

STEEL

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As the Editor Views the News

INDUSTRY seems to exhibit a dumb persistence in putting its worst foot forward. While on a recent motor trip, this writer passed rows of unpainted, dilapidated "company houses" guarded by forbidding signs: "Private Property. No Trespassing. Property of the X Y Z Steel Co." Of course the houses belonged to the mining divisions of important steel producing companies. To anyone familiar with the internal problems of the industry, the presence of such quarters for employes is understandable. But to the uninformed general public, the scene is revolting. The average layman says sarcastically "So this is how the great X Y Z Steel Co. houses its employes!"

• • •

This unfortunate impression is due in part to the fact that steel companies seldom call attention to the good houses they provide for employes. The corporations which maintain these hovels also own modern houses in attractive residential districts.

Put the Best Foot Forward

However, these model homes seldom are tagged and therefore the identity of ownership or sponsorship is not revealed. We offer this friendly tip: Remove the identifying marks from the disreputable shacks. Tear down the eyesores as soon as it is economically possible to do so. In the meantime, if the ownership label must be displayed, use it on houses that are truly representative of the corporation's policy.

• • •

The problem of housing undoubtedly will be revived in the early future. England, farther along on the road to recovery than the United States, already has experienced a shortage. However signs of impending activity in the construction of homes for employes are beginning to appear

Will Need More Houses

in our own country. The International Business Machines Corp. on Friday announced it has started a \$2,000,000 program (p. 22) for the erection of 350 houses which will be sold to

employes of its plant at Endicott, N. Y. It is practically certain that the need for similar programs in other sections will be felt in 1937 and 1938. It is not too early for industrial corporations to be considering to what extent they desire to participate in this field of activity. In some industrial centers, necessity may be an important factor in shaping company policy.

• • •

Speaking at a meeting of the American Institute of Bolt, Nut and Rivet Manufacturers, A. F. Jensen (p. 26) gave industrial executives something to think about when he urged manufacturers to rely more upon indirect methods of selling. He declares that the advertising appeal is shifting

Dramatizing the Commonplace

away from the direct merits of the product and toward the service or other benefits derived from its use. Alert merchandisers have noted this trend, even in the appeal to customers of relatively prosaic ferrous materials and parts. To dramatize the commonplace things is one of the most difficult problems in merchandising. It requires imagination and resourcefulness—qualities which sellers of iron, steel and nonferrous products were slow to develop until in recent years. Today progress in this respect is decidedly encouraging.

• • •

In view of the peculiar provisions of the 1936 federal tax law, policies affecting expenditures and disposition of profits are being considered with unusual care by the managers of industrial companies.

Price Advance Affects Outlook

One corporation has announced a profit sharing plan for employes (pp. 22, 39) which seems to have interesting possibilities. . . . Price advances for fourth quarter in certain semifinished and finished steel items (p. 77) inject a new factor into the outlook for demand over the remainder of the year. . . . Blowing scrap metal in Bessemer converters preparatory to charging it in open-hearth furnaces (p. 26) is a novel expedient employed in the Pittsburgh district to gain economies to offset high scrap prices.

E. L. Phelan

Federation Keeps Hands Off? Carnegie Conference Sept. 14

LABOR day found labor union forces hopelessly at odds over organization of the big industries, and little progress recorded in the drive to unionize steel.

Not until Nov. 16 when the American Federation of Labor holds its annual convention in Tampa, Fla., is a decisive test of strength between the federation and the CIO expected.

As the 30-day time limit which the federation's executive council gave the CIO to disband expired Saturday some federation union leaders were making efforts to obtain a rank-and-file referendum on question of ousting the ten rebel unions. The suspension will be one of the important issues before the convention. Meanwhile virtual immunity from large-scale strikes seems assured.

Fresh from his European trip, John L. Lewis in Washington press conference announced that no further protest would be made against the suspension; that none of the unions in the CIO would leave that organization. He stated the CIO will continue "a vigorous campaign" to unionize steel and other metalworking industries.

Truce for the Present

In Washington, too, some spokesmen for the federation were reported as saying that this organization will make no effort to carry on its unionization activities in the centers and industries where the CIO is conducting its drives. For the present it looks like a truce between the two factions, with the CIO given a free hand to see what it can do.

Failing in attempts to swing the central committee of 18 employe representatives of the Carnegie-Illinois Steel Corp. to the CIO, Thomas Moore resigned from the group.

At the conclusion of a four-day meeting of representatives of Carnegie-Illinois Steel Corp.'s sheet and tin plate mill workers in the Pittsburgh district, in Pittsburgh Friday, it was announced that a general meeting with company representatives will be held Monday, Sept. 14. It was explained, however, that these are the customary annual meetings, formerly conducted by the American Sheet & Tin Plate Co., and held last year at this time in New Castle, Pa. It was reported, though not officially confirmed, that the subjects for discussion at the Sept. 14 meeting will include group life insurance, liberalization of the present pension plan, and wages.

Unable to reconcile his conservative

views with those of John L. Lewis and the CIO group in the Amalgamated Association of Iron, Steel and Tin Workers, Michael F. Tighe, president, announced his "withdrawal as a candidate for re-election Jan. 1."

Diplomat, Tighe in a simply worded statement thanked his friends. In an article in the union's *Amalgamated Journal* he pleaded for unity, referred to Lewis' drive as an opportunity for the workers to enter a "truly democratic group, with the right of self-government." The "rank and filers" in Amalgamated, nucleus of the Lewis faction, he fought vigorously until overwhelmed. He is 78, and in poor health.

Tighe started work in the mills at 10. He was a puddler for the Wheeling Iron & Steel Co., now Wheeling Steel Corp., in Wheeling. He joined Amalgamated, oldest labor organization in the industry; became assistant secretary; secretary; vice president; and in 1919, president.

At the peak of its influence Amalgamated did not have more than 30,000 members. Just before CIO took over the association this year it had 5000.

Tighe favored limiting membership to skilled workers—directly opposed to the Lewis theory. Already a half dozen candidates, the majority of the Lewis school, have announced themselves for his office.

PROFIT SHARING "DIVIDENDS" FOR KEYSTONE EMPLOYEES

A two-way plan to increase the earnings of some 1500 employes of Keystone Steel & Wire Co., Peoria, Ill., will cost about \$200,000 the company estimates.

Keystone's profits will be shared with its workers, the first "dividend" to be made on the basis of the showing for the fiscal year ending June 30, 1937. In the meantime, a wage increase of 3 cents an hour in the average hourly earnings of all employes of the plant was granted effective Aug. 30.

The profit sharing will be on the following basis: 4 per cent on all net profits up to \$1,000,000 after deduction of all taxes; 8 per cent on the next \$100,000; 12 per cent on the next \$100,000; 16 per cent on the next \$100,000, and 20 per cent on all net profits over \$1,300,000.

Each profit sharer will participate in proportion to the amount of wages he receives during the year. Thus, if the net profits were \$1,500,000, the amount to be shared would be \$116,000 and an employe whose

total earnings were \$1800 would receive \$104.

Keystone's net income last year was \$1,167,790. Its factory payrolls at present are running at the rate of about \$2,000,000.

R. E. Sommer, vice president and general manager, said "this 3-cent increase in the hourly rate, together with the profit sharing plan will bring the average hourly wages of employes to the highest level in the history of the company and represents a level that is in excess of the average rate now paid in the steel industry, and is an increase of approximately 20 cents an hour over the average hourly rate paid in 1929."

The excess earnings plan of Westinghouse Electric & Mfg. Co. resulted in the placing of 14 per cent more in the August pay envelopes of its 40,000 employes. The plan provides for the payment of 1 per cent in additional wages for each \$60,000 the company earns in excess of \$600,000 a month. Nine per cent extra was paid in June to the employes and 13 per cent in July.

Another company raising wages last week was Central Foundry Co., Tuscaloosa, Ala. An increase of 5 per cent, effective Sept. 1, was announced. A 15 per cent bonus will be distributed Sept. 15 to all regular employes of the company who have been on the payroll the full quarter from June 1 to Aug. 31.

BUSINESS MACHINES BUILDING 350 WORKMEN'S HOMES

A program which holds significance for other companies facing a shortage of workmen's homes was announced last week by the International Business Machines Corp., New York, which plans to spend \$2,000,000 in the next two years in constructing 350 houses near its plant at Endicott, N. Y. They will be sold to employes at cost.

Construction has already started on the first group of 10, for which 134 requests for purchases were made. Six have been sold. Selling on insured mortgages of approximately \$3600, the homes are to be six-room frame structures, individually designed in colonial style, with attached garages.

REAL WEEKLY EARNINGS DOWN SLIGHTLY IN JULY

Real weekly earnings in 25 manufacturing industries were 1.0 per cent lower in July than in June, according to National Industrial Conference board, New York. The decline was attributed to a 0.5 per cent drop in average weekly work-hours from 39.4 to 39.2 although the average hourly earnings remained 61.7 cents, and to an increase in the general cost of living. Employment rose 0.8 per cent from June to July, but the number of workers employed is 13.2 per cent less than in July, 1929.

Signs of Plant Expansion Multiply; Producers Striving for Balance

EXPANSIONS and readjustments—relatively small, but significant, indicating confidence, and possibly being the forerunners of much more important developments, if the present broadening in iron and steel demand continues—featured news of the industry in the week.

A contract was awarded for a new blast furnace—first since 1928. Decisions were made to blow in four more blast furnaces shortly. Four other stacks, long idle, were abandoned, making 207 to be dismantled or taken from potential capacity since 1918—since which time, also, only 20 stacks have been built in this country.

While some open hearths have been enlarged in recent years inci-

dental to repairs, the first real step toward increasing the industry's ingot capacity has been taken.

Changes in the proportionate output of finished steel products manufactured, with enlargement in some departments and contraction in others, have upset the normal balance of ingot and finished steel capacities at many mills. The knowledge that practical ingot capacity today is smaller than at the beginning of the depression, by reason of obsolescence and other factors, and that extensive repairs and new construction are required, coupled with the promising outlook in markets which long were dormant, is leading to considerable study and discussion, and to some action.

scrapping its Crozer furnace at Roanoke, Va., last operated in 1924. Built in 1889 and rebuilt in 1907, this unit had an annual capacity of 60,000 gross tons of foundry iron.

The Ivanhoe, Va., stack formerly operated by the Ivanhoe Mining & Smelting Corp. has been dismantled. Built in 1881-82, it was last active in 1913. Annual capacity was 25,000 gross tons of foundry iron.

Increasing Open-Hearth Capacity

NATIONAL TUBE CO. is enlarging its 12 open-hearth furnaces at Lorain, O., from 90-tons to 125 tons, and this will increase its potential production of basic steel from 900,000 annually to approximately 1,260,000 tons. Six have already been rebuilt, taken successively as opportunity offered in recent months.

This plant has been shipping raw steel to Cleveland for the American Steel & Wire Co., and pressure has been so strong that the latter has had to obtain ingots from the Pittsburgh district.

In rebuilding the Lorain furnaces, incidentally, the bottom layers, as well as the top, are being insulated, for fuel conservation. A half million dollars has been appropriated for the project.

The moderate gains in ingot capacities recorded since the steel code was abandoned—the code forbid any increase—have been achieved mainly by enlarging furnaces. Practically the only new construction has been that of the Great Lakes Steel Corp., subsidiary of the National Steel Corp., which has lighted two of its four new open hearths at Ecorse, Mich. (STEEL, Aug. 31, page 19). The four will increase Great Lakes capacity from 920,000 tons to 1,400,000.

Carnegie-Illinois has sufficient confidence in the early return of demand for rails and other heavy products to start rebuilding of a battery of open-hearths in the Chicago district which have been out of commission for several years.

Inland Steel Co., the leading independent in the Chicago district, has ingot capacity of 2,000,000 tons and finishing capacity for 2,020,000 tons. Inland's finishing capacity includes a much larger proportion of sheet and strip output and much less heavy products than Carnegie-Illinois. As a result, Inland is running at capacity in

First New Blast Furnace Since 1928

INSTEAD of attempting to rebuild blast furnace stack No. 4 at its Corrigan, McKinney division, Cleveland, Republic Steel Corp. last week after conferences with engineers decided to rebuild a new stack on No. 4's foundations, and awarded the contract to Arthur G. McKee & Co., Cleveland.

The new furnace is scheduled for completion in about six months at a cost of more than \$1,000,000.

The stack's annual capacity will be 325,000 gross tons; capacity of present No. 4 which was built in 1915-16 is 240,000 tons.

McKee & Co. is now completing work on a new gas cleaning plant to operate in conjunction with the new furnace. The present hearth will be enlarged from 22 to 25 feet, changes will be made in two of the four stoves, and new boilers and a large turbo blower will be installed.

Four Stacks To Blow In; Four Abandoned

ACTIVE blast furnaces on the last day of August totaled 148. Since that time, one furnace has resumed and at least four more are scheduled for blowing in shortly.

Hamilton Coke & Iron Co. relighted its rebuilt and relined Hamilton, O., stack Sept. 1. This unit went down June 3. Pittsburgh Coke & Iron Co. (Davison Coke & Iron Co. until Sept. 1) will blow in its Sharpsville, Pa., furnace Sept. 8. This stack has been idle more than 6 years.

Within four to six weeks, American Steel & Wire Co. will relight one of the two furnaces at Morgan Park, Minn. (Duluth), plant formerly operated by the Minnesota Steel Co. The stacks have been inactive since 1930, although No. 1 was relined in 1931. Some of the ten basic open hearths and part of the wire mills have been in operation through the depression.

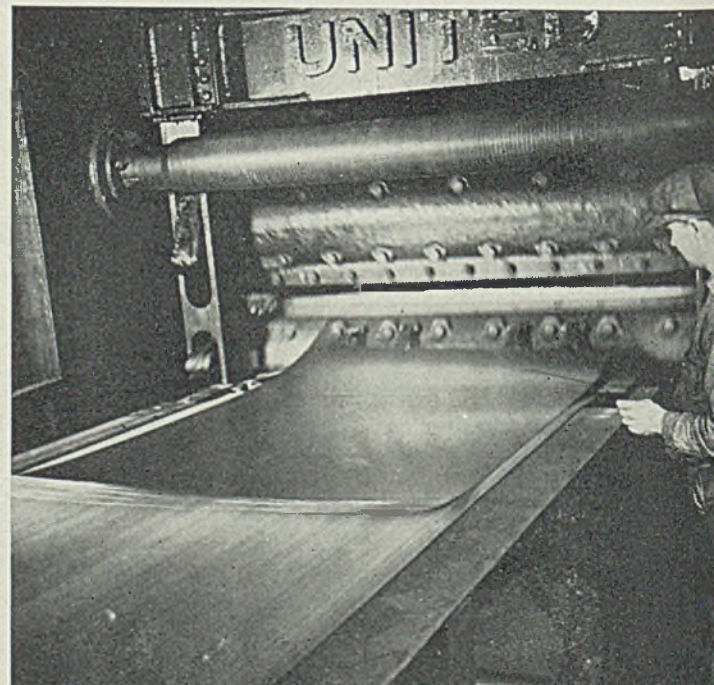
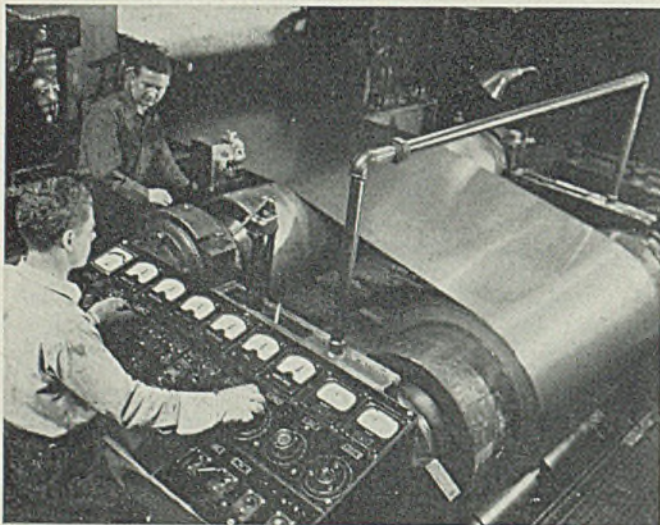
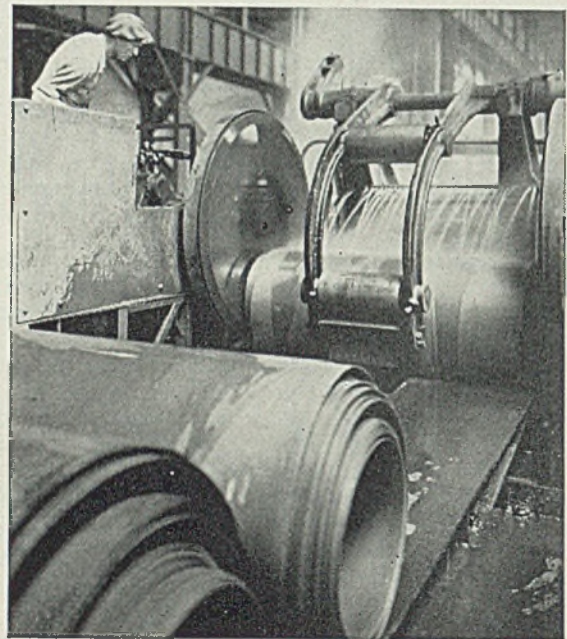
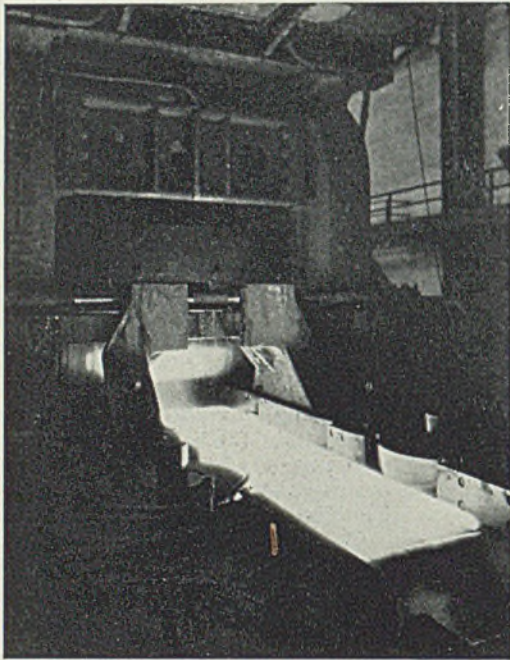
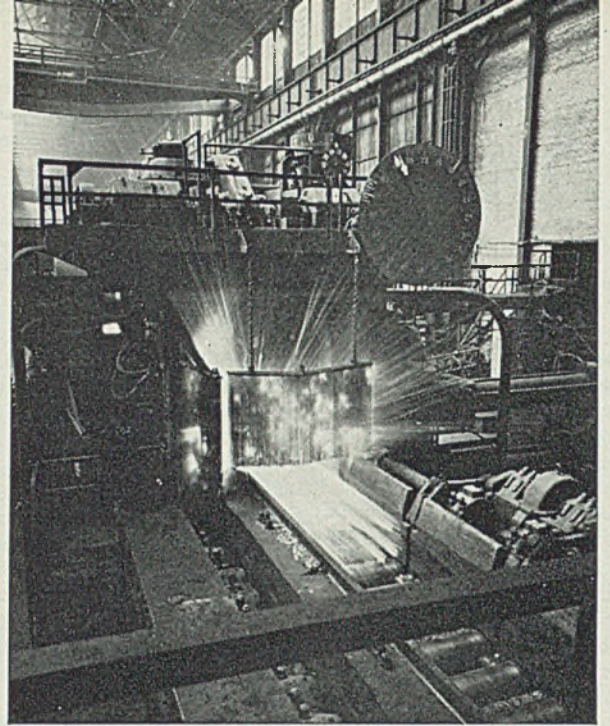
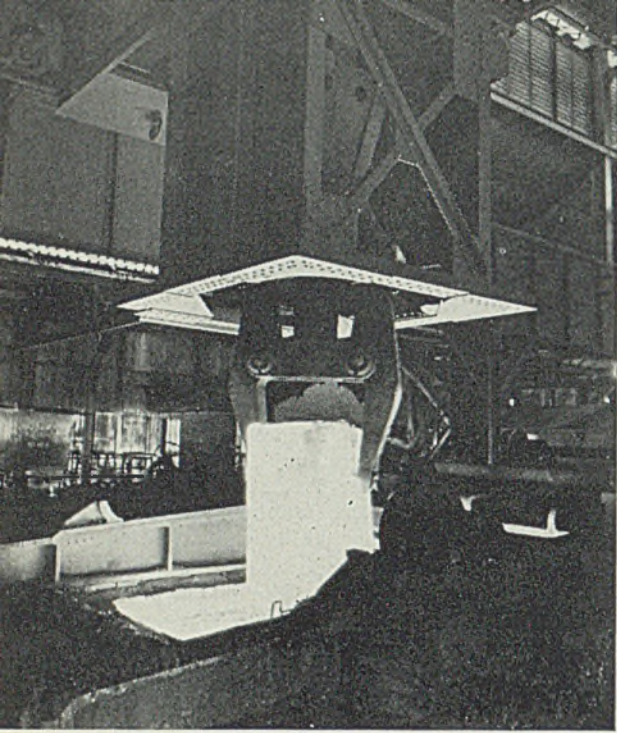
No other plans for expansion at Morgan Park are contemplated.

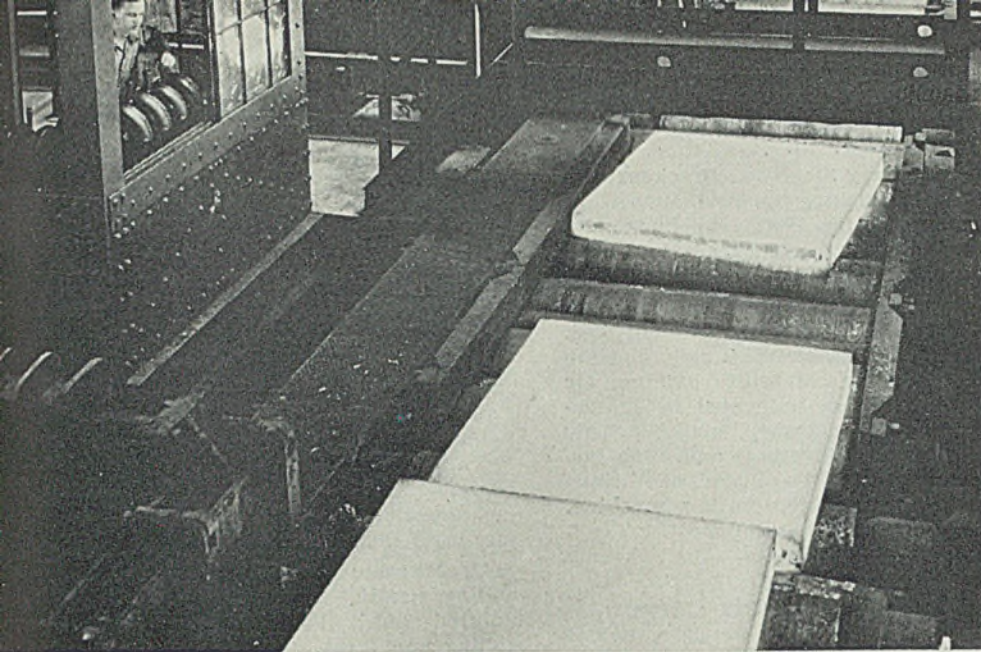
Struthers Iron & Steel Co. is preparing to relight its stack at Struthers, O., which has not operated since August, 1935, when it was blown out after less than a 3-month run. A furnace in the Buffalo district is being made ready, but the date of lighting has not been fixed.

With the dismantling of four stacks, the total number of potential units in the country as of Aug. 31 has been reduced from 252 to 248.

Carnegie-Illinois Steel Corp. has dismantled Joliet Nos. 1 and 2 at Joliet, Ill. These have been inactive for several years. Both built in 1873, No. 1 was first operated in 1880 and No. 2 in 1882. They had an annual capacity of 111,800 gross tons of bessemer iron.

Virginia Iron, Coal & Coke Co. is

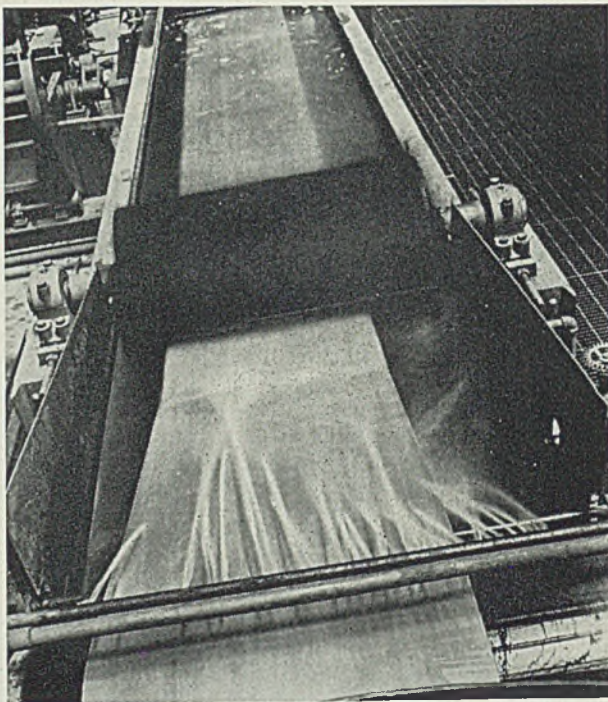




ingots and finished steel, and in expectation of increased demand for rails, structurals and other heavy products it will bring in four additional open hearths next month. This will increase its open-hearth complement to 31 furnaces.

Eight tinning machines of the automatic type will be installed at the Niles, O., division of the Republic Steel Corp. Contracts for these units recently were placed with the Aetna-Standard Engineering Co., Youngstown, O. A feature of the new pots is that they will be heated by immersion heaters of the Kemp type instead of being underfired. A 4-stand 4-high tandem strip tin plate mill recently was ordered for Republic's Niles plant for producing of deep-drawing black plate.

The steadiness with which ingot



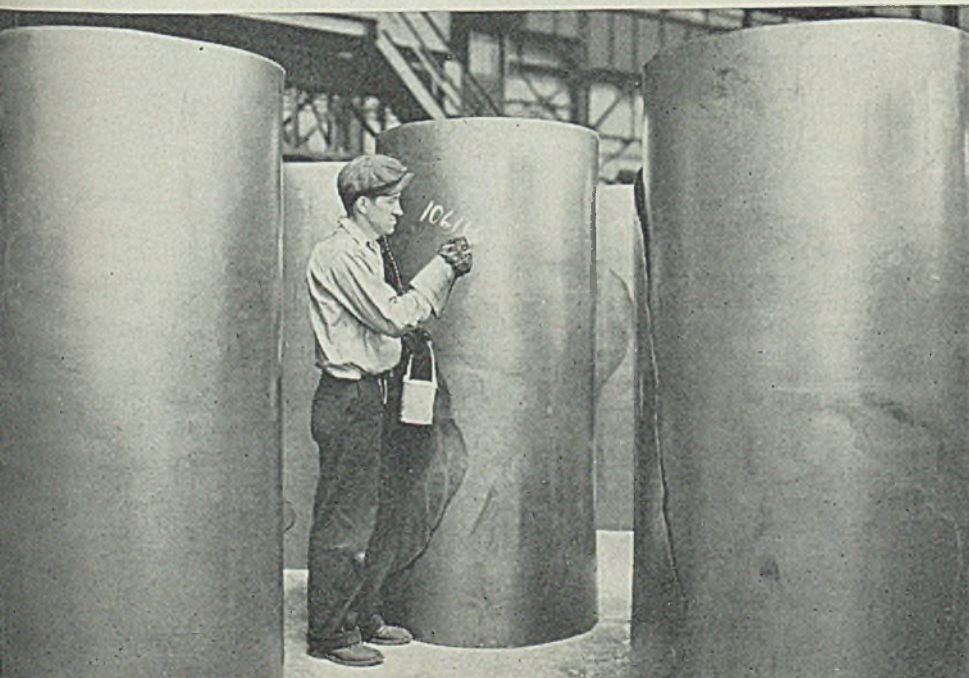
Primacy of Strip

IMPROVEMENT in steel demand this year has been strongest in strip and sheets, in which department plant expansion since 1929 has been concentrated. Capacity for producing wide hot-strip is approximately 6,844,500 tons a year, and this will be raised shortly to 10,044,500 tons, with completion of four mills now being constructed. Total finished steel capacity in this country is about 53,500,000 tons.

More rapidly, too, has come demand for other products such as structurals, for which capacity is 5,727,000 tons; rails, 3,492,600 tons; tin plate, 2,664,000 tons; plain wire, 4,000,000 tons, and bars 9,860,000 tons. For these there has been little or no plant expansion in the past several years. Capacity for black sheets is 5,300,000 tons, and plant improvement has consisted mainly of modernizing existing mills.

Illustrating the steps in strip production is this series of photographs taken recently in United States Steel Corp. plants in the Chicago district.

Left to right, across the pages: Removing the ingot from the soaking pit; ingot in its first pass through the slabbing mill; slabs moving to reheating furnace; rolling the strip, 900 feet per minute; strip 69 inches wide being coiled, coil weighing 4200 pounds; the hot-rolled coiled strip being unwound and passing through tub and shower, continuous pickling and washing; strip being cold-rolled under pressure of 2,000,000 to 3,000,000 pounds per square inch; the flying shear cutting strip to length; and the huge coils, ready to be shaped into automobile bodies, being marked for identification.



production in the central eastern seaboard district has lagged behind that for the industry as a whole in the last five years has been discussed frequently in the industry. At present, with its annual capacity of more than 8,000,000 tons, it is operating more than 20 points behind the average for the industry as a whole.

There may be several contributing reasons, but it is agreed that the principal one is the fact that the district's finished production is devoted so largely to the requirements of the heavy industries, which throughout the depression and until only recently have been dormant. In the district, which also includes Sparrows Point, Md., there is an annual finishing capacity of 1,652,300 tons of plates and 1,535,600

tons of shapes. These together make for a total of 3,187,300 tons, or more than half of the estimated hot finished steel capacity of the district, including both integrated and non-integrated producers.

In addition, there is capacity for more than 460,000 tons of rails, which has been practically idle in recent years, and a steel bar capacity of almost equal proportions.

These products are the principal requirements of the heavy industries, such as building construction, railroads and shipyards. These industries now appear to be moving definitely forward.

There has been relatively little new finishing capacity in the district until this year, when the \$5,000,000 cold tin mill at the Bethlehem plant at Sparrows Point went into operation. The Alan Wood Steel Co., Conshohocken, Pa., has just started improvements, which will add materially to its annual sheet capacity.

Four New Strip Mills By 1937

FOUR large strip mills now are under construction—will be in operation by 1937.

In the Pittsburgh district Jones & Laughlin Steel Corp. is building a 90-inch mill. Mesta Machine Co. is already moving in machine parts. Rated capacity is 720,000 tons a year. Jones & Laughlin's ingot capacity is 2,222,200 tons; its present finishing capacity, 1,567,600 tons. Consequently, if no open hearths are added, and none is now contemplated, finishing facilities will exceed ingots.

In Homestead, Pa., construction of Carnegie-Illinois Steel Corp.'s 100-inch semicontinuous strip-plate mill is proceeding apace. Capacity of this mill, 728,900 tons, will increase rolled steel capacity of the Carnegie group to 5,854,100 tons—while it can produce 10,026,500 tons of ingots a year.

In the Chicago district the Illinois Steel group has ingot capacity of 10,434,400 tons, and rolled steel products, 5,757,500 tons. Carnegie-Illinois ingot capacity is about double that of its rolled products, although such items as semifinished steel for sale, forged and formed products, such as car wheels and track accessories absorb a considerable proportion of its ingot capacity. As an offset also, there is about a 28 per cent loss between ingot and rolled steel.

At Gary, American Sheet & Tin Plate Co. is building a wide strip mill of 600,000 tons capacity. There, too, Carnegie-Illinois has just converted a 28-inch mill into a 36-inch

four-high continuous hot strip mill. A 600,000-ton wide strip mill is being built by Granite City Steel Co., Granite City, Ill.

Allegheny Steel Co., Brackenridge, Pa., is making several important changes at the West Leechburg strip steel division, recently acquired with the West Leechburg Steel Co. merger.

Two plant extensions, each approximately 80 x 400 feet, are being erected, one for rolling stainless strip and the second a general utility building for housing various units such as the machine shop, roll shop, etc. Allegheny is also installing three annealing furnaces and is buying a continuous pickling machine, cutting machine, slitter, and other equipment.

Vaughn Co. Gets Large British Equipment Order

Vaughn Machinery Co., Cuyahoga Falls, O., has been awarded a large order for wire mill equipment for the new Cardi South Wales plant of Guest, Keen & Nettlefolds Ltd., Birmingham, England, large British manufacturers of steel and allied products.

The complete plant will be ready about Jan. 1, 1937, and will have an annual capacity of approximately 50,000 tons of wire in sizes down to No. 20. The combination equipment embraces wire-drawing machines of various types for single and continuous drawing.

Vaughn Machinery's order is part of an extensive new building and modernization program on the part of Guest, Keen & Nettlefolds. Transfer has been made of the English company's wire-drawing plant and nail works from Newport and Rogerstone to Cardiff, where steelmaking activities are to be concentrated, with new coke ovens, blast furnaces, steel melting and rolling plants having a weekly capacity of 6000 tons coke, 9000 tons pig iron, 7500 tons ingot and 6500 tons of finished rolled steel.

Trying "Synthetic Scrap" In Pittsburgh District

Faced with high prices of heavy melting scrap, open-hearth furnace operators in the Pittsburgh district are experimenting with the use of "synthetic" scrap. This material is made by using bessemer converters to eliminate a larger portion than usual of carbon and silicon from pig iron. It is then poured into ingots and charged into open hearths as the equivalent of No. 1 heavy melting scrap.

Since carbon comprises the greatest bulk of the oxidized elements removed in the open hearth process, the time for a heat of steel is reduced if low-carbon scrap or pig iron is charged.

Sell the Service, Boltmakers Told

INCREASED emphasis on merchandising methods was suggested to members of the American Institute of Bolt, Nut and Rivet Manufacturers at a meeting in Cleveland last Thursday by A. F. Jensen, president, Hanna Engineering Works, Chicago, in an address "Are We Just Selling Hunks of Iron?"

Valuable lessons may be found, he said, in modern advertising based on appeals other than the direct merits of the product.

"Toothpaste manufacturers are selling healthy gums," Mr. Jensen pointed out. "Coffee makers are selling happiness and 'friendly stimulation.'"

"Soap flakes are advertised as a guarantee against runs in hosiery. Automobile manufacturers are selling riding comfort, safety and low-cost per mile. Radio companies have turned their appeals on perfect tuning, world-wide reception and perfect tone.

"The railroads are doing a splendid job selling safety. You could almost glorify a track bolt in the same way. At any rate, the big thing is to keep the consumers' minds on track bolts and keep on emphasizing it.

"Watch the advertising of the United States Steel Corp. Steel advertising is taking on a new form. They are selling beautiful bridges now. There are many new ways of merchandising bolts and rivets and creating demand for them."

Film Shows Rivet Use

Following Mr. Jensen's address he presented a film showing the manufacture and use of rivets in automobiles, railroad car construction, bridges and other work.

The institute meeting was one of the largest held in recent months, according to James D. Eggers, secretary. About 40 attended.

Sessions were devoted to discussions centering around general trade practices, looking to promotion of markets and the general development of sales programs.

Members were told that August business was slightly below July, the latter month being the best since 1931 with operations at 57 per cent of capacity and monthly shipments of bolts 90 per cent based on a four-year average of sales.

Arthur D. Morris, Bayonne Bolt Corp., Bayonne, N. J., president of the institute, was in charge of the Thursday morning session, while the afternoon meeting was presided over by H. C. Graham, vice president, Pittsburgh Screw & Bolt Corp., Pittsburgh.

Activities of Steel Users and Makers

UTICA DROP FORGE & TOOL CORP., Utica, N. Y., has been incorporated to take over the business of Utica Drop Forge & Tool Co. The company starts business immediately and will continue the policies of the previous company. The management of the new organization will be in the hands of J. Edward O'Toole, vice president and general manager, who has held the same position with the old company. Edward Norris has been elected president and treasurer, and Dana L. Tyler, secretary and assistant treasurer.

Power Transmission council and Mechanical Power Engineering associates moved their headquarters Sept. 1 from 1 Atlantic street, Stamford, Conn., to 75 State street, Boston. D. M. Rae is secretary.

E. F. Burke, Cleveland, representing C. I. Hayes Inc., Electric Power Equipment Corp., Hynes Electric Heating Co. and Illinois Testing Laboratories Inc., has moved from 2281 Scranton road, to room 525, 4614 Prospect avenue.

Consumers Steel Products Co., Detroit, has been appointed distributor in Michigan by American Rolling Mill Co., Middletown, O., for stainless steels and its recently perfected line of "Paint-grip" metal for advertising signs. Consumers Steel has also been

named distributor in the same territory for C. G. Hussey & Co., manufacturer of copper and brass sheets, rods, and bars.

Midland Wire Corp. has purchased the plant of the Monarch Products Co., Tiffin, O., and plans to start production of copper wire about Oct. 1. The company will have about 75 workers on its payroll when it starts operations.

Thomas Iron Co., a wholly owned subsidiary of Reading Iron Co., Philadelphia, will reopen its Richard mine, Wharton, N. J. Work on preparing this mine for operations, after a shutdown of four years, has been started, and the mine is expected to be in production by Oct. 1.

Modern Metals Corp., Chicago, warehouse seller and mill agent of steel, brass, copper and metal alloys, has leased the building at 2801 South Kedzie avenue. The building is 1-story of the heavy mill construction type and will provide the additional space needed because of increased business of the company.

Brodin Construction Co., Cleveland, maker of wire drawing and cold rolling equipment, has outgrown its present quarters at 10255 Harvard avenue and is moving into its new building at 11730 Harvard avenue. The building is 90 x 320 feet, and a three-ton crane runs the entire length of the plant.

Stockholders of Building Products Inc., New York, have voted to accept the offer of G. A. Sagendorph of Bos-

ton for the purchase of a majority interest in Penn Metal Co. Mr. Sagendorph, president of the Penn Metal Co. for many years, announces a new company will be formed known as the Penn Metal Corp., to take over all the fixed assets of the old company.

Penn Metal Corp. will continue with the same personnel in factory, sales, and executive forces, and with warehouses in Boston, New York, Philadelphia, Parkersburg, W. Va., Los Angeles and San Francisco.

Meetings

AN INSPECTION tour of the Ford Motor Co. plant, Dearborn, Mich., has been arranged for members of the Institute of Scrap Iron and Steel who will attend the midyear conference of the organization at Hotel Statler, Detroit, Sept. 9. This feature is in addition to the national golf tournament of the scrap iron trade to be held on the same day.

J. F. Froggett, senior editor, *Daily Metal Trade*, Cleveland, will speak at the dinner which will close the conference. Other addresses on subjects of interest to the scrap trade will be made by several members of the institute.

MACHINE TOOL DEALERS TO HOLD FALL MEETING IN OHIO

Associated Machine Tool Dealers will hold its fall meeting at Granville Inn, Granville, O., Sept. 21-22. John Sauer Jr., 2921 East Grand boulevard, Detroit, is secretary.

Good in Robinson-Patman Law Seen by Manufacturer

Some advantages of the Robinson-Patman act are noted by Frank Klein, budget director of the Worthington Pump & Machinery Corp., Harrison, N. J.

"Thoughtful students of management for some time have been of the opinion that intensive cultivation of a limited market, rather than a continuing drive for a more extensive market, results for many businesses in a more efficient operation; 'efficient' meaning lower costs to consumers and, concurrently, a higher rate of return on the capital invested in the business," he says.

"The Robinson-Patman act now places upon all businesses the necessity of examining in minute detail the costs of doing business. There is small doubt that many business heads will review results of that self-examination as a mandate of common sense to change the whole direction of their particular businesses from a drive toward a larger operation to one for shrinkage to a limited size and consolidation at such a level."

Steel Gives Outdoor Display Strength and Beauty



BRILLIANT colors make this outdoor advertising display spectacular. It is 64 feet high and has a 44-foot foundation. Seventy tons of steel, 11,100 bolts and 9530 feet of electric wiring were used in the construction. Two separate, identical units were built back-to-back to catch the attention of traffic from both sides. Neon lighting is used extensively and, on either side of the tower are louvred wings representing the colors of the spectrum. The display was erected by Central Outdoor Advertising Co. in downtown Cleveland

August Pig Iron Up 4.5 Per Cent; 2 More Stacks Resume

PRODUCTION of coke pig iron in the United States in August more than recovered the loss it suffered in July and reached a level which was the best since June, 1930, when the depression decline was gaining momentum. This improvement in production was accompanied with a gain of two more active blast furnaces, bringing the total Aug. 31 to 148.

Average daily output in August was 87,484 gross tons, an increase of 3749 tons, or 4.5 per cent, over the July rate of 83,735 tons. The June rate of 86,551 tons had previously been the highest since June, 1930, with 97,817 tons. In August, one year ago, production was 56,767 tons per day.

Total production for August was

MONTHLY IRON PRODUCTION

Gross Tons			
	1936	1935	1934
Jan.	2,029,304	1,478,443	1,225,643
Feb.	1,838,932	1,614,905	1,270,792
Mar.	2,046,121	1,770,990	1,625,588
Apr.	2,409,474	1,671,556	1,736,217
May	2,659,643	1,735,577	2,057,471
June	2,596,528	1,558,463	1,936,897
July	2,595,791	1,520,340	1,228,544
Aug.	2,712,009	1,759,782	1,060,187
Tot. 8 mo.	18,887,802	13,110,056	12,141,339
Sept. ....	.....	1,770,259	899,075
Oct. ....	.....	1,978,379	951,353
Nov. ....	.....	2,066,293	957,906
Dec. ....	.....	2,115,496	1,028,006
Total.....	.....	21,040,483	15,977,679

2,712,009 tons, which, like the daily rate, was the best since June, 1930, with 2,934,508 tons. Compared with the output in July of 2,595,791 tons, the increase amounted to 116,218 tons, or 4.5 per cent. The August, 1935, figure was 1,759,782 tons.

Eight months' production for the current year has aggregated 18,887,802 gross tons, this being a gain of 44 per cent, or 5,777,746 tons, over the 13,110,056 tons made in the corresponding period of 1935. The 8-month total for 1934 was 12,141,339 tons.

Relating production to capacity, operations in August were at the rate of 64.3 per cent, as compared with 61.5 per cent in July and 63.6 per cent in June. In August, one year ago, the rate was 40.7 per cent.

The 148 active furnaces on Aug. 31 compares with 146 on July 31 and 144 on June 30, and was the highest point reached since June, 1930, with 162. On the last day of August last year, only 98 were on blast. During the month, five non-merchant or steelworks stacks re-

sumed and three were blown out or banked. Of the merchant class, one was blown in and one was blown out.

Furnaces resuming in August

AVERAGE DAILY PRODUCTION

Gross Tons				
	1936	1935	1934	1933
Jan.	65,461	47,692	39,537	18,348
Feb.	63,411	57,675	45,385	19,762
Mar.	66,004	57,120	52,438	17,484
Apr.	80,316	55,719	57,873	20,786
May	85,795	55,986	66,370	28,784
June	86,551	51,949	64,563	42,165
July	83,735	49,043	39,680	58,108
Aug.	87,484	56,767	34,199	59,137
Sept. ....	.....	59,009	29,969	50,264
Oct. ....	.....	63,818	30,689	43,824
Nov. ....	.....	68,876	31,930	36,124
Dec. ....	.....	68,242	33,161	38,456
Ave.....	77,409	57,694	43,774	36,223

were: In Ohio: Toledo B, Interlake Iron Corp.; Ohio No. 6, Carnegie-Illinois Steel Corp. In Pennsylvania: Duquesne No. 2, Carnegie-Illinois Steel Corp.; Monessen No. 2, Pittsburgh Steel Co. In Indiana: Indiana Harbor No. 2, Youngstown Sheet & Tube Co. In Maryland: Maryland C, Bethlehem Steel Co.

Stacks blowing out or banking were: In Ohio: Ohio No. 4, Carnegie-Illinois Steel Corp. In New York: Standish, Chateaugay Ore & Iron Co. In Illinois: South Chicago No. 5, Youngstown Sheet & Tube Co. In Indiana: Madeline No. 3, Inland Steel Co.

The total number of potential blast

AUGUST IRON PRODUCTION

	No. in blast		Total tonnage	
	last day of	Aug. July	Mer- chant	Nonmer- chant
Ohio	34	33	104,023	537,273
Penna.	50	48	69,935*	818,194*
Alabama	10	10	81,879	66,204
Illinois	12	13	45,047	210,841
New York....	11	12	49,885	150,144*
Colorado	1	1		
Indiana	12	12	2,457*	386,951
Maryland ...	4	3		
Virginia	1	1		
Kentucky	2	2		
Mass.	1	1		
Tenn.	1	1		
Utah	1	1	25,816*	163,360
West Va.	3	3		
Michigan	4	4		
Minnesota ...	1	1		
Missouri	0	0		
Total.....	148	146	379,042*	2,332,967*

*Includes ferro and spiegeleisen.

RATE OF OPERATION

(Relation of Production to Capacity)

	1936 ¹	1935 ²	1934 ³	1933 ⁴
Jan.	48.2	34.2	28.3	13.3
Feb.	46.6	41.4	32.5	14.3
Mar.	48.5	41.0	37.5	12.7
Apr.	59.1	40.0	41.4	15.1
May	63.1	40.2	47.5	20.9
June	63.6	37.2	46.3	30.6
July	61.5	35.2	28.4	42.4
Aug.	64.3	40.7	24.5	42.8
Sept. ....	.....	42.5	21.5	36.4
Oct. ....	.....	45.8	22.1	31.8
Nov. ....	.....	49.5	22.8	26.2
Dec. ....	.....	49.0	23.7	27.9

¹Based on capacity of 49,777,893 gross tons, Dec. 31, 1935; ²capacity of 50,845,741 gross tons, Dec. 31, 1934; ³capacity of 50,975,561 tons, Dec. 31, 1933; ⁴capacity of 50,313,975 tons, Dec. 31, 1932. Capacities by American Iron and Steel institute.

furnaces in the United States is reduced from 252 to 248 with dismantling of four stacks. For identification of these furnaces, see page 23.

Davison Changes Name to Pittsburgh Coke & Iron Co.

Davison Coke & Iron Co., Oliver building, Pittsburgh, is changing its name to Pittsburgh Coke & Iron Co., effective Sept. 1. No other changes in the corporate setup will be made. In effect the new name will refer only to the company's coke and pig iron divisions. The Green Bag Cement Co., also a subsidiary, will continue to operate as formerly.

Pittsburgh Coke & Iron Co. owns two blast furnaces, both serving the merchant trade, one at Neville Island, Pittsburgh, which has been active continuously for some time and a stack at Sharpville, Pa., which will resume blast Sept. 8 after being idle more than six years.

Revised Scrap Rules Ready

Revised classification of scrap has been issued by the division of simplified practice of the bureau of standards, Washington, containing recent agreed revisions. It is known as simplified practice recommendation R58-36 and may be obtained from the superintendent of documents, government printing office, Washington, for five cents. Recent changes relate principally to alloy steel inclusions in various classes.

New Scrap Rate Named

Public service commission, Albany, N. Y., has approved a new rate of \$1.76 per gross ton on scrap iron and steel in minimum carloads from Rochester to Depew, N. Y., via Erie railroad. This new rate goes into effect Sept. 15.

Production

STEELMAKING eased 1½ points last week to 71½ per cent, due largely to temporary restrictions by an important producer in the Pittsburgh district, and to furnaces in other districts being taken off for repairs. Indications point to a further slight decline this week, owing to the Labor Day holiday and to a leading producer in the Youngstown area suspending operations to make repairs. Details follow:

Youngstown—Held at 79 per cent last week, with a slight decrease expected this week, as Youngstown Sheet & Tube Co. suspends production to make repairs.

Cleveland—Gained 2½ points last week to 82 per cent. National Tube Co., Lorain, operated all 12 furnaces last week, although it is expected to take one off this week for repairs. Otis Steel Co. continues to schedule all 8, while Corrigan, McKinney division of Republic Steel Corp. is operating 12 out of 14.

Colorado—With 10 furnaces continuing in production, the operating rate is held at 63 per cent.

Pittsburgh—Off 4 points to 70 per cent last week, due largely to the decline of United States Corp. local operating units, which closed the week at about 66 per cent. The independents operated on an average of 75 per cent. Thirty-eight out of 60 steelworks blast furnaces in the district are active.

Wheeling—Unchanged at 98 per cent last week, as 36 out of 37 open-hearth furnaces in the district were producing.

Detroit—Unchanged at 100 per cent last week, there being all 19 basic open-hearth furnaces making steel. One plant is operating 9 units and the other 10.

Chicago—Held at 72½ per cent for the third consecutive week. Backlogs assure a maintenance of heavy operations for an indefinite period. Inland Steel Co. has started the first of the four new open hearth furnaces it is building and expects to resume next month with a blast furnace which is being relined. Twenty-four of 41 blast furnaces are active, American Steel & Wire Co. will reopen its Duluth blast furnace and coke oven plant within the next four to six weeks, idle since 1930.

Central esatern seaboard—Off 2 points to 48 per cent. A slightly further reduction is expected this week in view of the Labor Day holiday.

Cincinnati—Advanced 4 points by addition of another open hearth, to 80 per cent, equaling the highest attained this year. Twenty of 24 open hearths are melting.

Birmingham—Steady operations of sheets, plate and structural steel fab-

District Steel Rates

Percentage of Open-Hearth Ingot Capacity Engaged in Leading Districts

	Week ended Sept. 5	Change	Same week 1935	1934
Pittsburgh	70	- 4	45	8
Chicago	72½	None	57	23
Eastern Pa....	48½	- 2	32½	15½
Youngstown...	79	None	60	23
Wheeling	98	None	84	23
Cleveland	82	+ 2½	56	24
Buffalo	75	- 6	32	19
Birmingham...	64	None	45½	25
New England	80	- 5	70	25
Detroit	100	None	94	77
Cincinnati	80	+ 4	†	†
Colorado	63	None	†	†
Average.....	71½	- 1½	52	18

†Not reported.

ricating shops, warrant continuation of steelmaking rate at 64 per cent.

New England—Down 5 points to 80 per cent, with expectations that this rate will be maintained this week.

Buffalo — Operations dropped sharply during the past week as repairs to open hearths were necessitated by long runs. Output was down to 75 per cent, with about a 3-point rise indicated for this week. Twenty-eight open hearths were in production, with 29 scheduled to operate this week.

CANADIAN OUTPUT DOWN IN JULY; GAINS FOR 7 MONTHS

Canada's steel industry experienced a general slackening during July. Production of steel ingots and castings amounted to 68,793 tons, compared with 82,196 tons in the preceding month and 86,101 tons for July of last year. Output of pig iron, at 34,988 tons, showed a decline of 38 per cent from the June total of 56,362 tons, and a drop of 31 per cent from the 50,513 tons produced in July of last year. Production included 30,199 tons of basic grade, 2407 tons of foundry iron, and 2382 tons of malleable iron. Output of ferroalloys marked an increase, totaling 10,962 tons, as against 5307 tons in June and 7269 tons in July, 1935.

Production figures for the first seven months show that the increase over 1935 is being maintained. Production of steel ingots and castings increased from 474,264 tons to 647,493 tons. Pig iron output totaled 375,323 tons, a gain of 21 per cent over the 310,290 tons produced for the corresponding period of last year. Production of ferroalloys rose from 29,461 tons to 41,512 tons. At the end of July three furnaces were in blast, with a combined daily capacity of 975 tons, which represented 23 per cent of the total capacity for Canada.

Financial

PITTSBURGH Steel Co., Pittsburgh, has filed a registration statement with Securities and Exchange commission for 101,400 shares of common stock. The issue will be offered to stockholders of record Sept. 22 for subscription of \$10 a share, at the rate of one share for each 2½ shares of common held. Proceeds will be used mainly for improvement and expansion of manufacturing facilities.

Locke Steel Chain Co., Bridgeport, Conn., has filed a registration statement covering 104,000 shares of its common stock, par value \$5, with the Securities and Exchange commission. Present capitalization consists of 110,000 shares of common stock, outstanding.

Consumers Steel Products Corp., Detroit, warehouse organization, reports net earnings of \$50,043, for eight months of the company's fiscal year.

DIVIDENDS DECLARED

Gulf States Steel Co. Birmingham, accumulation of \$3.50 a share on 7 per cent first preferred stock, payable Oct. 1, to stock of record Sept. 15, leaving arrears of \$24.50 a share.

Mesta Machine Co., Pittsburgh, has doubled its dividend rate in declaring a dividend of \$1.50 a share, payable Oct. 1, to stock of record Sept. 16. In the preceding quarter the company paid 75 cents a share.

Sivyer Steel Casting Co., Milwaukee, declared a dividend of 25 cents, payable Sept. 10, to stock of record Sept. 3. Last payment was 50 cents a share on Dec. 1, 1930.

Budd Wheel Co., Philadelphia, declared a regular quarterly dividend of \$1.75 and a participating dividend of 25 cents on the 7 per cent participating preferred, both payable Sept. 30, to record Sept. 16.

German Firm Builds First European Hot Strip Mill

First of its type to be built in Europe, a 50-inch hot strip mill is to be installed at the plant of the Hoesch Kolneussen A. G., Dortmund, Germany. The German manufacturer has entered into a license agreement with Cold Metal Process Co., Youngstown, O., and will immediately begin construction on the mill which is to be of the Steckel type for flat rolled products.

Of the single stand reversing type, the mill will be similar to the one at the Indiana Harbor, Ind., plant of Youngstown Sheet & Tube Co. The mill is capable of rolling light gages and will have an annual capacity of 3,000,000 tons.

July Exports and Imports Show Loss

EXPORTS of steel and iron products in July showed relatively little change from June, according to compilations by the metals and minerals division of the department of commerce. Manufactured and semimanufactured products decreased 4.6 per cent, while scrap exports gained 3.4 per cent,

FOREIGN TRADE OF UNITED STATES IN IRON AND STEEL

	1936		1935	
	Imports	Exports	Imports	Exports
Jan.	50,489	241,564	22,695	262,740
Feb.	43,358	213,802	28,905	228,657
Mar.	56,720	264,337	21,470	323,017
April	49,621	301,987	28,866	205,341
May	59,391	314,950	47,719	286,599
June	59,910	294,951	33,208	286,333
July	47,940	296,738	31,894	296,782
7 mo.	367,085	1,928,329	214,757	1,889,469
Aug.			32,312	247,312
Sept.			53,158	244,367
Oct.			59,473	238,350
Nov.			56,637	204,838
Dec.			53,678	239,269
Total			470,015	3,063,605

resulting in a net loss of 0.6 per cent in the total of these two classes.

Total exports were 296,738 gross tons in July, 1936, compared with 294,951 tons in June and with 296,782 tons in July, 1935. Scrap exports in July were 197,805 tons, against 191,173 tons in June of this year and 209,822 tons in July, 1935. Manufactured and semimanufactured iron and steel products exported in July totaled 98,933 tons, compared

ORIGIN OF JULY IMPORTS

	Gross Tons			
	Iron ore	Pig iron	Manganese ore	Ferromanganese
Germany	10	150		
Mexico	448			
United Kingdom	363	1,050		
Canada	2,802	2,902	396	
Cuba	22,000			
Chile	109,700			
Australia	9,356			
Norway	6,661	81		1,020
Sweden	46,523			
Philippine Islds.	377			
Netherlands	2,231			240
Russia	1,147	4,426		
British India	4,935	6,496		
France			2	63
Brazil		3,760		
Gold Coast		5,838		
Poland				63
Total	198,240	12,496	20,908	1,386

	Sheets skelp and sawplate	Structural steel	Steel bars	Hoops and bands
United Kingdom	10			67
Belgium	413	2,506	1,794	1,773
France	33	666	66	10
Germany	853	61	184	216
Sweden	10		330	1
Austria			8	
Total	1,319	3,233	2,449	2,000

with 103,778 tons in June and with 86,960 tons in July, 1935.

For seven months of 1936 total exports were 1,928,329 tons, composed of 1,274,740 tons of scrap and 653,589 tons of manufactured and semimanufactured goods. These figures compare with seven months of 1935 as follows: Total exports 1,889,469 tons, manufactured and semimanufactured goods, 529,160 tons, scrap 1,360,309 tons.

Imports of steel and iron products in July at 47,940 gross tons showed a decrease of 11,970 tons from the 59,910 tons imported in June but a substantial gain over the 31,894 tons imported in July, 1935. For seven months of 1936 the aggregate was 367,085 tons, compared with 214,757 tons in the corresponding period of 1935. A large part of the smaller tonnage in July was due to a shrinkage of pig iron imports from 16,793 tons in June to 12,496 tons in July. The decline of 10,000 tons in imports of scrap was the principal factor in bringing the total below June. These two declines were balanced in part by increased imports of hoops and bands, sheet piling and pipe.

UNITED STATES IMPORTS FOR CONSUMPTION OF IRON AND STEEL PRODUCTS

Articles	Gross Tons		
	July 1936	June 1936	Jan. thru July, '36
Pig iron	12,496	16,793	110,003
Sponge iron	252		1,380
Ferromanganese (1)	1,386	2,222	13,403
Spiegeleisen	4,011	5,285	21,385
Ferrosilicon (2)		2	3
Ferrosilicon (3)	28	22	425
Other ferroalloys (4)	275	150	426
Steel ingots, blooms			61
Billets, solid, hollow (5)	19	79	408
Concrete reinf. bars	364	501	2,073
Hollow bar, drill steel	141	162	1,149
Bars, solid or hollow	2,453	2,111	21,095
Iron slabs			
Iron bars	116	168	774
Wire rods	1,280	1,278	11,050
Boiler and other plate			52
Sheets, skelp, saw plate	1,319	1,420	11,856
Die blocks or blanks (5)	22	2	113
Tin plate, taggers' tin and terne plate	5	8	140
Structural shapes	3,233	3,157	28,660
Sheet piling	1,024	182	2,070
Rails and fastenings	859	573	4,405
Cast iron pipe and fittings	113	17	239
Malleable iron pipe fittings	50		70
Welded pipe	452	531	3,209
Other pipe	1,908	1,526	10,597
Hoops and bands for baling	777		865
Other hoops, bands	2,000	979	12,916
Barbed wire	949	557	10,168
Round iron, steel wire	464	420	2,800
Teleg. and tele. wire	1	1	34
Flat wire, steel strips	172	274	1,650
Wire rope, strand	220	183	1,449
Other wire	124	64	827
Nails, tacks, staples	1,659	1,479	14,462
Bolts, nuts and rivets	57	16	292
Horse and mule shoes	20	44	231
Castings and forgings	101	117	656
Total gross tons	38,350	40,323	291,396
Iron and steel scrap	9,590	19,587	75,689
Grand total all products	47,940	59,910	367,085

(1) Manganese content; (2) chrome content; (3) silicon content; (4) alloy content; (5) New classes. No comparable figures for previous year.

Comparative statistics showing the value of the iron and steel import trade follow:

UNITED STATES EXPORTS OF IRON AND STEEL PRODUCTS

Articles	Gross Tons		
	July 1936	June 1936	Jan. thru July, '36
Pig iron	125	91	1,049
Ferromanganese and spiegeleisen	48	16	274
*Other ferroalloys	107	75	1,148
Ingots, blooms, etc.	4,215	1,682	11,098
Bars, iron	98	107	754
†Bars, concrete	471	188	1,812
†Bars, other steel	3,929	3,128	28,365
Wire rods	2,132	3,317	23,063
Boiler plate	190	361	1,787
Other plate not fab.	6,587	3,922	34,682
Skelp, iron or steel	3,419	6,017	121,781
Iron sheets, galvanized	168	111	850
Steel sheets, galv.	3,781	4,654	32,201
Steel sheets, black	16,088	10,771	81,875
Iron sheets, black	536	798	4,431
Strip steel, cold-rolled	1,304	1,987	13,480
Strip steel, hot-rolled	4,748	4,015	21,957
Tin plate and taggers' tin	16,010	26,596	147,761
Terne plate	301	631	2,401
Tanks, except lined	1,283	1,669	14,051
Shapes, not fabricated	5,644	6,057	31,217
Shapes, fabricated	640	1,319	9,877
Plates, fabricated	115	570	2,034
Metal lath	58	168	600
Frames and sashes	52	91	518
§Sheet piling	59	263	1,599
¶Rails, 60 lbs. and over	5,145	6,458	34,877
¶Rails, under 60 lbs.	62	1,652	4,387
Rail fastenings	445	965	4,066
Switches, frogs, crsgs.	315	62	887
Railroad spikes	154	134	1,376
R. R. bolts, nuts, etc.	62	48	378
Boiler tubes, seamless	674	344	3,387
Boiler tubes, welded	46	36	281
Casing and oil line pipe, seamless	1,374	1,908	9,437
Do, welded	422	141	1,476
Seamless black pipe, other than casing	298	193	2,100
Malleable iron screwed pipe fittings	286	310	1,920
Cast iron screwed pipe fittings	196	174	1,170
Cast iron pressure pipe, and fittings for	1,064	485	5,357
Cast iron soil pipe Do.	495	495	3,018
Welded blk. steel pipe	1,042	687	6,197
Welded black wrought iron pipe	277	289	1,290
Welded galv. steel pipe	1,377	593	5,548
Welded galv. wrought iron pipe	255	99	982
Riveted iron or steel pipe and fittings	176	115	672
Plain iron or steel wire	1,439	2,376	14,094
Galvanized wire	2,263	1,693	12,236
Barbed wire	3,058	1,996	17,887
Woven wire fencing	309	191	1,475
Woven wire screen cloth	134	94	640
Wire rope	291	231	1,975
Other wire and mfrs.	460	399	2,814
Wire nails	772	448	4,774
Horseshoe nails	58	54	373
Tacks	31	32	191
Other nails, inc. staples	141	149	1,302
Ordinary bolts, mach. screws, rivets, washers	404	493	3,588
Iron castings	455	723	4,252
Steel castings	374	308	1,823
Car wheels, tires, axles	1,294	558	4,180
Horseshoes and calks	3	1	66
Iron and steel forgings, n. e. s.	224	240	2,543
Total gross tons	98,933	103,778	653,589
Iron and steel scrap	192,817	186,696	1,243,090
Tin plate scrap	1,195		10,020
Waste-waste tin plate	3,793	4,477	21,630
Total gross tons	197,805	191,173	1,274,740
Grand total all prod.	296,738	294,951	1,928,329

*New class. No comparable figures for previous year.

†New class. Previously included under former classification "Steel bars."

‡New class. Includes alloy, nonalloy and stainless steel bars (excepting concrete reinforcement bars).

§New class. Previously included with "Frames and Sashes."

¶Previously shown at "50 pounds."

Men of Industry

GEORGE W. NORRIS, former governor of the Federal Reserve bank, Philadelphia, and Mathew S. Sloan, chairman of the board and president of the Missouri-Kansas-Texas railroad, have been elected directors of Edward G. Budd Mfg. Co., Philadelphia. Mr. Norris also was elected to the finance committee.

S. E. Sjogren, associated with the Columbia Tool Steel Co., Chicago Heights, Ill., since 1927, has been named district sales manager at Detroit for the company, succeeding the



S. E. Sjogren

late Alex Luttrell. Previously he was in the employ of the Chevrolet Motor Co. and the Cadillac Motor Car Co. As a young man he served a full-time die maker's apprenticeship with Ireland & Mathews, Detroit, and with the exception of service in the army during the war, he has been located in Detroit for the past 22 years.

Thomas Lord has been appointed sales engineer in the Detroit territory for Foote Bros. Gear & Machine Corp., Chicago, replacing C. A. Hayward.

C. G. Fallon, 31 Burroughs street, Jamaica Plain, Boston, has been named New England sales representative for the American Hollow Boring Co., Erie, Pa.

F. Austin Davey, for the past 22 years chief engineer of the Empire Sheet & Tin Plate Co., Mansfield, O., has resigned. He plans a long vacation before becoming active in the steel business again.

C. N. Kirkpatrick, secretary and sales manager of the Landis Machine Co., Waynesboro, Pa., sailed

Aug. 28 for a trip to England and the Continent in the interests of the company.

William L. Buck, 277 Broadway, New York, and B. F. Abel, 2094 West Eighty-ninth street, Cleveland, have been appointed district sales representatives by the Bay City Forge Co., Erie, Pa.

L. H. Mesker, 920 Hollenden hotel, Cleveland, has been appointed exclusive sales agent by the Reed-Prentice Corp., Worcester, Mass., for its line of engine lathes, production lathes, die casting machines and injection molding machines.

Francis M. Higgins, market research analyst of the Four Wheel Drive Auto Co., Clintonville, Wis., has been named manager of advertising, succeeding W. M. Hanson, who has resigned. Mr. Higgins has filled various capacities in the sales and advertising departments of the FWD company since 1926.

W. I. Brockson has been elected vice president of Commercial Advertising Agency, Chicago. Prior to joining the agency two and one half years ago, Mr. Brockson was nine years advertising and sales promotion manager of Steel Sales Corp., Chicago, and before that worked several years as a sales executive in the farm equipment industry.

G. I. Wright, chief electrical engineer of the Reading Co. and Cen-



Frank J. Laskey

Whose appointment as general purchasing agent for Republic Steel Corp., Cleveland, was announced in STEEL, Aug. 24, page 22. Mr. Laskey has had wide experience in the purchasing departments of various steel companies prior to his recent promotion

tral Railroad Co. of New Jersey, has been appointed manager of the transportation department of the Westinghouse Electric & Mfg. Co., with headquarters at East Pittsburgh, Pa. Mr. Wright will have charge of engineering and sales of all Westinghouse equipment for the transportation field.

A. M. Jones, identified with the Buffalo Bolt Co., North Tonawanda, N. Y., for over 30 years, has been appointed general sales manager to succeed the late Proctor Carr. The major part of this time he has devoted to sales, going from the home office in North Tonawanda to Chicago in 1906, and then to St. Louis, opening an office there and acting as district sales manager until 1925, at which time he



A. M. Jones

returned to North Tonawanda as assistant general sales manager.

Jim Harry and R. S. Perrott have been placed in charge of the newly opened office at 401 North Broad street, Philadelphia, of the All-Steel-Equip Co. Inc., Aurora, Ill. Mr. Harry, who for the past 28 years has been in the Philadelphia district, has spent 16 years as a manufacturer's representative in the equipment business, while Mr. Perrott for the past 12 years has also been connected with the office equipment industry.

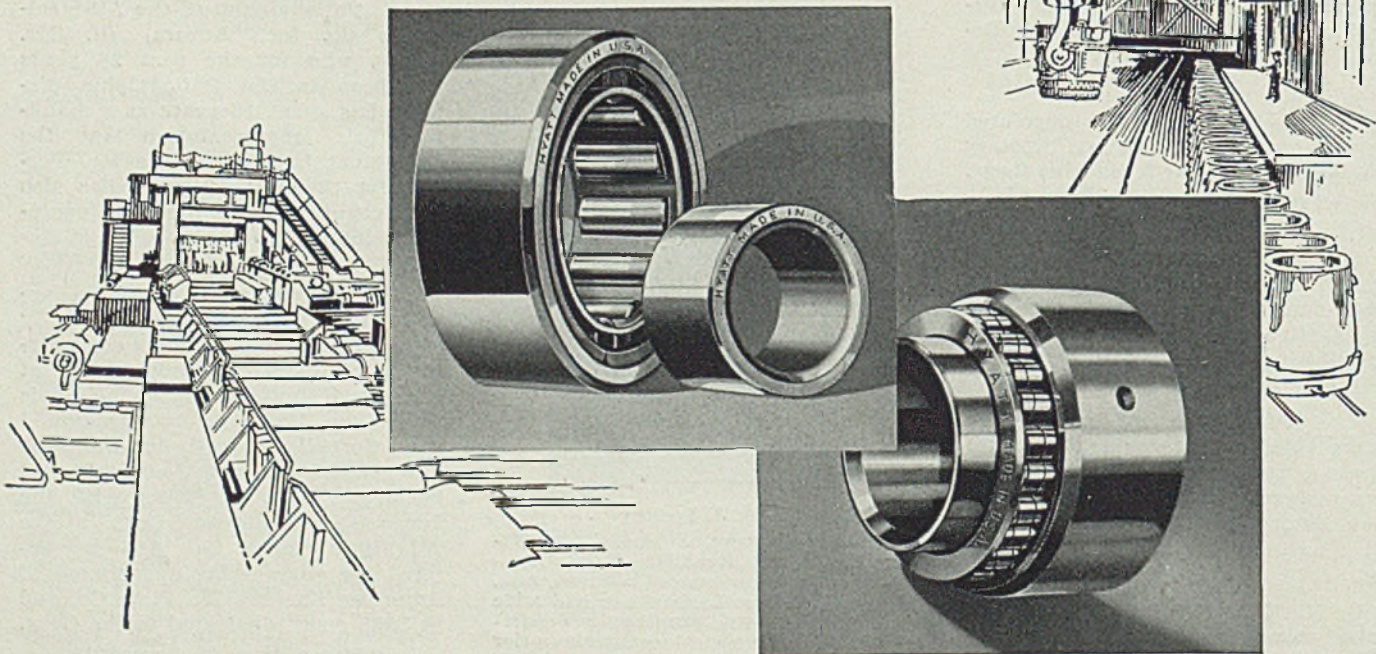
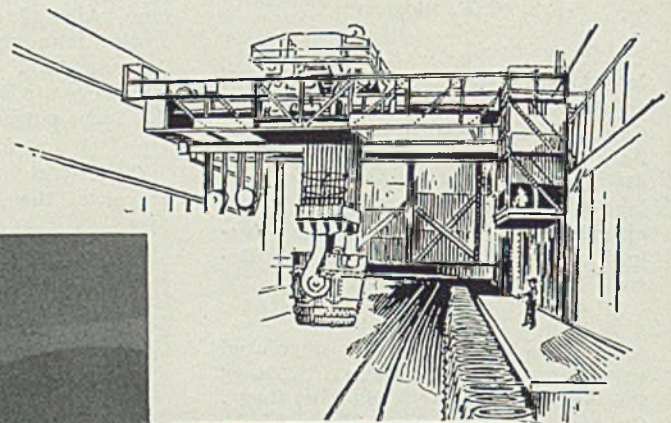
Stephen M. Jenks has been appointed chief engineer of the newly established construction engineering division with headquarters at Pittsburgh for the Carnegie-Illinois Steel Corp. Mr. Jenks was graduated from Cornell university in 1923 with a degree of mechanical engineer and began his business career with the Jones & Laughlin Steel Corp., at the Aliquippa works. In 1925 he entered the engineering department of American Sheet & Tin Plate Co. and in 1929 was transferred to the Gary,

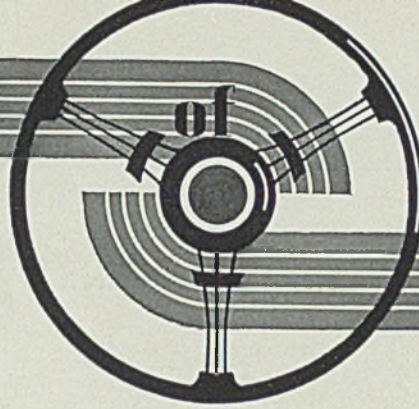
(Please turn to Page 36)

When extra *Load Capacity* counts.... count on **HYATT!**

Unseen, unheeded, these high-capacity bearings handle their appointed tasks silently, smoothly, efficiently. Years of hard service in all types of equipment, under all kinds of conditions, do not lessen their original accuracy, strength, or performance. Hyatt Roller Bearing Co., Newark, Detroit, Chicago, Pittsburgh, San Francisco.

If you have any bearing problem, in the machines you manufacture or in your own operating equipment, Hyatt plant and field forces are at your disposal.





DETROIT

IF A VISITOR from Mars came to Detroit today, assuming he knew all about our subdivisions of time into years and months, there might well be consternation on just what year this is.

A glance at the calendar says it is still September and the year is 1936, but in the automobile industry almost all of the present discussions center on 1937 and 1937 models.

Not that the remaining four months of 1936 are dismissed completely and heartlessly. Far from it, for the motor people with their 1937 models on tap are all ready to make as much hay as can be reaped in the time between now and Dec. 31.

The point might well be raised right here that even before 1935—the first year the perennial January shows were moved ahead to November—there were new car announcements as far in advance as the summer preceding. Packard always used to announce in September, and don't forget the old Buick preference for July and August.

True, but most manufacturers waited right up until Christmas. Now, we have Packard (since last Saturday) out as usual in September, yet the whole range of cars from General Motors, Chrysler, Ford and the smaller independents on down, poised on the brink, ready to jump in within a month's time.

Packard Lines Kept Intact

This means that not a single producer in motordom will have a new 1937 model to show strictly in 1937. Motordom's years are becoming shorter, for it is logical to expect a repetition next year.

Officially, the ice was broken last Saturday by Packard. Added to the eight "120-B," the eight "1400" series and the large 12, is the small six on a 115-inch wheelbase. But if you are looking for radical changes in these lines, don't be disappointed, for outwardly the appearance of each of the four follows Packard tradition.

Packard has always been a name in motordom synonymous with two stand-out characteristics: Big change affecting a new series apparently is mulled over for months and threshed out on all possible angles before the

go-ahead signal comes through; the resultant model seldom is very radical from the models preceding.

The story behind the debut of the 120 last year is proof. Fifteen months elapsed from the time the company confirmed its preparations until the time when the public could buy one. Then the car looked like its big brothers.

First News Was Year Ago

The present, 115-inch-wheelbase six is the same story, only not quite so long. Father Time has just about completed another lap since the blustery days in the late fall of 1935 when news began to trickle out concerning a six priced down beneath the 120 and the lowest yet of any Packard car. In fact, these columns in late November and again on Dec. 9, 1935, reported the initial activities of Packard on this subject.

Obviously, preparing for the six only took about two-thirds as long as for the 120, but this is due to the fact that many parts are designed interchangeable and that one assembly line was to be used for both.

Of recent date, however, the latter has been modified. The six is being turned out on the former 120 assembly line and the 120 has been moved over to the line from which the large eights in the "1400" series were once made.

Packard has really plowed back cash into the property account in 1936. For new tools, dies and equipment, some \$5,100,000 is being spent this year, representing the finish of an \$18,000,000 expansion program.

Included are four new 12-ton cupolas that will make Packard almost self-sustained on castings. Machine tool installations this year include two large surface broaches for finishing top and bottom of the cylinder block in one operation.

Assemblies at Packard were almost up to the 400-per-day mark and last week accounted for some 1850 units. By Sept. 15 they figure on turning out some 3000 jobs weekly. Of course most activity for the present is in stocking dealers.

Studebaker raced right down to the finish line with Packard for the claim of being first out with 1937 models. Packard won by ten days,

or the difference between Sept. 5 and Sept. 15, to be exact.

Although General Motors, Chrysler and Ford are keeping their grandstand seats to watch this warm-up pageantry before they throw their shock troops in, Studebaker's 1937 cars mirror what is coming on most of the models still in the embryo stage.

Hypoid rear axle and overdrive are the main features setting off the 1937 Studebakers. Both are standard equipment on the Dictator and President lines, the former series coming in six body styles on a 116-inch wheelbase and the President on a 125-inch base, also in six body styles, all closed.

By going to hypoid gears in the rear axle, or the design midway between worm and spiral-bevel gears, Studebaker follows an old Packard feature but one that Dodge and a few others will also imitate this season.

The lower pinion line of hypoids sets the body floor lower, especially in the rear compartment. At the door openings, for example, the Studebaker floors are 3 1/16-inch lower than a year ago, which gives a higher door, but does not raise the height of the car. Front and rear-door openings are 44 inches from top to bottom. Furthermore, there is no sacrifice to road clearance nor drive-shaft tunnel through the rear compartment.

Overdrive Boosts Economy

The overdrive, one of the evidences of a change for operating economy's sake, is dubbed "the positive, controlled, automatic type" by Studebaker, which says that the car coasts against engine compression in all speeds. An over-running roller clutch functions only temporarily after disengagement of the overdrive.

This type of overdrive is worked through the inertia of three rectangular pawls that operate in direct drive so long as the driver keeps his foot on the accelerator. To cut into overdrive the accelerator is released and then depressed slowly. Conversely, to cut out of overdrive, the accelerator foot is lifted and then applied quickly. Automatic engagement is handled through three of the pawls which are mounted in radial grooves

in the face of the outer member of a one-way roller clutch.

The overdrive works at any speed above 35 miles per hour and does not require any dash panel knob nor mechanical connection between the accelerator and transmission.

Another Studebaker change is in an improved gear shift, having a fool-proof floating ring which carries a synchronizing cone. Shifting to second speed is prevented until the synchronizing sleeve internal gear and the second speed main shaft gear are running at approximately the same speed.

Still another feature is the new double-drop frame built on a box-section side rail X-member construction. A new Ross twin-lever type steering gear permits easier parking and greater road control.

Other 1937 improvements include colored rubber running boards matching body hues, a current and voltage regulator that insures maximum but prevents battery overcharging, rubber insulating of the universal joint, a Fleming Mfg. Co. oil cleaner, and placing of the parking brake below the instrument panel at the left of the steering wheel. The 18-gallon gasoline tanks have been redesigned to the flat type, to permit more luggage space.

Grids Run Straight Back

From an outward appearance, the new Studebaker horizontal radiator grids run straight back to become louvres. The one-piece hood has one locking joint. A strong sales point has been made out of larger luggage compartments, which are equipped with an individual light, and have 17.4 cubic feet in the custom sedans and 22 cubic feet in the cruising sedans. Although hypoid rear axles have permitted the floors to be dropped, seat cushions remain in the same position. Leg room is increased. In the rear seat of the four-door sedans, for example, it measures 47 inches.

Motors of both the Dictator at 25.35 horsepower and the President at 30 horsepower, are the same. Piston displacement, bore and stroke and compression ratios carry through as do hydraulic brakes, the automatic hill-holder and all-steel top and body.

After a six-week shutdown, Studebaker got up to 400 assemblies daily last week and reeled off 2175 jobs. The assembly schedule for each of September and October is tentatively set up for 10,000 jobs.

In fact, present plans are based on production of 80,000 jobs this year, including a balance of 30,000 as-

Automobile Production

Passenger Cars and Trucks—U. S. Only
By Department of Commerce

	1934	1935	1936
Jan.	155,666	289,728	364,004
Feb.	230,256	332,231	287,606
Mar.	338,434	425,913	420,971
Apr.	352,975	452,936	502,775
May	330,455	361,107	460,565
June	306,477	356,340	452,955
July	264,933	332,109	440,999
7 mo.	1,979,196	2,550,364	2,929,875
Aug.	234,811	237,400	.....
Sept.	170,007	87,540	.....
Oct.	131,991	272,043	.....
Nov.	83,482	395,059	.....
Dec.	153,624	404,528	.....

Year..... 2,753,111 3,946,934

Estimated by *Cram's Reports*

Week ended:

Aug. 15	56,679
Aug. 22	73,709
Aug. 29	53,037
Sept. 5	31,628

semblies for the last four months of the year from the 50,000 1936 jobs already made. In 1935, for comparison, Studebaker's daily peak was 320 assemblies and the total year's retail deliveries were 43,345 units.

The overall assembly picture in motordom last week found Chevrolet and Ford about even at approximately 21,000 units apiece and the Plymouth plant remaining closed. Chevrolet's lines are now at the end of their 1936 run, though Ford may continue for a short time on the present series.

Beginning this week, mainly on Sept. 8, Chevrolet's foundry at Saginaw, as well as the transmission plants, axle division and a number of other parts divisions, resume work, making up the first of 1937 parts banks. With the cushion of a month's supply, the assembly lines at Flint and other points, should go into action again on Oct. 1.

Sept. 8, or the first working day after Labor Day, also carries significance at Chrysler. Though the Plymouth line will be down for another couple of weeks, the Dodge foundry which had been on a three-day weekly schedule starts up in full this week, so do sheet metal divisions and other parts' units at Chrysler. None of the assembly lines either for Dodge, DeSoto or Chrysler have started up yet, barring hand-built 1937 models.

Olympic Motor Car Co. Inc., is the new name of the company that the motor world used to know as Franklin Motors at Syracuse, N. Y. A. J. Brandt, Detroit industrial engineer,

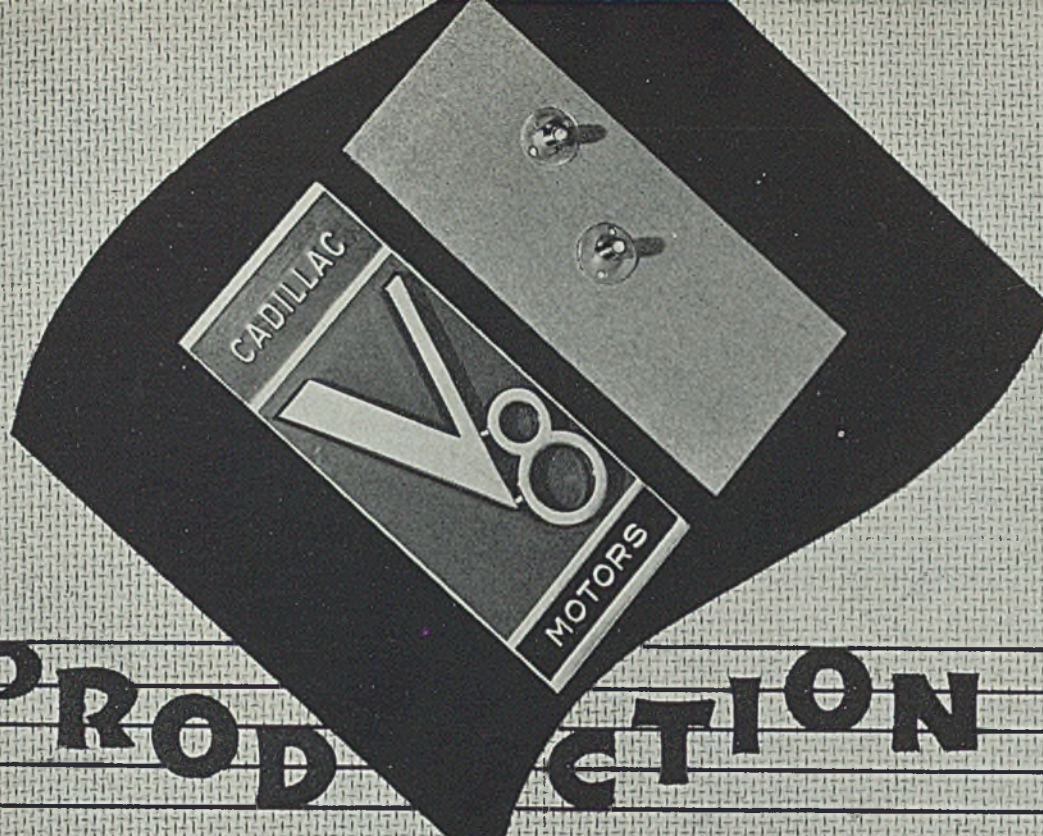
and A. R. Glancy, also of Detroit and a former General Motors executive, have completed incorporation under that name and soon will have a car out in the low-priced field and possibly will build trailers.

The Olympic company bought Franklin's business in bankruptcy proceedings on Dec. 8, 1934, after becoming virtually a 100 per cent creditor by acquiring Franklin bank loans, totaling more than \$2,000,000.

Since both have an old automobile name in common, Hupp's case is somewhat in the same category. At the annual stockholders' meeting Sept. 9 in Richmond, Va., the Hupp management hopes to have a plan to lay before shareholders concerning additional financing. Work on a 1937 model has passed the design stage, but there is no working capital to go further. Austin at Butler, Pa., is another toying with the idea of reincarnation.

Shop Addition for Olds

Although Alfred Sloan on returning from Europe Aug. 27 stated that General Motors' plant expansion was about completed for 1937 and confirmed the new Elizabeth, N. J., export plant for Buick, Olds and Pontiac, which these columns detailed Aug. 24, Detroit understands that a large press shop addition is still on the boards for Olds. . . . Buick, expected to be out around Sept. 15, has devoted especial attention to lengthening the small "40" series, making the body interchangeable with the "60" series, among other departures. . . . Lincoln's Zephyr is another model that will be lengthened out in wheelbase for 1937, but present basic design will be unchanged. . . . Ordinarily a poor month for parts and accessories sales, July was the best in several years for Ford in this respect. . . . General Motors truck is working on the finishing details to a new job. . . . Two inches cut from each door's width will be Chrysler's bid for roomier bodies in next year's cars. . . . Chrysler recently put in a new scrap baler for the more efficient preparation of steel scrap. . . . Makers of multiple spindle boring and drilling machines are as busy as any in the machine tool industry. The earliest delivery most can promise is December and January. . . . Cadillac and LaSalle, last of the 1937 General Motors' lines to come out this Fall, will pack the greatest change in appearance. . . . The Standard Steel Spring Co. strike at Coraopolis, Pa., near Pittsburgh, forced the company to move more than seven carloads of dies recently.



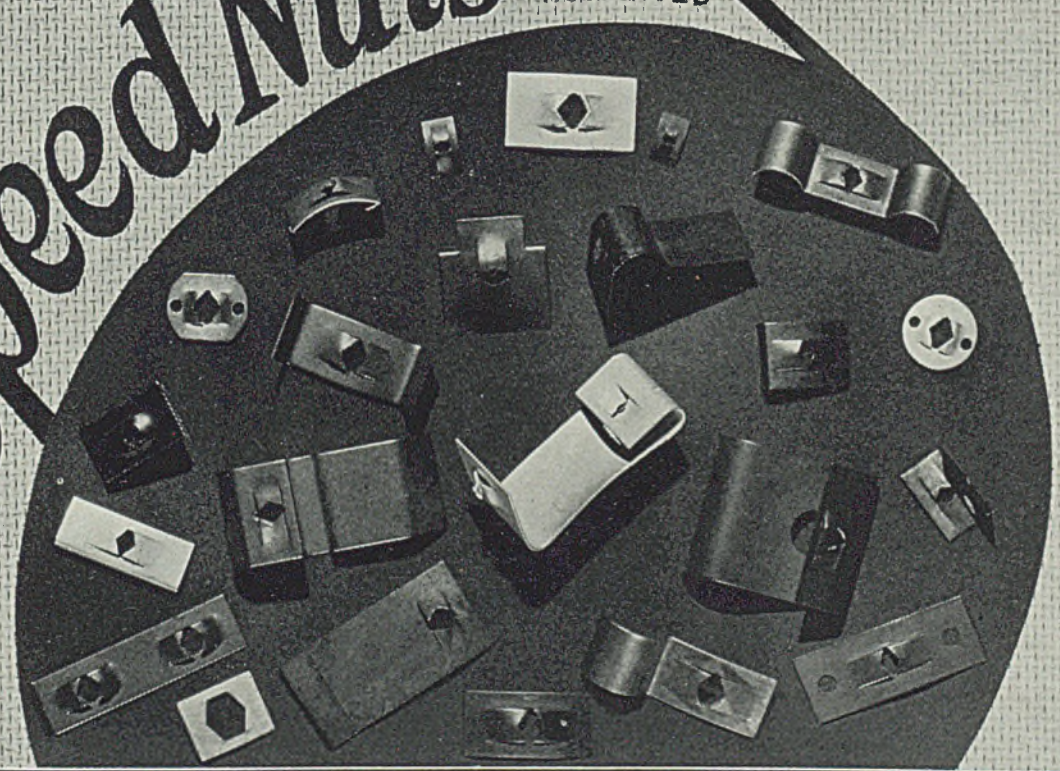
PRODUCTION NOTES

CADILLAC'S traditional selection of the very best for its assembly, includes the fastening details for its renowned insignia on both louvers. These plates must draw up perfectly flush and remain permanently tight... accomplished with SPEED-NUTS.

SPEED-NUTS provide rapid assembly and lower production costs and are available in both standard and special shapes. Write for card of assorted samples and list of their many established uses.

Speed Nuts

PATENTED



TINNERMAN STOVE & RANGE CO. • SPEED-NUT DIVISION • CLEVELAND, OHIO

Men of Industry

(Concluded from Page 31)

Ind., sheet and tin plate mills as fuel engineer. Four years later he returned to Pittsburgh as power engineer for the same company and was promoted to assistant chief engineer in 1935.

Owen C. Stevens, heretofore associated with the R. K. LeBlond Machinery Tool Co., Cincinnati, has joined the sales engineering staff of Stedfast & Roulston Inc., Boston, to cover the Springfield, Mass., territory.

H. Weers, former sales representative of the Fulton Sylphon Co., Knoxville, Tenn., has been named sales manager of the Bass Foundry & Machine Co., Fort Wayne, Ind., taking over major responsibilities of the late L. Heeley Link, vice president and secretary of the company.

Fred M. Ritts, formerly manager of the St. Louis branch office of the building materials division of the Armstrong Cork Products Co., Lancaster, Pa., has been transferred to Lancaster where he will serve as manager of the high temperature insulation department.

C. W. Robinson, formerly of the company's Chicago office, will succeed Mr. Ritts as manager at St. Louis. E. S. Penn, formerly of the Pittsburgh office, will take over the responsibilities of Armstrong's office at Albany, N. Y., and R. H. Craig has been transferred from Lancaster to the branch office at Louisville, Ky.

H. E. Oberg has been elected a vice president of Billings & Spencer Co., Hartford, Conn. He formerly was manager of the machinery and contract forging divisions of the company and prior to that was manager of the Detroit branch. He has been associated with the company for about 12 years.

C. D. Elliott, who joined Billings & Spencer in April, has also been made a vice president. Prior to joining the company he was a consulting engineer with the George S. May Co., and since 1930 was plant manager of the Wilcox & Crittenden Co., Middletown, Conn.

William A. Purtell, president and general manager of the Holo-Krome Screw Co., Bristol, Conn., and Carl A. Gray, vice president and general manager, Capewell Mfg. Co., have been elected directors of Billings & Spencer.

Walter D. Snyder has been appointed eastern sales representative for the Ajax Mfg. Co., Cleveland, builder of hot metal working machinery. On June 30 of this year Mr. Snyder retired from the United States navy as a lieu-



Walter D. Snyder

tenant commander, after a number of years of active duty in many branches of the service. Previous to his retirement he was superintendent of shops at the Boston navy yard. His offices are located in the Dewart building, New London, Conn.

Died:

GEORGE E. OSBORN, 44, vice president and general manager, Lamson & Sessions Co., Chicago, subsidiary of the Lamson & Sessions Co., Cleveland, in Chicago, Aug. 28. He joined the company in 1914 in the Cleveland office, and handled sales in the Chicago district for a number of years prior to becoming permanently located there in January, 1935.

L. H. Reitdyk, 55, treasurer, Shaw-Walker Co., Muskegon, Mich., at Muskegon, Aug. 22.

Ralph B. Manley, 56, president, Abrasive Machine & Supply Co., Newark, N. J., at the Orange Memorial hospital, Orange, N. J., Aug. 24.

John Gribbel, 28, president, American Meter Co., Philadelphia, at his summer home in Camden, Me., Aug. 25.

Ferdinand Grote, 89, founder of the F. Grote Mfg. Co., Evansville, Ind., manufacturer of elevators, cast iron and sectional, steam and hot-water heating boilers, in that city recently.

John F. Jackson, 71 vice president, Wisconsin Bridge & Iron Co., Milwaukee, from 1906 to his retirement in 1926, in Milwaukee, Aug. 22.

Werner Nygren, 68, president, Werner Nygren Inc., New York, engineer, in Freeport, Long Island, Aug. 28. He was a past president of the New York Association of Consulting Engineers and was a member

of the American Society of Mechanical Engineers, and American Society of Swedish Engineers.

John R. Sampson, 62, ore dock agent of the Soo line and Chicago & North Western railroads, at Ashland, Wis., Aug. 3. He entered the employ of the North Western 44 years ago.

Frank H. Plum, graduate of Stevens Institute of Technology and a mechanical engineer formerly with Foster Wheeler Corp., New York, in Rahway, N. J., July 19.

Edward T. Walker, 72, since 1891 secretary and treasurer of the Chicago Railway Equipment Co., Chicago, in that city Aug. 30. Mr. Walker was the last original employe, official and stockholder of the company.

N. Loring Danforth, 57, president and treasurer, Frank L. Danforth Co., Buffalo, dealer in heating and power plant equipment, and general contractor, at his summer home in Rose Hill, Ont., Aug. 27.

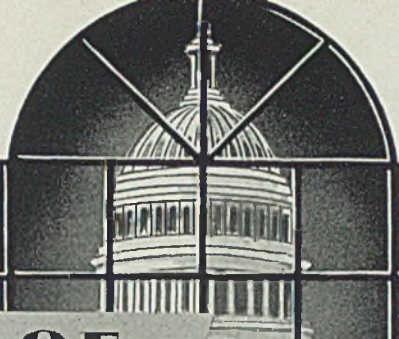
John Gill, 80, formerly plant manager for American Locomotive Co., Dunkirk, N. Y., Aug. 25, in Chicago. After leaving the American Locomotive Co., he was superintendent of motive power for the Chicago, Rock Island & Pacific railroad.

James B. Guthrie, 58, consulting engineer for the National Telephone Supply Co., Cleveland, in Cleveland, Aug. 30. He formerly had been connected with the Brown-Cochrane Co., Elyria, O., and the Stoddard-Dayton Co., Dayton, O.

Robert W. Ellingham, 68, works manager, Stevens-Walden Co., Worcester, Mass., hardware manufacturer, in Worcester, Aug. 22. He was an organizer of the Hendee Mfg. Co., now known as the Indian Motorcycle Co.

James Woolmington, 77, who retired as stationary engineer for the United States Steel Corp. in 1929 after 25 years of service, in Mechanicsville, O., Aug. 31. He was employed by the Pennsylvania railroad and later became stationary engineer for the H. & P. Nail Works, a subsidiary of the American Steel & Wire Co., and a part of the Steel corporation.

Frank Hitchcock, 74, former president of the Andrews & Hitchcock Iron Co., Youngstown, O., at his summer home in Alder Creek, N. Y., Aug. 29. He became associated with his father who at one time was prominent in the Mahoning valley blast furnace industry as one of the owners of Andrews & Hitchcock Iron Co., and upon the latter's death was elected president of the company. He remained president until the sale in 1916 of the Hubbard furnaces to the Youngstown Sheet & Tube Co.



WINDOWS OF WASHINGTON



WASHINGTON

THOSE in Washington whose sole purpose is to watch the nation's capital for various industrial and business interests already are beginning to think about the next session of congress—convening Jan. 5. That seems a long time off; yet there are very definite preparations to be made, for there is bound to be important action regardless of who is President or what complexion the new congress has.

During the next year a good deal of the emergency authority vested in the President comes to an end. Certain taxes expire and other matters of similar import will be before congress. There is every indication that both houses will be more hesitant to give the President some of the powers he had during the stirring days in the early part of the administration.

Many Powers Come to End

Just as a typical example, the emergency monetary powers of the President expire on Jan. 30, which means that congress will have to thresh out that question in about three weeks. That is not a long time considering the importance of the issue. These powers, of course, deal with the gold content of the dollar and provide for unlimited coinage of gold and silver at a fixed ratio.

The life of the reconstruction finance corporation comes to an end as a loaning agency on Feb. 1 unless some action is taken by congress. While the activities of this agency are not as extensive as they once were, they are still quite substantial.

One of the interesting measures which come to an end next year is the trade agreement act which granted the President power to make trade agreements with foreign nations. It expires June 12. Up to the present the government has made 14 of these agreements and more are being held up until after the election. Each of these will be effective

for a period of three years. There has been much said, both pro and con, regarding the trade agreements, and as usual the government's propaganda bureaus have been citing their great benefits to our trade. Of course, the balance of trade so far this year is against us—but that is a small matter.

One of the most important matters to industry is taxes. As pointed out in these columns before, something will have to be done about them.

By June 30 a number of excise taxes are scheduled to expire. Their combined collections amount to some \$300,000,000. The government will not let all of them pass by the boards. Among other things, they include the tax on firearms, refrigerators, gasoline, radio sets and automobiles.

In connection with the tax question, it will be recalled that the joint congressional committee on internal revenue legislation is likely to meet early this fall. It has been the opinion of members of congress for a long time that the whole tax structure needs revising without taking into consideration the 1936 tax law enacted at the recent session. There is no secret about the inequalities of the new tax law and undoubtedly they will be brought most strenuously to the attention of the committee.

INVESTIGATORS SENT TO PROBE ALLEGED COERCION

Louis R. Glavis, investigator, and a staff of assistants of the senate campaign funds committee have gone into Pennsylvania to look into the alleged coercion and intimidation of steel mill employes in connection with political activities.

David L. Lawrence, secretary of the state of Pennsylvania and chairman of the democratic state committee, charged before a routine meeting of the committee last week that steel mills are intimidating their employes into voting the Republican ticket at the coming elec-

tion. He made specific mention of Jones & Laughlin and Carnegie-Illinois, at Pittsburgh and Clairton, respectively.

Of course, Mr. Lawrence would have to drag the name of William T. Mossman, uncle of Governor Landon into the picture. Mr. Mossman is associated with Jones & Laughlin at Pittsburgh. The committee was told that this might be "significant." It is understood that Mr. Mossman has made some political trips with the governor.

While none of the testimony given before the committee by Mr. Lawrence was made public, it was stated that he presented "documents" against the two steel companies.

Senator Lonergan, Connecticut Democrat, chairman of the committee, announced that he may begin hearings in Pittsburgh within the next week or two.

Following his testimony before the committee of Mr. Lawrence said, "We do not propose to let this election be stolen either by coercion of employes of steel companies or others, or by election fraud."

RUMORS OF TRADE PACTS FOLLOW RETURN OF SAYRE

Assistant Secretary of State Francis B. Sayre, in charge of trade agreements, has just returned from a European trip which has led to rumors that trade agreement negotiations are about to begin again. However, it is known that nothing will be done now until after the election.

Secretary Sayre denied that his trip had anything to do with discussions of trade agreements with other countries. Ten months still remain, under the law, in which the President can conclude trade agreements. His authority then ends unless further action is taken to prolong it.

It is reported on good authority that various branches of the government are looking into the possibility of trade agreements with several other countries, in addition to the

14 with which agreements have been made, as soon as conditions are right—namely when the elections have been completed. There are any number of other government activities now being held up pending the result in November.

Preliminary discussions on the subject have been held with Great Britain, Chile, Argentina and several other South American countries, it has been intimated here. When Secretary of Commerce Roper returned from Europe recently he reported at one of his press conferences that the English would be glad to enter into such an agreement. Trade agreements between this country and Italy and Spain fell down because of the Ethiopian situation and the civil war in Spain.

SAYS EXCEPTIONS DEFEAT PURPOSE OF PATMAN LAW

Speculation continues in trade circles on both the Robinson-Patman law and the Walsh-Healy government contract law.

Dealing with the administration of the Patman act, one of the leading authorities at the federal trade commission made a flat statement that the exceptions and provisions of that bill defeat the whole purpose of the law.

It is said here that Patman has two bills or amendments which he proposes to introduce at the next session of congress. One would prevent any manufacturer from going into the retail business and the other would put a federal tax on distributors doing an interstate business. In this latter case, especially where a state distributor was paying a sales tax, the federal government would slap on a sales tax on any distributors going into that state to compete with the distributor who was paying the sales tax to his own state. It is understood that tentative drafts of these amendments have been prepared.

At this time there is no sign of the new regulations dealing with the government contract bill. As a matter of fact, Miss Perkins just returned Wednesday from her European trip. It is expected that some kind of announcement will be forthcoming in a few days.

LEGALITY OF RAILWAY LABOR ACT CHALLENGED

The Virginian Railway Co. has filed an appeal in the United States Supreme Court in which it contends that the provisions of the railway labor act authorizing collective bargaining between representatives of the carriers and employes are unconstitutional.

In challenging the act, the road charged that compulsory provisions of the legislation compel it "to recognize a labor union as a factor in the conduct of its business and deny to it its inherent right to deal directly, or through representatives,

with such of its employes as desire so to deal."

The road claims that the constitution is violated in that it deprives it of liberty and property and attempting to regulate labor relations with employes engaged solely in intrastate activities.

CONTEMPT ACTION BY COMMITTEE BREAKS CUSTOM

Futura activities of the so-called LaFollette committee on civil liberties, which is looking into espionage and other labor conditions in industrial plants, will bear watching. Before congress adjourned the question of espionage and the arming of steel plants came before the committee for discussion and it is most likely to come up again before the hearings have been concluded.

The latest move of the committee is to seek court action against six officials of the Railway Audit & Inspection Co. who refused to answer the summons of the committee for appearances at a hearing. Instead, these officials went into the local courts here and got an order to "show cause" why they should comply with the committee's subpoenas.

The great interest in the committee's action against these men is that this is the first time that any contempt action has been instituted when congress, itself, was not in session. This is being done under a new law said to have been passed during the closing hours of the last session. (There is some question as to whether this law really ever passed before adjournment. However, it was signed by the President.)

"STAGNATION" OF ALUMINUM INDUSTRY WILL BE STUDIED

The claim is made by the so-called light metals bureau that the aluminum industry in Canada and Norway, controlled by United States interests, has been forging ahead so rapidly that the combined production of these countries will, if expansion continues, outstrip the output of the United States.

A view of the so-called independent aluminum interests is being made by the new bureau, which was recently organized by a committee of research and information. This latter committee consists of: Ben Wood, consultant engineer of Stevens & Wood, New York; Arthur J. Smith, industrial engineer, Kansas City; John Patterson, director, Alabama Industrial authority, Decatur, Ala.; and E. P. Everhard, consulting engineer, Chicago.

The survey is to be made, it is claimed, because of the alleged "stagnation" of the United States aluminum industry as compared with the rapid growth of the industry in Russia, Germany, Japan, Norway, Canada and other countries. The bureau claims that its purpose is to assemble authentic data bearing on the effect which the alleged de-

cline has on national defense, industrial expansion and the economic welfare of the country.

The bureau states that Japan, aiming at self sufficiency and domination of the aluminum trade of Asia, has just placed a prohibitive tariff on imports, has built ten plants and plans to produce annually as much aluminum as is manufactured in the United States, to meet the needs of the Japanese market created by a patriotic drive popularizing the use of aluminum for everything from pots and pans to railroad equipment and ships.

AUSTRIAN FOREIGN TRADE IN IRON AND STEEL GAINS

Austria's foreign trade in iron and steel products reflected the general economic improvement which that country enjoyed in the first half of this year, according to a report to the commerce department from Commercial Attache Gardner Richardson, Vienna.

Italy, it is pointed out, continued to be the leading market for Austrian exports of these commodities. It is anticipated, however, that a certain recession will occur during the near future because Italy's iron and steel requirements will be diminished and its dependence on Austrian supply will lessen since the lifting of the sanctions, the report states.

Imports of iron and steel products into Austria in the first half of 1936 amounted to 41,581 metric tons, compared with 34,834 tons in the corresponding period of 1935. Germany, the Netherlands, France, the United Kingdom, Czechoslovakia, and a few smaller suppliers shared in this increase, while lower receipts were noted from other suppliers, according to the report.

Austrian exports of iron and steel products in the January-June period of this year amounted to 76,426 metric tons, compared with 41,842 tons in the first six months of 1935. The largest increase, the report shows, was in iron blooms, most of which went to Italy.

In the period January to June of the current year Austria's iron and steel shipments to Italy were valued at \$2,800,000 against \$180,000 in the corresponding period of 1935.

CZECHOSLOVAKIA PROSPERING FROM STRONG STEEL CARTEL

The relatively strong position of Czechoslovakia's iron and steel industry is largely due to activities of the local iron and steel cartel, a report to the commerce department from its Prague office reveals.

Sales effected in 1935 through its sales office exceeded those of 1934 by 5 per cent in pig iron and 22 per cent in rolling mill products, according to a recent statement by the cartel. The improvement was due to increase in both domestic and foreign business, the former being chiefly on account of railway expansion.

Is Profit Sharing Desirable Under 1936 Tax Law?

IN A period of industrial recovery, management always faces the difficult task of appeasing impatient stockholders, meeting demands for higher salaries and wages, and at the same time accumulating cash for reserves.

Under conditions existing in 1936, the problem is complicated by a serious labor relations situation of semi-political origin and by an absurd federal tax law which penalizes undistributed earnings.

For these reasons the wage policies recently announced by a number of companies in the iron, steel and metalworking industries are of unusual significance. One in particular is bound to be scrutinized carefully by employers and employes alike, because its provisions, while not new to American industry, carry certain interesting implications in view of the previously mentioned labor relations and federal tax complications.

Profit Sharing Plan Provides "Dividends" for Employes, Payable After End of Fiscal Year

We refer to the profit sharing plan announced Aug. 31 by the Keystone Steel & Wire Co. of Peoria, Ill. Stated briefly, the plan provides that workmen in the employ of the company as of June 30, 1937, who as of that date had been in the company's employ six months or longer during the fiscal year (July 1, 1936 to June 30, 1937) shall be eligible to participate in the profits earned by the company during that period. The amount to be shared among these participants will be determined as follows:

Four per cent on net profits up to \$1,000,000; 8 per cent on the next \$100,000; 12 per cent on the next \$100,000; 16 per cent on the next \$100,000; 20 per cent on all net profits over \$1,300,000. These profits are for the fiscal year and are the net profits after deduction of all taxes.

In singling out this plan for mention here, we do not necessarily imply that it is an ideal for other employers to adopt. Industry's past experience with profit-sharing schemes has proved conclusively that it is unwise to generalize on the merits of this method of remunera-

tion. Unquestionably such plans work better in certain plants than in others. They cannot be introduced indiscriminately with hope of uniform success.

Nevertheless there are a number of features in the Keystone plan which, viewed in the light of the peculiar conditions of 1936, afford ground for interesting speculation. The company's statement refers to the proportion of profit paid to each employe as a "profit-sharing dividend." If such dividends are recognized by the federal tax authorities as having the same standing as dividends paid to stockholders, then the company stands to reduce materially the amount it would otherwise pay to the government in the form of a tax on undistributed profits.

In Long Run, Penalizing of Reserves by Tax Law Will Impair Security of Jobs

If the plan works out in this way, then the company in effect is paying its employes more liberally, providing an incentive for more efficient operations, and making an effective gesture toward advancing friendly relations between employer and employe with money—part of which at least—would be lost to the company if the profit-sharing scheme were not in effect.

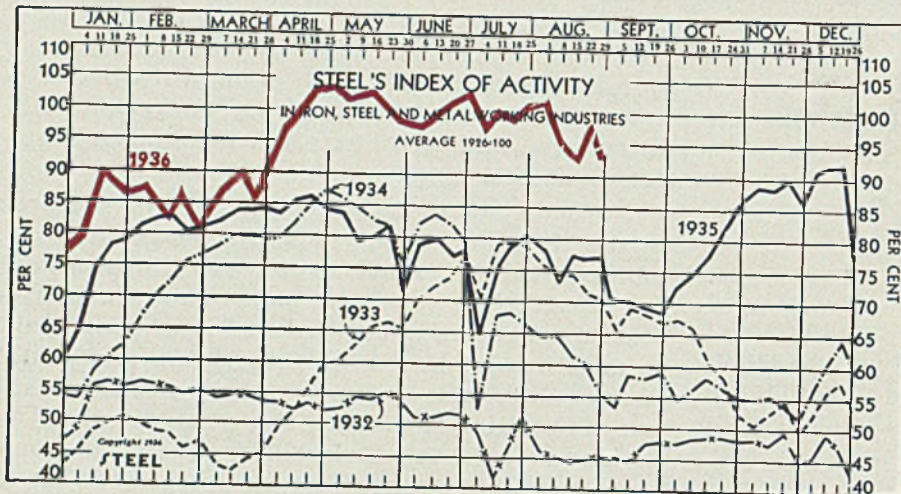
To be absolutely safe in speculating upon this subject, assume that the tax authorities interpret the law differently, or change their minds. What would happen if they ruled that profits shared by employes are not "distributed" profits under the law? In that case the company would pay a higher tax to the government and would have a lesser amount of profit remaining after taxes to share with employes.

A third possibility is that the "profit-sharing dividends" would be construed as a form of wages. As such the amount involved would be charged as operating expense and would reduce the profits and therefore the tax.

The first interpretation, namely that the law encourages employers to share profits with employes, does not make the 1936 federal tax law a good law for wage earners. Any momentary lift in income it may permit is more than offset by the threat to security of employment contained in the law's penalties on reserves.

But industry, confronted by this absurd law, is entitled to every legal recourse to turn it to its short-term advantages. For this reason the profit-sharing idea is worthy of careful examination.

THE BUSINESS TREND



STEEL's index of activity in the iron, steel and metal-working industries declined 4.0 points to 93.7 in the week ending August 29:

Week ending	1936	1935	1934	1933
June 13	99.4	80.0	83.8	72.1
June 20	101.0	77.3	81.8	73.9
June 27	101.9	78.4	79.4	77.0
July 4	97.5	64.1	52.3	71.4
July 11	100.9	76.5	67.8	79.1
July 18	99.9	79.8	68.1	79.4
July 25	102.1	80.8	66.4	78.8
Aug. 1	102.5	78.4	64.8	75.9
Aug. 8	98.7	73.4	64.6	74.7
Aug. 15	92.6	77.5	61.4	74.2
Aug. 22	97.7†	77.0	60.3	71.6
Aug. 29	93.7*	77.3	55.1	70.3

†Revised. *Preliminary.

The index charted above is based upon freight car loadings, electric power output, automobile assemblies (estimated by Cram's Reports) and the steelworks operating rate (estimated by STEEL). Average for 1926 equals 100, weighted as follows: Steel rate 40, and car loadings, power output and auto assemblies each 20.

Pace Is Steady Except for Erratic Auto Output

INDUSTRIAL activity is being maintained at a steadier pace than is indicated by many of the general business barometers. If it were not for the rather sharp fluctuations in automobile output which factor is heavily weighted in most business indexes, the graph of industrial activity in recent weeks would be a comparatively smooth line.

For instance, steelworks operations since the week ending April 11 have fluctuated between a low of 66 and a high of 73 per cent. To hold within a range of seven points during a period of 21 weeks is a demonstration of stability which

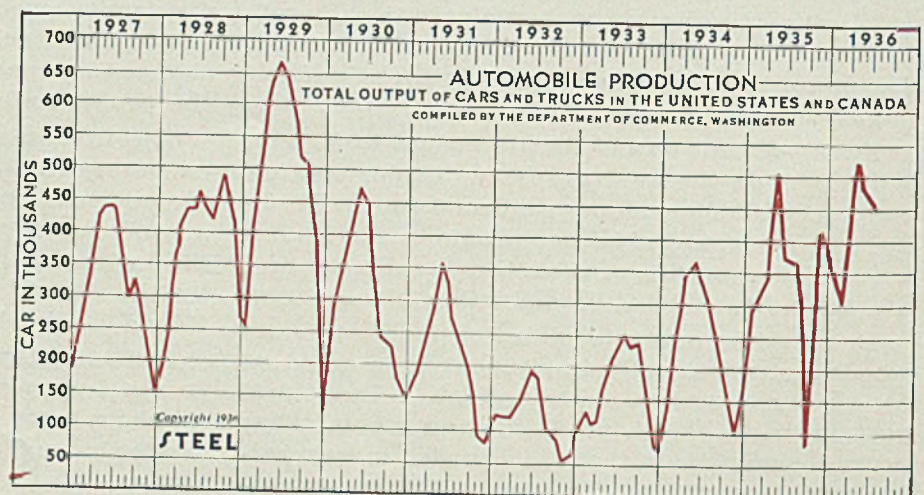
the industry experiences only in the extremes of acute depression or prosperity.

The record of freight car loadings also reflects unusual steadiness. Since the last week of June, and excluding only the week ending July 4, loadings have remained within the narrow range defined by a low of 713,000 and a high of 747,000 cars weekly.

Electric power output, which is an indicator of broad scope, has been steady throughout the summer. This is in sharp contrast to the normal curve, which heretofore has sagged noticeably in the midyear period. It is significant that the latest all-time record, established in the week ending Aug. 29, was made possible by a remarkable gain in the central district in which the industrial power load is an important factor.

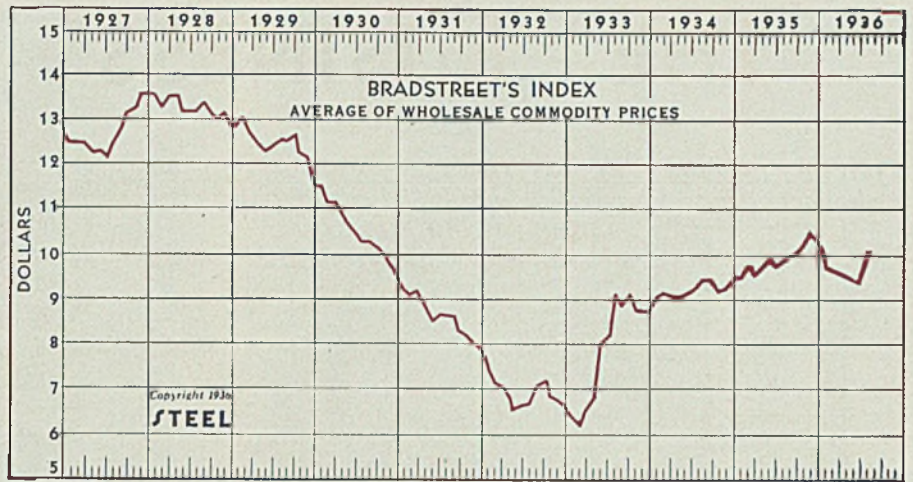
STEEL's index—jumpy on account of abrupt changes in automobile output—is down for the week ending Aug. 29.

	1936	1935
January	377,306	300,325
February	300,874	350,345
March	438,945	447,888
April	527,726	477,059
May	480,571	381,809
June	470,887	372,085
July	451,474	345,178
August	.....	245,092
September	.....	92,863
October	.....	280,356
November	.....	408,555
December	.....	418,303



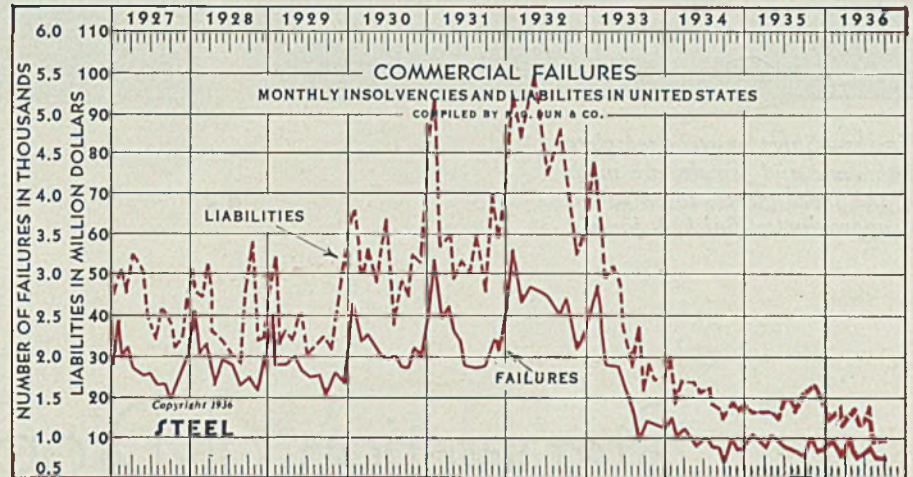
August 1 Price Index Shows Gain of 3.0 Per Cent

	1936	1935	1934	1933
Jan. 1	\$10.36	\$9.49	\$9.01	\$6.53
Feb. 1	10.02	9.78	9.26	6.53
Mar. 1	9.92	9.79	9.17	6.54
Apr. 1	9.85	9.66	9.16	6.98
May 1	9.81	9.79	9.14	8.02
June 1	9.73	9.90	9.24	8.34
July 1	9.85	9.84	9.32	9.01
Aug. 1	10.14	9.91	9.48	8.99
Sept. 1 .....	.....	10.00	9.45	9.06
Oct. 1 .....	.....	10.17	9.27	8.84
Nov. 1 .....	.....	10.28	9.29	8.81
Dec. 1 .....	.....	10.40	9.49	8.83



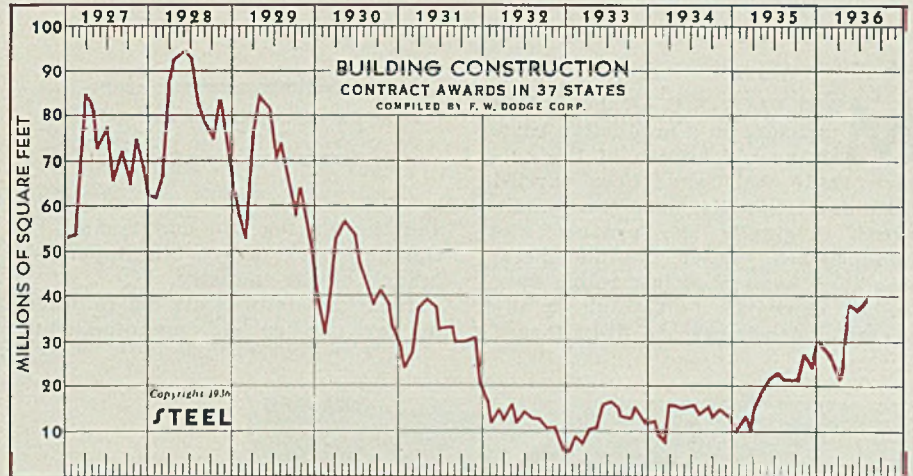
July Business Failures Lowest Since September 1920

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



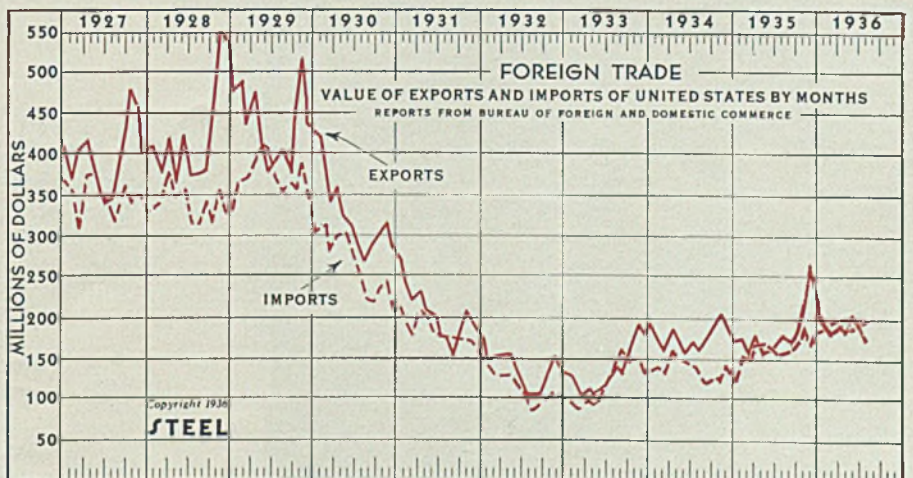
Building Awards Continue Moderate Gain in July

	Square Feet		
	1936	1935	1934
Jan.	27,053,300	11,245,100	9,568,700
Feb.	20,856,700	9,670,300	8,176,300
Mar.	31,308,100	15,845,300	14,788,900
Apr.	37,490,200	19,917,300	14,207,100
May	36,362,700	22,276,200	14,664,400
June	36,883,900	22,878,800	13,986,500
July	38,762,500	21,565,900	13,250,000
Aug.	.....	21,545,400	14,259,000
Sept.	.....	21,365,700	12,510,300
Oct.	.....	27,775,900	15,098,100
Nov.	.....	24,120,700	12,780,800
Dec.	.....	33,441,900	9,188,700



Unfavorable Trade Balance Continues as Exports Drop

	Dollars (000 omitted)			
	1936		1935	
	Exports	Imports	Exports	Imports
Jan.	198,654	187,482	176,223	166,993
Feb.	182,030	192,771	162,999	152,491
Mar.	194,790	198,686	185,603	177,279
Apr.	193,490	202,437	164,350	170,567
May	201,042	191,110	165,457	170,207
June	185,188	192,233	170,193	156,756
July	178,324	193,409	173,371	177,698
Aug.	.....	.....	172,194	169,030
Sept.	.....	.....	198,189	161,653
Oct.	.....	.....	221,215	189,240
Nov.	.....	.....	269,400	168,955
Dec.	.....	.....	223,737	186,648



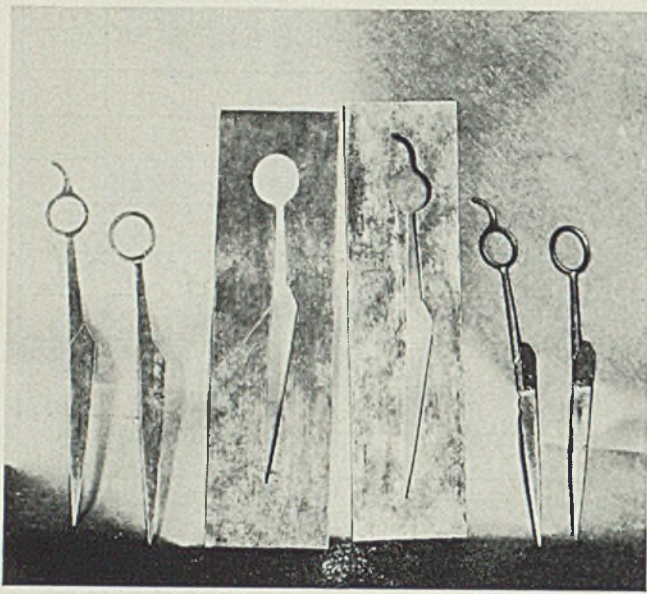


Fig. 1—Sheet metal templets, both male and female, are made of the shear pieces, to show the approximate finished form

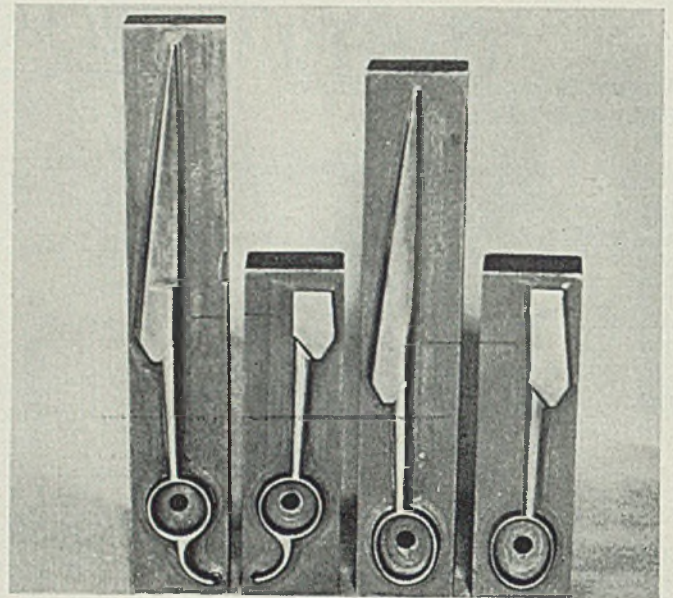


Fig. 2—Hobs of the blades require extensive manual work in forming and finishing to close tolerances

Preparation of Drop Forging Dies

MANUFACTURE of shears and scissors on a production basis is an old branch of the cutler's trade which has been carried on uninterruptedly since the middle ages. Originally the product was hand forged. Later the hot metal was hand hammered into rough dies. Today, however, all high grade shears and scissors are drop forged

BY FRED B. JACOBS

and the making and maintenance of the necessary dies is an important branch of the industry.

Identical methods are not followed in any two cutlery manufacturing

plants but the die sinking processes described in this article, followed at the plant of the Clauss Shear Co., Fremont, O., are representative of up-to-date practice. The company was founded over 50 years ago by John H. Clauss in Elyria, O. Later his brother Henri Clauss was taken into partnership and shortly after that the business was moved to Fremont. The company has an annual capacity of 50,000 dozen shears and scissors per year in about 300 patterns and sizes.

To outline the methods followed it may be well to describe what happens when it is decided to place a new pattern on the market. The sales department always is consulted in this matter and in many instances new patterns originate there. The first step in production involves making templets as shown at the left in Fig. 1. These templets are sheet steel about 1/16-inch thick and the outlines are finished entirely by hand. A hole is drilled in each templet so they can be put together like a pair of scissors and thus give an idea of the outline shape of the finished product. The next step is to make two female templets shown at the center of Fig. 1, which also are sheet metal about 1/16-inch thick. Each female temp-



Fig. 3 — Expert die-sinkers finish the hobs which must have perfectly smooth surfaces



Fig. 4—From the hobs plaster of paris molds are made, in which lead castings are poured to show the exact size of the finished product

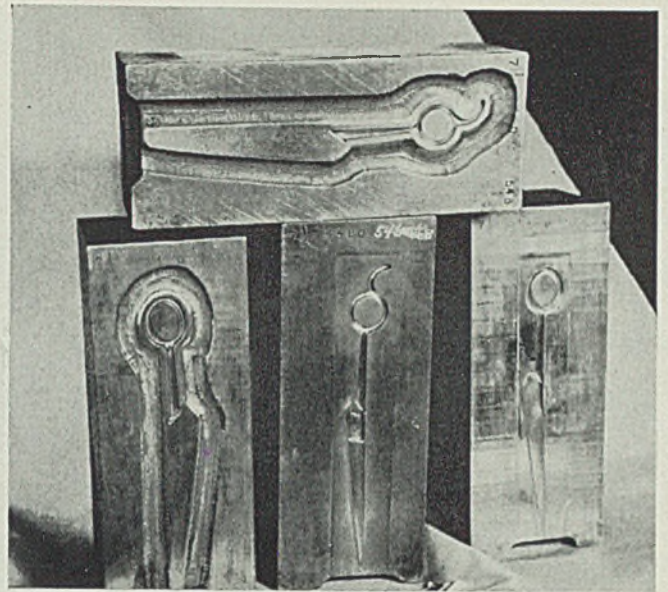


Fig. 5—If the lead castings prove satisfactory, dies are made from the hobs, two upper and two lower dies being required for each set of shears

for Use in Cutlery Manufacture

let is an exact fit with the male templets previously made.

As a pair of scissors consists of two members and as each member is drop forged between two dies, it is necessary to have four dies for one pair of shears. Before the dies are sunk, however, it is necessary to make four hobs. Hobs for a typical pair of barbers' scissors are shown in Fig. 2. The reason why two of the hobs are short is because all the metal of the lower or cutting part of the shears is forged in one die. These hobs are made of 0.60-0.70 per cent carbon steel of a special quality provided for this purpose. Such a steel must temper properly when it is quenched in oil and also must have the necessary toughness to stand the strain of hobbing out the die, which will be explained later. The outlines, of course, can be worked out by planing or milling, but as may be imagined, a large amount of hand work is necessary in finishing the hobs by filing and scraping.

A manual operation such as this can be carried out only by an expert die sinker of long experience. As shown in Fig. 3 the work is conveniently held in an ordinary vise. This illustration also shows the lighting facilities, providing natural

daylight from two sides. The hob must be made somewhat deeper than the depth of the impression required in the finished die so that the proper distance can be worked down later. After the outline on the hobs has been worked down, all raised surface must be finished carefully by polishing with emery cloth to remove scratches, for if the hob is not perfectly smooth it will not make a

smooth impression in the die and the finished product will show flaws.

The next step is to make a plaster of paris mold from each hob. Two of these molds are shown in Fig. 4. Some drop forging dies have what is known as a straight lock, or meeting point. In some instances the lock forms a slight depression. One of these depressions is shown at the right and its counterpart at

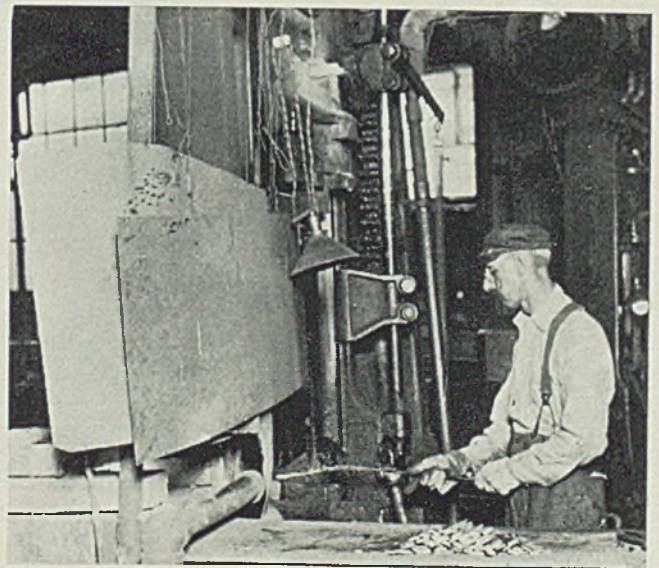


Fig. 6—Shear blades are forged in a light drop hammer, three or four blows being sufficient to shape the stock

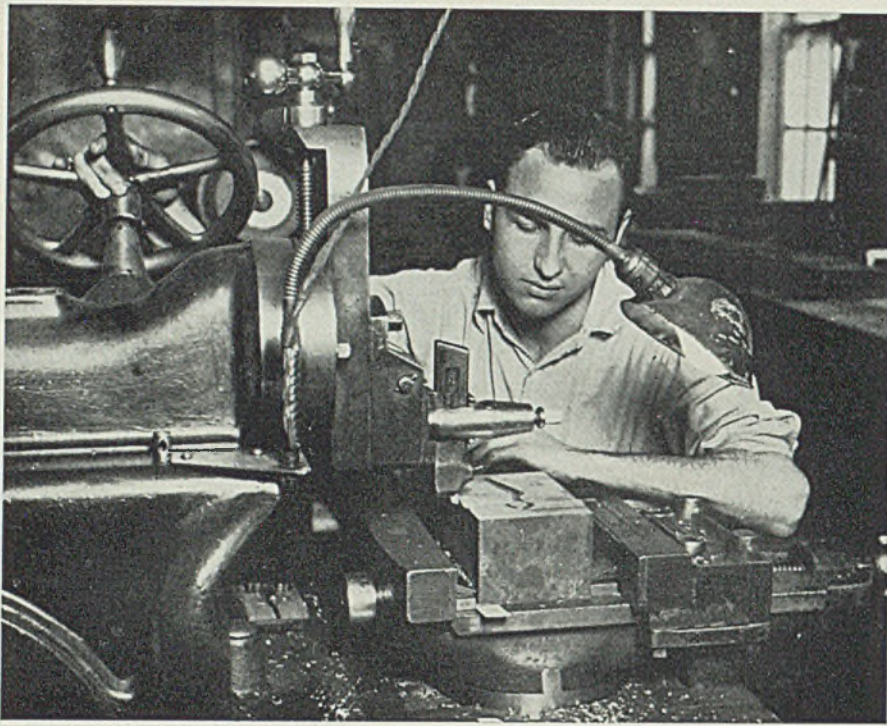


Fig. 7—In working down die surfaces a shaper is sometimes used as shown here

the left in Fig. 4. The majority of dies for this work have what is known as a straight lock.

After the plaster of paris molds are made, the die sinker works them down by hand so that the impression is just as deep as that wanted in the finished product. Then the two sections are put together to form a mold and lead castings are made. Two of these lead castings are shown at the right in Fig. 1. They can be put together to form a replica of the finished product, and to give an excellent idea of how the finished pair of scissors will appear. If the model thus made is satisfactory the hobs are hardened in oil and the impression surfaces are polished carefully to remove all scale. In Fig. 5 are shown the dies to be used in making a forging, having been sunk from the hobs.

Dies Easily Hobbed

As shown in Fig. 5, the die at the top and the one at the left are upper dies while the die in the center and the one at the right are lower dies. Referring to these illustrations, it will be seen that the gutter is always on the upper die. The hobbing process is simple. The die stock, which is of the same grade as that used in making hobs, is heated to a good red heat in a special gas fired furnace provided for the purpose. The hob is located in position on the ram of a drop hammer and the heated die stock is located on the anvil. Three to six blows serve to hob the shape into the die.

The next step is to polish the die

impressions carefully with abrasive cloth to remove all irregularities and to present a smooth surface, for the smoother the surface the better will be the forgings struck up between the dies. Then it is necessary to work down the upper surfaces of the dies to get the proper clearance. As stated previously, the hob is always made deeper than the finished impression, but in working down,

allowance must be made for the flash which is about 1/64-inch thick, and the fact that when the two dies come together the distances from their surfaces to the bottom of the impressions will determine the thickness of the finished forging.

Dies Are Machine Finished

In working down the die surfaces sometimes they are planed in a shaper as shown in Fig. 6. Again a vertical milling machine as shown in Fig. 7 often is used. This machine, of course, possesses one great advantage in that it is provided with a circular table which accommodates the vise in which the work is located. Thus the operator can give the work a longitudinal, cross, or circular motion. After the proper distances are machined the dies are hardened in oil and are then ready for use in a board drop hammer as shown in Fig. 8. This is comparatively light forging work and three to four blows are sufficient to shape the stock.

If the dies could be used indefinitely the problem would be a simple one, but in the average shear plant one set of dies will only strike up about 500 dozen impressions before re hobbing is necessary. In refashioning a set of dies they are first annealed carefully, the top planed down, the die then hobbled again and refinished. A drop forged die can be remade several times and when it becomes too thin for practical use the stock can be used over again for a smaller die.

Hobs are stored for future use.

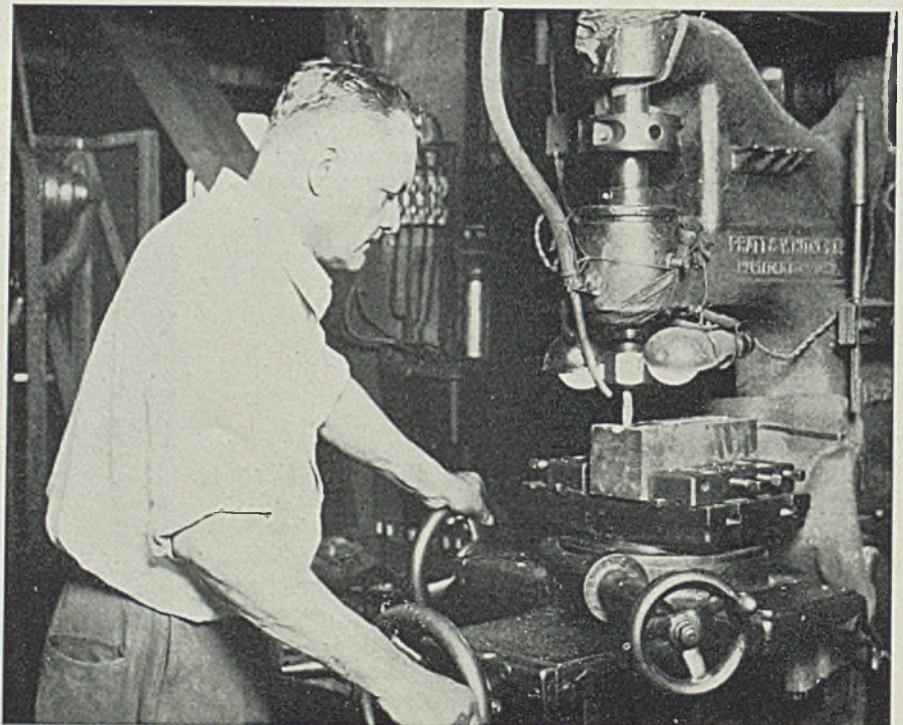


Fig. 8—Vertical milling machine provides additional flexibility in working down die surfaces

In case a die breaks in use, it is a simple matter to hob out another one. The process would be more costly if each die were worked out of solid metal without the aid of the hob. Thus the hobbing process

offers many advantages in that it facilitates ready repairs and makes it possible to keep on hand at all times masters for all the dies used in the shop in regular production work.

work. The oxygen and acetylene pressures recommended by the manufacturer of the welding equipment were used.

When the pieces of sheet metal were tack-welded and ready for the next step in assembly, $\frac{1}{4}$ and $\frac{3}{8}$ -inch thick asbestos sheets were laid along the surfaces that would be exposed most to the welding flame and then thoroughly soaked with water. The asbestos was fitted closely into the corner of the edges to be welded. This was found to be a splendid method of practically eliminating possible difficulties from warping.

Strips of the base metal were used as welding rod when this was required, although not much was needed as the welding operation consisted simply of melting down about $\frac{1}{8}$ -inch of the adjacent flanges. This is regular recommended practice for the making of flange type joints in sheet metal of this thickness. In this case, however, rather wide flanges were turned up in order to leave the reinforcement in the finished tank that this type of preparation would give.

The strips of metal used as a welding rod served a dual purpose in that they were used to assist the action of the flux by scraping off the viscous oxide slag that formed on the surface of the molten puddle. This particular type of stainless steel does not flow as easily under the action of the welding flame as some other types do, although the welding quality is good.

When the welding work has been completed, as shown in Fig. 1, the heat color marks were readily and permanently removed by the application of a regular type of mechanic's hand cleaner and common household scouring powder.

FIG 1 (Left)—One of the sulphur dye tanks after welding is complete. Heat color marks were easily removed from the stainless surface by the use of scouring powder. **Fig. 2 (below)**—Edges of the sheets were flanged before welding as shown here. The bottom and two of the sides are made from a single sheet

Stainless Steel Sulphur Dye Tanks Are Fabricated by Oxyacetylene Welding

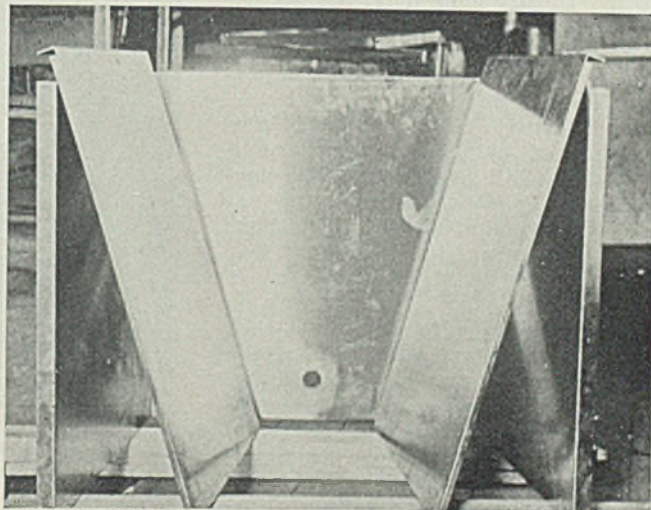
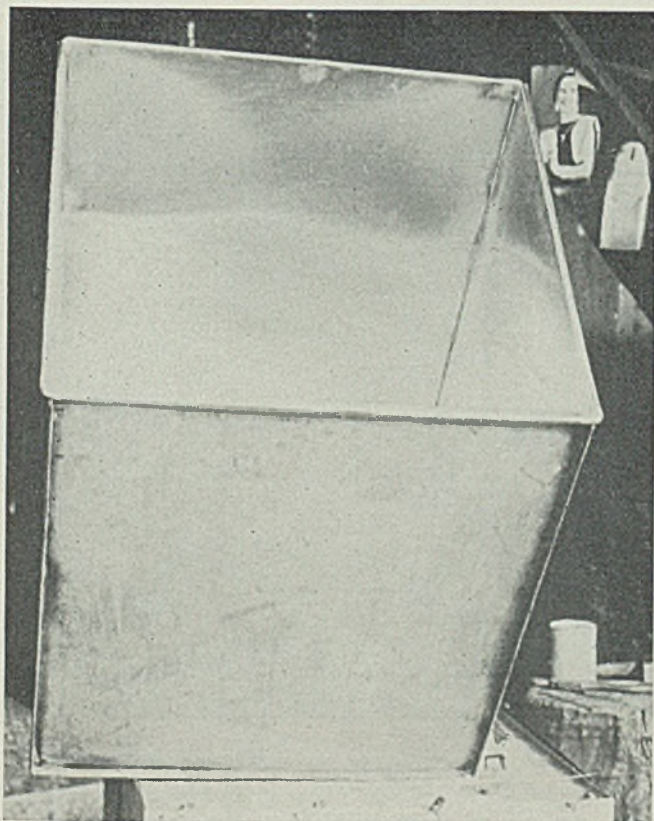
A SHEET metal working company which had not been equipped for welding for any great length of time recently received an order for several sulphur dye tanks to be fabricated by the oxyacetylene process from 16-gage stainless steel of a type known as disintegration proof. Although possessing but little previous experience with this type of material, the company produced the tanks successfully and is now specializing and aggressively seeking this class of work.

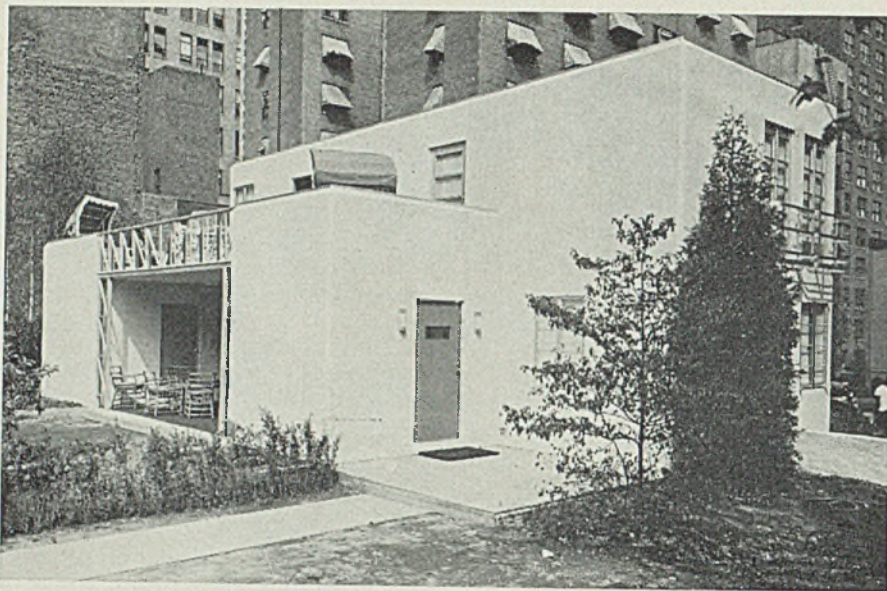
The method by which the tanks were fabricated was described in the July issue of *Oxy-Acetylene Tips*, published by the Linde Air Products Co., New York. One of the completed tanks is shown in Fig. 1 and the parts formed for welding are shown in Fig. 2. It will be seen that the sides and bottom are made of a single sheet of the material. A $\frac{1}{2}$ -inch flange was turned up on each edge by a power press to give a good

square corner and to stiffen the finished tank. This type of design helped considerably in keeping the edges in line for welding.

Small U-type clamps were used to hold the edges of adjacent sheets together and in place while the sheets were tack-welded. The tack welds were spaced at intervals of $2\frac{1}{2}$ to 3 inches and made along the edge in one direction only from end to end. Likewise the welding of the seam itself was carried out in one direction only beginning at one end and not stopping until the other end was reached. It is interesting to note that the edges of the material were thoroughly filed clean and free from oxide after tack welding and then the whole seam painted with Cromalloy flux before the final weld was made.

A blowpipe tip one size smaller than is recommended for working on ordinary carbon steel sheet of the same thickness was used for this





Advantages of prefabricated steel construction are exhibited in this \$10,000 house erected in downtown New York where it can be easily inspected

Steel Houses Are Assembled From Prefabricated Panels

USE of steel as a raw material from which standardized units for building construction may be fabricated and assembled into attractive, nonstandardized houses has been demonstrated by erection of an all-steel house at Thirty-ninth street and Park avenue, New York. Designed by William Van Alen, architect of the Chrysler building, and located just four blocks away almost in the shadow of the skyscraper, this modern home has been assembled by National Houses Inc., 480 Lexington avenue, New York, to demonstrate its new method of construction.

Houses built by this company, a comparatively new entry in the home construction field, are assembled from standard panels, the standard width being 4 feet and height being 9 feet for a one-story building and 18 feet for two stories. A 2-foot panel also is provided in a variety of heights to afford additional flexibility in design. The panels include door, window, corner and plain units, all of which form the outer face of the building.

No Frame Necessary

Panels are so formed that when bolted to anchor bolts set in the foundation and fastened with clamps, no other frame is needed. The method of construction of National Houses differs from most other prefabricated houses in that the panels forming the outer wall are as-

sembled first and then the clamps, which are the structural members taking the place of the ordinary and customary steel frame, are attached.

By this method, it is claimed, many of the difficulties encountered

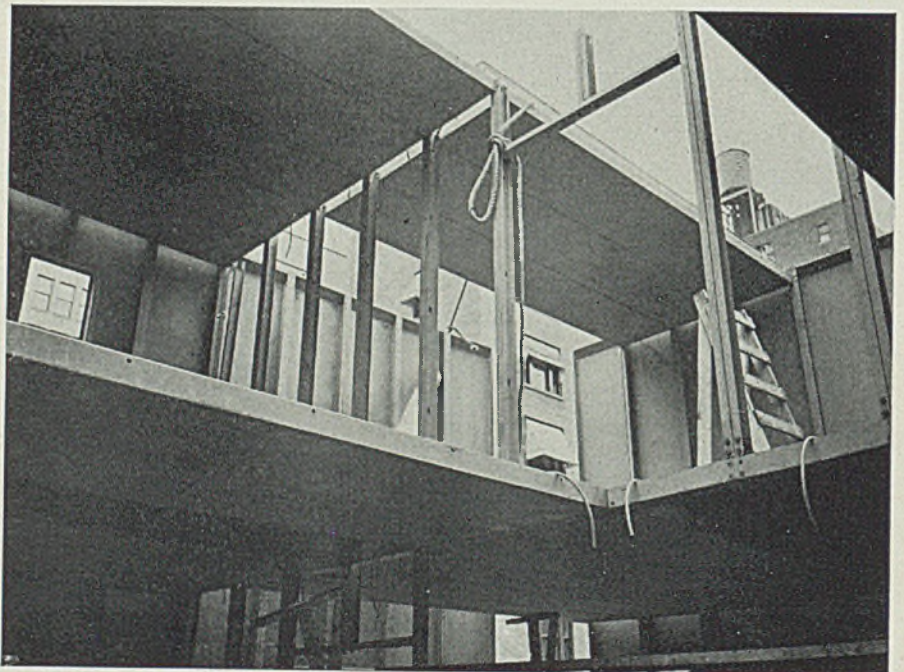
in fitting panels to preconstructed steel frames are avoided and assembly is simplified. Steel roof and floor pans are bolted to the outer walls and to the bearing partition studs and are filled with insulating roof and floor materials by the use of which durable and insulated roofs and a base for finished floors are obtained.

The bottom of the steel roof and floor pan forms the ceiling of the story below. Interior walls consist of 2-foot wide sheets of 20-gage steel designed to fasten in a simple manner to the structural clamps. The space of 4 inches between the inner and outer wall surfaces is filled with National insulation consisting of specially-processed Vermiculite, a fireproof mineral which is poured into the wall space and provides an insulating efficiency equivalent to approximately 52 inches of brick wall. Interior steel surfaces may be painted or papered as desired.

Expansion Problem Gone

By the elimination of practically all other materials, except steel and Vermiculite, it is stated that many of the problems of ordinary construction are avoided. There is only one material in the wall structure—steel—affected by expansion and contraction.

Exteriors of houses built by the company are covered with a newly invented finish by which pleasing marble-like surfaces is obtained, and the objectionable appearance of sheet steel in house construction is overcome. By unique architectural treatment, the steel panels in the



Steel roof and floor pans filled with insulating material are bolted to the outer walls and to bearing partition studs. The bottoms of these pans form the ceiling of the story below

outer wall seem to have a solidity and massiveness usually not attained in steel house design.

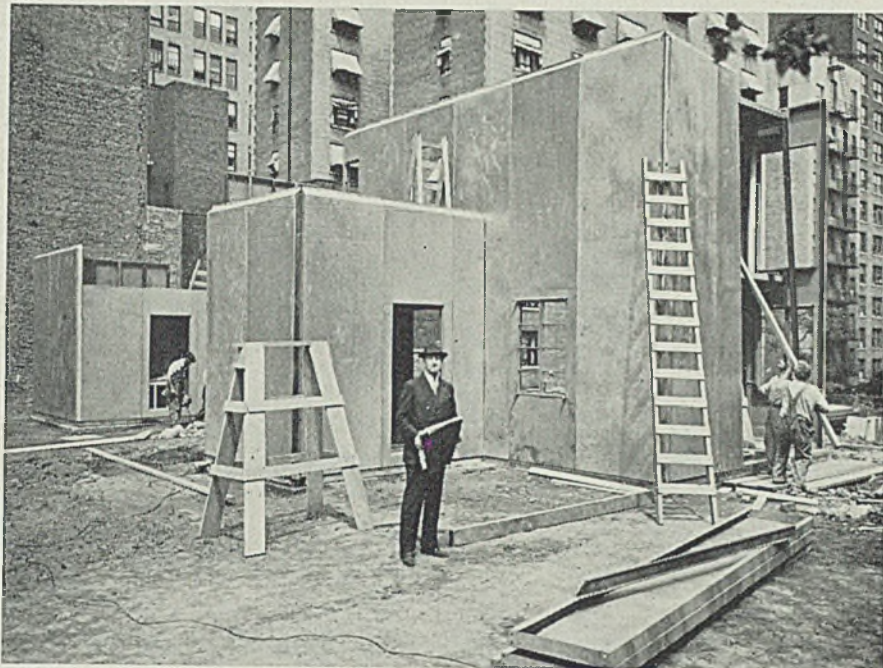
All concealed surfaces are treated with rust-proof paint that is said to have actually protected steel against exposure to the weather for more than 15 years. The exterior finish is durable and tests indicate that it will furnish protection for at least 7 years. It may be renewed by spraying the surfaces at a nominal cost.

Nonbearing partition walls consist of standard sections 2 inches thick and 2 feet in width filled with Vermiculite for insulation and sound deadening purposes. Houses built in this manner are claimed to be quiet and the acoustical qualities of the insulation prevent the reverberation of sound inside the structure.

Other Materials May Be Used

Steel casement windows and steel doors make it possible to assemble a house without the use of any wood whatsoever, although wooden floors are entirely optional. The units from which the company's houses are assembled may be utilized in any proper manner in combination with building units of other material. This is indicated in the model house at Thirty-ninth street and Park avenue, where a glass brick wall serves a useful purpose by affording maximum light to the library.

The New York house, shown in various stages of construction in the accompanying illustrations, is a \$10,000 structure and was finished complete in 30 days from the date when assembly was begun. It is two stories with a patio and sun



The 4-inch space between outer and inner walls and the 2-inch thick partition walls are filled with a fireproof mineral insulation and sound deadener. House exterior is covered by a newly developed sprayed finish

terrace and built-in garage with a white finish which resembles stucco in appearance.

Its eight good-sized rooms include a living room, dining room, library, kitchen and general utility room on the first floor, and three bedrooms, bathroom and sun terrace on the upper floor. The house is air conditioned and equipped with an oil-burning heating plant.

B. E. Moses, general manager,

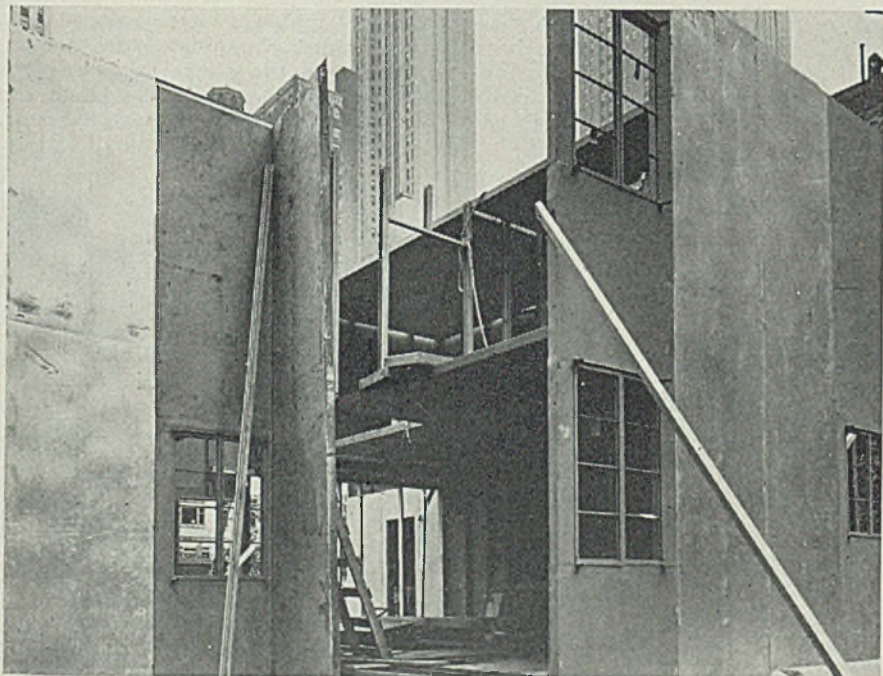
National Houses Inc., states that in the development of the use of sheet steel in the housing industry it is recognized that steel in the form of sheets is merely a raw material from which units for building construction must be fabricated and made available for ready assembly into nonstandard houses if this raw material is to attain its proper place in the house building industry.

Just as bricks are fabricated from clay in the brick yard, and just as lumber is fabricated from timber and made available through building supply firms throughout the country, so must the units of buildings fabricated from steel be made available for use in house assembly if steel is to become universally accepted and included in the assembly of houses, continues Mr. Moses. Because of the nature of the raw material, it is possible to obtain more wall surface and greater strength for the same amount of money from steel than from any other raw material.

Larger Units Fabricated

Steel also has the advantage, he maintains, in that the units for assembly into houses may be fabricated into larger sections than other types of materials. An entire wall section 4 feet wide and 18 feet high for a two-story building can be fabricated in the shop, transported to the site and assembled into the wall by a crew of five men working for a relatively short time in the erection.

These factors are fundamental, asserts Mr. Moses, and must and are being recognized as vital in solv-



Standard outer wall panels of 4-foot and 2-foot widths are assembled and bolted to the foundation, then fastened together with clamps which take the place of the customary steel frame

ing the problems of mass production and assembly of houses using steel as a basic material. Just as the machine age has given steel refrigerators, oil burners, conduits, air conditioning units, kitchen cabinets and innumerable other items already accepted as essential to modern, comfortable and practical living, so it is expected that steel properly proportioned and suited will be found acceptable in the walls, roof, floors and partitions of the modern home.

With its fireproof, earthquake,

lightning, termite, vermin and wind-proof qualities, and its low basic cost, the assembled steel house is being received with outspoken approval of the American people who are not unaware that mass production of parts and proper assembly has made the automobile a vital part of the nation's life, and who recognize that the same methods can be and should be applied to produce efficient, economical, durable and attractive homes through the use of modern materials, concludes Mr. Moses.

elers, hot saws, cranes, and similar equipment.

Concluding the book is a list of Timken equipped rolling mills, main roll drives and rolling mill pinion stands, giving the name of the company using the equipment, the type and size of the installation, the positions in which the bearings are used and the bearing numbers, these lists being as of July 1, 1936. No attempt has been made to list the many other Timken applications in connection with rolling mills.

There have been 689 Timken equipped rolling mill stands installed in the United States and Canada, starting with three in 1926. Of these stands, 126 are listed in this new publication as installed during 1935 and 118 as installed or on order during the first half of 1936.

Copies of this new booklet, which will be found useful to mill designers and operators, may be obtained without cost on application to the Timken Roller Bearing Co., Canton, O. or to any of the company's district offices.

Parallax Readings Eliminated in New Illuminated Over-and-Under Scale

ELIMINATION of the tower principle has resulted in elimination of parallax readings in a new scale designed and built by the Exact Weight Scale Co., Columbus, O. Employing a principle known as the "Shadowgraph," the scale indicates over and under weights with a travel of 2 inches per ounce. The reading is projected on a dial having a wedge-shaped shadow at its center. A hairline indicator travels up or down the dial according to whether the load placed on the pan is over or under the predesignated weight. The weight pan is placed under a cover at the rear of the scale. Weights are chrome plated stack pin type, 1 pound each, and smaller variations are controlled by a beam of 1-pound capacity graduated in ¼-ounce steps. Illumination to throw the shadow and indicator beams on the dial is furnished by standard two-contact automobile lamps of either 21 or 32 candlepower.

Mechanism Is Dustproof

Since all working parts are under cover, the scale functions well in dust-laden atmospheres. The housing is aluminum covered with dark gray or green enamel, and the lever system is of cast iron. Agate bearings surpass the beam mechanism. Pivots are of hardened tool steel, chrome plated. The scale capacity is 5 pounds avoirdupois, or 2500 grams metric. In event metric system is desired, weights of 1000 and 500 grams are supplied and the beam is graduated in 5-gram steps to a capacity of 500 grams.

Operation is completely noiseless, operating parts being mounted on rubber. The scale operates whether in level position or not, making it possible to move the unit easily from place to place without disturbing the accuracy of the readings. It is oil dashpot controlled in order to in-

crease ease and speed of operation.

Uses of the scale include parts selection, to determine whether or not a part is within required tolerance; balancing of pistons and connecting rods, formula ingredient control and the like. Special racks and handling equipment are developed by the company for specialized models in handling definite parts on a high production basis.

Rolling Mill Bearing Book Now Being Distributed

Timken Roller Bearing Co. has just issued a 64-page booklet, 8½ x 11 inches, entitled "The Answer to Rolling Mill Bearing Problems" which is well illustrated with both photographs and mounting diagrams. These show typical applications of Timken bearings to various types of mills, screw-downs, pinion stands, gear drives, table rolls, reels, straighteners, lev-

Snow Plow Constructed For Attachment to Lift-Trucks

Attachable in a short time to the platform of any high or low lift industrial power truck, a new snow plow recently introduced by the Easton Car & Construction Co., Easton, Pa., is expected to fill an industrial need this winter.

Snow can be pushed to either side of a runway or straight ahead by setting the blade, which is mounted on a pivot and equipped with a shear pin which protects the truck if a solid obstruction is met. Ordinary obstructions are met by a preloaded spring tension. Standard blade is 25 x 54 inches, and is equipped with a standard clamping device for attaching to the platform of any lift truck. In operation, the blade can be raised or lowered by the operator.

NUMEROUS industrial uses have been found for this scale which utilizes a shadow thrown on a screen to indicate weights over or under a predetermined standard



SURFACE TREATMENT AND FINISHING OF METALS

Brass Plating Prepares Steel Surfaces To Receive Heavy Coating of Rubber

METHODS of preparing metal surfaces to receive a finish are many, and vary according to the metal to be finished and the finish to be applied. Production of a surface to which the finish will adhere firmly is a primary requisite, which may involve merely a physical cleaning of the surface or a complete chemical change by means of one of the many chemical treatments or by electroplating. Naturally the simplest and most rapid method of cleaning is most desirable from a manufacturing standpoint, but in many cases conditions of service of the product and special requirements for adherence of finish necessitates use of an involved procedure. This is the case when rubber is to be applied to steel and the surface required is as involved as many complete finish systems.

Modern automobiles use considerable amounts of rubber for motor hangers, shock absorber parts, and other chassis equipment. These parts are all subject to rough usage and the rubber must adhere firmly to the steel. Present practice is to plate the steel with a light coating of brass to which the rubber will adhere in a manner satisfactory even to the automotive industry.

Process Is Automatic

Firestone Steel Products Co., Akron, O., which manufactures many of these parts for automobile manufacturers, has developed this process to a high degree and is obtaining satisfactory results from a continuous automatic process. So far the automatic process has only been used for parts less than a foot square and which can be conveniently racked due to their shape. Large parts and those which cannot be conveniently racked in the automatic process are brass plated in the same manner in a manual process.

The parts, which are usually made from hot-rolled steel, are ordinarily subjected to fabricating processes requiring liberal use of drawing compounds which must be removed before any surface treatment can be attempted. In this connection the use of drawing compounds requiring organic solvents for their removal must be avoided. Only compounds

which can be removed satisfactorily in an alkali cleaner are used.

In the continuous automatic system, parts, as they come from punch presses, are hung on racks suspended from an endless conveyor system. These racks are covered with a vinyl chloride compound to protect them from the action of strong cleaning solutions which are used. The parts are first treated with an alkali electro-cleaner to remove the drawing compounds and thoroughly clean the surface. The solution used is made up by adding 2 to 3 ounces of sodium hydroxide and 2 to 3 ounces of sodium carbonate per gallon of water. It is maintained at a temperature of approximately 210 degrees Fahr. During this treatment the work is made the cathode at a current density of 40 to 60 amperes per square foot except at the very end of the bath, when it is made the anode momentarily.

Drastic Treatment Required

This is a drastic cleaning operation according to general practice and it attacks equipment to a marked degree. However, the extreme cleanliness required for such work and the speed required by the rate of production make such treatment necessary, and maintenance cost of apparatus is overbalanced by advantages gained in quick cleaning. This solution is controlled by chemical analysis of samples taken by the operator about three times per week.

After the alkali cleaning operation the work is given a hot water rinse and then a pickling treatment in a 10 to 18 per cent solution of sulphuric acid which is maintained at a temperature of 185 to 210 degrees Fahr. This again is drastic treatment but is necessary as explained above. The bath is controlled by chemical analysis and is tested four or five times daily.

The pickling operation is followed by a cold water rinse and then by an acid dip in a solution of 35 to 50 per cent sulphuric acid, which is maintained at a temperature below 80 degrees Fahr. This bath is controlled by means of a hydrometer. The purpose of this bath is to remove the film of carbon left on the

surface of the steel by the pickling process.

After a water rinse the parts are subjected to an electro-stripping operation in an alkali-cyanide solution. This solution is made up by dissolving 2 to 3 ounces of sodium cyanide and 2 to 3 ounces of sodium hydroxide per gallon of water. The solution is maintained at a temperature of 85 to 100 degrees Fahr. Polarity of the current is reversed every 30 seconds during this treatment at a current density of 40 to 50 amperes per square foot. This solution is also controlled by periodic chemical analysis. Following a water rinse the parts are ready for brass plating.

The brass is plated in a cyanide solution made up by dissolving the following salts as indicated: Free sodium cyanide, 1 to 1.5 ounces per gallon; copper cyanide, 2.5 to 3.0 ounces per gallon; zinc cyanide, 1.25 to 2.0 ounces per gallon. It will be noted that sodium cyanide is expressed as *free sodium cyanide*. However to dissolve the salts and form the complex metal cyanides characteristic of the bath it is necessary to add 3.6 to 4.6 ounces per gallon of sodium cyanide or roughly one part of the salt to one part of copper cyanide or zinc cyanide. The "free" or "uncombined" sodium cyanide is the amount over and above that required to form the complex salts.

Anodes Must Be Pure

The pH of this solution is approximately 10.5 and must be maintained between 10.3 and 10.7. Usually it is only necessary to add small amounts of sodium bicarbonate to control the acidity of the bath. Exceptional purity is required of the anodes which are a cast 70-30 alpha brass. Purity of the anodes is essential to the adhesion of rubber as well as the purity and copper-zinc ratio of the plated brass, which must be held closely to the 70-30 ratio. It has been found that the composition of the plate, which is analyzed daily, is not affected materially by small changes in the composition of the bath. Close control of the composition of the plate is maintained by controlling temperature, acidity of the bath and current density used. A tank voltage of three volts and a current density of 8 to 12 amperes per square foot are used. Plate thickness is in the order of 0.00002-inch. The throwing power of this bath is good and parts having deep recesses are entirely coated with brass.

After plating, the parts are given

two thorough cold water and one hot water rinses to prevent cyanide staining, and passed through a drying oven. The dried parts emerge from the oven at a point near where they were hung on the conveyor at the beginning of the operation. They are then inspected and sorted.

Since the brass coating is so thin, it affords little or no protection to the base metal and on humid days a certain amount of base metal rusting may take place, rendering the part unfit for coating with rubber. Adhesion of the rubber is seriously affected by even small changes in the brass surface, and to prevent such changes from taking place from exposure to the atmosphere, the parts are covered with a cumar resin as soon as practicable after they have been plated. It is not necessary to remove this resin prior to applying rubber as it is absorbed and becomes a part of the coating.

Refractory Paint Withstands High Temperature in Furnace

Heat-resisting paint, long sought by industry, is announced by W. E. Harber Co., 133 McKinnie avenue, Fort Wayne, Ind. This paint, known as Harbcoat, is a refractory material which can be applied by brush, spray gun or dipping.

It is claimed that the material, applied to steel, cast iron and firebrick, has resisted temperatures up to 3300 degrees Fahr. without being affected. It hardens under heat and is said to resist abrasion and mechanical injury even at temperatures above 3300 degrees Fahr.

Field trials have indicated a wide use for this material to protect the linings of water gas generators, gas retorts, sidewalls, bridgewalls, door arches and jambs of all types of

steam boiler furnaces; billet heating furnaces; front walls and target walls of oil-burning furnaces and other high-temperature equipment.

To Prevent Blistering of Enamel on Cast Iron

One way to cure blistering trouble with enamel on cast iron is to anneal the castings before they are enameled. This operation breaks down the combined carbon and causes the evolution of gases before the enamel is applied. Following the anneal, the castings are sandblasted to remove scale and are enameled in the usual way. Another remedy is to remove the microchill from the castings by grinding or deep sandblasting.

Phosphate Process Increases Corrosion Resistance of Zinc

CHEMICAL rustproofing treatments, first introduced in 1915, have been the subject of constant research and development with the result that today there is a wide variety of treatments available. The original process, and most of the

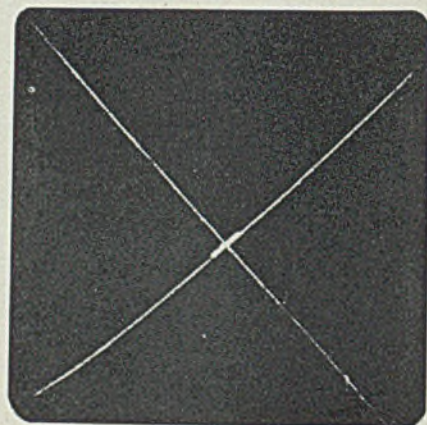
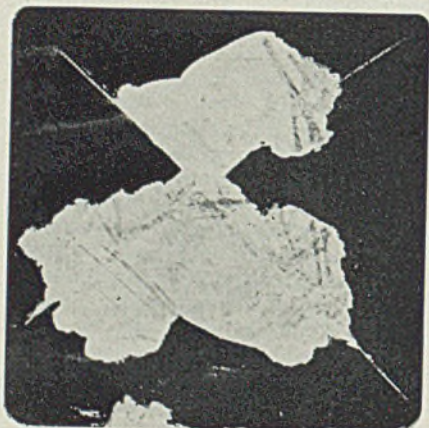
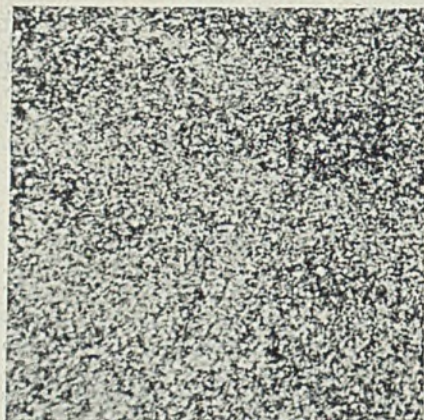
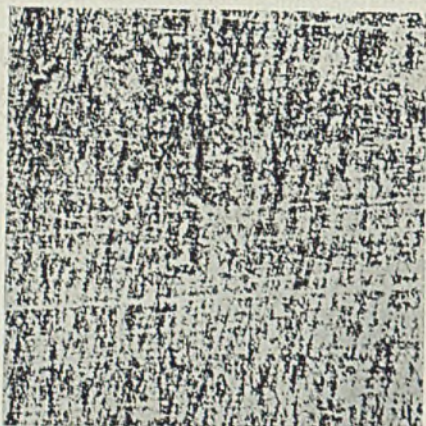
later developments, were for use only on steel parts, which was only natural because there was no demand for any other treatment.

However, the growing use of zinc-base die castings and the increasing need for stabilizing paint finishes on these die castings as well as on galvanized steel has led to the development of new processes. One of the latest of these, known as Bonderite "Z," is announced by Parker Rust-Proof Co., Detroit.

This process converts the smooth surfaces of zinc alloys or galvanized metal parts into an absorbent, paint-holding, crystalline structure which becomes an integral part of the metal itself. Parts to be treated need only be immersed in a chemical solution for a few minutes, rinsed and dried.

The accompanying illustrations demonstrate the effectiveness of phosphate processing zinc surfaces prior to finishing with paint. Upper left is a photomicrograph, X30, showing how the surface of untreated zinc appears under the microscope. Lower left shows untreated zinc surface which has been coated with a three-coat lacquer system and subjected to a salt spray. Upper right is a photomicrograph, X30, showing the surface change when zinc is phosphate processed. Lower right shows a panel which has been phosphate treated and coated with the same lacquer system as illustrated on the left and exposed to a salt spray for 500 hours. This is a convincing demonstration of the effectiveness of chemical sur-

face treatment. Note the crystalline structure of the uncoated panel which has been phosphate treated. It is this structure which affords paint finishes the secure foundation or anchorage characteristic of phosphated surfaces.



FORESIGHT



WHEN THE STEEL industry started, Detroit did not offer the necessary advantages of location. But methods and markets have changed, and today this particular spot is ideal for the manufacture and distribution of steel. Its geographical setting, its water, rail and truck transport facilities, make it possible to render a satisfying delivery service to more steel consumers than could be done from any other place. Great Lakes Steel Corporation, organized only seven years ago, took advantage of this fact by locating in Detroit. Today, large capacity for the production of high quality steel products makes Great Lakes a logical source of supply for any tonnage you may require. Let us furnish specific facts about our facilities.



GREAT LAKES STEEL

GREAT LAKES STEEL CORPORATION *Division of National Steel Corporation* DETROIT, MICHIGAN
DISTRICT OFFICES: *Boston, 1001 Statler Bldg.; Chattanooga, Hamilton Bank Bldg.; Chicago, 1026 Builders Bldg.; Cleveland, 820 Leader Bldg.; New York, 500 Fifth Avenue Bldg.; Philadelphia, 605 Liberty Trust Bldg.; St. Louis, E. R. Hensel Co., Cotton Belt Bldg.; San Francisco, Sharon Bldg.; Toronto, Ont., General Assurance Bldg.*

MATERIALS HANDLING

Materials Handling Operations Call For Centralization of Authority

THE general works manager of one of the largest metalworking plants in the United States recently was asked: "What, if anything, are you doing about your materials handling problems at the present time? Are you devoting more attention to them than formerly?"

His reply was: "We find it necessary today to give more time and study to this very important problem. Before the depression hit us, we had one engineer in complete charge of all materials handling throughout the entire plant. When business dropped to a fraction of our normal, the policy changed. As a result, nobody paid much attention to the problem of handling. The engineer in charge was transferred to another plant.

Decentralized by Depression

"When business again resumed a happier tone, the materials handling job was decentralized—that is, each department head now has jurisdiction over and responsibility for all materials handling within his own section. However, there is one notable exception. All intraplant handling, whether of incoming or of outgoing materials, is in complete charge of one superintendent. I may say that this man is really a transportation engineer for, in addition to

having charge of all incoming materials, he also plans and directs the distribution of parts and supplies to various departments and is in charge of shipping operations.

"This renewed interest in materials handling is evidenced by the receipt of an appropriation for some new equipment, the first sizable purchase of its kind to be made by us since the beginning of the slump."

The layout of the buildings and departments in the aforementioned plant is such that this decentralization of authority over the materials handling operations may work out satisfactorily, particularly in view of the fact that the intraplant handling, including shipping, is centralized in one person.

Generally, however, the better practice in industry is to make one man responsible for all plant handling. The reason is that, to be most effective, the flow of materials through a plant must be co-ordinated. To accomplish this most satisfactorily, the entire problem of manufacture and distribution must be taken into consideration.

The interdependence of the various departments of a business, one upon another; the sequence of manufacturing operations, the paths to and from storage departments, the relationship of final assembly lines to the other parts of the plant—all

must be woven into the final materials handling pattern. This is a one-man job. In most large plants it is a big enough job for one executive; in all plants it deserves at least part-time personal attention from somebody high in authority.

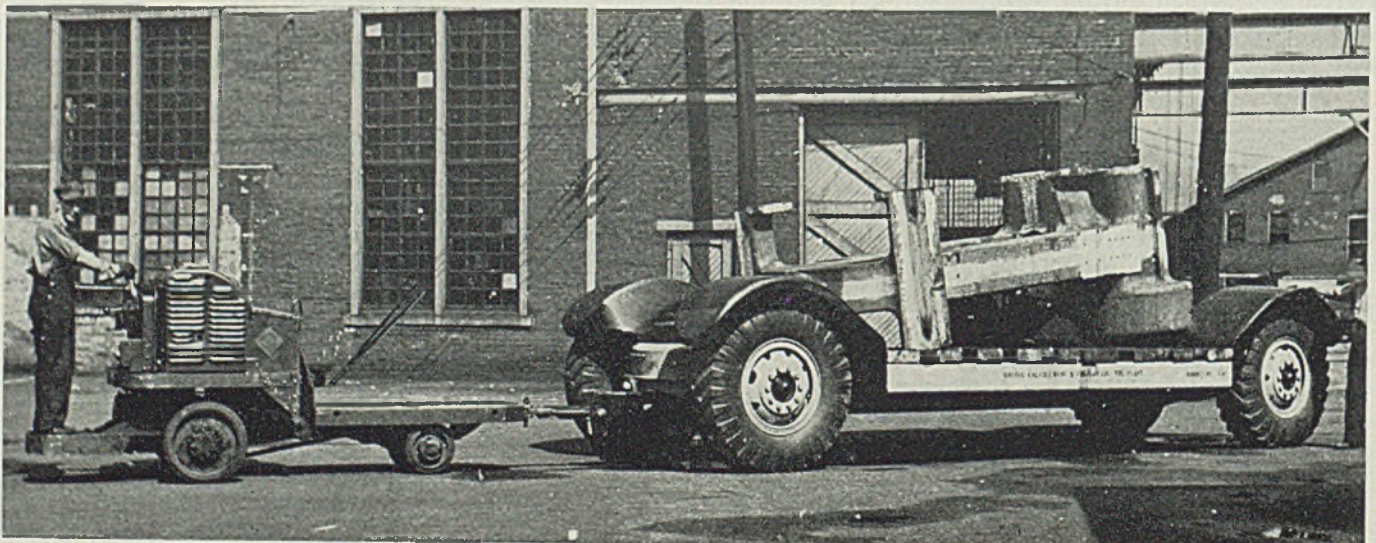
Materials Handling Talkies

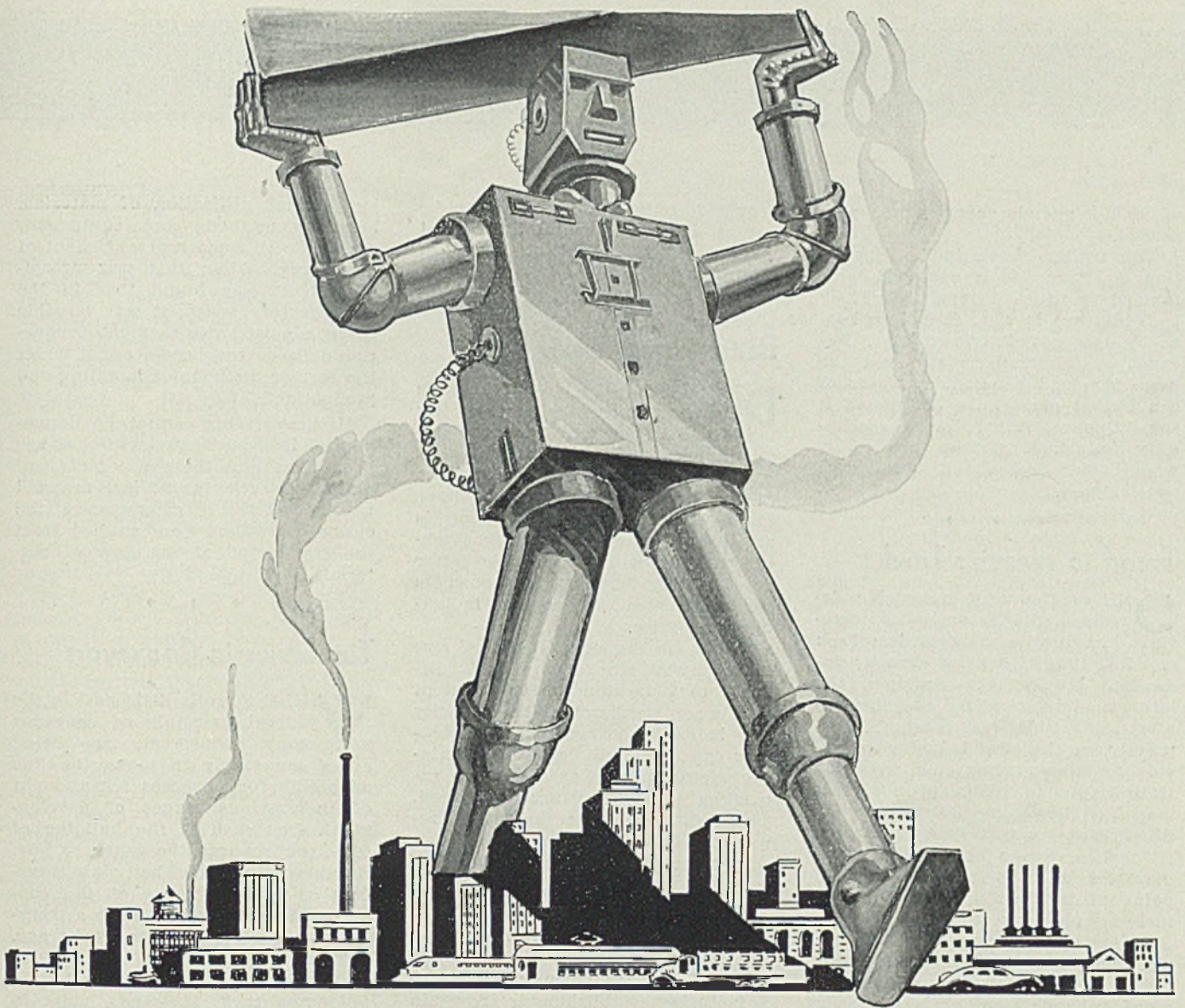
EDISON STORAGE BATTERY CO., Orange, N. J., has completed a two-reel motion picture, with sound effects, which shows and describes some of the most interesting developments in the use of electric industrial trucks for handling materials in and around mills, factories, warehouses and railroad terminals. It is the company's intention to have copies available for exhibition before groups interested in the general subject of modern materials handling.

Special Trailer Application

A NOVEL application of equipment for an unusually bothersome problem is one recently placed in use in the Youngstown plant of the United Engineering & Foundry Co. Transporting heavy castings from railroad cars to locations within the plant has created numerous difficulties in the past. To overcome these, a special heavy-duty trailer

SPECIAL industrial trailer, with a 3½-ton gas-electric tractor unit, transporting a rolling mill housing weighing 40,000 pounds at the Youngstown, O., plant of United Engineering & Foundry Co.





Industry has found a GIANT

With markets clamoring for more manufactured output, many industries are raising the over-all capacity of existing facilities by more extensive use of that modern giant—the battery industrial truck.

These trucks keep material on the move without congestion—feed machines with work and take it away as fast as machines and men can operate. They are truly giants ...can handle burdens up to 75 tons...load and unload themselves, thus dodging the work of needless rehandling. But they have a vulnerable point...

The power unit. Therefore industry tends

more and more to standardize on Edison Steel-Alkaline Batteries in the power box. They are not subject to unexpected failure. Their performance is predictable. They do not give off gas fumes, require repairs, sulphate or break. Only the Edison is built of steel; only the Edison uses non-corrosive alkaline electrolyte; all other batteries made in this country are the lead-acid types. Edisons live 2 to 5 times as long; cost least per year; keep production flowing. Industry uses more Edison Batteries than all other makes combined.

EDISON storage BATTERY

DIVISION OF THOMAS A. EDISON, INC., WEST ORANGE, N. J.



Just out! An authoritative data book on modern materials handling. Your copy is ready. Send for it now!

MATERIALS HANDLING

of 30,000 pounds capacity was purchased.

This trailer, shown in the illustration on Page 52, is equipped with four heavy antiskid tread tires, 13.50 by 24 inches in size. It is towed by a 3½-ton gas-electric tractor. Because of the trailer's size and the huge pay load handled, employees of the United plant have christened it the "Queen Mary". These special-duty industrial trailers are of 4-wheel steer design and of all-steel construction.

Trend to Heavier Trucks

ONE of the most noticeable developments recently in materials handling equipment has been in utilization of heavier capacity industrial trucks. For example, the latest model just added to one manufacturer's line was designed expressly for the steel industry to provide for transporting coils weighing from 10,000 to 16,000 pounds. This machine, shown in an accompanying illustration has a turning radius of 95 inches with a coil 54 inches in diameter and 78 inches long. At point of intersection, an aisle 115 inches wide is required.

Major operating parts are of special heat-treated alloy steels, and, to quote the manufacturer's statement, "chassis members are massive and ruggedly constructed to resist the enormous strain and stresses developed through handling unusually heavy loads and the sudden impacts encountered".

It is to be noted, also, that this machine features safety to operator and ease of control. Power steering by motor and electric control is

provided so that the wheels can be cut at any angle while the loaded machine itself is not otherwise in motion.

Battery Sizes Keep Pace

DISCUSSING the trend towards heavier capacities for electric industrial trucks and tractors, battery manufacturers point out that battery capacities, compared to those in use prior to the depression, have doubled and tripled. The trend is also toward automatic loading, stacking and unloading, and this latter development, they say, is responsible for the tremendous increase in battery capacities.

What the economic limits of size in industrial trucks may be is difficult to determine at the present time when trucks of 30-ton capacity are being manufactured. The battery capacities will be the determining factor insofar as the truck capacities themselves are concerned. The limit placed by industrial requirements is a still more difficult conjecture.

Something To Consider

IN THESE days when many manufacturing establishments are again working at capacity, or at a rate little below that point, there arises the question of whether additional plant capacity will be warranted should business continue on the upward swing.

This problem of sudden increase in demands on the production line has been solved in several instances

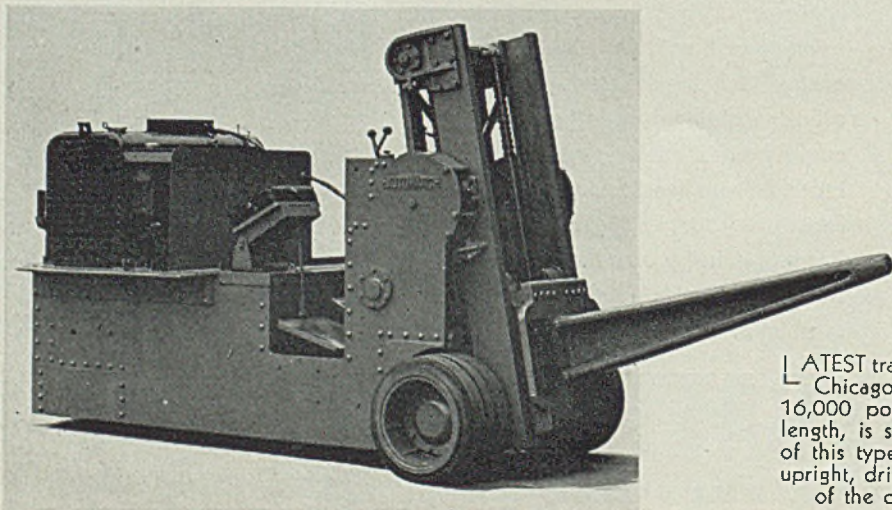
by efficient utilization of materials handling methods and equipment, coupled with some rearrangement of machinery. When this was accomplished, it was found that in the same factory space, it was possible to get almost twice as much production daily as had been secured under the former methods of handling and production.

Naturally, this cannot be accomplished in every instance, but it has been done and there are plenty of plants where better utilization could be made of the existing space if the entire operations were studied from the standpoint of the flow of materials.

Turntables in Conveyors

WHILE there is little new in the general principle of conveyor use, many refinements are being added constantly to make the line adaptable for purposes not thought of in previous stages of development. One such is the building of coil-upenders into the conveyor line. Another is the use of ball plate transfers as integral parts of the conveyor. A recent use of such a transfer was observed a few weeks ago.

This transfer was set into the line at a point where the rollers took a 90-degree turn. It was a point in the manufacturing operations which called for inspection work. The product was a heavy compressor. As the latter reached the transfer, an inspector, with little effort, merely spun the unit around on the balls and obtained a close-up view of the top and sides, permitting the compressor to pass on down the rollers to the next station. It is amazing how readily heavy units can be turned around by hand for such inspection work. Still another application of a similar principle is the use of a swivel block in a chain-driven conveyor line. This permits easy shifting of units or parts on which work is being done. This latter application is found quite frequently in the automotive plants where motors are conveyed from operation to operation, and the work made easy for the men.



LATEST tractor announced by Automatic Transportation Co., Chicago, is designed to handle loads of steel up to 16,000 pounds. Turning radius, as well as the overall length, is said to be the shortest ever attained for a unit of this type or size. An exclusive design of tilting back upright, drive axle mounted integral with frame at the front of the chassis and power steering are other features

Seek To Prevent Boiler Steel Failures By Control of Feed Water Composition

CONSTITUENTS of a boiler feed water are believed to exert an important effect upon the cracking of boiler steel, for example, sodium silicate and sodium hydroxide tend to produce embrittlement and sodium sulphite tends to inhibit this effect. These facts were pointed out in a paper, "Use of Solubility Data to Control the Deposition of Sodium Sulphate or Its Complex Salts in Boiler Waters," presented at the thirty-ninth annual meeting of the American Society for Testing Materials, in Atlantic City, N. J., June 29-July 3, by W. C. Schroeder, A. A. Berk and E. P. Partridge, nonmetallic minerals experiment station, bureau of mines, New Brunswick, N. J.

Four technical papers and two committee reports featured the session devoted to water, a session having been arranged under joint auspices of the society's committee D-19 on water for industrial uses and the joint research committee on boiler feed water studies.

Committee D-19 reported progress, stated that it expects to issue for information later in the year proposed standard methods for the determination of sulphate, hydroxide, total carbon dioxide and total orthophosphate ions—these being based on research work completed by the boiler feed water committee. Active work is under way to establish standard methods of analysis of the chloride, calcium and magnesium ions and other work is progressing.

The boiler feed water paper was one of two papers prepared by Messrs. Schroeder, Berk and Partridge in connection with investigations conducted under a co-operative agreement between the joint research committee and the bureau of mines.

Deposition Rate Shown

Included in this paper were interesting curves expressing conditions under which sodium sulphate will be deposited during the evaporation of boiler water at given initial composition. These curves were based on the results of an extended investigation of the solubility of sodium sulphate from approximately 300 to 660 degrees Fahr. in water and in various complex solutions representative of concentrated boiler waters. If further investigation shows that sodium sulphate either in solution or as solid is necessary to prevent embrittlement, these curves will define the conditions which can or should be maintained.

The second paper by the same authors, "Effect of Solution Composition on the Failure of Boiler Steel under Static Stress at 250 Degrees

Cent.," detailed an investigation primarily directed to secure information concerning the chemical factors involved in the production and prevention of embrittlement in boiler steel. The tentative conclusions will be subject to modification with further work.

It is indicated that pure sodium hydroxide has little effect on the load which a steel specimen will carry, but if the specimen has a line of stress concentration, such as a groove, sodium hydroxide definitely decreases the load-carrying ability. Similarities are shown between hydrogen embrittlement and embrittlement by chemically pure sodium hydroxide solutions. It is shown that sodium sulphite is reduced by iron and hydrogen at 250 degrees Cent. and that this reduction may explain its influence on the embrittlement reaction as well as offer a new view of its effect in the prevention of corrosion.

An investigation on the "Rate of Reaction of Sodium Sulphite with Oxygen Dissolved in Water," reported by R. M. Hitchens and R. W. Towne, Monsanto Chemical Co., St. Louis, showed that the reaction rate is a function first of the type of water, second of the temperature and third of the excess of the reagent employed.

The reaction proceeds roughly five

times as rapidly in sea water as in distilled water and ten times as rapidly in distilled water as in St. Louis city water. The reaction proceeds with great rapidity at 85 degrees Cent. even in water with strong inhibitory tendencies. In general, a rise of 10 degrees Cent. doubles the speed of reaction. A 20 per cent excess of reagent almost doubles the rate of reaction and a 100 per cent excess almost quadruples it.

Among the conclusions reached in a paper, "Determination of Dissolved Oxygen in Boiler Feed Water," by Prof. A. H. White, D. W. Button and C. H. Leland, University of Michigan, Ann Arbor, Mich.—the paper being a progress report of work under auspices of the joint boiler feed water committee—was that the direct Winkler method for determining dissolved oxygen may have an accuracy of 0.001-milliliter of oxygen in the volume titrated, if there are no interfering substances and the end point is determined electrometrically.

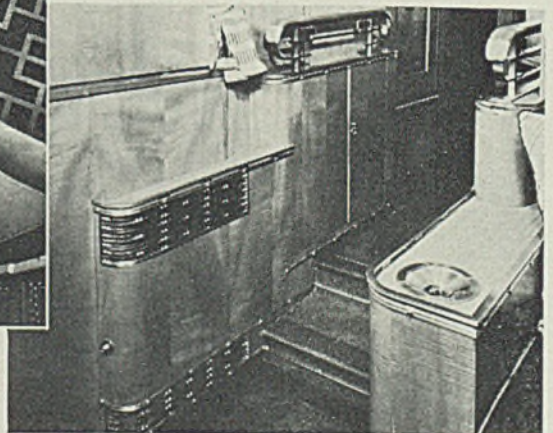
Nonvolatile interfering substances may be removed by boiling off the dissolved oxygen and collecting it again in distilled water where it is determined by the Winkler method. The oxygen from a 1-liter sample may thus be concentrated to one-tenth of that volume and titrated in a solution free from all but volatile impurities. Corrections for oxygen introduced with the reagents and for oxidation during exposure are small and capable of accurate determination and the method is indicated as being theoretically sound and free from systematic errors.

Stainless Steel Afloat and Ashore

THESE illustrations show two unique uses of stainless steel for decorative purposes. At the left is a residence



floor of stainless steel strips with an ebony inlay. Stair treads are of lead with studs of stainless steel. Below is shown stainless steel trim in the entrance to the dining salon of the yacht SEMLOH. Metal fabricators for both jobs were Kromm and Kohl, New York, and architect for the interior of the SEMLOH was Louis L. Tieman. Photos courtesy Electro Metallurgical Co., New York



Its Superiority fo

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TESTS AND INSPECTIONS —

the most thorough, painstaking and conclusive that can be applied — are maintained throughout NATIONAL plants. No off-hand or perfunctory work is tolerated. A system unique in pipe-making is employed to check and prove the soundness of output at every stage of production. The result is a strictly reliable product — a product that well deserves the title "AMERICA'S STANDARD WROUGHT PIPE." This photograph shows cooling table inspection and gaging of large diameter National Seamless Pipe.

Every Need makes

America's Standard Wrought Pipe

TAKE a cross-section of the country's finest buildings—the most representative in design, construction, and materials—and note how widely NATIONAL Pipe is used. Take a census of underground water lines, oil and gas wells and distribution lines, refineries, power plants, mines, railroads, ships—wherever pipe is used you'll find NATIONAL maintaining the leadership that you would expect from the world's largest and most experienced pipe manufacturer.

Naturally there are reasons for NATIONAL's universal acceptance by pipe buyers everywhere—reasons why architects, engineers, and contractors think of quality pipe in terms of NATIONAL—why they are prone to weigh all pipe specifications against the standards set by NATIONAL for nearly 70 years. Check the ten points illustrated here. You, too, will find concrete and forceful evidence why NATIONAL is "AMERICA'S STANDARD WROUGHT PIPE."

COMPLETE UNIFORMITY

in NATIONAL Pipe means uniformity of metallic structure, of ductility, strength and resistance to corrosion. It also means uniformity of diameter, wall thickness and surface finished unsurpassed in pipe making.



FLANGING

is a real test of any pipe. National Tube Company, therefore, manufactures a special grade of pipe for flanging and bending. Because of its exceptional ductility, dependable uniformity, and unusual strength, experienced fabricators prefer NATIONAL Pipe for flanging purposes.



COPPER STEEL PIPE

introduced by National Tube Company more than twenty years ago, widens the range of service of NATIONAL Pipe. This development, pioneered by NATIONAL, offers an effective and economical means of prolonging the life of piping systems subject to atmospheric corrosion, i.e., alternate wet and dry exposure.



STRENGTH AND DUCTILITY

to a remarkable degree are inherent in the steel of NATIONAL Pipe. This extraordinary toughness—strikingly demonstrated again and again where pipe has been violently distorted by accident or under abnormal stress in service—is turned to practical advantage every day.



COILS AND BENDS

are possible only in pipe that has extra strength and ductility to meet the demands of unusually exacting work. Specially selected materials, special processes and inspections supervised by skilled workmen, insure this uniform strength and ductility in NATIONAL Pipe. Material and time losses are thus prevented.



NATIONAL SCALE FREE PROCESS

invented by National Tube Company, is a method of removing mill-scale from NATIONAL Pipe (butt-weld sizes 1/2 to 3-inch), that leaves a clean, smooth surface. This minimizes corrosion, particularly pitting; gives a superior base for galvanizing; assures full capacity flow; avoids damage to valve seats or clogging of small orifices by scale.



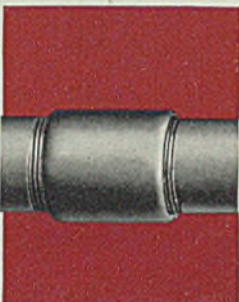
EASILY MADE THREADS

smooth and strong, are a marked advantage of NATIONAL Pipe. Uniform and homogeneous, the steel cuts clean and retains its characteristic strength even in the tightest part of the smallest thread. Quality metal—free from slag, laminations and blisters insures economical threading in installation.



SOUND JOINTS

are essential to outstanding pipe performance. Workmen in field and plant who have welded or coupled thousands of joints on NATIONAL Pipe, enthusiastically endorse it. For ease and speed of handling, for soundness and tightness of joints, NATIONAL is unequalled.



SPELLERIZING

is another exclusive NATIONAL feature by which the blooms for pipe, 4 inches and under, are subjected to a special roll-knobbing or hot-forging treatment. Surface metal is so worked as to eliminate any irregularities and to produce a uniform dense exterior. Tendency to corrode or pit is thus reduced.



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UNITED STATES STEEL

Enthusiasm and Courage Win Battles of Industry

THE fact that the welding industry is prosperous and growing at a rapid rate is based on the energy with which the individual members manage their own business. Individual enterprise is developed to a high degree in the welding business.

A recent example of the relentless pursuit of improvements may be cited in the case of a large company which makes and sells oxygen and acetylene and accessory equipment. The company developed an electric welding process which shows large economies in certain applications. In spite of the fact this company had never been in that business, it proceeded to put the process in the service of users. At the same time, a large manufacturer of electric arc welding machines and wire announces intention to sell small oxygen producing plants.

There are no neatly whitewashed fences in the welding business and no secretly arranged set-ups to eliminate competition and rob the public. Energy, enthusiasm and courage are winning the battles today.

Molecular Forces Are Fundamental in Welding

ACLEAN polished copper block resting on a clean polished steel block over a period of several years will show infiltration of the copper into the steel—no heating being involved in the phenomenon. Absolutely clean Johannsen gage blocks, or optical flats may be "wrung" together so that considerably more than 14.7 pounds per square inch tension is required to pull them apart in a direction normal to the engaged surfaces. In the case of the optical flats, the material itself will fail before the "wrung" joint will let go. It is a fair inference that molecular forces account for such cases which are the same molecular forces that cause what is ordinarily called a weld. In the case of the copper-steel joint referred to above, it would be identical to a weld in every respect except that it would not show the same evidence of thermal disturbance as a weld made in the regular manner.

Intimacy of molecular contact seems to be a fundamental condition

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.

to welding rather than temperature. There is no evidence that the molecular forces themselves are less at high temperature than at low. In fact, theory indicates that at zero temperature, molecular forces would also be zero. In the liquid state molecular contact is accomplished under favorable conditions. In the

plastic state, molecular contact is made by application of mechanical pressure. All the known welding processes are based on these facts. The difference between welding processes are differences in sources of heat and whether or not the weld is made in the plastic state or as a mixture of liquids.

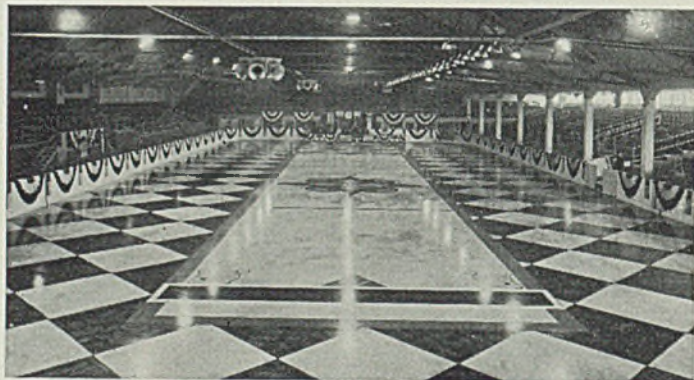
The purpose of stating these more or less fundamental conceptions of welding is to assist rather than inhibit the mental activity of inventors who are interested in welding. The field for inventions is open; the rewards are rich for better welding processes. The need is for invention—application of the invention is easily handled along routine channels.

Eight Miles of Welded Pipe Used to Freeze Denver Ice Hockey Rink

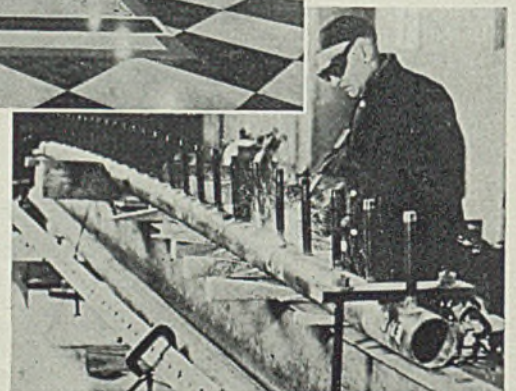
DENVER'S Mammoth Garden, new indoor hockey rink, required considerable welding in construction of the steel pipe system for freezing the arena floor. Using 30,000 cubic feet of gas, workmen made 2700 separate welds in laying approximately 8 miles of pipe. The ice sheet is laid on a concrete floor 80 x 180 feet. Calcium chloride brine circulates at 18 degrees Fahr. and at

a rate of 1150 gallons per minute. The chilling operation is done by two Frick 9 x 9 refrigerating machines, installed by the Stearns-Roger Mfg. Co., Denver.

An unusual feature of the rink is the design painted with special water color paint between layers of the ice. It is claimed that the result is less fatiguing to the eyes than a plain sheet of ice reflecting the floodlights.



MAMMOTH Garden, Denver's new ice-hockey rink (above), awaiting grand opening. The floor design is painted between layers of ice. Right, nipples being welded into a feed pipe to make connections



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WORTH also make Sheared Steel Plate up to 150" wide and Blue Annealed Sheets in all gauges down to No. 16 and widths up to 60".

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POWER DRIVES

Unit Group Drives Give Operating Economies

IN 1931, during the depression, the Jefferson Electric Co. erected at Bellwood, Ill., a plant containing 225,000 square feet of floor space for manufacturing and storage, plus office space. It was erected in a suburb of Chicago to permit consolidated operation of two separate outgrown and crowded plants in Chicago. The building is of single-story construction with monitor roof and ample glass area for natural light and the ceiling and walls painted white.

The plant is engaged in the production of transformers up to 5 kilovolt-amperes maximum, and a wide variety of special transformers for street and sign lighting, radios and oil burners, as well as fuses of all types, switch and outlet boxes, mercury switches and special equipment using this type switch. Production, therefore, is largely punch press work requiring over 200 presses, and coil winding, with a large toolroom and conveyors of various types.

The new plant was laid out and transmission erected for the machines so that they could be put into

BY E. A. BOHLMAN

Works Manager, Jefferson Electric Co., Bellwood, Ill.

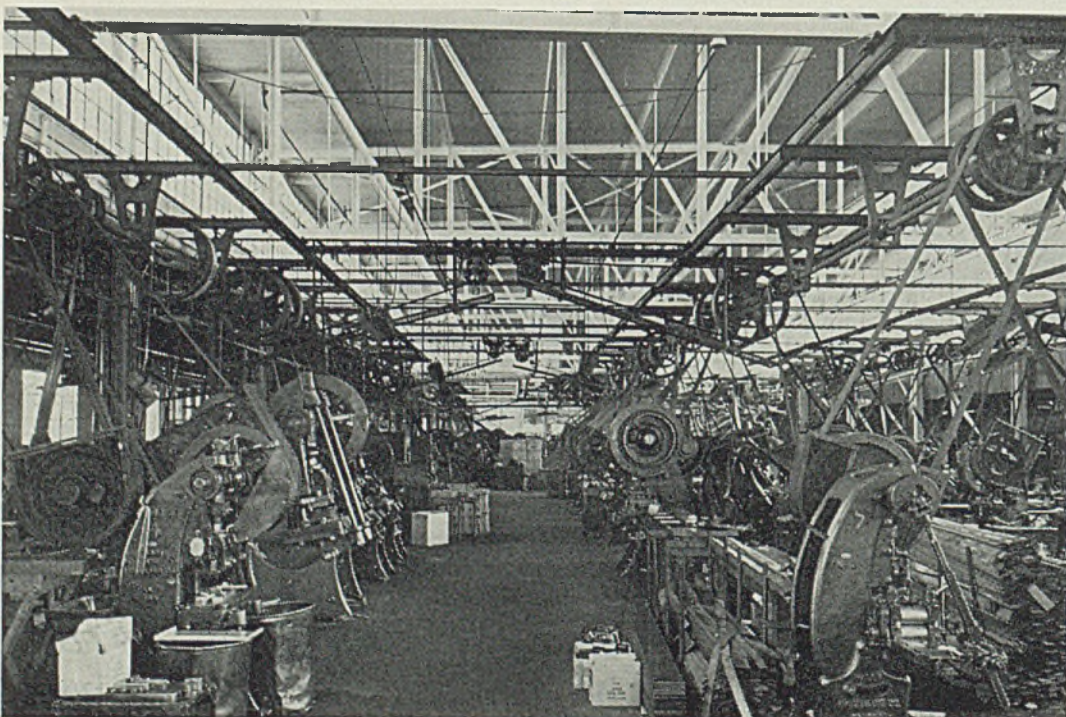
operation as soon as they were moved to the new location. Thus, it was possible to make the move without missing a single scheduled delivery. Also, by exercising good management and the economies obtained by the consolidated arrangement the plant operated through the depression without any shutdown.

From previous experience the writer favors group drive because of the economies in first cost and operation and in the simplicity of installation and changes. If properly laid out and planned for the work, group drives may be made sufficiently flexible to handle varying production requirements. During the depression first cost, or investment, was a very important factor and grouping permitted a very substantial saving. However, in plan-

ning the drives, the groups were kept small to provide the most flexible arrangement and simplicity in operation.

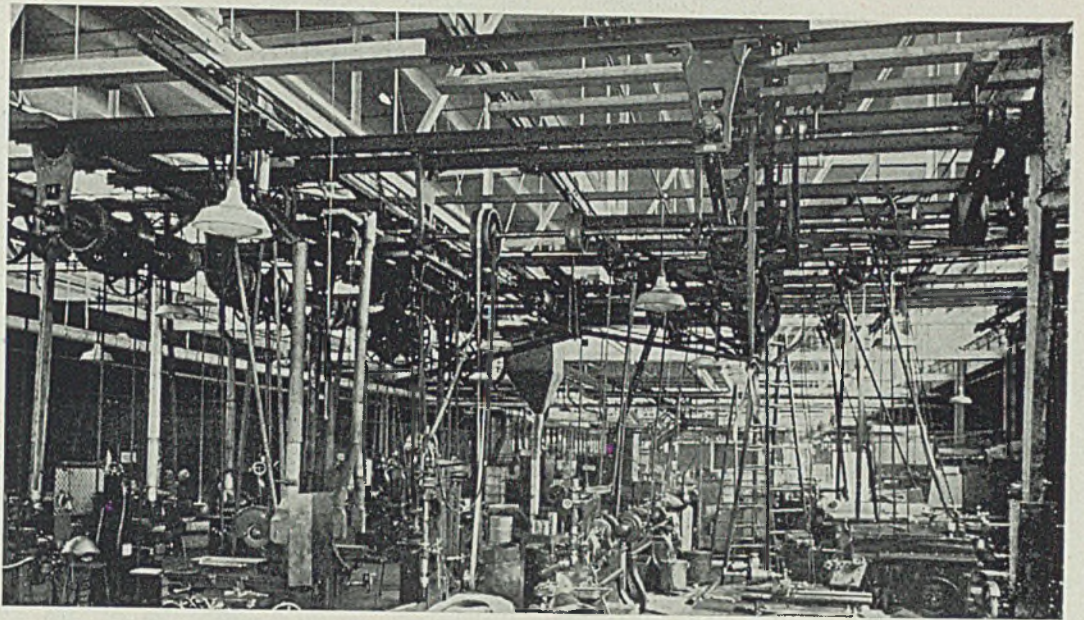
No group is made larger than may be driven by a 10 horsepower motor. The longest lineshaft is 80 feet and the average length is about 50 feet. Most of the shafts are 1 15/16 inches, with 2 7/16-inch shafts on the largest groups and a few 1 7/16-inch shafts on small groups.

In laying out the groups each group was planned to handle a standard item or similar items of work to completion. Thus, presses for second and additional operations are placed next to the blanking presses. This not only permits unit straight-line production with its economies in handling of materials and parts as the work progresses from machine to machine, but also permits a more constant load on the group because of the varying cycles of no-load to peak in the different presses. Where all presses are engaged in blanking on similar work the presses may synchronize and build up a high fluctuating load. This is not so likely with varying operations in a



Illustrations Courtesy Dodge Mfg. Corp., Mishawaka, Ind.

SPECIAL steel lineshafting over presses laid out in small groups to handle a job progressively and provide flexible arrangement



TOOLROOM machines powered in groups from overhead steel lineshafting eliminate underloaded individual drives

group, each with its own load cycle, which tends toward a more even power load and so permits operating the motors at practically full load at all times.

Another advantage of the unit group line is that if a particular item is not in production the entire line is down. Also, in changing production from one item to another the machines are down in sequence for changing dies.

Savings in Fixed Charges

Perhaps the greatest economy of group drives lies in the saving in annual fixed charges which are usually assumed to be about 15 per cent of the initial cost installed. For example, motors, wiring and control are important elements of individual drive cost. On one of the groups consisting of eight presses driven by a 10-horsepower motor, each press, if individually driven, would require about a 3 horsepower motor together with individual wiring and control or starting equipment. Thus the same installation, if individually driven, would have required a total of approximately 25 rated horsepower capacity in motors and eight individual controls and wiring, instead of the single 10-horsepower motor and one control.

This extra electrical equipment plus the cost of mounting of each individual motor, or attaching it to the machine, would run the initial drive cost up considerably above the cost of millwright work and material on a group drive. The extra annual fixed charges, due to this additional first cost, would add to the operating expense. Ordinarily the individual drive installation increases the investment and annual fixed charges by about 40 to 60 per cent.

The toolroom, where many man-

agers consider individual motor drive as essential, is also divided into relatively small group drives. Here, additional investment in drives would be a big factor with an increased annual fixed charge. It is doubtful if power costs would be decreased much, probably not sufficiently to compensate for the lower power factor penalty of underloaded individual drives. This is true of all well planned group and individual drives.

To obtain the best arrangement of toolroom equipment some of the lineshafts cross others, as shown in the illustration. Also wooden stringers were used here for mounting a few light countershafts.

Group drive has also been used on coil winding equipment. For example, on the installation for multiple winding, six machines are set in two parallel lines and group driven as a unit. The operators stand between the lines and have all machines within convenient access. Hand coil winding machines are bench mounted and driven from a floor-mounted lineshaft set between two parallel lines of winders thus providing compact, easily accessible drive installations.

Method of Installation

One objection sometimes raised to group drives is that they are put up to stay and not easily changed. To overcome this objection a special type of steel stringers and footings designed and marketed for this purpose was used. This superstructure is designed for lightness and stiffness and also for ease in erection, as the entire installation can be fastened on the trusses or ceiling beams with special bolts and clips without drilling or cutting. The stringers come in standard lengths and have holes to enable them to be bolted

together. As both stringers and footings consist of parallel shapes held apart with bolted spacers they may be easily shifted or adjusted into position after the bolts or clips are inserted in the slots and before tightening. This saves considerable time during installation.

Moving Is No Problem

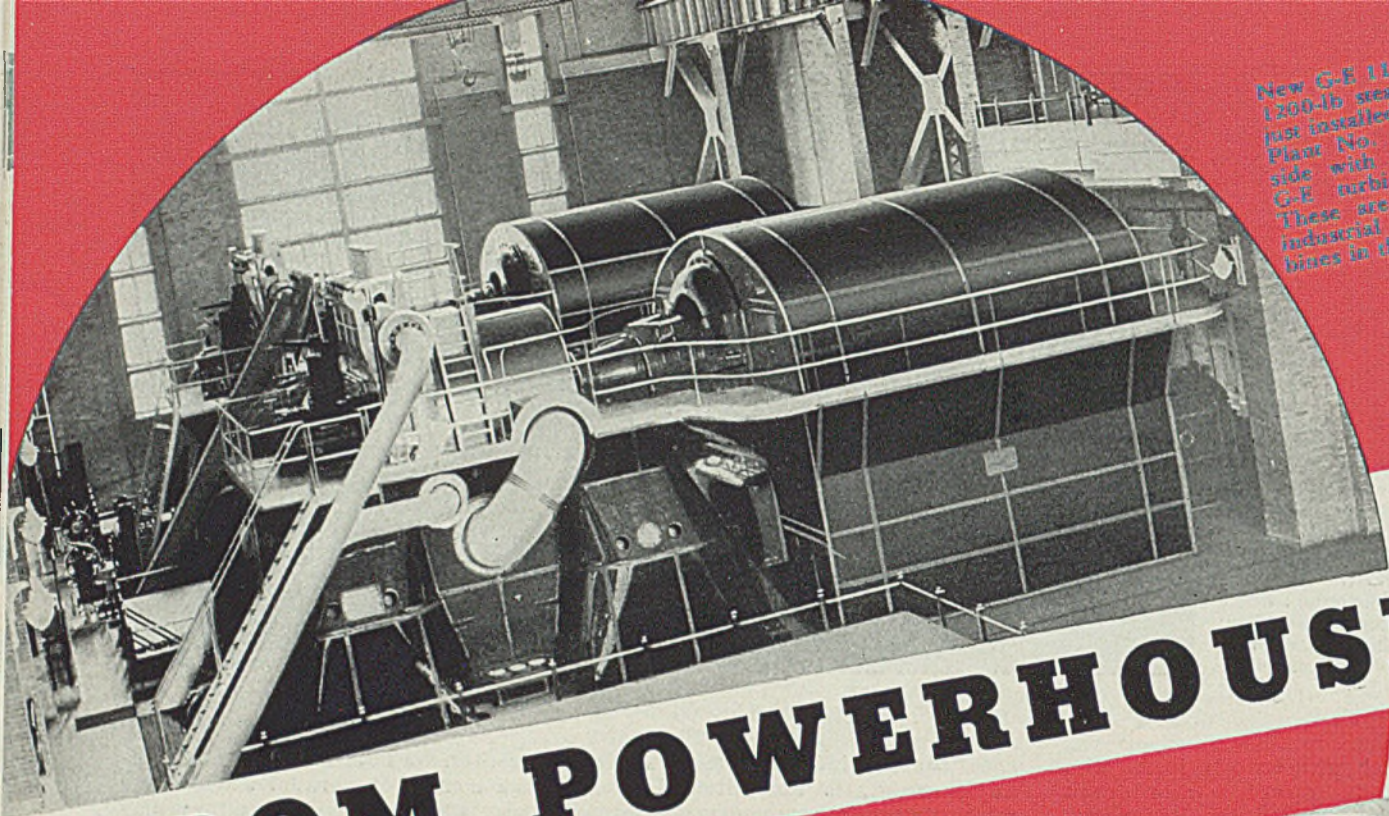
If it is desired to move a group drive, the superstructure is easily taken apart and is usable again at the new location, practically without waste. Using standard structural channels bolted together requires drilling, and the same is true of wooden stringers. Also, wooden stringers are seldom usable on a change and the bolts and lagscrews require tightening frequently.

Bolts on this steel superstructure were gone over and tightened a short time after installation. Now they are inspected and any loose ones tightened once a year. It had been the practice in the old plant to go over the wooden superstructure every month to check up on loose bolts and lagscrews.

Using this special steel superstructure was somewhat more expensive in first cost, although the ease and speed in erection, compared with wood, partially compensated for this increase. If any changes are necessary the complete salvageability will make it the more economical. Change must be contemplated as a probability in any industrial organization which expects to progress or even to keep up with the procession.

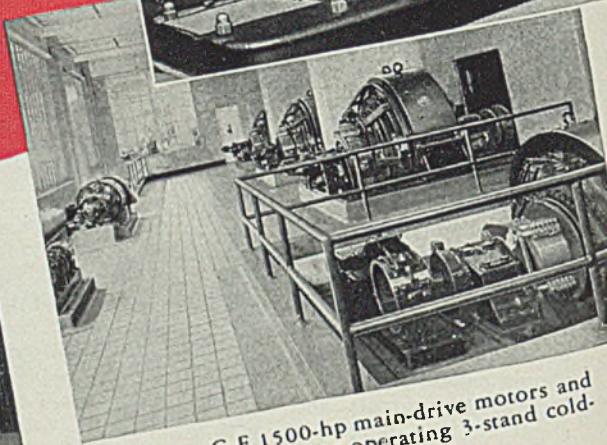
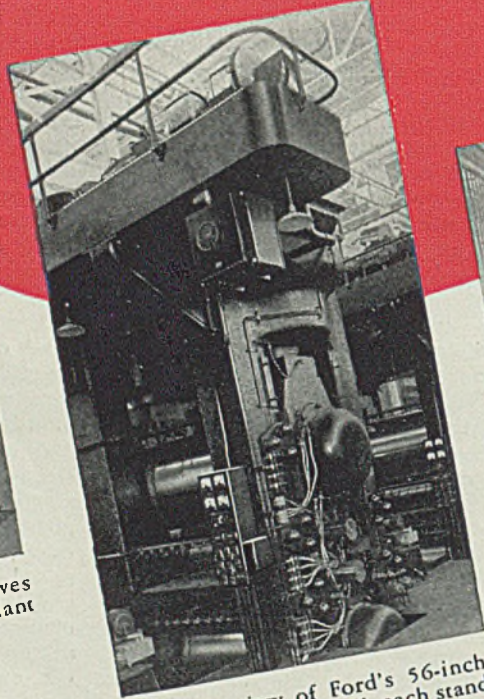
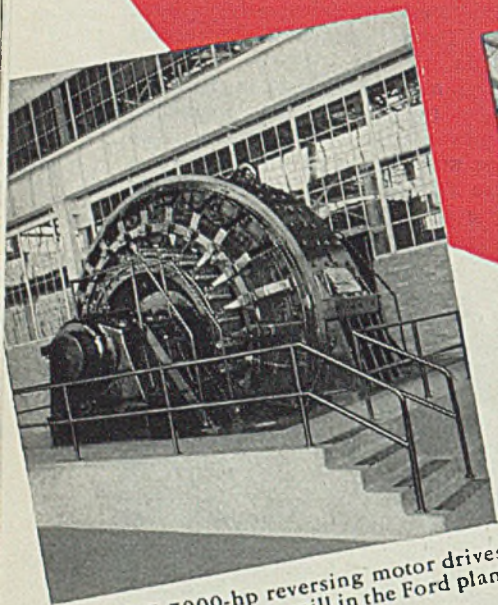
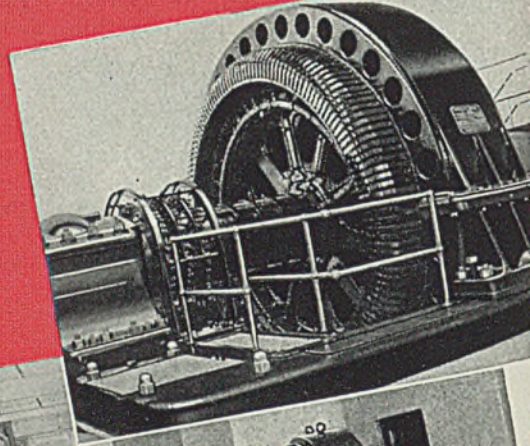
Mostly pressed steel and a few wooden pulleys are used on the lineshafts. Pulleys of large diameter are nearly all of wood. As no steam or wet processes are used in production, there is no trouble with the wooden pulleys. Paper pulleys are

New G-E 110,000-kw. 1200-lb steam turbine just installed in Power Plant No. 1, side by side with a duplicate G-E turbine (1950). These are the largest industrial steam turbines in the world.



FROM POWERHOUSE

The largest induction motor in the world used for industrial drive, this 8000-hp G-E motor drives the 42 in. x 32 in. continuous blooming mill in the Ford Motor Co.'s steel plant.



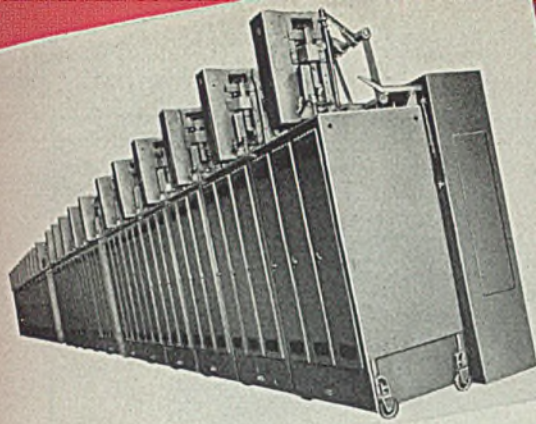
Giant G-E 7000-hp reversing motor drives the 44-inch blooming mill in the Ford plant

Close-up view of Ford's 56-inch tandem cold-strip mill, each stand driven by a G-E 1500-hp motor. Note the tensiometer, located between the mill stands, for automatically controlling the strip tension

Three G-E 1500-hp main-drive motors and 400-hp reel motor operating 3-stand cold-strip mill in the Rouge plant



GENERAL



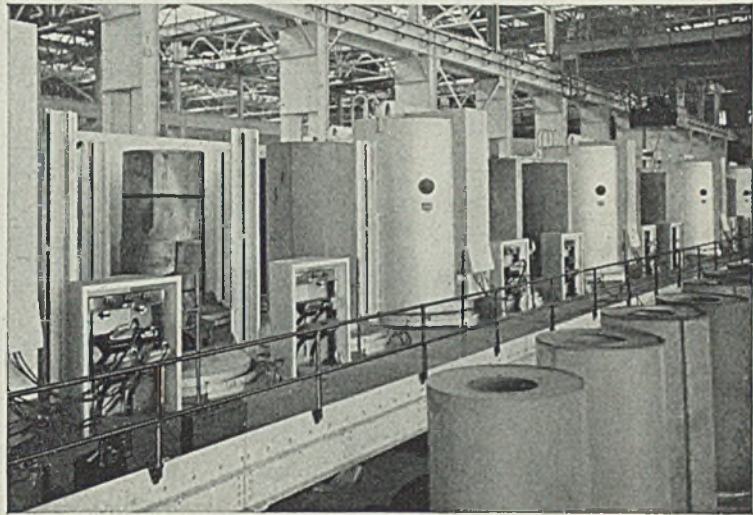
Some of Type FH G-E oil circuit breakers, of which there is a total of 50 units, enclosed in steel trucks, operating in the power house of the Rouge plant

TO FINAL PROCESSES

FORD

depends on

GENERAL ELECTRIC EQUIPMENT



These 14 G-E bell-type electric furnaces in Ford's Rouge plant anneal wide steel strip in coils. Each furnace uniformly anneals 16 tons of strip per charge at a speed more than twice as fast as other methods

And when we say "powerhouse," we mean POWERHOUSE! Because that second G-E 110,000-kw steam turbine-generator installed in the Ford Motor Company's Rouge plant is the latest in modern turbine design, operating at 1200-lb pressure at a temperature of 900 F. These giants, the largest industrial steam turbines in the world, supply power for the huge General Electric motors that drive the Ford steel mill.

Other G-E apparatus combining to make this plant an efficient, smoothly working mill includes batteries of FH truck-mounted oil circuit breakers in the powerhouse; and the world's largest induction motor used in an industrial application—8000 hp, designed for 13,200 volts, the highest in industry—driving the 42-32-inch continuous blooming mill. Dozens of 1500-kw motor-generator sets supply 250-volt general-purpose power. The controlled-atmosphere, bell-type annealing furnaces—14 of them—are used for bright-annealing steel strip—lowering annealing costs, saving time, and uniformly

annealing strip of superior quality. These furnaces occupy 50-per-cent less floor space than other types.

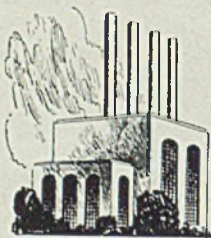
General Electric's experience in the design and manufacture of strip-mill drives gives you apparatus that permits continuous operation of your mill at high rates of production. The flexibility of the equipment, its coordination of design, ease of operation, and low maintenance requirements, save you both time and money.

It will pay you to consult with General Electric when planning new mills or additions to your present plant. Our engineers are experienced in the electrical problems of steel-mill men. The nearest G-E office will gladly assist you.

Be sure to visit our exhibit at Convention Hall when you are in Detroit, September 22-25, and then see modern G-E steel-mill and powerhouse equipment in operation when you visit the Ford plant. General Electric Company, Schenectady, N. Y.



ONE COMPANY'S RESPONSIBILITY



Since we are responsible for the finished product, and since the quality of the finished product is vitally dependent upon the raw materials, we prefer to control the production of the materials from which we make Pittsburgh Seamless. Remember, *seamless* can be made only from a better quality of steel. We can maintain the rigid standard of quality in Pittsburgh Seamless Pipe and Tubing because we control every step of its production from mining of the ore through every stage of manufacture.

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T H E R E I S N O T H I N G S U P E R I O R T O S E A M L E S S

used on all motors because of their greater tractive ability.

To reduce friction and maintenance, dumbbell tapered roller bearing boxes mounted in pressed steel four-point adjustable drop-hangers are used on all lineshafts. Instead of spacing the hangers on standard distances apart they are placed near heavy pulley loads. Flange couplings connect shafts.

Motor Statistics

Most motors are of the induction type operating at 440 volts, 60 cycles, three phase. Punch press group motors operate at 850 to 1150 revolutions per minute and the lineshafts on a 4 to 1 to 6 to 1 reduction.

Lineshaft motors are also mounted on short sections of the same type of special steel structure as is used for mounting lineshafts. Where possible motors are mounted in pairs, as shown in the illustration of the punch press department. This permits inspecting and servicing two motors with a single setting of the ladder.

Long center open belt drives connect motors and shafts in most cases. In a few recent installations the motors are mounted close to the shaft on an extension to the superstructure supporting the shaft and connected on short centers by multiple V-belts.

Only a few machines and the conveyors are individually driven. Isolated machines and special machines, usually with the drive built-in, have unit motors. Assembly conveyors and conveyor type vacuum treating enameling and impregnating units are motor driven through speed reducers. To permit selecting the proper speeds for varying output or product, variable speed transmissions units of the double-shifting cone type with block belt are connected into the drive. On a few conveyors where speed changes are made very infrequently, pulleys are changed.

Power Costs at Minimum

Electrical current is purchased at 2200 volts and stepped down to 220 to 440 volts for power and 110 volts, single phase, for lighting. The small amount of direct current required for mercury vapor lighting and testing is obtained from a motor-generator set.

Due to the excellent loading of the group motors, power factor is kept sufficiently high without corrective equipment to avoid penalty. This, with the low friction losses from antifriction bearings, helps keep power costs at a minimum.

Systematic inspection, lubrication and maintenance are the basis of trouble-free operation. One man devotes his whole time to inspecting, oiling and servicing motors and con-

trols, covering the entire plant at least weekly and parts of it daily. As the processes, except for grinding and machining cast iron in the toolroom, are practically dust free, atmospheric dust does not cause trouble. The motors, however, are blown out regularly on weekends when the plant is down.

Similarly a belt man keeps belts tight, cleans and replaces worn sections and rebuilds belts in his spare time. By continual attention he is able to anticipate necessary shortening of belts and perform the work with a minimum of interference with production. This practice saves much operating time over a system of emergency repairs. Ample belting for the load also gives better operation. Skimping on belt size or quality does not save money. Leather belts are on practically all drives.

Safety Work Is Stressed

Motor belts are cemented endless, while machine belts are connected with metallic fasteners of the hinge-and-pin type. Wire guards on angle iron framework safeguard motor belts and also machine belts within reach, as required by Illinois safety regulations.

Incidentally, safety work is highly stressed as punch presses are a serious hazard. The best types of safeguards and continuous education have kept accidents far below the average on such work. Safeguards are now painted red and the machines olive green when equipment is overhauled or idle, as an additional emphasis on safety.

Lineshaft bearings are oiled annually between the holidays, and at the same time the superstructure is checked over and loose bolts tightened.

The entire installation has proven very satisfactory and also economical in first cost and annual operating expenses, which include fixed charges, maintenance and power costs. It is close attention to these savings, which some managements consider minor items, that keeps costs down. Also, by dividing the groups into small units, instead of large groups, the desirable economies and necessary flexibility of production are obtained.

8200 Engineering Alloys Are Listed

Engineering Alloys—Names, Properties and Uses, by N. E. Woldman, metallurgical engineer, Eclipse Aviation Corp., East Orange, N. J., and A. J. Dornblatt, professor of metallurgy and chemistry, postgraduate school, United States Naval Academy, Annapolis, Md.: cloth, 600 pages, 6½ x 9¼ inches; published by Amer-

ican Society for Metals; supplied by STEEL, Cleveland, for \$10, plus 15 cents postage; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London.

Listing 8200 proprietary commercial and technical alloys manufactured in the United States and many made in foreign countries, including England, France, Germany and Sweden, this work satisfies the growing demand for a practical and technical reference book on engineering alloys. This is the most comprehensive compilation ever undertaken and has involved many months of painstaking effort in the assembly, checking and rechecking of information collected from many sources.

The book is devoted to data on the chemical composition, physical and mechanical properties, uses, and manufacturers of proprietary alloys. No attempt has been made to include alloys conforming to standard specification analyses as such; examples of the common engineering alloys produced to customers' specifications will be found listed among proprietary alloys. However, because of their widespread usage, specification alloys of the Society of Automotive Engineers, as well as a few others of general interest, have been included.

It was the aim of the authors to present as large an amount of reliable and up-to-date information on commercial alloys as was consistent with convenience in form and breadth of scope of the book. Information was obtained from manufacturers and from commercial literature and technical publications.

Seven Lists Compiled

To facilitate use, the book is divided into seven sections as follows: I—which gives an alphabetical listing of all alloys and their corresponding index or serial number; II—which gives the tradename, composition, properties, uses, general remarks and a key number designating the manufacturer and the reference for each alloy as listed in serial order; III—An index of alloys classified according to typical uses or special characteristics such as corrosion resistance; IV—an alphabetical listing of manufacturers with a summary of the alloys listed that are produced by each; V—which lists manufacturers, with addresses, in serial order according to key number; VI—comprising the references, in serial order according to key number; and VII—an appendix containing useful tables and miscellaneous information pertaining to the properties and testing of alloys.

Some of the 8200 alloys listed are either obsolete or are not in commercial production at present, but they have been embodied in the text to make it as complete a reference as possible. Because of its completeness and authority, this encyclopedic volume will be of great value to all users of metals and alloys.

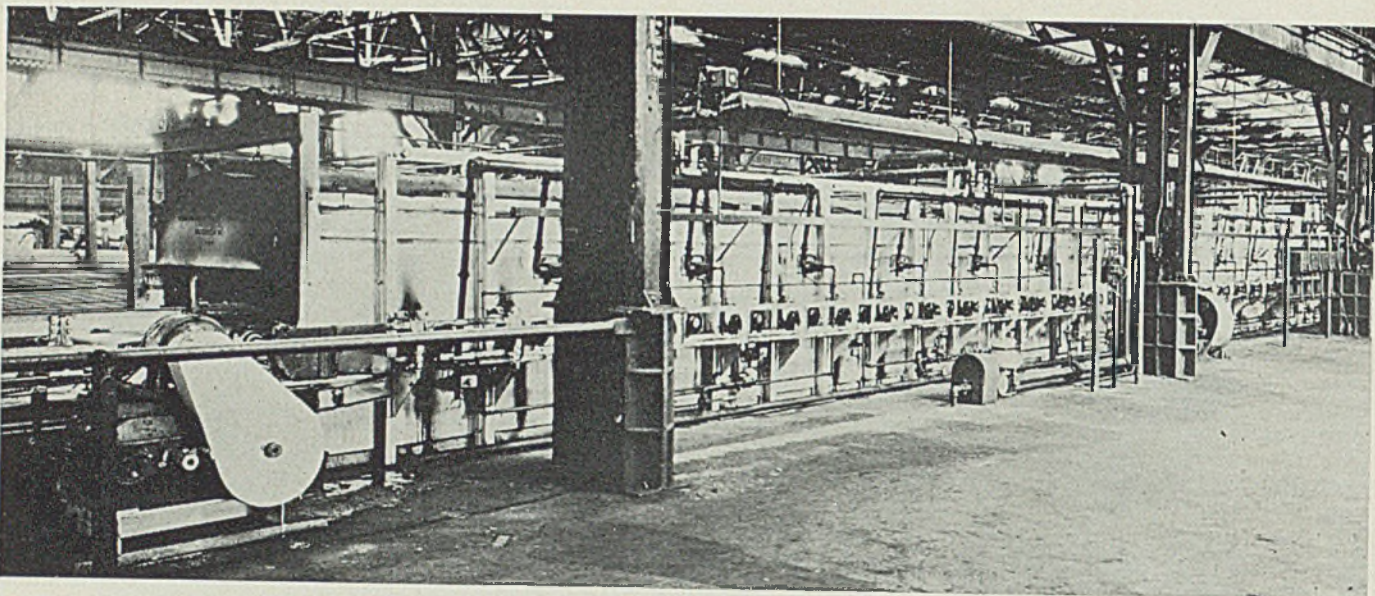


Fig. 1—This 88-foot long annealing and normalizing furnace will handle tubing up to 40 feet long. A portion of the charging table is shown at the left. The continuous chain drive for the rollers also is shown

DESIGNS TUBE ANNEALING FURNACE

Continuous Roller-Hearth Unit Meets Numerous and Difficult Specifications Imposed by Purchaser

A NUMBER of unique problems were presented recently in the design of a continuous furnace for annealing or normalizing seamless steel tubing varying from $\frac{3}{4}$ -inch outside diameter with $\frac{3}{32}$ -inch wall to $10\frac{3}{4}$ inches outside diameter with $\frac{7}{8}$ -inch wall. Specifications imposed on the builder by the purchaser, an important tube company, included requirements that the furnace be capable of handling 40-foot lengths and that the tubing be heat treated at a guaranteed rate. Natural gas of 1050 B.t.u. was to be the fuel.

The tubing to be processed in the furnace is manufactured from all the S.A.E. 1000 series of steels up to 1050 and from many special steels such as 4120, 4130, 4615, 3140, etc. Annealed material must have a maximum tensile strength of 55,000 pounds per square inch and a maximum yield of 35,000 pounds per square inch, tensile properties being determined on full-section S. A. E. 1015 tubing. Normalized tubing must show a fully normalized structure, recrystallized at or slightly above the A_1 point for the steel in question.

In considering these requirements,

the builder, Pennsylvania Industrial Engineers Inc., Pittsburgh, determined that a continuous, roller-hearth furnace would best meet all conditions. The customer agreed to limit loading to 700 pounds per roller at 1750 degrees Fahr. since over 90 per cent of the production would be within this loading. A schedule of representative safe loadings was to be posted at the charging end of the furnace as a guide for the heater in making up his charges.

Furnace Built for Easy Control

The furnace, shown in Figs. 1 and 3, is 88 feet long and 6 feet wide inside the brickwork and is fired with the 1050 B.t.u. natural gas through 56 nozzle-mix burners arranged in five zones, each zone being fired over and under the work from each side to provide uniform temperature distribution. Air-gas ratio control valves are used to provide for single valve control and to maintain the correct relationship between air and gas input to the furnace. These control valves, as well as the nozzle mix-burners, are of the furnace builder's own design. Temperature control is provided through five recording pyrometers operating proportioning

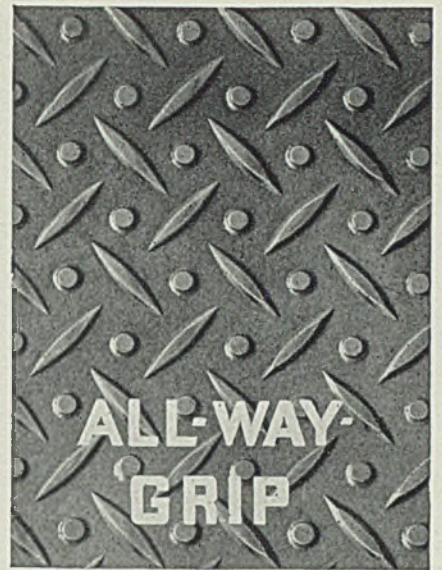
valves in the air line, one unit to each zone. Leeds & Northrup Co., Philadelphia, supplied the temperature control equipment.

Material is carried through the furnaces on 29 cast alloy rollers spaced at approximately 3-foot intervals. These rollers are mounted on grindstone bearings which materially reduce the unsupported length of roller used and simplify the problem of bearing maintenance on a hot alloy shaft. The rollers are driven by a continuous chain drive over sprockets connected to each roller by a wobbler arrangement. This allows furnace expansion to take place without interfering with the alignment or operation of the drive. The cross-sectional view of the furnace, Fig. 2, shows the rollers and method of driving.

Drives for the inlet and outlet tables are separate from the furnace and independently controlled for ease in arranging loads on the charging table and as an aid in discharging so that different lots of tubing are not mixed. Rollers on these tables are constructed of seamless steel tubing and supported on conventional roller bearings. Because of the wide variation in size and

To
American
Industry

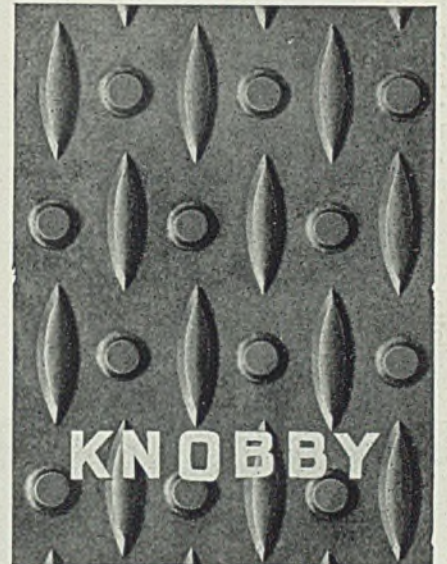
CENTRAL



ROLLED STEEL FLOOR PLATE

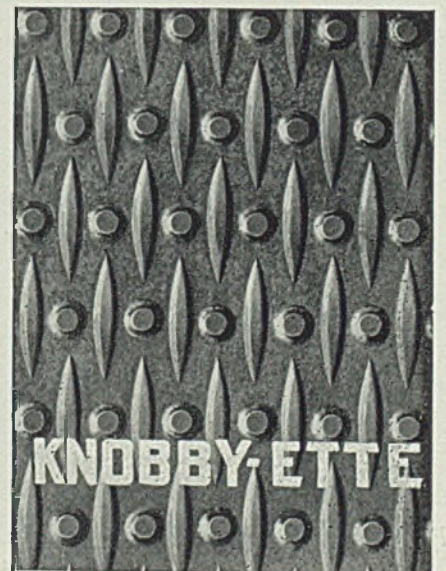
means - - - - -

- rugged, long-lived floors—little affected by hard service
- floors that stand the shocks of heavy trucking and hard knocks
- floors which wear for years and cost little or nothing for maintenance
- floors that provide sure, safe footing for employees as well as smooth, hard surfaces that make trucking easier and faster
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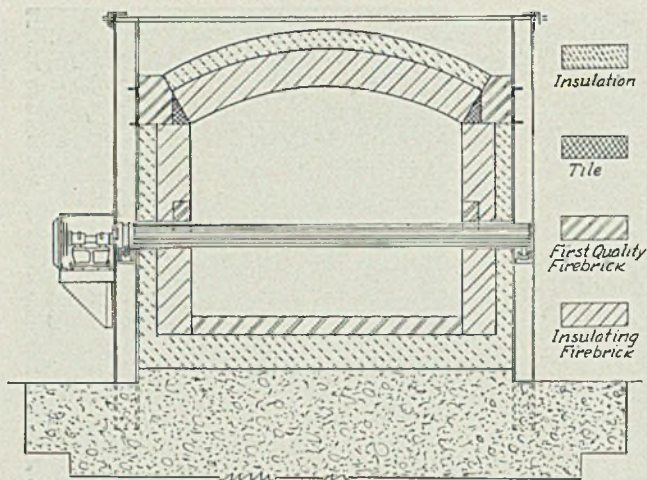


FIG. 2—A cross-section of the furnace looking through it from the discharge end. The chain and sprocket roller drive is shown on the left-hand side. The rollers are mounted on grindstone bearings

weight of tubing to be annealed, it was necessary to provide a 10 to 1 speed variation in the drive for both tables and furnace.

Varying Insulators Used

The furnace is constructed of insulating refractory 9 inches thick backed up with 4½ inches of insulating brick, except that the floor is covered with 4½ inches of regular fire brick to present a hard surface which will not be damaged in case it becomes necessary to clean scale from the bottom. Also a wearing strip of regular fire brick was built into the wall along the roller line to prevent excessive wear from tubing rubbing the sides of the furnace. This extensive use of insulating refractory has the advantage that necessary changes in operating temperature can be made without inter-

fering with furnace production at any time.

Flues were provided in the side walls of the furnace to remove products of combustion which could not be conveniently carried out through the doors. Counter-weighted doors were also provided which are raised just high enough to clear the largest tube currently going through the furnace.

Scale-Free Tubing Produced

By adjusting burner orifices to supply a slight excess of gas and by closing all but the four center flues, it has been possible to produce tubing with surfaces virtually scale free. Hot rolled tubing has no visible change in surface appearance, while cold drawn material has a thin, tight, uniform scale. This scale is readily pickled off and has resulted in in-

creasing the capacity of the pickle house since less pickling time is required than formerly. Because of the uniformity of the scale produced, no scale pattern is formed in pickling, which is a decided advantage in manufacturing cold drawn mechanical tubing.

After two months' operation, the furnace has exceeded the guaranteed production rate by 1.83 tons per hour. The peak day's production has been 224 net tons in 24 hours, or at a rate of 9.33 tons per hour. At the same time, fuel consumption is remarkably low, averaging only 815 cubic feet of gas per ton over the full two-month period of operation.

Operation Was Continuous

This low fuel consumption is accounted for, in part, by the fact that the furnace was operated continuously 24 hours per day, 7 days per week, for the two months and was not shut down at any time. Therefore, no light-up fuel is charged against production. The furnace operated at 1375 degrees Fahr. over virtually the entire period. In connection with the fuel economy, the thickness and efficiency of the insulating brick also account for a large part of the low fuel consumption and should be given recognition.

Operators of the furnace are well pleased with results as is evidenced by the continuous operation since installation. The entire set-up fit into the production scheme admirably and made possible handling a volume of material which it would not have been possible to produce without the equipment.

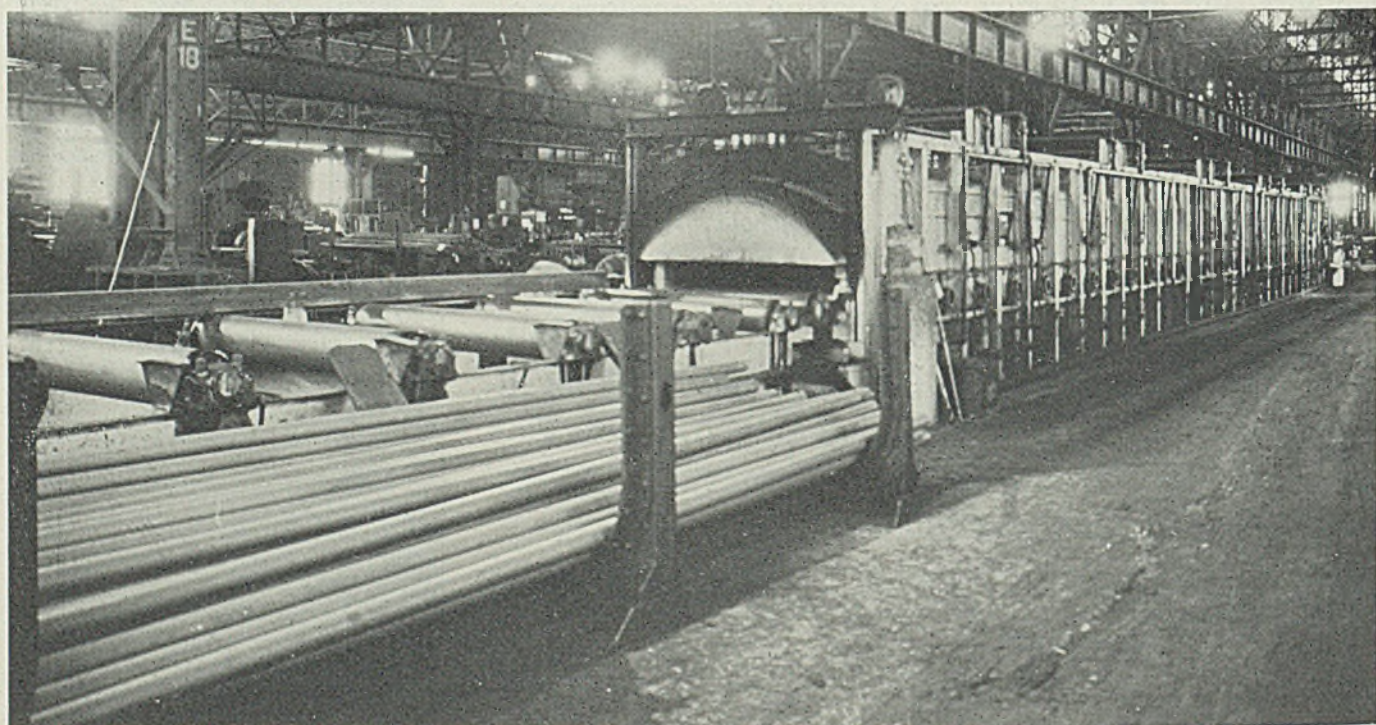


Fig. 3—Looking at the furnace from the discharge end. Tubes which have been heat treated are shown in the rack at the left. To afford flexibility, the furnace and charge and discharge tables have independent variable drives

PROGRESS IN STEELMAKING

Zone-Fired Slab Reheating Furnaces

Eliminate Excessive Scale Loss

TWO slab heating furnaces, which serve the broad strip mill of the Ford Motor Co., Dearborn, Mich., are insulated and encased in steel plates. The slabs are pushed into the furnace by a double-ram mechanical pusher and travel through the heating zones on alloy steel rails. Each furnace is 44 feet 5 inches long and 17 feet wide and is designed to heat 50 gross tons of cold slabs an hour. Slabs range from 12 to 16 feet long and 3 to 4 feet wide. When steel at a temperature ranging from 1200 to 1400 degrees Fahr. is charged onto the furnace hearth, the furnace has a rating of about 60 tons of slabs an hour.

Furnaces Are Triple Fired

Gas fuel consumption on cold slab practice is about 1,650,000 B.t.u. per gross ton and on hot slab practice 1,200,000 B.t.u. The furnaces are triple fired, the main heating zone being built for top and bottom firing. In the secondary heating zone the burners fire only above the steel. The zone system of firing eliminates excessive scale loss under various operating conditions.

Twelve burners are provided in the primary heating zone, six spaced over the width of the furnace above the steel and six below the steel. The secondary heating zone is equipped with eight gas burners. Air for combustion is supplied to the burners by a high-temperature exhaust fan which receives its supply from the recuperators beneath the furnace. The exhaust is built with an alloy impeller, an alloy shaft with water-cooled bearings and an alloy housing. The fan is insulated completely to curtail the heat loss.

One of the furnaces is served by a refractory tile recuperator and the other by a recuperator of the tubular type. Both recuperators are built to deliver air at about 800 degrees Fahr. when the furnace is operated at its rated capacity.

The door at the discharge end of the furnace is tight fitting to prevent infiltration of air and is actuated by an air cylinder mechanism. Insulation is employed on all sidewalls as well as the roof of the furnace.

Combustion and other control equipment is provided for both furnaces. The hot air supplied to each burner

is maintained at constant pressure. Automatic stack damper regulation is employed for holding the furnace pressure constant. Proper proportion of fuel and air is maintained by air-gas ratio regulators. These instruments are mounted on a panel board along with indicating dials, indicating and recording gages and an equalizing valve.

♦ ♦ ♦

Planing Eliminates Cracks

Copper mold stools, which fire-crack after being in use for about 125 heats, are serviced at one steel plant in a novel manner. The stools are sent to the machine shop where the top and bottom surfaces are planed if excessive firecracking has occurred. Copper thus removed is returned to the open-hearth shop and used as a furnace addition for copper-bearing heats.

♦ ♦ ♦

Reduces Weight of Gears

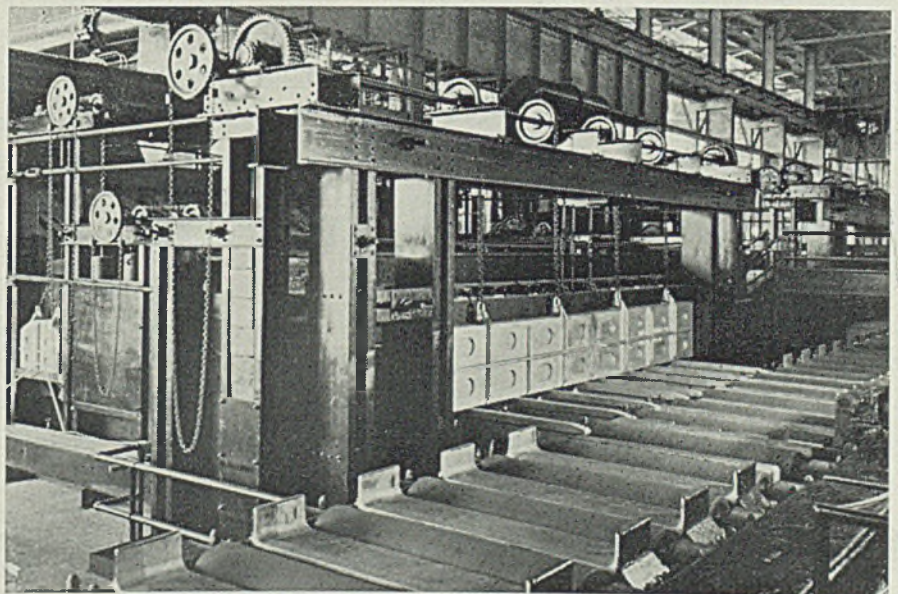
Rolled steel now is being fabricated into crane gears through the application of welding. In addition

to a reduction in weight, the product is said to have a greater resistance to wear and strain. The gears are built up of arms and webs of rolled steel, either single or double, and reinforced with gear bands which are welded integrally. When a single set of arms is employed each arm is reinforced with a rib of steel on each side of the arm; when construction calls for double arms ribs may or may not be used. The ring into which the teeth are cut is of alloy steel welded at the joint. Following the welding operation the entire unit is normalized to provide the greatest possible strength. The gear then is machined, the teeth cut and the piece heat treated to suit the application.

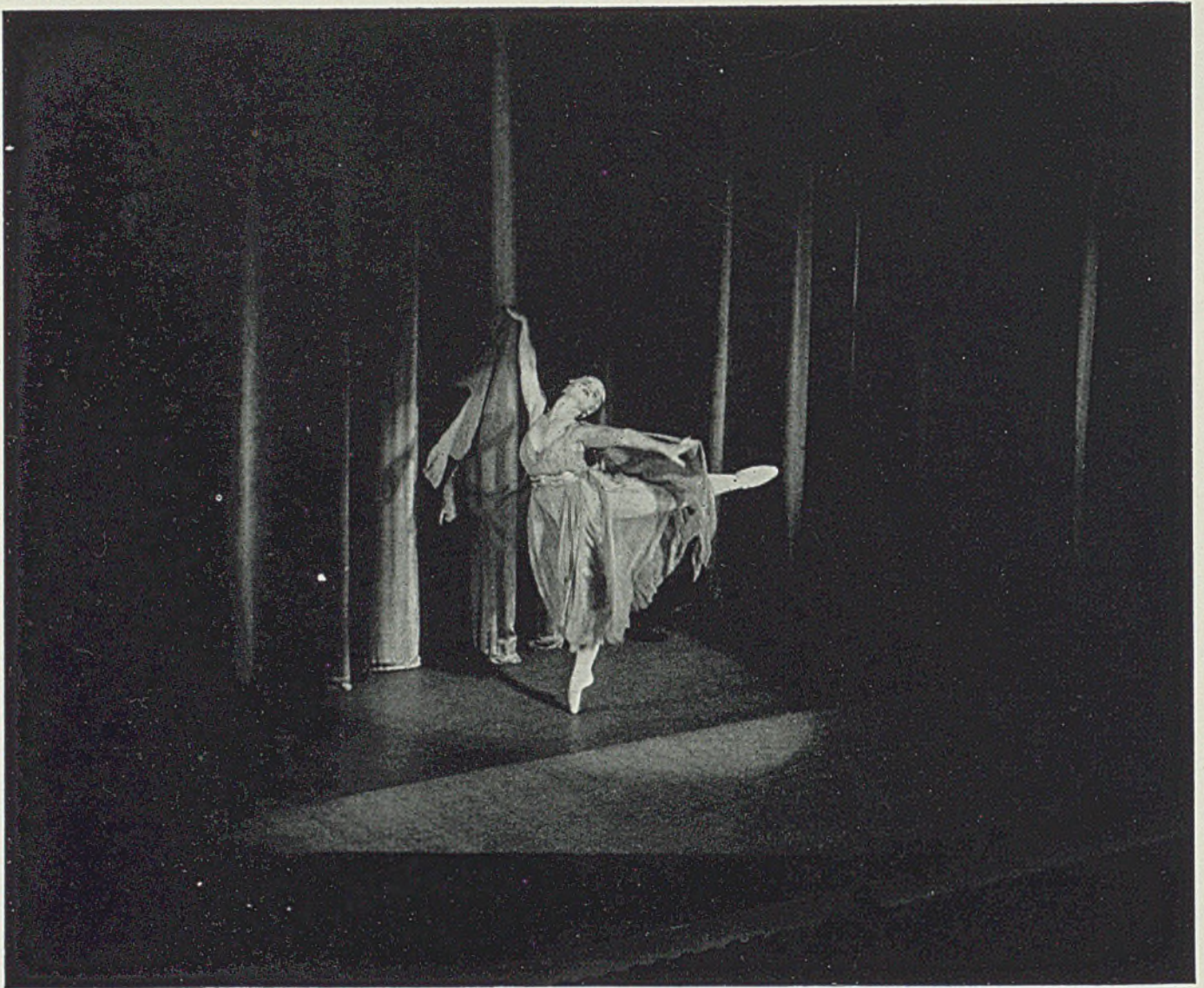
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Affects Oven Door Brick

Deterioration of by-product coke oven doors in service is attributed primarily to abrupt temperature changes and to the deposition of carbon within the refractory material following the decomposition of carbon monoxide, according to an investigation conducted in Germany. Tests for determining the suitability of refractories for coke oven doors include the measurement of the thermal expansion and of the stability under rapid temperature fluctuations, the estimation of the mullite content, and the determination of the form of oxide in which the iron occurs in the refractory.



Charging side of gravity-type gas-fired slab reheating furnace



Beyond Technique

A DANCER of international fame holds an audience spellbound with an intricate step.

There are hundreds of other performers who could go through the same dance with a mechanical perfection of detail that would defy criticism but still would leave the audience cold.

What is the difference? It is something beyond refinement of technique—a master touch superimposed on the mechanical routine. In dancing, in playing the piano, in painting pictures, in making superfine alloy

steels, this master touch determines the superlative performance. You can't weigh it. You can't measure it. But you know when it is there.

For half a century—longer than any other company in America—Bethlehem has been making alloy steels. The direction of masters of the art of making fine steels gives to Bethlehem Alloy Steels a superlative quality that far surpasses the sum of properties called for in specifications.

**Alloy
Steels**

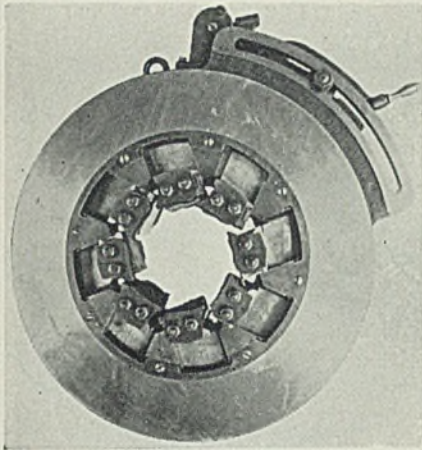


BETHLEHEM STEEL COMPANY

NEW EQUIPMENT

Pipe Die Heads—

Landis Machine Co., Waynesboro, Pa., has recently added a 10-inch size head to its line of stationary



Landis 10-inch stationary pipe die head made in two models for standard and oil country tubular goods

pipe die heads. The new head is made in two models, a standard model for standard pipe threads and a heavier model for oil country tubular goods. The capacity of the standard head is 4 to 10-inch standard pipe threads and the head for oil country tubular goods is from 4½-inch outside diameter to 10¾-inch outside diameter. The die heads are manually operated and are locked when closed. They have universal adjustment for size. The heavier model of the 10-inch die head is fitted with chaser holders which have an independent adjustment to and from the center. This type of chaser holder, which insures an equal distribution of the cut, is now supplied with all Landis stationary pipe die heads in which 3 11/16 and 4¾-inch wide chasers are employed.

♦ ♦ ♦

Broaching Machines—

American Broach & Machine Co., division of Sundstrand Machine Tool Co., Ann Arbor, Mich., announces four new machines — three broaches and a hydraulic press. Fig. 1 shows a horizontal machine for surface broaching lock seats for crankshaft bearing caps in cylinder blocks. Box-type construction with heavy side walls and carefully placed ribs is employed throughout the machine.

The hydraulic cylinder is integral with the sliding member, thus providing a support for the broach and a flywheel effect which promotes smooth cutting action. In Fig. 2 is shown a 15-ton vertical broaching machine for finishing the bore in type metal cylinders or mats to a diameter of approximately 6 inches. The ram of this press has a slide-way which causes the broach to travel downward in a straight line accurately with reference to a clearance groove in the work pieces. Otherwise the machine is similar to other machines in this line. The last section of the broach for this work has a slight burnishing action so that the cutting teeth of the broach do not drag over the finished surfaces on the return stroke of the ram.

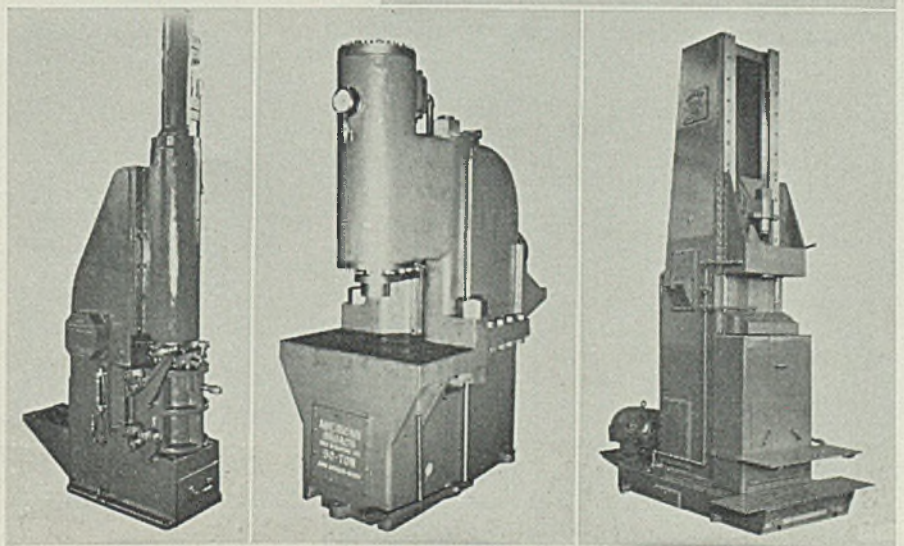
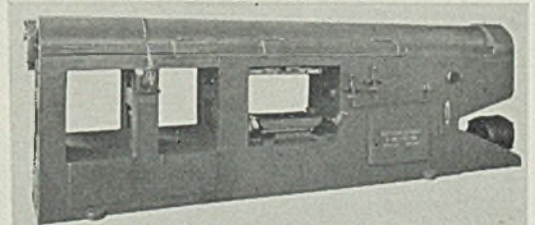
Hydraulic Straightening Press

A heavy-duty 50-ton straightening press is illustrated in Fig. 3. This machine is of heavy construction, has a 6-inch diameter ram with downward travel of 104 inches per minute, power pressure stroke of 23 inches per minute, return of 142 inches a minute and total stroke of 24 inches. The two stage hydraulic unit is submerged in oil and is arranged for direct connection to driving motor through a flexible coup-

ling supplied with the machine. Pressure variation is controlled by a pedal, thus leaving both of the operator's hands free to manipulate work in progress. When the pedal is released entirely, the ram returns to its topmost position.

The V-58 semiautomatic broaching machine is shown in Fig. 4. This broach has a normal working capacity of 50 tons and a peak of 56 tons. In general this machine is supplied for pulling broaches upward, but it may be arranged to pull downward if working conditions so require. Column is of one piece with adjustable hardened and ground wear plates and gibs. The slide that carries the cross head for pulling the broach is integral with the hydraulic cylinder, a feature which adds to the rigidity, performance and life of the machine, it is claimed. Machine has flexible coupling for direct motor drive, hydraulic equipment capable of operating pressures up to 1000 pounds per square inch, large coolant pump, convenient chip pan and 100-gallon oil reservoir in the base of the column. Direct reading pressure gages and conveniently located operating levers simplify operations at high speed. Most interesting is the feature which raises the broach automatically, connects

Fig. 1 (right) Horizontal broach. Fig. 2 (below, left) 15-ton vertical broach. Fig. 3 (below, center) Heavy-duty straightening press. Fig. 4 (below, right) Semiautomatic vertical broaching machine



it to the pulling head, returns it to the starting point after the broaching is completed and releases the broach automatically. As soon as broaching is completed, the work piece drops into an angular chute and is discharged at the right of the machine.

Car Hearth Furnace—

Philadelphia Drying Machinery Co., 3351 Stokely street, Philadelphia, is the builder of improved car hearth furnaces for normalizing, annealing, stress relieving and other heat treating. The furnaces are designed for uniform heating, sturdy construction and fuel economy and are built to buyers' specifications. They can be built to use fuel oil, city gas, natural gas, butane or propane as fuel and are generally equipped with a large number of small burners for greater temperature uniformity, freedom from flame impingement on the charge, flexibility to meet varying control conditions and better temperature control. Automatic temperature control is recommended and will perform with equal accuracy on all fuels. Low pressure oil burners are used with liquid fuels, and low pressure proportional mixers are used with gases.

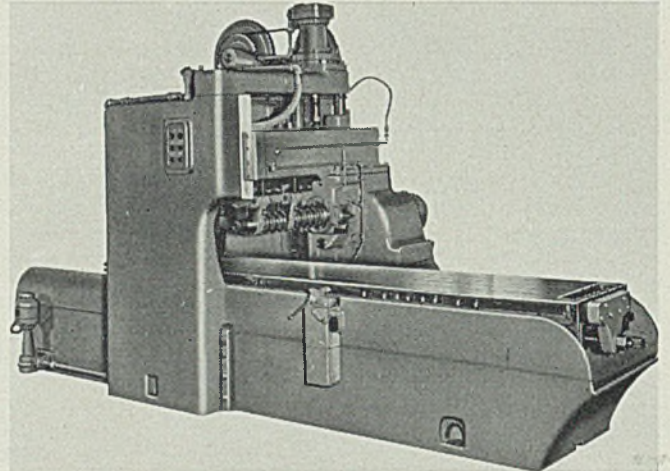
Furnace casings are of heavy steel plate braced by heavy buckstays to prevent distortion. Doors are of combination cast iron and steel suspended from chains running over ball bearing sheaves and are operated by a handwheel. Cars are constructed with heavy steel frames insulated and provided with fire brick piers to support the work and allow circulation of heat around the charge. Wheels are roller bearing equipped. Sand seals are provided to

prevent infiltration of air into the furnace and to prevent the hot gases from distorting the car frames. Two or more cars can be supplied for continuous operation.

Hydraulic Mill—

Sundstrand Machine Tool Co., 2531 Eleventh street, Rockford, Ill., has recently developed a Rigidmil having an automatic hydraulic operating cycle which includes actua-

Sundstrand Rigidmil with automatic operating cycle



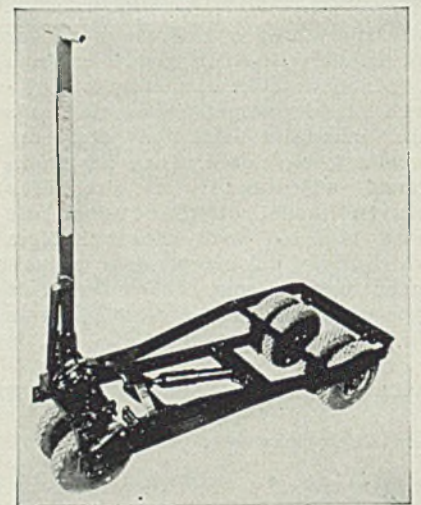
tion of the spindle head and clamping both ends of the cross rail as well as hydraulic feed and rapid traverse of 72 inches in both directions of the table. Machine shown is for milling five intermittent keyways in eight heavy shafts simultaneously. Depth of the cut is held within 0.002-inch. The operating cycle of the machine is automatic and is controlled by easily adjusted dogs. The spindle head approaches the work, feeds to depth against a

positive stop and clamps hydraulically. The table feeds to a predetermined distance; then the head unlocks, rises, table advances to position for next cut and cycle is continued until all keyways are complete. Then the table rapidly traverses to starting position and stops.

Pneumatic-Tired Lift Truck—

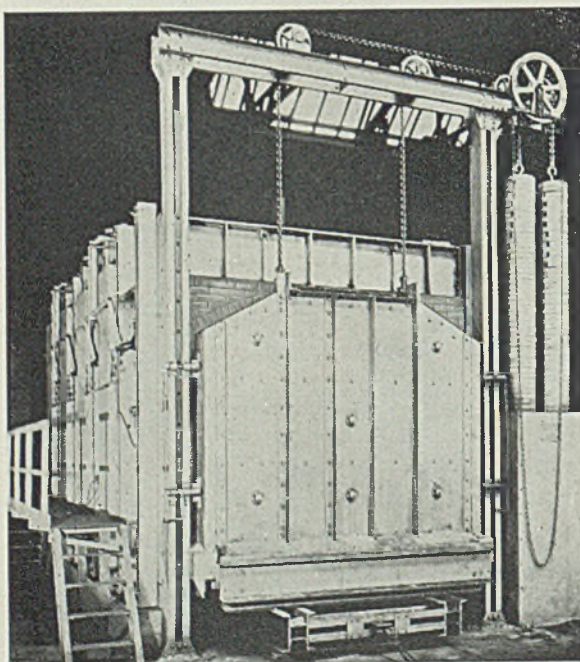
Yale & Towne Mfg. Co., Philadelphia, is the maker of a lift truck

equipped with pneumatic tires for use in handling goods which are easily damaged by vibration. The tires, six in number, provide vibrationless support for loads ranging up to 1500 pounds. A large hydraulic release check is mounted in



Yale Blue Streak lift truck equipped with pneumatic tires

the center of the frame to drop the load without jarring it. The model illustrated is the single stroke Yale Blue Streak truck which is equipped with side lift, roller lock, balanced handle and positive lifting latch. According to the company, the pneumatic tires decrease wear on the

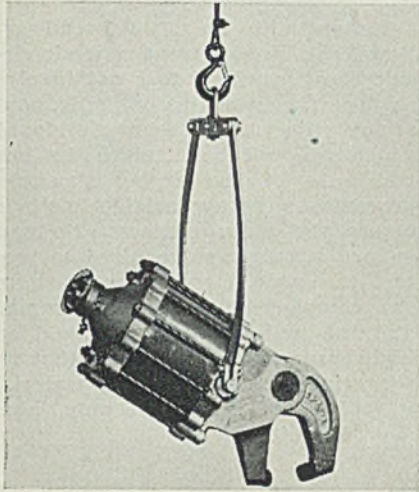


Improved car hearth furnace developed by Philadelphia Drying Machinery Co. for all heat treating purposes

truck itself with resulting longer life.

Squeeze Riveter—

Hanna Engineering Works, 1765 Elston avenue, Chicago, has recent-



Hanna pneumatic riveter of the "nut cracker" type which is suspended from a spring balancer for easy portability

ly developed a new squeeze riveter. Use of alloy steel heat treated castings, alloy steel forgings and aluminum castings has made possible the development of a light compact riveter of the "alligator" or "nut cracker" type. Weight is 100 pounds and is suspended from a spring balancer to make a portable tool which may be moved easily. The mechanism is entirely enclosed. A hardened and ground alloy steel wedge attached to the aluminum piston unit transmits the power to a hardened and ground roller mounted in roller bearings in the moving jaw. The moving or driving jaw closes upon the rivet and exerts a uniform predetermined pressure. The valve operator arrangement is an integral part of the handle used to locate the riveter in position, and air is used only on the power stroke, spring action returning the mechanism. The riveter exerts 10 tons pressure on the dies, which is sufficient to drive 1/4-inch rivets cold or 3/8-inch rivets hot. Considerable variation in the shape of the jaws to meet the clearance conditions of the work is possible.

Lighting Fixture —

Benjamin Electric Mfg. Co., Des Plaines, Ill., announces a new type combination mercury and incandescent lighting fixture which combines the light from a 250-watt mercury lamp and one 300-watt incandescent lamp or two 150-watt incandescent lamps. The reflector includes a por-

celain enameled steel dome type reflector and a diffusing globe of opal glass. An oxidized aluminum auxiliary reflector is provided in the hood to assure a greater utilization of the light from the lamps. The units are of special ventilated design to prevent excessive operating temperatures.

Shockless Gages—

B. C. Ames Co., Waltham, Mass., announces a new shockless gage with a removable case stem and spindle which makes for easier cleaning without disturbing the indicating mechanism of the gage. Diameter of the gage is 2 1/4 inches and maximum spindle travel is 0.3 inches. Bearings are supplied either plain or jeweled with sapphires. Heavier hands are used on these gages since the shock-absorbing mechanism cushions the abrupt action which tends to loosen hands on the shaft. Dials are graduated 0-100 or 0-50-0 in hundredths of a millimeter or thousandths of an inch.

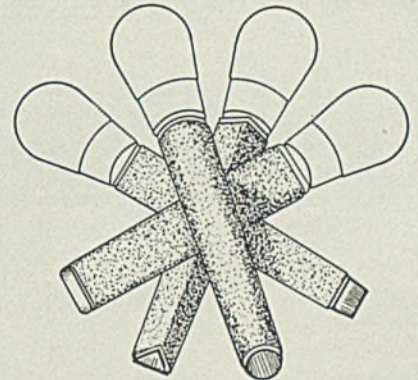
Milling Machine—

Cincinnati Milling Machine and Cincinnati Grinders Inc., Cincinnati, have recently announced a new milling machine designed for milling small to medium size work, run in toolroom or job lot quantities. All operating and control levers are conveniently grouped and many safety features protect machine and operator. All rotating shafts are guarded, hand cranks do not rotate when the power feed is engaged and the spindle brake stops the cutter immediately when the starting lever is pulled down. Lock pins in the cross and vertical feed levers prevent the op-

erator from moving the wrong one, a two way locking device prevents the spindle reverse lever from being accidentally moved and a safety gear prevents overloading the machine. Ranges are 28-inch longitudinal table travel, 10-inch cross travel and 19 and 18-inch vertical travel respectively for the plain and universal model. Fifteen spindle speeds are available, ranging from 23 to 1200 revolutions per minute, and 12 feeds are furnished, the range being from 3/4-inch to 30 inches per minute. A cutter coolant pump of 8 gallons capacity is included as standard equipment on all machines. Universal machines are equipped with a 10-inch universal dividing head and a totally enclosed driving mechanism for milling helixes ranging from 2 1/2-inch to 100-inch lead.

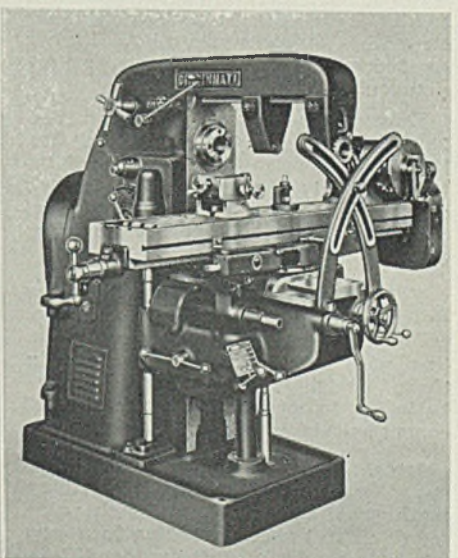
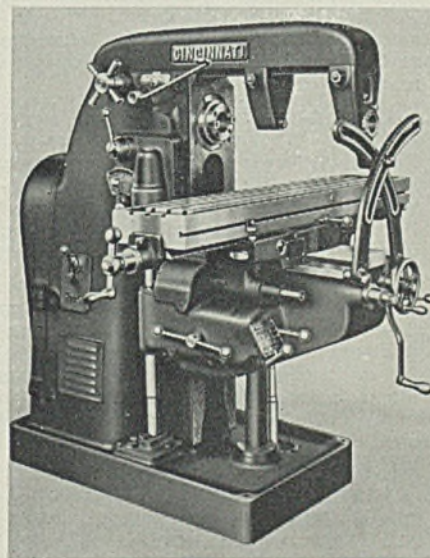
Abrasive Holder—

Keeler Mfg. Co., 2410-12 South



Keeler economy abrasive holder which is supplied with a wide range of cloth and paper abrasives

Keeler avenue, Chicago, announce a new abrasive holder. The working



Left—Cincinnati 2-MH plain model milling machine designed for milling small to medium size work pieces in tool room or job lot quantities. Right—Universal model in the same line

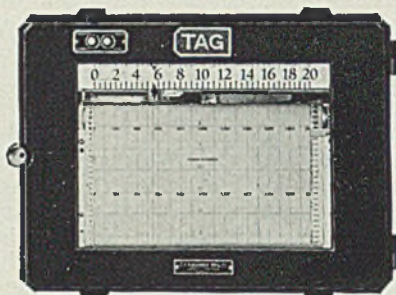
part or body of the tool is $9\frac{1}{4}$ inches long and is fitted with a $3\frac{3}{4}$ -inch wood handle mounted in a substantial ferrule. Round, square, triangular and flat shapes are provided. The tools can be used on any operation where abrasive cloth or paper is used by hand. Both cloth and paper backings are supplied by the company in garnet or flint, alumina oxide, emery or crocus. The abrasive as supplied by the makers is creased on the inside. The end to be inserted in the holder first is plainly marked. The taper on the holder stretches the abrasive so that it lays in position under enough pressure to hold it.

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Pyrometer—

C. J. Tagliabue Mfg. Co., Park and Nostrand avenues, Brooklyn, N. Y., announces a new 2 and 3-position recording and controlling pyrometer. The Tag photoelectric bal-

ancing method is used to simplify the instrument. Control is accomplished by movement of the recording carriage with its ink stylus above or below the control contact as-



Recording controlling pyrometer developed by C. J. Tagliabue Co.

sembly. Control action is independent of chart drive and protection is provided against power failure. A large scale indicates tempera-

ture at any time and is readable at a distance. Record is made in red ink by a pen filled with three-month supply. The pen is made of a transparent plastic and is easily removed for cleaning.

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Metallic Arcing Tips—

Roller-Smith Co., 233 Broadway, New York, announces a new air circuit breaker which does not involve the use of carbon tips. Metallic, non-arcng tips have been developed which will not burn, since the low resistance of the arcing structure prevents any appreciable voltage across the main contacts. No secondary circuits are required to protect the main circuit, according to the company. Tips are nonfragile, and the material will not weld on high currents. It is claimed that no appreciable amount of this material is volatilized when opening high short circuit values.

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.

Production Grinding—Carborundum Co., Hutto Machine division, 515 Lycaete avenue, Detroit. Catalog covering the company's present standard hones, honing machines and abrasives, including a presentation on production grinding.

Castings—Beryllium Corp. of Pennsylvania, Reading, Pa. Folder describing the beryllium copper heat treated castings, claiming greater strength, more uniformity, higher conductivity, and more wear resistance.

Lubricators—Manzel Brothers Co., 309 Babcock street, Buffalo. Catalog No. 25-B, illustrating and describing force feed lubricators, model 25, for positive and automatic lubrication of cylinders and bearings; includes prices for the various models.

Valve, Springs, Bolts, and Bushings—Toledo Steel Products Co., Toledo, O. Catalog covering the entire Toledo line, with specifications and prices; in three parts, each arranged alphabetically to provide a maximum of convenience for reference.

Metal Paint—Koppers Products Co., Pittsburgh. Folder describing methods of using Koppax black paint for all metal uses, including locations where excessively corrosive conditions are present and for use on hot surfaces up to 600 degrees Fahr.

Carbon and Alloy Steels—Harrisburg Steel Corp., Harrisburg, Pa.

Catalog listing products, including a flow chart showing how the company manufactures highly specialized products from raw materials to the finished product, and a detailed price list.

Wheelabrator Multi-Rotary Table—American Foundry Equipment Co., 555 South Byrkit street, Mishawaka, Ind. Folder No. 33, describing and illustrating the Wheelabrator multi-rotary table, the airless abrasive method of cleaning fragile or intricate metal parts.

Zinc Chromate Primer—Berry Brothers, Detroit. Folder covering Berryloid zinc chromate primer, specification P-27a, and allied products, a techno-practical discussion of its chemical and physical properties: a corrosion inhibiting primer for all varieties of alloy metal surfaces.

Electrolytic Stirrer—Precision Scientific Co., 1750 North Springfield avenue, Chicago. A Bulletin No. 31, on its rugged and continuous duty electrolytic stirrer, applicable to quantitative separation of metals such as copper, lead, cadmium, tin, nickel, cobalt, iron and zinc.

Steel Alloys—Michiana Products Corp., Michigan City, Ind. Folder No. 5M-8-36, describing the company's corrosion resistant and stainless steel alloys, including chemical and metallurgical properties of castings, and their uses; illustrated, suggesting many savings for the use of

corrosion-resistant and stainless steel castings.

Ventilation Methods and Equipment—Swartwout Co., 18511 Euclid avenue, Cleveland. Bulletin V-100-B, a non technical discussion on ventilation methods and equipment, for industrial and commercial builders, covering rotary ventilator, Swartwout-Dexter heat valve, air requirements, estimating ventilator requirements, Swartwout natural method, and Swartwout engineering service.

Pumps, Meters and Locomotive Feedwater Heating Equipment—Worthington Pump & Machinery Corp., Harrison, N. J. Folders No. W-112-B4 on horizontal duplex direct-acting underwriter fire pumps, type DF. Folder No. W-102-B1A, on horizontal duplex piston pumps. Type T13, for handling liquids at pressures up to 200 pounds per square inch. No. W-711-B3, on horizontal simplex air and steam heating vacuum pumps, types AE and AF. No. W-321-B4B, on monobloc centrifugal pumps, Type DE. No. W-321-B11, on monobloc centrifugal pumps for railroad car air conditioning. No. W-220-B8, on locomotive feedwater heating equipment, type SA, feedwater heater, reciprocating hot water pump, centrifugal cold water pump. No. M-975-B1A, on water meters for cold water services, disc type, turbine type, compound type. No. W-350-B1, on centrifugal acid pumps, type CG, for low duty series, belt or motor drive.

Semifinished, Bars, Hot-Rolled Sheets Up

Price Advances Expected To Stimulate Demand; Scrap Continues Strong

PPRICE advances for fourth quarter featured iron and steel markets last week as producers entered September with current consumption holding up and activity undiminished in the raw materials.

Rerolling billets, sheet bars and slabs have been advanced \$2 a ton for fourth quarter at Chicago and Pittsburgh. Bars and small shapes have been increased \$2 a ton and a similar advance has been made on hot-rolled annealed sheets. Gage extras for hot-rolled sheets have been increased but extras for pickling and oiling have been reduced. The majority of other finished steel products have been reaffirmed. Railroad spikes and track bolts are up \$3 a ton.

The effect of the price increases will be to drive in increased tonnage from consumers at third-quarter prices before the Oct. 1 deadline on the products where advances are scheduled, tending to sustain production.

With increasingly heavy demand in prospect, the steel industry is exhibiting more interest in plant expansion than at any time since the pre-depression era. Republic Steel Corp.'s award of a contract for a new blast furnace at Cleveland is the first since 1928. Ingot capacity is being increased at Lorain and Detroit. Four new wide strip mills will be in operation by 1937.

Operations last week held above the 70 per cent mark for the seventh consecutive week, but a decline of 1½ points reduced the national rate to 71½ per cent of capacity. Considering the inactivity in several major consuming industries, this was an exceptionally good showing. This week's average will shrink because of the Labor Day holiday.

Scrap prices went higher, STEEL'S composite making a gain of 38 cents to \$15.79, the tenth consecutive weekly rise from \$12.47. No. 1 melting steel touched the \$17.50 level at Pittsburgh for the first time since the late summer of 1929. In the South, Gulf States Steel Co. purchased 20,000 tons of heavy melting steel outside Birmingham at an unstated price.

The volume of pig iron orders has risen slightly. A 97,000-ton purchase of basic iron has been reported made by Allegheny Steel Co. for delivery by all-water.

August pig iron output, 2,712,009 gross tons was 4.5 per cent ahead of July production at 2,-

MARKET IN TABLOID

DEMAND . . . *Miscellaneous consumption still strong.*

PRICES *Higher in some lines for fourth quarter.*

PRODUCTION . . . *National rate down 1½ points to 71½.*

SHIPMENTS . . . *Strong.*

595,791 gross tons. The average daily output in August was 87,484 gross tons, highest since June, 1930, and a gain of 4.5 per cent over the July daily average of 83,735 gross tons. Eight months' output this year is 44 per cent ahead of the corresponding period last year—18,887,802 gross tons this year compared to 13,110,056. Stacks active at the end of August totaled 148, a gain of two over July and the greatest number active since June, 1930.

Automobile assemblies made a sharp decline of 22,309 units to 31,628.

Railroad requirements were a major factor on the bright side of the ledger. Awards for 1700 new freight cars started the month off well, while volume was good in both track accessories and rails. Chicago Great Western ordered 10,000 tons of rails and 9000 tons of fastenings; Santa Fe bought 21,000 tons of accessories. Domestic freight car awards in August involved 3725 cars, bringing the total for the first eight months up to 39,183 against 7033 last year.

Shape awards for the week dropped 19,602 tons 11,129. Contracts for concrete reinforcing bars also fell off, by about 3000 tons to 3935.

Operations in the Pittsburgh district were down 4 points to 70 per cent; Buffalo 6 to 75; eastern Pennsylvania 2 to 48½; New England 5 to 80. Cincinnati was up 4 to 80 and Cleveland 2½ to 82. Others were unchanged.

STEEL'S composite of iron and steel prices is up 7 cents to \$34.10, while the index of finished products remains at \$53.40.

Iron and steel exports increased from 294,951 gross tons in June to 296,738 gross tons in July, largely due to a gain in scrap shipments. Imports declined from 59,910 gross tons in June to 47,940 tons in July. Shipments of iron ore from the Lake Superior district for the season to Sept. 1 are 51 per cent ahead of last year.

COMPOSITE MARKET AVERAGES

	Sept. 5	Aug. 29	Aug. 22	One Month Ago Aug., 1936	Three Months Ago June, 1936	One Year Ago Sept., 1935	Five Years Ago Sept., 1931
Iron and Steel	\$34.10	\$34.03	\$34.94	\$33.88	\$32.79	\$32.82	\$30.61
Finished Steel	53.40	53.40	53.40	53.40	52.20	53.70	48.72
Steelworks Scrap....	15.79	15.41	15.13	14.66	12.55	12.65	8.82

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

A COMPARISON OF PRICES

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

	Sept. 5, 1936	Aug., 1936	June, 1936	Sept., 1935		Sept. 5, 1936	Aug., 1936	June, 1936	Sept., 1935
Finished Material					Pig Iron				
Steel bars, Pittsburgh	1.95c	1.95c	1.85c	1.85c	Bessemer, del. Pittsburgh	\$20.8132	20.8132	20.8132	19.81
Steel bars, Chicago	2.00	2.00	1.90	1.85	Basic, Valley	19.00	19.00	19.00	18.00
Steel bars, Philadelphia	2.26	2.26	2.16	2.11	Basic, eastern del. East. Pa.....	20.8132	20.8132	20.8132	19.81
Iron bars, Terre Haute, Ind.	1.85	1.85	1.75	1.75	No. 2 fdy., del. Pittsburgh	20.3132	20.3132	20.3132	19.31
Shapes, Pittsburgh	1.90	1.90	1.80	1.80	No. 2 fdy., Chicago	19.50	19.50	19.50	18.50
Shapes, Philadelphia	2.11½	2.11½	2.01½	2.01½	Southern No. 2, Birmingham.....	15.50	15.50	15.50	14.50
Shapes, Chicago	1.95	1.95	1.85	1.85	Southern No. 2, del. Cincinnati...	19.44	19.44	20.2007	19.38
Tank plates, Pittsburgh	1.90	1.90	1.80	1.80	No. 1 2X eastern, del. Phila.....	21.6882	21.6882	21.6882	20.68
Tank plates, Philadelphia	2.09	2.09	1.99	1.99	Malleable, Valley	19.50	19.50	19.50	18.50
Tank plates, Chicago	1.95	1.95	1.85	1.85	Malleable, Chicago	19.50	19.50	19.50	18.50
Sheets, No. 10, hot rolled, Pitts....	1.95	1.95	1.85	1.85	Lake Sup., charcoal, del. Chicago	25.2528	25.2528	25.2528	24.25
Sheets, No. 24, hot ann., Pitts.....	2.50	2.50	2.40	2.40	Ferromanganese, del. Pitts.....	80.13	80.13	80.13	90.13
Sheets, No. 24, galv., Pitts.....	3.20	3.20	3.10	3.10	Gray forge, del. Pittsburgh	19.6741	19.6741	19.6741	18.67
Sheets, No. 10, hot rolled, Gary....	2.05	2.05	1.95	1.95	Scrap				
Sheets, No. 24, hot anneal., Gary..	2.60	2.60	2.50	2.50	Heavy melting steel, Pittsburgh..	\$17.25	16.00	13.80	13.45
Sheets, No. 24, galvan., Gary.....	3.30	3.30	3.20	3.20	Heavy melt. steel, No. 2, east. Pa.	13.75	12.80	10.81	11.25
Plain wire, Pittsburgh	2.40	2.40	2.40	2.30	Heavy melting steel, Chicago	15.75	15.45	12.75	12.55
Tin plate, per base box, Pitts.....	5.25	5.25	5.25	5.25	Rail for rolling, Chicago	16.75	16.40	14.00	13.90
Wire nails, Pittsburgh	2.10	2.10	2.10	2.40	Railroad steel specialties, Chicago	17.25	16.65	14.40	13.75
Semifinished Material					Coke				
Sheet bars, open-hearth, Youngs... \$30.00	30.00	28.00	28.00		Connellsville, furnace, ovens.....	\$3.75	3.45	3.50	3.25
Sheet bars, open-hearth, Pitts.....	30.00	30.00	28.00	28.00	Connellsville, foundry, ovens.....	4.25	4.25	4.25	4.00
Billets, open-hearth, Pittsburgh....	30.00	30.00	28.00	27.00	Chicago, by-product foundry, del.	9.75	9.75	9.75	9.25
Wire rods, Pittsburgh	38.00	38.00	38.80	38.00					

Steel, Iron, Raw Material, Fuel and Metals Prices

Except when otherwise designated, prices are base, f.o.b. cars. Asterisk denotes price change this week.

Sheet Steel		Tin Mill Black No. 28		Corrosion and Heat-Resistant Alloys		Structural Shapes	
Prices Subject to Quantity Extras and Deductions (Except Galvanized)		Pittsburgh	2.75c	Pittsburgh base, cents per lb.		Pittsburgh	1.90c
Hot Rolled No. 10, 24-48 in.		Gary	2.85c	Chrome-Nickel		Philadelphia, del.	2.11½c
Pittsburgh	1.95c	St. Louis, delivered	3.08c	No. 302 No. 304		New York, del.	2.16½c
Gary	2.05c	Cold Rolled No. 10		Bars	23.00 24.00	Boston, delivered....	2.30½c
Chicago, delivered..	2.08c	Pittsburgh	2.60c	Plates	26.00 28.00	Bethlehem	2.00c
Detroit, del.	2.15c	Gary	2.70c	Hot strip	33.00 35.00	Chicago	1.95c
New York, del.	2.30c	Detroit, delivered....	2.80c	Cold strip	20.75 22.75	Cleveland, del	2.10c
Philadelphia, del.....	2.26c	Philadelphia, del.....	2.91c		27.00 29.00	Buffalo	2.00c
Birmingham	2.10c	New York, del.	2.95c	Straight Chromes		Gulf Ports	2.30c
St. Louis, del.	2.23c	Pacific ports, f.o.b. cars, dock	3.20c	No. 410	No. 430	Birmingham	2.05c
Pacific ports, f.o.b. cars, dock	2.50c	Cold Rolled No. 20		No. 442	No. 446	Cleveland	2.00c
Hot Rolled Annealed No. 24		Pittsburgh	3.05c	Bars	17.00 18.50 21.00 26.00	Buffalo	2.00c
Pittsburgh	2.50c	Gary	3.15c	Plates	20.00 21.50 24.00 29.00	Detroit, delivered....	2.10c
Gary	2.60c	Detroit, delivered....	3.25c	Sheets	25.00 28.00 31.00 35.00	Birmingham	2.10c
Chicago, delivered....	2.63c	Philadelphia, del.....	3.36c	Hot strip	15.75 16.75 21.75 26.75	Cleveland	2.00c
Detroit, delivered....	2.70c	New York, del.	3.40c	Cold stp.	20.50 22.00 27.00 35.00	Buffalo	2.05c
New York, del.....	2.85c	Enameling Sheets				Detroit, delivered....	2.10c
Philadelphia, del ...	2.81c	Pittsburgh, No. 10..	2.45c	Steel Plate		Pacific ports, f.o.b. cars, dock	2.50c
Birmingham	2.65c	Pittsburgh, No. 20..	3.05c	Pittsburgh	1.90c	Chicago or Gary....	2.00c
St. Louis, del	2.82c	Gary, No. 10	2.55c	New York, del.	2.19c	Duluth	2.10c
Pacific ports, f.o.b. cars, dock	3.15c	Gary, No. 20	3.15c	Philadelphia, del.	2.09c	Birmingham	2.10c
Galvanized No. 24		Tin and Terne Plate		Boston, delivered....	2.32c	Cleveland	2.00c
Pittsburgh	3.20c	Gary base, 10 cents higher.		Buffalo, delivered....	2.15c	Buffalo	2.05c
Gary	3.30c	Tin plate, coke base (box) Pittsburgh	\$5.25	Chicago or Gary	1.95c	Detroit, delivered....	2.10c
Chicago, delivered..	3.33c	Do., waste-waste..	2.75c	Cleveland, del.	2.09½c	Pacific ports, f.o.b. cars, dock	2.50c
Philadelphia, del.	3.51c	Do., strips	2.50c	Birmingham	2.05c	Chicago or Gary....	2.26c
New York, del.	3.55c	Long ternes, No. 24 unassorted, Pitts.	3.50c	Coatesville, base ...	2.00c	Boston, delivered....	2.37c
Birmingham	3.35c	Do., Gary	3.60c	Sparrows Pt., base	2.00c	New York, del	2.30c
St. Louis, del.....	2.88c			Pacific ports, f.o.b. cars, dock	2.45c	Pitts., forg. qual....	2.20c
Pacific ports, f.o.b. cars, dock	3.80c			St. Louis, delivered..	2.18c	Rail Steel	
						To Manufacturing Trade	
						Pittsburgh	1.80c
						Chicago or Gary....	1.85c
						Moline, Ill.	1.85c
						Cleveland	1.85c
						Buffalo	1.90c

Iron	
Terre Haute, Ind....	1.85c
Chicago	1.90c
Philadelphia	2.16c
Pittsburgh, refined..	2.75-7.50c
Reinforcing	
New billet, straight lengths, quoted by distributors.	
Pittsburgh	2.05c
Chicago, Gary, Buffalo, Cleve., Birm., Young...	2.10c
Gulf ports	2.45c
Pacific coast ports f.o.b.	
car docks	2.45c
Philadelphia, del.....	2.26c-2.36c
Rail steel, straight lengths, quoted by distributors	
Pittsburgh	1.90c
Chicago, Buffalo, Cleve- land, Birm., Young.....	1.95c
Gulf ports	2.30c

Wire Products

(Prices apply to straight or mixed carloads; less carloads \$4 higher; less carloads fencing \$5 over base column.)

Base Pitts.-Cleve. 100 lb. keg.	
Stand. wire nails....	2.10c
Cement c'd nails....	2.10c
Galv. nails, 15 gage and finer	4.10c
do. finer than 15 ga.	4.60c
(Per pound)	
Polished staples.....	2.80c
Galv. fence staples	3.05c
Barbed wire, galv...	2.60c
Annealed fence wire	2.65c
Galv. fence wire.....	3.00c
Woven wire fencing (base column, c.l.)	\$58.00
To Manufacturing Trade	
Plain wire, 6-9 ga..	2.40c
Anderson, Ind. (merchant products only) and Chicago up \$1; Duluth up \$2; Birming- ham up \$3.	
Spring wire, Pitts. or Cleveland	3.05c
Do., Chicago up \$1, Worc. \$2.	

Cold-Finished Carbon Bars and Shafting

Base, Pitts., one size, shape, grade, shipment at one time to one destination	
10,000 to 19,999 lbs.	2.25c
20,000 to 59,999 lbs.	2.20c
60,000 to 99,999 lbs.	2.15c
100,000 lbs. and over.....	2.12½c
Gary, Ind., Cleve., Chi., up 5c; Buffalo, up 10c; Detroit, up 15c; eastern Michigan, up 20c.	

Alloy Steel Bars (Hot)

(Base, 3 to 25 tons.)

Pittsburgh, Buffalo, Chi- cago, Massillon, Can- ton, Bethlehem	2.55c
Alloy	
S.A.E. Diff. S.A.E. Diff.	
2000.....0.25 3100.....0.55	
2100.....0.55 3200.....1.35	
2300.....1.50 3300.....3.80	
2500.....2.25 3400.....3.20	
4100 0.15 to 0.25 Mo.	0.50
4600 0.20 to 0.30 Mo. 1.25- 1.75 Ni.	1.05
5100 0.80-1.10 Cr.	0.45
5100 Cr. spring	base
6100 bars	1.20
6100 spring	0.70
Cr., Ni., Van.	1.50
Carbon Van.	0.95
9200 spring flats	base
9200 spring rounds, squares	0.25

Piling

Pittsburgh	2.25c
Chicago, Buffalo	2.35c

Strip and Hoops

(Base, hot rolled, 25-1 ton)
(Base, cold-rolled, 25-3 tons)

Hot strip to 23½-in.	
Pittsburgh	1.95c
Chicago or Gary	2.05c
*Birmingham base	2.10c
Detroit, del.	2.15c
Philadelphia, del.	2.26c
New York, del.....	2.30c
Cooperage hoop,	
Pittsburgh	2.05c
Chicago	2.15c
Cold strip, 0.25 carbon and under,	
Pitts., Cleveland..	2.60c
Detroit, del.	2.81c
Worcester, Mass.	2.80c
Carbon	
Cleve- Worces- Pitts. ter, Mass.	
0.26-0.50....	2.60c 2.80c
0.51-0.75....	3.45c 3.65c
0.76-1.00....	4.95c 5.15c
Over 1.00....	6.50c 6.70c

Rails, Track Material

(Gross Tons)

Standard rails, mill	\$36.37½
Relay rails, Pitts.	
20-100 lbs.	25.50-28.00
Light rails, billet qual. Pitts., Chi....	\$35.00
Do., reroll. qual....	34.00
Angle bars, billet, Gary, Ind., So. Chi.	2.55c
Do., axle steel....	2.10c
Spikes, R. R. base..	2.75c
Track bolts, base....	3.75c
Tie plates, base.....	2.00c
Base, light rails 25 to 40 lbs.; 50 to 60 lbs. inclusive up \$2; 16 and 20 lbs., up \$1; 12 lbs. up \$2; 8 and 10 lbs., up \$5. Base railroad spikes 200 kegs or more; base tie plates 20 tons.	

Bolts and Nuts

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

Carriage and Machine	
½ x 6 and smaller.....	70-10 off
Do. larger	70-5 off
Tire bolts	50 off
Flew Bolts	
All sizes	70-5 off
Stove Bolts	
In packages with nuts at- tached 75 off; in packages with nuts separate 75-5 off; in bulk 82½ off on 15,000 of 3-inch and shorter, or 5000 over 3-inch.	
Step bolts	65 off
Elevator bolts	65 off
Nuts	
S. A. E. semifinished hex. ½ to ⅞-inch.....	60-20-15 off
Do., ½ to 1-inch.....	60-20-15 off
Do., over 1-inch.....	60-20-15 off
Hexagon Cap Screws	
Milled	80-10-10 off
Upset, 1-in., smaller	85 off
Square Head Set Screws	
Upset, 1-in., smaller.....	75-10 off
Headless set screws	75 off

Plew Bolts	
All sizes	70-5 off
Stove Bolts	
In packages with nuts at- tached 75 off; in packages with nuts separate 75-5 off; in bulk 82½ off on 15,000 of 3-inch and shorter, or 5000 over 3-inch.	
Step bolts	65 off
Elevator bolts	65 off
Nuts	
S. A. E. semifinished hex. ½ to ⅞-inch.....	60-20-15 off
Do., ½ to 1-inch.....	60-20-15 off
Do., over 1-inch.....	60-20-15 off
Hexagon Cap Screws	
Milled	80-10-10 off
Upset, 1-in., smaller	85 off
Square Head Set Screws	
Upset, 1-in., smaller.....	75-10 off
Headless set screws	75 off

Rivets, Wrought Washers

Struc., c. l., Pitts- burgh, Cleveland	3.05c
Struc., c. l., Chicago	3.15c
⅜-in. and smaller, Pitts., Chi., Cleve. 70 and 5 off	
Wrought washers, Pitts., Chi., Phila. to jobbers & large nut. bolt mfrs....	\$6.25 off

Cut Nails

Cut nails, Pitts.; (10% discount on size extras) \$2.75	
Do. less carloads, 5 kegs or more, no discount on size extras	\$3.05

Do., under 5 kegs; no
disc. on size extras..... \$3.20

Pipe and Tubing

Base \$200 net ton, except on
standard commercial seamless
boiler tubes under 2 inches and
cold drawn seamless tubing.

Welded Iron, Steel Pipe

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

Butt Weld Steel	
In.	Blk. Galv.
¼ and ⅜.....	60 44½
½.....	64½ 55
¾.....	67½ 59
1-3.....	69½ 61½
Iron	
½.....	31½ 15
¾.....	36½ 20½
1-1½.....	39½ 25½
2.....	41½ 26
Lap Weld Steel	
2.....	62 53½
2½-3.....	65 56½
3½-6.....	67 58½
7 and 8.....	66 56½
9 and 10.....	65½ 56
Iron	
2.....	37 22½
2½-3½.....	38 25
4-8.....	40 28½
Line Pipe Steel	
½, butt weld.....	56
¼ and ⅜, butt weld.....	59
½, butt weld	63½
¾, butt weld	66½
1 to 3, butt weld	68½
2, lap weld	61
2½ to 3, lap weld.....	64
3½ to 6, lap weld.....	66
7 and 8, lap weld.....	65
Iron	
½-1½ inch, black and galv. take 4 pts. over; 2½-6 inch 2 pts. over discounts for same sizes, standard pipe lists, 8-12- inch, no extra.	
Boiler Tubes	
C. L. Discounts, f.o.b. Pitts.	
Lap Weld Steel	
2-2¼.....	33 1¾
2½-2¾.....	40 2-¼
3.....	47 2½-2¾
3¼-3½.....	50 3.....
4.....	52 3¼-3½
4½-5.....	42 4.....
4½.....	21
Charcoal Iron	
2-2¼.....	8
2½-2¾.....	13
3.....	16
3¼-3½.....	17
4.....	18
4½-5.....	20
4½.....	21

In lots of a carload or more,
above discounts subject to
preferential of two 5% and one
7½% discount on steel and
10% on charcoal iron.

Lapwelded steel: 200 to 9999
pounds, ten points under base,
one 5% and one 7½%. Under
2000 pounds 15 points under
base, one 5% and one 7½%.
Charcoal iron: 10,000 pounds to
carloads, base less 5%; under
10,000 lbs., 2 points under base.

Seamless Boiler Tubes
Under date of May 15 in lots
of 40,000 pounds or more for
cold-drawn boiler tubes and in
lots of 40,000 pounds or feet or
more for hot-finished boiler
tubes, revised prices are quoted
for 55 cold-drawn boiler tube
sizes ranging from ¼ to 6-inch
outside diameter in 30 wall
thicknesses, decimal equivalent
from 0.035 to 1.000, on a dollars
and cents basis per 100 feet
and per pound. Less-carloads
revised as of July 1, 1935, card.

Hot-finished carbon steel boiler
tube prices also under date
of May 15 range from 1 through
7 inches outside diameter, in-
clusive, and embrace 47 size
classifications in 22 decimal
wall thicknesses ranging from
0.109 to 1.000, prices also being
on a lb. and 100 ft. basis.

Seamless Tubing

Cold drawn; f.o.b. mill disc.
100 ft. or 150 lbs. 32%
15,000 ft. or 22,500 lbs. 70%

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

6-in. & over, Birm.	\$39.00-40.00
4-in., Birmingham....	42.00-43.00
4-in., Chicago	50.40-51.40
6 to 24-in. Chicago.	47.40-48.40
6-in. & over, east. fdy.	43.00
Do., 4-in.	46.00

Class A pipe \$3 over Class B
Std. fitgs., Birm. base..\$100.00

Semifinished Steel

Billets and Blooms

4 x 4-inch base; gross ton	
Pitts., Chi., Cleve., Buffalo & Young.	\$30.00
Philadelphia	35.67
Duluth	32.00
Forging Billets	
6 x 6 to 9 x 9-in., base	
Pitts., Chi., Buff.....	37.00
Forging, Duluth	39.00
Sheet Bars	
Pitts., Cleve., Young., Chi., Buff., Can- ton, Sparrows Pt.	36.00
Slabs	
Pitts., Chi., Cleve., Young.	30.00
Wire Rods	
Pitts., Cleve., No. 4 to 5	\$38.00
Do., No. 5 to ¾-inch	40.00
Do., over ¾ to 1-inch	42.00
Chicago up \$1; Worcester up \$2	

Skelp

Pitts., Chi., Young., Buff., Coatesville, Sparrows Point....	1.80c
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Coke

Price Per Net Ton

Beehive Ovens	
*Connellsville, fur....	\$3.75- 4.00
Connellsville, fdry....	4.25- 4.50
Connell prem. fdry....	5.50
New River fdry.....	6.00
Wise county fdry....	4.45- 5.90
Wise county fur....	4.00- 4.50
By-Product Foundry	
Newark, N. J., del.	9.70-10.15
Chi., ov., outside del.	9.00
Chicago, del.	9.75
New England, del....	11.50
St. Louis, del.	10.00-10.50
Birmingham, ovens	6.50
Indianapolis, del.	9.40
Cincinnati, del.	9.50
Cleveland, del.	9.75
Buffalo, ovens	7.50- 8.00
Detroit, ov., out. del.	9.00
Philadelphia, del.	9.38

Coke By-Products

Per gallon, producers' plants,
Tank lots Spot

Pure and 90% benzol.....	16.00c
Toluol	30.00c
Solvent naphtha	30.00c
Industrial xylol	30.00c
Per lb. f.o.b. Frankford, Phenol (200 lb. drums)..	15.50c
Do. (450 lbs.)	14.50c
Eastern Plants, per lb.	
Naphthalene flakes and balls, in bbls., to jobbers 7.25c	
Per 100 lbs. Atlantic seaboard	
*Sulphate of ammonia.....	\$1.275
†Western prices, ½-cent up.	

Pig Iron

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

Basing Points:	No. 2 Fdry.	Malleable	Basic	Bessemer
Bethlehem, Pa.	\$20.50	\$21.00	\$20.00	\$21.50
Birdsboro, Pa.	20.50	21.00	20.00	21.50
Birmingham, Ala., southern del.	15.50	15.50	14.50	21.00
Buffalo	19.50	20.00	18.50	20.50
Chicago	19.50	19.50	19.00	20.00
Cleveland	19.50	19.50	19.00	20.00
Detroit	19.50	19.50	19.00	20.00
Duluth	20.00	20.00	.....	20.50
Erie, Pa.	19.50	20.00	19.00	20.50
Everett, Mass.	20.50	21.00	20.00	21.50
Hamilton, O.	19.50	19.50	19.00	.....
Jackson, O.	20.25	20.25	19.75	.....
Neville Island, Pa.	19.50	19.50	19.00	20.00
Provo, Utah	17.50	.....	17.00	.....
Sharpsville, Pa.	19.50	19.50	19.00	20.00
Sparrows Point, Md.	20.50	.....	20.00	.....
Swedeland, Pa.	20.50	21.00	20.00	21.50
Toledo, O.	19.50	19.50	19.00	20.00
Youngstown, O.	19.50	19.50	19.00	20.00

Delivered from Basing Points:

Akron, O., from Cleveland	20.76	20.76	26.26	21.26
Baltimore from Birmingham	21.08	.....	19.96	.....
Boston from Birmingham	20.62	.....	20.50	.....
Boston from Everett, Mass.	21.00	21.50	20.50	22.00
Boston from Buffalo	21.00	21.50	20.50	22.00
Brooklyn, N. Y., from Bethlehem	22.93	23.43	.....	.....
Brooklyn, N. Y., from Bmghm...	22.55	.....	.....	.....
Canton, O., from Cleveland.....	20.76	20.76	20.26	21.26
Chicago from Birmingham	19.72	.....	19.60	.....
Cincinnati from Hamilton, O.	19.82	20.58	20.08	.....
Cincinnati from Birmingham.....	19.44	.....	18.44	.....
Cleveland from Birmingham	19.62	.....	19.12	.....
Indianapolis from Hamilton, O.	21.17	21.77	21.27	.....
Mansfield, O., from Toledo, O.	21.26	21.26	20.76	21.76
Milwaukee from Chicago	20.57	20.57	20.27	21.07
Muskegon, Mich., from Chicago	.....	.....	.....	.....
Toledo or Detroit	22.60	22.60	22.10	23.10
Newark, N. J., from Birmingham	21.61	.....	.....	.....
Newark, N. J., from Bethlehem..	21.99	22.49	.....	.....
Philadelphia from Birmingham..	20.93	.....	20.81	.....
Philadelphia from Swedeland, Pa.	21.31	21.81	20.81	.....
Pittsburgh district from Neville	Neville base plus 67c, 81c and Island			
.....	\$1.21 switching charges			
Saginaw, Mich., from Detroit.....	21.75	21.75	21.25	21.25
St. Louis, northern	20.00	20.00	19.50	.....

Delivered from Basing Points:	No. 2 Fdry.	Malleable	Basic	Bessemer
St. Louis from Birmingham	19.68	.....	19.50	.....
St. Paul from Duluth	21.94	21.94	.....	22.44

†Over 0.70 phos.

Low Phos.

Basing Points: Birdsboro and Steelton, Pa., and Standish, N. Y., \$24.00, Phila. base, standard and copper bearing, \$25.13.
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Gray Forge

Valley furnace	19.00	Lake Superior fur.	\$22.00
Pitts. dist. fur.	19.00	Do., del. Chicago	25.25
		Lylees, Tenn.	22.50

Silvery†

Jackson county, O., base; 6-6.50 per cent \$22.75; 6.51-7—\$23.25; 7-7.50—\$23.75; 7.51-8—\$24.25; 8-8.50—\$24.75; 8.51-9—\$25.25; 9-9.50—\$25.75. Buffalo \$1.25 higher.

Bessemer Ferrosilicon†

Jackson county, O., base: Prices are the same as for silveries, plus \$1 a ton.

†The lower all-rail delivered price from Jackson, O., or Buffalo is quoted with freight allowed.

Manganese differentials in silvery iron and ferrosilicon, 2 to 3%, \$1 per ton add. Each unit over 3%, add \$1. per ton.

Refractories

Per 1000 f.o.b. Works

Fire Clay Brick		timore bases (bags)..	\$45.00
Super Quality		Domestic dead-burned grains, net ton f.o.b. Chester, Pa., and Baltimore bases (bags)....	40.00
Pa., Mo., Ky.	\$55.00	Domestic dead-burned gr. net ton f.o.b. Chewelah, Wash. (bulk)..	22.00
First Quality		Basic Brick	
Pa., Ill., Md., Mo., Ky.	\$45.00	Net ton, f.o.b. Baltimore, Plymouth Meeting, Chester, Pa.	
Alabama, Georgia...\$38.00-45.00		Chrome brick	\$45.00
Second Quality		Chem. bonded chrome....	45.00
Pa., Ill., Ky., Md., Mo.	40.00	Magnesite brick	65.00
Georgia, Alabama....	35.00	Chem. bonded magnesite	55.00
Ohio			
First quality	\$40.00		
Intermediary	37.00		
Second quality	28.00		
Malleable Bang Brick			
All bases	50.00		
Silica Brick			
Pennsylvania	\$45.00		
Joliet, E. Chicago....	54.00		
Birmingham, Ala....	48.00		
Ladle Brick (Dry Press)			
Pa., O., W. Va., Mo.....	\$24.00		
Do., wire cut.....	22.00		
Magnesite			
Imported dead-burned grains, net ton f.o.b. Chester, Pa., and Bal-			

Nonferrous

METAL PRICES OF THE WEEK

Spot unless otherwise specified. Cents per pound

Copper		Casting, del. refinery	Straits Tin New York Spot	Lead N. Y.	Lead East St. L.	Zinc St. L.	Alumi- num 99%	Antimony Chinese Spot, N. Y.	Nickel Cath- odes		
Electro, del. Conn.	Lake, del. Midwest										
Aug. 29	9.75	9.40	43.12½	42.62½	4.60	4.45	4.80	*19.00	12.50	35.00	
Aug. 31	9.75	9.87½	9.40	43.12½	42.62½	4.60	4.45	4.80	*19.00	12.50	35.00
Sept. 1	9.75	9.87½	9.40	43.10	42.50	4.60	4.45	4.85	*19.00	12.50	35.00
Sept. 2	9.75	9.87½	9.40	42.80	42.30	4.60	4.45	4.85	*19.00	12.50	35.00
Sept. 3	9.75	9.87½	9.40	42.87½	42.40	4.60	4.45	4.85	*19.00	12.50	35.00
Sept. 4	9.75	9.87½	9.40	43.62½	43.12½	4.60	4.45	4.85	*19.00	12.50	35.00

*Nominal range 19.00 to 21.00c.

MILL PRODUCTS

F.o.b. mill base, cents per lb. except as specified. Copper brass products based on 9.75c Conn. copper

Sheets	
Yellow brass (high)	15.37½
Copper, hot rolled....	17.25
Lead cut to jobbers....	8.25
Zinc, 100-lb. base....	9.50
Tubes	
High yellow brass....	17.62½
Seamless copper....	17.75
Rods	
High yellow brass....	13.37½
Copper, hot rolled....	14.00
Anodes	
Copper, untrimmied	14.75
Wire	
Yellow brass (high)	15.62½

OLD METALS

Deal. buying prices, cents lb.

No. 1 Composition Red Brass	
New York	6.12½-6.37½
Cleveland	6.40-6.75
Chicago	6.12½-6.37½
*St. Louis	6.00-6.50
Heavy Copper and Wire	
New York, No. 1....	7.75-8.00
Chicago, No. 1.....	7.50-7.75
Cleveland, No. 1....	7.25-7.75
St. Louis, No. 1....	7.50-7.75
Composition Brass Borings	
New York	5.87½-6.12½
Light Copper	
New York	6.50-6.62½
*Chicago	6.12½-6.37½
Cleveland	6.00-6.25
St. Louis	6.00-6.50

Light Brass

Chicago	3.62½-3.87½
Cleveland	3.40-3.65
*St. Louis	3.50-4.00
Lead	
New York	3.62½-3.87½
Cleveland	3.75-3.80
Chicago	3.25-3.75
St. Louis	3.25-3.75
Zinc	
*New York	2.50-2.75
St. Louis	2.25-2.75
Cleveland	2.25-2.50
Aluminum	
Borings, Cleveland..	9.00-10.00
Mixed, cast, Cleve..	12.75-13.00
*Mixed, cast, St. L..	11.75-12.25
Clips, soft, Cleve....	15.00-15.50
SECONDARY METALS	
Brass ingot, 85-5-5-5	9.75
Stand. No. 12 alum.	16.50-17.00

Ferroalloys

Dollars, except Ferrochrome	
Ferromanganese,	
78-82% tidewater,	
duty paid	75.00
Do., Balti., base....	75.00
Do., del. Pittsb'gh	80.13
Splegeleisen, 19-20% dom. Palmer-ton, Pa., spott....	26.00
Do., New Orleans	26.00
Ferrosilicon, 50%	
freight all, cl.....	69.50
Do., less carload..	77.00
Do., 75 per cent..	126-130.00
Spot, \$5 a ton higher.	
Silicomane, 2½ carb.	85.00
2% carbon, 90.00; 1%,	100.00
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb. del....	10.00
Ferrotungsten,	
stand., lb. con. del.	1.30-1.40
Ferrovandium, 35 to 40% lb., cont....	2.70-2.90
Ferrotitanium, c. l., prod. plant, frt. allow., net ton....	137.50
Spot, 1 ton, frt. allow., lb.	7.00
Do., under 1 ton....	7.50
Ferrophosphorus,	
per ton, c. l., 17-19% Rockdale, Tenn., basis, 18%, \$3 unitage	58.50
Ferrophosphorus, electrolytic, per ton c. l., 23-26% f.o.b. Anniston, Ala., 24% \$3 unitage	75.00
Ferromolybdenum, stand, 55-65%, lb.	0.95
Molybdate, lb. cont.	0.80
†Carloads. Quan. diff. apply	

Warehouse Iron and Steel Prices

Cents per pound for delivery within metropolitan districts of cities specified

STEEL BARS	Cincinnati	3.25c	Buffalo	3.47c	Pittsburgh (h)	3.05c	St. Louis	3.65c
Baltimore*.....	Houston	3.25c	Chattanooga..	3.66c	San Francisco	3.60c	St. Paul	3.65c
Boston††	Los Angl. cl.	2.45c	Chicago	3.30c	Seattle	3.85c	COLD FIN. STEEL	
Buffalo	New Orleans	3.50c	Cincinnati	3.52c	St. Louis	3.40c	Baltimore (c)	3.88c
Chattanooga..	Pitts., plain (h)	3.05c	Cleveland, ¼-		St. Paul	3.40c	Boston*	4.05c
Chicago (j)....	Pitts., twisted		in. and over	3.41c	Tulsa	3.80c	Buffalo (h)....	3.70c
Cincinnati	squares (h)	3.175c	Detroit	3.52c	NO. 24 BLACK		Chattanooga*	4.28c
Cleveland	San Francisco	2.45c	Detroit, ½-in.	3.85c	Baltimore*†....	3.70c	Chicago (h)...	3.65c
Detroit	Seattle	3.50c	Houston	3.10c	Boston (g) ...	4.05c	Cincinnati	3.87c
Houston	St. Louis	3.35c	Los Angeles..	3.60c	Buffalo	3.35c	Cleveland (h)	3.65c
Los Angeles..	Tulsa	3.25c	Milwaukee ...	3.41c	Chattanooga*	3.41c	Detroit	3.74c
Milwaukee 3.21c-3.36c	Young.....	2.30c-2.60c	New Orleans..	3.65c	Chicago	3.95c	Los Ang.(f) (d)	5.85c
New Orleans..	SHAPES		New York†(d)	3.50c	Cincinnati	4.12c	Milwaukee ...	3.76c
New York†(d)	Baltimore*....	3.10c	Philadelphia*	3.10c	Cleveland	3.91c	New Orleans..	4.45c
Pitts. (h)....3.05c-3.20c	Boston††	3.29c	Phila. floor...	4.95c	Detroit	4.04c	New York†(d)	3.96c
Philadelphia*	Buffalo	3.35c	Pittsburgh (h)	3.25c	Los Angeles..	4.35c	Philadelphia*	3.91c
Portland	Chattanooga..	3.66c	Portland	3.60c	Milwaukee ...	4.06c	Pittsburgh ...	3.50c
San Francisco	Chicago	3.30c	San Francisco	3.25c	New Orleans	4.50c	Portland (f) (d)	6.30c
Seattle	Cincinnati	3.52c	Seattle	3.65c	New York†(d)	3.99c	San Fran.(f) (d)	5.95c
St. Louis	Cleveland	3.41c	St. Louis	3.55c	Philadelphia*†	3.75c	Seattle (f) (d)	6.25c
St. Paul.....3.35c-3.50c	Detroit	3.52c	St. Paul	3.55c	Pitts.** (h)	3.55c-4.85c	St. Louis	3.90c
Tulsa	Houston	3.10c	Tulsa	3.60c	Portland	4.20c	St. Paul	4.17c
IRON BARS	Los Angeles..	3.60c	NO. 10 BLUE		San Francisco	4.20c	Tulsa	4.80c
Portland	Milwaukee ...	3.41c	Baltimore*....	3.10c	Seattle	4.50c	COLD ROLLED STRIP	
Chattanooga..	New Orleans	3.65c	Boston (g) ...	3.40c	St. Louis	4.20c	Boston	3.245c
Baltimore*....	New York†(d)	3.47c	Buffalo	3.72c	St. Paul	4.00c	Buffalo	3.39c
Chicago	Philadelphia*	3.10c	Chattanooga..	3.46c	Tulsa	4.85c	Chicago	3.27c
Cincinnati	Pittsburgh (h)	3.25c	Chicago	3.15c	NO. 24 GALV. SHEETS		Cincinnati (b)	3.22c
New York†(d)	Portland (l)...	3.60c	Cincinnati	3.32c	Baltimore*†....	3.90c	Cleveland (b)	3.00c
Philadelphia*	San Francisco	3.25c	Cleveland	3.21c	Buffalo	4.10c	Detroit	3.18c
St. Louis	Seattle (l)....	3.65c	Det. 8-10 ga.	3.24c	Boston (g)....	4.00c	New York†(d)	3.36c
St. Paul.....3.35c-3.50c	St. Louis	3.45c	Houston	3.45c	Chattanooga*	3.96c	St. Louis	3.41c
Tulsa	St. Paul	3.55c	Los Angeles..	3.70c	Chicago (h)...	4.65c	TOOL STEELS	
REINFORCING BARS	Tulsa	3.60c	Milwaukee ...	3.26c	Cincinnati	4.82c	(Applying on or east of	
Buffalo	PLATES		New Orleans..	3.65c	Cleveland	4.61c	Mississippi river; west	
Chattanooga..	Baltimore*....	3.10c	New York†(d)	3.41c	Detroit	4.82c	of Mississippi 1c up)	
Chicago..... 2.10c-2.60c	Boston††	3.31c	Portland	3.85c	Houston	4.50c	Base	
Cleveland (c)			Philadelphia*	3.20c	Los Angeles..	4.40c	High Speed	

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, Sept. 3

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

	British gross tons U. K. ports		Channel or North Sea ports, metric tons		Continental gross tons **Quoted in gold pounds sterling		
	£	s d	Quoted in dollars at current value	£	s d	£	s d
PIG IRON							
Foundry, 2.50-3.00 Silicon	\$15.69	3 2 6*	\$13.89		1 15 0		
Basic bessemer,	15.69	3 2 6*	11.51		1 9 0		
Hematite, Phos. .03-.05..	18.86	3 15 0	.....		.....
SEMIFINISHED STEEL							
Billets	\$29.49	5 17 6	\$18.65		2 7 0		
Wire rods, No. 5 gage....	44.93	8 19 0	35.73		4 10 0		
FINISHED STEEL							
Standard rails.....	\$41.41	8 5 0	\$43.67		5 10 0		
Merchant bars.....	1.90c	8 10 0	1.17c		3 5 0		
Structural shapes.....	1.84c	8 5 0	1.11c		3 1 6		
Plates, ½ in. or 5 mm....	1.93c	8 12 6	1.53c		4 5 0		
Sheets, black, 24 gage or 0.5 mm.....	2.24c	10 0 0	2.33c		6 10 0††		
Sheets, galv., 24 gage, corr.	2.63c	11 15 0	2.51c		7 0 0		
Bands and strips.....	2.07c	9 5 0	1.43c		4 0 0		
Plain wire, base.....	2.18c	9 15 0	1.89c		5 5 0		
Galvanized wire, base....	2.58c	11 10 0	2.10c		5 17 6		
Wire nails, base.....	2.69c	12 0 0	1.71c		4 15 0		
Tin plate, box 108 lbs....	\$ 4.71	0 18 9	.....		.....

British ferromanganese \$75 delivered Atlantic seaboard, duty-paid. German ferromanganese \$9 0s 0d \$(43.74) f.o.b.

Domestic Prices at Works or Furnace—Last Reported

	£ s d		French Francs		Belgian Francs		Reich Marks	
	£	s d	Francs	Francs	Francs	Francs	Marks	Marks
Fdy, pig iron, Si. 2.5.	\$18.83	3 15 0(a)	\$19.11	290	\$15.16	450	\$25.36	63
Basic bessemer pig iron...	18.83	3 15 0(a)	12.52	190	12.64	375	27.97 (b)	69.50
Furnace coke.....	5.40	1 1 6	6.85	104	4.63	137	7.65	19
Billets.....	30.75	6 2 6	30.12	457	19.53	580	38.84	96.50
Standard rails.....	1.85c	8 5 0	2.01c	671	1.68c	1,100	2.42c	132
Merchant bars.....	2.09c	9 7 0	1.89c	630	1.06c	700	2.01c	110
Structural shapes.....	2.10c	9 7 6	1.86c	620	1.06c	700	1.96c	107
Plates, ½ in. or 5 mm....	2.17c	9 13 9	2.37c	790	1.29c	850	2.32c	127
Sheets, black.....								
Sheets, galv., corr., 24 ga.	2.69c	12 0 0§	2.39c	800†	1.45c	925†	2.64c	144†
or 0.5 mm.....	3.14c	14 0 0	3.60c	1,200	2.28c	1,500	6.77c	370
Plain wire.....	2.18c	9 15 0	3.30c	1,100	1.90c	1,250	3.17c	173
Bands and strips.....	2.26c	10 2 0	2.21c	735	1.29c	850	2.32c	127

*Basic. †British ship-plates. Continental, bridge plates. §24 ga. †1 to 3 mm. basic price. British quotations are for basic open-hearth steel. Continent usually for basic-bessemer steel. a del. Middlebrough. b hematite. †Close annealed. **Gold pound sterling carries a premium of 63.00 per cent over paper sterling.

BANDS	Baltimore*....	3.30c
Boston††	3.40c	
Buffalo	3.52c	
Chattanooga..	3.71c	
Chicago	3.40c	
Cincinnati	3.57c	
Cleveland	3.46c	
Detroit, ½-in. and lighter	3.49c	
Houston	3.35c	
Los Angeles..	4.20c	
Milwaukee ...	3.51c	
New Orleans..	4.05c	
New York†(d)	3.66c	
Philadelphia*	3.30c	
Pittsburgh(h)	3.30c	
Portland	4.35c	
San Francisco	4.20c	
Seattle	4.35c	
St. Louis	3.65c	
St. Paul	3.65c	
Tulsa	3.55c	
HOOPS		
Baltimore	2.30c	
Boston††	4.40c	
Buffalo	3.52c	
Chicago	3.40c	
Cincinnati	3.57c	
Det., No. 14 and lighter	3.49c	
Los Angeles..	5.95c	
Milwaukee ...	3.51c	
New York†(d)	3.66c	
Philadelphia*	3.55c	
Pittsburgh(h)	3.80c	
Portland	5.70c	
San Francisco	6.25c	
Seattle	5.70c	

High Speed59½c
 High carbon, high chrome39c
 Oil hardening23c
 Special tool21c
 Extra tool17½c
 Regular tool14½c
 Uniform extras apply.

BOLTS AND NUTS
 (100 pounds or over)
 Discount

Chicago (a)65
 Cleveland70
 Detroit70
 Milwaukee70
 Pittsburgh65-5

(a) Under 100 pounds, 60 off.
 (b) Plus straightening, cutting and quantity differentials; (c) Plus mill, size and quantity extras; (d) Quantity base; (e) New mill classif. (f) Rounds only; (g) 50 bundles or over; (h) Outside delivery, 10c less; (i) Under 3 in.; (j) Shapes other than rounds, flats, fillet angles, 3.25c.

Prices on heavier lines are subject to new quantity differentials: 399 lbs. and less, up 50 cts.; 400 to 3999 lbs., base; 4000 to 7999 lbs., 15 cts., under; 8000 to 14,999 lbs., 25 cts. under; 15,000 to 39,999 lbs., 35 cts. under; 40,000 lbs. and over, 50 cts. under; (except Boston).

†Domestic steel; *Plus quan. extras; **Under 25 bundles; ††50 or more bundles; †New extras apply; ††Base 40,000 lbs., extras on less.

Bars

Bar Prices, Page 78

Carnegie-Illinois Steel Corp. has announced the following delivered prices on hot-rolled carbon steel bars and small shapes: Pittsburgh, 2.075c; Chicago, 2.130c, an increase of \$2 per ton, effective Oct. 1. For other fourth-quarter announcements see page 80.

Pittsburgh — Moderately better backlogs of carbon and alloy steel bars reversed the downward showing during the middle of August. More bar demand is coming from automobile partsmakers, which supplements a continuing participation by jobbers, the general manufacturing trade, railroad car shops and makers of oil refining equipment. No concessions in the bar price from the present 1.95c, Pittsburgh, base on hot-rolled bars and 2.45c, base, for alloy bars are reported.

Cleveland — Specifications from miscellaneous consumers continue at the rapid pace set during August. Cold bar finishers are having difficulty in obtaining deliveries. Warehouse stocks are turning over at a much improved rate, because of delivery conditions in most mills. Continued influx of orders at a time when there has been little activity in the automotive industry, has led many to be optimistic over the outlook for fourth quarter. Prices remain firm at 2.00c., base, Cleveland.

Chicago — Demand continues heavy and producers have made little progress in curtailing extended deliveries. Miscellaneous buying remains strong, and automotive releases are improving, but no noticeable gain is expected until the middle of September. Tractor industry is slightly more active, and the farm implement industry, as a whole, continues to order material at an active rate.

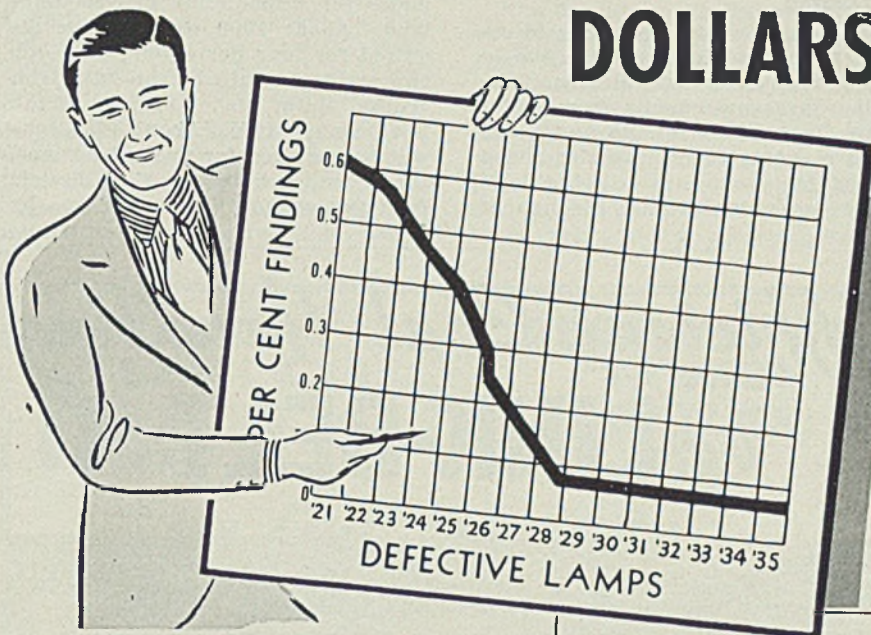
Boston—Steel bar bookings since about Aug. 15 have shown a consistent upward tendency. Consumption is heavy and demand comes from varied sources. In particular, jobbers have bought in carloads for replenishment of stocks. Mills continue to have difficulty in scheduling deliveries to suit buyers. Some improvement has developed in bar demand from railroads.

Plates

Plate Prices, Page 78

Pittsburgh—Plate fabricators still reflect a high rate of activity and in practically all cases have order backlogs that will carry them at least into the early part of fourth quarter. On

A glance at this chart MAY SAVE YOU LIGHTING DOLLARS!



● **FREEDOM FROM DEFECTS**—Tests on over 10,000,000 lamps have revealed that less than 1/10th of 1% of Edison MAZDA lamps have defects that affect their performance in service. The chart shows how research and the precision methods of manufacture have almost completely eliminated, from lamps made by G-E, defects that affect their performance in service.

THE TRUE COST of light is the cost of electricity as well as the cost of the lamps. When you buy lamps, it is well to remember you are also signing up for the current these lamps will use during their life.

Repeated scientific tests by recognized laboratories show that many poor quality lamps are as much as 30% less efficient than Edison MAZDA lamps. This means that many an inferior lamp marked 100 watts actually produces less light than a 75-watt MAZDA lamp. You couldn't afford to use some of these lamps even if you got them free and each one came wrapped in a dollar bill. Even though present day electric rates are lowest in history, there is no use paying for wasted current.

Next time you buy lamps, get your money's worth by asking for Edison MAZDA lamps. They Stay Brighter Longer and don't waste current. General Electric Company, Nela Park, Cleveland, Ohio.

EDISON MAZDA LAMPS

GENERAL  ELECTRIC

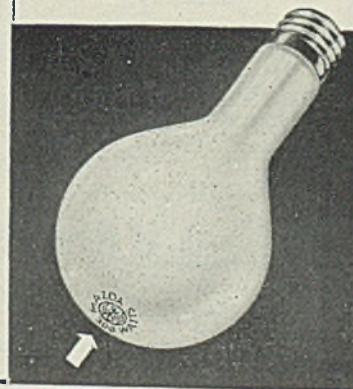
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bids taken Sept. 1 at Louisville, Ky., American Bridge Co. with a \$53,820 tender was low on three all-welded steel dump scows, taking about 450 tons. The plate market is quoted unchanged on the basis of 1.90c, f.o.b. Pittsburgh.

Cleveland — Mills continue to report heavy backlogs, mainly due to extensive buying by railroads. Miscellaneous requirements from boiler shops, high pressure tank and heavy press manufacturers have also added considerably to these backlogs. Steady operation of mills throughout

the remainder of the year seems assured. Prices remain firm at 2.09 1/2c, Cleveland.

Boston—Awards of destroyers and submarines by the navy mean a notable increase in consumption of plates for shipbuilding in New England. About 2000 tons will be required for four destroyers, of which two are to be built by the Bath Iron Works, Bath, Me., and two at the Boston navy yard. About 1250 tons will be required for five submarines, three to be built by the Electric Boat Co., Groton, Conn., and two by

the Portsmouth, N. H., navy yard.

Bath Iron Works has also booked one finishing trawler each for Booth Fisheries Inc. and Trawler Arlington Inc., Boston. These are in addition to three trawlers the company booked some time ago for Bay State Fishing Co., Boston.

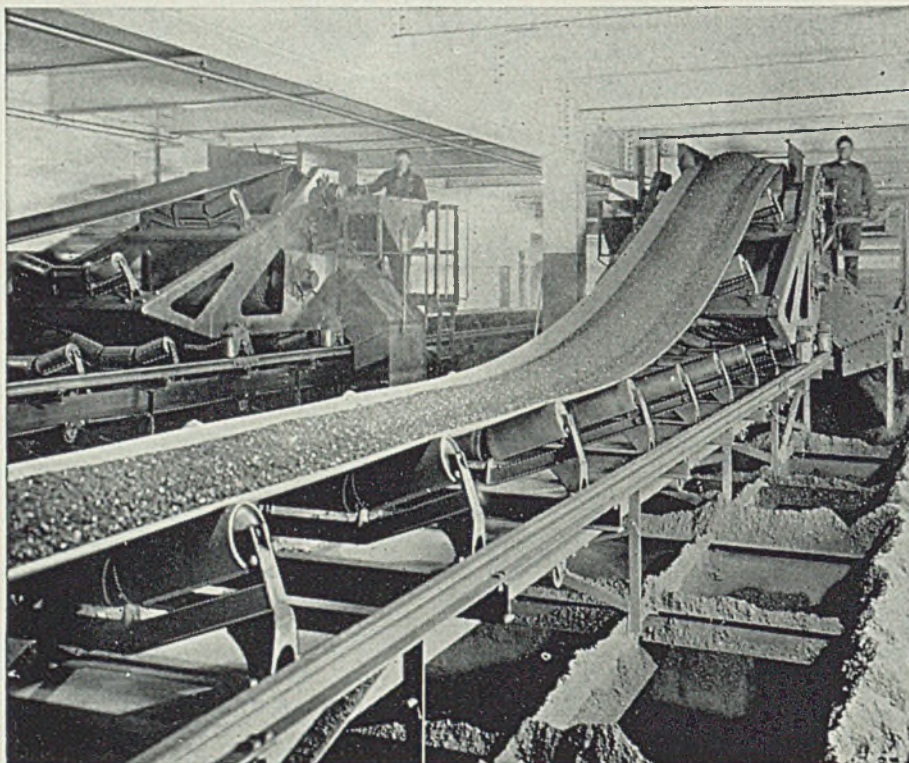
Chicago — Plate shipments continue heavy, due in large measure to active operations of structural fabricators and railroad equipment builders. While new business is made up of relatively small lots, the total is fairly substantial. Tank fabricators still are busy, though new bookings lately have been light. Prices are steady and an extension of the current 1.95c, base price, into fourth quarter is anticipated.

New York—While no action has been announced with respect to domestic prices, plate producers have advanced fourth quarter prices \$2 per ton on shipments to Canada on sizes not made in Canada, in the main over 78 inches in width. This places the Pittsburgh base at 1.65c on this business. On sizes made in Canada United States producers are keeping prices in line with Canadian producers.

Ship work continues active, with some important tonnage expected to be placed soon. Four private yards now are understood to be figuring on the United States liner on which bids are to close Sept. 15. On previous bids Newport News Shipbuilding & Dry Dock Co. was the only bidder. Newport News and Federal Shipbuilding Co. recently booked two destroyers each for the navy, requiring a total of 1800 tons of plates. Norfolk, Va., and Charleston, S. C., navy yards each booked a submarine requiring a total of 500 tons of plates. Laying tentative groundwork for a large ship construction plan, shipping board bureau officials at Washington assert that 350 new ships are needed to put the American merchant marine on even terms with foreign ships. Should private operators approve of the program and take advantage of the proffered subsidies as much as \$500,000,000 might be spent for ship construction, it is said.

Philadelphia — While trading is still fairly brisk, it is less active than a week ago. The one factor in the present lull has been the uncertainty with regard to fourth quarter prices. Present prices, it is now believed, will be generally extended, but there has been just enough uncertainty to cause some buyers to hesitate, it is declared. Bolstering recent buying has been substantial tonnage from the Pennsylvania railroad for car and locomotive repairs. The company's locomotive repair shops, it is said, are now operating at virtual capacity. Further releases from railroads and equipment builders for repairs and new equipment are ex-

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5772-A

ected as the fall season gets under way. The current market is 2.00c, Coatesville, Pa., or 2.09c, Philadelphia.

Seattle—Several important projects are pending and others are developing, but the situation is complicated by threatened interruption of deliveries by water and by uncertain political outlook. Twin Falls, Idaho, is considering a \$120,000 municipal water system, plans including 12½ miles of 24 and 30-inch steel supply pipe.

Contracts Placed

100 tons, pontoons for dredge, Bethel, Alaska, to Washington Iron Works, Seattle.

Contracts Pending

- 1000 tons, two destroyers, Bath Iron Works, Bath, Me.
- 1000 tons, two destroyers, Boston navy yard.
- 900 tons, 34 to 36-inch welded steel pipe, water and power department, Los Angeles; bids Sept. 10.
- 750 tons, three submarines, Electric Boat Co., Groton, Conn.
- 500 tons, two submarines, Portsmouth, N. H., navy yard.
- 450 tons, three all-welded dump scows for Louisville, Ky., engineers; American Bridge Co., Pittsburgh, low on Sept. 1 bid at \$53,820.
- 200 tons, fishing trawler, Bath Iron Works, Bath, Me., for Booth Fisheries Inc., Boston.
- 200 tons, fishing trawler, Bath Iron Works, Bath, Me., for Trawler Arlington Inc., Boston.
- 140 tons, 22-inch welded steel pipe, treasury department, invitation No. 880, Los Angeles; bids opened.
- 100 tons, 14-inch welded steel pipe, water and power department, specification No. 2049; bids opened.

turers have not yet shown appreciable activity since the beginning of the change-over period. The much improved conditions in building construction has accounted for strong demand for galvanized sheets. While new specifications have declined slightly, little improvement in the delivery situation has resulted. Most mills continue to run at approximately 70 per cent of capacity.

Chicago—Automotive sheet releases are increasing and the movement during coming weeks likely will continue upward. Demand from miscellaneous users remains steady

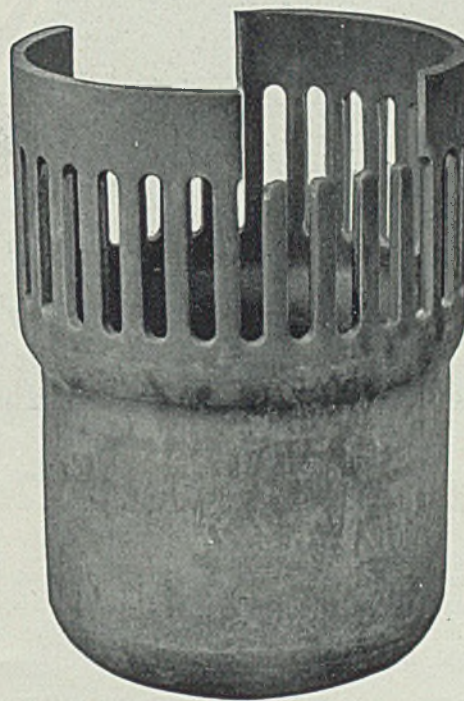
and mill operations hold near capacity. While producers were able to improve somewhat on deliveries during the recent lull in automotive needs, little further progress is anticipated during the next 60 days.

New York—In the absence of definite decision on fourth quarter prices, some sheet buying last week was held up. Buyers generally and particularly the larger ones, are slow in making any moves not absolutely necessary until they know future prices. Late last week there were persistent rumors that galvanized sheets would be advanced and it appeared that if

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Sheets

Sheet Prices, Page 78

Carnegie-Illinois Steel Corp. has announced delivered prices, effective Oct. 1, unchanged from third quarter, except on hot-rolled annealed, No. 24 gage. On the latter a \$2 per ton increase is made, as follows: Pittsburgh, 2.625c, Gary, Ind., 2.080c. Extras for oiling and pickling and for gage are also changed, details being given on page 89.

Pittsburgh—Sheet orders over the past week have generally held to the weekly average of the last half of August, with well diversified buying from jobbers, makers of refrigerators, drums and lockers, and participation from the automotive industry in spite of the latter's present retooling period. Heavy forward buying continues in electrical sheets against the forthcoming \$2 a ton advance.

Cleveland—Automobile manufac-

so they would be one of the exceptions to a generally unchanged market.

Philadelphia—Uncertainty as to fourth quarter prices resulted in somewhat lighter demand for sheets last week. Large buyers, where they encountered deliveries running into October, in practically all cases refused to place business until they knew for a certainty the prices for that position. Meanwhile, some producers withdrew from the market on these more advanced shipments. A feature is releases to auto body makers in this district of some impor-

tant work for 1937 models. This should result, in turn, in heavy steel releases in the near future.

Buffalo—Demand for sheets has increased after an August recession due to smaller automotive shipments. Predictions are that hand mills here will average 75 to 80 per cent of capacity during September with the new strip mill adding steadily to its production.

Cincinnati—Current orders for sheets represent about 85 per cent of capacity, on broad demand without much improvement in automotive specifications. Backlogs have been re-

duced so that deliveries on most grades are prompt. Prices for fourth quarter have not been announced, and bookings for fourth quarter requirements not yet accepted.

Birmingham, Ala.—Three shifts is still the schedule at sheet mill here to meet delivery needs. The market is strong and the activity promises to continue for some time.

Transportation

Track Material Prices, Page 79

Car buying is starting out well with 1700 placed the first week in September. Boston & Maine has awarded 750 gondolas, Maine Central 500 box cars, 150 hoppers and 100 gondolas and the Missouri Pacific 200 box cars.

Union Pacific will start work shortly on 50 gondolas at its Pocatello shops at Boise, Idaho.

Much activity is manifested in placing of track accessories, due largely to the price advance effective Sept. 1. Some buying in the expected fall activity is also evident in rails and cars, though not yet in large volume. Substantial buying of track fastenings recently was done by the Pennsylvania, Baltimore & Ohio, Reading and Seaboard Air Line in the East and the Santa Fe and Chicago Great Western in the West.

Chicago Great Western has distributed 10,000 tons of rails and 9000 tons of fastenings. The Santa Fe has bought 21,000 tons of fastenings and is expected in the market shortly for a rail tonnage.

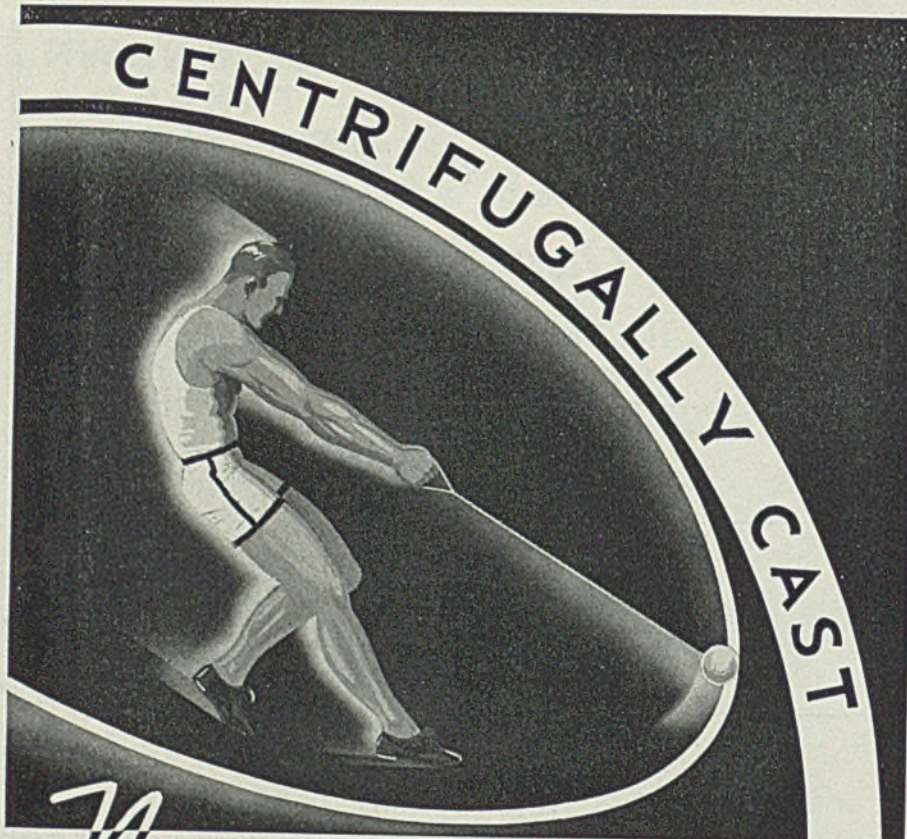
Kansas City Southern is considering bids on 1000 freight cars and 10 locomotives and the Chicago & North Western is inquiring for two seven-car light-weight passenger trains. Receivers of the Wabash railroad have been authorized by the court to buy 5000 tons of rails and fastenings.

Domestic freight car awards in August totaled 3725 units, bringing the total for eight months to 39,183 compared with 7033 in the corresponding period of 1935. Other comparisons follow:

	1936	1935	1934	1933
Jan.	2,050	24	152	3
Feb.	6,900	806	19,725	0
March	632	0	30	5
April	4,427	350	800	50
May	8,900	2	717	8
June	5,220	5,151	1,835	500
July	7,229	500	19	306
Aug.	3,725	200	105	202
8 mos.	39,183	7,033	23,383	1,008
Sept.		875	7	23
Oct.		1,250	75	514
Nov.		100	254	533
Dec.		10,050	110	316
Total		19,308	23,829	2,460

Car Orders Placed

Boston & Maine. 750 fifty-ton gon-



Nature's on our payroll

—or she *should* be. Employing the centrifugal force of nature, putting it to work in our foundries, is our method of producing a better casting of Bronze Alloy, Monel Metal, Nickel, Iron, or Semi-Steel.

ROLLS, SLEEVES, LINERS, BUSHINGS, BEARINGS and CASTINGS produced by this method find their way into the "tough spots" all over the world. Perhaps you have a place or a product that would benefit by their application?

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dolas, to Bethlehem Steel Co., Johnstown, Pa.
 Maine Central, 500 box cars, to Magor Car Co., Passaic, N. J.; 100 gondolas and 150 twin-hoppers, to Bethlehem Steel Co., Johnstown, Pa.
 Missouri Pacific, 200 forty-ton box cars, to Mount Vernon Car Co., Mount Vernon, Ill.

Rail Orders Placed

Chicago Great Western, 8000 tons to Carnegie-Illinois Steel Corp., 2000 tons to Inland Steel Co., Chicago; 9000 tons of fastenings divided among several producers.

Car Orders Pending

Kansas City Southern, 750 box cars, 250 gondola cars.
 Chicago & North Western, two seven-car, light-weight passenger trains.

Pipe

Pipe Prices, Page 79

Pittsburgh — Discounts on all forms of seamless pipe, mechanical tubing, boiler tubes and seamless tubing are unchanged for fourth quarter. No announcements have as yet been made on lap or butt weld pipe, although an early price stand is expected to be taken. Orders for tubular products appear to be fairly steady. The San Antonio Utilities League is urging construction of an 18-inch pipe line to bring municipal natural gas to that city. Gulf Production Co., Burkburnett, Tex., is expected to start construction of a 55-mile, 6-inch line from Altus, Okla. American Oil Co., Baltimore, is planning to make improvements to its Hays, Pa., terminal on the Monongahela river, including a small 6-inch pipe line at the terminal.

Cleveland—Jobbers have recently come into the market for considerable tonnage of pipe, to meet the heavy demand from industrial and domestic sources. Backlogs for merchant pipe remain at two to three weeks, even though mills have been running close to capacity for some time. Miscellaneous demand for cast pipe has held up well the last few weeks. J. B. Clow & Sons Co., this city, recently received a 420 ton WPA order for Akron, O.

Chicago — New business in cast pipe is quiet. With shipments against contracts steady, producers' backlogs are receding. Quickening in deliveries is expected to develop during the remaining months of mild weather, especially for projects which have been delayed. Inquiries in most instances involve only small lots.

Boston—New lettings of cast pipe aggregate more than 300 tons. Considerable business is pending, the largest inquiry involving 325 tons.

Philadelphia — Prices have been extended on boiler tubes for fourth

quarter, and trade opinion is that there will be no change in merchant pipe and tubular goods in general.

Bartlesville, Okla. — J. F. Pritchard Co., Kansas City, Mo., has been awarded a pipe line contract by the Empire Companies for 14 miles of 4-inch gasoline line from Odessa, Texas to their refinery and two gathering lines, four miles of 5½-inch and four miles of 16-inch. All lines will be Lindewelded.

Seattle—Demand for cast pipe continues slow, and new projects are infrequent. H. G. Purcell, for United States Pipe & Foundry Co., Burlington, N. J., has taken 250 tons of

4, 6 and 8-inch cast pipe for Union Gap, Wash.

Cast Pipe Placed

2820 tons, 48-inch, class B, for treasury department, Atlantic City, N. J., to Warren Foundry & Pipe Corp., Phillipsburg, N. J.

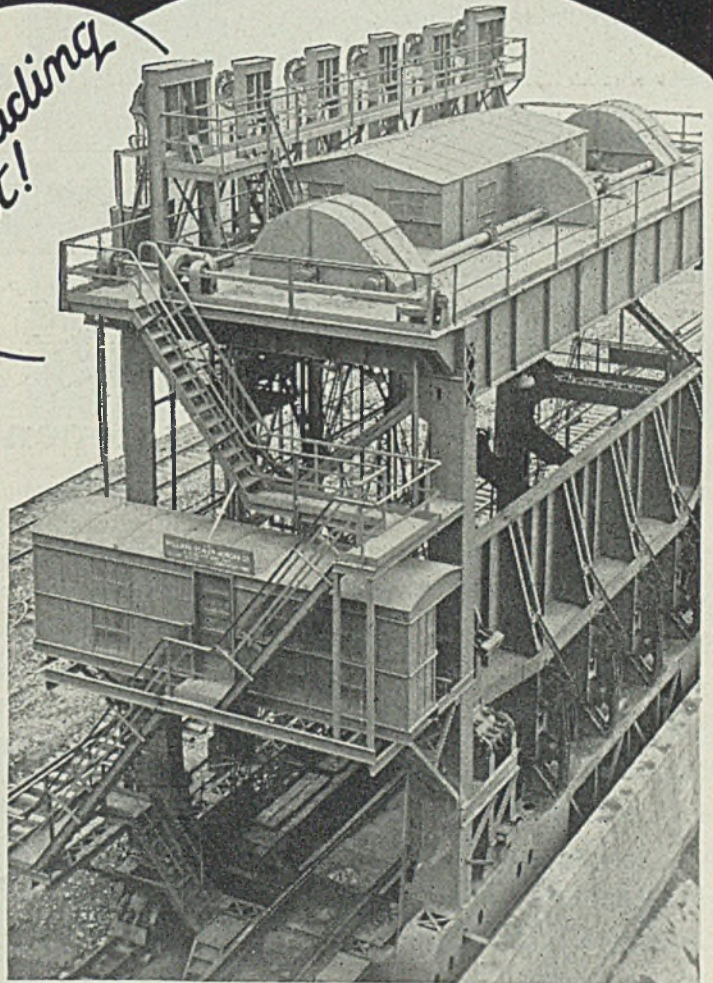
2000 tons, for treasury department, New York, to Warren Foundry & Pipe Corp., Phillipsburg, N. J., Donaldson Iron Co., Emaus, Pa., and United States Pipe & Foundry Co., Burlington, N. J.

1500 tons, 4, 6, 8 and 12-inch, East Smithfield, R. I., to Warren Foundry & Pipe Corp., Phillipsburg, N. J.

377 tons, North Falmouth, Mass., to United States Pipe & Foundry Co.,

Wellman Car Dumpers

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Strip

Strip Prices, Page 79

Cleveland — Specifications from miscellaneous consumers continue to tax the delivery situation. General requirements are well diversified but for cold-rolled narrow widths predominate. The general tendency has been to anticipate their needs a little further in advance, because of increasing difficulty in deliveries.

Chicago—Some improvement is noted in automotive releases, though the tonnage still is relatively small. Demand elsewhere is heavy and is off only moderately from the peak rate of the year. Deliveries on both hot and cold-rolled strip are extended several weeks, with further delays regarded as not unlikely when automotive shipments reach their fall peak. Opening of fourth quarter books is expected to see a continuation of current levels.

Boston—Some attractive business in hot-rolled strip featured the strip steel market here last week. Good business also continues to be booked although the total is not up to the level of July. Mills continue to have difficulty in making deliveries and continue heavily oversold.

New York—Narrow cold strip prices will again be extended, according to present indications. Volume has held up particularly well and there appears to be a disposition on the part of some trade leaders to continue at present levels to avoid any possible disruption. However, no official action has been reported and until then some uncertainty will continue.

Tin Plate

Tin Plate Prices, Page 78

Pittsburgh — Some slight decline in orders for tin plate placed by can-makers last week was discernible. Much present tin plate specifying is becoming more insistent on rush deliveries. In packers' cans a recent highlight has been the West Coast sardine pack which has established a new high. National Can Co., a subsidiary of McKeesport Tin Plate Co., McKeesport, Pa., has closed a contract for the entire can requirements of the Eastern Wine Co., marking a new trend in wine packaging. The market on tin plate holds unchanged at \$5.25 per base box, f.o.b. Pittsburgh.

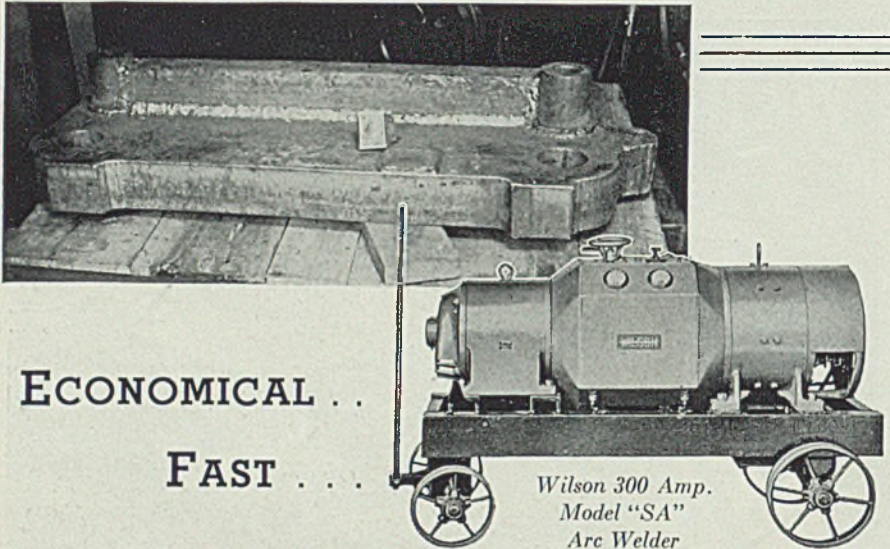
Equipment of the Alloy Welding & Mfg. Co., 1113 Metropolitan street, Pittsburgh, will not be sold until Sept. 9 by David L. Starr. Plaza building, Pittsburgh, receiver. Premises will be open for inspection Sept. 8.

Burlington, N. J., through procurement division, treasury department, Boston.
250 tons, 4, 6 and 8-inch, for Union Gap, Wash., to United States Pipe & Foundry Co., Burlington, N. J.
128 tons, Waterbury, Conn., to Donaldson Iron Co., Emaus, Pa., through procurement division, treasury department, New Haven, Conn.
121 tons, 8 and 10-inch, Hookset, N. H., to Warren Foundry & Pipe Corp., Phillipsburg, N. J., through procurement division, treasury department, Manchester, N. H.
120 tons, Waterbury, Conn., to Warren Foundry & Pipe Corp., Phillipsburg, N. J., through procurement division, treasury department, New Haven, Conn.

100 tons, 12-inch, Medford, Mass., to R. D. Wood & Co., Florence, N. J.

Cast Pipe Pending

4000 tons, specification X-46, 10 and 24-inch, Los Angeles; bids opened.
400 tons, Westchester sanitary sewer commission, White Plains, N. Y.; bids Sept. 11.
325 tons, 12-inch, Newton, Mass.
Unstated tonnage, 1800 feet of 6-inch; bids Sept. 10.
Unstated tonnage, \$175,000 filtration plant, South Milwaukee, Wis.; PWA grant applied for.
Unstated tonnage, New York state highway; bids Sept. 10.



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Arc Welder

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A NATION-WIDE ARC WELDING SUPPLY SERVICE

Few Price Changes For Final Quarter

Pittsburgh — Carnegie - Illinois Steel Corp. has announced opening of books for fourth quarter contracts.

The Corporation's announcement covering prices applying on sales for fourth quarter shipment includes the following delivered prices:

Re-rolling billets, blooms and slabs, Pittsburgh, \$32.50 per gross ton; Chicago and Gary, \$32.60 per gross ton.

Sheet bars, Pittsburgh, \$32.50 per gross ton; Chicago and Gary, \$32.60 per gross ton.

Forging billets, blooms and slabs, Pittsburgh, \$39.50 per gross ton; Chicago and Gary, \$39.60 per gross ton.

Hot-rolled carbon bars and small shapes, Pittsburgh, 2.075c; Chicago and Gary, 2.130c.

Hot - rolled strip, Pittsburgh, 1.975c; Chicago and Gary, 2.080c.

Structural shapes, Pittsburgh, 1.925c; Chicago and Gary, 1.980c.

Plates, Pittsburgh, 1.925c; Chicago 1.980c.

Hot-rolled sheets, Pittsburgh, 10-gage base, 1.975c; Gary, 2.080c.

Hot-rolled annealed sheets, Pittsburgh, 24-gage base, 2.625c; Gary, 2.730c.

Cold-rolled sheets (primes with seconds arising) Pittsburgh, 10-gage base, 2.625c; Gary, 2.730c. Pittsburgh, 20-gage, 3.075c; Gary, 3.180c.

Galvanized sheets, 24-gage base, Pittsburgh, 3.225c; Gary, 3.330c.

Long ternes, unsorted, 24-gage base, Pittsburgh, 3.525c; Gary, 3.630c.

The announcement also provides for the following reductions in extras charged for pickling and oiling sheets 12-gage and heavier, 15c instead of 25c; 13 gage to 16 gage, inclusive, 20c instead of 30c, 17 gage to 21 gage, inclusive, 35c instead of 45c, 22 gage and lighter, unchanged at 45c.

The gage extras for hot-rolled sheets as reflected by this producer's announcement, have been changed to read 10 gage and heavier, base; 11 gage add 5c, 12 gage add 10c, 13 gage add 15c, 14 gage add 20c, 15 gage add 25c, 16 gage add 35c, 11, 12, 13, 14 and 15 gages are up 5c, 16 gage is up 10c.

The foregoing prices which will apply on sales for shipment by the Carnegie-Illinois Steel Corp. to its customers during fourth quarter indicate that due to the advanced prices of scrap and other materials it will be necessary to increase the selling price \$2 per ton on certain products.

All semifinished prices are up \$2 a ton. Hot-rolled bars and small shapes

are up \$2 a ton. Hot-rolled annealed sheets also are up \$2 a ton, while other products are unchanged.

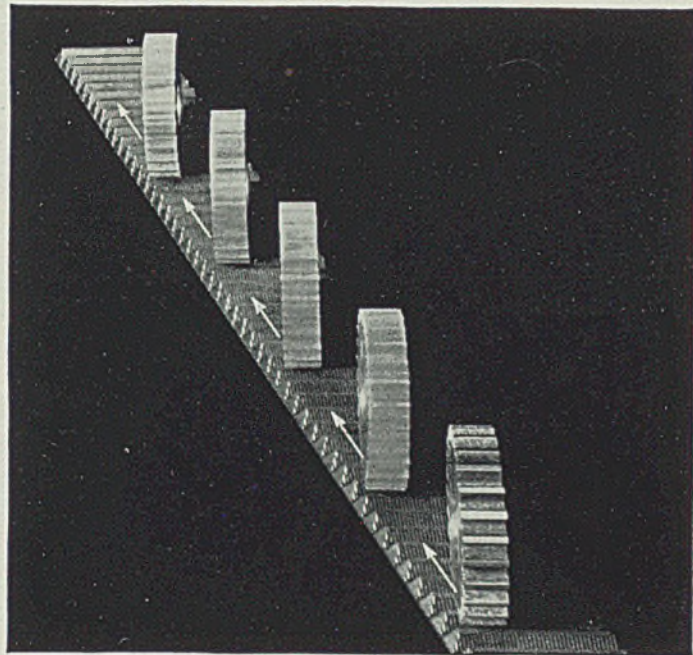
Ferroalloys

Ferroalloy Prices, Page 80

New York—While there is nothing definite, the trade looks for sellers of ferromanganese to open books early this week for fourth quarter at unchanged prices. The current price on ferromanganese is \$75 duty paid, Atlantic and Gulf ports. Specifications

are still holding up well, in keeping with the high rate of steel production and with the outlook in steel promising for over the remainder of the year a continued good movement of ferromanganese is anticipated. Domestic spiegeleisen, 19 to 21 per cent, is \$26, Palmerton, Pa., on lots up to 50 tons, and \$24 on 50 tons and over.

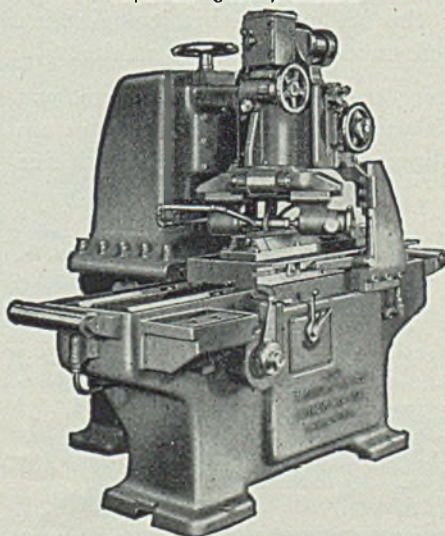
Lea Mfg. Co., Waterbury, Conn., has appointed Lea Products Co., Montreal, Que., as exclusive agent in Canada for its entire line of plating, buffing and polishing supplies.



All gear design starts from a basic rack. That is why Michigan crossed axes finishing—using a rack—consistently produces more accurate gears.

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Minimum Tool Costs—the lowest for any finishing process—is repeatedly proven by the Michigan Gear Finisher through reports such as this one from a leading manufacturer. These two qualities—accuracy and lower gear costs—combined with flexibility, are important factors in the popularity of this machine among gear producers irrespective of production quantity.

MICHIGAN TOOL COMPANY
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Wire

Wire Prices, Page 79

Cleveland—Specifications for the general run of wire products are encouraging in view of the definite slump in requirements from the automotive trade. Bright wire is in greatest demand. Backlogs have been steadily increasing, until now deliveries have been extended to one month.

Pittsburgh—Movement of wire

products over the past week has held close to the weekly average during August. Irregularities in nail prices continue to be noted, though manufacturers' wire items are holding firm. The fourth-quarter market on wire products, both merchant and manufacturing, is expected to be announced this week.

Chicago—While August developed a small decrease in wire business, sales and specifications still are relatively brisk. Better releases from automotive interests are due soon

and favorable prospects continue for miscellaneous users of manufacturers' wire. Wire consumers have shown little concern over possible price changes and buying has been predicated largely on actual requirements.

Boston — Business in manufacturers' wire is good, although not as heavy as during June and July. Prices are firm and unchanged. The only exception is on steel nails which continue easy, at \$1.80 to \$1.90, Pittsburgh, per 100-pound keg.

New York—Sellers doubt if books for fourth quarter will be opened on wire and wire products much before the middle of the month, judging from mill indications. This expected delay is taken in some quarters to indicate an advance in some lines particularly as no advance was made in wire products for third quarter when most other lines were marked up.

Shapes

Structural Shape Prices, Page 78

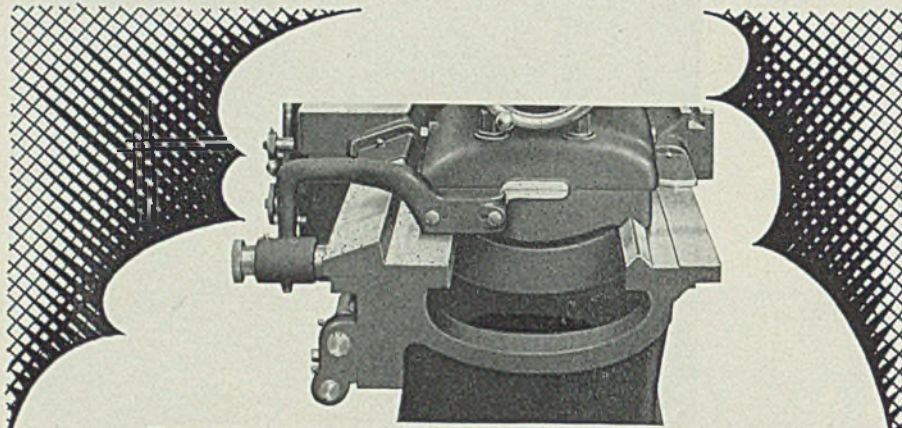
New York—Heavy awards featured the market. In addition to a number of large lots, many small tonnages were placed and the pending list continues to be swelled by many new projects. Fabricating shops are active and prices on erected work show an improvement. The price on plain structural material continues firm at 2.00c, Bethlehem, Pa.

Pittsburgh — Contract for 3500 tons in dam No. 21 on the Mississippi river at Quincy, Ill., has been entered by American Bridge Co., Pittsburgh. Blaw-Knox Co. has closed on 900 tons for transmission towers placed by the Cincinnati Gas & Electric Co., although other structural contracts and inquiries have been fewer the past week. Plain structural shapes remain quoted at 1.90c, base, Pittsburgh, with an early announcement expected on fourth-quarter plain material base.

Cleveland — Fabricators continue to operate at capacity, with work on books to keep them active for two or three months. Some have dis-

Shape Awards Compared

	Tons
Week ended Sept. 4	11,129
Week ended Aug. 28	30,731
Week ended Aug. 21	31,418
This week, 1935	15,746
Weekly average, 1935	17,081
Weekly average, 1936	22,690
Weekly average, August	28,225
Total to date, 1935	563,247
Total to date, 1936	816,866

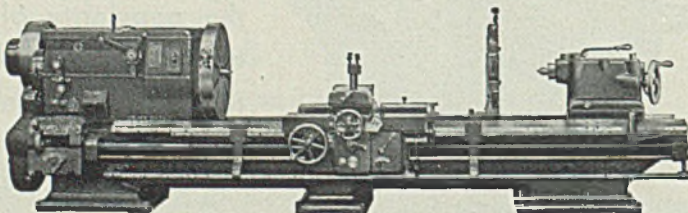


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The R. K. LeBlond Machine Tool Co.
Cincinnati, Ohio



30-inch
Heavy Duty
Engine Lathe

continued submitting bids on small jobs, unless ideal arrangements are available. Most mills are having difficulty in meeting delivery schedules, thus upsetting the operating plans of fabricators. The hockey rink job for this city has been definitely postponed until next year. No steel awards have yet been announced for three state highway bridges now pending. Bids on the easterly sewage works at Cleveland, involving 275 tons, were opened Sept. 3, but no award was announced.

Chicago—Fabricated shape orders and inquiries are light, but a fair volume of business is pending and fabricators continue busy against old orders. A moderate tonnage remains to be placed for Mississippi river dams, while small inquiries, many of which are for private projects, are numerous. Shape mills still encounter difficulty in satisfying delivery requests of buyers.

Boston—Lettings included two Maine highway bridges aggregating 585 tons. A large amount of tonnage is under negotiation for early closing. In addition, considerable tonnage is involved in many public projects slated to come out for bids shortly. Many bridge repairs and replacements necessitated by spring floods will be deferred until early next year. Erected prices show a tendency to go higher, ranging from \$75 to over \$80 per net ton for different kinds of work. Plain structural material continues firm at 2.00c base, Bethlehem, Pa., equivalent to 2.305c delivered, Boston.

Philadelphia—Armory work, comprising 1400 tons for a project at Teneck, N. J., features new demand. Also outstanding is state bridge work, involving more than 1100 tons for three projects, on which bids were opened Sept. 4. Two awards involved approximately 1200 tons.

San Francisco—While over 37,000 tons of structural material is either up for figures or pending, including 20,000 tons for the Federal building and 12,000 tons for the Union station, both in Los Angeles, awards were limited to lots of less than 100 tons. So far this year 131,523 tons have been booked as compared with only 75,361 tons for the corresponding period in 1935.

Seattle—New projects are developing but plans for industrial expansion are being delayed in view of political uncertainty and labor unrest. Meanwhile, fabricating plants are active and have a large volume of work on the books. Bureau of roads will ask bids soon for bridges in Montana, one at St. Regis, estimated at \$43,000 and a second over the Bitterroot river to cost \$90,000.

fare island, New York, to Harris Structural Steel Co., New York.
900 tons, transmission towers, Cincinnati, for Cincinnati Gas & Electric Co., to Blaw-Knox Co., Blawnox, Pa.
810 tons, two plant additions, Niles, O., and Warren, O., for Republic Steel Corp., Cleveland, to Ohio Structural Steel Co., Newton Falls, O.
670 tons, three manufacturing buildings, Ciba Pharmaceutical Products Inc., Summit, N. J., to Breen Iron Works, Newark, N. J., through Walter Kidde & Co., New York.
640 tons, Pennsylvania railroad bridge, Columbus, O., to Bethlehem Steel Co., Bethlehem, Pa.
530 tons, dock construction, Sinclair

Refining Co., Marcus Hook, Pa., to Belmont Iron Works, Eddystone, Pa.
425 tons, state bridge, Lewiston, Me., to Phoenix Bridge Co., Phoenixville, Pa.
310 tons, state highway bridge, Springfield, W. Va., to Fort Pitt Bridge Works, Pittsburgh.
289 tons, intake structure for tunnels, Ft. Peck dam, Ft. Peck, Mont., to Midland Structural Steel Co., Chicago.
250 tons, Capitol bus terminal, Fifty-first street and Seventh avenue, New York, to Dreier Structural Steel Co., New York.
180 tons, bridge WPGM 958-A, Carson county, Texas, to Capital Iron Works Co., Topeka, Kans.

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110 YEARS' IRON- AND STEEL-MAKING EXPERIENCE



Shape Contracts Placed

4300 tons, six hospital buildings, Wel-

- 175 tons, state highway bridge, Henderson, N. C., to Southern Engineering Co., Charlotte, N. C.
- 160 tons, state bridge, Clinton, Me., to American Bridge Co., Pittsburgh.
- 145 tons, bridge R-118-B, Clarke county, Mississippi, to Virginia Bridge Co., Roanoke, Va.
- 145 tons, state highway bridge, Indiana City, Pa., to American Bridge Co., Pittsburgh.
- 135 tons, service station, Paul Regan, Evanston, Ill., to Wendnagle & Co., Chicago.
- 125 tons, building, International Printing Ink Co., Newark, N. J., to Savary & Glaeser, Dunellen, N. J.
- 120 tons, viaduct, Havelock, Nebr., to Lincoln Steel Works, Lincoln, Nebr.

- 120 tons, state highway bridge, Wykoff, Minn., to American Bridge Co., Pittsburgh.
- 100 tons, synagog, Brooklyn, N. Y., to Dreier Structural Steel Co., New York.
- 100 tons, alterations, International Tailoring Co., New York, to Dreier Structural Steel Co., New York.
- 100 tons, taxpayer building, Broadway and Worth streets, New York, to Dreier Structural Steel Co., New York.
- 100 tons, alterations, Garment Center building, New York, to Taylor-Fichter Construction Co., New York.
- 100 tons, building, Ballantine Brewery, Newark, N. J., to Breen Iron Works,

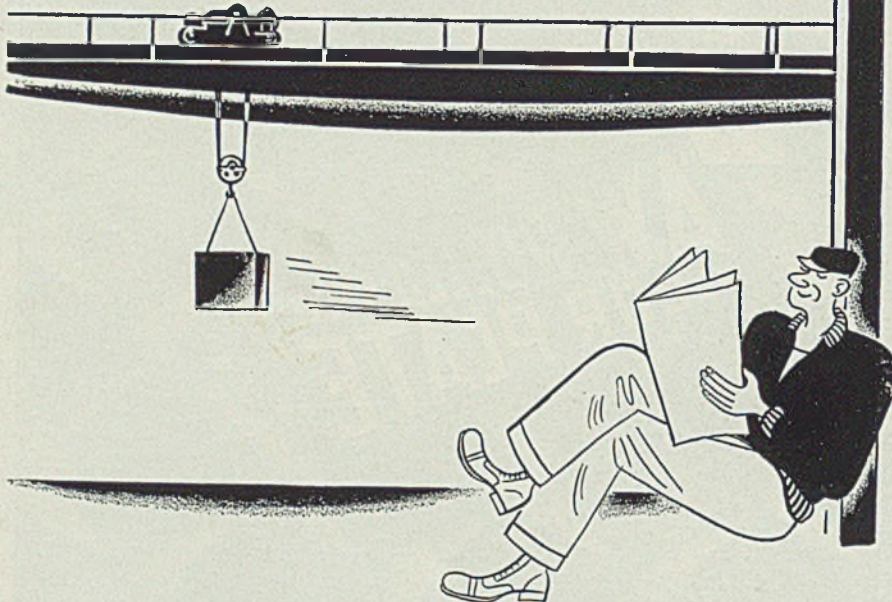
- Newark.
- 100 tons, building, navy yard, Brooklyn, N. Y., to Phoenix Bridge Co., Phoenixville, Pa.
- 100 tons, machinery and dredge for New York-Alaska Dredging Corp., to Washington Iron Works, Seattle.

Shape Contracts Pending

- 6500 tons, assembly plant, Linden, N. J., for General Motors Corp.; American Bridge Co., Pittsburgh, low.
- 6000 tons, west side elevated highway extension, Ninety-eighth to 111th streets, New York; low bidder, Del Balso Construction Co., New York.
- 3500 tons, state bridge, Turners Falls, Mass.; bids out soon.
- 2500 tons, grade crossing elimination, for various railroads, Buffalo; bids to state highway department, Albany, N. Y., Sept. 15.
- 1860 tons, state bridge, Deerfield-Sunderland, Mass.
- 1500 tons, state bridge, Lewiston-Auburn, Me.
- 1400 tons, armory, Teaneck, N. J.; bids postponed to Sept. 21.
- 1100 tons, state bridges, Mississippi.
- 1000 tons, state bridge, St. Louis Park, Minn.
- 770 tons, state bridge, Huntington, Mass.; bids soon.
- 700 tons, subway section No. 8, New York; bids Sept. 11.
- 600 tons, library building, Howard university, Washington; bids Sept. 15.
- 600 tons, Brooklyn state hospital building, Brooklyn, N. Y.; new bids Sept. 16.
- 600 tons, state bridge, Chesterfield, N. H.; bids soon.
- 600 tons, state bridge, Oxford, N. H.; bids soon.
- 590 tons, East Thirty-eighth street tunnel, construction shaft, Long Island City, N. Y.; bids Sept. 15.
- 475 tons, bridge over Central Vermont tracks, Monson, Mass.; low bidder, B. A. Gardetta, Ashley Falls, Mass.
- 460 tons, underpass, Gardner, Mass.; bids out soon, including 151 tons steel piling.
- 417 tons, two bridges and underpass, Barbers crossing, Worcester, Mass.; bids out soon.
- 400 tons, refinery unit for Shell Petroleum Co., St. Louis; Foster-Wheeler Co., New York, contractor.
- 357 tons, through truss bridges, Bedford county, Pennsylvania; bids to state highway department, Harrisburg, Pa., Sept. 18.
- 342 tons, two pony truss bridges, Indiana county, Pennsylvania; bids to state highway department, Harrisburg, Pa., Sept. 18.
- 300 tons, state highway bridge, Clark county, Nevada.
- 283 tons, four underpass bridges, Saugus, Mass.; bids soon.
- 250 tons, plant addition, Central Slipper Co., Clifton, N. J.
- 213 tons, state bridges, Colorado.
- 200 tons, New Haven railroad bridge, Providence, R. I.
- 200 tons, building at 24 Madison avenue, New York.
- 200 tons, four plant additions, Universal Folding Box Co., Hoboken, N. J.
- 200 tons, warehouse, Albany, N. Y., for National Casket Co., Boston.
- 200 tons, addition to Elmira reformatory, Elmira, N. Y.
- 175 tons, armory for the naval militia, Camden, N. J.; bids to be opened Sept. 14.
- 175 tons, high school, Dover, N. J.; Breen Iron Works, Newark, N. J., low bidder.
- 170 tons, state highway bridge, New Hartford, Conn.

WANTED:

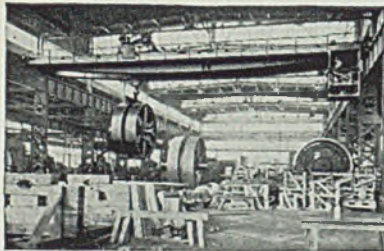
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- 169 tons, two bridges, Malden-Revere, Mass.; bids soon, including 53 tons steel piling.
- 150 tons, theatre and store building, Clifton, N. J.; bids by Eugene De-Rosa, New York.
- 145 tons, overpass, Mansfield, Mass.; low bidder, Arute Bros., Roxbury, Mass.
- 140 tons, bridge, Walsenburg, Colo., for Denver & Rio Grande railway.
- 122 tons, state bridge, Cocasset street, Foxboro, Mass.; bids soon.
- 100 tons, state bridge, Millbridge, Me.; low bidder, Lackawanna Steel Construction Corp., Buffalo.
- 100 tons, state bridge, Attleboro, Mass.; bids soon.
- 100 tons, overpass, Grafton, Mass.; bids soon.
- 100 tons, overpass, Sharon, Mass.; bids soon.
- 100 tons, Andover street underpass, Peabody, Mass.; bids soon.
- Unstated tonnage, bureau of roads bridges at St. Regis and over Bitterroot river, Montana; bids soon.

running close to capacity in clearing up orders that in some cases have been on their books for over a month. Jobbers have shown considerable activity in view of the rapid turnover of their stocks. Most demand has come from private sources, but much tonnage is expected to result from public projects now pending. Prices remain firm.

Chicago—Orders include several large lots, the leading one being 1000 tons for a local housing project. Two private buildings involve 675 tons. Distributors are receiving a fair tonnage made up of small lots for pri-

ivate construction, but a lull currently exists in orders for highway work. Shipments against old contracts continue heavy, and pending business points to a maintenance of active deliveries during the next 30 days.

Boston—While lettings are confined mainly to small orders, they aggregate a fair tonnage. Prospects for future business are bright. Considerable tonnage will be needed in connection with public work to come out in the various New England states in the near future. The market continues 2.10c base, Buffalo, for new billet rolled material but con-

Reinforcing

Reinforcing Bar Prices, Page 79

New York—Lettings aggregated around 1000 tons, with projects under negotiation for early closing involving several thousand tons. In addition, many small jobs are being placed consistently. The market continues to be quoted at 2.05c base, Pittsburgh, for new billet bars, this level being shaded \$5 to \$6 a ton in some instances where especially desirable tonnages are involved.

Pittsburgh—New billet steel reinforcing bars at the third-quarter official market of 2.05c, Pittsburgh, as quoted by distributors for straight lengths in carload lots, will be subject to fourth-quarter price consideration at an early date. Up through late last week prices for new billet and rail steel bars for reinforcing purposes at 1.90c on the same basis, had not been announced for fourth quarter. Inquiry for bars for outside construction work appears to have tapered somewhat.

Cleveland—While many small orders continue to feature the concrete reinforcing bar market, there is absence of large orders. Mills are

Concrete Awards Compared

	Tons
Week ended Sept. 4	3,935
Week ended Aug. 28	7,302
Week ended Aug. 21	7,720
This week, 1935	85,781
Weekly average, 1935	6,862
Weekly average, 1936	6,690
Weekly average, August....	7,011
Total to date, 1935	239,245
Total to date, 1936	240,830

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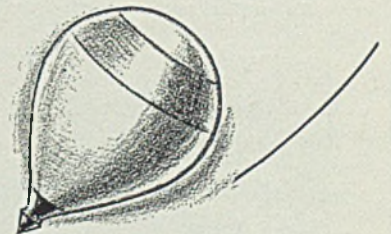
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Titan Metal Manufacturing Company

Brass and Bronze Products

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tinues to reflect weakness in connection with attractive business.

Birmingham, Ala. — Production and shipment continues strong with demand in local and surrounding sections quite active. Much tonnage is being moved to the West on large federal projects. A proposed river development on which work is to start in the next 60 days gives promise of further demands also.

Seattle—Mills are operating overtime and in some instances are pressed in making deliveries. Small projects in less than 100-ton lots have aggregated impressive totals.

United States engineer, Kansas City, Mo., opened bids for furnishing 3575 tons for the Fort Peck dam, Montana, Aug. 31.

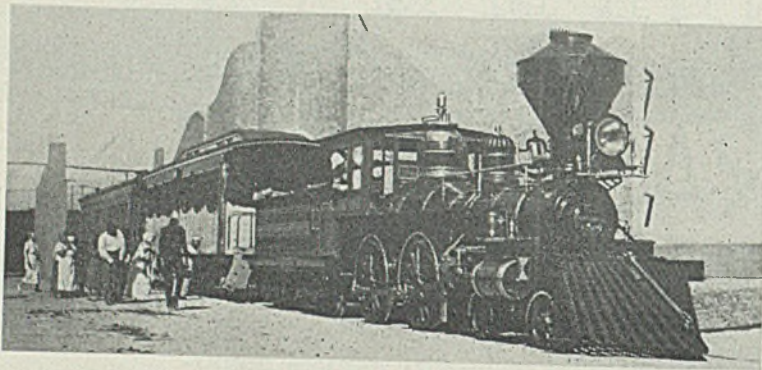
San Francisco—The market was active, close to 2000 tons being booked. This brought the aggregate for the year to 176,110 tons as compared with 165,846 tons for the corresponding period in 1935. California Hardware Co. are low on 458 tons for the treasury, Los Angeles.

Reinforcing Steel Awards

1000 tons, Julia Lathrop housing project, Chicago, to Joseph T. Ryerson & Son Inc., Chicago; United States Fireproofing Co., Chicago, general contractor.

- 440 tons, rail steel bars, Woolworth Co. building, Minneapolis, to Laclede Steel Co., St. Louis.
- 435 tons, state bridge, route 6, section 7, New Jersey, to Igoe Bros., Newark, N. J., through Maggi & Schoonover, Ridgewood, N. J.
- 350 tons, building, Liquid Carbonic Corp., Chicago, to Joseph T. Ryerson & Son Inc., Chicago.
- 350 tons, three schools, Los Angeles, to Soule Steel Co., Los Angeles.
- 325 tons, building, Spiegel Mav Stern Co., Chicago, to Joseph T. Ryerson & Son Inc., Chicago.
- 260 tons, new billet bars, three paving jobs, Minnesota, to Laclede Steel Co., St. Louis.
- 140 tons, West Vernon avenue school, Los Angeles, to Consolidated Steel Corp., Los Angeles.
- 125 tons, addition to Humphreys avenue school, Los Angeles, to unnamed interest.
- 110 tons, Broadway school, Los Angeles, to unnamed interest.
- 100 tons, procurement division, Treasury department, New York, to W. Ames & Co., Jersey City, N. J.
- 100 tons, three manufacturing buildings, Ciba Pharmaceutical Products Inc., Summit, N. J., to Concrete Engineering Co., New York, through Walter Kidde & Co., New York.
- 100 tons, mausoleum, Inglewood, Calif., to unnamed interest.
- 100 tons, Lafayette junior high school, Los Angeles, to Blue Diamond Corp., Los Angeles.

Behind the Scenes with STEEL

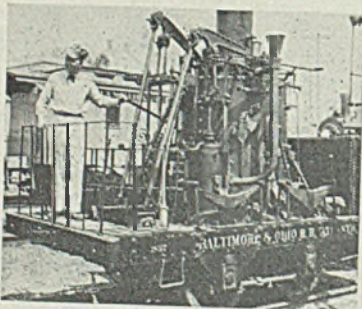


Off the Beaten Track At Transport Drama

NOT having much to do the other afternoon, we wandered down behind the scenes at Ed Hungerford's *Parade of the Years* pageant of transportation at the Great Lakes Exposition, and despite the fact that the expo is now in its last month it is worth reporting that this one-hour and 20-minute saga packs a terrific punch and is by all odds the stellar attraction on the grounds.

Behind the scenes the pageant resembles a combination railroad yard, stable, museum, moving picture set and airport, if you can imagine what that would be. It covers 5 acres. From the wings and onto the expansive stage emerge for fleeting glimpses about every form of transport vehicle the country has ever known.

The pageant is similar to the *Wings of a Century* feature presented at the Chicago Century of Progress, but has been amplified, improved and localized. To us the most interesting feature



was the lineup of antique and modern locomotives in the pageant. In their appearance and design is reflected a century of development in metals and manufacturing. Take a look at the old B. & O. Atlantic, shown below and try to figure out how that mass of rods, levers and gadgets ever moved a train of cars. Then take a gander at the old L. S. & M. S. locomotive above which is shown hauling Lincoln's funeral train on its trip west.

Old No. 999, which years ago made a record speed of 112 miles per hour outside of Buffalo, snorts onto the stage and skids her drivers about 10 feet in coming to a stop. A favorite museum piece of Henry Ford, the old Sam Hill locomotive, puffs into view.

Driving of the spike in the first transcontinental railroad is impressively dramatized.

The locomotives were loaned by their owners to Mr. Hungerford, who is "nuts" on railroading and is probably better versed on its history than any other person in the world. Some of them required a little touching up before they would run; for instance, the Sam Hill needed a new cab and tender sills, but they are all there.

The pageant will be put on at the forthcoming New York exposition in 1939 or 1940, although probably in somewhat revised form. If you want a genuine thrill and a chance to see pages of history books come to life, don't miss it. Just tell your secretary to remind you about this three years hence.

By the way, we understand Mr. Hungerford is now in Syracuse, planning to rip off a little pageant of railroading there, coincident with official removal of the N.Y.C. tracks from the center of the main drag.

—SHIRDLU

Reinforcing Steel Pending

- 3575 tons, Fort Peck, Montana, dam project; bids in to United States engineer, Kansas City, Mo.
- 1750 tons, government printing office warehouse addition, Washington; low bidder, Chas. H. Tompkins, Washington.
- 1350 tons, grade crossing elimination for several railroads, Buffalo; bids to state highway department, Albany, N. Y., Sept. 15.
- 1000 tons, plaza at Weehawken, N. J., for Midtown-Hudson tunnel, New York; bids Sept. 8.
- 682 tons, hospital, Northport, N. Y.; low bidder, White Construction Co., New York.
- 500 tons west side elevated highway extension, Ninety-eighth to 111th street, New York; low bidder, Del Balso Construction Co., New York.
- 458 tons, Treasury department, schedule 13913, list 1741, Los Angeles; California Hardware Co., Los Angeles, low.
- 400 tons, subway section No. 8, New York; bids Sept. 11.
- 300 tons, penitentiary building, Menard, Ill.; Wullmer Construction Co., Alton, Ill., general contractor.
- 293 tons, state bridge, Deerfield-Sunderland, Mass.; bids soon.
- 225 tons, Treasury department, New York; Mohawk Steel Co., Troy, N. Y., low bidder.
- 220 tons, grade crossing elimination, Ashburnham, Mass.; low bidder, G. Rossi & Son, Lewiston, Me.
- 169 tons, two bridges, Malden-Reve, Mass.; bids soon.
- 162 tons, state bridge, Huntington, Mass.; bids soon.
- 160 tons, four state underpass bridges, Sangus, Mass.; bids soon.
- 112 tons, bridge over Central Vermont tracks, Monson, Mass.; low bidder.

B. A. Bardetta, Ashley Falls, Mass. 102 tons, two bridges and underpass, Barbers crossing, Worcester, Mass.; bids soon.
 100 tons, overpass, Mansfield, Mass.; low bidder, Arute Bros., Roxbury, Mass.
 100 tons, state bridge over New Haven railroad, Attleboro, Mass.; bids soon.
 100 tons, state overpass over Boston & Albany railroad, Grafton, Mass.; bids soon.
 100 tons, state overpass, Sharon, Mass.; bids soon.
 100 tons, Bremerton, Wash., post-office; MacDonald Building Co., Tacoma, Wash., general contractor.

ducers opened books for fourth quarter last week and at once closed several thousand tons, mainly foundry iron. The price is unchanged at \$20.50, Everett, Mass., furnace, for the base grade of foundry iron. Demand for small lots of foundry iron is quite active. Foreign foundry iron continues to be sold in fair volume, at 50 cents to \$1 less.

New York—Although prices have been extended on pig iron, sellers point to the possibility of an increase later in the year. This belief is based on increasing costs, and stronger de-

mand. Included in strengthening factors at this time are also stronger prices on imported iron, and on foreign ore on which certain eastern producers rely to a large degree.

Philadelphia—With pig iron prices extended for fourth quarter, some routine contracting for that position is noted. Meanwhile, specifications are holding up well; in fact, the general trend since early summer appears to have been slowly but steadily upward in this respect.

Buffalo—Opening of books for fourth quarter has seen a rush to cover. This trend has been hastened

Pig Iron

Pig Iron Prices, Page 80

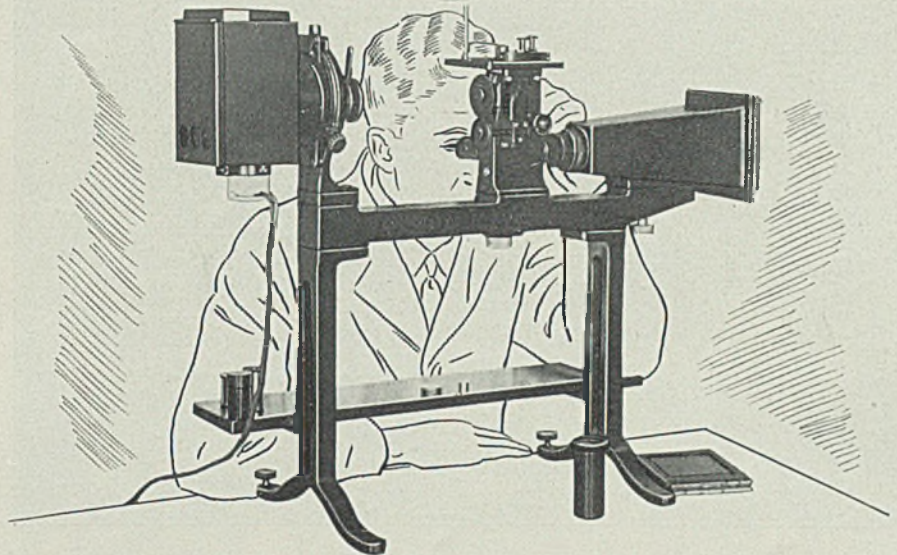
Pittsburgh—According to well-founded report, Allegheny Steel Co., Brackenridge, Pa., recently completed the purchase of about 97,000 tons of basic pig iron for shipment via all-water to its two open-hearth plants on the Allegheny river. The order was divided among at least three blast furnace interests in the Pittsburgh and Wheeling districts. In part, the size of the order is necessitated by Allegheny Steel Co.'s reopening of the former West Penn Steel Co.'s open-hearth furnaces, which are making steel for the recently acquired West Leechburg division. Shipments will carry over into next year. The market on basic iron is quoted \$19 a ton, f.o.b. Pittsburgh district furnace, with an allowance of 60 cents a ton on water shipments within the Pittsburgh district for 400 tons or more. The price at which this large tonnage was negotiated is unstated, but obviously it would take advantage of the river delivery deductible clause.

Cleveland—Books for the fourth quarter have been opened at unchanged prices, \$19.50 for foundry and malleable grades. Shipments continue, in small lots, at the steady rate set through August. Sales have held up remarkably, in view of the lack of activity in auto foundries. A few inquiries have been noticed for September and last quarter deliveries.

Chicago—Opening of fourth quarter books with prices unchanged has been accompanied by a substantial volume of orders. Consumers anticipate heavy needs during the balance of the year and are interested in obtaining protection. August shipments were 10 to 15 per cent heavier than in July and a further upturn is in prospect for September. Automotive foundries are increasing production, and while tractor and farm implement manufacturers still are in a seasonally quiet period, the outlook for the balance of the year as well as 1937 is exceptionally bright.

Boston—Domestic pig iron pro-

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by soaring scrap prices and scarcity of old material. August shipments exceeded those of July by a small margin. Ten blast furnaces are in production and another is being made ready for operation although the date of its activity has not been fixed.

Cincinnati—Prices of pig iron have been reaffirmed for the fourth quarter, and books opened. High rate of melt in the third quarter means little carryover to the next, and some furnace interests see in recent shipment gains, a trend upward for a

larger tonnage in the last three months. A new furnace of the Hamilton Coke & Iron Co., to replace one dismantled, was put in blast last week.

Toronto, Ont.—While there has been some improvement in pig iron sales recently, the outlook for the future is not as bright as a few months ago. Lack of rail and rolling stock orders is reflected in some curtailment in operations although foundries maintain active operations. Pig iron sales for the week continued

above 700 tons, with individual orders ranging from 50 to 100 tons. No large tonnage orders were placed and melters are not placing forward delivery contracts. Prices are firm and unchanged.

St. Louis—Only a fair amount of business was placed when books for fourth quarter pig iron orders were opened last week. However, makers believe September will show a heavy buying movement, probably the largest of the year. The market is strong, and there is a feeling that prices will advance during the quarter.

Birmingham, Ala.—Fourth quarter quotations on pig iron in the South will remain unchanged at \$15.50 for No. 2 foundry. Numerous small lot orders are being received, and the aggregate tonnage warrants continued operation of 10 blast furnaces, with little iron going to surplus stock. Pipe and stove foundries continue active.

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THE BISSETT STEEL COMPANY
CLEVELAND
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FINE TOOL STEELS
 TUNGSTEN CARBIDE DIES & TOOLS

Scrap

Scrap Prices, Page 81

Pittsburgh — Another 50-cent advance in scrap prices for delivery to the Pittsburgh district occurred last week as mill buyers tested the market to a minor degree at the \$17.50 level for No. 1 melting steel. Choice melting steel where guaranteed delivery can be given appears to be in stronger favor by consumers as evidenced by a successful bid to the Baltimore & Ohio last week of \$17.65 and to the Pennsylvania later in the week at better than \$18. Both latter prices represent an advance of almost \$1 a ton from the successful bids of a month ago. For Pittsburgh district shipment hydraulic compressed sheet scrap is now quoted \$17 to \$17.50; railroad steel wheels, knuckles and couplers, \$19.50 to \$20; railroad springs, \$20 to \$20.50; low phos billet crops, \$20 to \$20.50, and machine shop turnings, \$12 to \$12.50.

Cleveland — Prices of various grades of steel and iron scrap have advanced 50 cents to \$1.50 per ton. Melters are not buying in tonnages and restrictions on shipments are laid by some consumers. Considerable scrap is being shipped to the Youngstown district in view of light local demand.

Chicago — Scrap prices continue strong and quotations on some grades have advanced further. No. 1 heavy melting steel is unchanged in the consumers' market at \$16, but dealers are paying \$16.25 to \$16.50 in covering. Supplies appear ample to accommodate consumers' needs, the sharp price advances of the last few weeks tending to increase offer-

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ings by railroads and other scrap sellers. Specialty grades are strong, prices being higher in some instances.

Boston—Most delivered prices on scrap at New England consuming points have moved up during the past few days on new business. Consumers have paid \$12.75 delivered for No. 1 heavy melting steel, an advance of \$1. For No. 2 machinery cast \$10.50 to \$11 delivered are being paid. Textile cast has been bought at \$12 to \$12.50 delivered and heavy malleable cast at \$10.50 to \$11, delivered.

New York — Prices on iron and steel scrap again are moving upward and a number of important grades are quoted at 25 to 75 cents a ton higher than early this week. Brokers have received new orders from consumers, not only in this territory, but in eastern Pennsylvania and the Pittsburgh district. In addition, they are being pressed for shipments against unfilled contracts. In not a few cases, brokers are paying higher than warranted by the selling prices.

Philadelphia — Scrap continues to manifest a more settled tone, although some upward revisions have been made. The inside price of \$14.50 on No. 1 steel has disappeared, leaving the market at \$15, delivered consuming plant. Dealers are now paying as high as \$13.50 in covering on No. 2 steel booked at that level, with a result that this grade may be quoted at \$13.50 to \$14. Advances are also noted in compressed sheets, both new and old materials.

Buffalo—Scrap is moving upward rapidly with small receipts and heavy consumption adding strength. The large local melters now offer \$15 for No. 1 heavy melting steel and one lot of about 1000 tons is understood to have been booked. Reports are that dealers who recently sold No. 2 heavy melting steel for local delivery at \$13.25 have paid up to \$14.25 for tonnage to ship on these contracts. Other grades are proportionately strong.

Detroit—Acute shortage of scrap has become increasingly evident and prices on important grades have again advanced over the past week. No. 1 heavy melting steel is now quoted \$13.50 to \$14; hydraulic compressed sheet scrap, \$14 to \$14.50, advanced 50 cents a ton. Heavier automotive supplies of scrap are not expected to reach the market before another month.

Cincinnati—Another advance in iron and steel scrap marked attempts of dealers to obtain material to apply on orders, hold for orders which they believe are imminent, or ship to nearby consumers who have made such shipments profitable.

St. Louis—Further advances were

recorded in scrap this week, largely as a result of scarcity. Receipts from the country have been light, and it is said not much is available. The only sale of the week was 5000 tons of No. 2 heavy melting steel to an East Side mill, at present levels.

Toronto, Ont.—General business in iron and steel scrap is steady but spotty. Consumers show interest in a few special grades, while other lines are in light demand. Heavy melting steel has a fair call and there is good movement to mills in the Hamilton district. Iron grades have fair call

with special attention to machinery cast, wrought scrap and malleable. Prices are unchanged.

Birmingham, Ala.—Gulf States Steel Co. has bought 20,000 tons of heavy melting steel from interests outside this district and 1500 tons from dealers here, for delivery over the next few weeks. The price was not stated. Supplies are limited and tonnages are difficult to fill.

Seattle—The market is firm although Japan is not buying actively. The Orient promises to show interest within 30 days and exporting houses expect an active turnover.

RE-ORDERS: Another proof of DOALL value, American Can bought 4 machines; American Stove 4; General Electric bought 8; Crowe Name Plate bought 3; General Motors Truck bought 4; etc., etc., etc. In Rockford, Illinois, . . . the city that KNOWS machine tools best, there are now 12 DOALLS in use!!!

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Warehouse

Warehouse Prices, Page 82

Pittsburgh—Orders for warehouse steel over the first few days of September were not quite up to the early August daily average, but improvement is expected to develop.

Cleveland—The low status of most jobbers' inventories has led to replenishment of their stocks in merchant items. Sales of the last few days have declined but not to

the extent of causing alarm. Bars, plates, sheets, cold-finished bars, and cold-rolled strip are in active demand. Most activity has been in products in which mill shipments are deferred. Prices remain firm.

Chicago — August sales showed only a slight decrease from July, but held at the best level for the corresponding period in five to six years. Warehouses still encounter difficulty in obtaining sufficient stocks of wide flanged shapes.

New York — Orders for steel out of warehouse were at a materially

higher rate in August than in July, due largely to increased importation of steel, and the difficulty of mills to make shipments. September bookings so far are about at the August rate. Jobbers are having no difficulty in obtaining their present market prices.

Philadelphia — Warehouse demand has started off the new month well, with distributors still benefiting by the sold-up condition of the mills on some products. August business was about on a parity with that of July, orders exceeding original trade expectations in both months. Prices are unchanged.

Cincinnati—Broad demand for steel from warehouse continues, tonnage so far this month being little changed from the levels of August. Sales of building materials is undiminished. Prices are firm.

Bolts, Nuts and Rivets

Bolt, Nut, Rivet Prices, Page 79

A leading manufacturer of bolts and nuts has opened contract books for fourth quarter at third quarter prices. Rivet quotations also have been reaffirmed.

Although August tonnage in these lines was slightly below July, the volume of current and pending business has resulted in optimism for the balance of this year. July operations were at 57 per cent of capacity, according to the American Institute of Bolt, Nut and Rivet Manufacturers, while monthly shipments of bolts were 90 per cent, based on a four-year average of sales.

Cold Finished

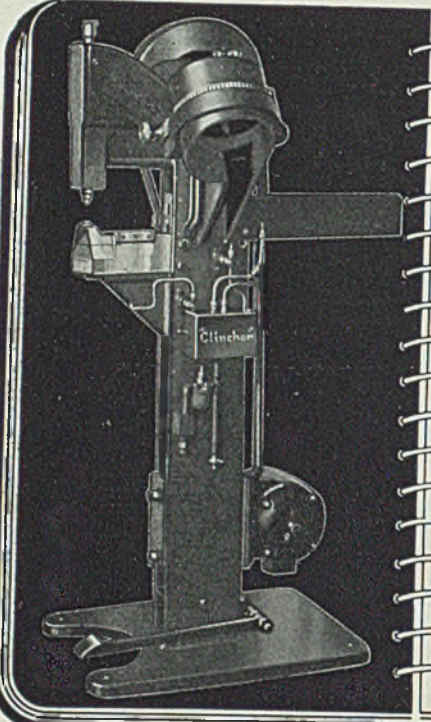
Cold Finished Prices, Page 79

Pittsburgh — Cold-drawn bar orders through last week failed to pick up from the low August point, which in retrospect compares unfavorably with the market's heavy buying. The present market of 2.25c, base. Pittsburgh, for cold-drawn carbon bars is quoted unchanged, and an announcement on fourth quarter has so far been delayed.

Semifinished

Semifinished Prices, Page 79

Pittsburgh—Carnegie-Illinois Steel Corp. has announced an increase of \$2 on delivered prices of semifinished steel of \$2 per gross ton, effective Oct. 1, as follows: Rerolling bars and slabs, Pittsburgh, \$32.50, Chicago and Gary, Ind., \$32.60; sheet bars, Pittsburgh, \$32.50, Chicago and Gary, \$32.60; forging blooms, billets and slabs, Pittsburgh, \$39.50, Chicago and Gary, \$39.60.



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Steel in Europe

Foreign Steel Prices, Page 82

London — (By Cable) — Domestic conditions in the steel and iron markets of Great Britain are excellent and export inquiry is also expanding. Pig iron exports are somewhat larger. Effects of the summer holiday season are disappearing and normal conditions are being resumed. The outlook is for continued activity. The tin plate market is satisfactory but galvanized sheet exports are quiet.

The Continent reports lively export trade in most markets especially semifinished steel, merchant bars and hoops. The Belgian and German markets are stronger.

Metallurgical Coke

Coke Prices, Page 79

With practically all available beehive coke capacity sold out, sellers have advanced their asking prices again the past week by 10 cents to 25 cents a ton and are now quoting a minimum of \$3.75 to \$4 a ton, f.o.b. Connellsville, Pa., ovens, for standard furnace coke. This compares with a previous quotation of \$3.65 to \$3.75 on the same basis. The requirements of several blast furnaces now being blown in are taking a large amount of present beehive coke output. Common foundry coke is firm at \$4.25 to \$4.50, f.o.b. Connellsville, Pa., and premium coke at \$5.50 minimum. The market on medium sulphur beehive furnace coke has advanced to \$3.50 to \$3.60, and crushed coke is up 25 cents over the past week to \$3.75 to \$4.

Shipments in all markets continue active and prices have been extended for fourth quarter without change. September shipments are expected to show an increase.

Nonferrous Metals

Nonferrous Metal Prices, Page 80

New York — The buying wave in zinc which carried prices \$1 per ton higher on Tuesday was the outstanding feature of nonferrous metal developments last week.

Copper — Export prices advanced to a high of 9.75c, c.i.f. with sales reported in the trade as high as 9.77½c, c.i.f. Some market observers believe that the foreign market trend will determine price levels here over the next several weeks although it is believed in most quarters that electrolytic will hold at 9.75c, Connecticut, for the balance of the month.

Lead — Sales increased slightly over the previous week but prices

held on the basis of 4.45c, East St. Louis, and 4.60c, New York.

Zinc — Sellers announced a price advance of 5 points to 4.85c, East St. Louis, for prime western on Monday and consumers rushed to cover needs at the old level. Consumers are now believed covered for about three months so quiet buying is now expected.

Tin — Belief is growing in the trade that the control plan will be renewed and prices rose sharply to around 43.62½c on Straits spot compared with 42.80c on Wednesday. Buying picked up late in the week.

Antimony — American prices advanced ¼-cent on Monday but reacted ⅛-cent on Wednesday with the close steady at 11.62½c on spot and 11.37½c on futures. Chinese spot held nominally unchanged at 12.50c.

Iron Ore

Iron Ore Prices, Page 81

Cleveland—Shipments of iron ore from the Lake Superior district during August was 7,444,444 tons, bringing the total for the season to Sept. 1, to 26,281,517 tons. This is

an increase of 51 per cent over the 17,386,599 tons for the like period last year.

The industry anticipates 7,000,000 tons will be brought down in September, and at least an additional 7,000,000 tons to follow in the remaining two months. Assuming these figures are reached, the total of 40,281,517 tons would represent an increase of 40.5 per cent over the 28,503,501 tons brought down in 1935.

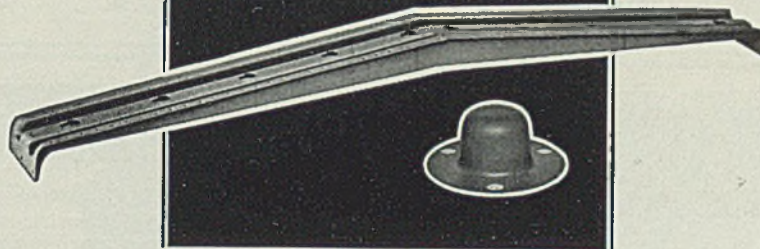
However, some leading shippers believe the movement in the remaining months will be larger and forecast 45,000,000 tons.

Shipments from upper lake ports for the season to Sept. 1, follow:

Port	To Sept. 1 1935	To Sept. 1 1936
Escanaba	916,524	1,319,313
Marquette	1,629,635	2,613,502
Ashland	1,968,430	2,726,251
Superior	6,172,592	9,731,425
Duluth	4,581,488	6,744,354
Two Harbors.....	2,117,930	3,146,592
Total	17,386,599	26,281,517

Excello Aircraft & Tool Corp., Detroit, has resumed common dividends with declaration of 15 cents, payable Aug. 15 to record Aug. 1 Last preceding payment was 20 cents, made on July 1, 1930.

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Construction and Enterprise

Ohio

ALLIANCE, O.—Kelvinator Corp., 14250 Plymouth street, Detroit, has acquired the former plant of the Buckeye Jack Mfg. Co. here on Gas-kill road, and will remodel it for manufacturing electric washing machines. R. D. Hunt is president of the new concern.

ATHENS, O.—Frank Pugh, Athens, is manager of proposed rural electric co-operative which would erect lines to serve Athens, Meigs and Gallia counties. Engineer is Carl Frye, 620 East Broad street, Columbus, O.

BELLE CENTER, O.—Village considering construction of waterworks system and is making survey of cost.

Edison Ellis, 922 State street, Lima, O., is engineer.

BLOOMVILLE, O.—Village plans construction of waterworks system to cost about \$50,000, and to include wells, pump house and elevated steel water storage tanks. Voters will probably pass on a bond issue to supply village's share of cost, remainder to be borne by WPA. E. J. Earick is mayor, Champe, Finkbeiner & Associates, 1025 Nicholas building, Toledo, O., engineers.

CAREY, O.—Village proposes construction of sewage treatment works and sanitary sewer system at estimated cost of \$200,000. Charles E. Hunter is mayor. Engineer is George Champe & associates, 1025 Nicholas building, Toledo, O.

CARROLLTON, O.—Windsor Evaporated Milk Co. will construct a large plant addition here.

CLEVELAND — Forest City Foundry Co., 2500 West Twenty-seventh street, will build a small addition to one of its plants here.

CLEVELAND—Lamson & Sessions Co., 1971 West Eighty-fifth street, is starting erection of a pickling building.

CLEVELAND—W. J. Schoenberger Co., valve manufacturer, will erect three factory buildings at 8810 Harvard avenue.

CLEVELAND—Reliance Electric & Engineering Co., 1088 Ivanhoe road, will spend \$15,000 for a plant addition.

CLEVELAND—Columbia Electrical Mfg. Co., 4519 Hamilton avenue is taking bids for a factory addition.

CLEVELAND—Cleveland Railway Co., T. H. Nichols purchasing agent, Midland Bank building, plans purchases of two arc welders costing about \$756 each.

CLEVELAND—Paramount Steel & Supply Co. has been incorporated by Irving Glicker, J. Surany and Philip C. Barragate. Correspondent is Elder & Elder, 820 Standard building.

CLEVELAND—Atlantic Plastic & Metal Parts Co. has been incorporated by Joseph M. Lewis, Edna Anderson and Jack H. Green. Lewis is correspondent, 705 Guarantee Title building.

CLEVELAND — Fairchild Milling Co., 1635 Merwin street, will build a 41-bin grain elevator, 63 x 107 feet, to cost \$150,000. Jones-Hettelfater Construction Co., Mutual building, Kansas City, Mo., has general contract.

CLEVELAND — Industrial Rayon Corp., West Ninety-eighth and Walford streets, has organized a subsidiary to be known as Rayon Machinery Corp. A new plant estimated to cost approximately \$7,500,000 will be built, where machinery for spinning rayon yarn will be manufactured. Hiram Rivitz is president of the new concern, and George P. Torrence is vice president and general manager.

CINCINNATI — Corcoran Brown Lamp Co., 4890 Spring Grove avenue, subsidiary of Electric Auto Lite Co., Champlain and Mulberry streets, Toledo, O., plans construction of a \$100,000 plant addition.

CIRCLEVILLE, O.—John C. Goeller, president of council, will probably submit bond issue to voters at November election, proceeds of which would go for village's share of cost in proposed sewage disposal plant, remainder to come from WPA.

DAYTON, O.—Contracting officer, air corps, materiel division, is taking

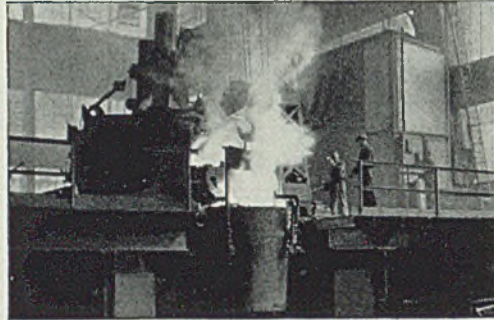
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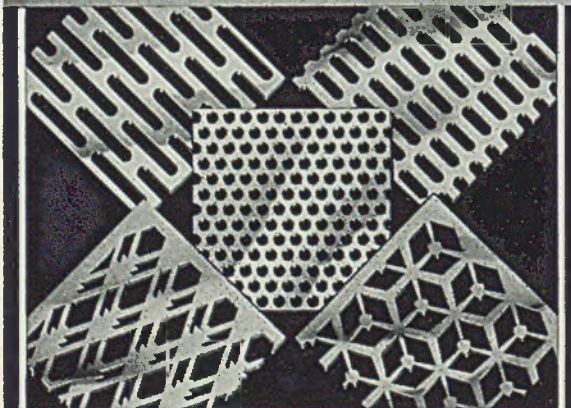
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bids due 10 a.m. Sept. 11 for five portable transformers.

DAYTON, O.—Air corps, materiel division, will receive bids until 10 a. m. Sept. 22 for two motor-driven drill presses to operate on a 220-volt, three-phase, 60-cycle alternating current, presses to be in accordance with specification 50148-A and amendment No. 1.

DELAWARE, O.—Delaware County Rural Electrification Co-operative Inc., W. O. Ziegler president, 620 East Broad street, Columbus, O., plans erection of 224 miles of electric power transmission lines in Delaware county, at an estimated cost of \$229,120. Engineer is Carl Frye, same address.

EAST LIVERPOOL, O.—City plans \$1,500,000 municipal power plant, and issue will be submitted to voters at special election after Nov. 3.

FINDLAY, O.—North Central Rural Electric Co-operative Inc., L. C. Ridenour manager, 620 East Broad street, Columbus, O., plans erection of transmission lines to serve Hancock, Seneca, Wyandotte and Crawford counties. Carl Frye is engineer, same address.

HAMILTON, O.—Butler County Rural Electric Co-operative Inc., 620 East Broad street, Columbus, O., is preparing plans for constructing 184 miles of transmission lines in county, and will probably be ready for bids about Sept. 21. Carl Frye, same address, is engineer.

LAKEWOOD, O.—Mayor Amos I. Kauffman has proposed to city council that Lakewood build its own water plant at an estimated cost of \$1,500,000, with a possible PWA grant of 45 per cent of the cost. Matter has been referred to the public utilities committee of the council.

LANCASTER, O.—City will construct \$300,000 sewage disposal plant if bond issue is approved at November election. Charles Moyer is mayor, Burgess & Niple, 568 East Broad street, Columbus, O., engineer.

MANSFIELD, O.—City council is considering preliminary plans for construction of elevated water tank to cost around \$67,000. Murray D. Shaffer is service director, city hall.

MARYSVILLE, O.—Village plans sewer extensions and sewage disposal plant remodeling. Dwight G. Scott is chairman of board of public affairs, Floyd G. Browne, Marion, O., engineer.

MT. GILEAD, O.—Morrow County Rural Electric Co-operative Inc., D. R. Stanfield manager, 620 East Broad street, Columbus, O., plans construction of 160 miles of transmission lines in and around Mt. Gilead, at a cost of \$40,000. Carl Frye is engineer, same address.

OSBORN, O.—Village voters will pass on bond issue of \$48,500 at special election Sept. 22, to supply part of cost of construction of planned \$140,000 sewage disposal plant, WPA to furnish rest of cost. Collins H. Wight is tentative engineer in charge, Union Trust building, Dayton, O.

SANDUSKY, O.—City plans water distribution system extension, will ask bids soon. Engineer is H. P. Jones & Co., Second National building, Toledo, O.

SHELBY, O.—Miller-Shelby Products Co., subsidiary of Michigan Steel Tube Products Co., Holbrook and Buffalo avenues, Detroit, is starting construction of a \$50,000 plant addition.

SIDNEY, O.—John Sexauer, president of council, has been requested by three large industrial plants to erect an elevated steel water storage tank for fire protection, and council has authorized preliminary plans by Floyd Browne, sanitary engineer, Marion, O.

SUGAR GROVE, O.—Village plans water system to cost \$80,000. C. A. Carr is mayor, Walter Graff, Lancaster, O., is engineer.

TOLEDO, O.—Willys-Overland Co., Wolcott boulevard, plans to reorganize and return to manufacturing automobiles. The factory will probably be rehabilitated.

TOLEDO, O.—Standard Oil Co. of Ohio, Midland building, Cleveland, plans construction of a \$1,500,000 distilling and cracking plant here.

YOUNGSTOWN, O.—Swift & Co., Union Stock Yards, Chicago, will build a new \$150,000 plant here.

TORONTO, O.—Follansbee Bros. Co., Third and Liberty streets, Pittsburgh, will spend \$4,700,000 to modernize its plant here if reorganization plans are approved in federal court at Pittsburgh.

WAUSEON, O.—Ames-Baldwin Wyoming Shovel Co. plant was recently destroyed by fire.

WEST UNION, O.—Village surveying possibility of constructing waterworks system to cost about \$50,000. Bonds will be sold to provide village's share of cost, with either PWA or WPA furnishing remainder. C. C. Washburn is mayor, W. S. Heer Engineering Co., 800 Broadway, Cincinnati, engineer.

YOUNGSTOWN, O.—Youngstown Steel Door Co., Meridian road, plans construction of new \$175,000 plant. H. H. Henricks is vice president and general manager.

ZANESVILLE, O.—Zanesville Mould Co., Muskingum avenue, will erect a new plant, 75 x 100 feet, to include a pattern shop and machine shop. W. J. Heck Contracting Co., Zanesville, has general contract. C. W. Roessler is owner and manager.

Connecticut

HARTFORD, CONN.—Hartford Electric Light Co., 36 Pearl street plans to spend \$200,000 in relocating Pearl street and Weathersfield substations.

TERRYVILLE, CONN.—Chapman Machine Co. plans to erect a 35 x 60 building adjoining its plant here. Company makes screw machine products.

Massachusetts

BOSTON—E. L. Snyder, 15 Kneeland street, asks bids on three 150 kilowatt generators for a diesel power plant. R. R. Burnham, 38 Chauncey street, is engineer.

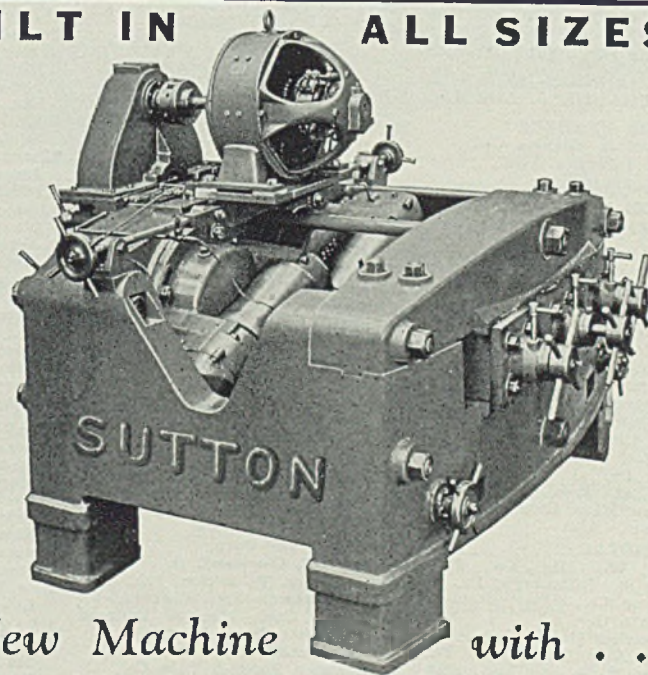
New York

DRESDEN, N. Y.—Village will vote Sept. 12 on a proposal to spend \$54,000 for construction of a municipal waterworks.

JAMESTOWN, N. Y.—Jamestown Metal Equipment Co. is planning a large addition, 80 x 100 feet, two stories, to its plant for manufacturing au-

(Please turn to Page 103)

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gan Ave., Chicago, Ill.
Midvale Co., The,
Nictown, Philadelphia, Pa.
Republic Steel Corp.,
Dept. ST, Cleveland, O.
Ryerson, Jos. T. & Son, Inc., 16th
and Rockwell Sts., Chicago, Ill.
Tennessee Coal, Iron & Railroad
Co., Brown Marx Bldg., Birming-
ham, Ala.
Timken Steel & Tube Co.,
Canton, O.
- BARS (Concrete Reinforcing)**
Carnegie-Illinois Steel Corp.,
Pittsburgh-Chicago.
Columbia Steel Co.,
San Francisco, Calif.
Inland Steel Co.,
38 S. Dearborn St., Chicago, Ill.
Jones & Laughlin Steel Corp.,
Jones & Laughlin Bldg.,
Pittsburgh, Pa.
Republic Steel Corp.,
Dept. ST, Cleveland, O.
Ryerson, Jos. T. & Son, Inc., 16th
and Rockwell Sts., Chicago, Ill.
Tennessee Coal, Iron & Railroad
Co., Brown Marx Bldg.,
Birmingham, Ala.
Youngstown Sheet & Tube Co.,
Youngstown, O.
- BARS (Iron)—See IRON (Bar)**
- BARS (Reinforcing)**
Foster, L. B., Co., Inc.,
P. O. Box 1647, Pittsburgh, Pa.
- BARS (Steel)**
(*Also Stainless)
Bethlehem Steel Co.,
Bethlehem, Pa.
Carnegie-Illinois Steel Corp.,
Pittsburgh-Chicago.
Columbia Steel Co.,
San Francisco, Calif.
- Inland Steel Co.,
38 So. Dearborn St., Chicago, Ill.**
*Jessop Steel Co.,
Washington, Pa.
Laclede Steel Co.,
Arcade Bldg., St. Louis, Mo.
*Ludlum Steel Co.,
Watervliet, N. Y.
*Midvale Co., The,
Nictown, Philadelphia, Pa.
*Republic Steel Corp.,
Dept. ST, Cleveland, O.
Ryerson, Jos. T. & Son, Inc., 16th
and Rockwell Sts., Chicago, Ill.
The Stanley Works,
New Britain, Conn.
Bridgeport, Conn.
Tennessee Coal, Iron & Railroad
Co., Brown Marx Bldg.,
Birmingham, Ala.
Timken Roller Bearing Co., The,
Canton, O.
Weirton Steel Co., Weirton, W. Va.
Youngstown Sheet & Tube Co.,
Youngstown, O.
- BATTERIES (Storage)**
Edison, Thomas A., Inc.,
Orange, N. J.
Electric Storage Battery Co., The,
19th St. & Allegheny, Ave.,
Philadelphia, Pa.
- BEAMS, CHANNELS, ANGLES,
ETC.**
(*Also Stainless)
Bethlehem Steel Co., Bethlehem, Pa.
Carnegie-Illinois Steel Corp.,
Pittsburgh-Chicago.
Columbia Steel Co.,
San Francisco, Calif.
Inland Steel Co.,
38 So. Dearborn St., Chicago, Ill.
*Jones & Laughlin Steel Corp.,
Jones & Laughlin Bldg.,
Pittsburgh, Pa.
*Jessop Steel Co.,
Washington, Pa.
*Ludlum Steel Co.,
Watervliet, N. Y.
Ryerson, Jos. T. & Son, Inc., 16th
and Rockwell Sts., Chicago, Ill.
Tennessee Coal, Iron & Railroad
Co., Brown Marx Bldg., Birming-
ham, Ala.
Weirton Steel Co., Weirton, W. Va.
Youngstown Sheet & Tube Co.,
Youngstown, O.
- BEARINGS (Ball)**
Bantam Ball Bearing Co., The,
South Bend, Ind.
Boston Gear Works, Inc.,
North Quincy, Mass.
Fafnir Bearing Co.,
New Britain, Conn.
Norma Hoffmann Bearings Corp.,
Stamford, Conn.
New Departure Mfg. Co.,
Bristol, Conn.
- BEARINGS (Bronze)**
Shoop Bronze Co., The,
344-360 W. Sixth St.,
Tarentum, Pa.
Cadman, A. W., Mfg. Co.,
2815 Smallman St.,
Pittsburgh, Pa.
Cramp Brass & Iron Foundries Co.,
Paschall Sta., Philadelphia, Pa.
Falcon Bronze Co.,
Youngstown, O.
Lawrenceville Bronze Co.,
Bessemer Bldg., Pittsburgh, Pa.
National Bearing Metals Corp.,
928 Shore Ave., Pittsburgh, Pa.
Rhoades, R. W., Metaline Co.,
50 3rd St., Long Island City, N. Y.
Shenango-Penn Mold Co.,
Dover, O.
- BEARINGS (Journal)**
Bantam Ball Bearing Co., The,
South Bend, Ind.
Fafnir Bearing Co.,
New Britain, Conn.
Hyatt Roller Bearing Co.,
P. O. Box 476, Newark, N. J.
Link-Belt Co., 300 W. Pershing Rd.,
Chicago, Ill.
National Bearing Metals Corp.,
928 Shore Ave., Pittsburgh, Pa.
Timken Roller Bearing Co., The,
Canton, O.
- BEARINGS (Oilless)**
Rhoades, R. W., Metaline Co.,
50 3rd St., Long Island City, N. Y.
Richardson Co., The,
Lockland, Cincinnati, O.
- BEARINGS (Radial)**
Bantam Ball Bearing Co.,
South Bend, Ind.
Fafnir Bearing Co.,
New Britain, Conn.
Hyatt Roller Bearing Co.,
P. O. Box 476, Newark, N. J.
New Departure Mfg. Co.,
Bristol, Conn.
Timken Roller Bearing Co.,
Canton, O.
- BEARINGS (Roll Neck)**
Bantam Ball Bearing Co., The,
South Bend, Ind.
Fafnir Bearing Co.,
New Britain, Conn.
Falcon Bronze Co.,
Youngstown, O.
Hyatt Roller Bearing Co.,
P. O. Box 476, Newark, N. J.
National Bearing Metals Corp.,
928 Shore Ave., Pittsburgh, Pa.
Ryerson, Jos. T. & Son, Inc., 16th
and Rockwell Sts., Chicago, Ill.
Shafer Bearing Corp.,
6501 W. Grand Ave., Chicago, Ill.
Timken Roller Bearing Co.,
Canton, O.
- BEARINGS (Roller)**
Bantam Ball Bearing Co., The,
South Bend, Ind.
Fafnir Bearing Co.,
New Britain, Conn.
Hyatt Roller Bearing Co.,
P. O. Box 476, Newark, N. J.
Norma Hoffmann Bearings Corp.,
Stamford, Conn.
S K F Industries, Inc.,
Front St. & Erie Ave.,
Philadelphia, Pa.
Timken Roller Bearing Co., The,
Canton, O.
- BEARINGS (Roller Tapered)**
Bantam Ball Bearing Co.,
South Bend, Ind.
Timken Roller Bearing Co.,
Canton, O.
- BEARINGS (Rolling Mill)**
Bantam Ball Bearing Co.,
South Bend, Ind.
Cramp Brass & Iron Foundries Co.,
Paschall Sta., Philadelphia, Pa.
Falcon Bronze Co.,
Youngstown, O.
Hyatt Roller Bearing Co.,
P. O. Box 476, Newark, N. J.
Lawrenceville Bronze Co.,
Bessemer Bldg., Pittsburgh, Pa.
Norma Hoffmann Bearings Corp.,
Stamford, Conn.
Shafer Bearing Corp.,
6501 W. Grand Ave., Chicago, Ill.
Shoop Bronze Co., The,
344-360 W. Sixth St.,
Tarentum, Pa.
Timken Roller Bearing Co.,
Canton, O.

(Continued from Page 101)

tomobile radiators and heating equipment. J. M. Benzinger has general contract.

NEW YORK—Eastern Diesel Corp. has been organized, with Samuel Newman, 1776 Broadway, as correspondent.

NEW YORK—Southern Kraft Corp., subsidiary of International Paper & Power Co., R. J. Cullen president, 220 East Forty-second street, will construct a new Kraft mill in the South, at an undetermined site.

NIAGARA FALLS, N. Y.—Union Carbide Co., subsidiary of Union Carbide & Carbon Corp., 30 East Forty-second street, New York, is asking bids for construction of a large furnace building addition to its present plant here south of the Niagara Falls boulevard. The new plant will be 60 x 90 x 360 feet. Harry L. Noyes is chief engineer of the company.

Pennsylvania

PHILADELPHIA—Lanston Monotype Machine Co., Locust street between Twenty-fourth and Twenty-fifth streets, will erect two additions to its plant, one 22 x 46 feet, six stories, the other 43 x 64 feet, one story. United Engineers & Constructors Inc., 1401 Arch street, is in charge.

WARREN, PA.—United Refining Co., 124 Dobson avenue, will spend \$250,000 for improvements to its main plant here. Plans include an addition to the cracking plant, installation of 1,250,000 gallons of additional storage facilities, construction of a new boiler house and a 230-foot stack, and installation of steam piping. H. W. Schmitt is secretary and general manager.

Michigan

ADRIAN, MICH.—Hurd Lock & Mfg. Co. has bought and is remodeling the former plant here of the Adrian Knitted Products Co.

DETROIT—Packard Motor Car Co., 1580 East Grand boulevard, plans to spend \$5,100,000 on plant expansion. M. M. Gilman is vice president and general manager.

DETROIT—Ditzler Color Co., 8000 West Chicago boulevard, will alter its present garage and machine shop and build two additions. Banbrook-Gowan Co., 4829 Woodward, is general contractor in charge.

DETROIT—Consumers Steel Products Co., Vermont and Porter avenues, will spend \$50,000 for new equipment and storage facilities, including a new acid tank and four new steel storage racks, of 50 tons capacity each. Louis J. Epps is president.

DETROIT—Detroit Steel Products Co., 2250 East Grand boulevard, is starting construction of a large addition to its Fenestra plant, to cost \$85,000, and to include 23,000 square feet of manufacturing space. Steel windows and accessories will be manufactured. V. F. Dewey is president.

DUNDEE, MICH.—City commission has urged construction by city of sewage disposal plant, and proposal is being studied.

PORT HURON, MICH.—Mueller Brass Co., 1925 Lapeer avenue, will build a \$31,000 addition to its brass shop, for which W. E. Wood & Co., 4649 Humboldt street, Detroit, has general contract.

Illinois

CHICAGO—Lapham Hickey Co., 3333 West Forty-seventh street, will soon erect a \$75,000 addition to the present plant.

CHICAGO—Industrial Gear Mfg. Co., 14 Fullerton avenue has been incorporated by A. M. Scharek, E. A. Fiala and J. R. Scharek. Correspondent is Mannion, Mannion & Mannion, 160 North LaSalle street.

Missouri

POPULAR BLUFF, MO.—Board of public works receives bids Sept. 16 for improvements to light plant and will install new equipment at an ap-

proximate cost of \$30,000.

ST. MARY'S, MO.—Jules R. Rozier, mayor, will ask bids around Sept. 22 for construction of proposed water-works plant. Russell & Axon, Roosevelt Hotel building, St. Louis, are engineers.

Arkansas

CONWAY, ARK.—Swift & Co., Union Stock Yards, Chicago, has purchased plant of Faulkner Dairy Co. and will install machinery for cheese plant.

Texas

CORSICANA, TEX.—Jack Cohen, (Please turn to Page 105)

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- Housing Nuts
- Hot Metal Ladle Car Bearings
- Locomotive and Car Journal Bearings
- Machinery Castings
- Acid Resisting Castings
- Phosphorized Copper
- Babbitt Metals

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 DAMASCUS BRONZE CO. DIVISION - KEYSTONE BRONZE CO. DIVISION
PITTSBURGH, PENNA.
 EXECUTIVE OFFICES - ST. LOUIS, MO.

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WHERE-TO-BUY

- BEARINGS (Quill)**
Bantam Ball Bearing Co.,
South Bend, Ind.
- BEARINGS (Self-Aligning Roller)**
Shafer Bearing Corp.,
6501 W. Grand Ave., Chicago, Ill.
- BEARINGS (Thrust)**
Bantam Ball Bearing Co., The,
South Bend, Ind.
Fafnir Bearing Co.,
New Britain, Conn.
Norma Hoffmann Bearings Corp.,
Stamford, Conn.
Timken Roller Bearing Co., The,
Canton, O.
- BELTING (Rubber)**
Goodrich, B. F., Co., The,
Akron, O.
U. S. Rubber Products, Inc.,
1790 Broadway, New York City.
- BENDING AND STRAIGHTENING MACHINES**
Buffalo Forge Co.,
490 Broadway, Buffalo, N. Y.
Kardong Bros., 346 Buchanan St.,
Minneapolis, Minn.
Morgan Engineering Co., The,
Alliance, O.
Thomas Spacing Machine Co.,
Pittsburgh, Pa.
- BENZOL AND TOLUOL RECOVERY PLANTS**
Koppers Construction Co.,
1438 Koppers Bldg., Pittsburgh.
Youngstown Sheet & Tube Co.,
Youngstown, O.
- BILLETS (Alloy and Carbon Steel)**
Alan Wood Steel Co.,
Conshohocken, Pa.
Andrews Steel Co.,
Newport, Ky.
Carnegie-Illinois Steel Corp.,
Pittsburgh-Chicago.
Firth-Sterling Steel Co.,
McKeesport, Pa.
Republic Steel Corp.,
Dept. ST, Cleveland, O.
The Stanley Works,
New Britain, Conn.
Bridgeport, Conn.
Tennessee Coal, Iron & Railroad
Co., Brown Marx Bldg., Birming-
ham, Ala.
Timken Steel & Tube Co.,
Canton, O.
Washburn Wire Co.,
Phillipsdale, R. I.
- BILLETS (Forging)**
Alan Wood Steel Co.,
Conshohocken, Pa.
Andrews Steel Co.,
Newport, Ky.
Carnegie-Illinois Steel Corp.,
Pittsburgh-Chicago.
Central Iron & Steel Co.,
Harrisburg, Pa.
Heppenstall Co.,
47th & Hatfield Sts.,
Pittsburgh, Pa.
Jones & Laughlin Steel Corp.,
Jones & Laughlin Bldg.,
Pittsburgh, Pa.
Midvale Co., The, Nicetown,
Philadelphia, Pa.
Republic Steel Corp.,
Dept. ST, Cleveland, O.
Standard Steel Works Co.,
Burnham, Pa.
The Stanley Works,
New Britain, Conn.
Bridgeport, Conn.
Tennessee Coal, Iron & Railroad
Co., Brown Marx Bldg., Birming-
ham, Ala.
Timken Steel & Tube Co.,
Canton, O.
- BILLETS AND BLOOMS**
(*Also Stainless)
Alan Wood Steel Co.,
Conshohocken, Pa.
Andrews Steel Co.,
Newport, Ky.
Bethlehem Steel Co., Bethlehem, Pa.
Carnegie-Illinois Steel Corp.,
Pittsburgh-Chicago.
Central Iron & Steel Co.,
Harrisburg, Pa.
Firth-Sterling Steel Co.,
McKeesport, Pa.
Inland Steel Co.,
33 So. Dearborn St., Chicago, Ill.
- *Jones & Laughlin Steel Corp.,
Jones & Laughlin Bldg.,
Pittsburgh, Pa.
*Ludlum Steel Co.,
Watervliet, N. Y.
*Republic Steel Corp.,
Dept. ST, Cleveland, O.
Standard Steel Works Co.,
Burnham, Pa.
The Stanley Works,
New Britain, Conn.
Bridgeport, Conn.
Tennessee Coal, Iron & Railroad
Co., Brown Marx Bldg.,
Birmingham, Ala.
Timken Steel & Tube Co.,
Canton, O.
Youngstown Sheet & Tube Co.,
Youngstown, O.
- BINS (Steel, Measuring)**
Erie Steel Construction Co.,
Berst Road and N. P. R. R.,
Erie, Pa.
- BINS (Storage)**
Petroleum Iron Works Co.,
Sharon, Pa.
- BLAST FURNACE FITTINGS**
Pollock, The Wm. B., Co.,
Youngstown, O.
- BLAST FURNACE SPECIALTIES**
Bailey, Wm. M., Co.,
702 Magee Bldg., Pittsburgh, Pa.
Brosius, Edgar E., Inc.,
Sharpsburg, Pa.
Falcon Bronze Co.,
Youngstown, O.
Leeds & Northrup Co.,
4901 Stenton Ave.,
Philadelphia, Pa.
Pollock, The Wm. B., Co.,
Youngstown, O.
Shoop Bronze Co., The,
344-360 W. Sixth St.,
Tarentum, Pa.
Steel Industries Engineering Corp.,
Empire Bldg., Pittsburgh, Pa.
- BLAST FURNACES—See FURNACES (Blast)**
- BLOCKS (Chain)**
Ford Chain & Block Co.,
York, Pa.
Yale & Towne Mfg. Co.,
4630 Tacony St., Philadelphia, Pa.
- BLOWERS**
Buffalo Forge Co.,
490 Broadway, Buffalo, N. Y.
Coppus Engineering Co.,
359 Park Ave., Worcester, Mass.
General Electric Co.,
Schenectady, N. Y.
Ingersoll-Rand Co.,
Phillipsburg, N. J.
Strong, Carlisle & Hammond Co.,
The, 1400 W. 3rd St., Cleve-
land, O.
- BLOWPIPES (Oxy-Acetylene)**
Linde Air Products Co., The,
30 E. 42nd St., New York City.
- BLUE PRINTING EQUIPMENT AND SUPPLIES**
Bruning, Chas., Co., Inc.,
445 Plymouth Ave., Chicago, Ill.
- BOILER HEADS**
Bethlehem Steel Co., Bethlehem, Pa.
- BOILER TUBES—See TUBES (Boiler)**
- BOILERS**
Murray Iron Works Co.,
Burlington, Iowa.
Oil Well Supply Co., Dallas, Texas
- BOLT AND NUT MACHINERY**
Landis Machine Co.,
Waynesboro, Pa.
- BOLTS**
(*Also Stainless)
Bethlehem Steel Co., Bethlehem, Pa.
Carnegie-Illinois Steel Corp.,
Pittsburgh-Chicago.
Columbia Steel Co.,
San Francisco, Calif.
Cleveland Cap Screw Co.,
2917 E. 79th St., Cleveland, O.
Oliver Iron & Steel Corp.,
So. 10th & Muriel Sts.,
Pittsburgh, Pa.
*Republic Steel Corp., Upson Nut
Div., Dept. ST, 1912 Scranton Rd.,
Cleveland, O.
- Russell, Burdsall & Ward Bolt &
Nut Co., Port Chester, N. Y.
Ryerson, Jos. T., & Son, Inc., 16th
and Rockwell Sts., Chicago, Ill.
Tennessee Coal, Iron & Railroad
Co., Brown Marx Bldg., Birming-
ham, Ala.
- BOLTS (Carriage and Machine)**
Bethlehem Steel Co.,
Bethlehem, Pa.
Cleveland Cap Screw Co.,
2917 E. 79th St., Cleveland, O.
Oliver Iron & Steel Corp.,
So. 10th and Muriel Sts.,
Pittsburgh, Pa.
Republic Steel Corp., Upson Nut
Div., Dept. ST,
Russell, Burdsall & Ward Bolt &
Nut Co., Port Chester, N. Y.
Ryerson, Jos. T., & Son, Inc.,
16th & Rockwell Sts., Chicago, Ill.
1912 Scranton Rd., Cleveland, O.
- BOLTS (Special)**
Bethlehem Steel Co.,
Bethlehem, Pa.
Cleveland Cap Screw Co.,
2917 E. 79th St., Cleveland, O.
Oliver Iron & Steel Corp.,
So. 10th and Muriel Sts.,
Pittsburgh, Pa.
Republic Steel Corp., Upson Nut
Div., Dept. ST,
Russell, Burdsall & Ward Bolt &
Nut Co., Port Chester, N. Y.
Ryerson, Jos. T., & Son, Inc.,
16th & Rockwell Sts., Chicago, Ill.
1912 Scranton Rd., Cleveland, O.
- BOLTS (Stove)**
Cleveland Cap Screw Co.,
2917 E. 79th St., Cleveland, O.
Republic Steel Corp., Upson Nut
Div., Dept. ST,
1912 Scranton Rd., Cleveland, O.
Russell, Burdsall & Ward Bolt &
Nut Co., Port Chester, N. Y.
Ryerson, Jos. T., & Son, Inc.,
16th & Rockwell Sts., Chicago, Ill.
- BOLTS (Track)—See TRACK BOLTS**
- BORING MACHINES (Horizontal)**
Landis Tool Co.,
Waynesboro, Pa.
- BOSH PLATES (Copper)**
Falcon Bronze Co.,
Youngstown, O.
Lawrenceville Bronze Co.,
Bessemer Bldg., Pittsburgh, Pa.
- BOXES (Annealing)**
Carnegie-Illinois Steel Corp.,
Pittsburgh-Chicago.
Petroleum Iron Works Co.,
Sharon, Pa.
Pollock, The Wm. B., Co.,
Youngstown, O.
United Engineering & Foundry Co.,
First National Bank Bldg.,
Pittsburgh, Pa.
Wilson, Lee, Engineering Co.,
1870 Blount St., Cleveland, O.
- BOXES (Case Hardening)**
Driver-Harris Co.,
Harrison, N. J.
Strong, Carlisle & Hammond Co.,
The, 1400 W. 3rd St., Cleve-
land, O.
- BOXES (Open Hearth Charging)**
Carnegie-Illinois Steel Corp.,
Pittsburgh-Chicago.
Morgan Engineering Co., The,
Alliance, O.
Petroleum Iron Works Co.,
Sharon, Pa.
Pollock, The Wm. B., Co.,
Youngstown, O.
Wellman Engineering Co.,
7000 Central Ave., Cleveland, O.
- BRAKES (Electric)**
Clark, The, Controller Co.,
1146 E. 152nd St., Cleveland, O.
Electric Controller & Mfg. Co.,
2693 E. 79th St., Cleveland, O.
- BRAKES (Press)**
Cincinnati Shaper Co.,
Elam and Garrard Sts.,
Cincinnati, O.
- BRICK—(Insulating)—See INSULATING BRICK**
- BRICK (Refractory)—See REFRACTORIES. CEMENT, etc.**
- BRICK (Silicon Carbide)**
Carborundum Co., The,
Perth Amboy, N. J.
Norton Co., Worcester, Mass.
- BRIDGE CRANES (Ore and Coal Handling) See CRANES (Bridge)**
- BRIDGES, BUILDINGS, VIADUCTS, STACKS**
American Bridge Co.,
Frick Bldg., Pittsburgh, Pa.
Belmont Iron Works,
22nd and Washington Ave.,
Philadelphia, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
Columbia Steel Co.,
San Francisco, Calif.
Ohio Structural Steel Co., The,
Newton Falls, O.
Petroleum Iron Works Co.,
Sharon, Pa.
Truscon Steel Co.,
Youngstown, O.
- BROACHING MACHINES**
Bullard Co., The,
Bridgeport, Conn.
Colonial Broach Co.,
147 Jos. Campau, Detroit, Mich.
- BRUSHES (Industrial)**
Pittsburgh Plate Glass Co.,
Rennous-Kleinle Div.,
3221 Frederick Rd., Baltimore, Md.
- BUCKETS (Clam Shell, Dragline, Grab, Single Line)**
Atlas Car & Mfg. Co., The,
1140 Ivanhoe Rd., Cleveland, O.
Harnischfeger Corp., 4411 W. Na-
tional Ave., Milwaukee, Wis.
Industrial Brownhoist Corp.,
Bay City, Mich.
Link-Belt Co., 300 W. Pershing Rd.
Chicago, Ill.
Wellman Engineering Co.,
7000 Central Ave.,
Cleveland, O.
- BUCKETS (Electric)**
Erie Steel Construction Co.,
Berst Road and N. P. R. R.,
Erie, Pa.
- BUCKETS (Elevator)**
Link-Belt Co.,
307 No. Michigan Ave.,
Chicago, Ill.
- BUILDINGS (Industrial)**
Austin Company, The,
16112 Euclid Ave., Cleveland, O.
- BUILDINGS (Steel)—See BRIDGES, ETC.**
- BURNERS (Acetylene)—See TORCHES AND BURNERS**
- BURNERS (Automatic)**
Kemp, C. M., Mfg. Co.,
405 E. Oliver St., Baltimore, Md
Pennsylvania Industrial Engineers,
2413 W. Magnolia St.,
Pittsburgh, Pa.
Surface Combustion Co.,
2375 Dorr St., Toledo, O.
Wean Engineering Co.,
Warren, O.
Wilson, Lee, Engineering Co.,
1370 Blount St., Cleveland, O.
- BURNERS (Fuel, Oil, Gas, Com-
bination)**
Best, W. N., Engineering Co.,
75 West St., New York City.
Hagan, Geo. J., Co.,
2400 E. Carson St., Pittsburgh, Pa.
Pennsylvania Industrial Engineers,
2413 W. Magnolia St.,
Pittsburgh, Pa.
Surface Combustion Co.,
2375 Dorr St., Toledo, O.
Wean Engineering Co.,
Warren, O.
Wilson, Lee, Engineering Co.,
1370 Blount St., Cleveland, O.
- BUSHINGS (Bronze)**
Cadman, A. W., Mfg. Co.,
2816 Smallman St., Pittsburgh,
Pa.
Falcon Bronze Co.,
Youngstown, O.
Gifford Engine Co.,
Eaton Rapids, Mich.
Rhoades, R. W., Metaline Co.,
50 3rd St., Long Island City, N. Y.
Shenango-Penn Mold Co.,
Dover, O.
Shoop Bronze Co.,
344-60 W. 6th Ave.,
Tarentum, Pa.

—Construction and Enterprise—

(Concluded from Page 103)

2608 Hickory street, Dallas, Tex., dress manufacturer, is considering construction of plant here which would include installation of 30 machines.

GAINESVILLE, TEX. — Three new oil refineries are planned here, to be built by the Gainesville Refining Co., G. A. Mattson general manager, the Tydal Refining Co., Mac Hall manager, and the North Texas Oil & Refining Co., R. L. Knight manager.

HARLINGEN, TEX. — Southern Cotton Oil Co. plans construction of cotton oil mill to cost \$150,000, with four hydraulic and six cold presses. Oscar Robinson, Austin, Tex., general manager.

HOUSTON, TEX.—Dixon Packing Co., 108 Milan street, will build new plant on Shell road.

SAN ANGELO, TEX.—Texas Wool Scouring Corp., Abe Mayer president, San Angelo National Bank building, plans construction of \$125,000 mill, to include machinery and equipment.

Wisconsin

BELOIT, WIS.—John Nielson Engineering Co., tool and die manufacturer, has a new factory and machine shop at 417 Eastern avenue.

FORT ATKINSON, WIS.—Ambrose Boiler Works has been opened in the former Becker plant by Eugene Ambrose, and welding and general service work will be included.

LA CROSSE, WIS.—Trane Co., maker of space heaters and other air conditioning and heating units, plans to issue \$300,000 worth of preferred stock, of which approximately \$100,000 probably will be used for plant expansion.

Minnesota

WINONA, MINN. — Winona Machine & Foundry Co., 159 Front street, will remodel its foundry building, with Seidlitz-Schwab & Co. as general contractor. Edward Leicht is sales manager.

Nebraska

COLUMBUS, NEBR.—City has authorized \$250,000 bond issue for either purchase of present light power system or construction of new one. J. L. Rich is city clerk, L. F. Gottschalk city engineer.

HASTINGS, NEBR.—State board of control, Capitol building, Lincoln, Nebr., O. R. Shatto secretary, asks bids for construction of sewage disposal plant at Ingleside State hospital, near Hastings. Cost will be over \$40,000, and construction will include control house, wells and chambers.

LINCOLN, NEBR. — Lancaster County Rural Public Power district will construct 354 miles of transmission lines in western half of county. Charles E. Johnson, Hastings, Nebr., is engineer in charge.

Idaho

MOSCOW, IDAHO—Hagan & Cushing packing plant was recently destroyed by fire, and will be rebuilt.

SODA SPRINGS, IDAHO—Municipality will build a municipal powerhouse and auxiliaries at a cost of \$32,607. M. L. Harsley has general contract.

TWIN FALLS, IDAHO — City council is considering construction of \$120,000 municipal waterworks system, to include a large reservoir and several wells.

Pacific Coast

LOS ANGELES — Day & Night Water Heater Co., Duarte road and Shanrock street, is starting construction of a plant addition, which with new equipment installation will cost about \$18,000. Herbert A. Hamm is engineer, Pasadena, Calif.

NEWPORT BEACH, CALIF.—City has approved bond issue of \$300,000 for construction of sewage disposal

plant, and additional federal funds will be sought.

PITTSBURG, CALIF.—City plans construction of water filtration plant to cost \$20,000.

SPOKANE, WASH.—City will ask bids soon for construction of South Side \$500,000 waterworks plant, with a federal grant of \$148,500.

Canada

BROCKVILLE, ONT. — Phillips Electrical Works plans construction of two plant additions, to cost approximately \$200,000. J. B. McCarthy is vice president in charge.

BRONZE • BRASS • ALUMINUM

Castings

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Link-Belt Co.,
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- CARBIDE**
Linde Air Products Co., The,
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Carnegie-Illinois Steel Corp.,
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Morgan Engineering Co., The,
Alliance, O.
Pollock, The Wm. B., Co.,
Youngstown, O.
Wellman Engineering Co.,
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Carnegie-Illinois Steel Corp.,
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Youngstown, O.
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Atlas Car & Mfg. Co., The,
1140 Ivanhoe Rd., Cleveland, O.
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Cadman, A. W., Mfg. Co.,
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Chain Belt Co., 1660 W. Bruce St.,
Milwaukee, Wis.
Falcon Bronze Co.,
Youngstown, O.
Farrel-Birmingham Co., Inc.,
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344 Vulcan St., Buffalo, N. Y.
International Nickel Co., Inc.,
67 Wall St., New York City.
Link-Belt Co., 300 W. Pershing Rd.,
Chicago, Ill.
National Bearing Metals Corp.,
928 Shore Ave., Pittsburgh, Pa.
Shenango-Penn Mold Co.,
Dover, O.
Shoop Bronze Co., The,
344-360 W. Sixth St.,
Tarentum, Pa.
Wellman Bronze & Aluminum Co.,
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Carnegie-Illinois Steel Corp.,
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Chain Belt Co., 1660 W. Bruce St.,
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Cramp Brass & Iron Foundries Co.,
Paschall Sta., Philadelphia, Pa.
Columbia Steel Co.,
San Francisco, Calif.
Erie Foundry Co., Erie, Pa.
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344 Vulcan St., Buffalo, N. Y.
Forging & Casting Corp., The,
Ferndale, Mich.
Forest City Foundries Co.,
2500 W. 27th St., Cleveland, O.
Hagan, Geo. J., Co.,
2400 E. Carson St., Pittsburgh, Pa.
Hyde Park Foundry & Machine Co.,
Hyde Park, Pa.
Link-Belt Co., 300 W. Pershing Rd.,
Chicago, Ill.
Midvale Co., The, Nicetown,
Philadelphia, Pa.
Murray Iron Works,
Burlington, Iowa.
National Roll & Foundry Co., The,
Avonmore, Pa.
Oil Well Supply Co., Dallas, Texas
Taylor-Wilson Mfg. Co.,
McKees Rocks, Pa.
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Cadman, A. W., Mfg. Co.,
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Pittsburgh, Pa.
Cramp Brass & Iron Foundries Co.,
Paschall Sta., Philadelphia, Pa.
Falcon Bronze Co.,
Youngstown, O.
Lawrenceville Bronze Co.,
Bessemer Bldg., Pittsburgh, Pa.
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Alliance, O.
National Bearing Metals Corp.,
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Shenango-Penn Mold Co.,
Dover, O.
Shoop Bronze Co., The,
344-360 W. Sixth St.,
Tarentum, Pa.
Titan Metal Mfg. Co.,
Bellefonte, Pa.
Wellman Bronze & Aluminum Co.,
6017 Superior Ave., Cleveland, O.
- CASTINGS (Brass, Pressure)**
Titan Metal Mfg. Co.,
Bellefonte, Pa.
- CASTINGS (Electric Steel)**
Carnegie-Illinois Steel Corp.,
Pittsburgh-Chicago.
Damascus Steel Casting Co., The,
New Brighton, Pa.
Farrel-Birmingham Co., Inc.,
110 Main St., Ansonia, Conn.
344 Vulcan St., Buffalo, N. Y.
Industrial Steel Casting Co.,
2237 Water Works Drive,
Toledo, O.
Link Belt Co.,
300 W. Pershing Rd.,
Chicago, Ill.
National-Erie Corp., W. 15th &
Raspberry Sts., Erie, Pa.
West Steel Casting Co.,
805 E. 70th St., Cleveland, O.
- CASTINGS (Gray Iron, Alloy, or
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Carnegie-Illinois Steel Corp.,
Pittsburgh-Chicago.
Chain Belt Co., 1660 W. Bruce St.,
Milwaukee, Wis.
Cramp Brass & Iron Foundries Co.,
Paschall Sta., Philadelphia, Pa.
Columbia Steel Co.,
San Francisco, Calif.
Erie Foundry Co., Erie, Pa.
Farrel-Birmingham Co., Inc.,
110 Main St., Ansonia, Conn.
344 Vulcan St., Buffalo, N. Y.
Forging & Casting Corp., The,
Ferndale, Mich.
Forest City Foundries Co.,
2500 W. 27th St., Cleveland, O.
Hagan, Geo. J., Co.,
2400 E. Carson St., Pittsburgh, Pa.
Hyde Park Foundry & Machine Co.,
Hyde Park, Pa.
Link-Belt Co., 300 W. Pershing Rd.,
Chicago, Ill.
Midvale Co., The, Nicetown,
Philadelphia, Pa.
Murray Iron Works,
Burlington, Iowa.
National Roll & Foundry Co., The,
Avonmore, Pa.
Oil Well Supply Co., Dallas, Texas
Taylor-Wilson Mfg. Co.,
McKees Rocks, Pa.
- CASTINGS (Heat Resisting)**
Driver-Harris Co., Harrison, N. J.
Farrel-Birmingham Co., Inc.,
110 Main St., Ansonia, Conn.
344 Vulcan St., Buffalo, N. Y.
- CASTINGS (Magnesium Alloys)**
Wellman Bronze & Aluminum Co.,
6017 Superior Ave., Cleveland, O.
Damascus Steel Casting Co., The,
New Brighton, Pa.
- CASTINGS (Malleable)**
Chain Belt Co., 1660 W. Bruce St.,
Milwaukee, Wis.
Lake City Malleable Co.,
5026 Lakeside Ave., Cleveland, O.
Link-Belt Co.,
300 W. Pershing Rd., Chicago, Ill.
Peoria Malleable Castings Co.,
Peoria, Ill.
- CASTINGS (Steel)**
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Brackenridge, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
Carnegie-Illinois Steel Corp.,
Pittsburgh-Chicago.
Columbia Steel Co.,
San Francisco, Calif.
Damascus Steel Casting Co., The,
New Brighton, Pa.
Farrel-Birmingham Co., Inc.,
110 Main St., Ansonia, Conn.
344 Vulcan St., Buffalo, N. Y.
Industrial Steel Casting Co.,
2237 Water Works Drive,
Toledo, O.
Link Belt Co.,
300 W. Pershing Rd., Chicago, Ill.
Mackintosh-Hemphill Co.,
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*Midvale Co., The, Nicetown,
Philadelphia, Pa.
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National Roll & Foundry Co., The,
Avonmore, Pa.
Oil Well Supply Co., Dallas, Texas
Pittsburgh Rolls Corp., 41st and
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Reliance Steel Casting Co.,
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Standard Steel Works Co.,
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Tennessee Coal, Iron & Railroad
Co., Brown Marx Bldg., Birming-
ham, Ala.
United Engineering & Fdry. Co.,
First National Bank Bldg.,
Pittsburgh, Pa.
West Steel Casting Co.,
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- CASTINGS (Worm & Gear Bronze)**
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Falcon Bronze Co.,
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- CEMENT (High Temperature)**
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Link-Belt Co.,
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- CHAIN (Malleable)**
Chain Belt Co., 1660 W. Bruce St.,
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Lake City Malleable Co.,
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Link-Belt Co.,
300 W. Pershing Rd., Chicago, Ill.
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North Quincy, Mass.
- CHAIN (Roller)**
Boston Gear Works, Inc.,
North Quincy, Mass.
Chain Belt Co.,
1660 W. Bruce St.,
Milwaukee, Wis.
- Link Belt Co.,**
307 No. Michigan Ave.,
Chicago, Ill.
- CHAIN (Silent)**
Boston Gear Works, Inc.,
North Quincy, Mass.
Link-Belt Co.,
307 No. Michigan Ave.,
Chicago, Ill.
- CHAIN (Sprocket)**
Boston Gear Works, Inc.,
North Quincy, Mass.
Chain Belt Co., 1660 W. Bruce St.,
Milwaukee, Wis.
Link-Belt Co.,
300 W. Pershing Rd., Chicago, Ill.
Peoria Malleable Castings Co.,
Peoria, Ill.
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Boston Gear Works, Inc.,
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Chain Belt Co., 1660 W. Bruce St.,
Milwaukee, Wis.
Link-Belt Co.,
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Morgan Engineering Co., The,
Alliance, O.
- CHARGING MACHINES (Open
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Morgan Engineering Co., The,
Alliance, O.
Wellman Engineering Co.,
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Pittsburgh-Chicago.
Cleveland-Cliffs Iron Co.,
Union Trust Bldg., Cleveland, O.
Columbia Steel Co.,
San Francisco, Calif.
Hanna Furnace Corp., The,
Ecorse, Detroit, Mich.
Shenango Furnace Co.,
Oliver Bldg., Pittsburgh, Pa.
Tennessee Coal, Iron & Railroad
Co., Brown Marx Bldg.,
Birmingham, Ala.
Youngstown Sheet & Tube Co.,
Youngstown, O.
- COAL, ORE AND ASH
HANDLING MACHINERY**
Atlas Car & Mfg. Co., The,
1140 Ivanhoe Rd., Cleveland, O.
Hagan, Geo. J., Co.,
2400 E. Carson St., Pittsburgh, Pa.
Industrial Brownhoist Corp.,
Bay City, Mich.
Link-Belt Co.,
300 W. Pershing Rd., Chicago, Ill.
- COKE—See COAL OR COKE**