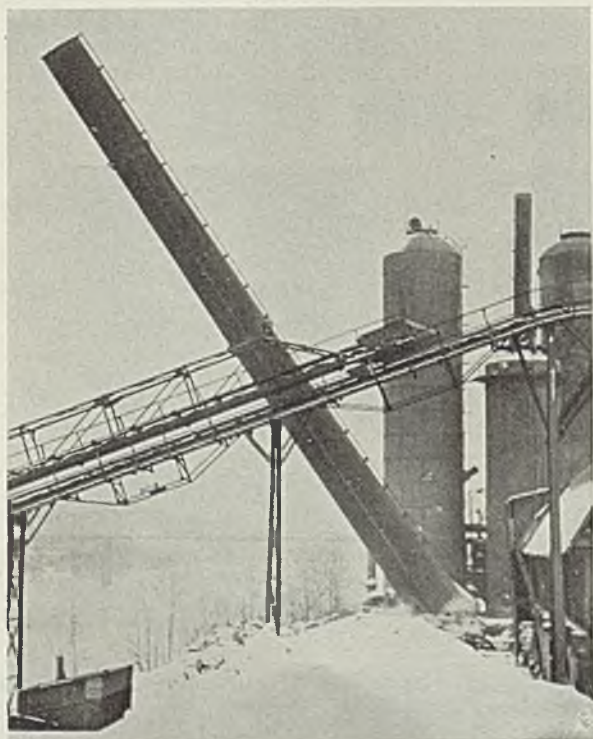
■ AMERICAN ROLLING MILL CO., Bethlehem Steel Co., Carnegie-Illinois Steel Corp., Edgewater Steel Co. and Standard Steel Works Co. have formed the Technical Board of the Wrought Steel Wheel Industry.

Purpose is to study technical problems presented by increasingly difficult requirements of railroad service, to collect information regarding wheel performance and to establish channels of communication and co-operation between the wrought steel wheel manufacturers and the railroads on engineering problems.

Charles T. Ripley, formerly chief mechanical engineer, Atchison, Topeka & Santa Fe railroad, has been appointed chief engineer of the board.

Mr. Ripley has had extensive experience with motive power equipment and is associated with numerous committees of the mechanical division, Association of American Railroads. Other board members are technical representatives of the five manufacturing companies. Co-operative work will be supported by the research and manufacturing facilities of the wrought steel wheel industry. Headquarters will be opened Jan. 1 at room 1408, 310 South Michigan building, Chicago.

Half-Century-Old Steel Draft Stack Pulled Down



■ Main draft stack of American Rolling Mill Co.'s No. 1 blast furnace at Ashland, Ky., toppling over during recent dismantling operations. The steel stack, weighing 250 tons and towering 158 feet in the air, was brought to earth by undermining one side and pulling it down. It was erected in 1886, upon a sandstone foundation, had a top diameter of 20 feet, a bottom diameter of 40 feet, and extended 40 feet below the base. When new gas cleaning equipment was installed in the furnace recently, a modern stack was put up

Two Out of Five Steelworkers Over 40

■ Two out of every five employes of the steel industry are over 40 years of age, estimates the American Iron and Steel institute on basis of data from companies employing two-thirds of the industry's workers.

Life may not begin at 40 for the steelworker, but at that age he is younger than about 230,000 of his fellow-employees. Almost half of those over 40 years are 50 years or older.

The number of employes from 18 to 25 years of age represents 20.2 per cent of the total and those from 26 to 40 years comprise 39.8 per cent of the total.

Average age of all steelworkers is 38 years, two years more than their average age in 1930.

Steelworkers are a little older, on the average, than workers in other manufacturing industries.

New Record for Steel Payrolls in 1937—but Not for Production

BY WALTER S. TOWER

Executive Secretary, American Iron and Steel Institute

■ A SHARP decline in general industrial activity in the closing months of 1937 depressed operations in the steel industry to the lowest levels in more than three years, after production in the first nine months came within 2 per cent of equaling corresponding 1929 record tonnage.

The rate of operations for the first nine months was 83 per cent of capacity, the high month being April with a rate of 90 per cent. With a swiftness unprecedented in the history of the industry, the rate dropped from 80.4 per cent about the middle of September to a level estimated for the month of December at about 27 per cent.

The average rate for the full year will fall close to 72 per cent of capacity as compared with 68 per cent last year.

Despite the let-down in the last quarter, the year as a whole set new records in the industry for number of employes, average wage rates and total payrolls.

Production of steel ingots in 1937 is estimated at approximately 50,250,000 gross tons, a larger total than that for any previous year except 1928 and 1929, and an increase of about 5½ per cent over 1936. That estimate is so close to the 1928 figure as to leave a chance that 1937 will be the second best year for steel output. The total in 1936 was 47,512,800 tons.

Labor troubles which appeared for a time in some quarters of the industry evidently had little direct effect on total output for the year.

The output of 1937 recorded the fifth consecutive yearly increase since 1932, but the gain this year was the smallest since 1933.

The relative stability of steel demand which characterized the year 1936 was not in evidence in 1937. Demand in the early months of this year now appears to have been influenced to a considerable extent by forward buying in addition to the large volume of consumers' requirements for immediate use. Forward buying evidently was stimulated by the unsettled labor situation in industry generally, and by an increase in steel prices made necessary by higher costs, especially of labor and raw materials.

As a result, the backlogs of unfilled orders on steel producers'

books mounted rapidly during the early months of 1937 and mills were hard pressed to make desired deliveries. Demand through most of the year from the automobile, farm implement and many miscellaneous lines was in large volume, but such important steel users as construction industries and the railroads continued to lag in buying.

Labor Day Marks Decline

Toward the end of the summer, however, new orders for steel fell off rapidly as consumers began to draw up inventories, and a decline in production set in after the Labor day holiday.

Payrolls of the steel industry established a new record during 1937. The year's payrolls of the industry are estimated to have amounted to approximately \$975,000,000, representing a gain of about \$200,000,000, or 25 per cent, over the \$758,060,000 paid to steel employes in 1936.

Two wage increases, one of about

10 per cent in November, 1936, and the other averaging 15 per cent, in March, 1937, causing hourly wage rates to rise to an average of 83 cents per hour, the highest level ever attained in the steel industry.

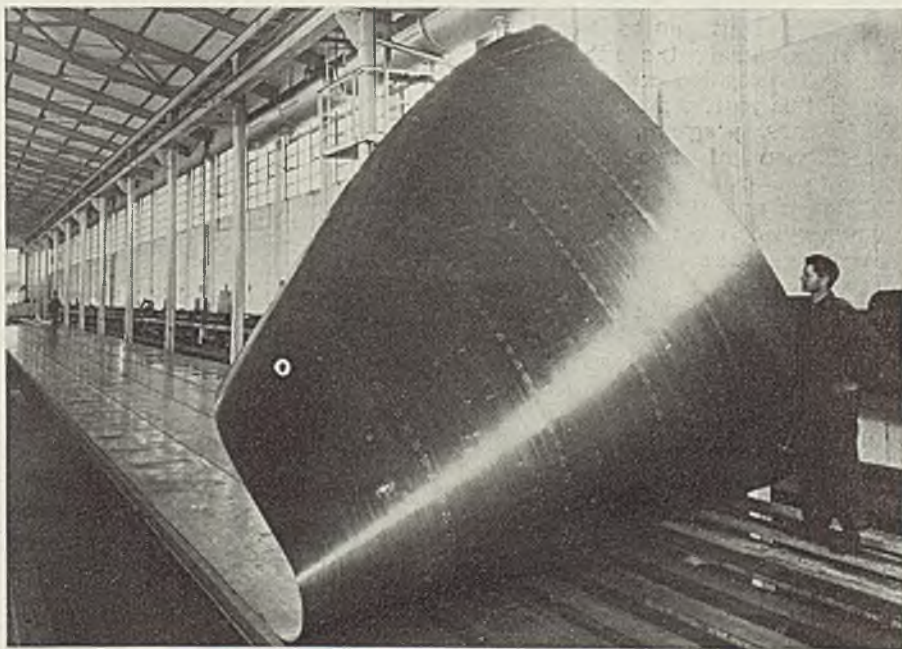
In addition, wage payments at the rate of time-and-a-half for overtime work beyond eight hours a day or 40 hours a week swelled the pay envelopes of many steel workers when the mills were running at a high rate of operations. Vacations with pay, or the option of extra pay in place of a vacation, were also granted to 300,000 steel workers during 1937, at a cost to the industry estimated to be \$12,000,000.

Employment in the steel industry rose from 537,000 in December, 1936 to the record level of 603,000 in August, 1937, and even after that date continued generally to hold above the corresponding levels of 1936.

In October, 1937, for example, the latest month for which details are available, a total of 586,600 were employed in the industry, or only about 3 per cent less than the September total, while tonnage of steel ingots produced in October was 21 per cent less than in September. This maintenance of the working forces was accomplished by reviving the share-the-work program.

In 1937, the industry allocated approximately \$300,000,000 for the construction of new plants and installation of modern equipment.

Flexible Steel Belt, 13 Feet Wide, 180 Feet Long



■ In Sweden recently, the Sandvik Steel Works completed this remarkably large flexible steel belt, for use in a conveyor system transporting and storing lump sugar. The belt is made from five cold-rolled, hardened and tempered bands, each 31¼ inches wide, and joined longitudinally by a patented method.

Photo, Soibelman Syndicate, New York

Large Ship Program Shaping Up; 100,000 Tons of Steel Pending

■ INTEREST in shipbuilding on the Atlantic coast has been stimulated by several pending programs requiring large tonnages of steel.

More than 100,000 tons probably will be taken in two mercantile projects. Considered the largest peace-time program, bids will be received Feb. 1 for 12 cargo merchant ships by the maritime commission. Standard Oil Co. of New Jersey is expected to close soon on 8 to 12 tankers, requiring about 5000 tons each. If the larger number is ordered, this will be the largest tanker order for private account on record.

Washington dispatches last week indicate as many as 20 tankers may be purchased if subsidy is granted by the government.

Navy work, active and contemplated, also is brightening prospects. Two tenders now being placed are estimated to require 15,000 tons. Last week 21,000 tons, representing partial needs for two battleships under construction in Brooklyn and Philadelphia navy yards, was distributed. This was only one of several sizable tonnages placed by the navy this year, during which the navy has contracted to build or has started eight destroyers and four submarines.

Navy In Great Expansion

Now undergoing the greatest expansion since the World war, the navy will continue to take steel for ships during the next several years. Twenty-two ships were delivered this year. Approval of a new \$576,000,000 program, calling for construction of two superdreadnaughts, two light cruisers, eight destroyers and six submarines and four auxiliary craft, authorized this year, was asked by the President last week.

Outlook for private work, other than that mentioned, is uncertain. A large program expected through the maritime commission has been disappointingly slow in developing, and well informed persons believe the current list of cargo ships may be the last for some months.

The maritime commission in its economic survey of the American merchant marine in November pointed out that only nine companies are reasonably assured of continuing under the merchant marine act of 1936 and that three of these require no new ships. The other six lines require more than 60 new bottoms, but it is not certain these will be built.

Nineteen thirty seven, however,

will show a gain, for both private and navy yards. Dec. 31, last year, work was underway on 30 privately owned ships of 1000 tons gross tonnage or larger, having an aggregate gross tonnage of 189,090. This year 33 ships under construction have a total gross tonnage of approximately 243,000.

Government work in private yards at the close of 1936 included 39 boats of more than 1000 tons displacement, a total of 160,930; this year there are fewer ships and a lighter aggregate displacement, 36 boats aggregating 144,000 tons. Increase in the amount of private work, however, more than offsets this decrease.

American bureau of shipping figures, which include smaller vessels, show that Dec. 1, this year, 90 vessels of more than 100 tons were being built under the bureau's classification. These have an estimated total tonnage of 219,200; last year on Dec. 1, there were 92 vessels with total tonnage of only 163,745.

Sea-going tonnage constructed this year will surpass any year since 1921 when the war-time building program was completed, it is believed in shipping circles. Tanker construction has led the way during the past two years, about 40 having been built or placed since Jan. 1, 1936, with eight to 12 more likely to be placed before the year ends.

Contemplated under subsidy arrangements with the maritime commission are at least 60 vessels. Largest program is that of the Lykes Bros.-Ripley Steamship Co. involving 28 cargo vessels, costing \$42,000,000, over the next five years. United States Lines, whose contract for a large transatlantic liner has been the outstanding merchant ship award this year, is tentatively considering eight cargo ships. Fulfillment of this program, however, depends on future developments.

\$350,000,000 Invested in Continuous Rolling Mills

■ Approximately \$350,000,000 has been invested by the steel industry in continuous sheet and wide strip mills since American Rolling Mill Co. announced ten years ago the development and successful operation of the first continuous sheet mill, Charles R. Hook, president, said last week.

The first sheet was rolled by the continuous process at Ashland, Ky., in 1923, but it was not until 1927 that

the process was formally introduced to the industry.

According to present schedules there will soon be 27 continuous sheet and wide strip mills in operation in this country with a combined annual capacity of more than 14,000,000 net tons.

Mr. Hook, whose company has licensed all the continuous wide strip mills in the industry, said he did not fear over-capacity in normal times "because the continuous mills, by improving the uniformity, size range and quality of iron and steel sheets, and at the same time substantially lowering production costs, have greatly expanded old markets and created many new markets for their products."

Nebraska Industries Point to Low Taxes

■ Claiming Nebraska offers freedom from oppressive taxation, Associated Industries of that state, with headquarters in Lincoln, has begun a nation-wide campaign to attract companies seeking new plant locations. Nebraska, it says, has no state income tax, no state sales tax, no state bonded debt, and no luxury taxes. A comprehensive booklet describes advantages.

Answering Problems of New Industrial Products

■ "Check Sheet: Introduction of New Industrial Products," No. 6 in the Market Research series of the bureau of foreign and domestic commerce, Washington, has just been published, and may be obtained from any district office of the bureau. It is a revised edition of the check list which seeks to answer the problems of introducing and establishing a new industrial product.

Foundry Equipment Orders Lower

■ Foundry equipment orders in November continued the decline of recent months, according to statistics of the Foundry Equipment Manufacturers' association, Cleveland. Index of net orders was 128.03, compared with 185.2 in October and 200.4 in November, 1936.

Shipments also declined, the index for November being 178.8, compared with 232.3 in October and 150.9 for November, 1936. Unfilled orders index in November was 294.0 compared with 309.3 in October and 223.4 in October, 1936.

Three months' average of gross orders was 181.8 in November, compared with 224.6 in October and 178.6 in October, 1936.

LABOR

■ WILLIAM GREEN, president, American Federation of Labor, in Washington last week announced that his organization will redouble its efforts at the next session of congress for its uniform hours and wages bill.

In a letter to all affiliated unions, Green warned that members of congress who voted against the federation bill will be called upon to answer for their action.

Peace negotiations which have been under way between the CIO and the federation since Oct. 25 definitely bogged down, and unless something new develops this phase of the matter is closed.

The federation in a statement said that "the special committee regrets to announce that all efforts put forth to bring about peace in the ranks of labor and reunite the organized labor movement ended in complete failure. It further announces that conferences to that end were terminated abruptly by the members of the CIO because the special committee of the federation declined to accept the dictum of John L. Lewis, chairman of the CIO. This would have required complete capitulation to the arrogant demand that the organizations and members of the federation should hereafter submit to the will, whim and fancy of John L. Lewis."

The CIO on the other hand officially stated that "our interest has been devoted exclusively to establishing unity in the labor movement. We have applied ourselves diligently to that task. We have offered the A. F. of L. our entire membership. They have refused our offer. The onus for the deadlock must be placed on the representatives of the A. F. of L."

METAL TRADES EMPLOYMENT DECLINES IN NOVEMBER

Metal trades employment at 22 leading cities declined 4.6 per cent in November but continued above the level for the corresponding period of the past seven years, according to the National Metal Trades association.

The November index was 99.6 per cent of the 1925-27 monthly average. This compares with 104.3 in October and 93 in November, 1936. The high for this year was 105 in July and low was 96.2 in January. Decreases were shown last month at practically all centers.

BAR MILL RATES CONTINUED

Bar iron mill wage scales have been extended unchanged for January. The card rate on boiling bar and 12-inch mills continues \$2.45, and on guide and 10-inch mills \$2.55.

District Steel Rates

Percentage of Open-Hearth Ingot Capacity Engaged in Leading Districts

	Week ended Dec. 25	Change	Same week 1936	1935
Pittsburgh ...	14	- 5	67	34
Chicago	23.5	- 0.5	64	50
Eastern Pa...	25	- 4	47.5	34.5
Youngstown...	18	-12	68	59
Wheeling	19	- 5	88	70
Cleveland ...	24	-12	68	40
Buffalo	14	- 2	47	47
Birmingham..	45	None	74	56
New England	28	- 2	77	77
Cincinnati ...	36	-18	96	†
St. Louis	15	- 1	80	†
Detroit	52	None	92	88
Average....	23	- 4	68	48

†Not reported.

Lake Carriers Extend Radio Communication

■ Ship-to-shore telephone service on the Great Lakes made great progress during the past season. According to H. E. Hageman, Lorain County Radio Corp., Lorain, O., operator of the service, 58 lake carriers now are equipped with combination sending and receiving sets, as compared with 14 at the end of the 1936 season. Further extension of the service is indicated for next year.

From the restricted service at the start in 1934, the service now is on a full 24-hour basis, with ship-to-shore and ship-to-ship conversations possible at all times throughout the region.

The extent to which this service helps in handling a fleet is reflected by the fact that the number of telephone calls during the past season showed an increase of approximately 150 per cent per ship.

Approves Group 1 Rules For Metal-Clad Doors

■ Proposed fair trade practice rules for the metal-clad door and accessories manufacturing industry were made public last week by the federal trade commission. Various interests in the industry conferred in Cincinnati Oct. 5 and adopted certain rules. With a few modifications, the commission has tentatively approved Group 1 rules, and is considering Group 2 rules as an expression of the industry.

■ Wellman Engineering Co., Cleveland, held its annual open house for employes' families last Wednesday. Workers' wives and children inspected a wide variety of products. Santa Claus distributed gifts to the children.

PRODUCTION

■ HOLIDAY interruptions and light demand caused a decline of 4 points in the national steelworks operating rate last week, to 23 per cent. Closing of plants at the year-end is expected to result in a lower rate this week.

Youngstown—Loss of 12 points in the operating rate last week brought it to 18 per cent, with 23 open hearths and 7 blast furnaces active. Plants closed Friday night and resumed Saturday night. The outlook for this week is for unchanged operations though there is some possibility of resumption at Ohio works of Carnegie-Illinois Steel Corp., which would raise the rate.

Pittsburgh—Declined 5 points to 14 per cent, with indications this week will see a lower rate on account of holiday idleness.

Wheeling—Down 5 points to 19 per cent.

Detroit—Unchanged at 52 per cent with expectations it will remain the same for this week.

Cleveland—Off 12 points to 24 per cent, one open hearth being put out and the holiday shut-down reducing the rate further.

Birmingham, Ala.—Unchanged at 45 per cent, with seven open hearths active for the Tennessee Coal, Iron & Railroad Co. and two for Republic Steel Corp.

St. Louis—Down 1 point to about 15 per cent, the lowest of the year. Schedules for this week indicate holiday closing will bring the rate close to 10 per cent.

New England—Off 2 points to 28 per cent. This week's schedule gives a drop of about 9 points, with only one steelworks in this district producing ingots.

Central eastern seaboard—Declined 4 points to 25 per cent. Most mills closed only for the Christmas week-end and will operate through New Year's day. One plant will add two open hearths this week.

Cincinnati—Down 18 points to 36 per cent. After the holiday shut-down production is expected to be resumed at about 30 per cent.

Chicago—Lost ½-point to 23½ per cent in spite of loss of Saturday for the Christmas holiday. One large interest increased output to balance loss of the day.

Buffalo—Off 2 points to 14 per cent, which probably will be the rate for this week as well. Active furnaces were closed down Christmas day.

■ A proposal by the railroads in the Southwest to place scrap iron freight rates on the basis of iron and steel products, has been withdrawn by the Southwestern Freight bureau.

MEETINGS

STEELMAKERS TO EXHIBIT IN CLEVELAND ROAD SHOW

■ INCLUDED among exhibitors in the Road show to be held in Public Auditorium, Cleveland, Jan. 17-21, in connection with the thirty-fifth annual convention of the American Road Builders' association will be many companies making road building machinery and several steel companies producing materials utilized in road construction. Sessions of the convention will deal with all phases of road building and maintenance.

Steel products to be displayed will include culverts, pipe, reinforcing, concrete bars, cable, fencing, piling, bridge flooring, highway guards, road markers, and sheets and plates.

A. S. T. M. ANNOUNCES DATES FOR ITS 1938 MEETINGS

American Society for Testing Materials has established the dates of important meetings to be held during 1938. The regional meeting will be held at the Seneca hotel, Rochester, N. Y., March 9, during the week that society committees are conducting their spring group meetings. A symposium on plastics will feature this regional meeting. Forty-first annual meeting will take place June 27-July 1 at Chalfonte-Haddon Hall, Atlantic City, N. J. Impact testing has been suggested as a symposium subject for this meeting.

PLAN REGIONAL FOUNDRY MEETING IN MILWAUKEE

American Foundrymen's association announces a two-day regional foundry conference at Hotel Schroeder, Milwaukee, Feb. 3-4, under auspices of the Milwaukee chapter of the association and co-operation of the mining and metallurgical school, University of Wisconsin, Madison, Wis.

According to present plans, the meeting will consist of a series of simultaneous sessions on steel, malleable, gray iron and nonferrous foundry problems. In general, subjects to be covered by the discussion groups will include melting, casting, sand, special metals, apprentice training and foundry management.

TRANSPORTATION INDUSTRY TO MEET IN ATLANTIC CITY

American Transit association will conduct its fifty-seventh annual convention in the Auditorium, Atlantic City, N. J., Sept. 19-22. In connection with the meeting, manufacturer members will hold an exhibit to open Sept. 17. Equipment to be displayed will include buses,

trolley coaches, rail cars, and other transit equipment, including shop and maintenance tools and accessory equipment, and parts and appurtenances used in the operation and maintenance of urban and interurban transportation systems. An attendance of from 4000 to 5000 transit industry operating officials is anticipated.

A. F. A. AND A. S. M. E. GROUPS SCHEDULE SIXTH MEETING

Sixth annual joint conference of the Birmingham chapter, American Foundrymen's association, and Birmingham section, American Society of Mechanical Engineers, is to be held at Hotel Tutweiler, Birmingham, Ala., Feb. 24-25. Sessions of the two-day meeting will take the form of symposiums on the mechanics of the cupola and its auxiliary equipment.

Convention Calendar

Jan. 10-14—Society of Automotive Engineers. Annual meeting at Book-Cadillac hotel, Detroit. John A. C. Warner, 29 West Thirty-ninth street, New York, is secretary and general manager.

Jan. 12-14—Institute of Scrap Iron and Steel. Tenth annual convention at Ambassador hotel, Atlantic City, N. J. Benjamin Schwartz, 11 West Forty-second street, New York, is director general.

Jan. 13-15—American Engineering Council. Annual meeting at Mayflower hotel, Washington. F. M. Felker, 744 Jackson Place N. W., is executive secretary.

Jan. 17-21—American Road Builders association. Annual convention and exhibit at Public Auditorium, Cleveland. Charles M. Upham, 952 National Press building, Washington, is secretary.

Jan. 23-28—Canning Machinery and Supplies association. Annual convention and exposition at Stevens hotel, Chicago. S. G. Gorsline, Merchandise Mart, Chicago, is secretary.

Jan. 24-26—National Warm Air Heating and Air Conditioning association. Semiannual convention at Roosevelt hotel, New York. A. W. Williams, 50 West Broad street, Columbus, O., is managing director.

Jan. 24-28—American Society of Heating and Ventilating Engineers. Annual convention and exposition at Grand Central Palace, New York. A. V. Hutchinson, 51 Madison avenue, New York, is secretary.

Jan. 24-28—American Institute of Electrical Engineers. Annual winter meeting at Engineering Societies building, New York. H. H. Henline, 33 West Thirty-ninth street, New York, is secretary.

Jan. 25-27—American Society of Refrigerating Engineers. Annual meeting at Roosevelt hotel, New York. D. L. Fiske, 37 West Thirty-ninth street, New York, is secretary.

Feb. 3-4—American Foundrymen's association. Regional meeting at Hotel Schroeder, Milwaukee, under auspices Milwaukee chapter and co-operation of mining and metallurgical school, University of Wisconsin.

Feb. 9-10—Steel Founders' Society of America. Annual meeting at Hotel Cleveland, Cleveland. R. L. Collier,

920 Midland building, Cleveland, is secretary.

Feb. 14-18—American Institute of Mining and Metallurgical Engineers. Annual meeting at Engineering Societies building, New York. A. B. Parsons, 29 West Thirty-ninth street, New York, is secretary.

Feb. 24-25—American Foundrymen's association and American Society of Mechanical Engineers. Sixth annual conference of Birmingham chapters at Hotel Tutweiler, Birmingham, Ala.

57 Chemical Elements Found in Steel Mills

■ At least 57 of the 92 chemical elements may be found in steel mills, says American Iron and Steel institute. Even gold, silver and platinum have their uses, while some of the rarer gases may also be present, although unintentionally.

Plain carbon steel may contain 16 elements other than iron, although it is commonly described by its percentage content of carbon, manganese, phosphorus, sulphur and silicon. However, on careful analysis it probably will be found to contain traces of oxygen, copper, nickel, arsenic, tin, cobalt, nitrogen, chromium, molybdenum, aluminum and antimony.

Some elements are not consciously introduced, and the amount of each is too small to have much effect on the steel's physical properties. Many elements, however, are intentionally added in specified amounts to produce steels of superior physical properties. Among these are chromium, cobalt, columbium, copper, manganese, molybdenum, nickel, silicon, titanium, tungsten, uranium, vanadium and zirconium.

Some elements unintentionally present in steel because they may be present in iron ore are minute quantities of aluminum, arsenic, calcium, copper, hydrogen, magnesium, manganese, phosphorus, potassium, sodium, sulphur and tin.

Air contains, besides oxygen and nitrogen, minute quantities of the gases, argon, krypton, neon, and xenon. Great quantities of air are blown into blast furnaces.

In the steel plant laboratory, bromine and silver will be found in photographic materials. Gold, iridium, platinum, rhodium, palladium, tantalum, and osmium will be found as constituents of laboratory apparatus. Chlorine, iodine and mercury are used as chemical reagents. Radium and radon are used in the testing and inspection of steel.

■ Simplified practice recommendation for eaves trough, conductor pipe, conductor elbows and fittings has been reaffirmed without change, according to the bureau of standards.

17-Car Streamline Trains Appear; Triumph of Engineering

■ LAST week, the City of Los Angeles, latest and longest of the streamliners, slid out of Grand Central station, New York, on a fast "cruise" to the West coast where it went on display before holiday throngs. In New York, it was viewed by 35,000 persons in a few hours, ample evidence of public interest in modern railroading and indicative of impending markets for steel and the metals.

Rapid development of streamline railroading is evidenced by merely comparing the first of the new trains which went into service for the Union Pacific railroad in 1934 and the latest. The 1934 train was three cars powered by a single 600-horsepower diesel engine. The City of Los Angeles carries two such engines alone for auxiliary power for lighting, air conditioning equipment, telephones, radios, and the like.

The Los Angeles and its twin, the City of San Francisco, will go into service early in January between Chicago and Los Angeles and San Francisco respectively. The first is owned jointly by the Union

Pacific and the Chicago & North Western railroads and the latter by the Union Pacific, Chicago & North Western and Southern Pacific.

The streamliners are capable of developing speeds of more than 110 miles an hour.

Each is 17 cars in length, the first three of which comprise the 5400-horsepower locomotive built by the Electro-Motive Corp., LaGrange, Ill., General Motors subsidiary. Motive power for each of the three 1800-horsepower units is identical and includes two 900-horsepower diesel-electric power plants, controlled simultaneously from the main locomotive throttle. The three units per locomotive are identified as "A," "B" and "B."

Auxiliary Power Plentiful

The first car in the train, or the unit coupling to the locomotive, is known as the auxiliary-baggage dormitory car, carrying the 1200-horsepower auxiliary power generating equipment. This power is derived from two 600-horsepower diesel-electric units operating in multiple to supply 220-volt, 3-phase, 60-cycle al-

ternating current. The A.C. power supply is supplemented by a 710 ampere-hour storage battery of 32 cells or 64 volts which is used for auxiliary apparatus control circuits, and emergency lighting in the event of failure of both power plants.

The first car in the train, as well as the 13 succeeding cars, were constructed by Pullman. Super-structures, including inside and outside paneling, are of aluminum alloy. Super-structures of the three power units were fabricated from United States Steel Corp.'s Cor-Ten alloy.

Total weight of the three power units with a full supply of fuel, water and sand, approximates 877,300 pounds. This weight is 298,000 pounds for the "A" unit and 289,650 pounds each for the "B" units. Each of these weights is divided between the two 6-wheel trucks, and further proportioned to the single idle and two driving axles of each truck. This distribution provides an average wheel loading at the rail of 23,730 pounds for the idle axles and 24,690 pounds for the drivers.

All truck assemblies are interchangeable, weight including motors approximately 50,000 pounds, and have a 14-foot 1-inch rigid wheel base. The truck frame and swing bolster are of cast steel, while the spring planks are of strain-relieved welded construction. High molybdenum, low-carbon, rolled steel wheels 36 inches in diameter, are mounted on three AEREA E-11-X axles having 6 x 11-inch journals.

Improved riding qualities, and greater stability in negotiating curves at high speeds, have been obtained by a new treatment of load suspension. The truck frame is supported at four points by twin group coil springs of silico-manganese steel, which ride on four equalizers carried by the journals. The bolster casting is supported at each

(Please turn to Page 41)



Sleek and graceful, latest and longest of the streamliners. Thirty-five thousand persons inspected the City of Los Angeles in New York just before it started its western run. Engineers in the new trains sit in upholstered seats, have a clear view of both sides of the track through a slanting, automotive-type windshield of $\frac{3}{8}$ -inch safety glass. New control and safety equipment features the trains



MEN OF INDUSTRY

■ WILLIAM M. BAILEY, president, William M. Bailey Co., engineers, Pittsburgh, has been elected a director of the Wellman Engineering Co., Cleveland, to fill the vacancy caused by the death of Atlee Pomerehne.

Mr. Bailey has been associated for years with the iron and steel industry. He started as secretary to A. C. Dinkey, former president of the Carnegie Steel Co. When Mr. Dinkey formed the Midvale Steel Co., Mr. Bailey remained his secretary and rose to the position of assistant to the president of the Midvale Steel & Ordnance Co., successor to the Midvale concern. Another change took him to the Federal Shipbuilding Co., Kearny, N. J., United States Steel Corp. subsidiary, as vice president. He left Federal Shipbuilding to become vice president of the Fulton Steel Corp., Fulton, N. Y., which was organized in 1917. Mr. Bailey later resigned his Fulton position to form his own engineering company.

W. C. Connelly has been elected president, Ohio Seamless Tube Co., Shelby, O. He will succeed Edwin Mansfield, who will become chairman of the board, Jan. 3. Mr. Connelly, a graduate of Case School of Applied Science, Cleveland, was formerly director of the Cleveland chamber of commerce, and president, Daniel Connelly Boiler Works.

James H. Perkins, chairman of the board, National City Bank of New York, has been elected a director, General Electric Co., Schenectady, N. Y.

Paul H. Hamel, identified with the scrap business for the past 20 years, has assumed the management of the Friedman Brothers scrap division of Reliance Steel Corp., Cleveland.

Claude G. Matthews, since 1930 manager of the Milwaukee branch of the Graybar Electric Co., has been transferred to Boston as sales manager of the New England division, Jan. 1.

A. F. Allen, secretary-treasurer, American Steel & Wire Co., Cleveland, subsidiary of United States Steel Corp., has been elected a director, Reynolds Spring Co., Jackson, Mich.

Nathan R. Birge, assistant to the president, General Electric Co., Schenectady, N. Y., since 1927, has been elected a vice president. Mr. Birge entered General Electric's em-



William M. Bailey

ploy in August, 1900, following graduation from Worcester Polytechnic institute.

James A. Callender, construction engineer, Portland, Oreg., has been appointed manager in that city of the branch of Soule Steel Co., San Francisco. He formerly was affiliated with the Pacific Coast Steel Co., specializing in the sales and engineering of reinforcing steel, and more recently had been working with government engineers in building the Bonneville dam.

Dr. Sanford A. Moss, mechanical engineer at General Electric Co.'s Thomson research laboratory, West Lynn, Mass., and prominent in the development of the centrifugal compressor and supercharger for aviation engines, will retire Jan. 1 after



Dr. E. H. Leslie

Who has joined the technical staff of Blaw-Knox Co., Pittsburgh, in charge of design and fabrication of operating units for the chemical and oil refining industries, as noted in STEEL, Dec. 20, page 30

34 years of service with the company. Dr. Moss has been awarded some 36 or more patents on mechanical devices. He is a member, American Society of Mechanical Engineers American Institute of Electrical Engineers, Society for the Promotion of Engineering Education and American Association for the Advancement of Science.

Ed Stein, United Iron & Metal Co., Canton, O., has been elected president, Cleveland chapter, Institute of Scrap Iron and Steel Inc. Other officers are: Secretary, B. A. Shapero, Max Friedman Co., Cleveland; treasurer, Frank G. Tuschman, I. Gerson & Sons Inc., Toledo, O.; chairman of executive committee, Sam Kasle, Kasle Iron & Metal Co., Toledo, O.

Hamilton Brush, who has been with the sales department of American Smelting & Refining Co., New York, since 1909, will resign as vice president in charge of sales Jan. 1. He will, however, continue to be associated with the company as sales consultant and a director. Kenneth Brownell, for five years manager of sales, has been named to succeed Mr. Brush as vice president in charge of sales.

L. W. Shugg, division manager, publicity department, General Electric Co., has been elected president, Exhibitors Advisory Council Inc., New York, to serve during 1938. Other officers elected are: Vice president, S. A. Knisley, director of advertising, Republic Steel Corp.; secretary, E. A. Phoenix, assistant sales promotion manager, Johnson-Manville Corp.; treasurer, R. H. DeMott, general sales manager, SKF Industries Inc.

Harry Symansky, Symansky Bros., Troy, N. Y., was elected president of the Capital district chapter, Institute of Scrap Iron and Steel Inc., at its first annual meeting, recently. Other officers elected include: Vice president, Henry Bradford, American Iron & Metal Co., Troy, N. Y.; treasurer, S. Levin, of Estate of Morris Levin, Albany, N. Y.; secretary, Sam Finkelstein, A. Finkelstein & Sons, Hudson, N. Y.

J. E. McMahon, formerly assistant sales manager, has been appointed general sales manager, Graton & Knight Co., Worcester, Mass., to succeed C. O. Drayton, who recently resigned. Mr. McMahon has had many years' experience with the company, including work in the factory, engineering department and as a salesman. In recent years he has been employed in an executive capacity in the sales promotion and advertising

department, as well as the sales department.

Dr. Charles A. Kraus, professor of chemistry and director of chemical research at Brown university, has been elected president of the American Chemical society for 1939. Dr. Kraus will take office as president-elect on Jan. 1, at which time Dean Frank C. Whitmore, of Pennsylvania State college, will become president for 1938. The new president-elect, who is 67, is internationally known for his part in the development of ethyl gasoline, ultraviolet lamps and heat-resisting glass.

DIED:

■ SAMUEL WILKOFF, president, Wilkoff Co., scrap dealer, Youngstown, O., in that city, Dec. 20. Born in Russian-Poland in April, 1862, he came to this country at the age of 13. In 1888 he and his brother, William, opened a scrap yard in Akron, O. Later in that year, however, he went to Kansas to try homesteading. After a short while he returned and re-established his business with his brothers, William and David. In 1901 he moved the scrap business to Youngstown and the firm was formally incorporated as Wilkoff Bros. Co. Later Mr. Wilkoff sold his in-

terest in that company and established the Wilkoff Iron & Steel Co. The two firms were consolidated as the Wilkoff Co. in 1912.

Charles E. Roeder, 69, founder of the Roeder Sheet Metal Works, Milwaukee, Dec. 18 in Milwaukee.

Clement R. Pentecost, 48, vice president, Deslauriers Steel Mould Co., Jersey City, N. J., in Short Hills, N. J., Dec. 16.

Oscar E. Lindemann, 44, chief purchasing agent, A. J. Lindemann-Hoverson Co., Milwaukee, manufacturer of stoves and ranges, Dec. 20. He was the son of Albert J. Lindemann, a founder of the firm and now chairman of the board, and brother of Albert Jr., now president; Walter, vice president, and Eugene, secretary.

A. M. McCrea, 61, chairman of the board, Union Spring & Mfg. Co., Pittsburgh, in Richmond, Va., Dec. 19, after an illness of several weeks.

Rudolph Wintzer, 64, consulting engineer, Nordberg Mfg. Co., Milwaukee, Dec. 16, in Milwaukee. Born in Germany, he received his mechanical engineering education there and in England, coming to America in 1907 and joining the Nordberg staff in 1912.

Activities of Steel Users, Makers

■ WILLIAM F. Eichfeld & Sons Co., Milwaukee, structural and architectural iron, has purchased the factory and site of the W. Toepfer & Sons Co. at 2549 North Thirtieth street, Milwaukee, and will occupy it Jan. 1. The Toepfer company, which specializes in perforated sheet metal products, is taking over the Eichfeld firm's lease on its quarters at East Pittsburgh avenue and South Barclay street. The transfer gives the Eichfeld company more production and office space.

Falk Corp., Milwaukee, has appointed Transmission Engineering Co., 116 New Montgomery street, San Francisco, as its representative in northern California.

Republic Steel Corp., Cleveland, has leased the Crescent No. 2 mine of Pittsburgh Coal Co. at Roscoe, Washington county, Pa. The output will be used for Republic's coke operations, requiring between 3500 and 4000 tons of coal daily.

Lincoln Electric Co., Cleveland, has opened a welding sales-engineering office in Atlanta, Ga., under the management of Robert Daniels. Arc welding equipment, including arc welders, electrodes and accessories, will be available to welding users.

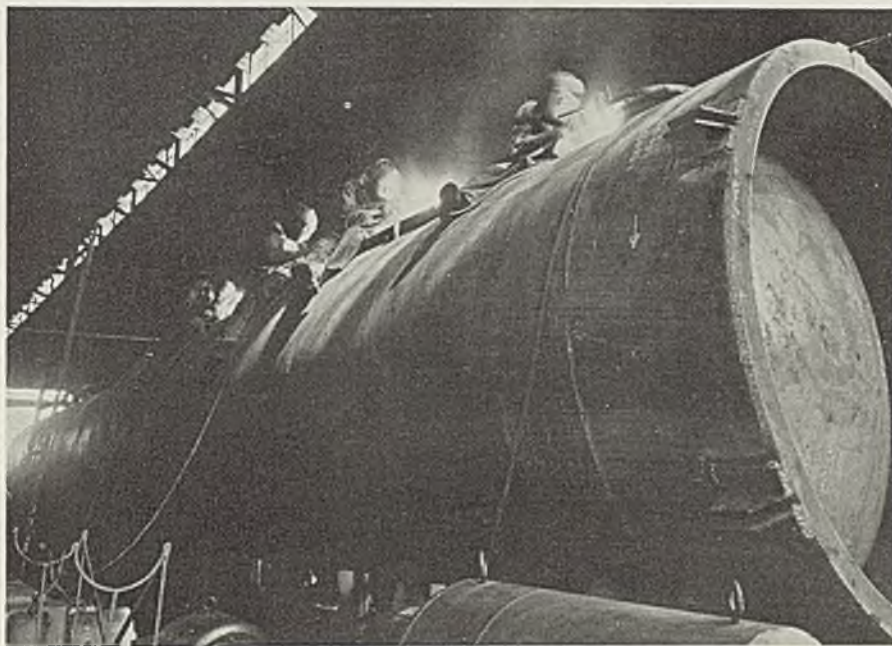
Horace T. Potts Co., Philadelphia, will be dissolved as of Dec. 31 and a new firm bearing the same name will be formed. The partnership will consist of: Thomas C. Potts, Harrison I. Potts, Horace M. Potts, Guy P. Bible, Morris E. Neeley, Arthur L. Collins, Claude Mengel, Thomas I. Potts and Horace T. Potts II.

Hanson-VanWinkle-Munning Co., maker of electroplating equipment and supplies, Matawan, N. J., has expanded its facilities. A new office building for use as a drafting and engineering room; a second extension to the electrical shop; a new railroad spur, a 60-ton crane, and a new electrical substation.

Pressed Steel Car Co. has awarded a contract to Donahoe Steel Products Co., Chicago, to dismantle the former's Koppel, Pa., plant. George H. Fleming, executive vice president, Pressed Steel Car Co., said that failure to sell the plant led to the decision to raze it. Operations at Koppel were transferred to the McKees Rocks, Pa., plant last spring.

Midwest Stamping & Enameling Co., Galesburg, Ill., has changed its name to Midwest Mfg. Co. *(Please turn to Page 79)*

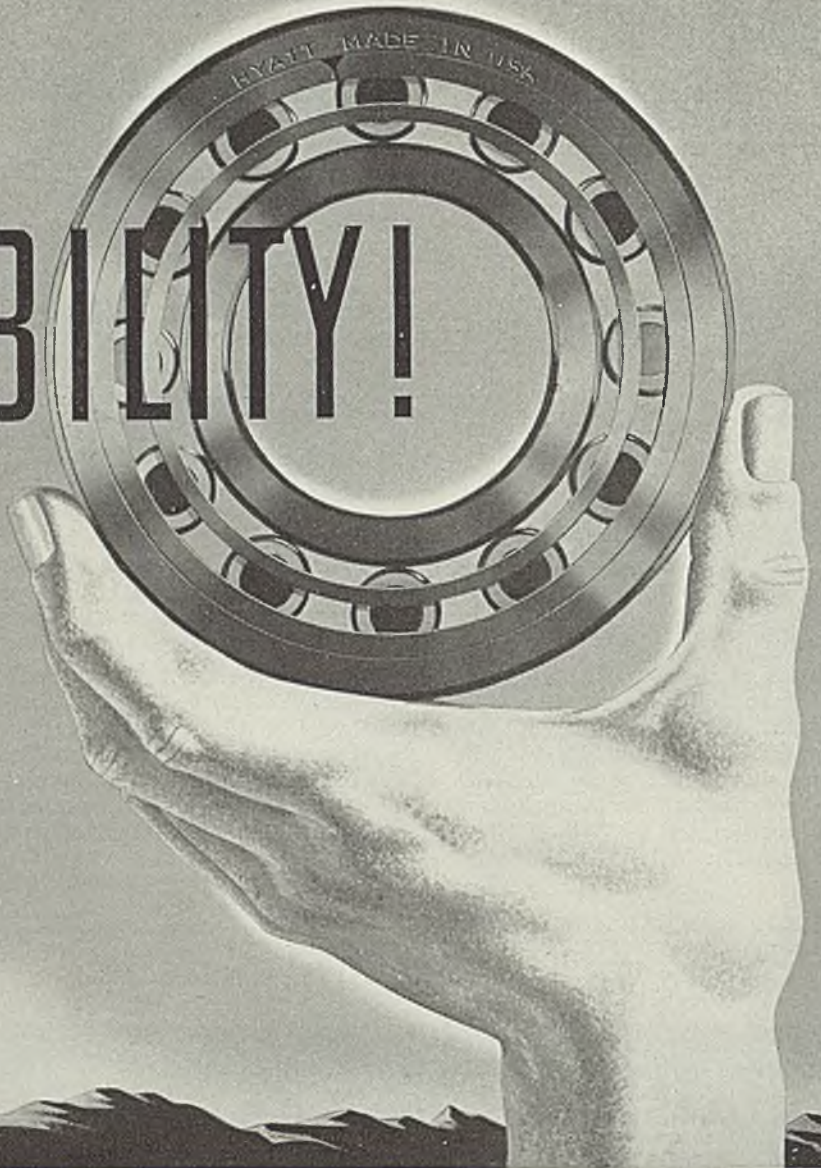
Lengthy Welding Job on Refinery Absorber



■ More than 1000 lineal feet of welding was required to fabricate this absorber for reclaiming gasoline from natural gas in a southwestern refinery. It is 8 feet in diameter, 7 feet at the top and is 58 feet, 10 inches high. The flanged steel bottom, of $1\frac{1}{8}$ -inch steel, required 10 beads of welding, the flanged top, of $\frac{5}{8}$ -inch steel, eight beads. There are 26 flanges or manholes, 8 to 24 inches in diameter. Fabrication was by Tulsa Boiler & Machinery Co., Tulsa, Okla., using Westinghouse flexarc welders

RELIABILITY!

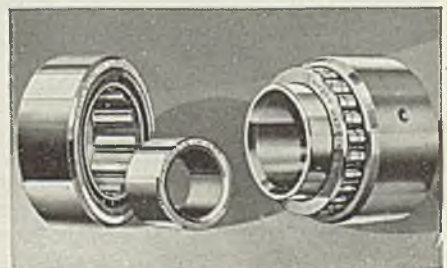
FROM THE HAND
OF THE HYATT
ENGINEER



RELIABILITY, in the machines you build or use, starts at the bearing points! Use Hyatt Roller Bearings with complete assurance that they will give you longer life under heavy loads, keep related parts in alignment, resist wear, minimize maintenance, and transmit the full measure of power. Not because of any secret formulae, but because of the advanced design by Hyatt engineers and precision manufacture of Hyatt craftsmen.

Evidence of Hyatt reliability is found everywhere in industry... wherever shafts, gears and wheels turn...in mill and factory, on the farm, on railways and highways. Certainly these bearings have a tough life, but, fortified by nearly fifty years' experience in building better bearings, Hyatts definitely have proved they can take it. Hyatt Bearings Division, General Motors Corporation, P. O. Box 476, Newark, New Jersey.

HYATT ROLLER BEARINGS



STEEL



MIRRORS OF MOTORDOM

DETROIT

■ WHEELS of motordom have been braked to a bare crawl as the old year ebbs, and it will be well into January before production is resumed at a normal rate. Many assembly lines last week were either idle or confined to one or two days of operation, and this week practically all will be down until Jan. 3 at the earliest. Some schedules postpone resumption until Jan. 10.

Ford will continue car assemblies through the holidays at a rate of better than 4000 a day with the exception of Christmas and New Year's day when it will close. January schedule calls for about 4000 cars and trucks a day, five days a week. A number of departments at the plant here will be closed until Jan. 17 in order to balance inventories.

The holiday lull is not unusual, however, as nearly every year the period from Christmas to New Year's day is a slack one for automobile production. Duration of the shutdowns this year has been prolonged in numerous cases, but sentiment is being whipped up for improvement in business in the next few weeks. Feeling is that the recession has been too sudden and sharp to be of a permanent character.

Last Quarter Showings Poor

Balance sheets generally will reflect poor fourth-quarter showings, but in view of the fact the automotive industry and all its suppliers have experienced boom times for the first three quarters of the year, there is not too much concern being expressed over precipitate drops in earnings for the last three months.

One student of financial affairs reasons thus: Suppose a company has earned \$10 in the first nine months, and suppose \$6 of this total has been paid out in dividends and extras thus far. Suppose, too, this company has projected a good-size expansion program which must be paid for out of cash. Now, the

BY A. H. ALLEN

Detroit Editor, STEEL

\$4 remaining out of earnings provides a good cushion to cover expansion costs, but at the same time if it shows on the balance sheet at the end of the year, it is taxable.

If, on the other hand, a loss of \$4 were incurred in the fourth quarter, the taxable surplus would be canceled out, without unduly disturbing the cash position of the company. Ergo, a loss of this amount in the fourth quarter will not be considered catastrophic by management.

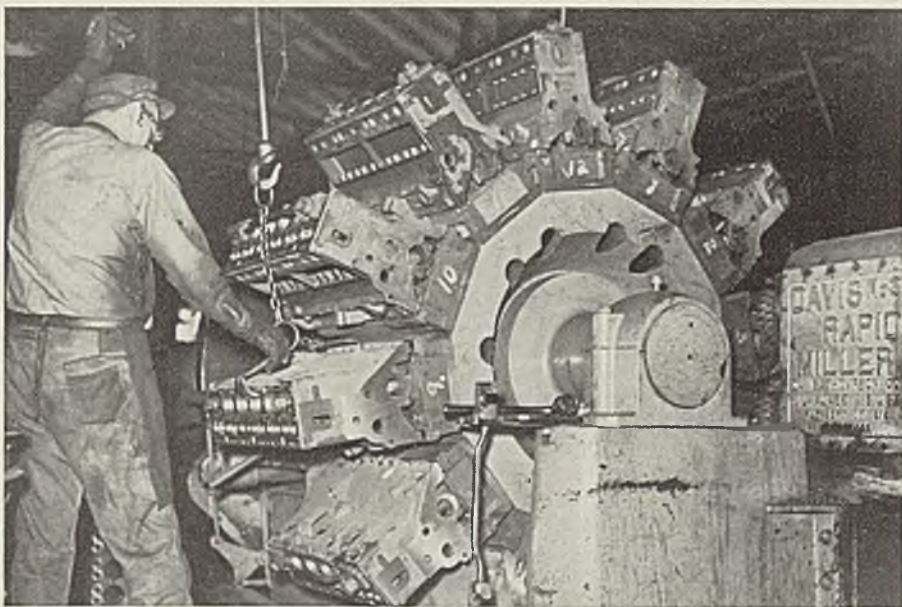
Granting this reasoning to be sound, it implies a serious deficiency

of buying, perhaps a slackening of sales effort which in the normal course of things is bound to be corrected. For this one reason alone, it may be inferred that the first quarter of 1938 will see buying springing back to a more normal level.

To cite a specific example, a large hardware jobber here for the first time in many years has not ordered stocks for spring delivery. There is every reason to believe this interest eventually will place his customary large orders, but as yet his buyers have not been instructed to go ahead. The same situation is multiplied a hundredfold throughout all lines of industry.

Of course, intimately associated with this picture is the matter of prices. Reports have been circu-

Mills 12 Cylinder Blocks Simultaneously



■ Twelve 6-cylinder blocks are milled at each end simultaneously on this Davis, Thompson Co. rotary milling machine in the Oldsmobile plant. Fixtures for holding each block during the milling operations are so located that blocks may be placed on and removed from the machine without stopping its travel



MIRRORS OF MOTORDOM

lated of pressure from automobile companies, for example, on parts suppliers. Parts suppliers are now studying cost figures to determine what can be done, and find the only place such reductions can come from is in material prices.

While it is true that metals such as copper, lead, zinc, tin and aluminum are quoted today at prices 5 to 35 per cent below August levels, these prices are in many instances only nominal, it is said, and are not tested by tonnage buying. Should orders suddenly appear for appreciable tonnages of these metals, their price level immediately would rise, because they are so sensitive to the effect of supply and demand.

■ **WEIGHING** the future in the light of the past two years' experience, a number of observers are freely predicting the end of the fall automobile show and the return to the former January shows — possibly not for 1939 models but likely for 1940 models.

At a general factory meeting here recently, Pontiac dealers unanimously agreed auto shows and new model announcements should be held on later dates, preferably between Dec. 1 and Christmas. Two salient reasons prompted this expression: First, the fact that the initial rush of new model business loads dealers with used cars which they must carry over until spring months to realize their investment; and second, early announcements and advance information on new models slices too sharply into sales of current models.

Moving the auto shows back into October was done two years ago in the effort to level out employment in the motor industry for the calendar year. It has been partially successful, but concerted pressure from dealers throughout the country for a return to the former system could have only one result.

The caution which most automobile retailers are exhibiting may hold down the dealer mortality this winter. One outlet for a low-price car here is refusing to take orders for new models on which trade-ins of 1936 or 1937 models are involved; others in the same line have set up limited quotas for trade-ins of recent vintage. Throughout the coun-

Automobile Production

Passenger Cars and Trucks—United States and Canada

By Department of Commerce

	1935	1936	1937
Jan.....	300,335	377,244	399,634
Feb.....	350,346	300,810	383,698
March....	447,894	438,943	519,177
April....	477,059	527,625	553,415
May.....	381,809	480,518	540,357
June....	372,085	469,368	521,139
July.....	345,297	451,206	456,909
Aug.....	245,075	275,934	405,064
Sept....	92,728	139,820	175,620
Oct.....	280,316	230,049	337,979
Nov.....	408,550	405,799	376,637
11 mos...	3,701,494	4,097,316	4,669,629
Dec.....	418,317	518,958	.....
Year.....	4,119,811	4,616,274	.....

Estimated by *Ward's Automotive Reports*

Week ended:	Week ending	
	Dec. 25	Dec. 18
Nov. 27	58,955	
Dec. 4	86,848	
Dec. 11	85,765	
Dec. 18	82,025	
Dec. 25	67,230	
General Motors	28,530	30,825
Chrysler	10,950	15,850
Ford	20,615	25,115
All others	7,135	10,235

try dealers in most all lines are extra wary about sanctioning deliveries of new models until actual purchasers are in sight.

This attitude has had a serious effect on such producers as Hupmobile which has not been assembling cars since late in November and probably will not resume until Jan. 15. Hupp has completed about 1400 jobs and is still in the process of signing up new dealers; but until cars begin to move into drivers' hands at a better rate it is impossible to start up assembly lines again.

In general, sales of cars in the medium-price class have been showing more life than those in either the low-price or high-price class, indicating that buyers in the laboring ranks are not interested in new cars to any extent, and that sales predominate among those in the medium-income class and those with higher incomes who have decided to drop a notch in car preference. But this stratum of buyers is not the market for the volume producers,

and thus the problem rests on how to stimulate sales in the Plymouth-Chevrolet-Ford level of buyers.

■ **THREE** paragraphs from a recent speech by W. J. Cameron of Ford Motor Co. are worthy of insertion in the record. Analyzing the current business situation for 400 Michigan manufacturers in session here, he said: "What is wrong in Michigan? The state has been filled with aliens preaching obstruction. They are met by a governor who believes they are the advance guard of progress. They came into Michigan in automobiles from Pennsylvania, Ohio and other states, with machine guns in the back seats.

"Behind the governor is a President who regards labor agitators as his storm troopers to force on the nation something the people themselves wouldn't stand for.

"I know one company that in the future will not respect the request of the President of the United States to compromise on a principle. We have the utmost respect for the office of President, but we will stand on principles."

■ **REPORTS** current of a prospective merger between Federal and Reo truck companies are unfounded. Federal has reorganized and expanded its sales personnel in preparation for marketing a new line of 29 models for 1938, including units ranging from ¾-ton to 7½ tons in capacity. Plant officials are looking forward to a banner year for truck sales, pointing to the fact that even a slight improvement in building construction would mean outlet for thousands of new trucks.

Willys production for this year has been concluded, and assembly lines are idle for an indefinite period. Sales for the past 12 months have totaled some 80,000 units, exceeding original schedules by 20,000. Surveying the year, Dave R. Wilson, president, observes, "Willys record has been one of steady earnings, except for the first three months of operations, during which actual production did not get under way due to the large task of retooling and rearrangement of manufacturing facilities to obtain greater efficiency through more concentrated manufacturing operations."

■ **ADVANCE CORP.**, Butler, Pa., handling imports and distribution of the Italian Fiat car in this country and Central America, reports 250 units arriving monthly.

■ **ILLUMINATED** vanity mirror is one of the latest gadgets to be offered for installation on new cars as an "approved accessory."

UP IN THE AIR?



MODERN Baker Fork Trucks make quick work of sheet and tin-plate handling; add substantially to storage space by higher tiering. Well fitted to handle the production of the new, high-speed mills, their sturdy construction and low maintenance write new records of lower handling costs, insure their rate of saving through many years of profitable service.

Get the facts on material handling from the Baker Materials Handling Engineer.

You'll find his data accurate and helpful in considering your own handling problems. Write the BAKER INDUSTRIAL TRUCK DIVISION OF THE BAKER-RAULANG COMPANY, 2166 West 25th Street, Cleveland, Ohio



POWER INDUSTRIAL TRUCKS FOR EVERY PURPOSE

"This welding wire is
always the same, Bill"



"That's been my experience, too"



IT'S Roebing custom-made Welding Wire. Unlike welding wire made of ordinary "tonnage" steel, the steel for this wire is produced in special small open-hearth furnaces, permitting very close control of the steel-making process. Furthermore, special melting stock is used. Result: a wire free of non-metallic impurities and absolutely uniform in quality.

There is no need for current changes when this wire is used. This saves time . . . keeps down welding cost.

JOHN A. ROEBLING'S SONS CO., TRENTON, N. J.
Branches in Principal Cities





WINDOWS OF WASHINGTON

WASHINGTON

BY L. M. LAMM

Washington Editor, STEEL

■ THERE are definite and apparently well-founded rumors behind the scenes in Washington that when the President sends his message to congress when it convenes Jan. 3, business will have nothing to fear. In fact these whisperings are to the effect that the Chief Executive is going to change his tone and that business will be much pleased with what he says.

This is reported to be the reason he has been having conferences with business and industrial leaders. It is certainly what his advisers are expecting.

The second or special session of the seventy-fifth congress is a thing of the past. The third session of the same congress, according to law, convenes on the third day of the new year. All of the legislation which was pending when congress adjourned will still be pending, with unchanged status.

Tax Relief Bill Planned

The second session did not accomplish the purpose for which it was called. It was in session for five weeks and the sum total of the actual legislative accomplishment included an appropriation of \$225,000 to pay the mileage of members of the congress, whether they went home for the holidays or not (and most of them did not); an appropriation of \$12,000 to pay salaries of page boys for the two houses of congress, and the authorization of a loan of certain capitol paintings to the Constitution Sesquicentennial. Certainly this is nothing to boast of, since it cost taxpayers many hundreds of thousands of dollars.

Business was considerably disappointed, owing to the fact that at one time there was an idea that tax relief legislation might be passed. The best information available now is that about the middle of January the ways and means committee of the house, which originates tax legislation, will have a tax relief bill ready for the lower house. It is confidently expected on

all sides that 1938 corporation taxes will be eased considerably.

Industrialists are confused by contradictory moves being made in Washington. More reform legislation has been talked of on the one hand, while on the other the Chief Executive himself seems disposed to be more lenient than usual with business.

Administration forces, of course, were discouraged by defeat of the wage and hour bill in the house. The final vote was taken at a late night session and up to supper that night there was no thought on the part of administration officials that there would be any trouble, in spite of the fact that earlier in the week there was talk that the bill might be recommitted.

Under ordinary conditions this means that the bill is killed, but this is considered such an important measure that the administration may make another effort at the coming session. However, unless the government is willing to meet all demands of the southern legislators there seems little chance of success. Of course, the labor unions are wrathful and promising dire results to Democrats who caused the recommitment.

Labor Threatens Reprisals

The final house vote, which was 216 to 198, was brought about by coalition of southern Democrats with Republicans. Thus the New Deal platform pledge of 1936 was scrapped by the southerners, who were fearful for their own industries.

Labor's non-partisan league, a creature of John L. Lewis and others of the same belief, in a scathing statement said that "the minimum wage and maximum hour bill will be an issue in the 1938 congressional elections." In cracking down on the southerners the league said that

"these congressmen cannot evade their heavy responsibility by the excuse that the bill was weak and inadequate. However slight the progress made, that much at least would have been gained, and the way to future improvement would have been opened. Every vote against the wage and hour bill brands the congressmen who cast it as the enemy of labor and the protagonist of parasitic industry".

TARIFF COMMISSION MAKES WORLD SURVEY OF STEEL

A survey of the world iron and steel industry is nearing completion by the United States tariff commission. It has been under way for about a year at the instance of the commission. While no date has been set for its release it is believed it will be available within two months.

It will cover production and international trade in raw materials and products of these industries, with particular reference to factors essential to tariff consideration.

The commission, in discussing this survey, says that "in value of output, employment, and volume of trade the iron and steel industry is one of the most important. World output of steel ingots and castings in 1936 was about 120 million tons, of which the United States produced about 39 per cent. Before and during the world war the share of the United States in world output was somewhat larger, but in recent years expansion of the industry in countries not previously important has been significant. For practically all tonnage products the United States is on a strong export basis, competition from the relatively small imports being confined largely to seaboard areas. Domestic demand for some special steels is supplied largely by imports and such imports are widely distributed throughout the country."

It is stated that "since the World war there have been in Europe important shifts in the political control of raw material sources for

this industry and its manufacturing facilities. Noteworthy advances have been made in technology, and the iron and steel industries have expanded greatly in a number of countries which formerly were not important producers. The recent rapid recovery of industry, resulting in a shortage of raw materials, particularly scrap iron and steel, in certain countries, a condition now showing substantial improvement, and the activity of international trade, make the survey of special timeliness and interest.

"Beginning with a brief summary of the technology of production, the survey will proceed with facts concerning the position occupied by each important producing country as to raw materials and its production of, and trade in, iron and steel products.

"It will also analyze the import trade of a number of nonproducing countries which are markets for products of the iron and steel industry of the United States. Information is given on the more important economic phases of the industry, such as transportation and marketing, price trends and policies, international cartels, and United States tariffs. There is included a comprehensive analysis of measures taken by foreign governments tending to influence international trade, an analysis that covers the development and present status of tariffs, quotas, exchange control measures, import permits, and other governmental measures which affect international trade in raw materials and products of the iron and steel industries."

TRADE AGREEMENT WITH ITALY BRIDGES GAP

A temporary commercial agreement has been signed between the United States and Italy, according to announcement by the state department. It became effective Dec. 16.

A treaty of commerce and navigation between the two countries signed in Florence, Feb. 26, 1871, terminated Dec. 15 in consequence of the joint notice of denunciation of Dec. 15, provided for most favored nation treatment in customs matters and negotiations for a new treaty to replace it have not been completed. The department felt, therefore, that steps should be taken to determine the treatment which will be accorded by each country to the commerce of the other during the interval.

In the meantime it has been agreed by the Italian government that "it will in fact apply the provisions of article eight of the proposed new treaty on and after Dec. 16, 1937, and that the government of the

United States will on its part continue to accord the articles of growth, produce or manufacture of Italy benefits of the minimum rates of the American tariff as established in its trade agreements with other countries (Cuba excepted) until 30 days after notice by either party of its intention to discontinue such treatment." The net result under this agreement is that the United States will get most favored nation rights until a new agreement is made.

INDUSTRY PROGRESSES BY ITS CRITICAL ATTITUDE

R. J. Hamilton, vice president of the American Radiator & Standard Sanitary Corp., was heard on the radio in a nation-wide hookup last week as a member of the Roper business advisory council, in connection with the regular weekly department of commerce program. His subject was: "Industry Hopes You Are Not Satisfied." He said that the present record compels industry to appraise itself.

"Industry must not falter through timidity," he said. "It must not grow overbold through accomplishment. A critical attitude toward itself is much more to be desired than one of complacency. It realizes that it is not perfect. It frequently speaks not at all or says the wrong thing. It hesitates at times.

"It seeks but does not always find. It keenly desires understanding of its problems and of its place in our national life. It knows that the little business of today becomes the big business of tomorrow if it serves you well. It knows equally well that big business remains big only so long as you approve. So industry reviews its record and feels that it has labored well. But that does not lull it into the belief that it has made fullest use of its opportunities. It ardently desires an increasing sense of partnership between its customers, employes and owners. It seeks this to the end that it may better serve each of them."

NLRB CLAIMS COURTS UPHOLD ITS DECISIONS

Members of the national labor relations board are very sensitive to the continued criticism they are receiving. To offset it they are putting out considerable propaganda.

Almost every time there is a favorable court decision the board puts out an elaborate statement telling just how many times it has been upheld by the courts. The latest bulletin is to the effect that the board's orders have been substantially or fully upheld in 18 out of 20 cases heard by the courts and "fully decided on the merits thus

far under the procedure of the statute." The board points out also that "in not a single case have the board's fact findings been reversed in whole."

In addition to labor decisions already handed down by the courts there are now on file with various circuit courts, 44 cases brought by the board for enforcement or by the employer involved for review.

In connection with court decisions in labor board cases only one affects the steel industry and that was the Jones & Laughlin Steel Corp. case in which ten employes were ordered reinstated with back pay.

BILL WOULD REPEAL TAX ON CAPITAL GAINS

Representative Celler, New York, has introduced a bill in the house calling for complete repeal of the capital gains tax. He had previously introduced one for partial repeal.

"Private industry must lead the march back to complete business recovery," he said on introduction of the bill. "There now seems to be general agreement among legislative leaders, administrative heads of government, business and labor leaders that repeal of the capital gains tax will open the floodgates of industry and business."

Celler said that he was in full accord with a recent statement of Secretary of the Treasury Morgenthau when he said "the basic need today is to foster the full application of the driving force of private capital. We want to see capital go into the productive channels of private industry. We want to see private business expand."

Germany Further Limits Use of Iron and Steel

■ To conserve iron and steel for manufacture of goods in which substitutes cannot be used, Germany has forbidden domestic use of a long list of additional products hitherto made from those metals. Included are equipment for roads, including signposts; buildings such as garages and oil stations; doors, stairs, window frames and shutters for most other types of buildings; agricultural equipment, such as feeding troughs; other products like monuments, signs and ornaments. A shorter list to the same effect was issued a year ago.

German iron and steel production is at a record rate and is exceeding all pre-war levels.

Recently developed substitutes include a transparent plastic material, technically known as acetyl cellulose, for making preserved-food containers. Top and bottom of the new container are tin, providing stability for handling.

At a time when minds are focused upon the prospect of a new year, it seems appropriate that all of us be reminded of the good fortune that is ours by virtue of our citizenship in a great nation. "God's Country" is reprinted from a copyrighted advertisement by the special permission of its original sponsor, Link-Belt Co., Chicago.

—The Editors

God's Country

"Breathes there a man, with soul so dead,
Who never to himself hath said,
This is my own, my native land?"

—SCOTT

SURE we've taken it on the chin! Sure we've had our dust-storms, droughts and depressions! *So what?* The gilt frame may have been broken, but the picture remains *unchanged*.

* * *

If you ever feel your knees getting a little shaky, try this simple experiment . . . repeat these words . . . *slowly*:

"Before the world, I AM AN AMERICAN! I envy no man. I fear no man. No man has anything I covet. No man can take away from me anything I have.

"Mine is a nation of *youth*, made out of a new kind of steel, alloyed with the blood strains of many peoples . . . not too stubborn to bend, but too strong ever to be broken.

"With its far-flung frontiers, mine is a land so broad, so rich in its hidden treasure, so vast in its resources that, if we had to, we could build a fence around ourselves and live forever . . . *alone*.

"Mine is a people of common stature, uncursed by class . . . vaccinated against all isms, cults and imported crack-pot philosophies . . . noisy at a ball game, but dangerously silent in battle.

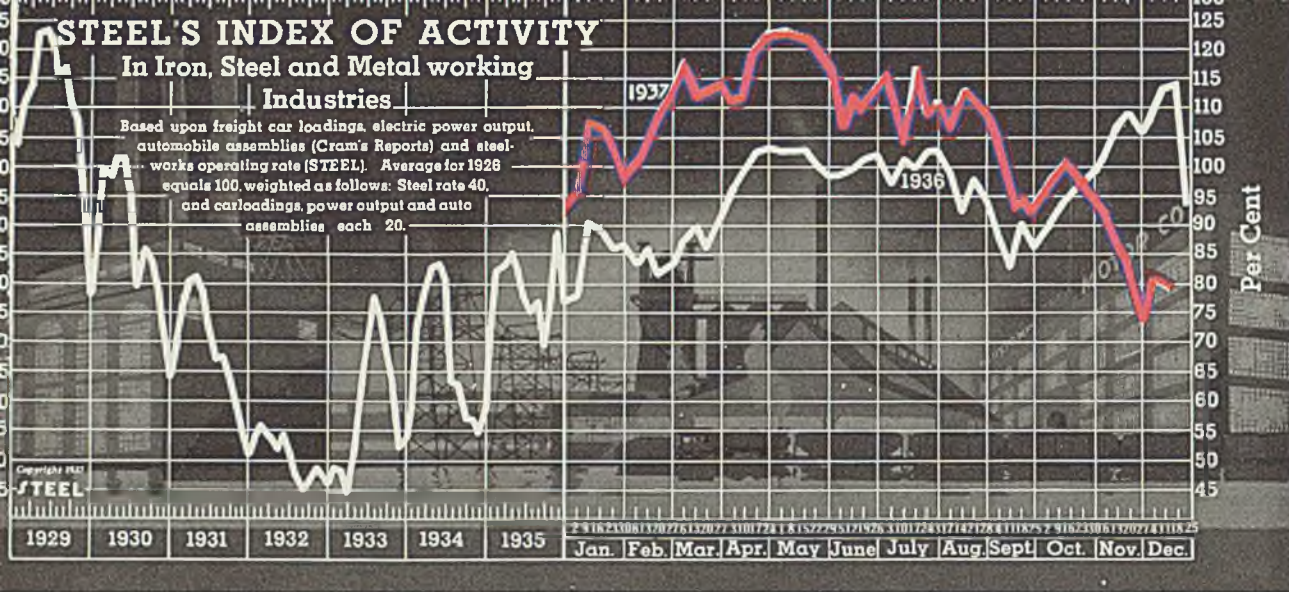
"My people *think!* Over the roar of wheels, in thundering subways, in factory and field, in the depths of mines, amid the clank of tin dinner buckets, behind the drawn blinds of their thirty million homes, wherever they are, even now they are thinking . . . thinking out the answers that others cannot find. And, when the time comes, they speak . . . without stuttering.

"I am proud of American inventive genius; if there had never been *but just these few* Americans . . . Franklin, Fulton, Bell, Edison and the Wright Brothers . . . this would *still* be the greatest nation on earth.

"But most of all I give thanks for American Industry and for American business brains that have found a way to pay better wages . . . to work shorter hours . . . to pay more for their raw stuff . . . and still, with the help of mass production and mass distribution, give the people what they want *at prices they can pay.*"

* * *

So long as machinery continues to ease the strain on muscle, and Americans after a day's work aren't too tired to *play* . . . nothing really serious is going to happen to . . . GOD'S COUNTRY.



The

STEEL'S index of activity declined 0.8 points to 79.7 in the week ending Dec. 18:

Week ending	1937	1936	1935	1934	1933	1932	1931	1930
Oct. 9	99.0	83.4	74.9	56.4	66.0	48.4	61.5	79.4
Oct. 16	101.8	95.9	77.4	58.2	60.9	48.7	57.9	77.5
Oct. 23	97.5	97.1	82.4	56.3	58.0	48.7	58.2	78.5
Oct. 30	95.7	99.1	86.4	55.0	52.3	48.4	59.2	72.5
Nov. 6	82.4	102.1	88.4	54.9	50.7	48.5	56.0	71.5
Nov. 13	86.5	107.9	88.8	55.2	52.6	47.7	55.5	73.0
Nov. 20	84.9	109.9	90.9	54.4	55.4	49.2	54.8	71.0
Nov. 27	72.7	105.2	86.0	51.9	49.7	47.5	54.4	66.9
Dec. 4	81.5	108.4	91.7	56.8	52.6	45.3	52.9	69.2
Dec. 11	80.5†	113.9	91.8	60.6	56.0	46.6	53.1	68.2
Dec. 18	79.7*	114.8	91.9	64.4	58.0	49.3	52.3	67.3

*Preliminary. †Revised.

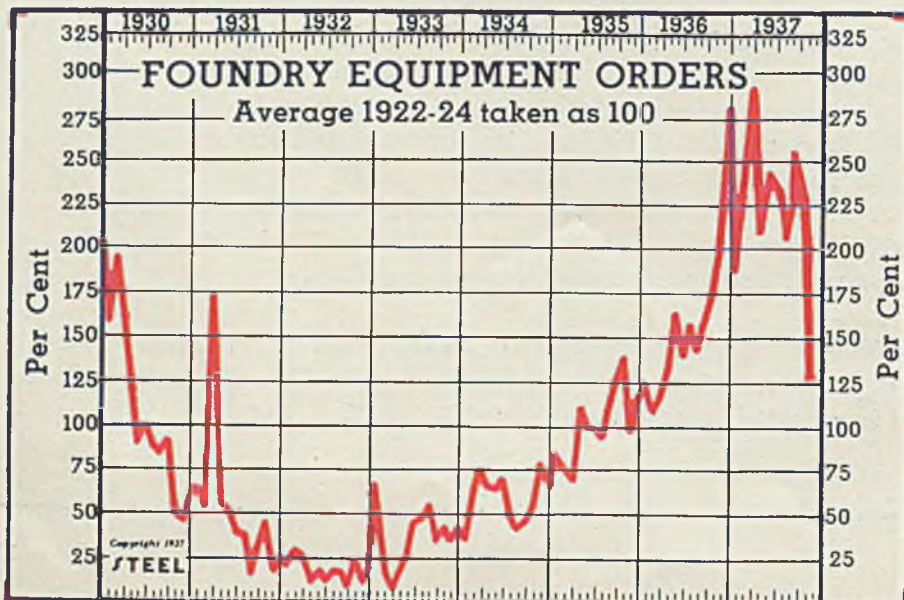
More Signs Point to Early Reversal in Business Trend

DECEMBER may prove to be the month in which the downward drift of industrial activity which extended throughout most of the second half of 1937 was checked and a reversal of trend initiated.

To date the records of business are not sufficiently complete to indicate this reversal conclusively. Also it is quite probable that the effect of stronger recovery influences upon important barometers of activity in December may be obscured by the season-

al interruptions caused by the observance of the Christmas and New Year's holidays.

Nevertheless, it is clear that improvement has been manifested by several definite signs since the middle of December. One of the earliest indications of a change was the slight advance in steelworks scrap, after many weeks of steady declines. Another was that some of the barometers of commodity prices struck bottom in December and turned upward. Still another sign was the halt in the steadily declining rate of steelworks operations. After receding in every consecutive week since early in September, the rate for the week ending Dec. 18 remained unchanged. Further declines in the current week and



	Per Cent			
	1937	1936	1935	1934
Jan.	190.9	127.0	76.6	37.2
Feb.	249.5	110.4	75.7	65.8
March	294.2	115.0	69.4	75.4
April	208.3	134.0	113.2	67.9
May	242.0	165.4	100.7	66.5
June	228.2	141.4	100.2	70.4
July	204.0	159.6	94.0	50.7
Aug.	257.5	144.8	113.0	43.1
Sept.	231.8	161.0	128.5	46.4
Oct.	185.2	173.8	140.0	55.3
Nov.	128.0	200.4	100.4	80.4
Dec.		283.3	118.1	66.9

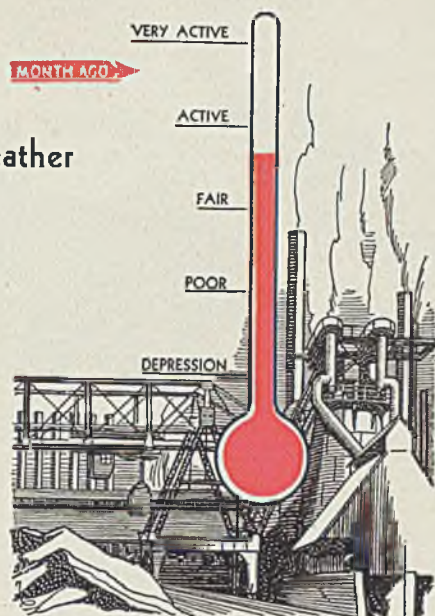
BUSINESS

TREND

until early in January, due to holiday interruptions, do not and will not erase the significance of this check.

Other indications of improvement are found in more cheerful market reports, showing a slight gain in orders for replacement. In some markets, inven-

Industrial Weather



TREND:

Downward

Where Business Stands

Monthly Averages, 1936=100

	Nov., 1937	Oct., 1937	Nov., 1936
Steel Ingot Output	57.3	86.8	115.4
Pig Iron Output	79.8	111.2	117.3
Freight Movement	94.7	114.3	108.7
Building Construction		88.6	102.4
Automobile Production	93.6	91.6	105.3
Wholesale Prices	102.5	107.4	106.7

tories have been worked down to levels where early buying will be necessary early in the new quarter.

STEEL'S index of activity has remained almost stationary for three weeks at around the level of 80. For the week ending Dec. 18 it stands at 79.7, a slight drop from the previous week. No market changes occurred in any of the four barometers on

which the index is based. The steelworks operating rate and freight car loadings remained stationary. Automobile output declined slightly and electric power output gained moderately.

The trend of electric power production is indicative of the present dull state of industrial activity. In a normal year, the weekly power output attains its peak for the year in the week immediately preceding the week that includes Christmas day. In other words, if 1937 had been normal, power output for the week ending Dec. 18 should have established a new high for the year. Instead it ranked twenty-ninth among the first 51 weeks of 1937. Strangely enough the peak occurred in the week ending Sept. 4, which normally would be a most unseasonable time for the attainment of this record.

The Barometer of Business

Industrial Indicators

	Nov., 1937	Oct., 1937	Nov., 1936
Pig iron output (daily average, tons)	66,925	93,259	98,331
Machine tool index	163.5	180.8	134.0
Finished steel shipments ..	587,241	792,310	882,643
Ingot output (daily average, tons)	86,151	130,488	173,496
Dodge building awards in 37 states (sq. ft.)		30,266,100	34,947,500
Automobile output	*360,000	337,979	405,073
Coal output, tons	35,300,000	40,675,000	41,879,000
Business failures; number ..	786	768	688
Business failures; liabilities	\$10,078,000	\$9,335,000	\$11,532,000
Cement production, bbls. ...		11,374,000	10,968,000
Cotton consumption, bales ..	485,000	526,000	626,695
Car loadings (weekly av.) ..	656,909	792,519	753,619

*Estimated.

Financial Indicators

	Nov., 1937	Oct., 1937	Nov., 1936
25 Industrial stocks	\$156.78	\$172.35	\$238.46
25 Rail stocks	\$24.52	\$26.87	\$43.26
40 Bonds		\$77.33	\$89.61
Bank clearings (000 omitted)		\$24,668,000	\$24,554,000
Commercial paper rate, New York (per cent)	1	1	%
*Commercial loans (000 omitted)	\$9,479,000	\$9,682,000	\$8,812,000
Federal Reserve ratio (per cent)	80.0	80.2	80.3
Railroad earnings	\$60,747,445	\$59,304,948	\$89,809,372
Stock exchange sales, New York stock exchange ..	29,264,906	51,093,381	50,469,732
Bond sales, par value	\$172,175,525	\$227,291,275	\$290,875,000

*Leading member banks Federal Reserve System.
†October, September and October, respectively.

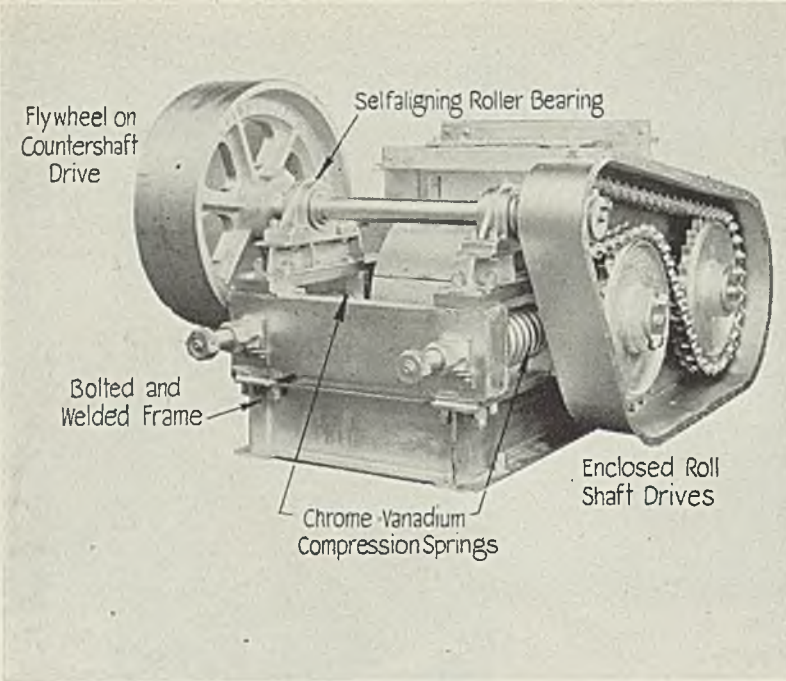
Foreign Trade

	Nov., 1937	Oct., 1937	Nov., 1936
Exports		\$333,136,000	\$225,766,000
Imports		\$224,391,000	\$196,423,000
Gold exports		\$232,000	\$127,000
Gold imports		\$90,709,000	\$75,962,000

Commodity Prices

	Nov., 1937	Oct., 1937	Nov., 1936
STEEL'S composite average of 25 iron and steel prices ..	\$38.96	\$39.59	\$34.65
Bradstreet's index	\$10.35	\$10.85	\$10.78
Wheat, cash (bushel)	\$1.05	\$1.14	\$1.34
Corn, cash (bushel)	\$0.70	\$0.86	\$1.20

Materials Selection



BY KENNETH LINDSAY

Vice President

and

HAROLD POLLITZ

Chief Engineer

Iowa Mfg. Co., Cedar Rapids, Iowa

The countershaft on the roll crusher is mounted on self-aligning bearings and drives the rolls, one of which shifts with the crushing load, by enclosed roller chain. Roll shaft bearings of tapered roller type are rigidly mounted on shafts but the bearing blocks on loose shaft are free to shift with load

■ BECAUSE of the extremely severe conditions to which they are subjected in service, portable rock crushing and screening units must be rugged and shockproof. Selection of materials of construction and the design of parts, drives and bearings are problems whose solution requires full knowledge and painstaking care. Much of this information cannot be had from handbooks or from schools of learning. Experience has been the best teacher.

The Iowa Super Tandem, portable, straightline, aggregate processing plant, designed for operation by one man, is built for the production of screened sand and gravel or crushed rock. It is used in asphalt, concrete or macadam road building. It also is used on concrete construction projects, on sand and gravel from local deposits. By the addition of a primary crusher it also may be used on rock from local quarries.

For portability the unit must be as compact and light as possible. For crushing and handling the material it must be strong and rigid.

Freight is one of the chief items of cost of sand and crushed rock when shipped. Expense of setting up and moving stationary equipment is prohibitive on relatively small projects. Therefore the demand for portable equipment, particularly for road building, which will permit the utilization of local sources of supply has increased rapidly within the last few years. Present day portable equipment capable of handling 200 to 250 cubic yards per hour from the pit has an hourly capacity equal to a day's

output of portable equipment of 10 to 12 years ago.

Large Units Portable

The Iowa portable Super Tandem straight line plant consists of a grizzly screen for removing large boulders more than 10 inches in diameter, a sand and grading screen, roll and jaw crushers and conveying equipment, all mounted on rubber tires for ease in transportation. This is made in several sizes and combinations of crushing, screening and conveying equipment for special types of work. The largest portable units weigh about 60,000 pounds.

Material is fed by conveyor or by power shovel into a hopper with regulated flow onto the screen. The latter first separates sand and then sizes the rock into two groups. The rocks smaller than 3 inches go to a roll crusher which crushes them into $\frac{1}{2}$ to 1-inch pieces, as set, to meet specification requirements. Larger rocks, from 3 to 10 inches, go through a jaw crusher and are reduced to minus 3 inches so that they can be handled by the roll crusher.

To conserve weight and dimensions a two piece conveyor carries the tailings from both crushers around and discharges them back over the incoming screens where the sized and fine materials fall through the screens into hoppers with conveyors to carry away and discharge at the side to truck or loading hoppers. Where rock is taken from a quarry, a separate portable primary crusher is used to crush 5 to 8 inches maximum before feeding into the hopper. This primary crusher is in-

dependently driven and operated.

Main problem in the design and construction of this portable type of unit is to keep weight at minimum and still build sufficient strength into the equipment to stand the shock of crushing and the weight of the material handled.

The power unit is separated from the main plant to keep down the weight and remove it from the dust. To operate the largest unit 125 horsepower is required. Such full load drives are well suited to diesel engines. Bearings, lubrication and the interconnection of the drives from the single power source to the various driven elements of the unit are given careful consideration in design and installation. Minimum overall height to permit shipment on a flat car and transport over highway bridges with minimum dismantling is also important.

Must Have Large Capacity

The bottleneck or capacity limiting element in portable equipment is the capacity of the screen, which not only removes the sand but sizes incoming and crushed stones from both crushers. The screen, therefore, must be quick acting, sturdy and have large capacity for its size. A flat, modified Symons type vibrating screen with 98 square feet of surface is used. This is counterbalanced by two 2 x 6-inch mild steel side bars operating in opposition to the motion of the screen to reduce vibration.

Screen is driven by V-belts at approximately 900 revolutions per minute. The screen is supported by a group of flat springs mounted at 30 degrees from the vertical and receives its impulse from the high speed eccentric driving unit through two horizontal flat steel springs. Through this action the screen throws the material up and forward, causing it to screen through on the fall, thus giving high capacity on a relatively small surface area. Red hard steel is used for the support-

Important in Building

Portable Rock Crushers

ing and driving springs while high tensile steels are used for the spring connections.

Vibration Is Low

Built as a unit, the screen is mounted on 12-inch channels but because of the low vibration it does not require excessively heavy bracing, reducing the overall weight.

On a portable unit the screen is the choke point. It is imperative that all material possible be sized as it first passes over the screen, thus reducing the carryover. This in turn relieves the crushers and increases capacity of the plant. Screen cloths are rubber mounted to prevent cutting the cloth when clamping on the supporting members and also to relieve the pounding of the larger stones on the screen cloth against the subframes.

The four drive bearings are of the self-aligning, spherical roller type, specially sealed against dust and dirt as well as the escape of the lubricant. Antifriction bearings of various types are used throughout the plant with each bearing designed for the load and service.

Main drive to the jaw crusher is by open belt on approximately 50-foot centers, allowing the power unit to remain clear of the dirt and dust. All other moving parts such as screen, roll crusher and conveyor countershafts are driven by open roller chains of special heat treated alloy steel driving on chilled cast iron or cut steel sprockets. This chain is of the roller and side bar type. The chains are lubricated with

The jaw crusher consists of a movable pitman or jaw working against a stationary jaw and driven by an eccentric shaft which is mounted on four sealed self-aligning bearings. The cast-iron toggle plate breaks on overloads

heavy motor or cylinder oil several times a day while in operation, to flush off the dust and dirt. This also provides a new oil coating which prevents the dust from working into the bearings of the roller chains where the flexing action takes place.

Jaw crusher is driven at 250 revolutions per minute. It consists of a fixed and a movable jaw plate mounted in a V-position with the movable plate fastened to the eccentric drive shaft. Rock is crushed as it moves down the V-jaws. A counterbalanced flywheel counteracts the eccentric "throw" of the shaft and so decreases the "pounding" load on the bearings. This design eliminates vibration or oscillating forces, thus giving longer life and smoother operation.

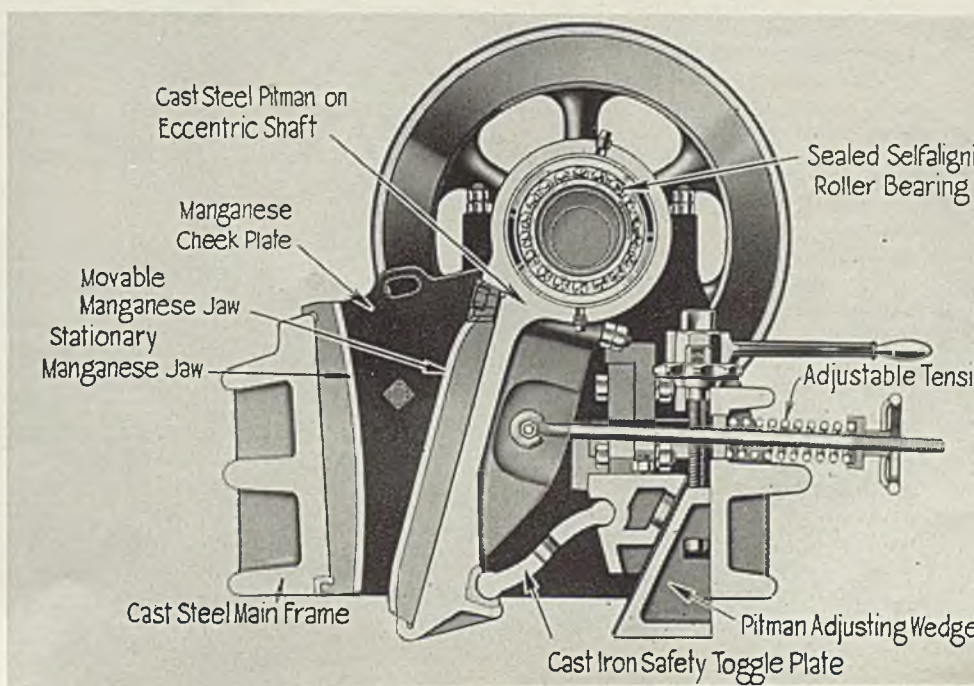
The eccentric shaft is of SAE 3140, forged and heat treated, chromium nickel steel, step cut to assure maximum rigidity and strength. The shaft and eccentric are mounted in oversize, double row, totally enclosed, self-aligning, spherical roller bearings. As these are subjected to highly abrasive rock

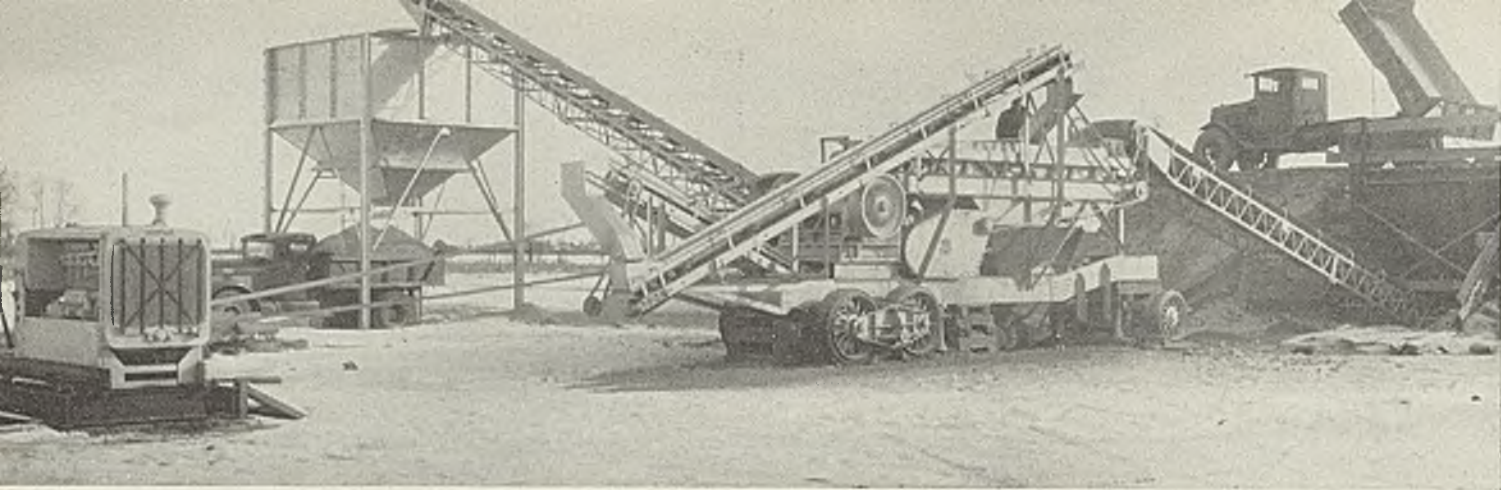
dust and a heavy shock load, special care has been taken in the design of the bearings and seals. Each bearing is provided with labyrinth grooves and flinger disks so that the lubricant must turn 14 corners to escape or for dust to enter.

Lubrication Seldom Necessary

A supply of lubricant ample to last for 2000 to 3000 hours of operation is placed in the bearing housings and plug sealed at the factory. Because lubrication in operation is necessary only at long intervals care is more unlikely to be taken to prevent the entrance of dust than if such action were required frequently.

Lubrication instructions to the operator indicate that the bearing opening plug must be washed before refilling. Every six months the bearings should be drained and flushed. A refill is 8 pounds of specified grease for the pitman eccentric bearings and 3 pounds for each of the main bearings. To minimize likelihood of more frequent lubrication, which would cause the bearings





to overheat if too much grease were supplied, no provision is made for grease gun lubrication.

Two important parts of a crusher are the base or main frame and the 1-piece pitman or frame supporting the movable jaw. These are annealed electric steel castings with heavy reinforcing ribs to withstand the terrific crushing shock of hard materials. Both front and back inside surfaces are machined for proper fitting and alignment of parts.

The corrugated crushing jaws and the cheek plates which form the side of the jaw opening are of 12 to 14 per cent manganese steel. As installed, this material is relatively soft but the peening action of crushing changes it into a hard, tough, wear resistant material, able to withstand the impact shocks and wear of cracking boulders, stone or "niggerheads." Both jaws and cheek plates are reversible so that when the face corrugations, which hold the stones from slipping, wear on the lower half they can be reversed to provide increased life.

Wedges Permit Takeup

The wedge bolts which hold the jaws and the cheek plates, are of high tensile, heat and wear resisting nickel steel. As the jaws get hot in operation a bolt with a high yield point is necessary to permit takeup. Holding and adjusting wedges are tapered to permit takeup from wear or for adjustment, as well as to take care of slightly different lengths of jaw plates.

Crushers must be adequately protected against extremely hard rocks and tramp iron. Two safety features are built into these crushers. Each flywheel has three steel shear pins in the hubs which, upon shearing, release the drive and the momentum of the flywheels. In addition the crushers have an S-shaped toggle plate which holds the opening of the pitman jaw in position. This toggle plate is of cast iron, with openings cast in the center to handle and weaken it so that the brittle iron will break under an excessive overload. These shear pins and tog-

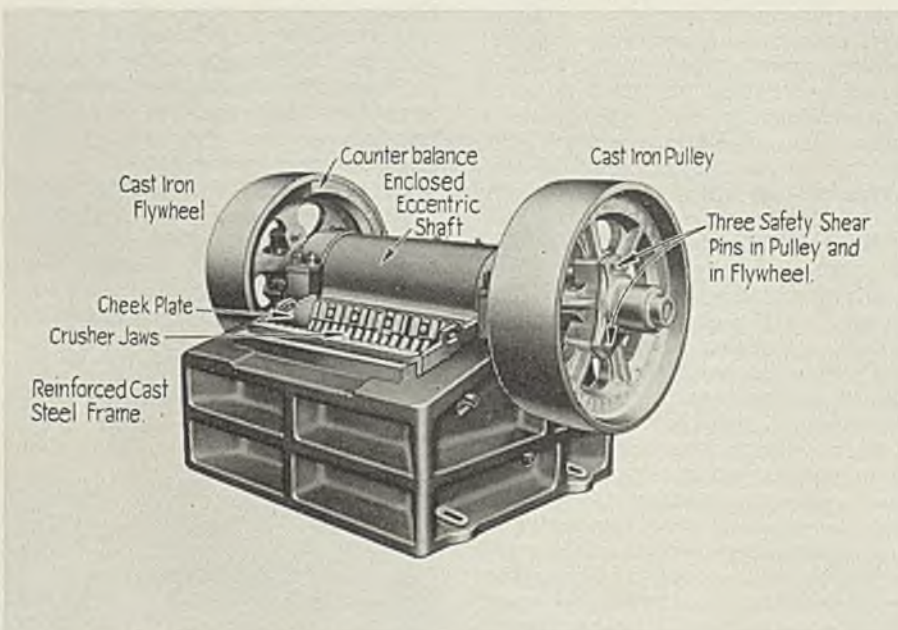
In operation, pit sand and stones are fed on the screen (right top) where the sand is separated and coarse material, according to size, goes to jaw crusher (with flywheel) or to roll crusher (with enclosed drive at right of jaw crusher). Conveyors on unit carry crushed material back over screen. The portable unit weighs 60,000 pounds, exclusive of feeding and discharge conveyors and drive

gle plates are easily, quickly and economically replaced, as compared with the more expensive parts of the crusher. The rounded end of

crusher and the smaller uncrushed oversize stones passing through the top deck of the screen on the first pass.

Double row, tapered roller bearings support the roll shafts. The pillow blocks for one shaft are stationary. For the other shaft these are loosely mounted and held by springs so that the bearings and housings move with the shaft as the roll pinches rocks and shifts on the shaft. Thus the bearings are in fixed alignment at all times with the shifting shaft.

Rolls are countershaft driven by open chain from the main drive. The countershaft is connected to the two



the toggle fits into wear resisting, manganese steel bearing grooves.

Roll crushers for final sizing of the aggregate consist of a pair of rotating manganese steel rolls or shells, 30 inches in diameter and 18 inches wide. One roll is mounted on fixed bearings and the other is held in position by two chromium vanadium steel compression springs coiled from 1 5/8-inch rod. These rolls crush the rock passing through the jaw

Large stones first go through the jaw crusher which reduces the size to permit final sizing in the roll crusher. Both flywheel, which is counterbalanced against the eccentric load, and drive pulley are provided with three shear pins for safety

roll shafts by a totally enclosed, heat treated steel, roller chain drive. As these rolls must rotate toward

each other, as if geared together; the chain passes from the countershaft gear over one roll sprocket, as though it were an idler, and around the other roll sprocket. This connection not only gives the necessary direction of rotation but also permits one gear to move with the shifting roll shaft as the roll operates. The chain must not be too tight to permit this action.

The countershaft driving the rolls, as is the case with all other countershaft drives, is mounted in self-aligning, roller bearing, pillow blocks to maintain alignment irrespective of vibration. These bearings are subject to vibration and twist and if rigid or solid bearings were used they would pinch-cramp, get hot and burn out. The self-aligning feature permits the bearings to move with the vibration but prevents pinching or cramping. These bearings have self-aligning seals; pressure applications of grease push out any dust that settles on the seal openings. Countershafts are of SAE 1020 or 1045 cold rolled steel.

Increase Shell Life

Roll shafts are also of SAE 3140 chromium nickel steel forgings to give maximum strength with minimum weight. The shells are manganese steel castings. General practice has been to provide ribs on these shells to facilitate the nipping action of the roll on the stone. However, it has been found that grooves or corrugations serve as well and wear down with the roll shell instead of wearing smooth as do the ribs, thus increasing the life of the shell.

Conveyor belts are 24 inches wide and are countershaft driven at 250 feet per minute. Troughing and return rolls are mounted on dead shafts, thus eliminating misalignment, with the rolls turning on tapered roller bearings. These are provided with pressure grease fittings and high grade seals to keep dirt and water out and retain the lubricant.

General framework of the machine is of structural steel shapes riveted

to locate assembly, with reinforcements welded in as necessary for strength and rigidity. The main frame is constructed of 15-inch channels to truss an exceptionally long span. The heaviest weight, that of the jaw crusher, is placed over the rear axle.

Protected by Steel Liners

Chutes, hoppers and pans are protected from wear by removable steel liners which easily may be obtained anywhere for replacement. Thus these structural parts do not have to be torn out and rebuilt when worn. The operator's platform, consisting of three planks, is the only wood used.

The entire load is mounted on 6 solid or 12 pneumatic tires. The 4 rear wheels, 2 on each side are mounted tandem on a single 6-inch SAE 1045 steel axle with a welded steel walking beam arrangement which permits each wheel to carry its full share of the load when traveling over rough ground. The wheels, which are not spring mounted, have tapered roller bearings totally enclosed and grease lubricated. To relieve the load on the pneumatic tires and to level up in operation the frame is supported when in use by six 35-ton locomotive screw jacks attached to the frame. The wheels are provided with mechanical automotive type brakes for transport in hilly country.

Such portable units are to a large extent individually designed and constructed insofar as the assembly and frame are concerned. Crushers, screens and conveyors can, in part, be made up in advance, but the frame and final arrangement vary somewhat according to the require-

ments and material to be handled. Thus final construction must await the receipt of the order in most cases.

Design and specifications for material in equipment meeting such severe service have followed a process of evolution. Whenever any part has been reported as breaking in service, steps have been taken to strengthen that part by reinforcing or by a change in design. Accessibility of all moving parts for adjustment and easy replacement for wear, because of the extremely abrasive material handled, is given primary consideration. Reduction of weight and height to permit transport and travel also are important.

With increased restrictions on weight limitations for road transport it may be necessary to use more of the new high tensile steel, particularly in the framework. One of the drawbacks, from this company's point of view, is a lack of definite information on the physical characteristics of such materials in the form of structural shapes and inability to obtain them from accessible warehouse stock. Our demand is not sufficient to warrant purchase in quantities, especially during the development and experimental stages of a new material.

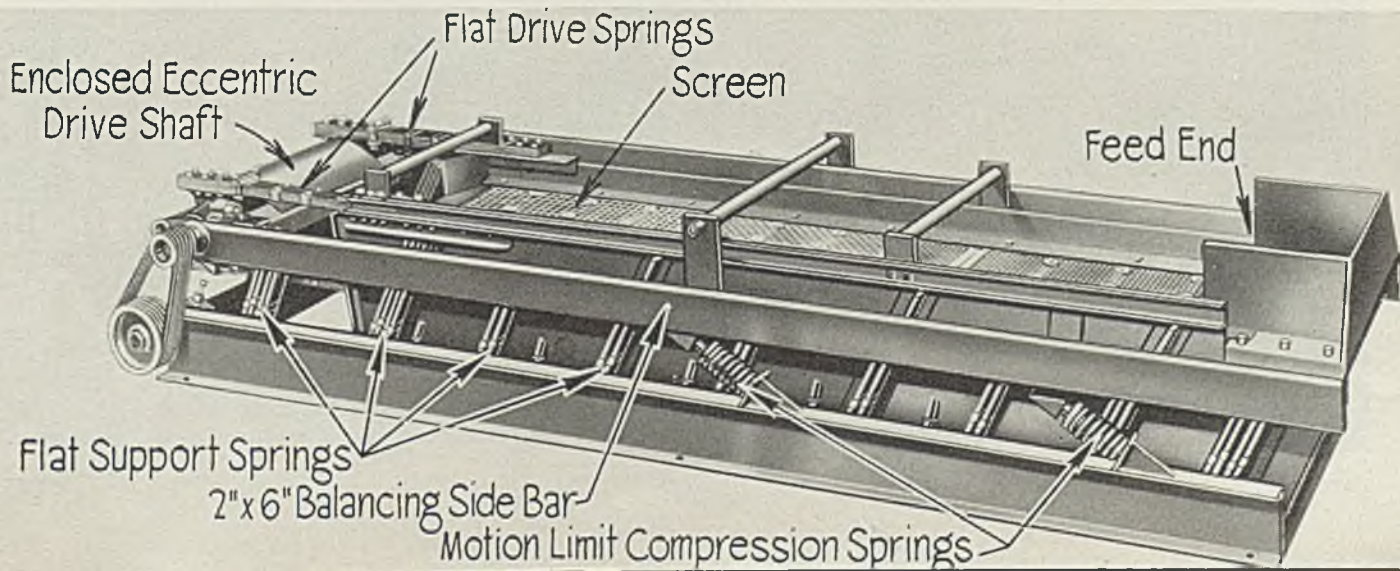
Markets Lubricate For Drawing Steel Wire

■ A lubricant for the dry drawing of steel wire has been developed by Metasap Chemical Co., subsidiary of National Oil Products Co., Harrison, N. J., after extensive research in this field.

This lubricant, known as Metasap DP, is a fine white powdery material "100 per cent through 200 mesh" with a melting point of 150 degrees Cent.

The Metasap technical service department states that Metasap DP gives excellent lubrication, cleaner and brighter wire, greater die life and more even gage and in many cases saves second passage.

The screen, which is the choke point of a plant, is of the flat vibrating type driven by V-belts through an eccentric shaft and flat springs. Counterbalancing side bars absorb and prevent transmission of vibration to main plant



Permanent Magnet Material Is Finding Widening Applications

■ DISCOVERY in 1935 of a permanent magnet material with eight to ten times the magnetic strength of comparable alloys has proved to be a development of major importance in industrial and other fields. This material contains 12 per cent aluminum, 20 per cent nickel, 5 per cent cobalt and 63 per cent pure iron, and was perfected by the General Electric Co., Schenectady, N. Y. It was placed on the market under the tradename Alnico (STEEL, Dec. 30, 1935, page 28). The alloy now is being manufactured by the Continental Motors Corp., Detroit, under license.

Innumerable uses for permanent magnets exist, particularly in the electrical field, where space forbids utilization of large magnets, and where a high flux density is required with the smallest piece of magnetic material. There is also an important use for this material in the manufacture of radio speakers.

For example, magnets made from

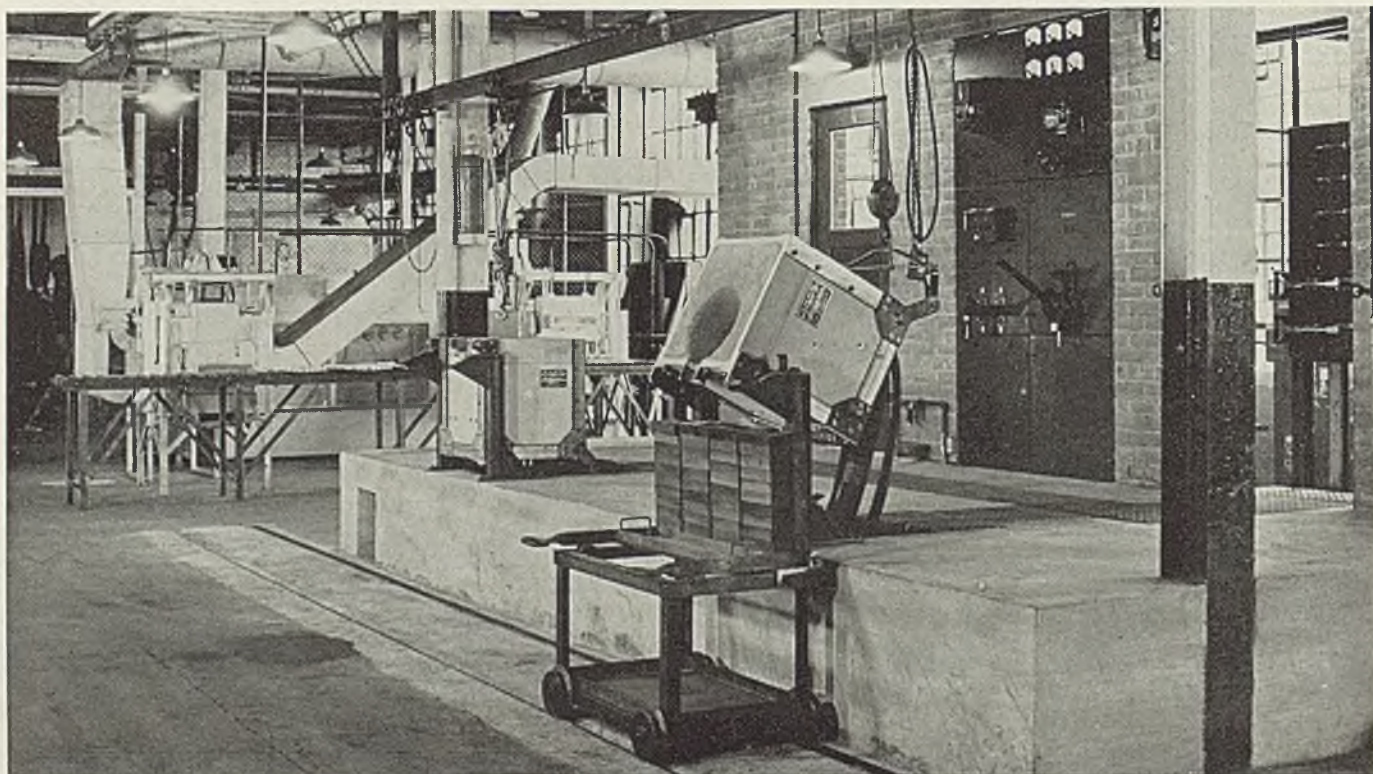
the alloy are employed to energize the field in loudspeakers in place of the copper-wound coil now being commonly used. These magnets have been found ideal for radio speakers installed in automobiles and in farm sets with which battery drain is a factor. In some cases, they save as much as 2 amperes. Because of the fact that these magnets do not dissipate heat, they can be placed in a small space without fear of damage by fire. In the automobile radio, only two leads are used, which materially lessens noise pickup. Furthermore, because of the fact there are no hot leads, sets us-

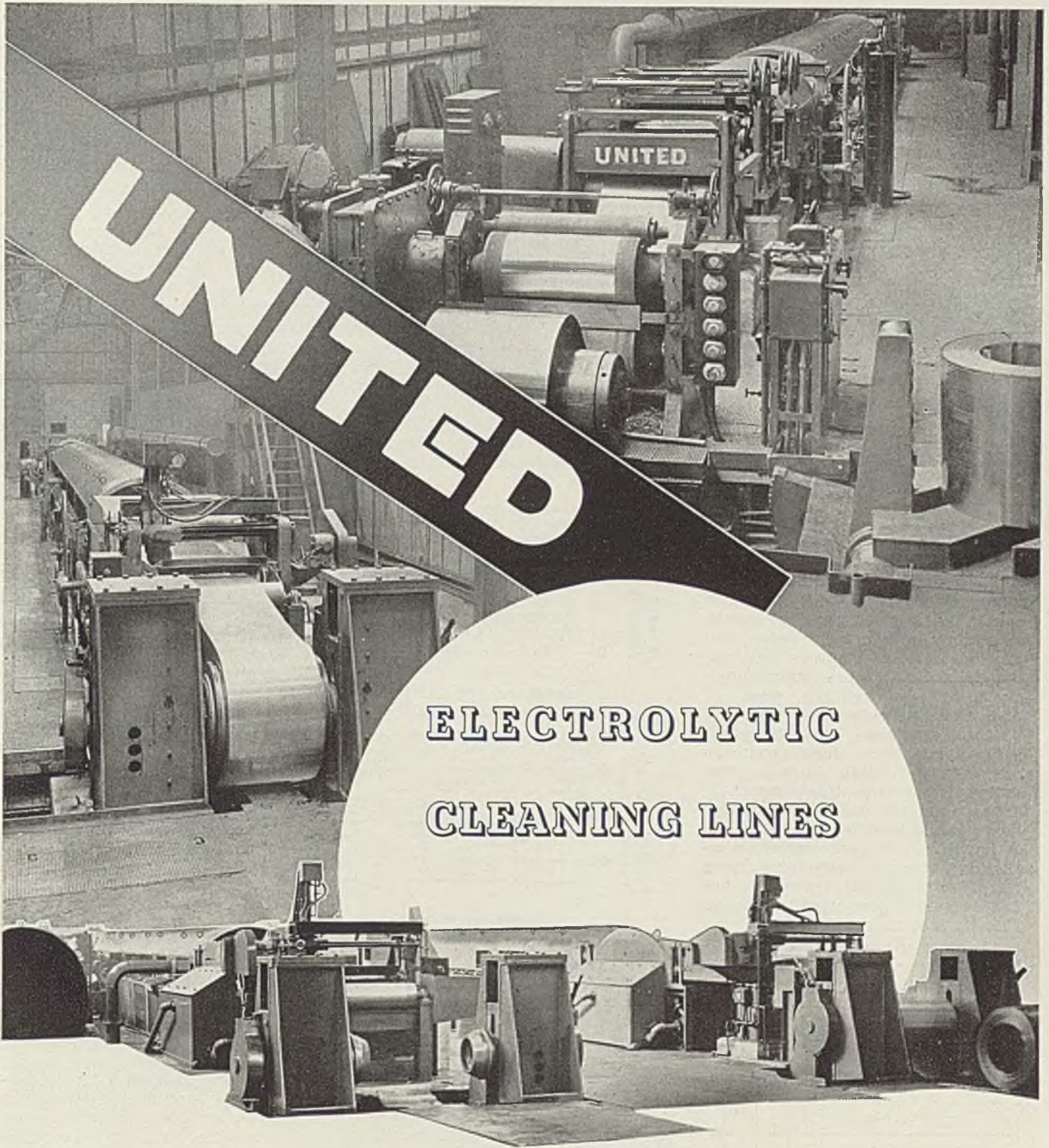
ing permanent magnets are more readily approved by the Fire Underwriters.

Replaces Magnetic Coil

The permanent magnet speaker is a dynamic speaker because it has a moving "voice coil," and the permanent magnet merely replaces the magnetic coil now used in the electrodynamic speaker. Impulses from the radio are transmitted to a small voice coil and the relation between current in the voice coil and the magnetic field produces vibration of the coil which in turn produces sound in the loudspeaker.

Two 100-pound coreless induction furnaces are used to melt the aluminum-nickel-cobalt-iron alloy. In the foreground are shown four stacks of tiered molds for multiple casting of small magnets. To bring out the desired crystal structure in the magnets, the castings are subjected to a complicated heat treatment. The castings are processed on trays which are moved into the preheating and heating furnaces shown in the background





ELECTROLYTIC CLEANING LINES

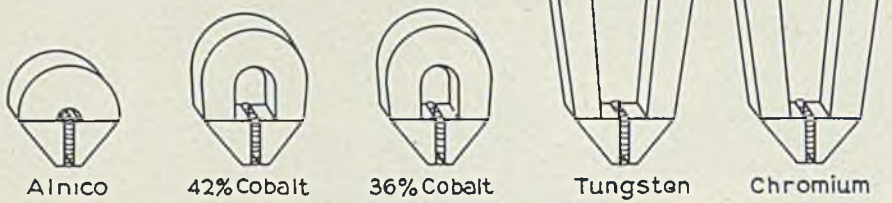
High speed operation . . . accuracy . . . ease, and flexibility of control . . . and cleaner strip. These are the outstanding features of the new and improved UNITED Electrolytic Strip Cleaning Lines. Sixteen are now in operation or under construction.

UNITED

ENGINEERING *and* FOUNDRY COMPANY
PITTSBURGH — PENNSYLVANIA

ASSOCIATED COMPANIES: DAVY AND UNITED ENGINEERING COMPANY, LTD., SHEFFIELD, ENGLAND DOMINION ENGINEERING WORKS, LTD., MONTREAL, P. Q.

This sketch shows the relative sizes of equivalent permanent magnets of different materials



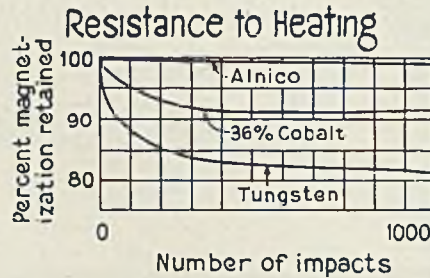
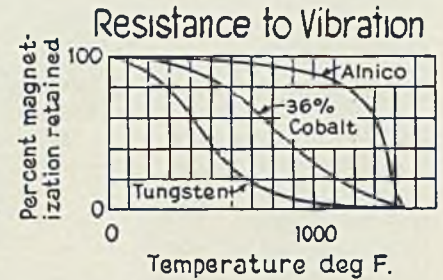
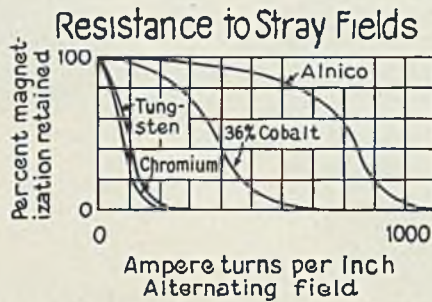
Permanent-magnet type speakers have been used in automobiles before, but they were so heavy that the trend in recent years has been to electrodynamic speaker. Adoption of Alnico, however, has eliminated the complaint of weight, because a speaker using this material is as light, if not lighter, than the average electrodynamic unit now used. The former type magnetic speaker used tungsten-iron and chromium-iron magnet alloys, as well as 42 per cent cobalt and 36 per cent cobalt-iron alloys, although the latter two are inordinately expensive for commercial use. An accompanying sketch shows relative sizes of equivalent permanent magnets of different materials. Also, three accompanying curves show a comparison of Alnico with other magnet materials from the standpoint of resistance to stray fields, resistance to heating, and resistance to vibration. A fourth sketch gives demagnetization and energy curves for various magnetic materials. These data are from research conducted in General Electric laboratories.

Alnico is a hard (Rockwell C45-50), steely appearing alloy with high magnetic flux density. It cannot be machined, has a crystalline structure and is extremely brittle. Specific gravity is somewhat lower than that of steel, the material

weighing 0.254-pound per cubic inch. A general description of melting, casting and treatment of Alnico magnets in the Continental plant may be of interest. Two 100-pound Ajax coreless induction melting

of a 3-foot platform, side by side, with a track running along the front of the platform for bringing molds up to the furnaces for pouring, as shown in one of the illustrations. Furnaces are mounted on trunnions and set partly into pits at the edge of the platform. An overhead electric hoist is arranged to tilt the furnaces when pouring.

The melt is prepared in silica crucibles which set into the furnaces and are surrounded with coils of heavy copper tubing through which cooling water is circulated. The heavy current travels through the copper and induces sufficient current in the metallic charge in the crucible to melt it. By proper controls, the current can be varied at different points of the crucible. Life of the crucible is relatively short, this being governed not by any washing away of the crucible



Comparison of aluminum-nickel-cobalt-iron alloy with other magnet materials from the standpoint of resistance to stray fields, resistance to vibration and resistance to heating

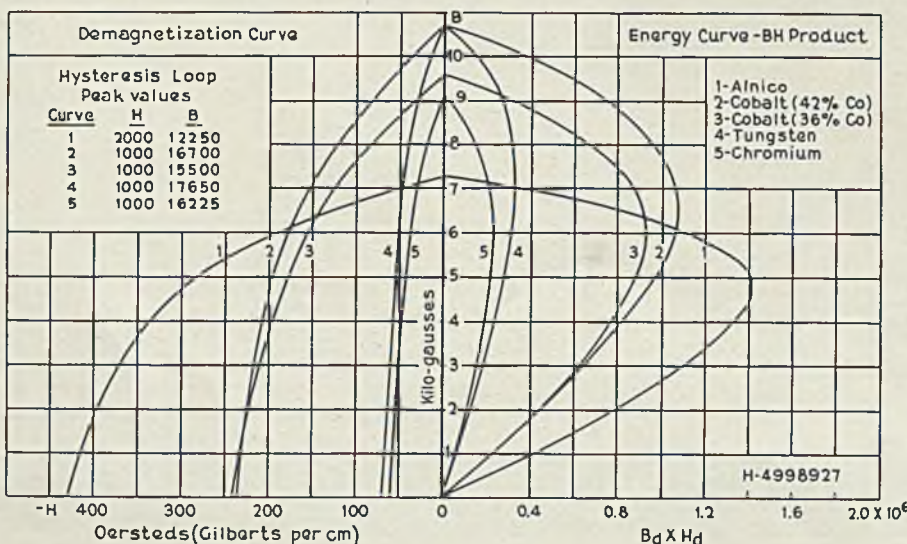
units are operated alternately, melting heats on 30-minute cycles. The furnaces are powered by a 60-kilowatt motor-generator set supplying current at 2000 cycles. The furnaces are mounted at the edge

itself but by the formation of a scull on the inside from heat of the metal. The alloy is an acid metal and every precaution must be taken to keep it free from carbon, silicon and other impurities.

Following through a typical heat, the charge is prepared and weighed carefully before being conveyed to the furnaces. Iron is in the form of 5-inch squares of low-metalloid steel, about 3/16-inch thick, and averaging well over 99 per cent pure iron. Electrolytic nickel in the form of small pieces is used, and cobalt in the form of rondelles. Pig aluminum makes up the balance of the charge.

The charge is placed in the crucible and the current applied. Pouring temperature is over 3000 degrees Fahr., and after the charge is properly melted it is poured into the molds, placed on a three-compartment car traveling on the track in front of the furnace.

After casting, the molds are taken (Please turn to Page 60)



Streamline Trains

Triumph of Steel

(Continued from Page 21)

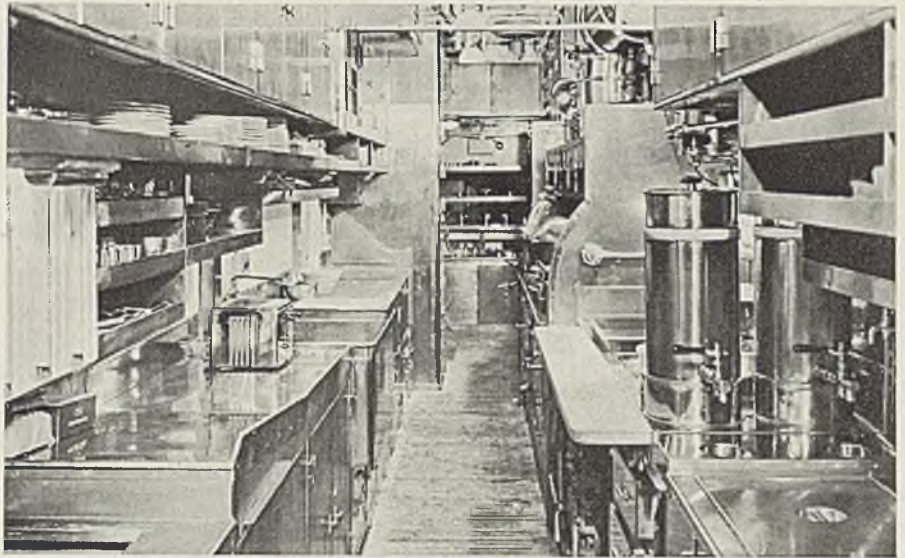
corner by a pair of chrome-vanadium elliptic springs. These springs ride on two welded spring planks, which in turn are carried by swing hangers pivoted from the outside of the truck frame. Lateral oscillations of the bolster are dampened by four hydraulic shock absorbers which also act to ease the body load against the truck frame when entering or leaving curves.

Center Axle Is Idle

Each truck has two traction motors geared direct to the outer axles, and carried in conventional manner between the driven axles and the truck transoms. The center axle is idle and is necessary for load carrying purposes only. Clean, dry air is forced to the motors by blowers located in the car body above each center plate. Passages between the swing bolster and transom sections are sealed by a Fabreka gasket and steel slide plate arrangement. From the transom, the air passes to the motors through flexible rubber ducts permanently fastened to the motor and transom openings.

Truck assemblies are equipped with American Steel Foundry Co.'s clasp brake actuated by four brake cylinders per truck. Each cylinder is fitted with manual slack adjusters. Automatic and manual sanding is provided at the leading wheels of each truck of the coupled locomotive.

Although the second and third units of the locomotive are equipped for independent operation in yard



■ Stainless steel kitchen equipment on the new trains is in keeping with their modern construction

movements, the locomotive main throttle is located at the control station in the operator's cab at the front end of the leading unit. Contour of the head end provides maximum safety and visibility for the operator and also effects a minimum wind resistance.

From a deeply upholstered adjustable seat, the operator has a clear view of both sides of the track through slanting automotive style windshields of 9/16-inch safety glass, with special windshield wiper and hot air defroster. Cab side windows are likewise of the automotive type with no-draft ventilators.

The operator's instrument panel provides for indirect illumination of the air gage, electric speedometer, and the gages indicating train air brake functions. At the right of

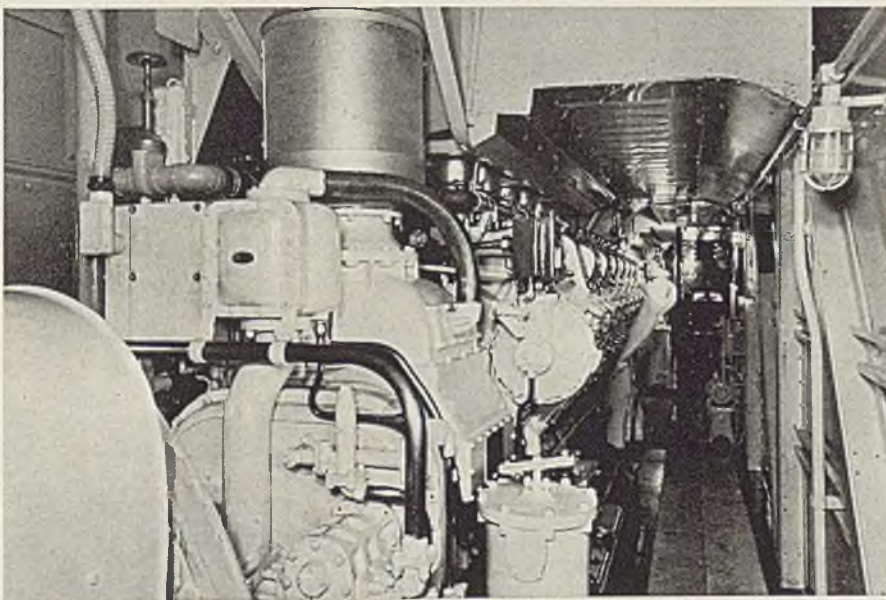
these instruments is the "wheel slip" indicator, which flashes a warning through a white lens when any pair of locomotive driving wheels slip due to poor track conditions. Automatic train control signal lights are mounted centrally in the cab directly below the windshields. A telephone is within reach of the operator by which the conductor may give verbal instructions as a supplement to the traditional engineer's air signal. A signal system is also provided for exchange of signals between the operator and train mail crew.

Movements Are Simplified

Locomotive movements have been simplified to the use of three levers, locomotive main throttle, reverse lever, and air brake handle. With the engines idling and the reverse lever in running position, any movement of the locomotive throttle is relayed electrically through four control trunk wires to each power plant of the locomotive. These telegraphic impulses are received by an electro-pneumatic device which actuates the local engine speed governor lever to increase or decrease engine speed and thus control the individual power plant output.

At the head of each engine is a local control station, from where the attendant may check the operating condition of each individual power plant. A local control station comprises fuel and lubricating oil gages, revolutions per minute indicator, 12-point exhaust pyrometer, and engine water thermometer. It also includes engine start and stop buttons and an isolation switch having two positions, ON and OFF. Moving the switch handle to OFF position opens all electrical control

(Please Turn to Page 51)



■ Winton diesel 12-cylinder engines, two each in the three units of the locomotive, deliver 5400 horsepower and are capable of driving the trains at more than 110 miles an hour



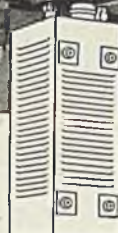
DELAY

**DON'T LET DELAY BREAK INTO
YOUR PRODUCTION PICTURE**

WHAT'S the use of having a modern high-speed plant if you let delay break into the picture? Nowadays a few minutes' delay causes the same loss of output that hours did a few years ago. And little delays don't always stay little. Sometimes they grow big and dam up production all along the line. The modern industrial truck keeps materials flowing smoothly to and from machines. But these trucks can be no more dependable than their power source. This automatically rules out stops for fuel, water or adjustments. Stalling is even worse. Also desirable is power that is without fumes,

noise or starting complications.

The steel-alkaline battery provides power meeting these requirements. At the same time it is free of the weak points common to every other type of storage battery. It lives 2 to 5 times longer and costs least of all to maintain because of its revolutionary new principle invented by Mr. Edison. The Edison Steel-Alkaline Battery easily withstands such rough service abuses as over-charging and over-discharging. That's why it keeps delay out of trucks and trucks out of the shop.



EDISON STORAGE BATTERY

DIVISION OF THOMAS A. EDISON, INC., WEST ORANGE, NEW JERSEY

MATERIALS HANDLING



Roller Conveyors Are Used in a Sheet Mill Shearing Line-Up

■ EXCELLENT example of straight line production in a given sequence of operations is afforded in live roller conveyor shearing line-ups in steel mills. One of the more recent installations was built by Logan Co., Louisville, Ky., to operate in conjunction with Mesta shears and levelers furnished by Mesta Machine Co., Pittsburgh.

The general layout of the con-

veyer system is shown in Fig. 1. adjustment of some 24 inches is available through motor-powered screw shafts mounted in heavy crossheads.

This available lateral adjustment of entire conveyor units, plus the aid of adjustable guard rails, permits correct centering of sheets of all widths as they pass through machines.

Another feature of this installa-

tion is the setup at the piler shown in the immediate foreground of Fig. 1.

A hinged stop, air-operated, is movable longitudinally to accommodate the particular length of sheet being handled. Of particular interest is an air-operated ram, mounted on wheels and a track, which is located at the side of the piling conveyor. After every few sheets are piled on the stack the ram is pushed up against the side and "shuffles the deck" against the guard rail on the opposite side to straighten the skewed sheets in the pile. In this way the pile is kept accurately lined up and is released from the piling unit in perfect alignment.

Figs. 2 and 3 show the beginning of the system used in operating

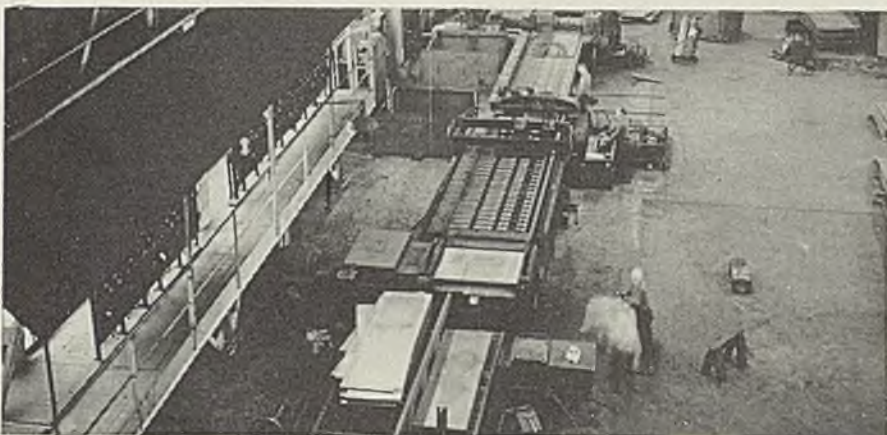


Fig. 1—General layout of the conveyor system and shearing lineup

veyor system is shown in Fig. 1. Power driven rolls take the sheets from the feeder unit to the roller leveler, to the trimmer, to the up-cut shear, to final leveling, to conveyor pile-up table and to pickup station. In the view shown, the movement is rear to foreground.

One of the interesting features of this installation is the lateral adjustment provided for all four of the conveyor sections. A lateral

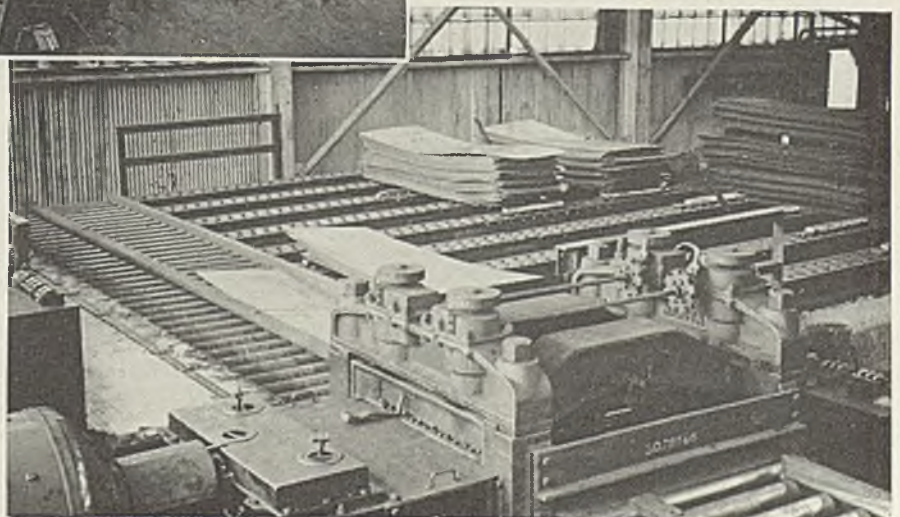


Fig. 2—Beginning of the system used in the conveyor shearing lineup

MATERIALS HANDLING



the conveyor shearing line-up. Sheets varying in size from 15 to 60 inches are handled by the machines. In the foreground is the leveler. Sheets in piles are placed on the 9-line wide roller conveyor storage area, each line equipped with air operated brake. These packs of sheets are released as required onto the pack tilter, which is motor operated through gear and segment type lifting mechanism.

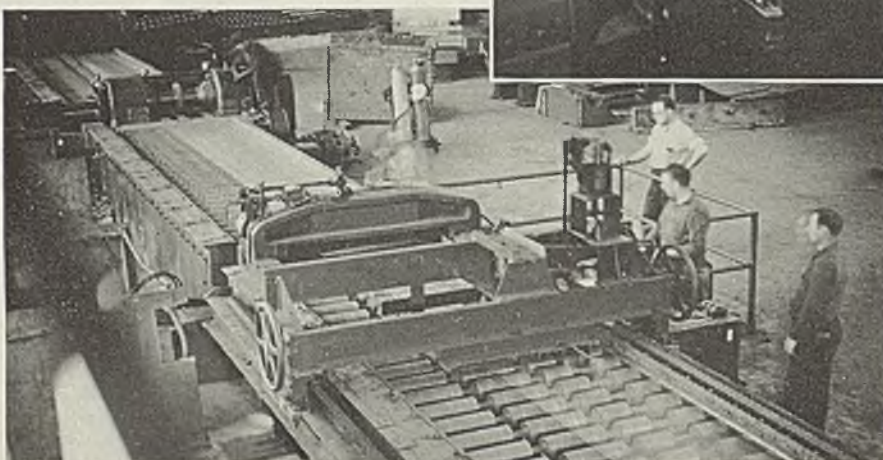
When the table is tilted to a convenient working position, as shown in Fig. 3, the sheets are transferred one at a time onto an adjacent live roller conveyor, set at right angles to the tilting table, is the first of four chain driven live roller units and serves as a feeder for the leveler. It is equipped with an adjustable guard rail, and the entire unit is adjustable laterally. This combination permits all width

Fig. 3—Table of the pack tilter is here shown tilted to a convenient working position

sheets to be centered properly with the leveler. Both adjustments are controlled through motor powered screw shafts operating in heavy crossheads. Subsequently machines in the lineup are similarly equipped.

After passing through the leveler, the sheets are conveyed over a sec-

Fig. 4—In the foreground is the gaging device, while immediately behind it is the up-cut shear



ond live roller unit to the side trimmer where it is trimmed to the proper width. A third live roller unit with skewed rolls used in order to keep the sheet against the proper side guard, delivers to the gager table and the up-cut shear.

Gaging device is shown in the foreground of Fig. 4, while immediately behind it is the up-cut shear. Sheets are moving toward the foreground. The gaging device, which was furnished as part of the conveyor, is movable, being equipped with a rack and pinion device, which may be locked in position at any desired point. The stop bars of the gage are set directly over the several gaps provided between rolls. The live rollers run continuously, and after the gage has been set, the gaging and shearing operations are entirely automatic.

Following this, the sheet passes through a second leveler onto the piling table shown in the extreme

foreground of Fig. 1. The sheet is received on a guard strip and pulled off manually onto the double line gravity roll piler. The guard is adjustable laterally to accommodate different width sheets. Between the double line of rolls is the hinged stop, air operated, and movable longitudinally according to the length of the sheets. The small boxlike unit mounted on the floor track on the right side of the piler is the ram used for straightening the piles of sheets. When a sufficient pile of sheets has accumulated, the stop is lowered and the pile gravitates on a roller conveyor to a point convenient for removal to storage.

Chain drives for live rollers run in oil and are completely enclosed in steel plate housings. All drive units are placed under the conveyors.

Handling Forging Flash

■ An inclined conveyor in a pit is used in one plant to handle forging flash to the gondola for shipment.

Forgings are trimmed at the hammer and the flash thrown into corrugated steel box skids with an endgate for dumping. The flash is carried to the conveyor, one end of which sets in a pit, and dumped by loosening the endgate and raising the opposite end of the box skid

with the tiering or high-lift truck. A length of railroad iron embedded in the concrete prevents a skid from slipping into the pit. Alligator shears placed at one edge of the pit cut long flash so it will load better. The cut end drops into the pit on the conveyor; the end held by the operator is tossed on the conveyor.

As flash is accumulated it is stored temporarily in these box skids until
(Please turn to Page 59)



PROGRESS IN STEELMAKING

New Power Station for Steel Mill

■ CARNEGIE-ILLINOIS STEEL CORP. will soon complete and put into operation a new power station, No. 5, at its South works in Chicago.

This station will replace older equipment and will provide for future expansion and, to a certain extent, centralize power facilities.

Surplus blast furnace gas will be used as primary boiler fuel with natural gas and oil as secondary fuels. Provisions have also been made to use pulverized coal for secondary fuel after the bulk of the surplus blast furnace gas has been utilized for metallurgical purposes. The yard layout and building design provide not only for storage, handling and pulverizing facilities, but also for dust collectors to prevent the discharge of flash from the stacks.

Covers 30,000 Square Feet

The building has a maximum length of 275 feet, a width of 124 feet 5 inches, a height of 88 feet, and covers an area of 30,000 square feet. It will house three boilers, each with a capacity of 300,000 pounds of steam per hour, one 25,000-kilowatt condensing turbogenerator and three 75,000 cubic feet per minute condensing turbo-blowers, operating at 3000 revolutions per minute against a maximum discharge pressure of 30 pounds per square inch gage. Space is also provided in the present building for one additional boiler and for a 50,000-kilowatt turbogenerator.

Steam will be supplied to the turbine throttles at a pressure of 450 pounds per square inch and a temperature of 750 degrees Fahr. The boilers which will supply this steam are of the four-drum bent tube

type, each having 22,000 square feet of heating surface and a 17,150 cubic foot furnace with an additional heating surface of 6200 square feet in the water-cooled walls and slag screen. Each boiler is equipped with a 7180 square foot economizer and a 6450 square foot superheater.

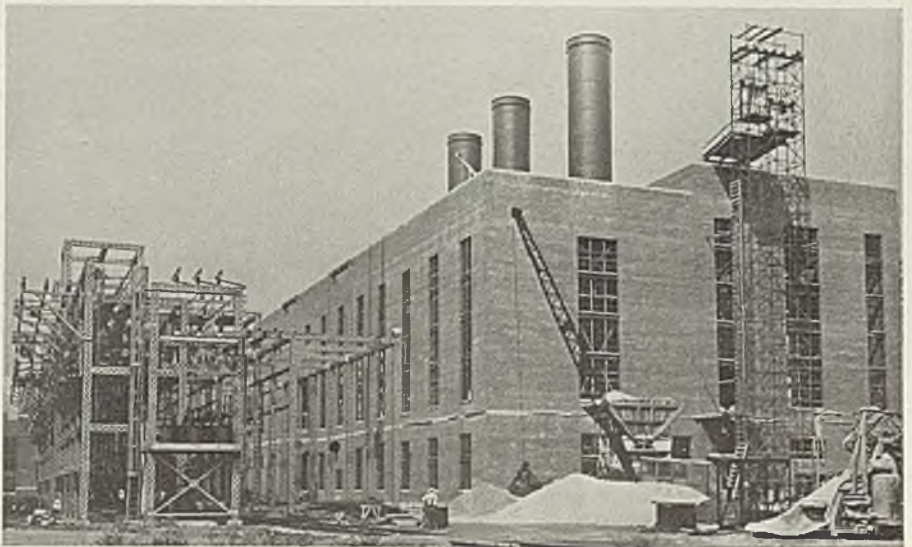
Gases leaving each economizer divide and pass through two 26,200 square foot regenerative type air heaters, where they give up waste heat to the combustion air. After leaving the air heaters these gases are discharged by induced draft to a 14-foot diameter concrete-lined steel stack supported on the building steelwork. Each of the two induced draft fans serving each boiler has a maximum capacity of 192,000 cubic feet per minute of gas. One is driven by a geared turbine and the other by a two-speed motor.

Each boiler has two forced draft

fans, one motor driven and the other turbine driven, each designed to deliver 45,000 cubic feet per minute of air through the air preheaters to the burners. Furnaces are fired tangentially and each boiler will be operated by complete automatic combustion control.

Makeup, for replacing the water and steam losses from the system, is expected to run about 20 per cent of the total feed-water supply. The makeup water will be taken from the lake and treated by a hot process lime and soda ash softener. Feed water will be pumped to the boilers by three centrifugal 3500 revolutions per minute boiler-feed pumps with a capacity of 750

New Power station No. 5 nears completion at South Works of Carnegie - Illinois Steel Corp., Chicago



gallons per minute each at a head of 1427 feet, two being motor driven and one turbine driven. The feed-water heating cycle will include a 600,000 pound per hour de-aerating heater and two closed heaters using steam extracted from the turbine at pressures of 80 and 40 pounds per square inch absolute.

Control in Separate Building

Electrical control equipment will be located in a separate, two-story building, 67 feet long and 32 feet wide, which also provides offices for the load and fuel dispatchers and the power production department. Power from Nos. 1 and 5 power stations will be stepped up, and power over the corporation's 66-kilovolt lines from the Gary and Buffington plants will be stepped down for distribution through the plant in a central outdoor substation.

Water for the condensers and boilers will be taken from Lake Michigan through an intake provided with traveling screens, each having a capacity of approximately 50,000,000 gallons per day, sufficient to meet the needs of a city of about 1,000,000 population. The water will flow by gravity to the station through a 10 foot by 10 foot concrete tunnel 1400 feet long.

At the station it will be pumped through the condensers by vertical motor-driven pumps. The turbo-generator condensers have a cooling

surface of 20,000 square feet and each of the turbo-blower condensers, 3850 square feet. The condensate will be removed by duplicate, motor-driven pumps to be used again for feed water to the boilers. Noncondensable air and gases which would in time build up and destroy the vacuum will be removed from each condenser by twin steam jet air pumps.

Although most of the steam from the boilers is used by these turbines, some of it will be used in single-stage evaporators which will supply 150 pounds of steam to the plant for miscellaneous uses.

Geological Map Issued By State of Michigan

■ A new and complete geological map of the state of Michigan was issued recently as part of the celebration of the Centenary of the Michigan Geological Survey and as an up-to-date record of the geology of the state.

The Paleozoic geology was compiled from records in the survey and geology departments of the University of Michigan and Michigan State College, records of well contractors and those of mining, oil and gas operators. In addition, the records of over 5500 wells—water wells, test wells, core holes and oil and gas wells—were studied, cross sections

made and contacts drawn from dips so obtained.

The map differs from the edition of 1916 in many particulars to include later information. In professional paper 184, the Freda and Jacobsville sandstones are considered a unit. The centennial map shows them as separate and distinct sandstones. A new formation, named the Grand River group, is shown although it has few outcrops in the state.

The legend is not a columnar section but explains the conventional colors of the map, describes formations and briefly indicates mineral values contained therein. Much information from well samples is given also.

Suction Hoses Made To Combat Silicosis

■ United States Rubber Products Inc., 1790 Broadway, New York, has designed new blower and dust suction hoses to aid in the fight against the industrial lung disease known as silicosis.

The hoses, it is claimed, are made to meet any known conveying conditions. A light steel wire helix with long-wearing qualities supports the carcass of the hoses. Corrugations on the outside give it flexibility. Sizes can be secured ranging from 2 inches up to, and including, 12 inches.

Cement Floors Are Made Hard and Greaseproof

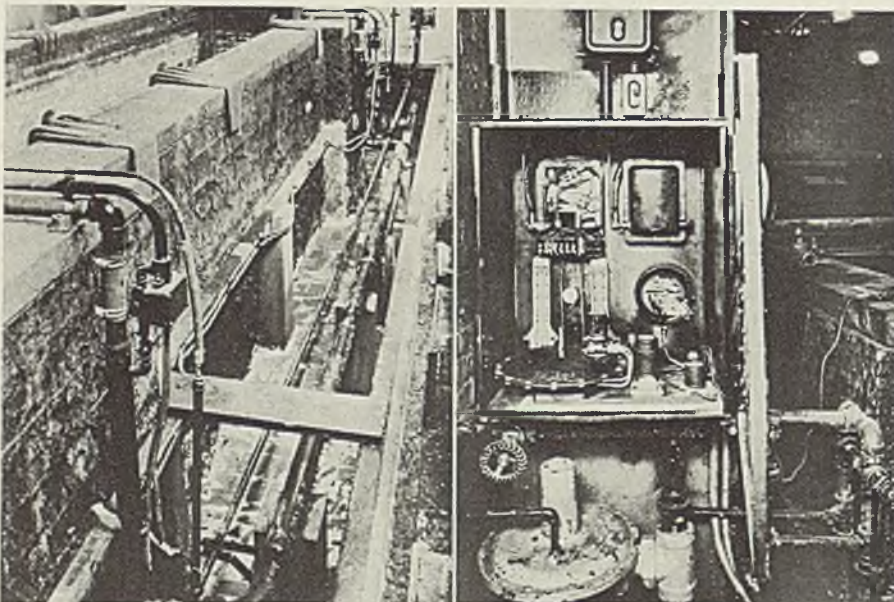
■ Granitex is the name recently given by Truscon Laboratories, Detroit, to a liquid product which it developed some time ago for making cement floors nondusting, stainproof and oil and greaseproof. It is applied to the floor by means of a long handled brush. It is not a chemical floor hardener nor is it to be confused with sodium silicate. It merely introduces into the pores of cement floors a binder or tough, wear resisting filler and makes them hard.

Designs Journal Bearings

■ New method of designing journal-bearings that takes into account both possibilities for failure, seizure and high temperature has been developed by Samuel A. McKee, national bureau of standards, department of commerce.

Means for the determination of the maximum loads and speeds permissible with a given oil under conditions assumed for safety are provided by two simple relations obtained by substituting suitable values in an expression representing the rise in temperature of a bearing above its surroundings.

Reduces Acid Pickling Costs



■ Submerged gas combustion installation in acid pickling tank, shown left, liberates hot products of combustion directly into tank at bottom. Violent agitation accompanies this action but without the attendant dilution when steam is used. One steel company saved 72 cents per ton on all steel pickled by this method. Shown right is the system of controls by which liquid temperature, automatic ignition and fuel pressure are maintained

Specially-Built Furnace Anneals Copper Tubing At Low Cost

■ Featuring low cost of operation and good production speed is a specially-built furnace for scale-free annealing of copper tubing in straight lengths of from 10 to 20 feet, in operation at the plant of Wolverine Tube Co., Detroit.

Unit is a gas-fired, continuous roller hearth, conveyor-type of furnace, built by Electric Furnace Co., Salem, O., and is used for intermediate annealing during cold-drawing operations.

Overall length of the furnace, not including feeding or discharging mechanism, is 22 feet, and it has capacity for handling 3000 pounds of copper tubing per hour, based on heating average-size tubing to a temperature of 1050 degrees Fahr. Average size of tubing processed is 1½-inch diameter with 0.100-inch wall thickness.

Neutral to slightly-reducing atmosphere is maintained by keeping air from the furnace, the products of combustion comprising the furnace atmosphere. Positive pressure on combusted gases keeps air from entering at the charge end, and the discharge end is sealed by a solid water curtain through which the annealed tubing passes upon emerging from the heating chamber.

The furnace is fired by burners located along each side of the heating chamber and firing into combustion chambers located in the bottom of the furnace below the hearth line. These burners fire in staggered relation and the supply of gas-air mixture is controlled automatically through a proportion-

ing-type control valve, the latter actuated by a control pyrometer.

Gas-mixing equipment, comprising a motor-operated pump or blower, mixes natural gas and air in the proper proportions and delivers the mixture to the burners. This method of control insures a constant ratio of gas and air and, after once being set, need not be disturbed regardless of the rate of firing.

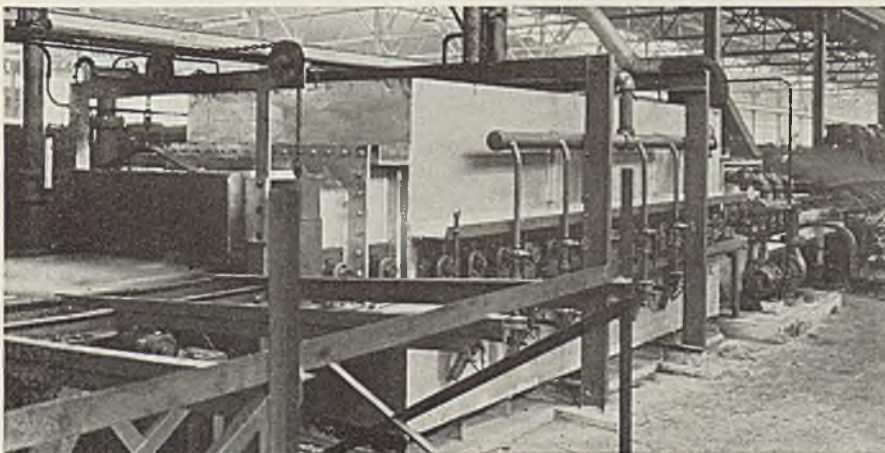
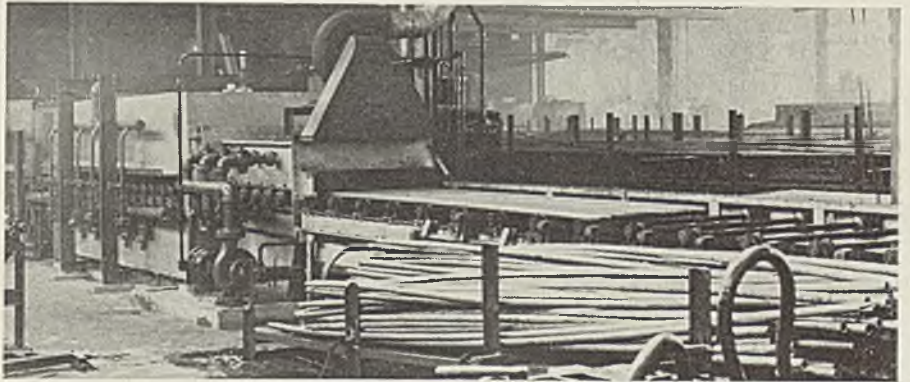
Tubing is loaded onto a feed table at the charging end of the furnace and is conveyed through the heating chamber on rotating rollers, the tubing passing successively through a vestibule, heating chamber, water quench curtain and onto a discharge table from which point an automatic dumping mechanism removes the annealed tubes to handling trucks.

Heat-resisting alloy rollers are used, actuated by means of a chain and sprocket driven by an induction motor through reduction gearing

running in oil. A variable-speed transmission is provided, permitting the speed of the rolls to be varied, so any time ranging from 5 to 20 minutes may be obtained in the heating chamber.

The entire furnace is enclosed in a heavy steel plate shell reinforced with structural members and castings. The shell is welded throughout to prevent leakage of the products of combustion. Such leakage would lower the pressure on furnace gas to the extent that infiltration of air might occur.

Accompanying illustrations show both charge and discharge ends of the furnace, the discharge end showing the dumping equipment that removes the annealed tubing from the conveyor. The three inlets shown at the end section of the furnace are for the cooling water which is admitted to a tank and spills over one end in a solid curtain, thereby sealing that end.



Above is seen discharge end of furnace. Tubes are emerging from water curtain seal onto unloading table. At left is the charging end of the furnace. Scale-free annealing is accomplished by positive pressure on furnace atmosphere which comprises products of gas combustion



SURFACE TREATMENT AND FINISHING OF METALS

Highly Finished Bumpers Important to Appearance

■ BESIDES protecting the fenders, automobile bumpers are also designed to beautify the appearance of a car.

High camber bumpers with curved ends are one of the most popular and efficient designs and, to finish these bumpers automatically from

end to end, a polishing and buffing machine has been designed by Excelsior Tool & Machine Co., East St. Louis, Ill. It is a rocking table, twin wheel type and will handle bumpers of any height or shape.

In operation, bumpers are reciprocated back and forth under the

polishing wheels until the desired finish is obtained. The rocking table and corresponding cams, which are adjustable to the various heights and shapes of bumpers, equalize the wheel pressure over the entire face of the bumpers.

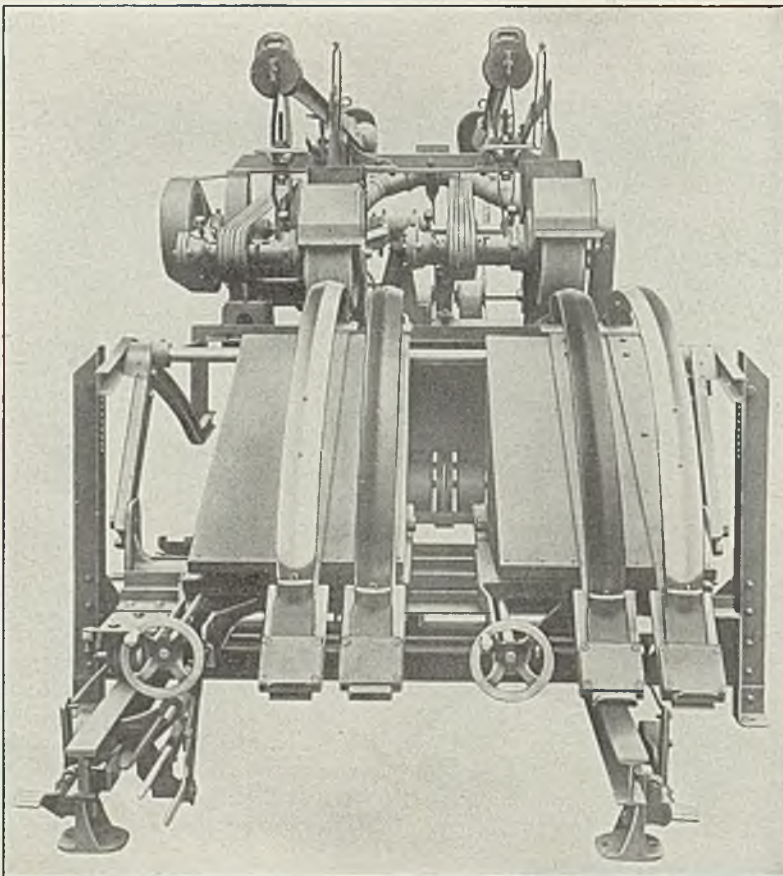
Work is held in place by quick releases, spring holding fixtures designed to allow a floating action and to track the bumpers central their entire length with the contour of the polishing wheels. Four bumpers are placed on the divided table and two of these are always in contact with the polishing wheels and in plain view of the operator. In this way, rejects are avoided and over or underpolishing is said to be impossible.

Adjustable to Lengths

Carriage travel speed is 40 feet per minute and adjustable to the various lengths of the bumpers. Carriage is operated by reverse friction belts, dust protected and supported the entire length to prevent sagging. With sprockets and roller chain, this imparts a steady reverse to the carriage in both directions.

The cam shaft that supplies the rocking motion to the carriage on which the bumpers are located, is guided at each end by hardened steel rollers engaging the guide channels, which are adjustable to correspond with the shape of the bumpers. By this method, both high and low camber bumpers are polished with the same precision as if done by hand.

The twin carriages are shifted independently, as though two single wheel machines were used. Operation is continuous, two bumpers being polished at the same time independently of each other, and removed only when the desired finish is obtained. Only time the machine is not in production is when the polishing wheels are changed or replaced. Spindles are of special alloy steel, with over-size ball bearings and are assem-



On the divided table, four bumpers are located, two of which are always in contact with the polishing wheels, and in plain, unobstructed view of the operator

bled in dustproof housing to accommodate polishing or buffing wheels up to 16-inch diameter, 6-inch face, and 1½-inch hole.

Process Is Continuous

When production is from one to 10,000 bumpers per day, the most economical setup is to install the machines in groups, so arranged that the process is continuous from the roughing to the finishing operation.

First 14-wheel, straight-in-line, bumper polishing machines were built by Excelsior in 1925, and many are still in daily operation. However, changes in bumper design necessitated a more efficient cost-reducing, polishing method to eliminate the laborious hand finishing requirements. By equalizing the polishing wheel pressure over the entire bumper, the wheel upkeep cost is also materially reduced.

Serious Variations Occur In Tinplate Surfacing

■ Quality of the tin coating on a tinplate is expressed commercially as the weight of tin spread over the surface of the sheets in a whole box of tinplates but it is known that far from the tin being distributed in a coating of uniform thickness over the entire area, serious variations occur.

In a recent paper before the Iron and Steel Institute, W. E. Hoare classifies these variations in thickness according to whether they occur between one sheet and another as a whole, between one end and another of any particular sheet, or between points close together on a sheet. The paper, which has been published by the International Tin Research and Development council as technical publication series A, No. 59, discusses the variations of the two latter kinds in relation to porosity. It is shown possible to establish a close connection between the weight of the coating and its porosity.

Causes of the variations in thickness are deduced. The work confirmed the theory of Chalmers, connecting the minimum pore diameter with the thickness of the coating. As regards variations at points which are close together these are due to grease lines, scruff bands, ripples and other defects. By a simple reflection method the surface of tinplate can be made photographically on sensitized paper, the ridges, hollows and other surface peculiarities remaining upon it. The accumulation of tin into such characteristic ridges may cause the thickness of the coating in the hollows to be only 60 per cent of the average value. In-

teresting conclusions are drawn as to the effect of ridges upon porosity.

Strip Heater Dries Photo Frame Lacquer

■ Electric strip heater oven is improving production methods at F. Zimmerman Co., Cleveland, manufacturer of picture moldings and frames, by speeding the drying of lacquer on frames.

Gold and silver plated metal photo frames are dipped in clear lacquer to preserve the finish. This lacquer must be hardened so that it is not easily scratched. With ordinary methods of drying it requires several hours for the lacquer to become sufficiently dry to meet this company's requirements. With electric heat the lacquer is now hardened in 15 minutes.

Electrical equipment had helped this company to several production short cuts in the past and was the first consideration of Mr. H. H. Leckler, general superintendent, in searching for a way to speed the drying of frames.

Strip heaters proved to be the answer. An oven was built of galvanized steel with angle-iron frame and 2-inch insulation between the inner and outer shells.

Heat is supplied by six 1,000-watt strip heaters bolted to the sides of

This simple oven, heated by six 1,000-watt electric strip units, reduced the drying time of lacquer on picture frames from a matter of hours to 15 minutes. Photo courtesy *Electrical Production*

the inner steel frame, there being three of these heaters attached to each side of the frame.

A thermostatic regulator maintains a constant temperature of 140 degrees Fahr. In the construction of the doors a loose fit was allowed at the top to permit escape of fumes from the drying lacquer and to assist the circulation of air that is inside the oven.

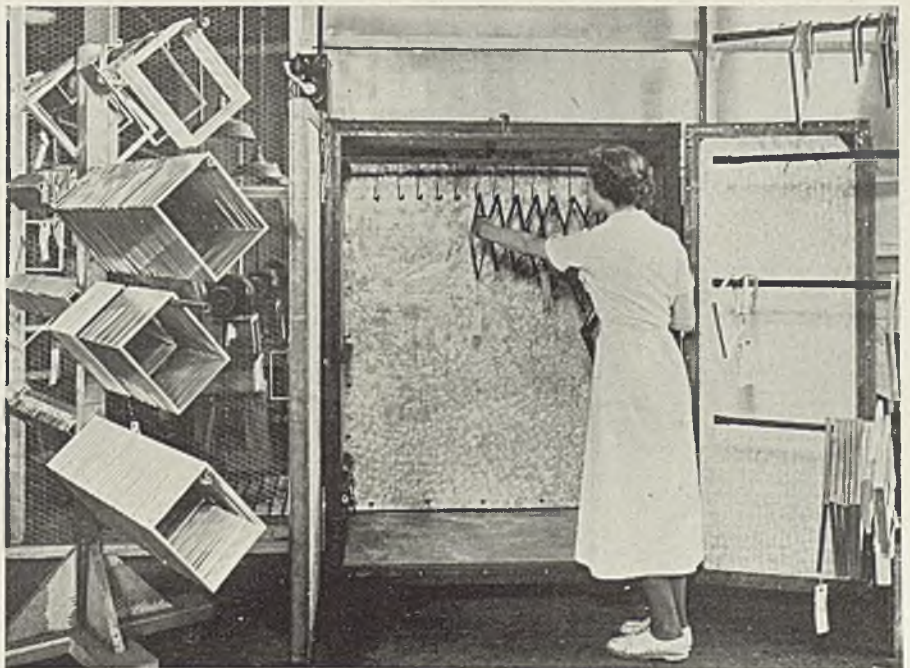
This drying equipment heats up quickly and no time is lost when the work day starts. Its temperature control being automatic, the operator is free to concentrate on the lacquering.

Test Effect of Rust

■ Concrete Reinforcing Steel institute, Chicago, has announced arrangements for tests to determine the effect of rust on the performance of a reinforcing bar when embedded in concrete.

General knowledge on this subject is believed to be lacking, and the institute, under its research fellowship arrangement at Lehigh University, plans to present the facts in a form that would be of value to members of the industry as well as to engineers, architects, and others concerned with rust.

Arrangements are being made to incorporate the tests in the more extended series of bond tests on reinforcing bars. Special attention will be given to the portion of the program relating to rusted bars and the report when available will be placed in form suitable for presentation to inspectors. By this means it is hoped to discourage unwarranted rejections through a showing of factual evidence as a guide in reaching a proper decision.





WELDING, ETC.

BY ROBERT E. KINKEAD

Bill the Welder Wants a Steady Job

■ Bill the welder is taking it on the chin these days in some of the steel mills.

Fifteen hours a week or no work at all is punishment when he had just begun to get a little savings ahead. Bill (or Tom, or Jerry, or whatever his name may be) is neither a radical nor a fool. He deals with the hard realities of supporting a family whose needs go on whether his job does or not. He has never been on relief and never wants to be. He wants to work and earn a decent pay. By no stretch of the imagination can Bill, as an individual, do anything to start the mills rolling again so that he will begin to earn enough to pay family expenses. Someone higher up has to do it. Knowing Bill as we do, which is very well indeed, we were convinced that someone had better do something about it.

It is the responsibility of leadership to lead. The responsibility of government and business is a joint responsibility. The present dead-

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.

lock is based on childish and trivial sensibilities of leaders in both business and government. The deadlock can and must be immediately broken by the good will and good sense of both parties. The President is out on a limb. It will be better for everyone concerned to get him back to where he can do some good, rather than saw the limb off. Business has been too strict in its interpretation of its rights. The time has come to compromise and move forward. Trial by force and violence means pulling the whole structure of business and government down and starting over again with no hope of stability for ten years.

Bill the welder is a worker and he wants a steady job. There is

nothing to be gained by passing resolutions in conventions or having government officials croon their economic theories over the radio. The correct answer is jobs—millions of them. Anything less than that is just more of the same drivel that both government and business are issuing at the present time. No one is going to be very happy until Bill and his fellow workers get jobs that pay a reasonable year 'round income.

Cost of Welding from User's Point of View

■ With welding rod production off from 25 to 50 per cent among various manufacturers, opportunity is offered to carry forward the banner of progress in the field of welding rods.

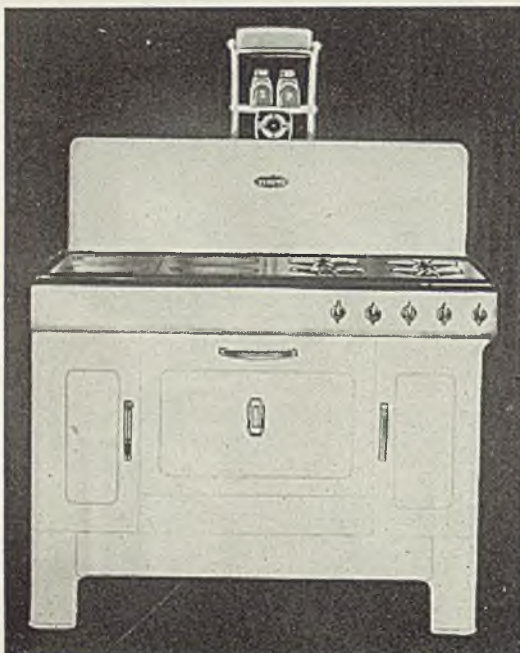
The opportunity is obvious if viewed from the user's point of view. If welding rod manufacturers have failed to see the opportunity, it is because they are thinking in terms of selling their product rather than trying to solve the problems of the user.

The fabricating shop working on day work rates will get from 1.5 to 2 pounds of weld metal on the job per man hour. In the northeastern part of the country the operator will be paid about 85c per hour on the average for work where no high degree of qualification is required. With overhead at 150 per cent and rod at 8½c per pound, the fabricator will pay \$2.30 to get two pounds of weld metal on the job, or \$1.15 per pound.

This is exclusive of preparation of the material prior to welding, power cost, etc. Bright young men representing the welding rod manufacturers take up a good deal of production executives' time trying to sell welding rod on the basis of kilowatt hours per pound efficiency, decreased spatter loss, price discounts for quantity purchases, etc. All of this effort in spite of the fact that if the rod were sold for 2c per pound or even given away it would not help solve the production man's problem. It is the labor cost that dominates the situation in the welding shop. Method of welding determines labor cost more than the kind of welding rod.

It would pay the welding rod manufacturers larger returns to expend their funds for engineering in the direction of how to make welds rather than in the direction of trying to shave a fraction of a cent per pound off the price of the rod. As a matter of fact, it is paying large returns to the very few manufacturers who are proceeding along these lines.

Fed by Bottle



■ This modern combination range uses coal and bottled gas as fuel. A product of Renown Stove Co., Owosso, Mich., it has been officially approved by the American Gas association testing laboratory

Streamline Trains Triumph of Steel

(Concluded from Page 41)

circuits to that power plant and reduces the engine speed to idle, irrespective of the operation of the remaining power plants. Returning the switch to the ON position closes the control circuits, and the engine immediately responds to the power demand being called for by the operator or position of the locomotive throttle.

In addition to the indicating instruments at each control station, the locomotive is equipped with a trunk line alarm system, whereby a dangerous engine condition is brought to attention by an audible as well as visual alarm. This system includes engine water temperature and oil pressure switches, an electric gong, and four illuminated enunciator signals in each locomotive unit and the auxiliary power plant compartment. The enunciator boxes have three lenses of different color to indicate hot engine, low oil pressure, and boiler failure. The alarm gong rings with the illumination of any of the three signals and continues until the failure has been located and acknowledged by placing the isolation switch handle in OFF position. This same gong is utilized as a call signal for the attendant by use of a push button.

Details of Power Plant

Essential units of each 900-horsepower plant comprise an engine with its attendant cooling, fuel and lubricating oil systems, power generator and exciter, battery charging generator, and the necessary contactors, switches and fuses for the control of electrical circuits. In addition to two such power equipments, each locomotive unit carries 1200 gallons of fuel and 1100 gallons of water for the train-heating steam boiler.

The engines are V-type, 12-cylinder, 2-cycle, Winton diesel, having an 8-inch bore and 10-inch stroke, seven bearing crankshaft, drop-forged connecting rods, needle bearing wrist pins, aluminum pistons, lubricating oil and water pumps, and deliver 900 horsepower each at 750 revolutions per minute.

Main generators are 600-volt direct current, with differential voltage control through belt driven exciter-auxiliary generator sets and are used to supply power for the 450-horsepower traction motors mounted in each truck immediately below each power plant. The generators also act as engine starters when receiving energy from the locomotive batteries through separate contractors.

The engine cooling system con-

sists of 50 square feet of water cooling radiators per engine hung from the removable roof hatches, through which openings the engine and generators are lowered into the car body. Air for radiator cooling is taken in through grilled openings in the sides of the car body, and forced out through the radiator assemblies by three 26-inch propeller type fans which are belt driven from the main engines. Automatic and manually operated shutter arrangements are provided ahead of each fan group for control of engine water temperature during service or main line operations. With the stopping of the engines, the shutters close automatically and all radiator water drains into the system water storage tanks.

Each engine is served by an independent fuel system consisting of a motor driven tandem pump arrangement, filters, pressure relief valves, and fuel gages approved by the interstate commerce commission.

Flash Tube Boiler Used

The steam boiler is a flash tube Clarkson type generator, having a capacity in excess of 2200 pounds evaporation per hour at 225 pounds steam pressure. Feed water pumps, flame control, and trainline pressure regulation is fully automatic as adjusted by a single hand rheostat. The steam trainline extends the full length of each locomotive unit to provide steam for heating the operator's cab while in service, and to warm the engine water systems during the maintenance or lay-over periods.

Air-compressor equipment per 5400-horsepower locomotive constitutes six two-stage water cooled compressors of 79.4 cubic foot displacement at 750 revolutions per minute. They are belt driven from a shaft extension of each main generator. The compressed air is cooled by 42 feet of fin copper tubing and stored in two air-cooled reservoirs, 24½ x 66 inches, having a combined capacity of 56,500 cubic inches.

Locomotive air brake equipment is New York Air Brake AHSC (high speed control). Most of the apparatus is piped on a single panel mounted in the hood compartment in front of the cab. The automatic train control — Union Switch & Signal Co. continuous — is likewise assembled on panels and housed in the front hood. Both air brake and train control equipments are arranged to actuate a pneumatic switch which reduces all engines to "idling", in the event of an emergency brake application or train control penalty stop.

The locomotive storage battery installed in each unit is a 25-plate

32-cell Exide Ironclad. On the "A" unit it is located in the hood compartment at front. On the "B" units it occupies a similar location but is grouped in two tiers in the center of a platform to provide aisle space on either side.

Reader Comments

(Concluded from Page 9)

suggests the use of a more weldable material for casing. In this connection it should be pointed out that casing must have not only a high tensile strength, but also high resistance to the collapsing action of the formations in which the casing is set. This probably could be obtained by using a lower carbon material with an increased wall thickness, but this would then lead to increased weight which is also objectionable.

In connection with a comparison between threaded and welded casing, we also point out that the various tube mills producing casing and other oil tubular goods today make a precision job both of external threads on casing, tubing, and drill pipe and on internal threads for corresponding couplings. A degree of accuracy is maintained with relation to lead, taper, thread depth, and included thread angle which is most surprising. Included angles are today checked in minutes not in degrees, and tapers and thread depths are checked in thousandths.

The point to this is that threading practice has very materially improved during the past several years, and even though material is being used for oil tubular goods which has a material higher tensile strength than that formerly used, it is not fair to say that this material makes necessary special procedures which slow up the work.

This is not in keeping with the facts, inasmuch as thread cutting equipment has been developed which will permit of the handling of oil tubular goods just as rapidly and with a materially higher degree of thread accuracy than could be obtained when low carbon welded pipe was used for casing oil wells.

Where the work is being handled in the field, and this applies either to welding or to threading, the human element is certain to play a part in the completion of the joint. We are, however, of the opinion that the human element will to a materially less extent affect the strength and leak-proof qualities of a threaded joint than will be the case with a welded joint.

G. M. STICKELL

Assistant Sales Manager,
Landis Machine Co.,
Waynesboro, Pa.

POWER DRIVES



Temporary vs. Permanent

■ IN THE HASTE to get machines in operation again after they have been moved, the practice in many plants is to run temporary power lines to the motors on the machines.

Later a permanent installation is made, although in many cases the temporary lines become permanent until trouble necessitates a change. These temporary installations are unsightly, unsafe and expensive. With careful planning the permanent lines could be installed in advance, ready for the equipment

when moved. A good example of what could have been done, and was not, was seen in a plant recently visited.

This plant is slowly moving into a new addition. As a machine finishes a run it is moved to its new location, set up and put in operation. Wiring and other connections are all temporary. Most of the machines are lineshaft driven with a few machines in the line individually driven.

Many of the machines have air

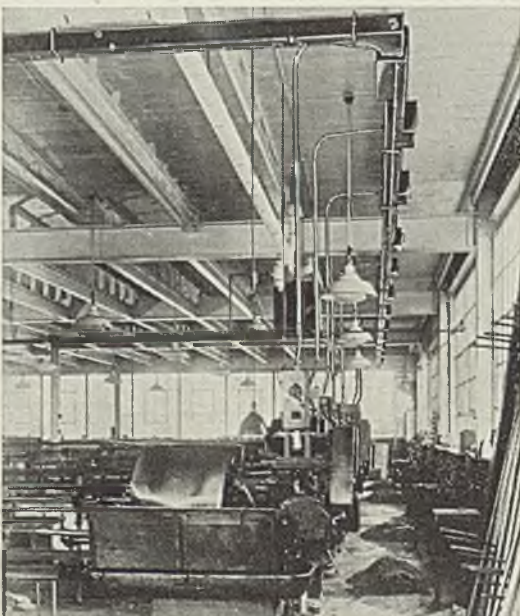
chucks, which also requires air connections. Moving has been going on slowly over a period of about 3 months and is not yet completed. The ceiling is a maze of loose electric wires and air-hose lines looped up to keep them out of the way of belts and workers. If trouble should occur in any circuit, the electrician would have difficulty in tracing through the particular lines out of service or in threading new lines through the loops.

With modern facilities for handling power distribution lines, a permanent installation could have been made almost as quickly and at less expense than for the temporary wiring and permanent conduit installation. The location of all equipment had been carefully planned and laid out on a floor plan so that the machine installation was not hit and miss.

Two Methods in Use

Two methods of arranging distribution lines to individual machines to speed up installation and changes are in wide use in industrial plants. Both of these methods use a metal duct attached to the ceiling, or placed overhead in monitor or truss-supported structures.

In one type of duct, feeder wires extend from a distribution panel and lie in the duct. These wires are identified at frequent intervals so any particular circuit may be located. One side of the duct is



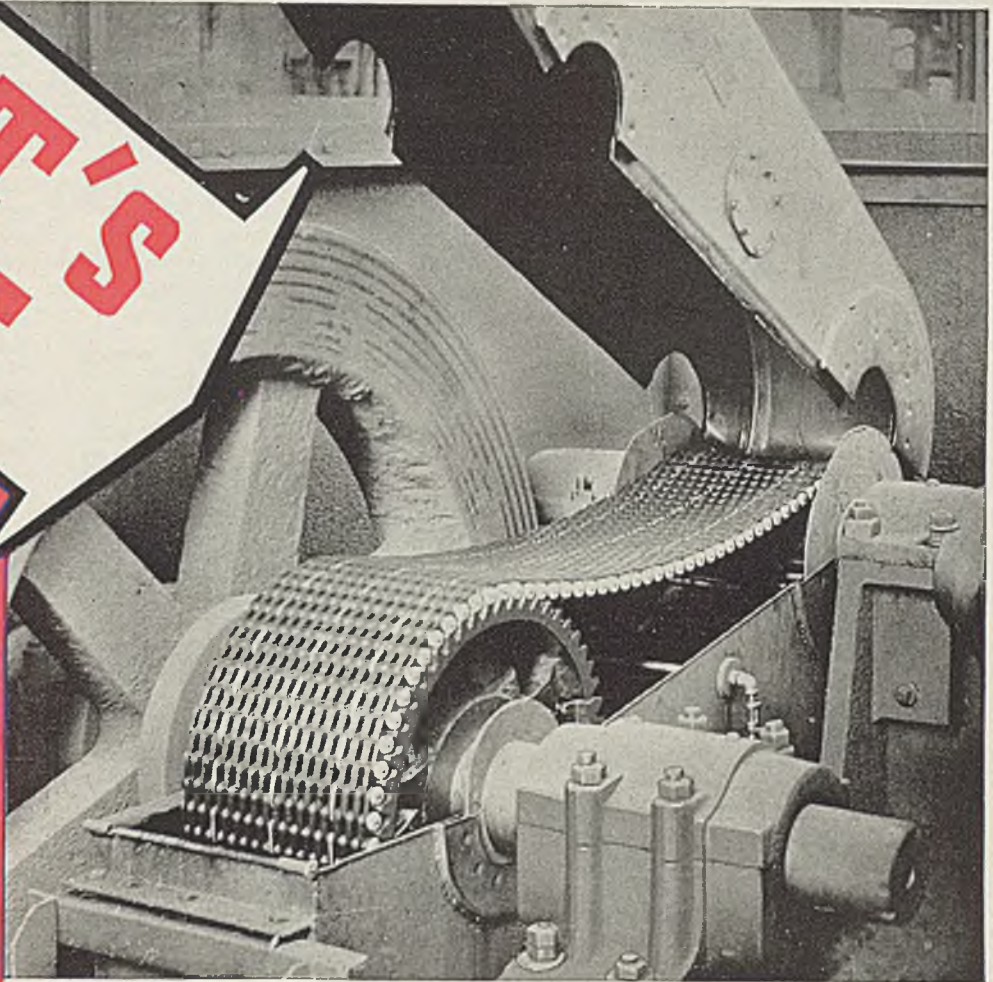
Typical example of a permanent duct system is the Bull Dog BUStrubution installation in a Detroit plant

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● Some plant executives have the idea that silent chain drives are expensive. Actually they cost less...even their first cost being lower than belts in many instances. Over a period of years, Link-Belt Silverstreak Silent Chain Drives always show important savings because they are built to give constantly efficient service with practically no attention or upkeep expense. They transmit full speed and power... never slip... save space... and are smooth and quiet in operation. Cut your production costs... save maintenance trouble and expense by equipping your machines with Silverstreak Silent Chain Drives.

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LINK-BELT
Silverstreak
SILENT CHAIN DRIVES

Comparing Temporary and Conduit Wiring with Duct System

CONDUIT

DUCT

Installing and Removing Temporary Wiring			Permanent Duct Installation		
Labor	1-h. p. motors	\$12.00	Material	1-h. p. motors	\$70.00
Labor	7 ½-h. p. motors	15.00		7 ½-h. p. motors	118.00
		\$27.00	\$188.00		
Conduit Installation					
Material	1-h. p. motors	\$25.00	Labor	1-h. p. motors	19.00
Material	7 ½-h. p. motors	68.00		Labor	7 ½-h. p. motors	25.00
		93.00	44.00		
		115.00	\$232.00		
		\$235.00			

hinged, giving access to the wires over the entire length. The other sides are provided with concentric knockouts on 3-inch centers for conduits to the machines.

To connect up a machine, it is necessary only to install the comparatively short conduit line from the duct to the machine and connect the wires in this conduit to the wires in the duct. To disconnect or move a machine, the operation is reversed and the spot where the connection was made to the wires in the duct taped over. The circuit is then available for any other connection at the same or another point on the duct. Additional wires may be laid in the duct until its capacity is reached.

Splices are allowed in the duct so lines can be installed to the approximate point beforehand. This is also an economic factor because it permits the use of short pieces of salvaged wire. When the machine is moved all that is necessary to wire it permanently is short conduit and wires from the duct to the machine.

In the other type of duct, copper busbars or feeders are built in the duct, insulated from the duct and

from each other. Provision is made in the duct for attaching special plugs for connections through conveniently spaced knockouts. These plug-in devices carry fuses, vacuum-break switches or circuit breakers for branch circuit connections. From these the connection is made to the machine or other power-using unit by comparatively short runs of rigid or flexible conduit.

The plug-in devices are separate units with the protective device assembly enclosed in a steel housing. Copper contact fingers projecting from the back of the plug enable it to be plugged easily into the duct. Conduit to extend the circuit to the motor is connected at knockouts in the case of the plug. These plugs are interchangeable in case of a change in power or load requirements or the need of different types of connection or protection plugs. The plugs take the place of the distribution panelbox.

Both distribution systems are made up of standard units and may be added to at any time. In case a room or building is not to be used for production, the entire system of ducts may be dismantled and installed elsewhere with practically

100 per cent salvage of all parts.

With either type of installation the duct system is permanent and may be readily adopted to fit changing conditions within the full current-carrying capacity of the system. When a machine is moved, only short sections of conduit need be removed or replaced instead of making a long conduit run where wasted wire and conduit are unavoidable. This makes an important saving in time and expense and only a few shifts will cover the extra cost of the original duct installation over straight conduit runs from distribution points to the individual drives.

By making a permanent distribution duct system of either of these types, the machine in the plant mentioned could have been installed as quickly as by running the temporary lines and would have presented a finished, safe installation. The temporary lines will have to be done over some time. In all probability the total cost of temporary loose wires and a finished conduit system will cost as much as having used a duct system in the first place.

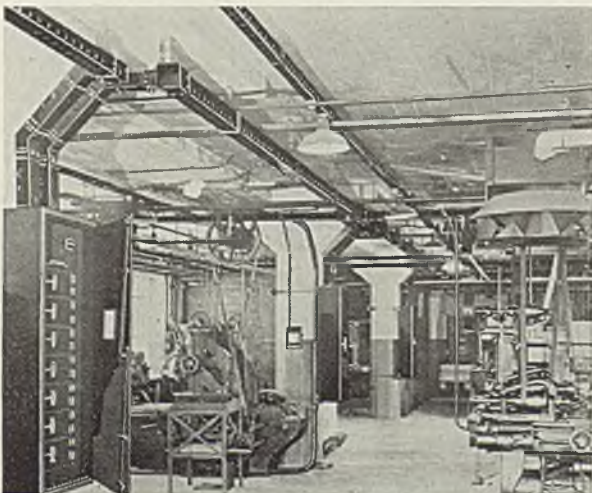
Estimate Cost Difference

A rough estimate of the difference in cost of installing one of these duct systems before placing machines, compared with running temporary wiring and later changing to permanent conduit wiring, is given in the accompanying table. In making this computation, the engineer assumed that ten 1-horsepower motors are equally spaced along one end of the 100 x 150-foot room with the distribution panel in the center and ten 7 ½-horsepower motors on lineshaft drives equally spaced on the remainder of the floor with power panel on wall.

In this tabulation the damaged and wasted wire in the temporary installation is not included. Also, the cost of wire is omitted, as its probable cost, as that of the connection to machines, would be comparable in both cases. No attempt is made to include any portion of the cost of the lighting circuits in this duct, which would be possible.

Although the difference in estimated cost is only \$3 in this case, the cost of future extensions or changes would be a distinct advantage in favor of the permanent installation. Safety, appearance and the knowledge that the installation is right from the beginning are important but cannot be evaluated in dollars.

Altogether too often the power drive is considered to be all right as long as the wheels will turn. Power wastes and production losses in many cases pay for an efficient drive every year or so.



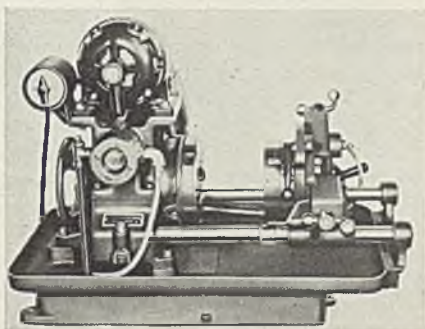
Another example of permanent duct systems is this installation of Square Duct, manufactured by Square D Co.

NEW EQUIPMENT



Threading Die Head Is Integral with Carriage

■ Oster Mfg. Co., 2057 East Sixty-first place, Cleveland, is marketing a new model No. 512-A Tom Thumb pipe threading machine which is



Newest addition to Tom Thumb portable pipe threading machines is this No. 512-A model with die head of the front cutting type

equipped with a die head that is integral with the carriage and supports threading dies more rigidly.

Die head is of the front-cutting type which, with the machine's close grip chuck, makes it possible to handle pieces as short as 2½ inches. Size setting marks are on top of the head

An internal oiling system to the dies and cut-off tool is provided. Flexible hose carries the oil from oil pump to intake valve in the die head. Flow of oil is controlled by a 2-way thumb valve.

Holder for the cut-off, reaming and chamfering tools are operated in a heavy block by a large ball-crank. This tool holder eliminates twist and possible breakage of tools. Studs carrying the die head and carriage are longer and supported at the ends for greater rigidity.

Overall length of the machine is 24 inches. Weight is 375 pounds.

Tests Metal Hardness

■ Teleweld Inc., 630 Railway Exchange building, Chicago, has devel-

oped a light weight, portable brinell testing instrument known as the Telebrineller. Instrument is claimed suitable to be used in close quarters and eliminates the necessity of dismantling or transporting equipment.

Combined weight of the outfit including the carrying case is 6½ pounds. Producers claim that no previous training is necessary to operate it accurately. Outfit includes Telebrineller instrument proper, a bar of known hardness, microscope with scale etched in its focal plane, slide rule packed with extra test bars and impression balls in a small case. Instrument itself consists of a metal tube supported in a soft rubber head, rubber spacing block, tube-holding bar of known hardness, anvil and rubber head resting directly on the bar. Below the bar an impression ball is secured in a narrow aperture in the base of the head which comes in direct contact with the metal to be tested. The spacing bar holds the bar in a clear area for each test.

To make a test the instrument is held against the object and anvil is struck a sharp blow with the hammer. Impact is transmitted through anvil to the bar, then to the ball on the object. Force of blow is said not to be a factor. Diameters of the impressions made are then measured in 1/10 millimeter by placing the microscope over each in turn and reading the scale. BHN is then obtained by the slide rule or by using a simple mathematical formula.

The Telebrineller has been used to test welded joints in alloy steel pipe, heat exchangers and castings besides its original use of testing rail ends.

Instruments Housed In Metal-Clad Switchgear

■ Delta-Star Electric Co., 2400 Fulton street, Chicago, has introduced a metal-clad switchgear with built-in test compartment which houses a 100,000 kilo-volt ampere oil-blast circuit breaker, instrument trans-

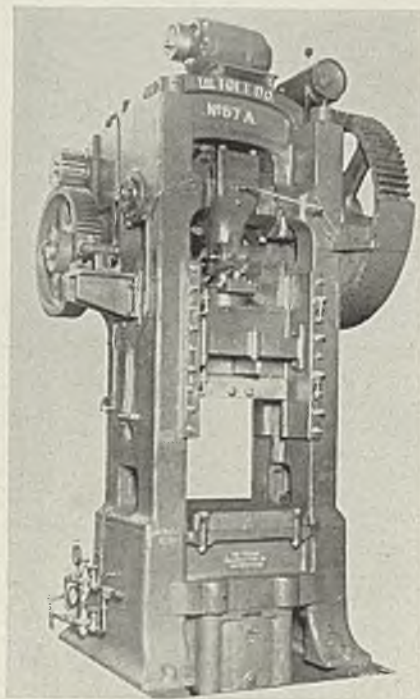
formers, insulated bus, cable terminators and accessories.

Panel door is made of die-pressed steel with concealed hinges and carries the instruments, relays and control switches. At the end of the steel enclosure is a door giving access to circuit breaker test compartment. It is used in conjunction with an elevating type handling truck and a control wire jumper providing ready means for checking the breaker operation when removed from its cell.

Test compartment contains a control switch, control bus connections and alarm bell.

Die Press Is Equipped With Pneumatic Cushion

■ Toledo Machine & Tool Co., Toledo, O., has announced the Toledo No. 57-A press with built-in draw-



Toledo 57-A press has a speed of 22 strokes per minute. It is equipped with a hydro-pneumatic die cushion

ing cushions to do double action work. The press is fitted with a semi-built-in, heavy-duty, Marquette hydro-pneumatic die cushion, which gives approximately double the normal blankholding pressure, adapting the unit to shape-stretching jobs requiring a high gripping pressure around the edge of the blank.

The press is a double geared, single-end drive, single-action type with a gear ratio of 16 to 1 which gives a speed of 22 strokes per minute. Press is powered by a 10 horsepower, 1200-revolutions per minute, high-slip motor which drives the flywheel by means of V-belts.

Electric push-buttons control the multiple disc, air-operated friction clutch, making it possible to inch, run or stop the press. All main bearings are bronze bushed and lubricated by means of manifold type one-shot system. Machine has a 10-inch stroke adjustable for 4 inches, crankshaft 6½ inches at bearings and 9¾ inches at the pins. Bed area is 32 x 32 inches. Slide is counter-balanced by a weight in the gear wheel. Due to the hydro-pneumatic cushion, shell can be drawn up to 4¾ inches high.

Improves Steel Truck

■ Chase Foundry & Mfg. Co., Columbus, O., has introduced a warehouse truck made of rolled steel and arc-welded. Fabrication cost of this truck is said to have been low-



Warehouse truck is fabricated of drawn steel shapes and arc-welded

ered and quality of the unit improved.

Frame of this 2-wheeled truck is entirely made of rolled or drawn steel shapes. Design is such that it can be built in any size or capacity. Steel sections are said to give truck a greater load carrying capacity than that of the conventional type of the same weight.

Automatic Shear Operates At High Rate Of Speed

■ Buffalo Forge Co., Buffalo, has introduced an automatic shear for high speed production and shearing of stock for bolts and rivets. Three bars can be fed and sheared at one time at a shearing rate of thirty strokes per minute.

Machine is designed for continuous shearing and is equipped with automatic feed rolls which are driven direct from the intermediate shaft of the roll. Rolls are made to grip and pull the stock into the shear only when knives are open on the up stroke of the machine, and they release their grip the instant the stock touches the rear gage and the top knife starts to descend. The roll automatically adjusts itself to any ordinary irregularities in the bar stock.

An open-side, tilting-type gage provided at the rear of the machine is easily adjusted for any length of bolt up to 18 inches for automatic feed and 48 inches for hand feed. Cropping gage is also provided to cut off 1 inch on each bar at start of run to secure a square end and remove the ragged mill cut. Gage is automatically removed after the first cut, permitting the stock to continue against the regular gage.

Automatic electrical stop is employed to disengage clutch on shear when end of stock bars reach feed rolls. Clutch may be engaged either by means of a hand lever or foot pedal. Both are provided. It is also arranged to disengage after each stroke or to run continuously until disengaged.

Motor is mounted on top of shear frame and drives the shear by means of V-belts direct to the flywheel. All gears, flywheel belts and motor pulley are enclosed by guards.

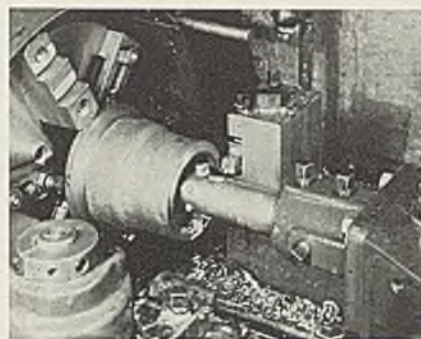
Tool Speed Increased

■ Haynes Stellite Co., 205 East Forty-second street, New York, has introduced a new cobalt-chromium-tungsten alloy known as Haynes Stellite-2400, which is used for cutting tools.

It is claimed that speeds and feeds recommended for its use are from 10 to 50 per cent faster. The alloy is used on cutting tools which are

marketed in a variety of sizes of solid, square and rectangular tool bits, welded tip tools, milling cutter blades and small tools to fit requirements.

Tools with this alloy are ground either by hand or by machine with



High-chromium steel is roughed, finish faced and bored with Haynes Stellite-2400 tool bits

the cutting edge supported as much as possible. Operations in which this alloy has been used on cutting tools include cylinder boring jobs, machining stainless steel, poppet-valve nozzle castings and finishing of cast iron flywheels.

Small Diesel Engine Made For Light Vehicles

■ Hercules Motor Corp., Canton, O., has introduced series DOO 4-cylinder diesel engines for use in commercial vehicles of smaller sizes as well as for industrial, agricultural, oil field and marine applications.

Engines are interchangeable from an installation standpoint with the OO series of gasoline engines. General design of the new series is the same employed in larger models. Pre-combustion chamber is located at the side of cylinder bore. Throat which connects cylinder with chamber is designed so piston, on its approach to top center on the compression stroke, gradually reduces the throat area, automatically increasing the velocity of air entering this chamber at the same time fuel is injected, thoroughly mixing fuel and air.

Rigid crankshaft with bearing surfaces electrically hardened is supported by five bearings in a crankcase which is cast integral with cylinders. Crankcase also supports 4-bearing camshaft. Aluminum alloy pistons are used. Connecting rods are of heat treated nickel chrome molybdenum steel, rifle drilled, providing pressure lubrication to full-floating piston rings.

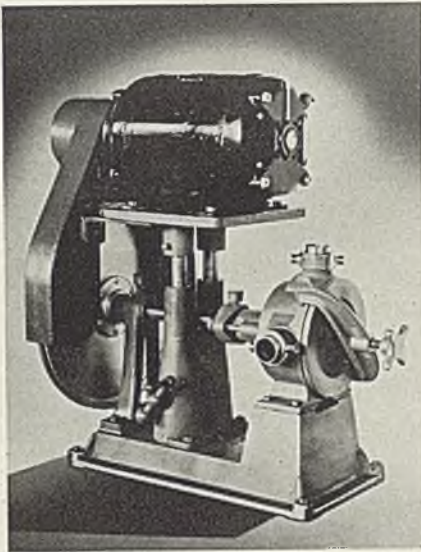
Large capacity centrifugal water pump supplies cooling water which

sweeps high temperature areas. Cooling fan is driven by a V-belt from a pulley mounted on an extension of the crankshaft. Lubrication is forced, supplied by geared pump to all main connecting rod piston pin bearings, and to gear train as well as over-head valve mechanism. Splash system lubricates cylinder walls. Oil filter is included.

Plunger fuel pump is built with a vacuum governor as an integral part of pump and mounted on same side of engine as fuel injectors, intake manifold, air cleaners and generator. Lubricating oil filter, water pump and starting motor are located on the exhaust manifold side.

Pump Is Variable

■ Viking Pump Co. of Delaware, Cedar Falls, Iowa, has announced a variable speed rotary pump unit to



Viking pump has a flat belt drive base and a speed range of 200 to 500 revolutions per minute

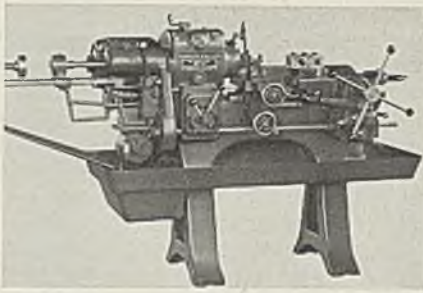
be used in plants where a unit for capacity changes is desired.

Unit is mounted on a standard, flat belt-drive base. By turning small hand wheel located near base plate, motor base plate either is raised or lowered, increasing the pitch of V-belt motor pulley. This movement also changes motor speed and likewise the pump capacity.

Speed range of unit, which is equipped with a standard 1800-revolutions per minute motor, is from 200 to 500 revolutions per minute.

Turret Lathe Machines Nonferrous Materials

■ Bardons & Oliver Inc., Cleveland, has added a new No. 2 geared electric turret lathe to their line. Besides incorporating features of



Machine is a No. 2 Bardons & Oliver geared electric turret lathe equipped with 2-speed reversing motor, electric power operated automatic chuck and bar feed

larger machines, the lathe, with a capacity of one-inch round bar through the spindle, is especially suited to the machining of brass, aluminum and other nonferrous materials as well as steel and small cast iron castings.

Design of the head is centered about a standard frame, high torque, quick reversing motor flange mounted to drive gear train of hardened alloy steel gears, sliding on alloy steel splined shafts mounted on anti-friction bearings. Reversing is accomplished electrically, clutches being eliminated. Spindle and shaft bearings are mounted in solid metal walls. Spindle itself is mounted on a straight roller bearing in front and on a radial bearing and thrust bearing in the rear.

Spindle has standard 6-inch spindle nose and can be equipped with standard hand or air operated chucks. Six spindle speeds may be obtained with a single speed motor or 12 spindle speeds with a 2 speed motor. Lever, located on top of head, controls the lathe. Magnetic reversing switch, mounted inside of the machine directly in back of

the hand reversing switch, is an added feature. All wiring is enclosed in machine. Hand operated pump located on the saddle lubricates all parts not reached by splash system. Three different cross slide carriage units, 2 hand operated bar feeding mechanisms, ratchet and finger type, power operated automatic chuck and feed bar are available.

Pump Conveys Juices

■ Worthington Pump & Machinery Corp., Harrison, N. J., is announcing a new line of elbow-propeller circulating pumps to convey not only water but also semi-viscous liquids, especially liquors, sugar juices and paper stock.

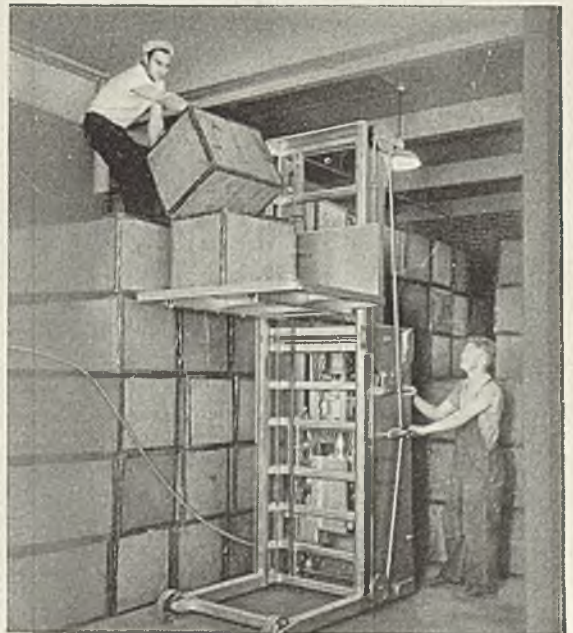
These pumps, compact in design, may be installed in pipe lines for booster or circulating service. The small number of vanes and large openings provide a large streamline flow channel. Unit has a capacity ranging from 1000 to 2000 gallons per minute, at heads up to 20 feet. Internal bearings and ball-type thrust bearings are provided. Units are suitable for any type drive.

Stacking Is Facilitated

■ Service Caster & Truck Co., Albion, Mich., has announced the Service electric lifter for vertical transportation of anything that can be stacked. Machine is of the hinged telescopic type. Hinging permits the upper section to be folded over for easy passage through normal doors.

Lifter is equipped with selective cable control by which the platform can be stopped at any preselected height. Push-button control is also available. Lifter has a 12-foot lift,

Service electric lifter is being used to pile cases of rubber. It has a 12-foot lift and is controlled by a push-button



but units can be built to any specification for handling barrels, boxes, bales or loaded trailers.

Furnace Temperatures Measured By Rayotube

■ Leeds & Northrup Co., 4900 Stenton avenue, Philadelphia, has introduced a sensitive instrument called the Rayotube which accurately measures the temperatures of the work of heat-treating furnaces on any standard Micromax electric control. This specialized couple simply looks in from a safe cool location outside of the furnace wall.

Although highly sensitive to temperature changes it is so sealed that contaminating and corrosive gases cannot reach any vital part. Rayotube holds its calibration under the severest operating conditions it is claimed. Forge shops, billet-furnaces, slab-furnaces and quenching operation are benefited by this instrument.

Installation of the instrument is simple. A small hole is cut in furnace wall on a line with the work, and target tube cemented in, its closed end extending a short distance into the furnace and its open end a short distance outside. Mounting bracket attaches to the outer-end holding rayotube so rigidly that even if tube should move it would still be in line with the target.

Redesigned Welders Operate Magnetically

■ Hobart Bros. Co., Troy, O., has announced a new line of simplified arc welders, redesigned to operate magnetically instead of manually. Complete overload and under-voltage protection are provided. When welding load requires full rated horsepower of the motor, operator flips small toggle switch to high position and presses starter

button. Motor starts under reduced voltage with approximately one third starting current usually drawn when starting across the line.

As machine gains speed switch automatically changes over to normal full-load running position. If half the rated horsepower of machine is sufficient for the job at hand, operator flips switch to low. In this case, when button is pressed, the machine starts and runs without changing over to full-load position.

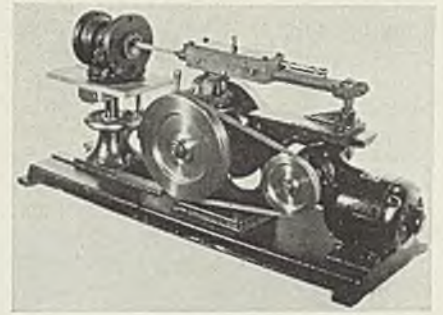
Lapping Machine Has Self-Leveling Lap

■ National Air Brake Service Inc., 907 Liberty street, New York, has introduced a K-2 Triple Valve lapping machine designed to resurface locomotive distributing valves, feed valves and all types of triple valves including the new AB valves.

Essentially, machine consists of a reciprocating arm and a slotted weight in the center and a lap at the free end. Weight provides a 12-pound downward pressure on the lap, diameter of which varies with the width of seat.

Lap is self-leveling to handle abrasive compound and is rotated by alternating contact with side walls of valve seat. When running free, lapping arm is supported by a ball bearing in the top of an eccentric pin which is rotated by vertical shaft from friction wheel on inside of fly wheel. Rotation of pin produces lateral movement of arm, which in combination with reciprocating motion, results in oscillating lap. When friction wheel is disengaged, eccentric pin is automatically centered to cut out lateral motion and produce a reciprocating movement.

Length of lapping arm stroke is adjusted between 0 and 6 inches by sliding crank pin across face of fly-



National lapping machine with K-2 triple valve in place occupies a bench space of 13 x 41 inches and has an overall height of 18 inches

wheel. In the top of the slot of lapping arm weight, a steel spring is fixed to provide bearing surface of lapping arm upon eccentric pin. Spring may be depressed into an inverted arc by an adjusting screw to cause middle of lapping arm to move in an inverted vertical arc and lap to move inversely, which motion is used to wear down ends of valve seats low in the center.

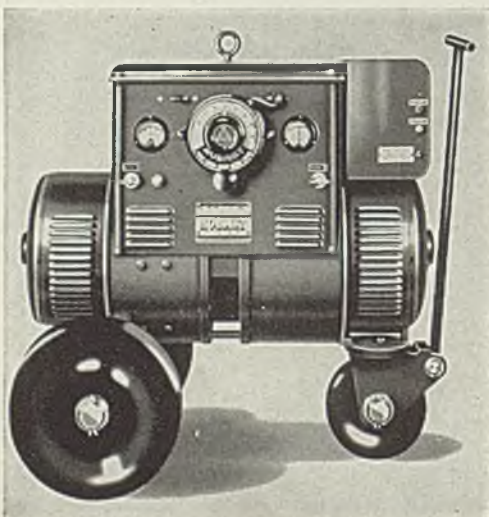
Chuck plates are available for both triple valves and locomotive distributing valves. Plates can be adjusted vertically, laterally and longitudinally. Power is supplied by a $\frac{1}{4}$ -horsepower 1750 revolutions per minute motor equipped with a 10 to 1 worm reduction gear.

Filter Cleans Paint

■ Staynew Filter Corp., Rochester, N. Y., has introduced the Protectomotor model CPH-L liquid filter for horizontal installations on liquid lines, where frequent inspections are necessary. Paint and oil are among the liquids filtered by the new unit.

Fundamental construction of the filter is the same as that incorporated in the rest of the line of Protectomotors. Container or shell is fabricated of seamless pressed steel with threaded intake connections in standard sizes. All other metal parts are of aluminum or other rust-resisting materials to suit the particular application. Drain cock is provided so that filter is easily cleaned by shutting off entering air and opening cock so that air pressure in the line backs up and blows foreign matter off filtering surface and out of cock.

Main features of the CPH-L model include reinforced core and spring retainer for lubrication lines on internal combustion machines. Filters are available with pipe sizes from $\frac{1}{8}$ inch to 3 inches. A series of wire mesh-backed fins placed concentrically around a hollow core outlet is the principle upon which the filters work for pipe line use.



Hobart arc welder is operated magnetically and is said to save from 30 to 40 per cent current costs



Handling Forging Flash

(Concluded from Page 44)

a car is to be loaded. Cutting is done only as the car is loaded as only a small proportion of the flash requires cutting. The former method was to wheel the flash up an incline and dump it into the car or have men shovel it over the side of the gondola. By using the conveyor, the work is accomplished in a few hours by the truck and shear operators.

The conveyor does not rest on the car, so it may be pulled along with a car puller as it fills. A hinged chute on the end of the conveyor, which is turned back over the conveyor when not in use so that it will clear cars on the track, guides flash to approximately the center of the gondola, thus loading evenly.

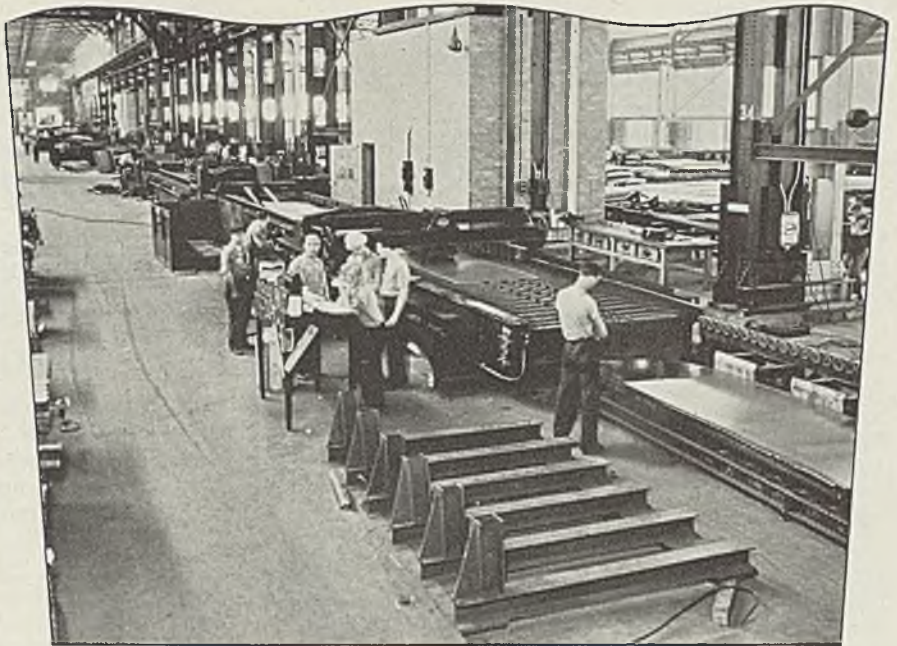
Practical Work on Steel for Consumer

■ *Steels for the User*, by R. T. Rolfe; cloth, 280 pages, 6 x 9 inches; published by Chapman & Hall Ltd., London; supplied by STEEL, Cleveland; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London.

The basis of this volume is a series of articles in the technical press, which, in response to requests, has been revised and added to. The aim of the author has been to present a view of steel useful to the user, as contrasted with the numerous volumes written for the student. The purpose has been to enable the user to exercise greater discrimination and to select steels for various purposes with more discrimination.

Current textbooks present some surprising gaps, the author states, and carbon steels represent a neglected field. Research has established a wealth of data which have not been collated and placed in available form. The present work constitutes an attempt to bridge this gap between science and practice for carbon steels in industry. Alloy steels are not specifically dealt with, although frequently discussed, in cases where carbon steels do not perform satisfactorily for the purpose.

While the scientific aspects of the various processes are all comprehensively treated, these are always illustrated by ample data and examples from actual service.



EFFICIENCY IN STEEL PRODUCTION DEPENDS UPON CONVEYERS

IN 1910 the Steel Industry produced 30 tons a year for each I worker employed—in 1930 it produced 42 tons. But in addition to this tonnage increase per worker, the production of 1930 was largely composed of much more highly processed and finished materials.

Continuous Flow production methods explain the larger output per worker in spite of the added amount of processing.

In the Steel Industry materials handling is the main component of production—and the lowest man-hours-per-ton are always found where equipment is of the Mathews type, embodying the maximum application of Continuous Flow, highly integrated processing, unifying individual mills and the plant as a whole.

Processing Equipment installed during 1936-37, embracing the ultimate in design and engineering in the Steel Industry, is illustrated and described in our catalog on Steel Plant Conveyers. Available now.

The leaders in this industry, responsible for 85% of steel production in the United States and Canada, are applying the Continuous Flow Principle of Handling Materials with Mathews Conveyers.

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CONTINUOUS FLOW PRINCIPLE OF HANDLING MATERIALS
CONVEYERS



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

Conveyor Chains—Link-Belt Co., 307 North Michigan avenue, Chicago, has issued illustrated folder 1651 on its swivel conveyor chain. Engineering data is included.

Closet Fixtures—Knappe & Vogt Mfg. Co., Grand Rapids, Mich., has issued catalog 424 illustrating and describing its line of steel clothes closet fixtures.

Colors—Ferro Enamel Corp., 4150 East Fifty-sixth street, Cleveland, has published a booklet illustrating and describing the production of colored porcelain enamels.

Load Systems—Acme Steel Co., Chicago, has released a folder describing its unit load system. The bulletin is particularly interesting to stop-over and pool car shippers.

Castings and Valves—Sivyer Steel Casting Co., Milwaukee, has issued a booklet embodying illustrations, descriptions and engineering data concerning pressure castings. The booklet is entitled, "Ladle Sparks."

Metal Hose—Chicago Metal Hose Corp., Maywood, Ill., has available two illustrated bulletins which it has recently issued on its metal and Rex-tube and Rex-weld insulated steam hose. Engineering data is included.

Fire Brick—Quigley Co., 56 West Forty-fifth street, New York, has issued a bulletin with interesting information for high temperature furnace owners. Some engineering data is included.

Alloys—Metal Wire Co. Inc., Prospect Park, Pa., has published a 35-page booklet embodying graphs, engineering data and price per pound of a wide variety of alloys used in wires of rod and strip form.

Laboratory Equipment—Bausch & Lomb Optical Co., Rochester, N. Y., has released bulletin 25 describing the laboratory technique and the use of microscope equipment for dust investigation.

Exhaust Fans—Northern Blower Co., West Sixty-fifth street, Cleveland, has published a bulletin illustrating and describing its Norblo exhaust fans. Engineering data are included.

Estimators—General Electric Co., Schenectady, N. Y., has issued a 7-page bulletin embodying engineering data issued estimating the approximate weight of various kinds of electrodes.

Microscopes—Bausch & Lomb Optical Co., Rochester, N. Y., has released bulletin 26 embodying a description of a bulletin of the U. S. bureau of mines on the use of the microscope in ore dressing and copper ores.

Insulations—Refractory & Insulation Corp., 381 Fourth avenue, New York, has issued bulletin I-61 containing specifications, applications and a description of combination blankets and one-coat finish Stic-Tite insulation used in the iron and steel industries.

Vertical Motors—Fairbanks Morse & Co., 900 South Wabash avenue, Chicago, has issued bulletin 1410 describing hollow shaft vertical motors as adapted to turbine pump applications. Engineering data and illustrations are included.

Flow-Meters—Cochrane Corp., Seventeenth and Allegheny avenue, Philadelphia, has issued a pamphlet illustrating functions of power plant instruments and describing its flow meters. Specifications and engineering data are also embodied.

Motors—Century Electric Co., 1806 Pine street, St. Louis, has issued a 22-page bulletin describing and illustrating fractional horsepower, brush lifting and brush riding, split phase, direct, and poly-phase motors. Engineering data are included.

Heating—Leeds & Northrup Co., 4901 Stenton avenue, Philadelphia, has issued catalog T-621 embodying the triple-control method of heat treatment of steel called Vapocarb-Hump. Graphs, illustrations, descriptions and engineering data are included.

Vanadium—Vanadium Corp. of America, 420 Lexington avenue, New York, has released a folder entitled, "Vanadium Facts." Illustrations, and engineering data are employed in describing the uses of vanadium in steel shafts, high speed grinders, wrenches and steel pawls.

Graphs—Esterline-Angus Co., Indianapolis, has issued a small 7-page booklet announcing the publication of its book in February entitled, "Graphic Routes to Greater Profits." The book is a working manual or a source book of fact-finding techniques, applicable to all graphic instruments.

Marking Devices—Dickey Grabler Co., Madison avenue, Cleveland, has compiled an 11 1/2 x 8 1/2, 84-page catalog No. 37 covering some of the marking devices, metal stampings and machined products which it manufactures. The catalog contains illustrations and descriptions along with engineering data. It is bound by a wire spiral binding making its pages easily accessible. Cover is of fiber board composition.

Magnet Material Finds Widening Application

(Concluded from Page 40)

to a shakeout and the castings placed in a tumbling barrel for cleaning; faces are ground on a surface grinder equipped with a segmental wheel and magnetic table. These operations are all grouped conveniently at one side of the pouring platform for continuous operation.

A high finish is not required on the magnets, except on the top and bottom where surface contact is necessary. It is necessary, of course, to grind flat surfaces smooth and parallel, but curved surfaces usually are left rough.

After grinding, the castings must be put through a complicated heat treatment to obtain the desired crystal structure for the best magnetic conditions. Castings are charged on heat-resisting alloy trays and automatically pushed from one furnace to another on roller conveyors. When cooled, the magnets are checked with flux meters against a standard sample to make sure they will pass requirements of subsequent magnetization. After this operation, the material is then sent into the various departments for assembly.

Magnets range in weight from 1/4 to 2 pounds. Some must be made with holes in the center. This is accomplished by coring the casting at that point. The molds in which these castings are made are composed of silica sand and thoroughly baked. One charge of each furnace is sufficient to make from 200 to 600 magnets depending upon the size.

Experiments are being conducted with the use of this material in magnetos, switches, slot machines, microphones, in fact any place where a material of unusually high flux density and great retentivity is desired.

Better Steel Market Seen for New Year

Scrap Leading Way; Ship Tonnage Large; Japan Buys Pig Iron

IN THE final week of the year, with production interrupted by holiday closing and general hesitation, steelmakers look forward for the opening weeks of 1938 to bring an improvement in buying in all lines.

Consumers who have been delaying orders as far as possible, to limit their inventories, are expected to place business when the turn of the year has passed, and necessity for rigidly holding stocks as low as possible no longer operates.

The industry for weeks has had its eyes fixed on the opening of the new year as a time for some expansion. Already indications have appeared of a better feeling and this is likely to continue in increasing measure. However, the improvement is expected to be conservative for the early weeks of 1938.

Meanwhile, a number of projects involving large tonnages of steel, delivery of which will be spread over several months, are developing. These include steel rails for track maintenance a considerable tonnage for battleships, tankers and cargo vessels and some large structural projects. These requirements will give mills considerable backlog. It is believed automotive production, while perhaps not equaling that of 1937, will require a large tonnage of steel.

Japan has closed for 50,000 tons of pig iron with southern producers, including both basic and foundry. This is the first large purchase of pig iron by Japan in several weeks. Earlier in the year its purchases aggregated several hundred thousand tons. Japan is in the market for a substantial tonnage of plates also.

Due largely to plant shutdowns for Christmas, as well as to light buying, the national steel operating rate declined 4 points last week to 23 per cent. The slackening of production was general in practically all centers. Pittsburgh dropped 5 points to 14 per cent, Eastern Pennsylvania 4 points to 25. Youngstown 12 points to 18, Chicago half a point to 23.5, Wheeling 5 points to 19, Buffalo 2 points to 14, New England 2 points to 28, Cincinnati 18 points to 36, St. Louis 1 point to 15 and Cleveland 12 points to 24. Detroit at 52 per cent and Birmingham at 45 per cent were unchanged.

Railroad buying, always an important element in



MARKET IN TABLOID

DEMAND . . . Improving, some heavy tonnages in prospect.

PRICES . . . Steady, scrap makes further advance.

PRODUCTION . . . Operations down 4 points to 23 per cent.

SHIPMENTS . . . Light, most buyers asking prompt delivery.

the steel market, seems to be pivoting on the possibility of an increase in freight rates early in the year. Western roads have outlined their requirements of rails at 150,000 to 200,000 tons. Placing of small lots of rails and rolling stock indicate pressing needs of the carriers. A southern mill has accumulated a backlog of rails to keep it busy well into 1938. St. Louis & San Francisco railroad has placed 18,000 tons of rails and fastenings and the Missouri Pacific 900 tons of rails. Chesapeake & Ohio is inquiring for 27,500 tons and Pere Marquette for 6900 tons.

Curtailed assembly schedules, due largely to the holidays, reduced automobile output last week to 67,230, nearly 15,000 less than the preceding week. General Motors produced 28,530, compared with 30,825 the week before; Chrysler assembled 10,950, against 15,850; Ford 20,615, compared with 25,115 units; other producers made 7135, compared with 10,235 the week before.

Steelmaking scrap continues to indicate better sentiment by a steady, though gradual rise. Last week an advance of 50 cents was registered at Chicago, other centers holding firmly. This is an increase of \$1.50 at Chicago during December. Scrap prices in outlying sections from which steelmakers draw supplies show a stiffening in prices, indicating supplies are light. Scattered buying gives color to the belief some mills need further supplies and regard present prices as attractive.

For the fourth consecutive week STEEL'S composite price of steelmaking scrap showed an increase. The composite for last week stands at \$13.58, a rise of 17 cents over the preceding week. The rise since the last week in November aggregates 83 cents. The iron and steel composite at \$38.90 and the finished steel composite at \$61.70, show no change.

COMPOSITE MARKET AVERAGES

	Dec. 25	Dec. 18	Dec. 11	One Month Ago Nov., 1937	Three Months Ago Sept., 1937	One Year Ago Dec., 1936	Five Years Ago Dec., 1932
Iron and Steel	\$38.90	\$38.90	\$38.88	\$38.96	\$40.16	\$35.15	\$28.98
Finished Steel	61.70	61.70	61.70	61.70	61.70	53.90	46.74
Steelworks Scrap . . .	13.58	13.41	13.08	13.32	18.99	16.92	6.41

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

COMPARISON OF PRICES

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

	Dec. 25, 1937	Nov. 1937	Sept. 1937	Dec. 1936		Dec. 25, 1937	Nov. 1937	Sept. 1937	Dec. 1936
Finished Material					Pig Iron				
Steel bars, Pittsburgh	2.45c	2.45c	2.45c	2.05c	Bessemer, del. Pittsburgh	\$25.26	\$25.26	\$25.26	\$21.8132
Steel bars, Chicago	2.50	2.50	2.50	2.10	Basic, Valley	23.50	23.50	23.50	20.00
Steel bars, Philadelphia	2.74	2.74	2.74	2.36	Basic, eastern del. East. Pa.	25.26	25.26	25.26	21.81
Iron bars, Terre Haute, Ind.	2.35	2.35	2.35	1.95	No. 2 fdy., del. Pittsburgh	25.21	25.21	25.21	21.3132
Shapes, Pittsburgh	2.25	2.25	2.25	1.90	No. 2 fdy., Chicago	24.00	24.00	24.00	20.50
Shapes, Philadelphia	2.45½	2.46	2.46	2.12	Southern No. 2, Birmingham	20.38	20.38	20.38	16.88
Shapes, Chicago	2.30	2.30	2.30	1.95	Southern No. 2, del. Cincinnati	23.89	23.89	23.89	19.69
Tank plates, Pittsburgh	2.25	2.25	2.25	1.90	No. 2 X eastern, del. Phila.	26.135	26.14	26.14	22.68
Tank plates, Philadelphia	2.43½	2.44	2.44	2.09	Malleable, Valley	24.00	24.00	24.00	20.50
Tank plates, Chicago	2.30	2.30	2.30	1.95	Malleable, Chicago	24.00	24.00	24.00	20.50
Sheets, No. 10, hot rolled, Pitts.	2.40	2.40	2.40	2.10	Lake Sup., charcoal, del. Chicago	30.24	30.14	30.04	26.2528
Sheets, No. 24, hot ann., Pitts.	3.15	3.15	3.15	2.75	Gray forge, del. Pittsburgh	24.17	24.17	24.17	20.6741
Sheets, No. 24, galv., Pitts.	3.80	3.80	3.80	3.35	Ferromanganese, del. Pittsburgh	107.49	107.35	107.29	82.65
Sheets, No. 10, hot rolled, Gary	2.50	2.50	2.50	2.25	Scrap				
Sheets, No. 24, hot anneal., Gary	3.25	3.25	3.25	2.90	Heavy melting steel, Pittsburgh	\$13.75	\$14.10	\$20.40	\$18.55
Sheets, No. 24, galvan., Gary	3.90	3.90	3.90	3.50	Heavy mlt. steel, No. 2, E. Pa.	14.25	12.25	16.69	14.13
Plain wire, Pittsburgh	2.90	2.90	2.90	2.60	Heavy melting steel, Chicago	13.25	12.55	17.85	17.00
Tin plate, per base box, Pitts.	\$5.35	\$5.35	\$5.35	\$5.25	Rails for rolling, Chicago	14.25	15.10	20.35	17.25
Wire nails, Pittsburgh	2.75	2.75	2.75	2.20	Railroad steel specialties, Chicago	15.75	16.75	20.50	19.00
Semifinished Material					Coke				
Sheet, bars, open-hearth, Youngs.	\$37.00	\$37.00	\$37.00	\$32.50	Connellsville, furnace, ovens	\$4.37	\$4.37	\$4.45	\$4.00
Sheet bars, open-hearth, Pitts.	37.00	37.00	37.00	32.50	Connellsville, foundry, ovens	5.25	5.25	5.25	4.40
Billets, open-hearth, Pittsburgh	37.00	37.00	37.00	32.50	Chicago, by-product foundry, del.	11.00	11.00	11.00	9.75
Wire rods, No. 5 to ¾-inch, Pitts.	47.00	47.00	47.00	40.75					

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	3.30c			Pittsburgh base, cents per lb.				Pittsburgh 2.25c			
Hot Rolled No. 10, 24-48 in.		Gary	3.40c			Chrome-Nickel				Philadelphia, del. 2.46½c			
Pittsburgh 2.40c		St. Louis, delivered	3.53c			No. 302 No. 304				New York, del. 2.51½c			
Gary 2.50c		Granite City, Ill.	3.50c			Bars 24.00 25.00				Boston, delivered 2.64½c			
Chicago, delivered 2.53c		Cold Rolled No. 10				Plates 27.00 29.00				Bethlehem 2.35c			
Detroit, del. 2.60c		Pittsburgh	3.10c			Sheets 34.00 36.00				Chicago 2.30c			
New York, del. 2.74c		Gary	3.20c			Hot strip 21.50 23.50				Cleveland, del. 2.46c			
Philadelphia, del. 2.70c		Detroit, delivered	3.31c			Cold strip 28.00 30.00				Buffalo 2.35c			
Birmingham 2.55c		Philadelphia, del.	3.40c			Straight Chromes				Gulf Ports 2.66c			
St. Louis, del. 2.63c		New York, del.	3.44c			No. No. No. No.				Birmingham 2.40c			
Granite City, Ill. 2.60c		St. Louis, del.	3.33c			410 430 442 446				Pacific ports, f.o.b. cars, dock 2.81c			
Pacific ports, f.o.b. dock 2.96c		Granite City, Ill.	3.30c			18.50 19.00 22.50 27.50				St. Louis, del. 2.52c			
Hot Rolled Annealed No. 24		Pacific ports, f.o.b. dock 3.71c				21.50 22.00 25.50 30.50				Bars			
Pittsburgh 3.15c		Cold Rolled No. 20				26.50 29.00 32.50 36.50				(Base, 3 to 25 tons)			
Gary 3.25c		Pittsburgh	3.55c			Hot strip 17.00 17.50 23.00 28.00				Pittsburgh 2.45c			
Chicago, delivered 3.28c		Gary	3.65c			Cold stp. 22.00 22.50 28.50 36.50				Chicago or Gary 2.50c			
Detroit, delivered 3.35c		Detroit, delivered	3.76c			Steel Plate				Duluth 2.60c			
New York, delivered 3.49c		Philadelphia, del.	3.85c			Pittsburgh 2.25c				Birmingham 2.60c			
Philadelphia, del. 3.45c		New York, del.	3.89c			New York, del. 2.54c				Cleveland 2.50c			
Birmingham 3.30c		St. Louis	3.78c			Philadelphia, del. 2.44½c				Buffalo 2.55c			
St. Louis, del. 3.38c		Granite City, Ill.	3.75c			Boston, delivered 2.66c				Detroit, delivered 2.60c			
Granite City, Ill. 3.35c		Enameling Sheets				Buffalo, delivered 2.49½c				Pacific ports, f.o.b. cars, dock 3.01c			
Pacific ports, f.o.b. dock 3.81c		Pittsburgh, No. 10	2.90c			Chicago or Gary 2.30c				Philadelphia, del. 2.75c			
Galvanized No. 24		Pittsburgh, No. 20	3.50c			Cleveland, del. 2.45½c				Boston, delivered 2.86c			
Pittsburgh 3.80c		Gary, No. 10	3.00c			Birmingham 2.40c				New York, del. 2.79c			
Gary 3.90c		Gary, No. 20	3.60c			Coatesville, base 2.35c				Rail Steel			
Chicago, delivered 3.93c		St. Louis, No. 10	3.13c			Sparrows Pt., base 2.35c				To Manufacturing Trade			
Philadelphia, del. 4.10c		St. Louis, No. 20	3.73c			Pacific ports, f.o.b. cars, dock 2.81c				Pittsburgh 2.30c			
New York, delivered 4.14c		Tin and Terne Plate				St. Louis, delivered 2.52c				Chicago or Gary 2.35c			
Birmingham 3.95c		Gary base, 10 cents higher								Cleveland 2.35c			
St. Louis, del. 4.03c		Tin plate, coke (base box) Pittsburgh	\$5.35							Moline, Ill. 2.35c			
Granite City, Ill. 4.00c		Waste-waste, 2.75c; strip	2.50c							Buffalo 2.40c			
Pacific ports, f.o.b. dock 4.41c		Long ternes, No. 24, unassorted, Pitts.	4.10c							Birmingham 2.45c			

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

Reinforcing	
New billet, straight lengths, quoted by distributors	
Pittsburgh	2.55c
Chicago, Gary, Buffalo, Cleve., Birm., Young...	2.60c
Gulf ports	2.91c
Pacific coast ports, f.o.b. car docks	2.96c
Philadelphia, del.	2.85c
Rail steel, straight lengths, quoted by distributors	
Pittsburgh	2.40c
Chicago, Buffalo, Cleveland, Birm., Young....	2.45c
Gulf ports	2.81c

Wire Products

Prices apply to mixed carloads, base; less carloads subject to quantity extras.

Base Pitts.-Cleve. 100 lb. keg.	
Standard wire nails	\$2.75
Cement coated nails ...	\$2.75
(Per pound)	
Polished staples	3.45c
Galv. fence staples	3.70c
Barbed wire, galv.	3.40c
Annealed fence wire....	3.15c
Galv. fence wire	3.55c
Woven wire fencing (base C. L. column) .....	.74
Single loop bale ties, (base C. L. column)....	.63

To Manufacturing Trade

Plain wire, 6-9 ga.	2.90c
Galvanized wire	2.95c
Anderson, Ind. (merchant products only) and Chicago up \$1; Duluth and Worcester up \$2; Birmingham up \$3.	
Spring wire, Pitts. or Cleveland	3.50c
Do., Chicago up \$1, Worc. \$2.	

Cold-Finished Carbon Bars and Shafting

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

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

Alloy Steel Bars (Hot)

(Base, 3 to 25 tons)	
Pittsburgh, Buffalo, Chicago, Massillon, Canton, Bethlehem	3.00c

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

Piling

Pittsburgh	2.60c
Chicago, Buffalo	2.70c

Strip and Hoops

(Base, hot-rolled, 25-1 ton)		
(Base, cold-rolled, 25-3 tons)		
Hot strip to 23½-in.		
Pittsburgh	2.40c	
Chicago or Gary	2.50c	
Birmingham base	2.55c	
Detroit, del.	2.61c	
Philadelphia, del.	2.70c	
New York, del.	2.74c	
Cooperage hoop,		
Pittsburgh	2.50c	
Chicago	2.60c	
Cold strip, 0.25 carbon and under, Pittsburgh, Cleveland		3.20c
Detroit, del.	3.41c	
Worcester, Mass.	3.40c	
Cleve. Worces- ter, Mass.		
Carbon Pitts.	3.20c 4.30c	
0.26—0.50 ...	3.20c 4.30c	
0.51—0.75 ...	4.45c 4.65c	
0.76—1.00 ...	6.30c 6.50c	
Over 1.00 ...	8.50c 8.70c	

Rails, Track Material

(Gross Tons)	
Standard rails, mill	\$42.50
Relay rails, Pittsburgh, 20—100 lbs.	32.50-35.50
Light rails, billet qual., Pittsburgh, Chicago....	\$43.00
Do., rerolling quality..	42.00
Angle bars, billet, Gary, Pittsburgh, So. Chicago	2.80c
Do., axle steel	2.35c
Spikes, R. R. base	3.15c
Track bolts, base	4.35c
Tie plates, base	\$46.00
Base, light rails 25 to 60 lbs.; 20 lbs. up \$2; 16 lbs. up \$4; 12 lbs. up \$8; 8 lbs. up \$10. Base railroad spikes 200 kegs or more; base tie plates 20 tons.	

Bolts and Nuts

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

Carriage and Machine	
½ x 6 and smaller	65-5 off
Do. larger, to 1-in.	60-10 off
Do. 1½ and 1¼-in.	60-5 off
Tire bolts	50 off
Plow Bolts	
All sizes	65-5 off
Stove Bolts	
In packages with nuts attached 70 off; in packages with nuts separate 70-10 off; in bulk 80 off on 15,000 of 3-inch and shorter, or 5000 over 3-inch.	
Step bolts	50-10-5 off
Elevator bolts	50-10-5 off

Nuts

S. A. E. semifinished hex.:	
½ to ¾-inch	60-10 off
Do., 9/16 to 1-inch.	60-5 off
Do., over 1-inch	60 off

Hexagon Cap Screws

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

Square Head Set Screws

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

Rivets, Wrought Washers

Structural, Pittsburgh, Cleveland	3.60c
Structural, Chicago	3.70c
½-inch and smaller,	
Pitts., Chl., Cleve.	65-5 off
Wrought washers, Pitts., Chl., Phila. to jobbers and large nut, bolt mfrs. i.c.l. \$5.40; c.l. \$5.75 off	

Cut Nails

Cut nails, C. L. Pitts. (10% disc. on all extras)	\$3.60
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Do., less carloads, 5 kegs or more, no discount on any extras...	\$3.90
Do., under 5 kegs no disc. on any extras....	\$4.05

Welded Iron, Steel Pipe

Base discounts on steel pipe, Pitts., Lorain, O., to consumers in carloads. Gary, Ind., 2 points less. Chicago, del. 2½ less. Wrought pipe, Pittsburgh.

Butt Weld Steel		
In.	Blk.	Galv.
½	59½	49
¾	62½	53
1—3	64½	55½
Iron		
¾	26	8
1—1¼	30	14
1½	34	16½
2	33½	16

Lap Weld Steel		
2	57	47½
2½—3	60	50½
3½—6	62	52½
7 and 8	61	50½
9 and 10	60½	50
Iron		
2	26½	10
2½—3½	27½	12½
4	29½	16
4½—8	28½	15
9—12	24½	10

Line Pipe Steel		
1 to 3, butt weld	63½	56
2, lap weld	56	59
2½ to 3, lap weld	61	60
3½ to 6, lap weld	59½	58½
7 and 8, lap weld	58½	
10-inch, lap weld	58½	
12-inch, lap weld	58½	

Butt Weld Iron		
%	Blk.	Galv.
¾	25	7
1 and 1¼	29	13
1½	33	15
2	32½	15

Lap Weld		
1½	23½	7
2	25½	9
2½ to 3½	26½	11½
4	28½	15
4½ to 8	27½	14
9 to 12	23½	9

Boiler Tubes

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

Lap Weld		
Sizes	Steel	Charcoal Iron
1½" OD x 13 Ga.	\$10.45	\$23.71
1" OD x 13 Ga.	11.89	22.93
2" OD x 13 Ga.	13.31	19.35
2" OD x 11 Ga.	15.49	23.36
2½" OD x 13 Ga.	14.82	21.68
2½" OD x 11 Ga.	17.38	26.02
2½" OD x 12 Ga.	17.82	26.57
2½" OD x 12 Ga.	18.86	29.00
3" OD x 12 Ga.	19.73	31.36
3½" OD x 11 Ga.	24.89	39.81
4" OD x 10 Ga.	30.81	49.90
5" OD x 9 Ga.	47.57	73.93
6" OD x 7 Ga.	73.25	

Seamless		
	Hot Rolled	Cold Drawn
1" OD x 13 Ga.	\$ 8.41	\$ 9.46
1½" OD x 13 Ga.	9.96	11.21
1½" OD x 13 Ga.	11.00	12.38
1½" OD x 13 Ga.	12.51	14.09
2" OD x 13 Ga.	14.02	15.78
2½" OD x 13 Ga.	15.63	17.60
3½" OD x 12 Ga.	17.21	19.37

2½" OD x 12 Ga.	18.85	21.22
2½" OD x 12 Ga.	19.98	22.49
3" OD x 12 Ga.	20.97	23.60
4½" OD x 10 Ga.	40.15	45.19
3½" OD x 11 Ga.	26.47	29.79
4" OD x 10 Ga.	32.83	36.94
5" OD x 9 Ga.	50.38	56.71
6" OD x 7 Ga.	77.35	87.07

Cast Iron Water Pipe

Class B Pipe—Per Net Ton	
6-in. & over, Birm.	\$46.00-47.00
4-in., Birmingham	49.00-50.00
4-in., Chicago	57.20-58.20
6 to 24-in., Chicago.	54.20-55.20
6-in. & over, east fdy.	50.00
Do., 4-in.	53.00

Class A Pipe \$3 over Class B Std. ftgs., Birm., base \$100.00

Semifinished Steel

Billets and Blooms	
4 x 4-inch base; gross ton	
Pitts., Chl., Cleve., Buffalo, Young, Birm.	\$37.00
Philadelphia	42.30
Duluth	39.00

Forging Billets	
6 x 6 to 9 x 9-in., base	
Pitts., Chicago, Buffalo ..	43.00
Forging, Duluth	45.00

Sheet Bars	
Pitts., Cleve., Young, Sparrows Point	37.00

Slabs	
Pitts., Chicago, Cleveland, Youngstown	37.00

Wire Rods	
Pitts., Cleve., No. 5 to ¾-inch incl.	47.00
Do., over ¾ to 1¼-inch incl.	52.00
Chicago up \$1; Worcester up \$2.	

Skelp	
Pitts., Chl., Young, Buff., Coatesville, Sparrows Pt.	2.10c

Coke

Price Per Net Ton	
Beehive Ovens	
Connellsville, fur.	\$4.00- 4.50
Connellsville, fdry.	5.00- 5.50
Connell. prem. fdry.	5.75- 6.25
New River fdry.	6.50- 6.75
Wise county fdry.	5.75- 6.00
Wise county fur.	4.75- 5.00

By-Product Foundry

Newark, N. J., del.	10.88-11.35
Chl., ov., outside del.	10.25
Chicago, del.	11.00
Milwaukee, ovens.	11.00
New England, del.	12.50
St. Louis, del.	11.00-11.50
Birmingham, ovens	7.50
Indianapolis, del.	10.50
Cincinnati, del.	10.50
Cleveland, del.	11.05
Buffalo, del.	10.50
Detroit, del.	11.10
Philadelphia, del.	10.60

Coke By-Products

Spot, gal. Producers' Plants	
Pure and 90% benzol.	16.00c
Toluol	30.00c
Solvent naphtha	30.00c
Industrial xylo.	30.00c
Per lb. f.o.b. Frankford and St. Louis	
Phenol (200 lb. drums) ..	16.25c
do. (450 lbs.)	15.25c
Eastern Plants, per lb.	
Naphthalene flakes and balls, in bbls. to jobbers	7.25c
Per ton, bulk, f.o.b. oven or port Sulphate of ammonia.	\$29.00

Pig Iron

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

Basing Points:	No. 2 Fdry.	Malleable	Basic	Bessemer
Bethlehem, Pa.	\$25.00	\$25.50	\$23.50	\$26.00
Blrdsboro, Pa.	25.00	25.50	24.50	26.00
Birmingham, Ala.†	20.38	.....	19.38	25.00
Buffalo	24.00	24.50	23.00	25.00
Chicago	24.00	24.00	23.50	24.50
Cleveland	24.00	24.00	23.50	24.50
Detroit	24.00	24.00	23.50	24.50
Duluth	24.50	24.50	.....	25.00
Erie, Pa.	24.00	24.50	23.50	25.00
Everett, Mass.	25.75	26.25	25.25	26.75
Granite City, Ill.	24.00	24.00	23.50	24.50
Hamilton, O.	24.00	24.00	23.50	.....
Neville Island, Pa.	24.00	24.00	23.50	24.50
Provo, Utah	22.00	.....	.....	.....
Sharpsville, Pa.	24.00	24.00	23.50	24.50
Sparrow's Point, Md.	25.00	.....	24.50	.....
Swedeland, Pa.	25.00	25.50	24.50	26.00
Toledo, O.	24.00	24.00	23.50	24.50
Youngstown, O.	24.00	24.00	23.50	24.50

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

Delivered from Basing Points:

Akron, O., from Cleveland	25.39	25.39	24.89	25.89
Baltimore from Birmingham	25.78	.....	24.66	.....
Boston from Birmingham	26.57	.....	26.07	.....
Boston from Everett, Mass.	26.30	26.80	25.80	27.30
Boston from Buffalo	26.45	26.95	25.95	27.45
Brooklyn, N. Y., from Bethlehem	27.47	27.97	.....	.....
Brooklyn, N. Y., from Bmghm.	27.25	.....	.....	.....
Canton, O., from Cleveland	25.39	25.39	24.89	25.89
Chicago from Birmingham	24.42	.....	24.30	.....
Cincinnati from Hamilton, O.	24.27	25.11	24.61	.....
Cincinnati from Birmingham	23.89	.....	22.89	.....
Cleveland from Birmingham	24.32	.....	23.82	.....
Mansfield, O., from Toledo, O.	25.94	25.94	25.44	25.44
Milwaukee from Chicago	25.10	25.10	24.60	25.10
Muskegon, Mich., from Chicago, Toledo or Detroit	27.10	27.10	26.60	27.60
Newark, N. J., from Birmingham	26.21	.....	.....	.....
Newark, N. J., from Bethlehem	26.53	27.03	.....	.....
Philadelphia from Birmingham	25.58	.....	25.46	.....
Philadelphia from Swedeland, Pa.	25.84	26.34	25.34	.....
Pittsburgh district from Neville Island	.....	.....	.....	.....
Saginaw, Mich., from Detroit	26.45	26.45	25.95	25.95
St. Louis, northern	24.55	24.55	24.05	.....

	No. 2 Fdry.	Malleable	Basic	Bessemer
St. Louis from Birmingham	24.12	.....	23.82	.....
St. Paul from Duluth	26.08	26.08	.....	26.58
†Over 0.70 phos.	.....	.....	.....	.....

Low Phos.

Basing Points: Blrdsboro and Steelton, Pa., and Standish, N. Y., \$28.50, Phila. base, standard and copper bearing, \$29.63.	.....	.....	.....	.....
Gray Forge	.....	.....	.....	.....
Valley furnace	\$23.50	Lake Superior fur.	.....	\$27.00
Pitts. dist. fur.	23.50	do., del. Chicago	.....	30.24
		Lyles, Tenn.	.....	26.50

Silvery†

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

Fire Clay Brick	.....	.....	.....	.....
Super Quality	.....	.....	.....	.....
Pa., Mo., Ky.	\$64.60	.....	.....	.....
First Quality	.....	.....	.....	.....
Pa., Ill., Md., Mo., Ky.	51.30	.....	.....	.....
Alabama, Georgia	51.30	.....	.....	.....
New Jersey	56.00	.....	.....	.....
Second Quality	.....	.....	.....	.....
Pa., Ill., Ky., Md., Mo.	46.55	.....	.....	.....
Georgia, Alabama	41.80	.....	.....	.....
New Jersey	51.00	.....	.....	.....
Ohio	.....	.....	.....	.....
First quality	43.70	.....	.....	.....
Intermediate	39.90	.....	.....	.....
Second quality	35.15	.....	.....	.....
Malleable Bung Brick	.....	.....	.....	.....
All bases	\$59.85	.....	.....	.....
Silica Brick	.....	.....	.....	.....
Pennsylvania	\$51.30	.....	.....	.....
Joliet, E. Chicago	59.85	.....	.....	.....
Birmingham, Ala.	51.30	.....	.....	.....
Ladle Brick	.....	.....	.....	.....
(Pa., O., W. Va., Mo.)	.....	.....	.....	.....
Dry press	\$30.00	.....	.....	.....
Wire cut	\$28.00	.....	.....	.....

Magnesite

Imported dead-burned grains, net ton f.o.b. Chester, Pa., and Baltimore bases (bags)	\$45.00
Domestic dead-burned grains, net ton f.o.b. Chester, Pa., and Baltimore bases (bags)	43.00
Base Brick	.....
Net ton, f.o.b. Baltimore, Plymouth Meeting, Chester, Pa.	.....
Chrome brick	\$49.00
Chem. bonded chrome	49.00
Magnesite brick	69.00
Chem. bonded magnesite	59.00

Fluorspar, 85-5

Washed gravel, duty paid, tide, net ton	\$23.50-24.00
Washed gravel, f.o.b. Ill., Ky., net ton, carloads, all rail	\$20.00
Do., for barge	\$22.00
No. 2 lump	22.00-23.00

Ferroalloys

Dollars, except Ferrochrome

Ferromanganese, 78-82%, tidewater, duty pd.	\$102.50
Do., Baltimore, base	102.50
Do., del. Pittsburgh	107.49
Spiegeleisen, 19-21% dom.	.....
Palmerston, Pa., spot	33.00
Do., New Orleans	33.00
Do., 26-28%, Palmerston	39.00
Ferrosilicon, 50% freight allowed, c.l.	69.50
Do., less carload	77.00
Do., 75 per cent	126-130.00
Spot, \$5 a ton higher.	.....
Silicomn., 2½ carbon	106.50
2% carbon 111.50; 1%, 121.50	.....
Ferrochrome, 66-70 chromium, 4-6 carbon, cts.	.....
lb. del.	10.50
Ferrotungsten, stand., lb. con. del. cars	2.00-2.25
Ferrovandium, 35 to 40% lb., cont.	2.70-2.90
Ferrotitanium, c. l., prod-plant, frt. all., net ton	142.50
Spot, carlots	145.00
Spot, ton lots	150.00
Ferrophosphorus, per ton, c. l., 17-19% Rockdale, Tenn., basis, 18%, \$3 unitage	63.50
Ferrophosphorus, electro-lytic, per ton c. l., 23-26% f.o.b. Monsanto, Tenn., 24% \$3 unitage	80.00
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				Straits Tin, New York		Lead	Lead East	Zinc	Alumi-num	Antimony	Nickel
Electro, del. Conn.	Lake, del. Midwest	Casting, refinery		Spot	Futures	N. Y.	St. L.	St. L.	99%	Spot, N. Y.	odes
Dec. 18	10.12½	11.12½	9.75	42.50	42.50	4.75	4.60	5.00	20.00	14.00	35.00
Dec. 20	10.12½	11.12½	9.75	42.25	42.25	4.75	4.60	5.00	20.00	14.00	35.00
Dec. 21	10.12½	11.12½	9.65	42.12½	42.12½	4.75	4.60	5.00	20.00	14.00	35.00
Dec. 22	10.12½	11.12½	9.65	42.75	42.75	4.75	4.60	5.00	20.00	13.75	35.00
Dec. 23	10.12½	11.12½	9.65	42.25	42.25	4.75	4.60	5.00	20.00	13.75	35.00

MILL PRODUCTS

F.o.b. mill base, cents per lb. except as specified. Copper brass products based on 11.00c Conn. copper

Sheets	
Yellow brass (high)	17.37½
Copper, hot rolled	19.12½
Lead, cut to jobbers	8.25
Zinc, 100-lb. base	10.50

Tubes	
High, yellow brass	20.12½
Seamless copper	19.87½

Rods	
High yellow brass	13.37½
Copper, hot rolled	15.62½

Anodes	
Copper, untrimmed	16.37½

Wire	
Yellow brass (high)	17.62½

OLD METALS

Nom. Del. buying prices	
No. 1 Composition Red Brass	
New York	5.37½-5.62½
Cleveland	6.25-6.50
Chicago	5.75-6.00
St. Louis	5.75-6.00

Heavy Copper and Wire

New York, No. 1	7.25-7.50
Cleveland, No. 1	7.25-7.50
Chicago, No. 1	7.37½-7.62½
St. Louis	7.25-7.50

Composition Brass Borings

*New York	4.87½-5.12½
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Light Copper

New York	5.25-5.50
Cleveland	5.25-5.50
Chicago	5.25-5.50
St. Louis	5.00-5.25

Light Brass	
Cleveland	3.25-3.50
Chicago	3.62½-3.87½
St. Louis	3.25-3.75

Lead	
New York	3.50-3.75
Cleveland	3.25-3.50
Chicago	3.50-3.75
St. Louis	3.25-3.50

Zinc	
*New York	2.12½-2.25
Cleveland	2.00-2.25
St. Louis	2.25-2.50

Aluminum	
Borings, Cleveland	6.75-7.00
Mixed cast, Cleve.	9.75-10.00
Clips, soft, Cleve.	11.75-12.00
Mixed cast, St. L.	9.25-9.75

SECONDARY METALS	
Brass, ingot, 85-5-5-5, lcl.	11.25
Stand. No. 12 alum.	17.00-17.50

WAREHOUSE IRON AND STEEL PRICES

Cents per pound for delivery within metropolitan districts of cities specified

<p>STEEL BARS</p> <p>Baltimore 4.00c Birmingham 3.85c Boston†† 4.05c Buffalo 3.90c Chattanooga 4.21c Chicago (j) 3.85c Cincinnati 4.05c Cleveland 3.75c Detroit 3.93½c Houston 3.10c Los Angeles 4.30c Milwaukee 3.96c-4.11c New Orleans 4.20c New York† (d) 4.12c Pitts. (h) 3.80c Philadelphia 4.00c Portland 4.50c San Francisco 4.20c Seattle 4.45c St. Louis 4.09c St. Paul 4.10c-4.25c Tulsa 3.35c</p> <p>IRON BARS</p> <p>Portland 3.50c Chattanooga 4.21c Baltimore* 3.25c Cincinnati 4.05c New York† (d) 3.65c Philadelphia 4.00c St. Louis 4.09c</p> <p>REINFORCING BARS</p> <p>Buffalo 3.10c Birmingham 3.85c Chattanooga 4.21c Cleveland (c) 2.55c Cincinnati 3.75c Houston 3.25c Los Angeles, c.l. 2.975c New Orleans* 3.24c Pitts., plain (h) 2.55c Pitts., twisted squares (h) 3.95c San Francisco 2.97½c Seattle 2.975c St. Louis 3.99c Tulsa 3.25c Young 2.30c-2.60c</p> <p>SHAPES</p> <p>Baltimore 3.90c Birmingham 3.75c Boston†† 3.92c Buffalo 3.80c Chattanooga 4.11c Chicago 3.75c Cincinnati 3.95c Cleveland 3.86c Detroit 3.95c Houston 3.10c Los Angeles 4.30c Milwaukee 3.86c New Orleans 4.10c New York† (d) 3.97c Philadelphia 3.90c Pittsburgh (h) 3.70c Portland (l) 4.25c San Francisco 4.05c Seattle (l) 4.25c St. Louis 3.99c St. Paul 4.00c Tulsa 3.60c</p> <p>PLATES</p> <p>Baltimore 3.90c Birmingham 3.75c Boston†† 3.93c Buffalo 3.80c Chattanooga 4.11c Chicago 3.75c Cincinnati 3.95c Cleve., ¼-in., o'r 3.86c Detroit 3.95c Detroit, ½-in. 4.15c Houston 3.10c Los Angeles 4.30c Milwaukee 3.86c New Orleans 4.10c New York† (d) 4.00c Philadelphia 3.90c Phila. floor 5.25c</p>	<p>Pittsburgh (h) 3.70c Portland 4.25c San Francisco 4.05c Seattle 4.25c St. Louis 3.99c St. Paul 4.00c Tulsa 3.60c</p> <p>NO. 10 BLUE</p> <p>Baltimore 3.95c Birmingham 3.80c Boston (g) 4.00c Buffalo, 8-10 ga. 3.97c Chattanooga 4.16c Chicago 3.85c Cincinnati 4.00c Cleveland 3.91c Det. 8-10 ga. 3.93½c Houston 3.45c Los Angeles 4.50c Milwaukee 3.96c New Orleans 4.35c New York† (d) 4.07c Portland 4.25c Philadelphia 4.00c Pittsburgh (h) 3.75c San Francisco 4.30c Seattle 4.50c St. Louis 4.39c St. Paul 4.10c Tulsa 3.80c</p> <p>NO. 24 BLACK</p> <p>Baltimore*† 4.50c Birmingham 4.55c Boston (g) 4.75c Buffalo 4.80c Chattanooga* 4.06c Chicago 4.45c-5.10c Cincinnati 4.75c Cleveland 4.66c Detroit 4.68½c Los Angeles 5.05c Milwaukee 4.56c-5.21c New York† (d) 4.82c Philadelphia 4.65c Pitts.** (h) 4.75c Portland 5.15c Seattle 5.35c San Francisco 5.15c St. Louis 4.84c St. Paul 4.75c Tulsa 4.85c</p> <p>NO. 24 GALV. SHEETS</p> <p>Baltimore*† 4.70c Birmingham 5.20c Buffalo 5.45c Boston (g) 4.85c Chattanooga* 4.66c Chicago (h) 5.10c-5.75c Cincinnati 5.40c Cleveland 5.31c Detroit 5.40c Houston 4.50c Los Angeles 5.75c Milwaukee 5.21c-5.86c New Orleans* 5.75c N. Y. ov. 10 bd. 5.00c Philadelphia 5.30c Pitts.** (h) 5.40c Portland 5.90c San Francisco 5.85c Seattle 5.90c St. Louis 5.49c St. Paul 5.40c Tulsa 5.20c</p>	<p>Philadelphia 4.10c Pittsburgh (h) 4.00c Portland 5.00c San Francisco 4.80c Seattle 4.95c St. Louis 4.34c St. Paul 4.35c</p> <p>HOOPS</p> <p>Baltimore 4.45c Boston†† 5.25c Buffalo 4.22c Chicago 4.10c Cincinnati 4.25c Detroit, 14 & Und. 4.185c Los Angeles 6.55c Milwaukee 4.21c New York† (d) 4.32c Philadelphia 4.35c Pittsburgh (h) 4.50c Portland 6.50c San Francisco 6.50c Seattle 6.30c St. Louis 4.34c St. Paul 4.35c</p> <p>COLD FIN. STEEL</p> <p>Baltimore (c) 4.50c Birmingham 4.91c Boston* 4.65c Buffalo (h) 4.35c Chattanooga* 4.86c Chicago (h) 4.30c Cincinnati 4.50c Cleveland (h) 4.30c Detroit 4.30c Los Ang. (f) (d) 6.85c Milwaukee 4.41c New Orleans 5.10c New York† (d) 4.57c</p> <p>Philadelphia 4.53c Pittsburgh 4.15c Portland (f) (d) 7.10c San Fran. (f) (d) 6.80c Seattle (f) (d) .. 7.10c St. Louis 4.54c St. Paul 4.77c Tulsa 4.80c</p> <p>COLD ROLLED STRIP</p> <p>Boston 3.845c Buffalo 3.79c Chicago 3.87c Cincinnati 3.82c Cleveland (b) .. 3.60c Detroit 3.43c New York† (d) .. 3.92c St. Louis 4.54c</p> <p>TOOL STEELS (Applying on or east of Mississippi river; west of Mississippi 1c up.)</p> <p align="center">Base</p> <p>High speed 80c High carbon, Cr. 45c Oil hardening 26c Special tool 24c Extra tool 20c Regular tool 16c Water hardening 12½c Uniform extras apply.</p> <p>BOLTS AND NUTS (100 pounds or over)</p> <p align="center">Discount</p> <p>Birmingham 50-10 Chicago (a) 55 to 60 Cleveland 60-5-5 Detroit 70-10 Milwaukee 60 to 65</p>	<p>New Orleans .. 60 Pittsburgh 65-5</p> <p>(a) Under 100 lbs., 50 off. (b) Plus straightening, cutting and quantity differentials; (c) Plus mill, size and quantity extras; (d) Quantity base; (e) New mill classif. (f) Rounds only; (g) 50 bundles or over; (h) Outside delivery, 10c less; (i) Under 3 in.; (j) Shapes other than rounds, flats, fllet angles, 0.15c higher.</p> <p>On plates, shapes, bars, hot strip and blue annealed quantity extras and discounts as follows: Under 100 lbs., add \$1.50; 100 to 399 lbs., add 50c; 400 to 3999 lbs., base; 4000 to 9999 lbs., deduct 10c; over 10,000 lbs., deduct 15c. At Cleveland, under 400 lbs., add 50c, with \$1 minimum invoice.</p> <p align="center">†Domestic steel; *Plus quantity extras; **One to 9 bundles; †† 50 or more bundles; †††New extras apply; ††††Base 10,000 lbs., extras on less.</p>
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Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, Dec. 22

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

	British gross tons		Continental Channel or North Sea ports, metric tons	
	U. K. ports	£ s d	Quoted in dollars at current value	**Quoted in gold pounds sterling
PIG IRON				
Foundry, 2.50-3.00 Silicon	\$30.00	6 0 0	\$20.51	£ 11 0
Basic bessemer			20.80	2 12 0
Hematite, Pho. .03-.05.	36.25	7 5 0	.....	.....
SEMIFINISHED STEEL				
Billets,	\$39.38	7 17 6	\$43.01	£ 7 6
Wire rods, No. 5 gage	56.38	11 5 6	48.00	6 0 0
FINISHED STEEL				
Standard rails	\$50.63	10 2 6	\$46.00	5 15 0
Merchant bars	2.73c	12 5 0	2.17c to 2.27c	6 0 0 to 6 5 0
Structural shapes	2.37c	10 12 6	1.94c	5 7 6
Plates, ¼ in. or 5 mm.	2.58c	11 11 3	2.59c	7 2 6
Sheets, black, 24 gage or 0.5 mm.	3.34c	15 0 0	3.18c	8 15 0††
Sheets, gal., 24 gage, corr.	3.96c	17 15 0	3.99c	11 0 0
Bands and strips	3.07c	13 15 0	2.17c	6 0 0
Plain wire, base	4.35c	19 10 0	2.42c	6 17 6
Galvanized wire, base	5.18c	23 5 0	3.18c	8 15 0
Wire nails, base	4.13c	18 10 0	2.90c	8 0 0
Tin plate, box 108 lbs.	\$ 5.63	1 2 6	.....	.....

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

Domestic Prices at Works or Furnace—Last Reported

	£ s d		French Francs	Belgian France	Reich Marks
	5 6 0(a)	\$18.8†			
Fdy, pig iron, Si. 2.5	\$26.50	5 6 0(a)	\$54	\$25.50	750
Basic bessemer pig iron	25.00	5 0 0(a)	.....	.....	28.03 (b) 69.50
Furnace coke	9.38	1 17 6	6.43	189	7.31
Billets	39.38	7 17 6	28.36	840	32.64
Standard rails	2.26c	10 2 6	1.730c	1,150	2.06c
Merchant bars	2.35c	11 9 0	1.62c	1,080	1.65c
Structural shapes	2.46c	11 0 6	1.58c	1,055	1.65c
Plates, ¼ in. or 5 mm.	2.61c	11 14 3	2.03c	1,350	2.06c
Sheets, black	3.51c	15 15 0‡	2.35c	1,565‡	2.36c
Sheets, galv., corr., 24 ga. or 0.5 mm.	4.35c	19 10 0	3.30c	2,200	4.50c
Plain wire	4.35c	19 10 0	2.49c	1,660	2.48c
Bands and strips	2.72c	12 4 0	1.82c	1,210	2.33c

*Basic. †British ship-plates. Continental bridge plates, ¼ ga. † to 3 mm. basic price British quotations are for basic open-hearth steel. Continent usually for basic-bessemer steel a del. Middlesbrough. b hematite. ††Close annealed.
 **Gold pound sterling carries a premium of 64.3 per cent over paper sterling.

IRON AND STEEL SCRAP PRICES

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

HEAVY MELTING STEEL	
Birmingham, No. 1.	10.00
Birmingham, No. 2.	9.00
Bos. dock No. 1 exp.	14.00-14.25
N. Eng. del. No. 1.	13.50
Buffalo, No. 1.	13.00-13.50
Buffalo, No. 2.	12.00-12.50
Chicago, No. 1.	13.00-13.50
Cleveland, No. 1.	12.50-13.00
Cleveland, No. 2.	11.50-12.00
Detroit, No. 1.	9.50-10.00
Eastern Pa., No. 1.	14.50-15.00
Eastern Pa., No. 2.	13.00-13.50
Federal, Ill.	11.00-11.50
Granite City, R. R.	13.00-13.50
Granite City, No. 2.	11.00-11.50
New York, No. 1.	†11.00
N. Y. dock No. 1 exp.	13.50
Pitts., No. 1 (R. R.)	14.50-15.00
Pitts., No. 1 (dir.)	13.50-14.00
Pittsburgh, No. 2.	12.00-12.50
St. Louis, R. R.	13.00-13.50
St. Louis, No. 2.	11.00-11.50
San Francisco, No. 1	14.00-15.00
Seattle, No. 1.	8.00
Seattle, No. 2.	7.00
Toronto, dlrs. No. 1.	10.00
Toronto, No. 2.	9.00
Valleys, No. 1.	13.50-14.00
COMPRESSED SHEETS	
Buffalo, dealers.	12.00-12.50
Chicago, factory.	12.00-12.50
Chicago, dealer.	11.50-12.00
Cleveland.	12.00-12.50
Detroit.	10.25-10.75
E. Pa., new mat.	14.50-15.00
E. Pa., old mat.	10.50-11.00
Pittsburgh.	13.00-13.50
St. Louis.	7.25-7.75
Valleys.	12.50-13.00
BUNDLED SHEETS	
Buffalo.	9.50-10.00
Cincinnati, del.	9.50-10.00
Cleveland.	9.00-9.50
Pittsburgh.	12.00-12.50
St. Louis.	6.75-7.00
Toronto, dealers.	7.00
SHEET CLIPPINGS, LOOSE	
Chicago.	7.00-7.50
Cincinnati.	6.00-6.50
Detroit.	7.00-7.50
St. Louis.	5.50-6.00
STEEL RAILS, SHORT	
Birmingham.	15.00
Buffalo.	18.00-18.50
Chicago (3 ft.).	15.50-16.00
Chicago (2 ft.).	16.00-16.50
Cincinnati, del.	17.00-17.50
Detroit.	14.50-15.00
Pitts., 3 ft. and less	17.50-18.00
St. Louis, 2 ft. & less	15.00-15.50
STEEL RAILS, SCRAP	
Boston district.	†11.00
Buffalo.	15.50-16.00
Chicago.	13.00-13.50
Cleveland.	16.50-17.00
Pittsburgh.	14.50-15.00
St. Louis.	13.00-13.50
Seattle.	10.00
STOVE PLATE	
Birmingham.	8.00-8.50
Boston, district.	†8.00
Buffalo.	11.50-12.00
Chicago, net.	8.50-9.00
Cincinnati, dealers.	5.50-6.00
Detroit, net.	8.50-9.00
Eastern Pa.	13.00-13.50

New York, fdry.	†8.50-9.00
St. Louis.	9.00-9.50
Toronto, deal'rs, net	9.00
SPRINGS	
Buffalo.	18.00-18.50
Chicago, coil.	17.00-17.50
Chicago, leaf.	15.50-16.00
Eastern Pa.	18.00-18.50
Pittsburgh.	17.50-18.00
St. Louis.	15.00-15.50
ANGLE BARS—STEEL	
Chicago.	15.00-15.50
St. Louis.	12.50-13.00
RAILROAD SPECIALTIES	
Chicago.	15.50-16.00
LOW PHOSPHORUS	
Buffalo, crops.	18.50-19.00
Cleveland, crops.	19.50-20.50
Eastern Pa., crops.	19.00-19.50
Pittsburgh, crops.	18.00-18.50
FROGS, SWITCHES	
Chicago.	13.00-13.50
St. Louis, cut.	13.50-14.00
SHOVELING STEEL	
Federal, Ill.	11.00-11.50
Granite City, Ill.	11.00-11.50
Toronto, dealers.	8.00
RAILROAD WROUGHT	
Birmingham.	11.00-11.50
Boston district.	†9.00-9.50
Buffalo, No. 1.	11.00-11.50
Buffalo, No. 2.	13.00-13.50
Chicago, No. 1 net.	10.00-10.50
Cincinnati, No. 2.	9.50-10.00
Eastern Pa., No. 1.	15.50-16.00
St. Louis, No. 1.	9.00-9.50
St. Louis, No. 2.	13.00-13.50
Toronto, No. 1 dir.	16.00
SPECIFICATION PIPE	
Eastern Pa.	13.50-14.00
New York.	†9.00-9.50
BUSHELING	
Buffalo, No. 1.	12.00-12.50
Chicago, No. 1.	10.00-10.50
Cinclin., No. 1, deal.	8.50-9.00
Cincinnati, No. 2.	3.00-3.50
Cleveland, No. 2.	8.50-9.00
Detroit, No. 1, new.	9.50-10.00
Valleys, new, No. 1	12.50-13.00
Toronto, dealers.	7.00
MACHINE TURNINGS	
Birmingham.	6.00-7.00
Buffalo.	9.00-9.50
Chicago.	6.50-7.00
Cincinnati, dealers.	4.00-4.50
Cleveland.	7.50-8.00
Detroit.	5.25-5.75
Eastern Pa.	8.50-9.00
New York.	†5.00-5.50
Pittsburgh.	7.00-7.50
St. Louis.	5.00-5.50
Toronto, dealers.	7.00
Valleys.	9.50-10.00
BORINGS AND TURNINGS	
For Blast Furnace Use	
Boston district.	†2.50

Buffalo.	9.00-9.50
Cincinnati, dealers.	3.50-4.00
Cleveland.	9.00-9.50
Detroit.	6.25-6.75
Eastern Pa.	8.00-8.50
New York.	†4.50-5.00
Pittsburgh.	7.00-7.50
Toronto, dealers.	7.50
CAST IRON BORINGS	
Birmingham.	6.00-7.00
Boston dist. chem.	†7.50-8.00
Bos. dist. for mills.	†7.00-7.50
Buffalo.	9.00-9.50
Chicago.	6.00-6.50
Cincinnati, dealers.	3.50-4.00
Cleveland.	9.00-9.50
Detroit.	6.25-6.75
E. Pa., chemical.	13.50-14.00
New York.	†4.50-5.00
St. Louis.	5.00-5.50
Toronto, dealers.	7.50
PIPE AND FLUES	
Cincinnati, dealers.	7.00-7.50
Chicago, net.	7.50-8.00
RAILROAD GRATE BARS	
Buffalo.	9.50-10.00
Chicago, net.	8.50-9.00
Cincinnati.	5.50-6.00
Eastern Pa.	13.00-13.50
New York.	†8.50-9.00
St. Louis.	9.00-9.50
FORGE FLASHINGS	
Boston district.	†6.50
Buffalo.	12.00-12.50
Cleveland.	11.00-11.50
Detroit.	9.00-9.50
Pittsburgh.	12.25-12.75
FORGE SCRAP	
Boston district.	†6.50
Chicago, heavy.	15.50-16.00
ARCH BARS, TRANSOMS	
St. Louis.	15.50-16.00
AXLE TURNINGS	
Boston district.	†7.50
Buffalo.	13.00-13.50
Chicago, elec. fur.	11.50-12.00
Eastern Pa.	13.00-13.50
St. Louis.	9.50-10.00
Toronto.	8.00
STEEL CAR AXLES	
Birmingham.	16.00-17.00
Buffalo.	18.00-18.50
Boston district.	†14.00
Chicago, net.	17.00-17.50
Eastern Pa.	20.50-21.50
St. Louis.	18.50-19.00
SHAFTING	
Boston district.	†15.00
New York.	†15.50-16.00
Eastern Pa.	19.00-19.50
St. Louis.	13.00-13.50
CAR WHEELS	
Birmingham.	14.00-15.00
Boston dist., iron.	†10.00
Buffalo, steel.	18.50-19.00
Chicago, iron.	14.50-15.00
Chicago, rolled steel.	15.50-16.00

Cincinnati, iron.	15.00-15.50
Eastern Pa., iron.	16.50-17.00
Eastern Pa., steel.	18.00-18.50
Pittsburgh, iron.	15.00-15.50
Pittsburgh, steel.	17.50-18.00
St. Louis, iron.	14.00-14.50
St. Louis, steel.	15.50-16.00
NO. 1 CAST SCRAP	
Birmingham.	14.00-14.50
Boston, No. 1 mach.	†11.00
N. Eng. del. No. 2.	12.00
N. Eng. del. textile.	15.50-16.00
Buffalo, cupola.	14.00-14.50
Buffalo, mach.	14.50-15.00
Chicago, agri. net.	10.50-11.00
Chicago, auto.	11.50-12.00
Chicago, rall'd net.	10.50-11.00
Chicago, mach. net.	12.50-13.00
Cinclin., mach. cup.	10.50-11.00
Cleveland, mach.	17.00-17.50
Eastern Pa., cupola.	16.00-16.50
E. Pa., mixed yard.	13.50-14.00
Pittsburgh, cupola.	16.00-16.50
San Francisco, del.	13.50-14.00
Seattle.	8.00
St. Louis, No. 1.	12.00-12.50
St. L., No. 1, mach.	12.50-13.00
Toronto, No. 1, mach., net.	12.50
HEAVY CAST	
Boston dist. break.	†8.50
N. Eng. del.	12.50-13.00
Buffalo, break.	11.50-12.00
Cleveland, break.	14.50-15.50
Detroit, break.	10.00-10.50
Detroit, auto net.	12.50-13.00
Eastern Pa.	14.00-14.50
New York, break.	†10.50-11.00
Pittsburgh.	13.00-13.50
MALLEABLE	
Birmingham, R. R.	12.50-13.50
New England, del.	16.00
Buffalo.	14.00-14.50
Chicago, R. R.	14.50-15.00
Cinclin., agri. del.	10.50-11.00
Cleveland, rail.	15.50-16.00
Detroit, auto.	11.50-12.00
Eastern Pa., R. R.	16.50-17.50
Pittsburgh, rail.	13.75-14.25
St. Louis, R. R.	14.00-14.50
RAILS FOR ROLLING	
5 feet and over	
Birmingham.	16.00-17.00
Boston.	†12.00
Chicago.	14.00-14.50
Eastern Pa.	18.00-18.50
New York.	†15.00-15.50
St. Louis.	14.00-14.50
LOCOMOTIVE TIRES	
Chicago (cut).	16.00-16.50
St. Louis, No. 1.	14.75-15.25
LOW PHOS. PUNCHINGS	
Buffalo.	17.50-18.00
Chicago.	14.50-15.00
Eastern Pa.	18.00-18.50
Pittsburgh (heavy).	16.00-16.50
Pittsburgh (light).	14.00-14.50
Seattle.	15.00

Iron Ore	
Eastern Local Ore	
Cents, unit, del. E. Pa.	
Foundry and basic	
56.63% con.	9.00-10.00
Cop-free low phos.	
58-60%	nominal
Foreign Ore	
Cents per unit, f.a.s. Atlantic	
Foreign manganiferous ore, 45.55%	
Iron, 6-10% man.	nom. 12.00

Lake Superior Ore	
Gross ton, 51 1/4%	
Lower Lake Ports	
Old range bessemer.	\$5.25
Mesabi nonbess.	4.95
High phosphorus.	4.85
Mesabi bessemer.	5.10
Old range nonbess.	5.10

nom.	12.00
No. Afr. low phos.	nominal
Swedish low phos.	17.00-18.00
Spanish No. Africa	nom. 12.00
basic, 50 to 60%	nom. 12.00
Tungsten, sh. ton, unit, duty paid nom.	24.50-25.50
N. F., fdy., 55%.	7.00

Chrome ore, 48% gross ton, c.i.f. \$25.50-26.50	
Manganese Ore	
Prices not including duty, cents per unit cargo lots.	
Caucasian, 50-52%.	non. 45.00
So. African, 50-52%	non. 45.00
Indian, 50-52%	Nominal

Sheets

Sheet Prices, Page 62

Pittsburgh—New sheet business is not coming out in the desired volume and operations continue to sag slowly. Most business now being placed is from miscellaneous sources and auto partsmakers are numbered among them less frequently. Mills rolling common black sheets now are operating around 28 per cent of capacity against 32 per cent last week, jobbing mills are down to 27 per cent against 30 per cent previously, while galvanized operations are at 33 per cent against 35 per cent previously. Both the holiday and the inventory seasons are believed to be playing their parts in the current market dullness.

Cleveland—Some new business continues to appear for delivery after the first of the year but to-date this has proved disappointing. Some finishing mills are expected to close down over the holidays. However, at the opening of the new year the more optimistic expect operations to resume at a substantially higher level than a week ago. Specifications from partsmakers and auto builders remain practically unchanged.

Chicago—While sheet consumers refrain from ordering for January shipment, the reduced status of inventories is expected to be followed by a small increase in buying next month. Sheet consumption is fairly steady but orders are insufficient to result in any definite gains in production. Automotive purchases are limited to only a short distance ahead. Early delivery is available on new business.

Boston—Mild improvement in sheet buying next quarter is expected to include needs of fabricators for seasonal consumer goods, refrigerators and other household units; also better jobber specifications to fill gaps appearing in warehouse stocks. Current demand is light, scattered less-than-car lots being lumped with other items. Small tank builders are not buying and stamping shops as a rule are consuming little steel. If pressure develops against steel prices, many believe sheets will bear the brunt of the drive, probably from automotive fabricators.

New York—While expecting a dull period between now and the end of the year, sheet sellers anticipate a slight gain in December bookings, compared with November. Consumers' stocks of plain material have been considerably reduced, although in a number of cases consumers have large stocks of finished products to work off before they will become active buyers of sheets; nevertheless, most sellers believe

that the low point has been passed. Sharply reduced rolling schedules have complicated the delivery situation somewhat. Generally speaking, though, mill shipments can still be had promptly.

Philadelphia—Some shrinkage is evident in inventories of sheet consumers in this district but little replacement buying is being done so far. One automotive interest is fairly busy on work for Ford Motor Co. but releases for other builders are said to be only sufficient for two to three days per week. The radio trade is slow currently, with operations estimated at less than 25 per cent. The stove trade is in its slack season and is reported to have substantial stocks of finished products. Miscellaneous demand is irregular. Prices are steady.

Cincinnati—Demand for sheets has sagged to about 20 per cent of capacity after a brief bulge, including some export business, which nearly doubled this rate. Consumers consistently shy from forward buying, all new business being on a rush basis. Interest in first quarter needs is insignificant. Pre-holiday ordering, light but imperative, requires mill operations this week at the restricted rate.

St. Louis—After a moderate spurt in sheet buying earlier in the month, the market has turned slow, with incoming orders confined to small lots from miscellaneous users. No betterment in the situation is anticipated before spring. Manufacturers of stoves are out of production, and that outlet will remain closed until mid-January at earliest. Consumer inventories, however, are being used up, and any turn for the better in business would be reflected quickly in expanded commitments. At the moment galvanized is the most active item, with purchasing in the south making relatively the best showing.

Birmingham, Ala.—Production of sheets continues at a comparatively satisfactory rate, although somewhat below the usual pace for the past three years. Roofing is somewhat off in demand as is demand for drum stock sheets.

Tin Plate

Tin Plate Prices, Page 62

New York—While there is some routine contracting, actual specifications for tin plate are at a low ebb. However, this is largely a seasonal situation and consequently is causing little concern. Consumers will carry some stocks over into the new year, but it is believed that by early February there will be a pronounced swing upward, which will be augmented by improved ex-

port demand. At the moment some fair export inquiry is current but little buying has developed.

Strip

Strip Prices, Page 63

Pittsburgh—Both hot and cold-rolled strip specifications have declined and such as now are being received are coming from miscellaneous purchasers. The automotive industry is taking only what it seems to require at the moment. Cold strip mills are operating around 23 per cent of capacity against 28 per cent last week, and hot-rolled mills around 33 per cent against 35 per cent formerly.

Cleveland—Producers expect little new business over the holidays as consumers have more than ample stocks to supply probable demand during this period. Some have specified for delivery after the first of the year, but this tonnage is small. Most consumers report stocks are moving at a fairly satisfactory rate and expect a gradual improvement through January. Mill prices are firm and unchanged.

Chicago—Expectations of better demand for strip next month are based on the low state of inventories of many consumers and on prospects for a moderate upturn in consumption. Buying lately has been largely for prompt delivery.

Boston—Narrow cold strip shipments in some instances are higher than finishing operations, which have slipped several points, few operating up to 30 per cent during the last month of the year. The excess of shipments over output has resulted from the release of some tonnage booked for shipment after Jan. 1, such specifications having been made up and held for shipping releases which came sooner than expected. While new incoming volume is slow, a few bright spots are appearing. Consumers in numerous instances appear to have gone to extremes in reducing inventories and even a small gain in fabricators goods will be reflected in strip requirements early next quarter. Hot strip buying is dull and usual seasonal volume inquiries covering quarterly needs have been few and curtailed.

New York—Consumers are working off narrow cold strip at a slower rate, but curtailed buying through most of the closing quarter has brought inventories on many specifications to a low point. Slightly improved orders for shipment next month with release of some tonnage already booked earlier than expected, indicates the need of strip

by some fabricators. Shipments have been slightly heavier than operations with several producers who stocked some specifications for later shipment. Most finishing mills are now operating under 30 per cent. Prices are firm.

Philadelphia—No change has developed in the market for narrow hot and cold strip. Most consumers are well supplied for present requirements, although some replacement buying has appeared.

Plates

Plate Prices, Page 62

New York—The current week is expected to witness the closing of a number of tankers for the Standard Oil Co. of New Jersey, with possibly as many as 9 or 12 being awarded, and even 20, according to Washington dispatches, which assert that the company would put up \$44,000,000, if the government would advance a subsidy of \$16,000,000 to round out the full amount required for such a program. Conversations between the oil company officials and the maritime commission have been going on, with another conference scheduled for Dec. 29.

This program is the center of attention among platemakers here. It is estimated that should 12 vessels be awarded more than 40,000 tons of plates will be required, with 20,000 tons of shapes and bars. Railroad activity here is composed largely of inquiries for routine first quarter requirements. Consumers' stocks generally are low and any material gain in the business of these consumers should be reflected almost immediately in orders for plain material.

Japan is said to be in the market for a substantial tonnage of steel plates for delivery early in 1938.

Cleveland—Plate sellers see little change in current requirements through the remainder of the month. Due to lack of demand from railroads and large expansion programs, present activity has centered around small miscellaneous requirements. Some inquiries are appearing for shipment during January, but this has not reached any appreciable tonnage.

Chicago—Largest of recent plate inquiries is 6500 tons for a penstock for the Grand Coulee dam. Railroad purchases are limited to small lots for miscellaneous repair work, with only small tonnages pending for new freight car building. Oil companies are planning to spend more money in 1938 than this year on equipment, and prospects for tank

business next year are moderately favorable.

Boston—Plate demand is slow and irregular, but in a few instances car lot orders for stock have been placed. Such buying is in isolated cases only. Most fabricators have slowed down operations, including boiler shops. Except 200 tons for a standpipe, Scituate, Mass., to be placed next month and the award of 100 tons at Hampden, Me., large tank projects are missing. Several district structural fabricating shops have released slightly heavier plate orders. Floor plate volume has dropped to scattered small-lot shipments which mills make from stock in most instances.

Philadelphia—An inquiry by the Western Maryland for 1100 freight cars has added a new note of interest to the plate market. A shipbuilding yard in this district is also reported low on four tankers for the Standard Oil Co. of New Jersey, which are expected to be placed as soon as negotiations on cost with the maritime commission have been concluded. Several others of the 12 tankers which may be placed also may go to yards in this district. Miscellaneous demand for plates is slow, with most of the business in carlots or less.

Birmingham, Ala.—Plates are not holding to the anticipated rate of production, but are on a fairly satisfactory basis. Some new business is believed in sight after the first of the year.

San Francisco—The only plate award of importance involved 275 tons for three 400-horsepower and one 250-horsepower boilers for state institutions in California, booked by unnamed interests. Interest centers around the opening of bids Dec. 27 for 42,808 feet of 20 to 36-inch welded steel or cast iron pipe for Seattle, Wash. So far this year 60,997 tons have been placed as compared with 61,292 tons for the corresponding period in 1936.

Seattle—Seattle has called bids for 42,808 feet of 12 to 36-inch water pipe line, Volunteer-Magnolia improvement, Dec. 27, but they will not be opened until next month after the city sells a proposed bond issue. Alternates are asked for cast iron pipe and tonnages involved are not stated. The project is estimated at \$200,000.

Plate Contracts Placed

1049 tons, 8000 feet, 28-inch steel pipe, U. S. engineer, Fort Peck, Mont., to Treadwell Construction Co., Midland, Pa.

880 tons, four river barges, Socony Vacuum Oil Co., Kansas City, Mo., to St. Louis Shipbuilding Co., St. Louis.
185 tons, caissons, Lincoln tunnel, north tube, New York, contract MHT-24 to Petroleum Iron Works Co., Sharon, Pa.

100 tons, water tank, Hampden, Me., to Chicago Bridge & Iron Co., Chicago.

Plate Contracts Pending

42,808 feet, 12 to 36-inch electric welded pipe (alternates for cast iron), Volunteer-Magnolia improvement, Seattle; bids Dec. 27 not to be opened until later.

Bars

Bar Prices, Page 62

Cleveland—Sellers of alloy and commercial carbon steel bars report specifications from local forging concerns serving the auto industry unchanged at the low level of the past few weeks. Some consumers have entered the market for delivery after the first of the year, but volume of this business has recently declined due primarily to the holiday season. A sharp increase in consumption soon after the first of the year is not thought likely, but many expect a pronounced but gradual upward trend through January.

Chicago—While steel bar sales show little change, consumers have indicated that heavier buying will be done in January. The tendency to hold down inventories over the year-end is causing purchases to be regulated entirely by current needs but there are promises of heavier orders next quarter. Inquiries from miscellaneous consumers have been more numerous the past ten days and while individual tonnages are light, there also has been a slight increase in size of commitments.

Boston—Commercial steel bar specifications are few and in small lots. As consumers continue to work off inventories at a reduced rate, some users of alloy and special bar stock are buying from nearby secondary distributors, but only stock absolutely needed. Mill deliveries on special finished stock are uncertain, due to irregular rolling schedules. Some pickup in forging bars is confidently expected next month. Prices are firm.

Philadelphia—Other than light buying to fill in depleted stocks interest in the steel bar market is negligible. Such buying as appears, however, is well diversified and is taken to indicate favorable prospects for heavier commitments after inventory has been completed. Warehouses are well stocked. Prices are firm.

New York—A slight increase in bar specifications has developed over the past two weeks, a turn that is expected to be further emphasized when the holiday and inventory periods are over. The trade, however, continues conservative in es-

timates of first quarter business, with railroad buying likely to continue dull for several weeks and with machinery specifications continuing their somewhat belated decline. Although reduced mill schedules have resulted in delays in some cases, shipments of a general run of specifications are still available within a week.

Birmingham, Ala.—Sales of steel bars are comparatively few. Considerable buying, however, is believed imminent after inventories and particularly from business known to have been held in abeyance over the past few weeks.

Pipe

Pipe Prices, Page 63

Cleveland—City of Cleveland will ask for bids on 3000 feet of 30-inch steel pipe this week, for a water main from Parma reservoir to Rocky river. This is the outstanding pending project as domestic and industrial requirements continue to lag. The largest recent award went to U. S. Pipe & Foundry Co., East Burlington, N. J., involving approximately 275 tons of cast pipe for the city of Cleveland.

Boston—Cast pipe needs are generally supplied from foundry stocks, there being few tonnage inquiries, 150 tons for Lawrence, Mass., to be purchased by a contractor. The district foundry has been operating five days a week, well above industrial activity in the district as a whole. Part of the current output is being stocked. Consignment stocks of merchant steel pipe are better balanced with buying slow, but steady. Wrought pipe moves in small lots.

New York—Sellers of merchant pipe are entering new contracts at unchanged prices. Little tonnage, however, is actually being specified. The resale market here is showing stronger tone, with consignment stocks owned by the mills being more firmly held.

Birmingham, Ala.—Cast iron pipe outlook is brighter. American Cast Iron Pipe Co. will have a satisfactory schedule on business just booked, and inquiries indicate the industry as a whole may be stepped up soon.

San Francisco—Awards of cast iron pipe totaled 914 tons, bringing the year's aggregate to 29,527 tons, compared with 46,428 tons for the same period last year. No action has yet been taken on a maximum of 800 tons of 6 to 16-inch cast iron, transite of welded steel pipe for Vancouver, Wash.

Seattle—Demand for cast iron and

steel pipe is slightly more active. Seattle major pipe line extension, bids Dec. 27, calls for alternates for cast iron, tonnage in excess of 1000 tons. Seattle opened bids Dec. 21 for 62,000 feet of ½ to 3-inch wrought iron and galvanized steel pipe.

Cast Pipe Placed

400 tons, various sizes, Vancouver, Wash., to H. G. Purcell for United States Pipe & Foundry Co., Burlington, N. J.
294 tons, disposal plant, Colo., to unnamed interest.

Cast Pipe Pending

3500 tons, 20 to 36-inch cast iron or welded steel pipe, Seattle, Wash.; bids Dec. 27.
913 tons, 4 to 12-inches, La Mesa, Lemon Grove and Spring Valley irrigation district, La Mesa, Calif.; Macco Construction Co. low on general contract.
220 tons, 6 to 12-inch, Bremerton, Wash.; bids opened.
200 tons, 8 and 12-inch, Spokane; bids in.
150 tons, various sizes, pumping station alterations, Lawrence, Mass., bids

Wire

Wire Prices, Page 63

New York—At the end of the year fill-in buying for prompt shipment has declined slightly, but volume for shipment next month has mildly improved. Most industries using wire products are buying little, notably textile mill equipment builders and the decline appears more pronounced in manufacturers' wire. Wire rope demand, while low, holds better than that average, notably in hard coal mining districts. Finishing operations have slipped several points, few departments going better than 30 per cent. Wire rod buying is slack. While domestic prices are steady, export business on rods and finished wire goods is being done at quotations under the domestic market.

Cleveland—Sellers expect a temporary delay over the holidays in the recent moderate upward trend in new business. Most consumers have ample stocks for the next few weeks and this is further reflected in recent specifications. However, considerable optimism is expressed by some who claim miscellaneous consumption will continue to expand after the first of the year.

Chicago—Steel wire demand is fairly steady and there are expectations of a small gain next month. So far little tonnage has been booked for January shipment but small buying is expected to develop to compensate for the restricted demand during the inventory-taking

period. Distributors of merchant wire products are ordering only small lots, stocks generally being sufficient to accommodate their present business.

Boston—While a few sizable wire orders are being booked for shipment early next quarter, such inquiries usually appearing for quarterly needs about this time are less numerous. Such estimates of needs as have appeared are about normal in tonnage. Consumer stocks are out of balance in numerous instances, some still having large supplies of certain specifications and being bare of others. Fill-in buying is expected to expand shortly. Current demand is well diversified. Considerable volume of electrical wire needs has backed up, notably in the construction field, contractors having held up orders, result of uncertainty as to copper prices. Sellers feel that a stabilized copper price at 10 cents would release most of this business.

Birmingham, Ala.—Production of wire remains on a limited basis, but presents one of the most hopeful viewpoints of any specification because of the necessity of early buying. Dealer stocks in wire products are particularly low.

Rails, Cars

Track Material Prices, Page 63

Carbuilders look for this year's total of orders placed by domestic lines to approximate 52,000 cars. The total for the first 11 months was 51,336 and since then 275 cars have been placed by the Louisiana & Arkansas, leaving, according to trade leaders, only 400 cars for the Western Pacific among such inquiry as is likely to be closed before the end of this year.

Meanwhile railroads are entering the market for routine first quarter requirements of miscellaneous steel. Rail tonnage continues light in the East, although this inactivity may result in a larger volume than otherwise in the first quarter. It is known that several eastern railroads will need tonnage for laying when the weather moderates. Practically all New England railroads, it is said, will require more rails next year than they bought during the period now closing.

Budgets for five western roads indicate 150,000 to 200,000 tons of rails may be bought. Track accessory orders have been heavier lately, about 15,000 tons being involved in such purchases. A small portion of the Canadian National's inquiry for 2000 box cars, 24 snow plows, 6 locomotives and 5 mail and express

cars will be placed among builders in this country.

Placing of 13,200 tons of rails and 4800 tons of fastenings by the St. Louis & San Francisco with Tennessee Coal, Iron & Railroad Co. brings the rail backlog of its Ensley mill to 114,330 tons.

Chesapeake & Ohio is inquiring for 27,500 tons and Pere Marquette for 6900 tons of rails.

Car Orders Placed

Louisiana & Arkansas, 275 seventy-ton flat cars, to American Car & Foundry Co., New York.

Locomotives Placed

Mexican Railway Co., three locomotives to the Montreal Locomotive Works Ltd., Montreal.

White Pass & Yukon, one locomotive, to Baldwin Locomotive Works, Eddystone, Pa.

Rail Orders Placed

Missouri Pacific, 900 tons 131-pound rails, to Carnegie-Illinois Steel Corp., Chicago.

St. Louis-San Francisco, 13,200 tons 112-pound rail and 4800 tons fastenings, to Tennessee Coal, Iron & Railroad Co., Birmingham, Ala.

Car Orders Pending

Canadian National, 4000 steel box cars, 24 snow plows, 5 mail and express cars.

Delaware & Hudson, 10 all-steel passenger coaches; bids asked.

Paulista Railway of Brazil, 125 gondola cars and 125 flat cars of 30 metric tons and 95 car sets of underframes and spare parts for 130 fruit cars; bids asked through Rua Libero Badaro, Sao Paula, Brazil.

Western Maryland, 1100 cars, including 500 hoppers, 500 box and 100 gondolas; bids Jan. 10.

Locomotives Pending

Canadian National, six type 6400 locomotives.

Rail Orders Pending

Chesapeake & Ohio, 27,500 tons 131-pound rails; bids soon.

Pere Marquette, 3550 tons 112-pound rails for lines in the United States and 3350 tons of 105-pound rails for Canadian lines; bids soon.

Buses Booked

Twin Coach Co., Kent, O.: Eighteen 40-passenger and four 31-passenger for Los Angeles Motor Coach Co., Los Angeles; twelve 41-passenger for Capital Transit Co., Washington; eight 40-passenger for Seattle Municipal Street Railway, Seattle; five 31-passenger for Spokane United Railways, Spokane; five 38-passenger for Boston Elevated Railway, Boston; five 41-passenger for Baltimore; four 2-passenger for Erie Coach Co., Erie, Pa.; four 44-passenger for Youngstown Municipal Railway, Youngstown, O.

Shapes

Structural Shape Prices, Page 62

New York—With unplaced active structural tonnage approximating 25,000 tons, heavier requirements are expected out for estimates early next month, mostly New York city work. Figures are being taken on a 1000-ton school and early bids are expected on 11 additional schools approved by the board of estimate. A 6000-ton bridge closed Dec. 29 for the Long Island railroad. Tonnage involved in current structural contracts is light.

Pittsburgh—The largest structural steel tonnage pending in this district covers 2700 tons for the psychiatric hospital, General State authority, this city. A number of small-lot sales have been made but in isolated instances and tonnages are not sufficient to keep the mills busy. No one large tonnage was placed this past week.

Cleveland—No change in the structural steel market has been noted this past week. Large expansion programs have been definitely postponed until some future date. This condition has also spread to the miscellaneous small projects during the holidays. Fabricators still possess substantial stocks for current operating schedules. Mills expect little if any general improvement in buying until after the middle of January.

Chicago—Practically all new structural inquiries in this district involve less than 100 tons at a time, while new work in other areas also is small. Uncertainty over the business outlook is contributing to the postponement of proposed work in some instances. Awards are headed by 2400 tons for a Milwaukee high school.

Boston—General contract bids on several fair-sized projects have exceeded appropriations and will be rebid. In this category is the 600-ton high school, Rochester, N. H.

Bridge inquiries are few, but close to 1500 tons are involved in New Hampshire structures to be bid early next year. Contracts for fabricated structural steel have slumped and prices are low on the limited volume available. Pending tonnage is made up of more small projects, notably schools and post offices, taking 50 to 100 tons in most instances.

Philadelphia—A. K. Wickstrom, Boundbrook, N. J., is low on general contract for the Potomac river bridge, Hancock, Md., involving 2500 tons of structurals and 600 tons of bars. Bids go in Jan. 4 on additional buildings for the Farview state hospital, Farview, Pa. Several state jobs are coming before the trade next month, but dearth of private work continues.

Birmingham, Ala.—Shapes are contributing in good measure to the district's steelmaking rate with several fairly large orders under way.

San Francisco—Only three awards of structural shapes in excess of 100 tons were placed during the week. No new inquiries of importance developed. Awards totaled 1397 tons and brought the aggregate for the year to 146,816 tons, compared with 166,121 tons a year ago.

Seattle—Bids have been called Jan. 11 at Camp Murray by the state armory board for construction of the armory at Seattle, involving 600 tons of shapes. Parker & Schram, Portland, at \$161,483 have been awarded the general contract for the substructure of the Washington state Puget Island bridge involving 600 tons of steel piling. Pending projects total in excess of 500 tons, mostly for Washington state highway projects.

Shape Contracts Placed

2500 tons, stadium alterations, Detroit Baseball club, Detroit, to Whitehead & Kales, Detroit.

2400 tons, Pulaski high school, Milwaukee, to Milwaukee Bridge Co.

1600 tons, addition to steam plant, Consumers Power Co., Essexville, Mich., to Ingalls Iron Works, Birmingham, Ala.

965 tons, power house, Springfield, Ill., to Mississippi Valley Structural Steel Co., Decatur, Ill.

800 tons, cyanide sand building No. 1, Homestake Mining Co., Lead, S. D., to Worden-Allen Co., Milwaukee.

315 tons, high school, Farrell, Pa., to Fleming Structural Steel Co., New Castle, Pa.

250 tons, bridge, Mozee City, Wash., to Midwest Steel & Iron Works Co., Denver.

200 tons, Central school, Elba, N. Y., to Ernst Iron Works, Inc., Buffalo.

185 tons, 377-foot bridge, Dodge county, Nebraska, to Illinois Steel Bridge Co., Jacksonville, Ill.

180 tons, central school, Alexander, N. Y., to Bethlehem Steel Co., Buffalo.

170 tons, school building, Hartsdale,

Shape Awards Compared

	Tons
Week ended Dec. 25	10,740
Week ended Dec. 18	19,109
Week ended Dec. 11	10,987
This week, 1936	27,620
Weekly average, 1936	16,332
Weekly average, 1937	23,251
Weekly average, November	24,633
Total to date, 1936	1,137,621
Total to date, 1937	1,209,072

Includes awards of 100 tons or more.

—The Market Week—

N. Y., to Ingalls Iron Works, Birmingham, Ala.
 150 tons, state highway bridge 5526 FAGM-31, Willmar, Minn., to Bethlehem Steel Co., Bethlehem, Pa.
 150 tons, state railroad bridge No. 4-2/8, McGonigle, O., to Bethlehem Steel Co., Bethlehem, Pa.
 150 tons, building, Phillips Petroleum Co., Galveston, Tex., to Vulcan Steel Tank Co., Tulsa, Okla.
 140 tons, central school, Lackawanna, N. Y., to Buffalo Structural Steel Co., Buffalo.
 135 tons, central school, Wyoming, N. Y., to Ernst Iron Works, Inc., Buffalo.
 125 tons, high school, Girardville, Pa., to Truscon Steel Co., Youngstown, O.
 125 tons, building addition, Western Printing & Lithographing Co., Racine, Wis., to Bethlehem Fabricators, Inc., Bethlehem, Pa.
 100 tons, addition to hospital, Batavia, N. Y., to Bethlehem Steel Co., Buffalo.
 100 tons, bridge near Green river, Grand and Emery counties, Utah, to American Bridge Co., Pittsburgh; Strong & Grant, Springfield, Utah, general contractors.
 Unstated, fish life and operating machinery, Bonneville dam, to Smith Corporation, Portland, Oreg., and Lakeside Bridge & Steel Co., Milwaukee.

Shape Contracts Pending

2700 tons, city hall, Houston, Tex.
 2700 tons, psychiatric hospital, General State authority, Pittsburgh.
 2500 tons, bridge, Potomac river, Hancock, Md.; A. K. Wickstrom, Boundbrook, N. J., low.
 1200 tons, municipal power house, Lansing, Mich.
 1000 tons, public school 124, Bronx, N. Y.; taking bids.
 600 tons, steel piling, Washington state Puget Island bridge substructure. Parker & Schram, Portland, general contractor.
 600 tons, Seattle armory building; bids to armory board, Camp Murray, Jan. 11.
 400 tons, bridge, Bonneville, Mo.
 384 tons, eastern state penitentiary, Graters Ford, Pa.; Belmont Iron Works, Philadelphia, low.
 350 tons, high school, Elgin, Ill.
 300 tons, shapes and bars, Dennison vocational school, Washington; Jeffress-Dyer Inc., Washington, low, bids Dec. 21.
 300 tons, alterations to state bridge over Missouri river, St. Charles, Mo.
 230 tons, high school building, Glen Cove, N. Y.
 200 tons, Coal washer, Maldsville, W. Va.
 180 tons, school building, Richfield Springs, N. Y.
 150 tons, railroad bridge, WPGH, X 2 to 52-2-20-C1, Harvey, Marquette county, Michigan, for state.
 125 tons, bridge, over Rio Grande river, Fabens, Tex., for International Boundary commission.
 120 tons, bar joists, school, Providence, R. I.; John Bowen Co., Boston, low.
 115 tons, theater and store building, F. S. Kogod and M. Burka, Washington.
 Unstated, gates and castings for Seminoe dam, Wyo.; Joshua Hendry Iron Works, San Francisco, low.

Semifinished

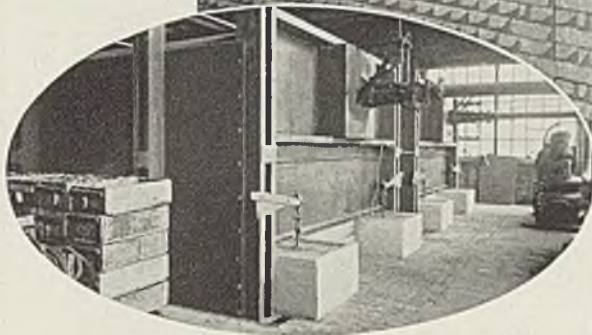
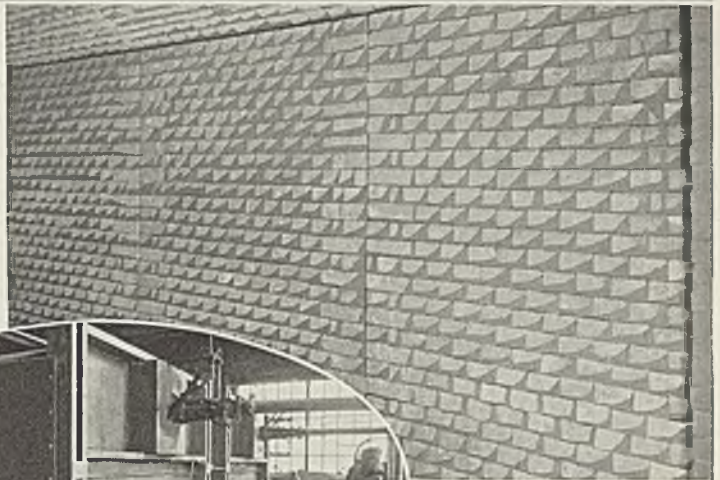
Semifinished Prices, Page 63

Little new business in semifinished material is before the mills, much of the current tonnage being confined to wire rods and manufac-

Efficient Insulation in this Pot-Type Annealing Furnace

- CUTS FUEL COSTS
- SPEEDS PRODUCTION
- ASSURES EASIER AND MORE FLEXIBLE TEMPERATURE CONTROL

Right: Interior of pot-type annealing furnace constructed at the James Mfg. Co., Fort Atkinson, Wis., by the Whiting Company. Note Armstrong's Insulating Fire Brick installed on the furnace wall and crown.



Left: Exterior view of same furnace. Armstrong's N-16 and EF-22 Brick are used in this installation to assure efficient and economical operation.

ARMSTRONG'S Insulating Fire Brick help assure efficient and economical operation of the above furnace installed by the Whiting Company, at the James Manufacturing Company, Fort Atkinson, Wisconsin. These dependable brick have low thermal conductivity, high crushing strength, and ample refractoriness for the use intended. In addition, they are free from shrinkage, light in weight, and exceptionally uniform in size.

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sulation. They prevent heat loss and waste, assure quicker heating, and substantially reduce fuel costs. Their use permits a sharper furnace that can be keyed to the tempo of the other units in a continuous production line.

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Armstrong's

HIGH TEMPERATURE INSULATION

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Resolutions

■THE TIME has come to think of scythes and hourglasses and wassail, bells and whistles and new resolutions to fracture. This department has made a real long list of fine resolutions which we are going to blow instead of horns. We hereby firmly resolve: (1) to stop muttering incantations between our teeth when people ask us for past histories of Shrdlu and to prepare the honest facts for public consumption; (2) to quit bumming cigarettes until Cmfwyp changes his brand; (3) to give promptly a place in the sun, which shines so brightly on this page, to all new editors of STEEL whose stint youse guys are reading each week. We've made a lot more, too, but just to show you we are as good as our word, here are some of the new arrivals. Over there in the corner is George Birdsall, who comes to us from the corn country of Iowa with a long lineup of technical writing behind him on the way. He'll hold up his end of the engineering staff. Under the table, quaking in their diplomas, are two neophytes fresh out of collitch. They are Bob Polatsek and Jay De Eulis, who are adding that collegiate atmosphere to our office and incidentally trying to learn the business of purveying news and technical advances to the metalworking and metal producing industries. They're glad to know *you*, too.

Chick, Chick!

■THE BOYS who write advertising copy for Republic Steel have been letting themselves go lately. They've been used to writing such fine copy about saving time and money in production and absence of flaws and inclusions in their very fine sheets, and they have really outdone themselves in this latest masterpiece now resting on our desk like a pearl among

ersters. Clothed in a beautiful aquamarine cover trimmed in silver, and splashed generously within in a gorgeous shade of orchid, this latest creation of the Republic creators is designed to make the feminine eye water with desire for the gorgeous fine-ware built of Enduro stainless steel. One of the lads over there said, "We had a circus with words like gorgeous, lovely, exquisite, cute and other dandies which somehow do not impress engineers with the merits of Republic's pig iron." Ah, but the results are quite alluring. The thing looks *ever* so chic!

Success Story

■CIRCULATION department of this mag lets it be known that the circulation rolls have become swelled with the Christmas spirit. Last couple of weeks have been among the largest in recent history from the angle of new subscribers. Two reasons for this, say the ace circulators—because many smart executives are giving subscriptions to their subordinates for Christmas and also because of the alleged "recession," which has made STEEL's weekly summary of news and market developments all the more valuable.

Ah, Happiness

■RUMMAGING around the other day in some old files we came across a firm name which failed to survive the depression, quite unfortunately, because it reminds us of the descriptive names found out West in the cow country. It was the Happy Thought Foundry Co. We have spent no end of time trying to visualize some pioneer foundryman setting up his operations and creating a name like that out of his imagination. We'd almost be willing to bet they made stoves, with a name like that.

—SHRDLU

turers' wire. Demand for billets and sheet bars has fallen off as non-integrated sheet mills let down on their operating rates.

Reinforcing

Reinforcing Bar Prices, Page 63

New York—Reinforcing steel inquiry is limited to small tonnages with approximately 3000 tons pending. Several small lots are for world's fair buildings. Bids also closed Dec. 21 on several hundred tons for New York state highway projects. The 2.84c price, delivered job, on work bid since Dec. 20 has not been tested by tonnage, but several projects going in this week will furnish such a test.

Pittsburgh—The largest reinforcing bar award involved 325 tons for a manufacturing building for the Kelsey-Hayes Wheel Co., Neville Island, Pa., placed with Jones & Laughlin Steel Corp. Other small lots are scattered and miscellaneous in character.

Cleveland—Reinforcing awards are practically absent, although some inquiries are appearing for small tonnages. Little change is expected in the present market dullness until after the first of the year. While stocks are generally below normal they are ample to supply current requirements. No real test has been offered at the adjusted price levels, although it is generally expected to have a stabilizing influence.

Chicago—Orders for less than 100 tons are fairly numerous but action is deferred on a large portion of pending work. Uncertainty over general business conditions is blamed for failure to proceed with contemplated construction in a number of cases. December shipments will fall below November, with the first quarter outlook dependent upon whether or not pending jobs are closed.

Boston—The new price of 2.95c on new billet steel, cut lengths, con-

Concrete Bars Compared

	Tons
Week ended Dec. 25	4,939
Week ended Dec. 18	5,418
Week ended Dec. 11	2,032
This week, 1936	6,795
Weekly average, 1936	6,065
Weekly average, 1937	6,061
Weekly average, November	6,282
Total to date, 1936	327,663
Total to date, 1937	315,164

Includes awards of 100 tons or more.

crete bars, delivered building site represents a substantial advance over recent business, has not been tested by tonnage sales. This price includes a \$2 a ton trucking charge. Buying is in small lots, the year closing with inquiry slack. Outlook for new highway and bridge requirements during the next few months is not bright.

Philadelphia — Several state jobs taking moderate tonnage are still pending, including a Farm show building, Harrisburg, requiring 420 tons. Industrial construction work is practically nonexistent. Close pricing is still noted on jobs available but mill base continues firm.

San Francisco—Sales and inquiries remain exceptionally light with total pending business not exceeding 4500 tons. New inquiries were limited to lots of less than 100 tons. Awards aggregated 639 tons and brought the total for the year to 96,399 tons, compared with 227,207 tons in 1936.

Seattle—Rolling mill operations are practically at a standstill, lacking backlogs and booking only occasional small tonnages. WPA projects to be up for figures next month are expected to increase demand. Business pending, for Washington state highway jobs, total about 500 tons. Numerous school construction contracts in this area are calling for less than 50 tons each.

Reinforcing Steel Awards

- 650 tons, sewage disposal plant, Des Moines, Iowa, to Laclede Steel Co., St. Louis.
- 550 tons, addition, Museum of Modern Art, New York, to Concrete Steel Co., New York; through John Lowry Inc., New York, general contractor.
- 488 tons, Panama canal schedule 3301, class 2, to Youngstown Sheet & Tube Co., Youngstown; through Carroll-McCreary Co., New York.
- 365 tons, research laboratory, Abingdon, Va., to American Steel Engineering, Philadelphia.
- 325 tons, manufacturing building, Kelsey-Hayes Wheel Co., Neville Island, Pa., to Jones & Laughlin Steel Corp., Pittsburgh.
- 310 tons, highway work, in Pierce, Lewis, Pacific, King and Wahkiakum counties, Washington, to unnamed interests.
- 250 tons, bridge, Wichita, Kans., to Sheffield Steel Corp., Kansas City, Mo.
- 250 tons, building, Socony Vacuum Oil Co., St. Louis, to Laclede Steel Co., St. Louis.
- 210 tons, department store, Hartford, Conn., to Truscon Steel Co., Youngstown, O.
- 200 tons, nurses' home, state hospital, Chattahoochee, Fla., to Cesco Steel Products Co., Atlanta; Batson Cook Co., Inc., West Point, Ga., general contractor.
- 185 tons, road work, Clinton county, Pennsylvania, to Bethlehem Steel Co., Bethlehem, Pa.
- 175 tons, procurement division, treasury department, New York, to W. Ames & Co., Jersey City, N. J.
- 150 tons, school, Vestal, N. Y., to Bethlehem Steel Co., Bethlehem, Pa.; O'Connell Co., Binghamton, N. Y., gen-

- eral contractor.
- 146 tons, foundations for sub-station for Pacific Gas & Electric Co., Oakland, Calif., to Gunn, Carle & Co., San Francisco.
- 130 tons, state school, Polk, Pa., to McCloskey Co., Philadelphia.
- 130 tons, substructure, bridge, Deer Isle, Me., to Concrete Steel Co., New York.
- 125 tons, Olympia boulevard bridge, for city of Los Angeles, to unnamed interest.
- 100 tons, paving, Peoria, Ill., to Ceco Steel Products Corp., Chicago.
- 100 tons, printing company building, for Hennegan Realty Co., Cincinnati, to Pollak Steel Co., Cincinnati, through Parkway Construction Co., Cincinnati.
- 100 tons, post office, Lexington and Rock-

port, Mass., to Truscon Steel Co., Youngstown, O.

Reinforcing Steel Pending

- 4193 tons, proposal 171, for United States engineers office, Los Angeles; bids opened.
- 1000 tons, sewer contract, Memphis, Mo.; Walsh & Wells, St. Louis and Nolen Construction Co., Detroit and Schevenell Construction Co., Memphis, low bidder.
- 600 tons, bridge, Potomac river bridge, Hancock, Md.; A. K. Wickstrom, Boundbrook, N. J., low.
- 370 tons, sewage disposal system, sludge digestion tank, gas holder, Detroit.
- 150 tons, school, East Lansing, Mich.



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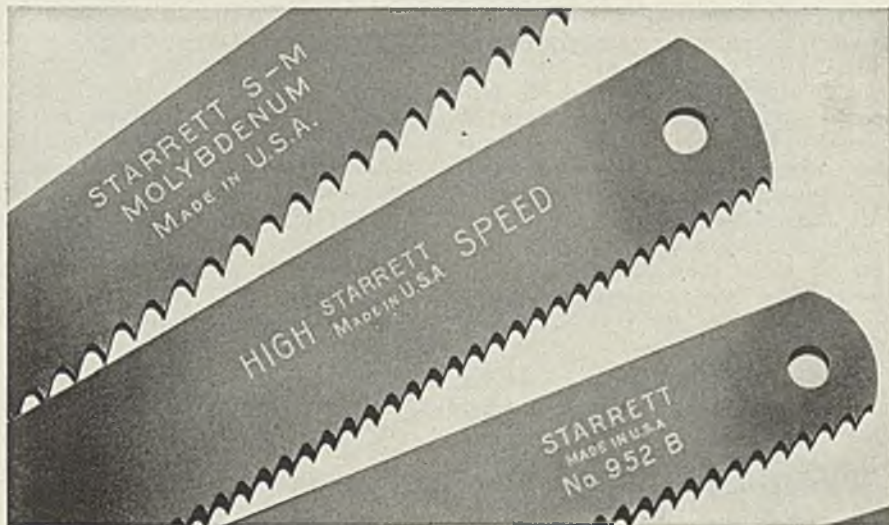
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117 tons, paint shop, Socony-Vacuum Oil Co., Chicago.
100 tons, Cunningham school, Joliet, Ill.
100 tons, Schmidt brewery, Detroit.

Pig Iron

Pig Iron Prices, Page 64

New York—Improvement in spot buying indicates stocks of some pig iron consumers have been reduced more sharply over recent weeks than indicated earlier in the month. Business is still admittedly light. Yet, several sellers have reported more carlot business for immediate shipment.

Japan has closed for 50,000 tons of foundry and basic pig iron with southern producers. This is the first important tonnage of iron Japan has bought in this country in a considerable period, although in the early months of the year it closed on an aggregate of several hundred thousand tons.

Foreign inquiry is comprised largely of scattered lots ranging from 100 to 1000 tons.

Pittsburgh — Pig iron sales still are confined to scattered lots. Foundries operations are low. Such tonnages as are being shipped from furnaces here include No. 2 foundry and malleable largely, while steel-making grades are very dull.

Cleveland—Many foundries have closed over the holidays for inventory. This has been reflected in shipments of merchant pig iron. Some sellers have further curtailed operations and again revised former estimates on total shipments for the month. Most foundries now in operation are on a hand to mouth basis with inventories greatly depleted.

Chicago—Pig iron shipments continue well below the rate of previous months but prospects are favorable for an upturn in deliveries in January. With a sharp reduction in stocks this quarter, some new business also is expected soon. Foundries are not interested in contracting for the entire quarter and subsequent purchases are expected to be for no more than 30-days' requirements. The market continues steady at \$24, furnace, for No. 2 foundry and malleable.

Boston—With foundry operations averaging around 30 per cent, spot buying of pig iron has declined while covering for first quarter has been sluggish. In spots inventories are low, but melters are slow to estimate future needs. Imports have stepped up of late, some India iron arriving against old orders, while considerable is stocked for spot sales. On the 626-ton navy in-

quiry for foundry iron, the district furnace bid on the relatively small requirements for Boston. Prices bid on this lot were firm and in line with listed quotations.

Philadelphia—Some deviation in bids on pig iron for various east and west coast navy yards is noted. On the principal lot, 223 tons of low phosphorus, E. & G. Brooke Iron Co., Birdsboro, Pa., bid low at \$26.20, delivered. Alan Wood Steel Co., Conshohocken, Pa., was second at \$29 and Bethlehem Steel Co. and Republic Steel Corp. third at \$30.23. Demand from the foundry trade is confined to spot needs. Comparatively little tonnage is on sellers' books for first quarter shipment, part of which represents carryover from fourth quarter. Pipemakers are well stocked.

Buffalo—Continued falling off in shipments will make the last half of December one of the poorest in recent years for pig iron producers. Many foundries have curtailed operations for the holiday period, some following the usual custom, while others reported lack of business. Booking for the first quarter are fairly good.

Cincinnati — Decline in foundry operations, with some melters planning shutdowns over the holidays, brought further shrinkage in pig iron shipments. Spot ordering has all but vanished and releases against contracts are insignificant. Cancellations on fourth quarter contracts have been few, but the carryover is heavy considering recent light melting. As heretofore, demand for machine tool castings is proportionately good.

St. Louis — Current shipments have fallen to the smallest daily average thus far recorded this year. The melt has also dwindled to the lowest point of the year. However, there is some buying of small lots for prompt delivery, mainly from small concerns, or from larger users desiring special analysis. Blast furnaces still have fair backlogs, and indications are that a considerable volume of iron purchased last spring will be carried into the first quarter. Activities at steel casting plants have dropped and at jobbing foundries the slump has been acute. Stove industry is practically down, operations being confined to skeleton crews doing repairs and arranging patterns. Some makers have heavy inventories of finished products.

Toronto, Ont.—Business was featureless in the pig iron markets for the past week with sales dropping to around 700 tons. Melters are holding stocks at a minimum but it is expected more general buying will develop soon after the turn of the

year. Sales are confined to lots of one to two cars and first quarter booking has not yet started. Production of pig iron, however, continues at its peak level with November output the highest monthly record since January, 1930. The daily melt has shown only small reduction for the holiday season and steel interests look for sharp increase in business next month. Prices are firm and unchanged.

Birmingham, Ala. — Pig iron melters, while not curtailing operations, are marking time until after the first of the year in anticipation of renewed demand. Thirteen furnaces are pouring, but shipments are considerably below the melt.

Scrap

Scrap Prices, Page 66

Pittsburgh — While some recent purchases of No. 1 heavy melting steel scrap have been made at \$13.50 and several hundred tons went at \$14, the latter figure has little to back it up at the moment. Some trading has been done between dealers who have paid \$13.25. However, the market here is struggling toward more definiteness, which may not become apparent for another week. The Baltimore & Ohio railroad list, to close Dec. 28, contains 3000 tons of melting steel, 2000 tons of cast car wheels, 2000 tons of structural, 650 tons of No. 1 cast and smaller lots of miscellaneous scrap.

Chicago — Steel scrap prices continue to rise in the face of more active bidding by brokers and dealers. Supplies are relatively small as holders are reluctant to dispose of their accumulations in view of the stronger market. Mills withhold orders and in the meantime No. 1 heavy melting steel has brought as high as \$14 in dealer trading. Shipments against mill contracts are expected to be completed next month and to be followed by new buying.

Boston—Scrap prices hold steady with no declines noted, a firmer trend showing on several grades, notably stove plate for domestic shipment, which is 75 cents higher. Heavy melting steel for export is steady with \$14 being paid for the bulk of No. 1, although in some instances slightly better has been done for tonnage at docks. Shipments to domestic consumers are light. Boat loading continues active at several ports.

New York—Stove plate and grate bars are firmer and have advanced 50 cents, reflecting heavier shipments to an Eastern Pennsylvania steelworks, paying \$13.50, delivered,

for those grades. It is also reported but unconfirmed, that another Eastern Pennsylvania mill has bought a moderate tonnage of heavy melting steel. Domestic buying is light, with foundries taking small shipments only. Buying against export orders continues steady and recent boat loadings have materially lowered supplies on barges. No tonnage has yet been placed against the last export orders, which approached 500,000 tons. Another broker not originally reported included in the group sharing in this tonnage has returned from Europe with an undetermined order to apply against the originally noted volume.

Philadelphia—Demand from both foreign and domestic sources is quiet. At least one mill continues to pick up odd lots of No. 1 heavy melting steel at \$14.50 to \$15 and some No. 2 steel, stove plate and grate bars are moving to another point against \$13.50 orders. Dealers expect more buying after the turn of the year. Steel specialties and cast grades are steady but practically inactive.

Buffalo — With sentiment in the iron and steel scrap market gradually improving, prices on steelmaking grades have been advanced 50 cents a ton. It was the first advance in prices since the \$8 plunge from the mid-summer peak got under way. Little substantial buying is noted as dealers are hesitant in contracting for tonnage volume at current prices. No. 1 heavy melting steel is quoted, rather nominally, at \$13 to \$13.50 a ton, with a \$1 differential on No. 2 stock, bushings, compressed sheets and drop forge flashings.

Another indication of the reluctance of dealers to sell at prevailing prices is the limited response to the compromise agreement established by the chief local buyer. Dealers were given the right to ship against contracts on a percentage basis to the tonnage they would contract for at \$13 a ton for No. 1.

Cincinnati—Approach of the new year and optimistic sentiment on the part of some dealers have strengthened the iron and steel scrap market. Prices, however, are unchanged and mills continue inactive as buyers. Little material is coming out. One railroad withdrew most of the scrap list available to this district and another failed to publish a list because of low prices.

St. Louis—The market for iron and steel scrap has stiffened perceptibly. This manifestation is due entirely to eagerness on the part of dealers to cover on short contracts, in the belief that prices shortly will go higher. Buying by consumers is absent and will be until after the turn of the year, but mills have out-

feelers, and with inventories heavily reduced in recent weeks, they must soon buy, even to maintain their present low rate of operations.

Symptoms of approaching strength in the market are numerous and well defined. To begin with offerings from all quarters have become extremely light, and prospects for their augmenting are decidedly slim.

Country dealers are offering almost nothing, and many report their territories have been well combed and little material is coming to light as a result.

Birmingham, Ala. — The scrap market continues without indication of early revival with major items at the lowest price level of recent months. Small lots are being moved, mostly to foundries.

Seattle—Conditions are uncertain, dealers marking time in the absence of demand. The export movement is entirely at a standstill and local sales are only the small tonnages required by foundries. Developments in the Orient are being closely followed but there is no indication when Japan will resume buying.

Toronto, Ont. — Moderate decline in sales is reported for iron and steel scrap. The slump is seasonal and local dealers look for speeding up

in business with the turn of the year. Recent reduction in dealers' buying prices has tended to slow down offerings and it is stated that little scrap is going into the yards at this time. Heavy snow during the past week or two also has affected shipments of scrap from the rural districts. Occasional shipments of heavy melting steel are being made to the Hamilton mills and foundries are interested in machinery cast and stove plate in small tonnage lots. No further revision is reported in prices for the week.

Warehouse

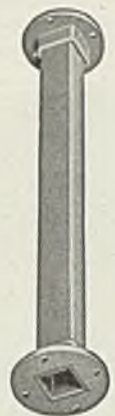
Warehouse Prices, Page 65

Philadelphia — Galvanized sheet makers have restored the \$2 functional allowance to the jobbing trade. Quantity differentials remain unchanged for first quarter at 25 cents for less than a minimum car down to 7000 pounds and 35 cents for less than 7000 pounds. These differentials are up 10 cents from third quarter. Jobbers have reaffirmed pipe prices for first quarter. General warehouse demand for the first 18 days of December are about on a par with November but the last half will meet the usual

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holiday slackening in demand. Some deviation in prices is noted but most interests are maintaining published levels.

Boston—Galvanized sheets have been reduced to 4.85c for 50 bundles and over, 4.95c applying on 25 to 49 bundles while for three to 25 bundles the new jobber price is 5.10c. This is a decline of more than \$8 a ton in 50 bundle lots. Demand for steel out of warehouse is seasonally light, but small-lot buying this month has been fairly well sustained.

Cleveland—Warehouse distributors expect sales and shipments to continue their downward trend through the remainder of the month. If present estimates materialize December will be approximately 30 per cent below November. Most distributors feel that a gradual improvement will materialize during January.

Chicago — Sales continue to decline, business being held down by reduced consumption and the tendency of consumers to hold down inventories. Warehouses anticipate continued quiet until mid-January.

Cincinnati — Number of warehouse orders is fairly well sustained but total tonnage is several points below November. Jobbers' inventories are the lightest in several years.

St. Louis—Reduced inventories of consumers are beginning to help warehouse business. Sales are more numerous than heretofore, but quantities involved are small and apparently for immediate use. Holiday influences were felt, and generally operators do not look for any

notable improvement in the situation before the late winter. Present indications point to smaller total sales in December than during any preceding month this year with the exception of February. Prices remain unchanged on all standard products.

Seattle—Business reflects seasonal slackness and volume is low. No item is in particular demand. Mill orders are lacking. Prices continue firm. New WPA projects in this section are expected to increase turnover next month.

Bolts, Nuts, Rivets

Bolt, Nut, Rivet Prices, Page 63

Bolt, nut and rivet specifications are irregular with little change in total demand. Stocks of consumers and jobbers are relatively small though with consumption also at a reduced level, inventories are regarded as none too light. Consumption in the farm equipment industry continues fairly active for this period while requirements of railroads and car builders are depressed. While some seasonal gain in demand is looked for next month, little sustained improvement is anticipated until railroads show more active participation in the market. First quarter contracts carry unchanged prices.

Makers are encouraged over prospects of increased ship work, for in addition to navy work there are now active the tanker program of the Standard Oil Co. of New Jersey and 12 merchant ships for the United States maritime commission, on

which bids are to be opened Feb. 1.

Iron Ore

Iron Ore Prices, Page 66

Cleveland — Stocks of iron ore at lower lakes ports and furnaces Dec. 1 were approximately 7,250,000 tons more than on the comparable date last year, due primarily to the sharp drop in consumption over the past two months. The Lake Superior Iron Ore association reports.

	Tons
Consumed in October	4,203,873
Consumed in November	2,734,504
Decrease in November	1,469,369
Consumed in November, 1936 ..	4,269,049
On hand at furnaces Dec. 1....	36,552,692
On Lake Erie docks Dec. 1....	6,073,262
Total Lake Erie docks Dec. 1.	42,625,954
Reserve Total Dec. 1, 1936	35,378,068

Receipts of iron ore at lower lake ports for the 1937 season, shipments to interior furnaces and dock balances follow:

Port	Receipts Season	Shipments Season Dec. 1, '37	Dock Bal.
Buffalo ...	5,851,276	705,819	152,847
Erie	2,745,295	2,516,672	286,287
Conneaut ..	9,635,048	8,935,650	1,977,600
Ashtabula ..	6,572,771	5,488,746	1,837,615
Fairport ..	1,904,419	1,830,850	480,218
Cleveland ..	10,082,766	7,296,956	795,026
Lorain	3,914,834	1,629,116	260,870
Huron	967,617	954,932	217,175
Toledo	1,923,960	1,168,491	65,624
Total	43,597,986	30,527,232	6,073,262
Year ago 31,312,182	23,481,986	4,918,348	

Receipts at other than Lake Erie ports for November and the 1937 season follow:

Port	Month	Season
Detroit	158,147	1,456,853
Indiana Harbor	257,840	2,762,939
Gary	108,251	5,715,509
S. Chicago (Loc. Fees) ..	263,941	7,321,385
Sault Ste. Marie, Ont. ..	417,547	
Hamilton, Ont.	62,426	697,881
Total	850,605	18,372,114
Year ago	1,430,132	12,824,487

Cold Finished

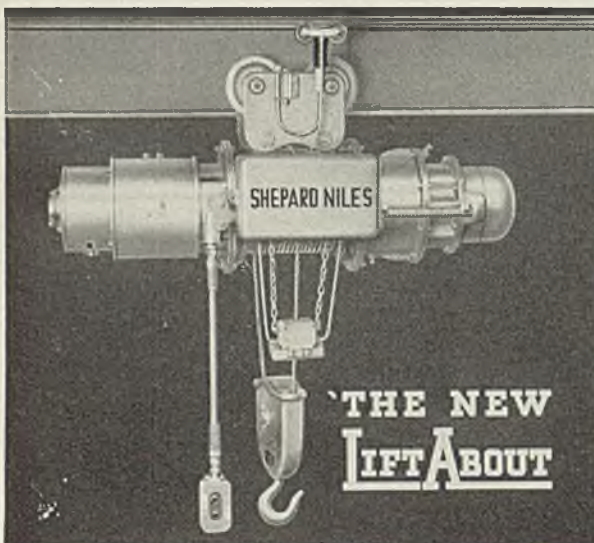
Cold Finished Prices, Page 63

Pittsburgh—Purchases by consumers continue to be made cautiously on the eve of the inventory season. The current dullness in trade has not been relieved by sales to auto partsmakers, while buyers of shafting are not prominent in the market.

Metallurgical Coke

Coke Prices, Page 63

Between the customary dullness of foundry operations in the holiday season, the taking of usual inventories, and the banking of merchant blast furnaces, the coke industry here is at a low ebb. Connellsville beehive oven operations have declined to only several hun-



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dred still active and these largely supported by term contracts. By-product coke, both from this district and from outside, is pressing heavily upon the foundry fuel market and the price schedule seems to be in some danger, but no quotational changes yet are noted.

Steel in Europe

Foreign Steel Prices, Page 65

London — (By Cable) — Middlesbrough pig iron output is insufficient to meet demand but supplies of Midland foundry iron are adequate. Hardly any pig iron is available for export except hematite. The first consignment of Brazilian ore contracted by the Iron and Steel federation has arrived. Steelworks are fully occupied except tin plate, sheet and plate mills.

The Continent reports export trade quiet. Following the Dusseldorf meeting with American interests plate and galvanized sheet export prices have been adjusted downward.

Ferroalloys

Ferroalloy Prices, Page 64

New York—Ferromanganese sellers look for some improvement next month but expect the movement to be well below normal. The month now closing was the lightest this year. Prices are unchanged at \$102.50, duty paid, Atlantic and Gulf ports.

Domestic spiegeleisen also is moving slowly although it is believed that the bottom has probably been reached. Prices are steady at \$33, Palmerton, Pa., for 19 to 21 per cent, and \$39 for 26 to 28 per cent.

Nonferrous Metals

Nonferrous Metal Prices, Page 64

New York—A more optimistic outlook was taken by metal trade interests last week. Greater confidence in the copper market was reflected in an increase in business.

The reduction of 25 cents per pound in cadmium prices to the basis of \$1 to \$1.35 for large lots in the producers' market and to \$1.20, duty paid New York, is not expected to stimulate demand, according to authoritative sources. It was pointed out that even at substantially higher prices demand was in excess of supplies. These recent drop in prices was attributed to the general business recession. Requirements for first quarter have been covered rather fully.

Copper — Quotations continued spread with custom smelters at

10.12½c and primary mine producers at 11.00c, delivered Connecticut. Casting copper was adjusted downward to 9.65c, f.o.b. refinery. Export copper closed around the 10-cent level on a c.i.f. European port basis. Red metal scrap prices have tended toward firmness, indicating that the primary metal market has likely scraped bottom for the current movement.

Lead—Interest was centered on the November statistical report which showed an increase of 12,927 tons in refined stocks. The report as a whole was disappointing since shipments dropped considerably while production was cut only slightly. Prices held steady at 4.75c, New York, and 4.60c, East St. Louis.

Zinc—Sales continued at a slow pace but prices held at 5.00c, East St. Louis.

Tin—Prices fluctuated between a low of 42.12½c and a high of 42.75c on Straits spot. In relation to Eastern and London quotations direct importation has not been attractive at domestic levels.

Antimony — Demand continued dull with American spot easing ¼-cent on Wednesday to 13.75c, New York. Chinese spot held nominally at 14.25c, duty paid New York.

Coke By-Products

Coke By-Product Prices, Page 63

New York—With demand for distillates less active, supplies are freer, although lower production operates against topheavy accumulations. Lacquer-makers are taking less toluol, accounting materially for the

decline in buying of that product, although industrial requirements for distillates are generally down. Phenol is inactive for industrial uses, while naphthalene buying has slumped, partly due to usual between-season influences. Coke oven by-product prices are unchanged.

Much Ore Imported

Baltimore—Several iron ore shipments arrived here recently. Twenty-one thousand tons came in from Cruz Grande, Chile, Nov. 25; 6300 tons from Lulea, Norway, Nov. 27; 21,800 tons, Cruz Grande, Nov. 29; 6367 tons Narvik, Sweden, Dec. 2; and 21,600 tons from Cruz Grande, Dec. 2 also.

During the period from Nov. 25 to Dec. 4, inclusive, several shipments of manganese ore arrived. Seventy-two hundred and thirty came in from Poti, Russia, Nov. 25; 8900 tons, Poti, Nov. 26; 8100 tons, Takoradi, Gold Coast, West Africa, Nov. 28; 4900 tons, Santiago, Cuba, Nov. 29; and 5700 tons, Poti, Nov. 29.

Other arrivals of manganese ore included 2000 tons, Calcutta, Nov. 30; 7560 tons, Poti, Dec. 1; and 8200 tons, Takoradi, Dec. 4. Shipments of 400 cases of ferromanganese came in from Yokahoma, Dec. 1.

Approximately 5340 tons of chrome ore came in from Nuevitas, Cuba, Nov. 30; also, 1500 tons of chrome bearing iron ore from Masinloe, Zambales, Nov. 25.

Philadelphia — Imports during the week ended Dec. 18 were confined to 1300 tons of chrome ore from South Africa; 328 tons of


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shapes, 65 tons of steel bars and 49 tons of steel bands from Belgium; 19 tons of steel bars and one ton of steel bands from France.

Case To Test Models for Pittsburgh District Dams

■ Hydraulic model studies on the Mahoning dam, largest of its type in the Pittsburgh flood control project, will be made at Case School of Applied Science. Prof. George E. Barnes, head of the civil engineering department at Case, will supervise the tests and experimental work, and will act as consulting engineer on design of the dams.

The floor control project, designed to protect the Pittsburgh drainage area from destructive floods, will include nine dams and reservoirs costing an estimated \$80,000,000. The Mahoning dam will be of solid concrete construction about 150 feet high and 800 feet long, and will have five gates, each 30 feet high. It has been designed to handle floods 50 per cent greater than any yet recorded in the Pittsburgh drainage area.

Urges World Commerce As Means to Peace

■ Speaking before the Chicago World Trade conference in Chicago recently, Thomas J. Watson, president of the International chamber of commerce, declared economic strife between business and government is retarding general prosperity. Blame

for this, he said, should be divided between government and business. Both sides "are doing too much arguing and not enough discussing."

Mr. Watson, who is president of the International Business Machines Corp., urged co-operation between the world's business and governmental groups for revision of trade barriers to improve commerce and promote peace. "Actually, we are working for world peace through world trade. Let us move goods and service both ways across borders and we will eliminate the necessity of soldiers marching across those same borders."

Steel Mill in India Makes Profit First Year

■ Indian Steel Rolling Mills Ltd., Negapatam, India, has announced the payment of a 5 per cent per annum dividend on ordinary shares and 5½ per cent on preference shares, free of income tax, for the half year ending June 30, 1937, within a year of commencing production on a commercial scale. The strategic location of the mills, occupying a key position in the South Indian market, with access to distant markets by sea, has enabled the company to take advantage of the rise in steel prices and to cover markets wherever they can be exploited profitably.

Apart from standard sizes of steel products in rounds, squares and flats now on manufacture, it is learned that the company has ordered machinery for speeding up

production and for meeting the growing demand for smaller sections suitable for reinforced concrete work. The equipment at the finishing end, consisting of roller cooling bed and auxiliaries, are, it is understood, of the latest type. The mill does not work up from the ore but melts scrap in an electric furnace.

Illinois Zinc Plans New Strip Mill at Chicago

■ Illinois Zinc Co. plans to build a new zinc strip rolling mill in the Chicago district at a cost of about \$500,000. This expansion program, to be put into effect when and as the board of directors feels conditions justify, was presented at the annual stockholders' meeting in Chicago.

This will be the first zinc rolling mill in the Chicago district, and will enable the company to serve local and eastern trade with greater dispatch and at less freight cost than from its present location at Peru, Ill., where it has been operating mills since 1870.

The new rolling mill will have the most modern equipment, and will be devoted largely to producing patented zinc alloys. The company will continue to operate its sheet zinc rolling mill at Peru, Ill., its zinc mines at Hanover, N. Mex., and its smelting plant at Dumas, Tex.

The board has been enlarged from seven to 11 members, to include important interests recently identified with the company. George A. Easley, vice president, International Mining Co., and John E. Bierwirth, vice president, New York Trust Co., have been elected directors. No change has been made in the active officers.

GE Test Graduates Hear International Broadcast

■ Third annual reunion of engineering graduates of the General Electric Co.'s test course was observed last week with an international short-wave broadcast. Officers and prominent members of the Past Test Men's association sent greetings to the more than 7000 graduates from Schenectady, N. Y.

Approximately 15,000 men from 200 schools are estimated to have passed through the General Electric test course and student engineering courses of predecessor companies. The company's list contains the names and addresses of almost 7000 active alumni. Of these, 2600 are with the company.



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Activities of Steel Users, Makers

(Concluded from Page 23)

ective and plant personnel remain unchanged and all manufacturing and office work will continue at Galesburg. In addition to refrigerator cabinets the company will manufacture products for the air conditioning, heating and hardware fields.

Eclipse Air Brush Co. Inc., has moved its office and factory to 390 Park avenue, Newark, N. J.

George D. Miller Co., Cleveland, machine tool dealer, has moved its offices to larger quarters at 509-11 Rockefeller building.

Acme File & Rasp Co., 4526 Fulton street, Chicago, after improving its process now is engaged on a large scale in recutting old files.

Standard Alloy Co. Inc., Cleveland, maker of chrome heat and acid-resisting alloy castings, has just installed another electric melting furnace, doubling its capacity.

Smith Steel Foundry Co., Milwaukee, is installing a 1-ton 'Lectromelt furnace for the production of alloy and stainless steels for castings, to be ready for operation between Jan. 15 and Jan. 20.

Okonite Co., Passaic, N. J., has completed a new two reel sound film showing how rubber insulated wires and cables are made and used. Lowell Thomas is the narrator. It will be shown in two film sizes.

C. F. Pease Co., manufacturer of blue printing machinery, Chicago, has moved from 813 North Franklin street, to a new office and factory building at 2601 West Irving Park road.

General Porcelain Enameling & Mfg. Co., Chicago, has purchased property at Grand and Natchez avenues, formerly occupied by Shafer Bearing Corp. The property will be used for further expansion by the General company.

Canton Foundry & Machine Co., 6400 Breakwater avenue, Cleveland, maker of shears, shear knives and turn tables, has appointed the R. L. Batteiger Co., Widener building, Philadelphia, its agent in the Philadelphia area.

Madison-Kipp Co., Madison, Wis., has been granted a non-exclusive license under patent No. 1,589,657,

covering important features of modern die-casting machines using air pressure for forcing molten metal into a die supported by the machine.

Martindale Electric Co., Cleveland, has purchased the Hergi Mfg. Co., Bridgeport, Conn., and has moved the factory to Cleveland where it will continue to manufacture the same line of motor-driven, flexible shaft equipment and carbon, alloy and high-speed steel rotary files, rasps and burrs.

Machinery & Welder Corp., St. Louis, in addition to acting as distributor for General Welding & Equipment Co., Cambridge, Mass., maker of automatic shape cutting machines, in the St. Louis, Kansas City, Mo., and Moline, Ill., districts, will also represent the company in the Chicago and Milwaukee territories.

Electric Hose & Rubber Co., Wilmington, Del., has opened a new and larger eastern sales office in the Rockefeller Plaza, New York. Occupying more than 600 square feet of floor space, the new office will serve as headquarters for A. B. Dougall, general sales manager, and D. C. Smalley, manager of metropolitan sales division.

Pittsburgh Piping & Equipment Co., Pittsburgh, has appointed Garrett Burgess Inc., Woodbrook building, Detroit, its representative in the Detroit district for the piping di-

vision, which fabricates and erects power and process piping systems, and the alloy division, which specializes in the fabrication of stainless steel piping tanks and vessels.

Hanson-Van Winkle-Munning Co., Matawan, N. J., and Anderson, Ind., has appointed Chamberlain Co. Inc., Los Angeles, as distributor for its products in southern California. Jack D. Clayton, who formerly represented the Hanson-Van Winkle organization in Detroit, is now acting as sales representative in southern California for the Chamberlain company.

Clark Bros. Bolt Co., Milldale, Conn., has reassembled and set up in its office lobby the front walls and part of the roof of a building erected in 1840 for the manufacture of bolts and nuts, and reported to be the first bolt factory in America. The "factory" was built and used by Rugg & Barnes of Marion, Conn. Following their early venture as boltmakers they were employed by the Clark Bros., 1851 to 1886 in Milldale, one mile from Marion.

Nash Motors division of Nash-Kelvinator Corp., Kenosha, Wis., has established a new department of business management. The department will work with factory branches and distributors in applying practical business management methods to both wholesale and retail operations. A. Carl Tiedemann, until recently a regional manager

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for Packard Motor Car Co., has been appointed director of the department.

High Speed Hammer Co. Inc., Rochester, N. Y., maker of high-speed precision drilling machines, has appointed H. A. Smith Machinery Co., Syracuse, N. Y., as its exclusive sales representative in the eastern part of upstate New York, and has named W. S. Gallagher, Buffalo, as exclusive sales representative covering the territory west of Rochester, N. Y., including Erie county, Pennsylvania, and William Halpern & Co., New York, in Massachusetts, Rhode Island and Connecticut for the sale of its high speed precision drilling machine.

Roots-Connersville Blower Corp., Connersville, Ind., has named the following exclusive representatives for the sale of its turbine pumps: Arthur N. Goff, Fond du Lac, Wis., who will cover Wisconsin, with the exception of a few counties comprising the Milwaukee area; and F. W. Bartling and G. T. Oberklein, Cincinnati, who will cover the southwestern section of Ohio as well as the counties in north-central Kentucky and a few adjacent counties in Indiana.

Homestead Valve Mfg. Co. Inc., Coraopolis, Pa., has named the following as distributors of its "hy-pressure Jenny," a steam vapor spray cleaner: Gibson Co., Indianapolis; Keyes Co., East Liverpool, O.; Minneapolis Iron Stores Co., Minneapolis; Dyke Motor Supply of Akron, Akron, O.; Canton Hardware Co., Canton, O.; General Auto Supplies, New Albany, Ind.; Grinold Auto Parts Inc., Hartford, Conn.; Automotive Equipment Supply Co., St. Louis; Cummings & Emerson, Peoria, Ill.; Dyke Motor Supply Co., Pittsburgh; Cole Bros., Nashville, Tenn.; City Auto Parts, Worcester, Mass., and Automotive Supply Co. Inc., Appleton, Wis.

Equipment

New York—Shepard-Niles Crane & Hoist Co., Philadelphia, has been awarded an overhead electric traveling crane for the Frankford, Pa., arsenal, at \$12,013.75, bids Dec. 8.

Seattle—Items for electrical construction, water machinery and road maintenance equipment are in best demand. Puget Sound navy yard is in the market for drill press, lathe, welding equipment, 2-ton chain hoist, air compressor, shapes, sheet steel and roofing tin.

Construction and Enterprise

Ohio

CANTON, O.—Timken foundation, Canton, plans central-heating plant in new three-story Timken technical high school. Cost \$1,000,000.

CINCINNATI—City is planning program to develop and flood proof Cincinnati waterworks, including Western hills pumping station, \$25,000; construction of emergency station at Eastern avenue plant, \$117,000; development of combination station at California plant to increase high and low service facilities by installing two low-service pumps, \$1,234,000; and improvements in high-service facilities, \$4,714,000. Cost of entire project \$6,400,000. Burns & McDonnell, 107 West Linwood boulevard, Kansas City, Mo., engineers, made the recommendations after a study begun last April.

CLEVELAND—Cuyahoga school district board of education, East Seventy-first street, Cleveland, plans central-heating plant in two-story high and grade school. Cost \$500,000.

COLUMBUS, O.—State department of education, Columbus, plans improvements in power house at Wilberforce university, Xenia, O., including 125-kilowatt and 75-kilowatt engine generator units.

COLUMBUS, O.—State department of education, Columbus, has authorized installation of new ice-manufacturing and cold-storage plant at state boys' industrial school, Lancaster. Cost \$36,000. J. P. Schooley, state office building, Columbus, state architect.

DAYTON, O.—Cimatool Co., Dayton, plans one-story boiler house with gas-fired boiler units at new tool works. Cost over \$150,000.

HURON, O.—City is considering constructing sewage disposal plant. Cost \$50,000. W. Heckelman, city engineer.

LEBANON, O.—City plans sewerage system and sewage disposal plant. \$70,000 bond issue has been approved.

MANSFIELD, O.—City plans motor-driven pumping units and auxiliary equipment in Maxwell station for waterworks system. Also steel tower.

WARREN, O.—Sunlight Electric Co., Warren, manufacturer of fractional horsepower electric motors, a unit of General Motors Corp., Detroit, plans installing electric power equipment in new plant at Warren, work to begin soon. Total cost of project \$400,000.

WOOSTER, O.—Wooster college plans power house on campus to furnish heat and electricity for 18 buildings. Cost \$200,000.

New York

ENDICOTT, N. Y.—Village, village hall, has applied to public service commission for permission to replace present power lines with larger lines. Cost \$40,000. Private plans. H. W. Lauder, municipal power plant superintendent.

ENDICOTT, N. Y.—Board of village trustees plans constructing municipal power plant addition and extension of facilities. Maturity pending legal decisions. L. L. Mathews & Associates, 170 Broadway, New York, engineers.

TONAWANDA AND NORTH TONAWANDA, N. Y.—Cities at special meeting agreed to abandon proposal that single sewage treatment plant be built for joint use, and will instead construct

separate units. Department of health gives owners until Jan. 1 to formulate new plans for construction which will end pollution of Niagara river. Cost exceeds \$100,000.

WESTFIELD, N. Y.—Board of village trustees, village hall, plans purchasing and installing transformers, generators and other equipment for improving municipal light and power plant facilities. Cost \$35,000. M. Mettendorf, superintendent.

New Jersey

HAMMONTON, N. J.—Town plans control house, digesting tanks, chlorinator siphons, sprinkling filter and sludge beds, motors, pumps, sludge digesters, and chlorinator heater. Cost \$200,000. J. Adams, Hammonton, architect and engineer. Project approved by WPA.

LONG BRANCH, N. J.—Town has preliminary plans for constructing pumping station and sewage treatment plant. C. Kupper, 409 East Main street, Bound Brook, engineer.

ORANGE, N. J.—E. Billhuber Inc., 154 Ogden avenue, Jersey City, N. J., manufacturer of drugs and pharmaceuticals, plans installing electric power equipment in new three-story plant at Crane street here. Cost \$125,000.

Pennsylvania

CLARION, PA.—Borough plans municipal sewage treatment and disposal plant. Will engage engineer to prepare plans and specifications early in 1938. C. Imel, borough hall, borough engineer.

MONACA, PA.—Borough has preliminary sketches for water softener plant and waterworks improvements. Cost \$90,000. Chester Engineers, Century building, Pittsburgh, engineers.

PHILADELPHIA — Delta Equipment Co., 148 North Third street, would like to purchase 10 to 15-ton capacity gantry crane with 40 to 60-foot boom and either 220-volt direct current 3-phase motor, or 60-cycle 220 or 440-volt alternating current motor.

Connecticut

COLCHESTER, CONN.—Borough is preparing plans and specifications for constructing municipal water system. Cost \$90,000. H. W. Buck, 650 Main street, Hartford, Conn., engineer.

Maine

CARATUNK FALLS, ME.—Central Maine Power Co. plans dam and hydroelectric plant at Caratunk Falls near Solon. Preliminary engineering work has already been started.

Massachusetts

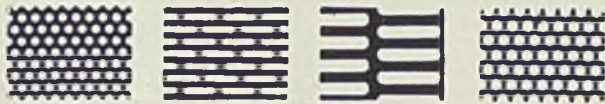
BOSTON — Department of mental diseases, Boston, plans improvements to power plant at state hospital in Grafton, including oil-burning equipment. Cost \$30,000. R. D. Kimball Co., 6 Beacon street, Boston, consulting engineer.

BOSTON — Chadbourne-Walker Co., Boston, has been incorporated with 5000 shares of no par stock to manufacture screw machine products. Frederick C. Hersee, George W. Sauter, Belmont, and William H. Wetsell Jr., Waterbury, incorporators.

SHREWSBURY, MASS.—School board,

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331-S

Shrewsbury, plans central-heating plant in five-story junior and senior high school. Cost \$390,000.

WORCESTER, MASS.—City waterworks department plans constructing pumping station in Tatnuck section. Cost \$250,000.

Illinois

WINCHESTER, ILL.—City plans constructing sewerage system and sewage disposal plant. PWA project. Wood, Walraven & Tilly, 222½ South Sixth street, Springfield, engineers.

Alabama

ALBERTVILLE, ALA.—City soon takes bids for municipal electric distribution system, street lighting system, transformers, and miscellaneous equipment. Cost \$150,000. J. M. Todd, Balter building, New Orleans, La., engineer.

BESSEMER, ALA.—City, care of J. Bryant, mayor, plans electric distribution system. Cost \$1,872,726. PWA loan \$1,030,000 and grant \$842,726 approved. Lide & Adler, Woodward building, Birmingham, Ala., engineers.

DECATUR, ALA.—City, care of J. A. Nelson, mayor, plans electric distribution system. Cost \$350,000. PWA loan \$269,000 and grant \$81,000 approved. T. M. Francis, Brown Marx building, Birmingham, Ala., engineer.

GUNTERSVILLE, ALA.—City plans constructing electric distribution system. Cost \$87,272. PWA loan \$48,000 and grant \$39,272 approved. Lide & Adler, Woodward building, Birmingham, Ala., engineers.

HARTSELLE, ALA.—City, care of J. P. Hodges, mayor, plans electric distribution system. Cost \$60,000. PWA loan \$33,000 and grant \$27,000 approved. Lide & Adler, Woodward building, Birmingham, Ala., engineers.

RUSSELLVILLE, ALA.—City, care of W. L. Porter, mayor, plans electric distribution system. Cost \$125,454. PWA loan \$69,000 and grant \$66,454 approved. Lide & Adler, Woodward building, Birmingham, Ala., engineers.

TARRANT CITY, ALA.—City, care of R. Ingram, mayor, plans electric distribution system. Cost \$329,091. PWA loan \$181,000 and grant \$148,091 approved. Lide & Adler, Woodward building, Birmingham, Ala., engineers.

Delaware

GEORGETOWN, DEL.—Delaware Rural Electric association, Georgetown, plans extending rural electric transmission lines in Delaware, including purchase of poles, wire, transformers and constructing a substation. A total of 385 miles of wire will be placed. Requisition received for \$42,459.

WILMINGTON, DEL.—Delaware Power & Light Co., Sixth and Market streets, plans enlarging Christiana substation by 25,000 kilovolt-amperes, including installing three large transformers with necessary oil-circuit breakers, disconnecting switches, controls and equipment, auxiliary apparatus, improvements, and addition to steel structure. Cost \$300,000.

Florida

GRACEVILLE, FLA.—West Florida Electric Co-operative Association Inc., A. J. Crutchfield, president, Graceville, plans installing generating plant for rural power lines in Jackson county. Cost \$30,000. First extension through northwest section in Cambellton and Malone will cost \$100,000.

Mississippi

MORTON, MISS.—Adams-Edgar Lumber Co., Morton, plans boiler plant at three-story lumber and wood-working mill on local site. Cost \$90,000. Stephen Shea, Lake Charles, La., engineer.

STARKSVILLE, MISS.—City, care of mayor, plans electric distribution system to cost \$150,909. PWA loan of \$33,000 and grant of \$67,909 approved. A. S. Brumby, Starksville, engineer.

North Carolina

HICKORY, N. C.—Town voted bonds to construct sewage disposal plant. PWA project. Cost \$175,000. R. L. Hefner, city manager.

ROCKY MOUNT, N. C.—Contracts will be awarded soon for improvements in municipal power plant. William C. Olsen, 5 Exchange place, Raleigh, consulting engineer.

South Carolina

ROCK HILL, S. C.—P. W. Spencer has applied to federal communications commission for permission to construct broadcasting station.

Louisiana

NATCHITOCHEs, LA.—State Normal college here plans central-heating plant in new high and trades school. Financing through federal aid. Cost \$550,000.

SPRINGVILLE, LA.—Livingston Parish police jury plans central-heating plant in new courthouse at Livingston. Financing through federal aid. Cost \$175,000.

SUNSET, LA.—Municipality is planning gas distribution system.

Tennessee

BROWNSVILLE, TENN.—Southwest Tennessee Electric Membership Corp., Brownsville, plans constructing 280 miles of primary and secondary lines for rural electrification in Haywood, Lauderdale and Madison counties. Cost \$290,000. Funds secured through federal aid.

CHATTANOOGA, TENN.—City, care of A. Flske, power board director, Municipal building, is planning electric distribution system. Cost \$6,446,212. PWA loan \$2,382,000 grant \$1,948,000 and balance in bonds already voted and approved. S. R. Finney, Municipal building, engineer.

COLUMBIA, TENN.—City, care of E. Denham, mayor, plans electric distribution system. Cost \$204,000. PWA loan \$112,000 grant \$91,800 approved. Freeland, Roberts & Co., Industrial building, Nashville, engineers.

FAYETTEVILLE, TENN.—City, care of B. E. Holman, mayor, plans electric distribution system. Cost \$149,000. PWA grant \$67,050 approved. Lide & Adler, Woodward building, Birmingham, Ala., engineers.

LENOIR CITY, TENN.—City, care of M. S. Goodwin, mayor, plans electric distribution system. Cost \$52,727. PWA loan \$29,000 and grant \$23,727 approved. Campbell Wallace, Empire building, Knoxville, engineer.

Virginia

WINCHESTER, VA.—Winchester Woolen Co. plans constructing new power plant. Cost \$40,000.

Michigan

DETROIT — Fruehauf Trailer Co., 10940 Harper avenue, plans one-story

boiler house at plant in connection with other buildings for expansion. Cost of total project over \$100,000.

SAGINAW, MICH.—Bay Pipe Line Co. and Bay Refining Corp., 205 Bearinger building, Saginaw, plan 33-mile welded-steel pipe line from oil field area in Buckeye township, Gladwin county, to Bay city to be used for crude oil transmission. Booster stations to be installed. Cost \$250,000.

TRAVERSE CITY, MICH.—Municipality plans electric light and power plant. Cost \$125,000.

Indiana

FT WAYNE, IND.—Ft. Wayne state school, Ft. Wayne, plans steam power plant at Muscatatuck colony institution, Butlerville. Project includes plant and two other buildings. Total cost \$250,000.

LINTON, IND.—Board of public works, E. V. Bull, chairman, has preliminary plans for sewage disposal plant and improvements for present waterworks system. Cost \$190,450. WPA project. L. S. Finch, 276 Century building, Indianapolis, engineer.

ORESTES, IND.—Brunson Bros. Canning Co., Orestes, is planning constructing a canning factory including installing machinery and equipment. Cost including equipment, \$30,000.

RICHMOND, IND.—Board of school trustees, C. K. Robinson, secretary, plans one-story boiler house at new multi-story senior high school. Cost \$573,000.

WASHINGTON, IND.—Board of public works, city hall, soon takes bids for constructing 3000-kilowatt turbogenerator set for municipal light plant. Bevington-Williams Inc., 1139 Indiana Pythian building, Indianapolis, consulting engineer.

Missouri

JEFFERSON CITY, MO.—State building commission, state house, plans central-heating plant in multi-story state office building on West High street for which \$850,000 has been authorized. Keene & Simpson, Land Bank building, Kansas City, Mo., architects.

JEFFERSON CITY, MO.—Missouri state penitentiary and bi-partisan advisory board of state building commission, E. M. Eagan, executive secretary, takes bids to Jan. 1 for altering power plant building, stokers, boilers, generating equipment and electrical distribution lines at Missouri state penitentiary. PWA project. Cost \$450,000. C. A. Haskins, care of owner, engineer. (Noted Dec. 13 Issue).

KIRKSVILLE, MO.—Board of directors, Northeast Missouri State Teachers' college, Kirksville, plans central-heating plant in new junior high school and administration building. Cost \$300,000.

MARYVILLE, MO.—Board of regents, Maryville Teachers' college, plans central-heating plant in new Horace Mann training school. \$250,000 authorized.

Arkansas

ANADARKO, ARK.—City has made preliminary plans for installing 5000-horsepower diesel engine and generator for light plant. Cost \$75,000. N. Kinkel, Anadarko, engineer.

SALEM, ARK.—Salem foundry, located in building owned by John Pickren, was damaged by fire.

Oklahoma

DUNCAN, OKLA.—Southwestern Light & Power Co., Chickasha, Okla., was voted



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franchise and plans rebuilding and extending present electric distribution system. Private plans. Cost \$50,000.

JAY, OKLA.—City is making preliminary plans for constructing waterworks system. No engineer engaged as yet.

Wisconsin

RIVER FALLS, WIS.—Wilkins & Kay, River Falls, have plans under way for new cold-storage and refrigerating plant. Cost \$30,000.

Minnesota

ANOKA, MINN.—City, W. Ridge, city clerk, is preparing preliminary plans for constructing a hydroelectric plant and will receive bids in the spring. G. M. Orr & Co., 542 Baker arcade, Minneapolis, consulting engineer.

WILLMAR, MINN.—City, Hans Gundersen, city clerk, is completing specifications for electric construction for Westinghouse turbine, and will receive bids soon. Burlingame, Hitchcock & Estabrook, Inc., Sexton building, Minneapolis, consulting engineer.

Texas

ARANSAS PASS, TEX.—Warren Petroleum Co., National Bank of Tulsa building, Tulsa, Okla., made final plans for 35,000-gallon natural gasoline plant. Private plans. Cost \$100,000.

CALDWELL, TEX.—City plans butane gas plant and distributing pipeline system. Bonds already authorized. Cost \$42,000. Joseph J. Rady, Majestic building, Ft. Worth, consulting engineer.

DALLAS, TEX.—Highland Park council, E. B. Germany, mayor, plans expenditures for improvements to water system, including rehabilitation of two pumping stations. Applied for WPA grant of \$180,000. Cost of total project \$360,000.

GALVESTON, TEX.—Board of education, Galveston, plans central-heating plant in new multi-story high school. Cost \$500,000. R. R. Rapp, Guarantee building, architect.

KINGSVILLE, TEX.—Dr. Pepper Bottling Co., care of J. E. Garrison, manager, has plans in progress, complete about Jan. 1, for one-story seven-room plant. Will H. Noonan, 620 Mesquite street, Corpus Christi, Tex., architect.

KINGSVILLE, TEX.—Board of directors of Texas College of Arts and Industries, plans central-heating plant in new multi-story science building. Cost \$210,000.

Kansas

KANSAS CITY, KANS.—Midwest Cold Storage & Ice Corp., Fifth street and Kaw river, has approved plans for three-story addition to cold-storage and refrigerating plant. Cost with equipment over \$100,000. George E. Wells Inc., Security building, St. Louis, consulting engineer.

South Dakota

FREEMAN, S. DAK.—City, E. Schamber, city clerk, has rejected all bids which closed Dec. 8 and will take new bids soon for constructing new municipal light and power plant with distribution system. Cost \$98,000. Buell & Winter, 508 Insurance Exchange building, Sioux City, Iowa, consulting engineers.

Iowa

ADEL, IOWA—Clayton Royer, Adel, has leased local Hutchins building and will remodel and equip for new cold storage and refrigerating plant.

DES MOINES, IOWA—Des Moines Ice & Fuel Co., 100 Maple street, plans rebuilding of coal tipples at Eighteenth and Hickman streets recently damaged by fire, including installation of hoisting and conveying equipment.

DYERSVILLE, IOWA—Dyersville Cold Storage Locker Co. plans one-story cold-storage and refrigerating plant. Cost \$50,000.

SPIRIT LAKE, IOWA—Voters approved \$13,000 bond issue at recent election to finance constructing water treatment plant. Fred Dowden, city clerk.

Nebraska

FRANKLIN, NEBR.—City council will purchase new diesel engine for municipal power plant when city engineer has revised plans and specifications. Harry Robinson, city clerk.

LINCOLN, NEBR.—Nebraska state board of control, state house, Lincoln, L. D. Hart, secretary, plans central heating plant in new state hospital building at Ingleside. \$363,600 has been authorized.

New Mexico

ARTESIA, N. MEX.—Central Valley Electric Corp., I. S. Reser, president, takes bids soon for equipment for power plant for rural electrification system, including two 450-kilowatt and one 300-kilowatt generating units. Cost \$125,000.

000. Distributing system cost \$135,000. Financing through federal aid. E. T. Archer & Co., New England building, Kansas City, Mo., consulting engineer.

Pacific Coast

EUGENE, OREG.—City water board is considering constructing a new unit for municipal steam standby plant to furnish 6000 kilowatts hourly. Estimated cost \$489,700.

MEDFORD, OREG.—Rogue River Canning Co. plans improvements in cold-storage and refrigerating plant at local cannery.

SALEM, OREG.—Salem Box & Mfg. Co. plant which was damaged by fire Nov. 20 will be rebuilt including installing modern equipment. Cost \$50,000. John S. Friesen, manager. (Noted Dec. 6).

MONROE, WASH.—City will hold special election Jan. 18 to pass on proposed \$35,000 bond issue to finance \$107,000 water system improvement which includes four miles of pipe.

OLYMPIA, WASH.—State will open bids Jan. 3 for seven buildings, including power plant and laundry for custodial school at Buckley. Cost \$500,000.

QUINAULT, WASH.—Quinault Light Co. has selected site on national forest land for proposed hydroelectric project and will call for bids soon for water wheel, generating and power house equipment. Financed by REA loan. Cost \$60,000. Fred Nichols, project superintendent.

SEATTLE—Local office of Zellerbach Paper Corp. will let contracts soon with eastern companies for steel digesters, tanks and other equipment for newly erected pulp plant at Fernandina, Fla.

SPOKANE—Western Bottling Co. is building addition to plant. Cost \$18,300. Peter Young, general contractor.

SPOKANE—Tungsten Products Inc., Collins Hotel, has been organized with capital of \$100,000 by B. R. Moyes and associates.

SPOKANE—City plans constructing sewage disposal plant, and is seeking WPA funds. Cost \$2,000,000. A. D. Butler, city engineer.

TACOMA, WASH.—City will call for bids soon for constructing proposed water department storage building and shops. Cost \$100,000.

TACOMA, WASH.—City will receive bids soon for supplying meters and transformers and incandescent lamps. Cost \$40,000.

TACOMA, WASH.—Hooker Electro-Chemical Co., Tacoma, main office, 60 East Forty-second street, New York, plans installation of electric power equipment in new addition to plant at Tacoma. Work begins soon. Cost \$100,000. McKim, Mead & White, 101 Park avenue, New York, architects. Alan Porter Lee Inc., 136 Liberty street, New York, consulting engineer.

Canada

ST. JOHNS, N. B.—New Brunswick power board has made plans for extending electric distribution lines. Cost over \$75,000.

EAR FALLS, ONT.—Ontario hydroelectric power commission, Toronto, is taking bids for constructing a 75-mile transmission line into Woman's Lake gold camp from Ear Falls power development. Line to supply other mines in this area.

TORONTO, ONT.—Bids will be received to Dec. 28 by W. O. Robbins, mayor, chairman of the board of control, for supplying and installing pumping equipment and electrical equipment for water pumping station in Victoria park. Cost over \$1,000,000. H. G. Acres & Co. Ltd., Ferry street, Toronto, engineer.

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