STEEL

FOR FORTY-EIGHT YEARS—IRON TRADE REVIEW

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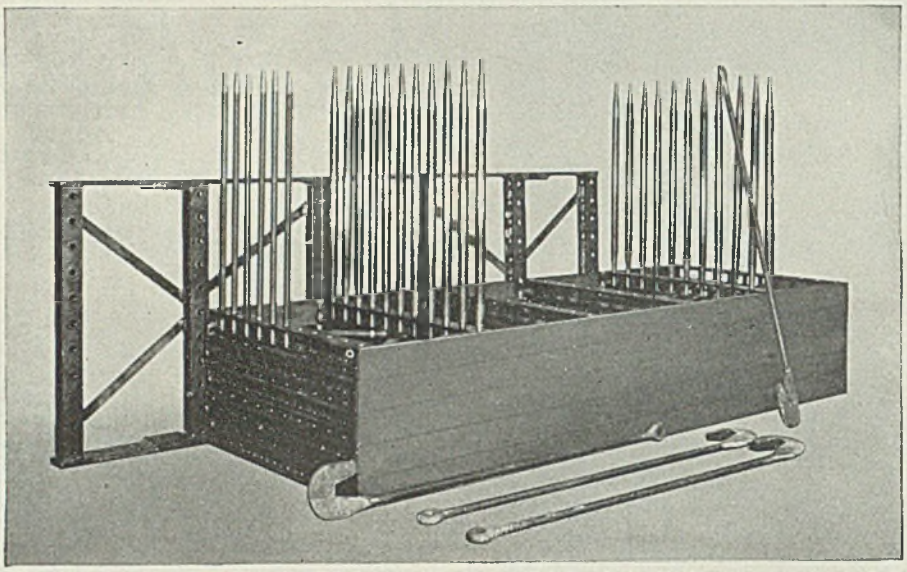
Vol. 101-No. 12 — September 20, 1937

WEIGHT SAVED...63%

YET THESE WELDED CRATES CARRY



Six of twelve all-welded Monel pickling crates now in use in the plant of a large mid-western steel company. In addition to the crates, 648 solid taper pins, 144 larger hollow taper pins and the necessary lifting hooks are all of Monel. This equipment was fabricated by the **Youngstown Welding and Engineering Co., Youngstown, Ohio.** *Each crate weighs 550 lbs. as compared to a cast bronze crate weighing approximately 1500 lbs. to carry the same load.*

100% OF THE LOAD

AND WEIGHT'S NOT ALL THAT MONEL SAVES!

ANYTHING that makes a big reduction in the weight of the pickling crate is mighty important, you'll agree. Cut down on weight, and see what you save:

In the first place, you buy lighter, stronger crates. And every time your crate carries a load to the bath, your power hauls less crate and more load.

All that is true provided the metal in your crate has the toughness, strength, and corrosion resistance the pickling crate must have. You can't sacrifice those qualities.

Monel* has more than paid its way in pickling, over many years. It is highly resistant to corrosion from the pickling acids, both sulphuric and muriatic. That's the reason for its long life. That's the reason too why steel men rely on it so strongly . . . they have seen Monel crates come out of the pickling bath year after year showing little wear and slight corrosion.

Properly designed pickling crates of Monel have *always* been lighter than crates of other metals. And now welding goes still further—makes it possible to build them much lighter yet. Think of it! The crates shown here each weigh about 550 pounds. That's just 37% of the 1550 pounds you would need in a crate of cast bronze to carry the same load.

Skillful design takes full advantage of welding in turning out these "stripped-for-action" crates.

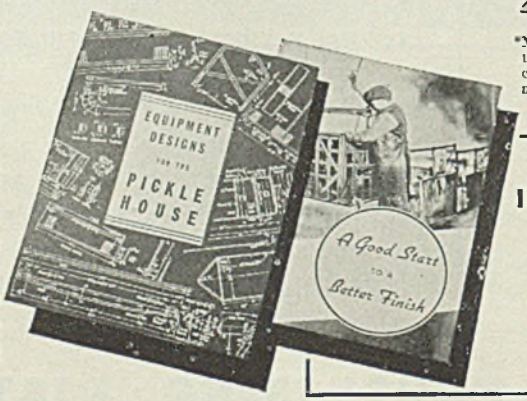
We have prepared two booklets full of *practical* designs and illustrations of pickling equipment. The suggestion you've been searching for may be in one of them. Write to-day for your FREE copy of "Equipment Designs for the Pickle House", and "A Good Start to a Better Finish".

THE INTERNATIONAL NICKEL COMPANY, INC.

67 Wall Street • New York, N. Y.

INCO MONEL **MONEL**

*Monel is a registered trade-mark applied to an alloy containing approximately two-thirds Nickel and one-third copper. This alloy is mined, smelted, refined, rolled and marketed solely by International Nickel.



IDEAS YOU'LL WANT TO USE

In addition to informative data on the use of Monel for Pickling Crates, these booklets contain numerous ideas for improving crate design. Write today for "Equipment Designs for the Pickle House" and "A Good Start to a Better Finish".

As the Editor Views the News

UNLESS the national labor relations board acts quickly to adopt a more considerate policy in administering the Wagner act it will become an agency for strife instead of peace in labor relations. Some recent rulings of trial examiners have subjected employes (p. 35) to unnecessary confusion and have placed employers (p. 47) in the position of having to disobey federal court orders if they are to heed the board's decisions. The whole sorry mess reflects against the judgment of those lawmakers who thought that a vindictive, one-sided law could be made to introduce justice into labor relations. The Wagner act is a failure.

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Recent jitters in Wall street do not seem to have discouraged industry from going ahead with rehabilitation and expansion programs. American Steel & Wire has awarded contracts for five plant additions in Cleveland (p. 30) and Kelsey-Hayes wheel will erect a plant on Neville Island, Pittsburgh. A brief summary of the outlook for structural steel (p. 31) emphasizes the growth of projects for private enterprise and the leveling off of government-sponsored work. The reluctance of railroads to buy freely until wage and legislative threats are clarified is an important current factor in the outlook for shapes. Important highway construction is in prospect.

More Money For Expansion

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Among the first of the important meetings to herald the opening of the 1937 fall convention season is the thirty-third annual convention and exposition of the Association of Iron and Steel Engineers, scheduled for Chicago, Sept. 28-Oct. 4. This organization, to whose activities a special section of this issue is devoted (pp. 83-130), has achieved a notable record of accomplishment. Starting modestly in 1907 as the outgrowth of an informal meeting of electrical engineers, it advanced steadily with the expanding use of electricity until at the present time the scope of its activities embraces most of the important divisions of engineering in iron and steel. The founders of the A. I. S. E. certainly were men of vision, but it is doubtful whether they could have foreseen the extent to which electricity 30 years later was to become the indispensable hand maiden of the iron and steel industry.

A. I. S. E. Ready For Convention

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Manufacturing sterling silver flatware involves operations strikingly similar to those employed in the production of many articles of alloy steel. The ingots are alloys of silver and copper (p. 50); they are "scalped," which is equivalent to the grinding or chipping of alloy steel ingots; rolled; annealed and pickled—much as steel is handled. The blanking, "striking," trimming and finishing operations all have their counterparts in the processing of steel products. . . . Early estimates of the popularity of the automobile trailer were grossly exaggerated. Nevertheless the demand is such that some manufacturers are able to utilize a modified form (p. 77) of motordom's mass production technique. In some respects, the trailer is a cross between an automotive product and the vision of a prefabricated house.

Auto Methods For Trailers

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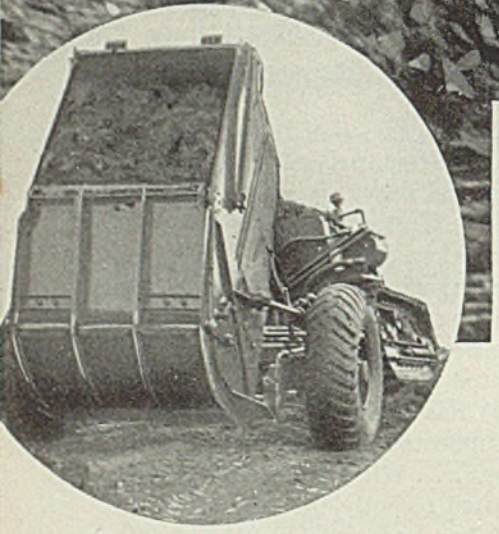
Manufacturers of office equipment encounter finishing problems that are exacting and diversified. Usually electroplating and enameling are involved, and more often than not, these operations must be accomplished by the manufacturer with all of the economy and flexibility that is expected of a jobbing shop. An Ohio manufacturer (p. 132) has been successful in reducing a number of complicated finishing problems to a fairly simple routine. . . . When the American Iron and Steel institute stated recently that the steel produced in 1936 would have an average life of 33½ years, it unwittingly aroused poetic instincts. We actually encountered keen rivalry as to who would be first to burst into print with verse on the "Seven Ages of Steel." You'll find it on page 129.

Seven Ages Of Steel

E. L. Shaner

A Ton Lighter

because it's INLAND HI-STEEL



Less Power and Fuel to Operate—and the Workability of INLAND HI-STEEL Saves Manufacturing Costs

Here's the new scraper that Baker Manufacturing Company is now building with a saving of a ton in weight, thanks to Inland Hi-Steel.

Inland Hi-Steel was chosen as the material for this new equipment for four reasons—all mighty important.

First, the user saves a ton of weight every mile. Convert that saving into fuel dollars over a period of years and you'll find that he gets more pay for his work.

Second, his equipment is more rust-resistant. Inland Hi-Steel is more resistant to atmospheric corrosion than copper-bearing steel, and many times more resistant than ordinary carbon steel.

Third, and here's something that appeals particularly to the fabricator, Inland Hi-Steel is easily worked. It saves fabrication costs . . . punches without burr, is readily cut and shaped, and welds well.

And fourth, Inland Hi-Steel is moderate in cost.

Inland engineers will supply full details and samples for tests. Write for Bulletin 10, describing the metallurgical properties of Inland Hi-Steel.

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Rejuvenation Comes to Iron Ore Industry in New Jersey

NEW YORK

RESUMPTION of operations at the Mount Hope mine near Dover, N. J., marks a further step in the recent rejuvenation of iron ore mining in New Jersey. Of the six fully equipped mines in that state four now are active, the others being the Richard mine near Wharton, the Washington mine at Oxford and the Scrub Oak mine at Wharton.

These mines represent by far the greater share of the state's capacity, estimated at 1,700,000 gross tons of concentrates annually. Iron content of these concentrates averages 67 to 68 per cent and in some cases as high as 70. The two mines yet to be placed in operation are the Beach Glen and Ringwood properties.

The present year is expected to prove the best in a quarter of a century for the iron ore industry in New Jersey, with a good outlook further ahead. The output of the mines now active is said to have been sold solidly ahead through the first half of next year. Last year production was estimated at around 160,000 tons, a gain of about 60,000 tons over the previous five-year average. The rate now is said to be approaching the 1,000,000-ton mark.

Foreign Ores Are Scarce

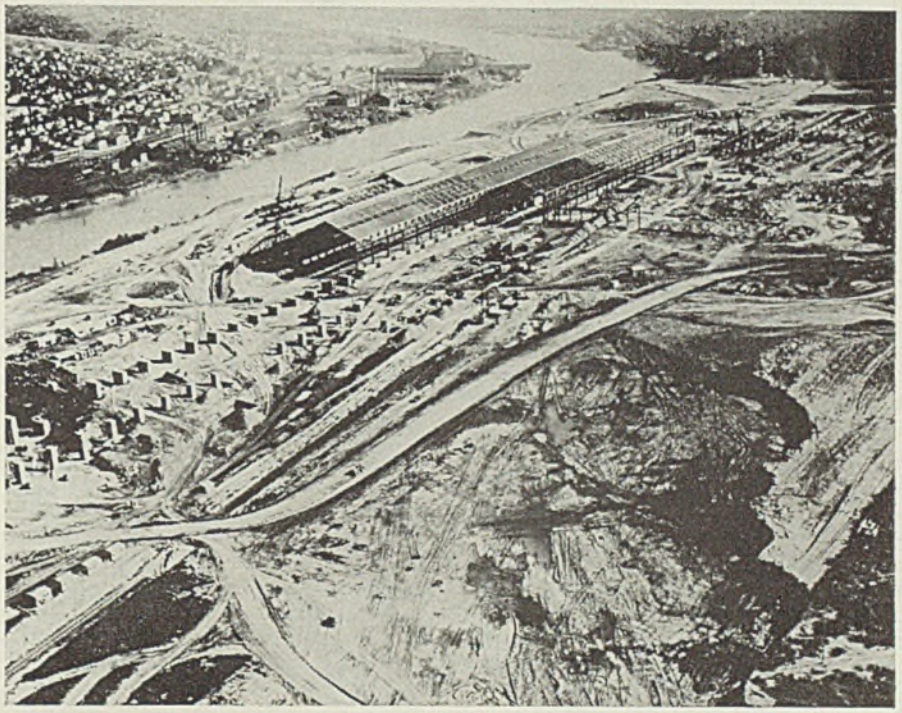
This spurt is attributed not only to the sharp increase in consumption but to the scarcity of foreign ores on which Eastern consumers have been relying extensively in recent years. Because of the heavy demand and the difficulty in obtaining foreign ores in the volume desired ores have been brought in volume this year from Lake ports to at least two tidewater furnace locations.

Is this improvement in New Jersey's iron ore industry a mere "fair weather" phenomenon? The producers are confident that it is not. They point out the strides that have been made in beneficiating their magnetic ores and in lowering the cost of production. They are confident that their product will take an increasingly important position as time goes on.

The trend will be observed with much interest. History shows that, aside from the emergency period during and immediately after the World war, the iron ore industry in New Jersey has not really flourished since the early eighties.

As is usual during time of industrial activity, some thought has been given to the possibility of reversing the normal flow and shipping New Jersey iron ore abroad. Hardened old-timers do not regard this speculation seriously. They point out

Huge Irvin Mill Takes Form



RAPIDLY taking form is the new Irvin works of Carnegie-Illinois Steel Corp. on the Monongahela river between Clairton and Dravosburg, Pa., as shown by this aerial view taken on Sept. 7, the 108th day since William A. Irvin, president, United States Steel Corp., turned the first spadeful of dirt at the site of the plant bearing his name. Since then more than 2,000,000 tons of earth and rock have been removed and this work continues on a 24-hour schedule. In the meantime American Bridge Co. is bringing to completion the three main mill buildings which soon will be ready for installation of equipment. The plant is being constructed on an artificial plateau 220 feet above the river level, obviating flood hazards. Products will be sheets, strip and tin plate, to be rolled from slabs produced at the Carnegie-Illinois Edgar Thomson works 10 miles away

that if the situation in Europe becomes extremely tight there probably would be a correspondingly heavy demand for iron ore in this country with every likelihood that our domestic ore would stay on this side.

Other well informed observers are so impresed with present world conditions, involving a shortage of iron ore and of bottoms for loading in the westerly direction, combined with extraordinary requirements by leading European powers in connection with vast armament programs, that they actually have been investigating the possibilities of exporting New Jersey ore.

So far these attempts have met with no success. Nevertheless these interests feel that there is a chance of selling some of this ore abroad, particularly because of the high iron content in the concentrates. They do not believe that even the higher phosphorus New Jersey ores would prove unsatisfactory for European mixes. The possibilities, of course, depend on whether the present scarcity becomes more pronounced. Quoting of prices in line with the foreign market so far has been complicated in part by the cost of getting the ore aboard ships. Despite the proximity of these mines to tidewater points the handling facilities are not at present such as to facilitate expeditious movement.

Certain interests who have been seeking outlets for American iron ore abroad report that European buyers are more interested in Lake ore than in Eastern ores but so far have found the delivered cost too high.

Despite the scarcity of iron ore from abroad, present imports are at a considerably higher rate than last year. Department of foreign and domestic commerce figures place the importation during the first half of this year at 1,220,484 gross tons. This compares with 956,214 tons for the first half of 1936.

Steel Manufacturing Processes Increase Value of Raw Materials by 63 Per Cent

STEELWORKERS were furnished with an average of $3767 worth of raw materials in 1935 from which they produced an average of $6155 worth of finished iron and steel, the American Iron and Steel institute has calculated.

Total value of raw materials purchased by the industry was $1,411,000,000, while the total value of iron and steel produced was $2,305,000,000. The $894,000,000 difference represents the value, 63 per cent, added to the raw materials by manufacturing processes.

The institute's calculations are based on figures from the recently issued federal census of manufactures for 1935.

Average annual earnings for an average 375,000 steel workers during 1935 were $1224, the census figures show. For 1937 it is estimated the steelworkers' average income will exceed $1730. The 1935 wage was equivalent to 51 per cent of the value they added to the raw materials.

By comparison, the employes of all other manufacturing industries received in wages an average of $1012 during 1935, or 38 per cent of the value they added by processing the various raw materials furnished them.

By paying out in wages an amount equal to more than 50 per cent of the value added to raw materials by manufacturing processes, the steel industry ranked among the top 10 per cent of 370 industries covered by the census of manufactures.

The balance of $2388 per man remaining after deducting cost of raw materials from the value of its products was used by the steel industry to pay for labor, new equipment, interest, depreciation, taxes, sales expense, research, and other operating costs.

After all these expenses, net profits of the industry in 1935, before dividends to stockholders, amounted to only $114 per man employed, according to data compiled by the institute. Dividends to the half million stockholders, whose investments furnish the great bulk of the industry's capital, represented an average of $71 for each employe at work, leaving only $43 to be added to the industry's surplus funds for each man on the payrolls during 1935.

Ohio Scrap Yards Win Lower Compensation Rate

Compensation insurance rate for scrap iron dealers in Ohio has been reduced from $11 to $7 per $100 of payroll, effective July 1, the second reduction in basic rate in two years. It results from a safety campaign and co-operative program conducted by Cleveland and Cincinnati chapters of the Institute of Scrap Iron and Steel Inc., in co-operation with the Ohio industrial commission. The original rate was $14 per $100 of payroll, the recent reduction bringing it to half this figure.

Protest is made against placing office help and salesmen on the basic yard rate of $7. These classes formerly were charged at 5 and 45 cents per $100.

Steel & Wire Launches Rehabilitation Program

American Steel & Wire Co. has awarded contracts for erection of five new additions at its Cuyahoga works, Cleveland, first step in a $4,000,000 rehabilitation program.

Construction will be started soon by the American Bridge Co., another United States Steel Corp. subsidiary. To be erected are: Warehouse, 80 x 576 feet; annealing room, 80 x 144 feet; cleaning building, 80 x 648 feet; storage building, 65 x 408 feet; and a building for stainless steel, 80 x 192 feet. In addition the roof of the annealing building, which measures 80 x 432 feet, will be raised and a crane runway added.

Although work will start soon, the project will not be completed for approximately 18 months due to the fact operations in the departments affected will be continued.

Kelsey-Hayes To Build New Plant at Pittsburgh

Kelsey-Hayes Wheel Co. has acquired a 30-acre site on Neville Island, Pittsburgh, on which it will erect a $1,000,000 plant. The new unit will use 100,000 tons of flat steel annually. Company officials found they could purchase raw materials cheaper and at the same time have a better market for their scrap metal at Pittsburgh, a decisive factor in the location of the unit, said to be the first of several to be installed there.

Construction plans call for completion by Jan. 1.

Central Foundry Buys Alabama Soil Pipe Plant

Central Foundry Co., New York, has purchased the physical properties of the Bessemer Soil Pipe Works, Bessemer, Ala. The plant has a capacity of about 400 tons of cast iron sanitary pipe, normally employs 300 to 400 men, but has been inactive for the past five or six years. It is located near Central Foundry's Bessemer plant.

Structural Activity in 1937 Is Only Moderately Above That of 1936

A 1937 construction gain of only moderate proportions over 1936 was all that most building experts could promise at the start of this year. With only a few months remaining now, it appears that the increase will indeed be small.

Reports of several statistical agencies show that for seven months this year construction was 12 to 18 per cent ahead of the comparable period of 1936. The outlook for a good volume of construction over the balance of 1937 has become more uncertain recently, in line with the bearish thinking which has pervaded other industries. Some fabricators assert they would be satisfied if 1937 holds even with 1936.

The year so far has been marked by a substantial increase in private enterprise and a decline in public work. Factory enlargement programs, railroad construction, and power plant expansion, to mention a few leaders, were especially active. Bridge building, particularly in the East, has been good.

New Public Works Planned

Railroad construction, however, has been temporarily halted while the carriers attempt to settle problems of rates and wages. Factory enlargement programs are believed by many observers to have passed their peak for this year.

Public works will be moderately accelerated by the recent presidential approval of nearly $100,000,000 worth of new public construction. Six hundred and forty-eight PWA allotments are involved, mostly schools and other public buildings, waterworks, sewage systems and other projects. Actual value of this program, including the amounts which will be contributed by the various communities affected, will be around $250,000,000. The PWA has approved a $20,100,000 allotment for completion of the Keystone dam, in the Central Nebraska Power and Irrigation district, two power plants and transmission lines.

In early October bids are expected to close for about 18,000 tons of shapes for the main span of the Bronx-Whitestone bridge, New York. While this is one of the largest outstanding projects, a fair volume of projects ranging from 1000 to 5000 tons is pending.

One of the latest expansion programs in the automobile industry involves plans by Kelsey-Hayes Wheel Co. to build a plant on a 30-acre tract on Neville Island, near Pittsburgh, costing in the neighborhood of $1,000,000.

In the field of residential construction, where activity has been well maintained this year, one of the most recent developments of interest to the steel industry is the announcement by Harnischfeger Corp., Milwaukee, that it will erect 135 prefabricated steel dwellings in a "planned" community near Milwaukee. The development will be one of the first large-scale low-cost housing projects undertaken by private capital, and will be one of the most spectacular programs ever attempted by promoters of the steel house.

Probably the outstanding topic of the year has been building costs. Wages for common and skilled labor have risen steadily since 1935. However, to those persons who complain costs have risen unduly high, builders reply that it is entirely unfair to compare present costs with those which prevailed during the depths of the depression, and that due to improved standards and materials, values today are in excess of what could be obtained for the same amount prior to the depression.

Higher prices for material and labor appear likely to cut into the 1937 profits of structural steel fabricators, it is believed in some quarters.

Lighter Shapes Gain Moderately

Moderate gains in the use of lighter structural shape products continue to be shown, but talk of these items supplanting the heavy beams has been exaggerated frequently. As an example, in Pittsburgh recently it was reported that the largest district independent steel producer would eliminate its structural mills to make way for additional raw steel facilities and would concentrate on smaller sizes of structural steel. This rumor was denied promptly by officials of the steel company.

Recently projected highway expansion programs indicate that activity will be well maintained over the next few years. New York City has heretofore taken the lead in elevating and tunneling for automobile traffic, but now Chicago is planning 165 miles of elevated roads in the next five years, while San Francisco and other cities are considering good-sized programs.

One of the most interesting of the proposed highways is the projected South Penn route in Pennsylvania, which would make use of the right of way started more than 50 years ago for a railroad through the Tuscarora and Laurel mountains. The railroad line was never finished, but nine tunnels were partially completed.

The Commonwealth of Pennsylvania proposes to build a 200-mile express highway, a toll road, from Pittsburgh through Carlisle to Harrisburg, which would eliminate many of the long grades now encountered by motorists. The cost would be $60,000,000 to $65,000,000.

It has been estimated roughly that some 45,000 tons of steel would be required for the South Penn highway job. Last week bids were taken for draining eight of the tunnels which are half filled with water. The ninth tunnel of the unused railway is not to be used in the contemplated highway job.

Superior To Install Two 30-inch Cold Mills

Award of two 30-inch cold mills, one of them a 4-high and the other a 2-high, is expected to be made soon by the Superior Steel Corp. as part of its expansion program at Carnegie, Pa. The mills are designed to run both carbon and stainless grades. They will be housed in a building occupied by the recently-abandoned 12-inch hot mill.

The expansion and improvement program will add approximately 20 per cent to the company's capacity. Previously the company has rolled only up to 20 inches. Plans also include changes in annealing, pickling and finishing to take care of increased width of metal.

Republic Operating Four Stacks At Youngstown

Republic Steel Corp., Cleveland, has recently relighted its No. 5 blast furnace at Youngstown, O., after having been shut down for some time for modernization and relining. Rated capacity of the furnace is placed at 700 tons. Four of the company's five stacks in this district are now producing iron.

Electric Ranges Gain

More than 2,500,000 electric kitchen ranges now are in use in this country and in 10,000,000 homes obsolete ranges will be replaced eventually with electric ranges, said George A. Hughes, Chicago, at a meeting of electrical dealers in Cleveland, Sept. 14. Electric ranges made today, he said, will last a lifetime.

Reinforcing Steel Buyers Protected by Institute's Code of Standard Practice

BENEFITS to concrete reinforcing steel buyers as result of the code of standard practice adopted by sellers are indicated in a memorandum just released by the Concrete Reinforcing Steel institute, 201 North Wells street, Chicago.

The standard practice code is designed to furnish reliable information relative to the purchase and use of reinforcing material and the sources from which it may be obtained. The institute lists a number of the more important applications of the code to the buyer's needs, as follows:

The reinforcing industry has definite, fair rules of procedure for dealing with the various business and technical phases of a contract for reinforcing materials. They form the institute code of standard practice.

The code is made a part of every contract, unless specific provision to the contrary is stated, and hence shall govern in those cases where the provisions of building codes, architects' and engineers' plans and specifications, or contracts are not complete or clear.

The seller provides three distinct types of engineering service, depending upon the character of the job; each proposal shall specify which of these three types is included. The code further informs the buyer as to the extent, if any, or responsibility assumed by the seller in connection with the engineering service rendered.

The industry follows certain rules and practices in estimating and detailing reinforcing materials in the absence of any definite requirements to the contrary covered either by the plans or specifications of the architect or engineer.

In the event business controversies should arise during the life of a contract a method of settlement by arbitration is fully set forth.

In the purchase of reinforcing materials, the buyer may obtain a guide to reliable sources through the list of names and addresses of members of the Concrete Reinforcing Steel institute given on page 14 of the code.

The code of standard practice is a declaration of sound principles, designed to promote fair business relations between the buyer and the seller of reinforcing materials.

Meetings

BRITISH INSTITUTES PLAN AMERICAN VISIT IN 1938

British Iron and Steel institute and British Institute of Metals have issued a preliminary announcement concerning their joint meeting with the American Iron and Steel institute and American Institute of Mining and Metallurgical Engineers in the United States in the fall of 1938. The provisional program arranges for the formation of two groups, one interested in ferrous and the other in nonferrous metals, and each to hold a series of meetings in various Eastern cities between the dates of Oct. 3 and Oct. 21.

Among the cities included in the itineraries are New York; Bethlehem, Pa.; Waterbury, Ansonia and Bridgeport, Conn.; Pittsburgh; Washington; Baltimore; Cleveland; Detroit; and Chicago. Plant visitations will be made in most of these centers.

STEEL CONSTRUCTORS TO HOLD HIGHWAY MEETING

American Institute of Steel Construction has issued invitations to a dinner meeting at the Waldorf-Astoria hotel, New York, Sept. 21, to discuss plans for improving highway design, particularly within the limited areas of congested cities. Among those invited to attend and participate in the discussion are representatives of automobile manufacturers, automobile owners, highway engineers, city engineers, city planners, architects and road builders.

Admittance will be by card invitation. Clyde G. Conley, president, Mt. Vernon Bridge Co., Mt. Vernon, O., and president of the institute, will preside.

FOUNDRY EQUIPMENT GROUP SCHEDULES FALL MEETING

Fall meeting of the Foundry Equipment Manufacturers association is to be held Oct. 18-19 at the Greenbrier hotel, White Sulphur Springs, W. Va. Arthur J. Tuscany, executive secretary of the association, Penton building, Cleveland, states that all manufacturers of equipment used in foundries are invited, regardless of membership in the organization.

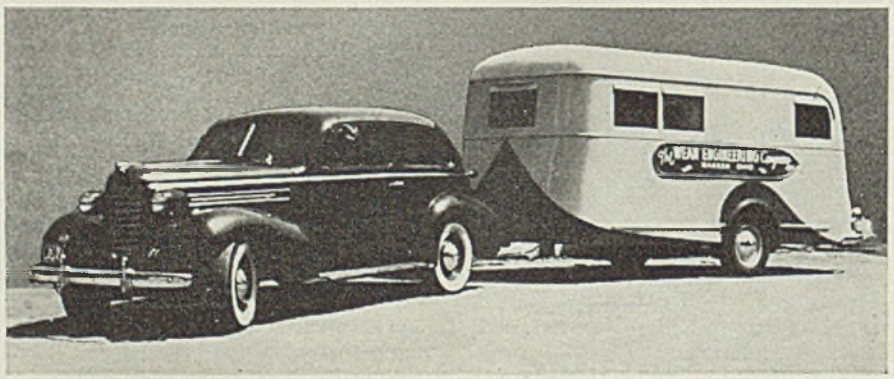
The meeting will consider present business conditions and prospects for the future, results of a recently released survey of wage and employment conditions in the industry, and results of a comparison of sales and administrative expenses now being completed.

Coincident with this meeting, Steel Founders society will meet at nearby Hot Springs, Va., and the Conveyor association also at White Sulphur Springs.

SCRAP INSTITUTE TO HOLD CONVENTION IN JANUARY

Tenth annual convention of the Institute of Scrap Iron and Steel will be held at the Ambassador hotel, Atlantic City, N. J., Jan. 12-14, according to announcement of M. V. Bonomo, president. Arrangements for the convention are under joint auspices of the New York, New Jersey and Philadelphia chapters, which will act jointly as hosts.

B. H. Rubine, Hudson Iron & Metal Co., Bayonne, N. J., is general chairman of the joint committee. President of the three host chapters are: J. A. Moskowitz, New York; Arthur Reichman, New Jersey; and A. R. Robinson, Philadelphia. Preparations are being made for a record attendance to celebrate the institute's tenth year.



Field Office on Wheels

EQUIPPED for field office work, conferences, storage of blue prints and surveying instruments and other tools, this trailer is being used by Wean Engineering Co., Warren, O., in field construction jobs where the presence of a superintendent of erection is required. It may be moved directly into buildings, in close proximity to the installation. Repeated building of temporary construction thus is eliminated

New Record in Tin Plate, Strip, Sheets

RECORD-BREAKING demands, largely from industries manufacturing consumers' goods, created new peaks of production in steel sheets, strip and tin plate in the first six months of 1937, it is indicated by the American Iron and Steel institute, analyzing its report on steel made for sale, which appeared in STEEL, Aug. 23, page 27. Steel bars and seamless pipe, used chiefly by durable goods industries, were also produced in record tonnages.

All other major products showed substantial increases over output in the corresponding period of last year. During the half-year period, a total of 22,345,820 gross tons of finished steel was produced for sale by the industry, a tonnage which closely approximates the volume of shipments during the period. The total represented an increase of nearly 30 per cent over the output in the same period of 1936.

A total of 4,411,516 gross tons of sheet steel was shipped during the first half of 1937, or more than 63 per cent of the record annual sheet output of 6,995,905 gross tons, established in 1936. Producers of consumers' goods, such as automobiles, farm equipment and house furnishings, take about 74 per cent of the sheets that can be traced to destination, it is estimated.

Strip Steel Shipments Up

Shipments of strip steel during the first six months amounted to 1,727,311 gross tons, or 53.5 per cent of the record annual output of 3,224,916 gross tons, also established in 1936. More than 85 per cent of strip steel shipments which can be traced to destination go into consumers' goods. Shipments of sheets and strips in the first half of this year were respectively 34 per cent and 23 per cent above the tonnages shipped in the first half of 1936.

Shipments of tin plate aggregated 1,253,970 gross tons in the first six months of 1937, equal to about 60 per cent of the record total of 2,103,153 gross tons, produced in 1936, and an increase of 27 per cent over shipments in the first six months of 1936.

Total shipments of seamless steel pipe in the first half of this year reached 873,073 gross tons, excluding mechanical tubing, equal to nearly 70 per cent of the total of 1,254,499 gross tons produced in the record year 1936. The half-year total exceeds by 41.5 per cent the tonnage shipped in the first half of last year.

A total of 3,594,916 gross tons of steel bars, including bars for concrete reinforcement, were shipped during the first six months. This tonnage represents an increase of 31 per cent over the first half of last year.

Production

RESUMPTION of production after the interruptions of Labor day brought the national operating rate back 8 points to 80 per cent of capacity last week, with indications at several centers that this may be bettered this week. Part of the factors holding the rate below that preceding the holiday is necessity for repairs to open hearths, though in some instances lack of business has caused some shortening.

Cleveland—Up 1 point to 63 per cent, idleness of Republic's Corrigan McKinney open hearths during change in a rolling mill continuing to hold the rate down.

Youngstown, O.—Up 5 points to 75 per cent, with 58 of 83 open hearths and 22 of 25 blast furnaces active. The same rate is indicated for this week.

Central eastern seaboard—Down 1.5 points to 63 per cent. An easing tendency is noted in some directions, with strength in others. A blast furnace is scheduled to be blown out for repairs soon.

Birmingham, Ala.—Unchanged at 91 per cent. Anticipated drop in rate was avoided by quick repair to a Gadsden open hearth. Only one furnace is out of production.

St. Louis—Down 3 points to 74 per cent of capacity.

Chicago — Gained 10 points to 83 per cent, from the holiday week preceding. This is a loss of 3 points from the rate two weeks ago.

Cincinnati—Declined 9 points to 80 per cent, two open hearths being out for repairs in preparation for increased fall production.

Detroit—Down 5 points to 95 per cent, one open hearth down practically all week for repairs.

New England—Up 10 points to 75 per cent, with probability of the same rate this week.

Buffalo—Down 9 points to 70 per cent, with indications for return to 79 per cent this week.

Pittsburgh—Up 15 points to 84 per cent, which is a gain of one point over the rate prevailing in the week before the Labor day holiday. The leading interest was operating around 89 per cent and the leading independent around 76 per cent. Forty-eight blast furnaces are active, one furnace having resumed at Johnstown, Pa., during the past week.

Wheeling—Up 13 points to 89 per cent, which is two points below the figure estimated prior to the Labor day holiday.

District Steel Rates

Percentage of Open-Hearth Ingot Capacity Engaged in Leading Districts

	Week ended Sept. 18	Change	Same week 1936	Same week 1935
Pittsburgh ..	84	+15	72	46
Chicago	83	+10	72½	59½
Eastern Pa...	63	—1.5	48	35½
Youngstown .	70	+5	80	54
Wheeling	89	+13	92	84
Cleveland ...	63	+1	82	67
Buffalo	70	—9	76	37
Birmingham .	91	none	64	50
New England	75	+10	70	68
Detroit	95	—5	95	94
Cincinnati ...	80	—9	76	†
St. Louis	74	—3	†	†
Average ..	80	+8	72½	52

†Not reported.

Hourly Wages Increase; Work Week Is Shorter

Average hourly earnings in manufacturing industries increased from 70.7 cents in June to 71 cents in July, according to the National Industrial Conference board. A decrease of 2.2 per cent in the average work week, however, caused average weekly earnings to decline from $28.39 in June to $27.84.

Since July, 1936, employment has increased 16.6 per cent; total man hours worked, 17.1 per cent; payrolls, 34.2 per cent. Average hourly earnings in July were 15.1 per cent higher than a year ago and average weekly earnings were 15 per cent higher. Length of the average work week has increased only 0.5 per cent.

Comparison with 1929 indicates improvement in employment, but manufacturing activity as measured by total man-hours worked has not yet reached the 1929 level. There were 2.8 per cent more workers employed in July in the 25 industries reporting to the board than in 1929. Total payroll disbursements exceeded those of 1929 by 0.2 per cent.

Total man-hours worked were 16.4 per cent less than eight years ago. Average hourly earnings are now 20.3 per cent higher, and the average work week is 18.6 per cent shorter. Weekly earnings are 2.5 per cent lower than 1929 as result of the shorter work week, but the purchasing power of these weekly earnings is 9.8 per cent higher.

Financial

IRON, STEEL LEAD BUSINESS IN 1937, SAYS ECONOMIST

Iron and steel have taken the lead in business this year, replacing the automotive industry which led the way out of the depression, according to Col. Leonard P. Ayers, vice president, Cleveland Trust Co., Cleveland.

Despite a serious setback by strikes among independent producers, the volume of steel production to date this year has been a third larger than in the corresponding period last year, and total output is nearly sure to exceed that of 1929, Colonel Ayers declared.

Other lines of business are not so conspicuously active as are iron and steel but records for 1937 for the most part are well above those for the same months in 1936.

CONTINENTAL CAN FILES REGISTRATION STATEMENT

Continental Can Co., New York, has filed with SEC a registration statement covering a proposed issue of 200,000 shares of $4.50 cumulative preferred stock. A special stockholders meeting is to be held Sept. 28 for the purpose of authorizing the issue which is expected to be underwritten by a banking group headed by Goldman, Sachs & Co.

YOUNGSTOWN STEEL DOOR TO INCREASE CAPITAL STOCK

Stockholders of Youngstown Steel Door Co., Youngstown, O., have approved a plant to increase authorized common shares to 800,000 from 400,000 and to split common stock 2 for 1, thereby increasing number outstanding to 665,920 from 332,960 shares.

LUDLUM'S 7-MONTH NET OVER A MILLION

Ludlum Steel Co., Watervliet, N. Y., reports net profit of $1,032,193 for the first seven months this year after all charges except tax on undistributed profits. This equals $2.07 a common share against $1.95 a share or $1,041,245 for the entire year 1936. For the seven months this year consolidated sales were $8,424,000 compared with $5,694,000 in the like period last year.

SCULLIN STEEL MODIFIES PLAN OF REORGANIZATION

United States District Judge, John C. Collet has approved a modified plan of reorganization for the Scullin Steel Co., St. Louis, to meet objections of some holders of bonds and preferred stock. Under the plan $3,062,500 in first mortgage bonds will be replaced with an equal issue of common stock before Oct. 1, 1944, at the rate of 30 shares for each $1000 bonds. Three per cent fixed interest and an additional 3 per cent if earned will be paid on the new issue. Owners of 100,000 shares of preferred stock will get 1¼ shares of new common for each share of preferred. Holders of 30,000 shares of old common will receive 10,000 shares of the new issue, with 20 shares for each $1000 note going to the owners of $1,497,000 in debentures.

STANDARD SCREW SEEKS TO SPLIT COMMON

A meeting has been called Sept. 23 for stockholders of Standard Screw Co., Hartford, Conn., to act on recommendations of directors that common shares be split five for one. Par value will be reduced to $20 from $100.

DIVIDENDS DECLARED

Pressed Steel Car Co., Pittsburgh, has declared a full-year dividend of 25 cents a share on the first preferred, $2.50 on the second preferred and 25 cents on the common stock. The common dividend will be payable Oct. 20 to stock of record Sept. 30, while holders of first preferred will receive dividends of 18¾ cents a share payable Oct. 20 to stock of record Sept. 30 and 6¼ cents a share payable Dec. 6 to stock of record Nov. 20. Holders of second preferred will receive dividends of $1.87½ a share payable Oct. 20 to stock of record Sept. 30 and 62½ cents a share payable Dec. 24 to stock of record Dec. 10. To date this year the company has purchased $532,500 of its 5 per cent debentures, due Jan. 1, 1951, leaving outstanding debentures in the face amount of $3,728,418.

Directors of Jones & Laughlin Steel Corp., Pittsburgh, decided not to declare the regular dividend on its cumulative 7 per cent preferred stock payable Oct. 1, but declared a dividend of $1.75 a share on account of arrearages. The dividend is payable Oct. 15 to record Sept. 30. The company paid a like amount July 15.

General Electric Co., Schenectady, N. Y., has recently declared a dividend of 40 cents a share for the third quarter. The dividend is payable Oct. 25 to stockholders of record Sept. 24.

Directors of American Coach & Body Co., Cleveland, have voted a dividend of 25 cents a share, payable Oct. 1 of record Sept. 20.

Living costs of wage earners in August increased 0.1 per cent over July, according to the National Industrial Conference board. All major budget divisions except food advanced in cost.

What Can Industry Do To Lessen Unemployment?

"Some 67,000 new manufacturing plants will be needed to provide jobs for available factory labor," according to a recent study by Allen W. Rucker and N. W. Pickering, business economists. The study, "What Can Industry Do About Unemployment?," has just been published by Farrel-Birmingham Co. Inc., Ansonia, Conn., in booklet form. "Factory employment opportunity since 1923 has risen and fallen directly with the number of going businesses; the job opportunity per going firm has ranged from 42 to 44 persons. The present average, 43.7 employes per plant, would require 67,000 new plants to provide employment for the ten million workers available to industry."

The authors stress the need for concrete thinking by business men. They point out that available official records show that:

"To produce the 1929 standard of living for the 1937-38 population, industry will need to raise the total work done from the present 13.3 billion man-hours a year to 18.65 billion man-hours; that this in turn means an average work-year per wage earner of 1865 man-hours instead of the 1704 hours worked in 1935, for each of ten million wage earners.

"To employ ten million wage earners in industry means one and one-half million new jobs and these can be provided only by an additional 67,000 new firms inasmuch as the census reveals that jobs per going firm do not show any appreciable increase in fifteen years."

The study points out that an adequate standard of living for the underprivileged part of the population would require either some five billion man-hours of work additional in industry or, lacking that, an increase of 54 per cent in productivity per man-hour. Unless more goods are produced, no possible increase in dollar wages will raise the real standard of living, say the authors. Their figures take into consideration the increase in productive efficiency.

Welding Wire Output Exceeds 70,000 Tons

More than 140,000,000 pounds of steel welding wire was produced last year, enough to make a strong weld 134,000 miles long, according to the American Iron and Steel institute. This represents an increase of about 480 per cent over 1932 production of 24,150,000 pounds.

The institute announced the amount of welding wire produced per ton of steel ingots increased from 1.79 pounds per ton in 1932 to 2.95 pounds last year.

Labor

The national labor relations board hearing against the Weirton Steel Co. last week entered its second month, with company counsel bitterly protesting the procedure in allegedly protecting CIO witnesses from cross examination concerning the union. At one point E. G. Smith, trial examiner, was charged with making a premeditated ruling.

The hearing has been transferred to Steubenville, O., from New Cumberland, W. Va. Operation and financing of the Weirton employe representation plan was outlined before the trial examiner.

Meanwhile at Johnstown, Pa., the labor board hearing continued against the Bethlehem Steel Co., with CIO witnesses testifying to alleged "hostility" which they asserted they had encountered.

Threatens to Call 1500 Witnesses

Trial Examiner Frank Bloom's policy of protecting CIO witnesses from cross examination brought from Hoyt A. Moore, Bethlehem counsel, a threat to call all of the company's 15,000 Cambria plant employes as witnesses. Mr. Moore's threat followed several days of objecting in vain to the practice of permitting witnesses to tell the attitude of fellow workers toward the ERP and certain company actions without saying who the complainants were.

Other developments last week:

SWOC announced an international convention of steelworkers would be held in Pittsburgh late in November or early in December, the first convention to be held by the union. Policy for guidance of officers in negotiating for renewal of contracts with steel companies probably will be drafted.

Trainmen ended a strike which began June 10 at the Cambria plant of Bethlehem in Johnstown. The men returned without the signed contract they sought.

The Heppenstall Co., Pittsburgh, filed an injunction suit to restrain pickets from interfering with plant operations. The company pointed out that a contract with the CIO would not be binding under Pennsylvania law. The plant has been closed for about two months.

CIO was defeated in a labor board election at the plant of National Electric Products Co. in Ambridge, Pa., by the A. F. of L. The labor board ordered the election in defiance of a federal court ruling upholding the A. F. of L. contract that the company had signed.

Homer Martin, president of the United Automobile Workers, informed General Motors Corp. that "wildcat" strikes were outlawed by the union and promised "effective disciplinary action" against its own members in case of unauthorized strikes.

Edwin S. Smith, a member, denied the labor board was prejudiced in favor of the CIO as against the A. F. of L.

UNEMPLOYMENT IN JULY ESTIMATED AT 6,119,000

Unemployment in July totaled 6,119,000, practically unchanged from June, estimates the National Industrial Conference board. Total employment in private enterprise and in permanent government agencies aggregated 46,923,000, a net advance of 25,000 over June. Persons employed in non-agricultural activities totaled 35,284,000, practically unchanged from June.

Increases in employment of 129,000 in manufacturing, 29,000 in agriculture, 13,000 in public utilities, and a few thousand in forestry, fishing and transportation were offset by decreases of 88,000 in trade, distribution and finance, 43,000 in the service industries, 18,000 in construction, and 9000 in mining.

July's unemployment total was 2,206,000 less than in July, 1936. During the 12 months the board estimates a reabsorption of 2,798,000 persons into the nation's employed labor force. The total labor force is estimated to have increased 592,000 since July last year, and by 4,754,000 since 1929.

TCI EMPLOYMENT INCREASES 37 PER CENT SINCE JAN. 1

Tennessee Coal, Iron & Railroad Co. employment reached a total of 27,265 Sept. 1, a new record and an increase of 37 per cent since Jan. 1 when 19,823 were on payrolls of its various plants near Birmingham, Ala. Since Jan. 1, 1936, the company has added 12,251 employes.

Obsolete Ships Sold to British for Scrap Use

Awards of 15 ships of its laid-up fleet, for conversion into scrap, and two for conversion into colliers, is announced by the maritime commission. The highest bids for the scrap were $688,365 and the ships sold for colliers brought $130,019. It is estimated 125,754 tons of scrap will be realized from the 15 ships.

Simpson, Spence & Young, New York, bidding for British buyers, were awarded ten ships at $464,868 and a bonus of $29,820, offered by the buyer if eight or more ships were awarded to it. Three other ships for scrapping were awarded to Philipp Bros. Inc., New York, at $143,102 and the remaining two to Union Shipbuilding Co., Baltimore, at $50,575.

Briggs To Build New Parts Plant

BRIGGS MFG. CO. has purchased 74 acres of property fronting on the south side of Eight-Mile road at the Michigan Central railroad in Detroit where construction will start immediately on a building for construction of moldings and other automobile parts, Walter O. Briggs, chairman, has announced.

This is in the immediate vicinity of the new Dodge truck plants and the Rotary Electric Steel Co. The new Briggs building will comprise two stories at the outset, providing 200,000 square feet of floor space. Expansion calls for expenditure of approximately $3,000,000 for building and equipment.

Recently Briggs purchased land and buildings from the Hudson Motor Car Co. on Conner avenue, a former export plant of Hudson. With these two new acquisitions, Briggs officials state the company will have adequate room for expansion and future development of its service and plumbingware division.

Bar Iron Mill Wages Continue Unchanged

Average selling price of bar iron as determined to the satisfaction of the Western Bar Iron association and the Amalgamated Association of Iron, Steel and Tin Workers having undergone no change from July 1 to Oct. 1, the Amalgamated association bar mill workmen are entitled to unchanged wage rates.

The $2.45 card continues for boiling, 12-inch and bar mills, and a $2.55 card for guide and 10-inch mills. Rates continue unchanged for puddlers and others since they were advanced voluntarily by the members of the Western Bar Iron association April 1.

Machine Tool Orders in August Gain Slightly

Downtrend in machine tool orders of the previous three months steadied in August, according to the National Machine Tool Builders' association, with the index slightly above that of July, at 179.8, compared with 171.1 in July. The index of domestic orders rose from 115.4 in July to 129.5 in August; foreign orders declined from 55.7 in July to 50.3 in August but constituted 28 per cent of total orders.

The three months' average trend continues downward, dropping from 190.5 in July to 180.9 in August.

July Imports Show Small Volume Gain

IMPORTS of steel and iron products, excluding scrap, into the United States in July totaled 41,188 gross tons valued at $2,084,401, compared with 39,699 tons valued at $2,212,086 in June. This is a gain of 3.7 per cent in volume but a decline of 5.8 per cent in value compared with June, according to compilations of the bureau of foreign and domestic commerce. Compared with July, 1936, there was an increase of 7.4 per cent in quantity and 30.2 per cent in value.

For seven months imports totaled 306,945 tons valued at $15,084,934, excluding scrap, compared with 291,396 tons valued at $11,849,746 for seven months of 1936. This is an increase of 5.3 per cent in quantity and 27.3 per cent in value. This reflects the generally higher prices of iron and steel in world markets.

Scrap imports in July were 5824 tons, compared with 5072 tons in June and 9590 tons in July, 1936. For seven months 38,581 tons of scrap were imported, compared with 75,689 tons in the corresponding portion of 1936. In both cases most of the scrap was from Canada and the smaller tonnage reflects the demand from other countries, probably principally Great Britain.

Pig iron was the largest item of imports in July, 8310 tons, compared with 7541 tons in June and with 12,496 tons in July, 1936. Structural shapes were second in volume, 7486 tons, compared with 7370 tons in June. Steel bars ranked third with imports of 4823 tons, compared with 3635 tons in June.

Belgium continued the principal source of steel and iron imports, providing 13,806 tons, compared with 11,703 tons in June. This was principally shapes, bars, hoops and bands. Germany ranked next with a total of 6253 tons, made up of nails, tacks and staples, barbed wire, shapes and bars. British India was third with 5269 tons of pig iron and Canada fourth with pig iron, spiegeleisen, ferromanganese and rails.

FOREIGN TRADE OF UNITED STATES IN IRON AND STEEL

Gross Tons

	1937 Imports	1937 Exports	1936 Imports	1936 Exports
Jan.	43,063	201,692	50,489	241,564
Feb.	41,628	290,987	43,358	213,802
March	51,805	570,584	56,720	264,337
April	68,197	683,674	49,277	301,987
May	49,050	969,222	59,391	314,950
June	44,771	896,534	59,910	294,951
July	47,012	889,438	47,490	296,738
7 mos.	345,526	4,432,131	367,085	1,923,403
Aug.	.....	.....	60,697	295,341
Sept.	.....	.....	59,993	235,571
Oct.	.....	.....	64,509	261,882
Nov.	.....	.....	61,970	203,297
Dec.	.....	.....	52,584	244,156
Total	.....	.....	666,838	3,162,694

ORIGIN OF JULY IMPORTS

Gross Tons

	Iron ore	Pig iron	Manganese ore	Ferromanganese
Norway	15,072	.....	.....	2,064
Sweden	15,305	.....	.....	.....
Mexico	1,188	.....	.....	.....
Unit. Kingdom	10	.....	.....	34
Canada	30	664	.....	431
Cuba	38,500	.....	.....	.....
Chile	143,350	.....	.....	.....
Australia	8,504	.....	.....	.....
Newfoundland	9,080	.....	.....	.....
Netherlands	.....	2,377	.....	.....
British India	.....	5,269	3,567	.....
France	.....	.....	13	.....
Soviet Russia	.....	.....	29,619	.....
Brazil	.....	.....	1,835	.....
Br. W. Africa	.....	.....	16,296	.....
Japan	.....	.....	.....	69
Total	231,039	8,310	51,330	2,598

	Sheets, skelp and sawplate	Structural steel	Steel bars	Hoops and bands
Belgium	210	6,001	3,315	3,157
France	112	1,160	828	283
Germany	9	292	200	247
Sweden	13	.....	492	2
Unit. Kingdom	5	31	73	.....
Canada	1	.....	.....	.....
Cuba	.....	2	.....	.....
Total	350	7,486	4,908	3,689

UNITED STATES IMPORTS FOR CONSUMPTION OF IRON AND STEEL PRODUCTS

(Gross Tons)

Articles	July 1937	June 1937	Jan. thru July,'37
Pig iron	8,310	7,541	68,175
Sponge iron	.....	371	2,128
Ferromanganese (1)	2,598	3,418	19,850
Spiegeleisen	3,440	2,375	12,452
Ferrochrome (2)	17	15	233
Ferrosilicon (3)	219	586	1,504
Other ferroalloys (4)	.....	.....	52
Steel ingots, blooms	.....	.....	124
Billets	150	215	1,239
Concrete rein. bars	95	40	3,545
Hollow bar, drill steel	146	230	1,521
Bars, solid or hollow	4,823	3,635	33,382
Iron slabs	.....	.....	1
Iron bars	71	233	1,230
Wire rods	1,045	1,044	9,364
Boiler, other plate	.....	23	199
Sheets, skelp, saw plate	350	684	8,205
Die blocks or blanks	4	18	77
Tin plate, tagger's tin and terne plate	.....	47	152
Structural shapes	7,486	7,370	57,865
Sashes, frames (5)	.....	.....	.....
Sheet piling	.....	694	1,762
Rails, fastenings	1,032	1,664	6,403
Cast iron pipe, fittings	272	399	1,777
Malleable iron pipe, ftgs.	12	37	254
Welded pipe	343	355	6,002
Other pipe	1,578	2,008	16,124
Cotton ties	105	.....	454
Other hoops and bands	3,504	2,675	19,211
Barbed wire	1,767	580	8,857
Iron and steel wire	239	308	2,985
Teleg. and tele. wire	2	2	12
Flat wire and strips	281	350	2,136
Wire rope and strand	404	397	2,261
Other wire	380	734	2,761
Nails, tacks and staples	1,827	810	11,348
Bolts, nuts and rivets	94	18	358
Horse and mule shoes	26	23	183
Castings and forgings	488	301	2,759
Total gross tons	41,188	39,699	306,945
Iron and steel scrap	5,824	5,072	38,581
GRAND TOTAL	47,012	44,771	345,526

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

Carboloy To Use U. S. Tungsten

TUNGSTEN from two United States mines will be adequate for needs of the Carboloy Co. Inc., Detroit, manufacturer of cemented carbide cutting tools, dies, etc., W. G. Robbins, president, announced last week to the metalworking trade. The announcement is of particular interest to cemented carbide users in view of suspension of shipments of Chinese concentrates and the rapidly rising price of tungsten.

"Tungsten carbide is the main ingredient of Carboloy," Mr. Robbins wrote. "Tungsten concentrates from China were used for the manufacture of tungsten carbide for Carboloy for several years, not only because of availability but also because of the high purity of such concentrates. In the manufacture of Carboloy, the purity of the tungsten is the same as that used in the manufacture of filament for incandescent lamps.

"Because of the uncertainty in connection with the continuation of an adequate supply of tungsten of the proper purity from China, the General Electric Co., during the past few years, has purchased two tungsten mines in the United States. The material from both of these mines is of the high purity demanded for Carboloy requirements.

"At the moment, shipments of Chinese concentrates have been suspended and the price of tungsten has risen rapidly. However, the General Electric Co. assures the Carboloy Co., its subsidiary, that an adequate supply of tungsten will be available from the operation of the domestic mines to satisfy all Carboloy needs.

"Notwithstanding the increase in the market price of tungsten, we have every reason to believe that the price of cemented carbide manufactured by the Carboloy Co. will not be increased as a result of this condition."

Issues Standard Practice

A manufacturers' standard practice booklet containing standard permissible variations for dimensions and straightness of hot-rolled steel bars, dimensions and weight of bar size shapes and weight of concrete reinforcing bars has just been issued by the Association of American Steel Manufacturers. Copies may be had from T. Wallace Williams, recording secretary of the association's technical committee, 616 Investment building, Pittsburgh.

Men of Industry

HOWARD V. HARDING, who since 1927 has been chief engineer of Peter Clark Inc., builder of mechanical stage equipment, New York, has become associated with Lukenweld Inc., division of Lukens Steel Co., Coatesville, Pa., as district sales manager in the metropolitan territory. He will make his headquarters at 120 Liberty street, New York.

Born in Framingham, Mass., in 1896, Mr. Harding started his career

Howard V. Harding

in 1914 with Hyde Windlass Co., Bath, Me., as machinist's apprentice, later becoming a draftsman. In 1919 he joined Mead Morrison Co., Boston, and in 1921 became associated with Gifford Wood Co., Hudson, N. Y., where until 1927 he was engaged in the design of material handling equipment. While with the Peter Clark organization, he designed the hydraulic stage lifts in Radio City music hall and also in a number of movie theatres. He is a member, American Society of Mechanical Engineers.

♦ ♦ ♦

Warren C. Drake, 21 West street, New York, has been appointed New York representative for Ironton Fire Brick Co., Ironton, O.

♦ ♦ ♦

H. R. Kimball, 176 Federal street, Boston, has been appointed district sales agent in New England for Roller-Smith Co., New York.

♦ ♦ ♦

Tom M. Girdler, chairman, Republic Steel Corp., Cleveland, will speak at the annual dinner of the Illinois Manufacturers' association, to be held at Chicago, Dec. 14.

♦ ♦ ♦

L. W. Browne, formerly president, Fisher Governor Co., is now associated with O. C. Keckley Co., Chicago, as vice president in charge of sales and distribution of its steam and liquid control equipment.

♦ ♦ ♦

J. H. Klein Jr., former navy commander and for the past several years a member of the staff of the Delco brake division of General Motors Corp., Dayton, O., has been named director of inspection and standards of the division.

♦ ♦ ♦

George F. Fisher, associated with United States Steel Corp. subsidiaries the past 15 years, has been named manager of sales of the newly formed construction materials division, Tennessee Coal, Iron & Railroad Co., Birmingham, Ala.

♦ ♦ ♦

D. N. Rupert has been appointed purchasing agent, Pittsburgh Gage & Supply Co., Pittsburgh, succeeding L. L. Brenholts, who has been elected president, Harris Pump & Supply Co. Mr. Rupert formerly was in the sales department.

♦ ♦ ♦

C. F. Spinning, 705 Columbia building, Pittsburgh, has been appointed district sales representative for western Pennsylvania, eastern Ohio and West Virginia, to handle the Gary grating and treads which are made by Standard Steel Spring Co.

♦ ♦ ♦

Lyman C. Judson, a graduate of Cornell university, Ithaca, N. Y., and identified with the electrode business for the past 20 years, has been appointed electrode sales manager, National Carbon Co. Inc., with headquarters at 30 East Forty-second street, New York.

♦ ♦ ♦

Victor W. Bone, manager-director, Ruston-Bucyrus Co., Lincoln, England, British affiliate of Bucyrus-Erie Co., South Milwaukee, Wis., has been visiting the Milwaukee headquarters to confer with executives relative to export sales of excavating machines and large dredges.

♦ ♦ ♦

M. H. Lebowitz has been made chief inspector of Wood works, Carnegie-Illinois Steel Corp., McKeesport, Pa. Employed by the company for 14 years, he formerly was foreman of the finishing department. George W. Douglas, foreman of the warehouse and shipping department, will assume Mr. Lebowitz's former duties in addition to his own.

♦ ♦ ♦

W. E. Ragsdale has been named manager of the Dallas, Tex., office of Cutler-Hammer Inc., Milwaukee. After receiving a degree in electrical engineering from the University of Oklahoma, he became associated with the National Broadcasting Co. Located at 624 Santa Fe building, the Dallas office is under the jurisdiction of G. E. Booth, manager of the company's St. Louis office.

♦ ♦ ♦

Roland S. Higgins, recently with Smoot Engineering division of Republic Flow Meters Co., has been named by Continental Roll & Steel Foundry Co. to represent the furnace division in the middlewestern district, with offices at East Chicago, Ind. His duties will be in connection with the sales and engineering of Universal industrial gas burners and allied combustion and furnace equipment.

♦ ♦ ♦

George H. Bendell has been named superintendent, Waukegan,

George H. Bendell

Ill., plant of American Steel & Wire Co. He succeeds the late W. E. Acomb. S. R. Snow, foreman of the wire mill, has been promoted to assistant superintendent replacing Mr. Bendell. Mr. Bendell has been with the United States Steel Corp. since 1907, beginning as an inspection clerk with the former Illinois Steel Co.

♦ ♦ ♦

R. R. Davis, formerly apparatus advertising manager of Westinghouse Electric & Mfg. Co., has been appointed assistant to the general advertising manager of the company. Mr. Davis has been associated with Westinghouse advertising activities since 1910. For the present, his offices will continue to be in the East Pittsburgh works, though he will be located in the new Pittsburgh headquarters as soon as advertising offices can be established there.

♦ ♦ ♦

Walter J. Worth has been appointed sales representative for the Pittsburgh Rolls Corp., a subsidiary of Blaw-Knox Co., Pittsburgh. After studying at Carnegie Institute of

Walter J. Worth

Technology, Mr. Worth became connected with Duquesne Steel Foundry Co. and later with the Continental Roll & Steel Foundry Co., spending six years on shop work and 15 years in the sales organization.

♦ ♦ ♦

D. C. Brooks has been named sales promotion manager of Westinghouse Electric International Co. He was educated in England and in 1928 entered the merchandising division of Westinghouse in this country. He later was connected with the London office. Mr. Brooks will make his headquarters at New York.

♦ ♦ ♦

W. W. McClellan has been appointed to the sales engineering staff of the Grand Rapids, Mich., office of Lincoln Electric Co., Cleveland. He has had extensive practical welding experience, having been engaged in maintenance welding for the Campbell, Wyant & Cannon Foundry Co., Muskegon, Mich.; as general welder for E. W. Bliss Co., and as a special welder working on jigs, fixtures, tools and dies in the Grand Rapids stamping division of General Motors Corp.

♦ ♦ ♦

H. M. George, associated with the cast iron boiler and radiator industry for many years, recently sailed for Paris to take up new duties of equipment standardization in the European plants of American Radiator Co. Mr. George has served the American Radiator Co. in its Kansas City, Mo., Birmingham, Ala., and St. Paul plants, and for the past six years has been located at the Bond plant, Buffalo, as general superintendent. He is a member, American Foundrymen's association and American Society for Metals.

♦ ♦ ♦

Arthur Cross, president, Dominion Steel & Coal Corp. Ltd., Montreal, Que., which recently purchased the former Canadian subsidiaries of United States Steel Corp., including Canadian Bridge Co., Canadian Steel Corp., Canadian Steel Lands Co., Canadian Steel & Wire Co. and Essex Terminal Railway, announces the following new officers of the Dominion organization: H. J. Kelley, vice president; C. B. Lang, vice president and managing director; M. W. McDonald, secretary; F. H. Kester, general manager; R. A. Spencer, assistant general manager; J. W. Holzhauser, treasurer and auditor; D. K. Douglas, assistant secretary.

♦ ♦ ♦

Herbert Ladds, who has been vice president and general manager, Lamson and Sessions Bolt Co., Birmingham, Ala., subsidiary of Lamson & Sessions Co., Cleveland, has resigned to become president of Sweet's Steel Co., Williamsport, Pa. He will start his new duties Oct. 1.

George J. Case Jr., who has headed the Lamson and Sessions Co., Chicago, another subsidiary, has been named to succeed Mr. Ladds at Birmingham. He will be succeeded at Chicago as vice president and general manager by W. M. Olsen. R. M. Smith has been chosen as assistant to Vice President Olsen at Chicago.

♦ ♦ ♦

G. Blocksidge has been appointed assistant to vice president of Westinghouse Electric International Co. He became associated with Westinghouse in 1906 following graduation from Virginia Polytechnic institute in electrical engineering. In 1912 he was transferred to the Baltimore office; in 1916 to the Philadelphia office; in 1921 he became associated with the export division and was stationed in London as chief engineer until 1924, when he was recalled to New York; in 1932 he was made manager of the central station and transportation division, which position he held until his recent promotion. He will handle all contacts with the Electrical Apparatus Export association and similar associations, together with other special assignments, and will make his headquarters at 150 Broadway, New York.

Died:

JOSEPH O. ENTREKIN, vice president in charge of sales, Wheeling Corrugating Co., subsidiary of Wheeling Steel Corp., Wheeling, W. Va., in Wheeling, Sept. 11. He had been identified with the Wheeling Steel Corp. and predecessor companies about 25 years, and at one time operated the Portsmouth Culvert Co., Portsmouth, O. He later represented the Corrugating company as a salesman in the Philadelphia office. In 1916 he was made manager of the company's branch at Richmond, Va., and in 1924 became vice president. Mr. Entrekin was well known throughout the sheet steel and fabricating industries.

♦ ♦ ♦

Victor J. Rimelen, for 10 years associated with the Bendix-Westinghouse Co., Pittsburgh, Sept. 11 in Pittsburgh.

♦ ♦ ♦

John M. Thorne, 43, an engineer employed at the Westinghouse Air Brake Co., Pittsburgh, Sept. 13 in Pittsburgh.

♦ ♦ ♦

Edward T. Pierce, 81, head of Morse Twist Drill & Machine Co. and Pierce Mfg. Co., New Bedford, Mass., in that city, Sept. 10.

♦ ♦ ♦

Col. Stephen A. Douglas, 64, consulting engineer and a specialist in electrical and steel engineering projects, New York city, in that city, Sept. 10.

♦ ♦ ♦

Joseph E. McGinnes, Pittsburgh engineer and president of McGinnes, Smith & McGinnes Co., McGinnes Engineering & Supply Co., Iron City Plumbing Co. and American Furnace & Ventilating Co., Sept. 10 in Pittsburgh.

♦ ♦ ♦

Charles Neave, 69, counsel and member of the board of directors, General Electric Co., Schenectady, N. Y., at his home in Ossining, N. Y., Sept. 10. A member of the firm of Fish, Richardson and Neave, he had been counsel for the company the past 35 years and was elected to the board in March, 1936.

♦ ♦ ♦

Samuel H. Truitt, 58, Philadelphia district representative for McKeesport Tin Plate Co., Andrews Steel Co. and Newport Rolling Mill Co., in Philadelphia, Sept. 16. Prior to forming his own business in 1931, he was Philadelphia manager of sales for Central Alloy Steel Co., before its merger with Republic Steel Corp., and following that was made assistant manager of sales in Philadelphia for Republic.

♦ ♦ ♦

Noak Victor Hybinette, 71, inventor of the electrolytic process bearing his name for refining nickel, in Palermo, Italy, Sept. 7.

Born in Falun, Sweden, he came to the United States and was made general superintendent, Orford Copper Co., Bayonne, N. J., now merged with International Nickel Co. In recent years he had been president of Hybnickel Alloys Co., Wilmington, Del., and of Nicralumin Co., Jackson, Mich.

Activities of Steel Users and Makers

FACTORY additions, approximating $50,000, are nearing completion at the Peoria, Ill., plant of Caterpillar Tractor Co. The new buildings will consist of a two-story brick and steel structure to house the engineering, tool design and apprentice departments; and a 101 x 900-foot addition to the machine shops, which will contain two conveyor-type tractor assembly lines. The largest single unit, costing approximately $200,000, will consist of an addition to the present road machinery building, containing 190,000 square feet to be used as a storage room.

♦ ♦ ♦

Steel & Tubes Inc., subsidiary of Republic Steel Corp., Cleveland, has opened a branch office in Baltimore, with H. H. Smith in charge.

♦ ♦ ♦

Salem Engineering Co., Salem, O., has removed its main offices and plant to a newly purchased building at 714 South Broadway.

♦ ♦ ♦

Magnesium-base alloys are now being die cast by Doehler Die Casting Co., Toledo, O. In addition to this light metal, the company die casts tin, lead, zinc, aluminum and copper base alloys.

♦ ♦ ♦

Chicago Pneumatic Tool Co., New York, has opened a direct factory sales and service branch at 119 West Second street, South, Salt Lake City, Utah. Otto A. Ray has been named manager.

♦ ♦ ♦

Milwaukee Malleable & Gray Iron Works, Milwaukee, has completely revamped and improved its cleaning department. New equipment in this department includes three wheelabrators.

♦ ♦ ♦

Murray Co., Dallas, Tex., has developed a machine known as the Rylander cotton drier and conditioner. It treats green and damp cotton by the application of heat, making it easier to gin the cotton as well as improving the sample.

♦ ♦ ♦

The Linde Air Products Co., New York, unit of Union Carbide & Carbon Corp., has opened a new sales office in Oakland, Calif., at 3710 San Pablo avenue. This office will serve the Oakland area, supplementing the San Francisco office.

♦ ♦ ♦

Partnership in Thomas Prosser & Son, New York, heretofore consisting of Richard Prosser and Roger D. Prosser, has been dissolved by the death of the former on July 12 of this year. Roger Prosser will continue to conduct the business under the same firm name.

♦ ♦ ♦

Frank Campbell Coe, sales engineer, located in the Commercial Trust building, Philadelphia, has been appointed to represent Graham Transmissions Inc., in eastern Pennsylvania, southern New Jersey, Maryland, Delaware and the District of Columbia.

♦ ♦ ♦

Rust Engineering Co., Pittsburgh, has been awarded a contract by Ohio Power Co., a subsidiary of the American Gas & Electric Co., for a new boiler house, auxiliary switch room and transformer structure to be erected at Power, W. Va., as part of a $3,000,000 improvement program.

♦ ♦ ♦

Increased activities at the Harrison and Newark, N. J., Buffalo and Holyoke, Mass., plants of Worthington Pump & Machinery Corp. have necessitated increasing the total number of employes 86 per cent since 1932. Compared with 1929 totals, the present figure shows an increase of 6 per cent. Unfilled orders are said to be at the highest level in 17 years.

♦ ♦ ♦

A. S. Lindstrom Co., 274 Brannan street, San Francisco, manufacturer's sales-engineer, represents the following materials handling equipment manufacturers on the Pacific coast: Clark Tructractor division of Clark Equipment Co., Battle Creek, Mich.; Howell Industrial Truck Co., Cleveland; Lyon Iron Works, Greene, N. Y., and the Ohio Electric Mfg. Co., Cleveland.

♦ ♦ ♦

Uhl Construction Co., Pittsburgh, announces a new department of standard steel buildings for industrial and commercial use. C. K. Wehn, who is in charge of this department, has had 15 years experience in standard building construction, having formerly served in a similar capacity with the Truscon Steel Co. and later as district manager, Pittsburgh territory, for the H. K. Ferguson Co.

♦ ♦ ♦

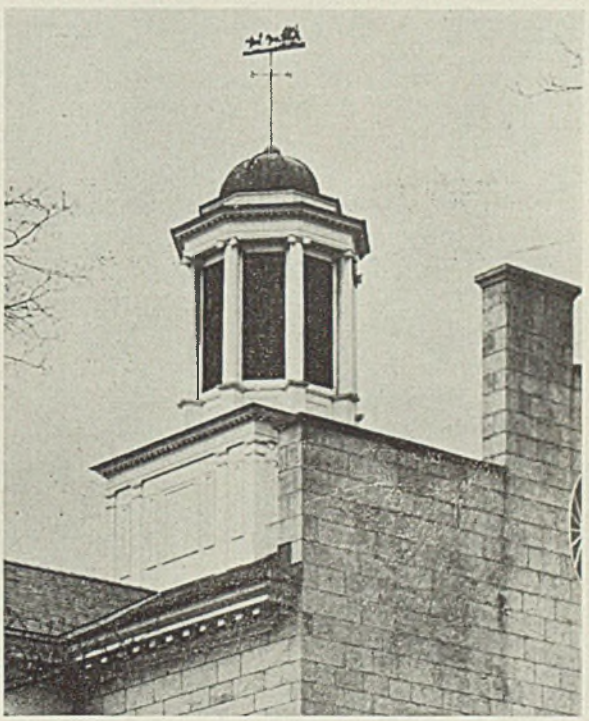
Hayes Equipment Mfg. Co. and Clear Vision Pump Co., Wichita, Kans., have been combined under one management, to be known as Hayes Equipment Mfg. Co. J. T. Cronkhite is president; Roy Streeter, vice president; A. F. McMaster, secretary-treasurer; Dr. D. I. Maggard, chairman of the board; J. C. Riggs, sales manager; Nat Hull, chief engineer, and Walter Hickman, factory superintendent.

♦ ♦ ♦

Norge division of Borg-Warner Corp., of which C. D. Donaven is vice president and general manager, has completed construction of a new gas and electric range plant at Muskegon, Mich. The Muskegon manufacturing facilities now include 28 acres of plant ground and 721,295 square feet of floor space. Productive capacity has been increased to a total of 3500 refrigerators, ranges and washing machines per day.

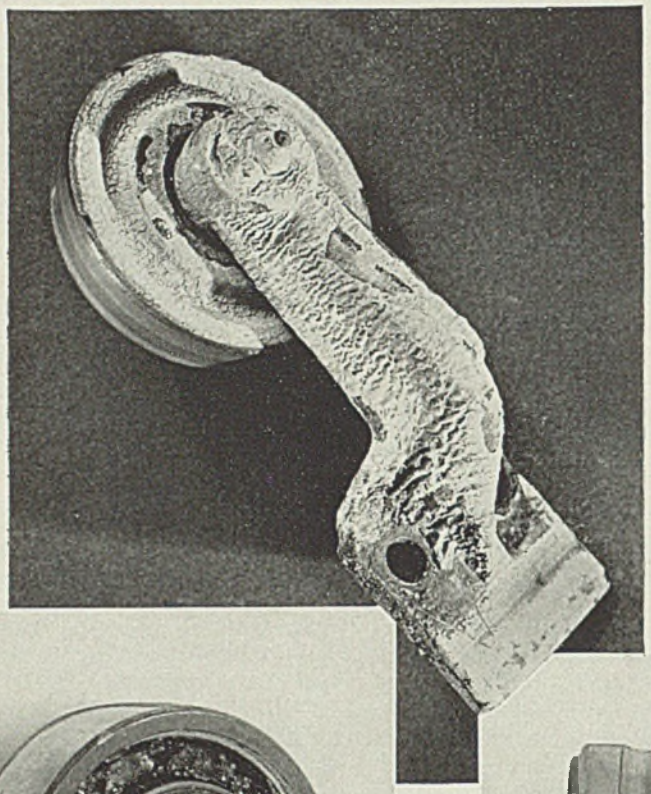
Tin Plate Roof Intact After 102 Years

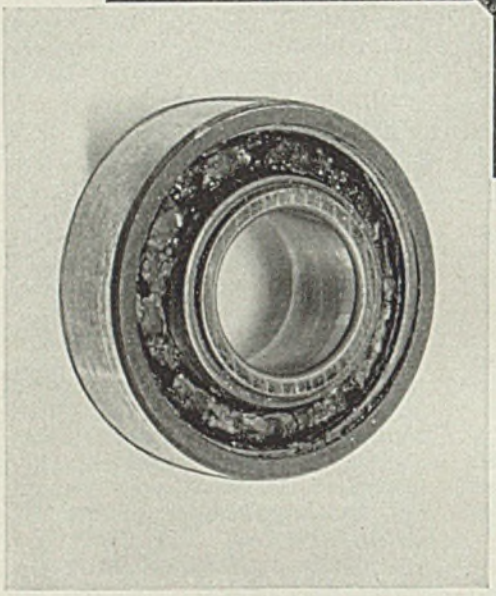
BUILT just 102 years ago on a wage scale of $1.50 and a pint of whiskey per day, this court house at Wellsboro, Tioga county, Pennsylvania, was provided with a dome sheathed with tin plate. Still intact, the tin plate was made by the N. & G. Taylor Co., Cumberland, Md., now a part of Republic Steel Corp. which markets the product as Republic Taylor ternes



N-D-Seals *Still Withstanding* Heat and Acid *After 18 Months*

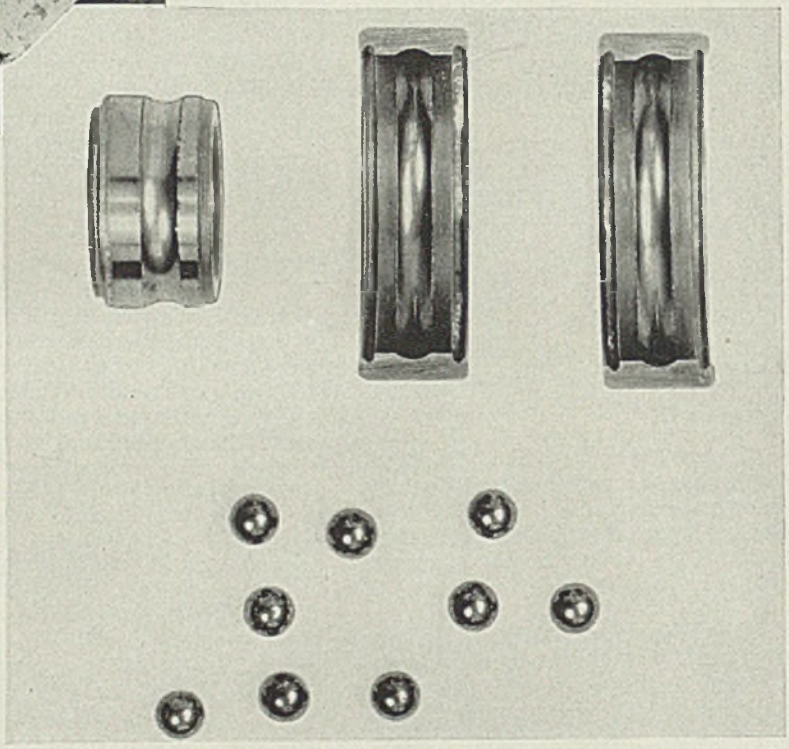
Palmer-Bee and Customer Delighted with Fine Service On Bonderizing Operation





Above: Although operating satisfactorily, this bearing was removed after 18 months' service and seals removed to show how well the lubricant was retained and protected.

Right: Unretouched photo of same bearing cut open to show excellent condition of balls and races.



• Excessive temperatures and acids—serious enemies of anti-friction bearings—have been set back on their heels by N-D-Seals in Palmer-Bee conveying systems on a Bonderizing operation in a large refrigerator plant.

There are two secrets to this success . . . the effectiveness of the seals built into these bearings . . . and the superior knowledge of lubricants by New Departure engineers and chemists.

Over 9 million N-D-Seals in use today—find out what they can do for you. Ask for Booklet DS.

2599

NEW DEPARTURE *N-D-Seal* Bearings

New Departure • Division General Motors Corporation • Bristol, Connecticut

NOTHING ROLLS LIKE A BALL

MIRRORS OF MOTORDOM

DETROIT

THIS is the season for appraisal of the industrial weather for the last quarter, and some observers here do not see quite the rosy outlook which automobile builders discern over the next few months. On the rainy side, they point to the serious break in the stock market which may or may not be attributable to the restrictions on free trading imposed by the SEC.

They forecast continuance of labor disturbances this fall, although probably not as serious or widespread as those earlier this year. But they can see no end to production interferences by a young and ambitious union which is raked by internal dissension and which maintains a truculent attitude toward the automobile industry and its suppliers.

Scattered labor disturbances already have broken out in this territory in suppliers' plants. It is still too early for any concerted move among the automobile plants on the part of labor. Leaders prefer to wait until production schedules are inched back to a more normal pace, after the automobile shows next month.

War Threats Are Disturbing

Rumblings of war, both in the Mediterranean and Far East sectors, are considered disturbing factors, and business analysts here are scanning keenly the reports of vacationists back from the European scene, failing to find much comfort therein.

On the sunny side is the news of unprecedented optimism in agricultural districts. Crops generally are exceptionally good, and prices are at a level to insure ample profits. Such profits are going to be dumped back into equipment—and automobiles—so from this standpoint the manufacturers of small cars, trucks and agricultural implements see no letdown in the high rate of sales of their products, and are shaping plans to provide increased output.

It is considered a fact that business generally continues on the upward trend and over the next few years should show no reversal. The current disturbing factors may be forerunners of only a slight seasonal valley in the 1938 graph. Automobile builders are inclined to this view, if their present plans are any gage. Production schedules are all being boosted, new plants taking shape and ambitious merchandising programs launched.

BY A. H. ALLEN
Detroit Editor, STEEL

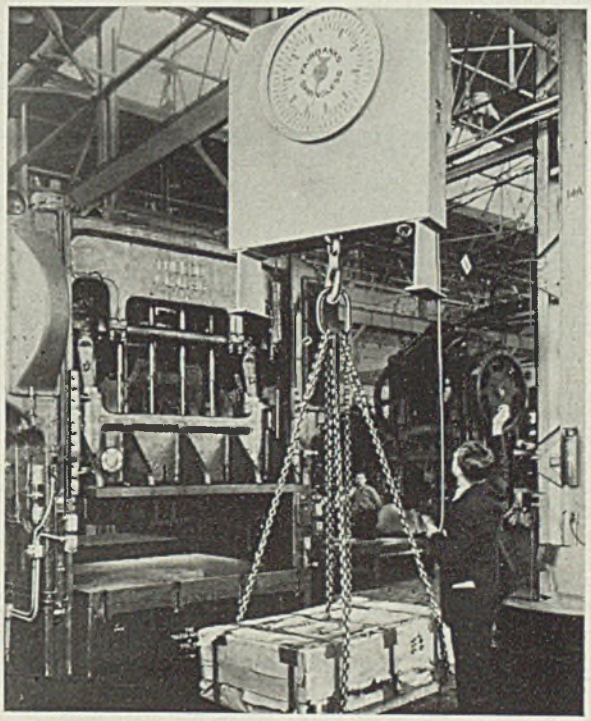
THIS is also the time of year when Detroit plays host to thousands connected with the automobile industry in all sections of the country. Dealers by the score, servicemen, magazine writers, newspaper editors and a host of others are descending on this automotive metropolis to be informed about what is in store for next year.

Previews were scheduled nearly every day last week and invitations have been mailed for additional showings later in the month. At each affair, key officials of the companies sponsoring the display are in attendance, and a spirit of good fellowship and cordiality prevails. Hudson's showing last Tuesday resembled a miniature automobile show, with a dozen or more Hudson and Terraplane passenger and commercial cars set up amid resplendent surroundings in the Masonic Temple here.

The new Hudson line has not been changed radically. Front ends have been rounded to a further degree, and a number of bright metal decorative touches added. Interiors on some models feature decorative trim of pressed steel with satin-finish chromium plate. Production departments are nearing capacity opera-

Scale Controlled by "Electric Eye"

AN "electric eye" device on this specially constructed scale controls printing of an exact weight ticket when the load has stopped swaying. It is used in the new DeSoto press plant in Detroit for weighing incoming bundles of steel sheets and gives a quick accurate total of unloaded metal



MIRRORS OF MOTORDOM

tions, although assemblies are still slow.

At the press preview of the 1938 Buick last week in Flint, H. H. Curtice, president of the division, told the 200-odd in attendance that Buick had spent over $10,000,000 in plant expansion and retooling for the new cars. This sum was on top of the $30,000,000 which Buick has spent over the last three years in a broad expansion program. Additional facilities were needed at Flint to satisfy needs of Linden, N. J., and Los Angeles assembly plants.

Buick now is in a position to produce 300,000 units yearly, a total in line with the 25 per cent boost in facilities which a number of other producers are effecting. During the 1937 model year, Buick turned out 220,353 cars, notwithstanding halts in production during the strike.

New Machinery Installed

Machinery sellers benefited to the extent of some $3,700,000 in the Buick program, 425 new machines having been installed, a large number of these going into the motor plant to duplicate present equipment and bring capacity to 1500 engines daily.

Improved facilities also have been provided in the sheet metal plant and axle division, and a new foundry sand system, now being installed, represents expenditure of $200,000. Additional storage space is being provided for castings and forgings ahead of assembly so that a more even flow of materials can be maintained during peak periods.

More than half a million was spent for steel and die storage space. New presses have been installed, new docks constructed, new material handling equipment purchased. Much of this expansion was necessitated by increases in production of the lowest-priced Buick model.

Feature of the 1938 Buick line, as far as the engine is concerned, is a new type of aluminum alloy piston, the top of which is stepped down on one side. The design is claimed to give a better distribution of gases in the combustion space, and to add seven horsepower.

Another General Motors subsidiary, Cadillac-LaSalle, has started 1938 production on a small scale, putting new equipment through its paces preparatory to opening the throttle. And the throttle will really be opened here if present plans to turn out 50,000 cars in the coming model year are attained.

Removal of some Olds Body work from the Fisher plant at Lansing to Linden, N. J., has freed facilities in the former plant to the extent that it will now supply several hundred bodies daily to La Salle, these bodies formerly having been made in Detroit.

May Revise Cadillac

Inquiries for certain parts now being received from Cadillac-La Salle indicate the company may have something further to announce later in the year or early next year. There is talk of a radically revised Cadillac V-16 now in the making, with the V-type engine opened up to be nearly flat.

Cadillac itself is understood to be ready to show a rather startling outward appearance on the 1938 model in the effort to keep pace with the popularity which La Salle has gained the past year. The design is rumored to be along the lines of the Cord, with running boards eliminated, bodies slung low, etc.

Ford closed last week on his last-quarter sheet steel requirements for approximately 250,000 cars. A delay in placing this tonnage arose from Ford's insistence on placing maximum weight tolerances on specifications which some steel sellers felt could not be met by their mills. One report had it that Ford sought to cut in half the usual 5 per cent weight tolerance specified by steel manufacturers.

Production at the East Windsor plant of Ford Motor of Canada is being boosted by about 25 per cent with installation of additional equipment and more floor space. Changes will bring yearly capacity of this division to about 100,000 units.

General Motors' researchers Lovell and Campbell, in a recent paper before the American Chemical society, cited extensive experiments to prove gasoline made up of uniform ball-shaped molecules is much more efficient in internal combustion engines than fuel with long, thin molecules. If the oil companies can now assure round, fat molecules in their gasoline, the way is open to use of smaller engines, giving more miles per gallon. This molecule theory is the chemists' explanation of the performance of fuels with different octane ratings.

Canadian Plant Re-equipped

General Motors of Canada will resume operations at Regina in November with a production of about 125 cars and trucks daily. The plant has been idle since 1930, is now being re-equipped at a cost of something under a million dollars.

Speaking at a meeting of General Motors dealers in Chicago last week, W. S. Knudsen, corporation president, said: "I think I can truthfully say that our (labor) situation is somewhat improved, and that responsibility will take the place of mob rule in labor relationship, and that the corporation in its policy of moderation, open dealings and an open opportunity for all will emerge from this period as strong with its men and the public as it has been in the past."

Industrial employment in Toledo, O., is running 20 per cent above a year ago and most automotive partsmakers there look forward to capacity production during the final quarter. Latest figures show 51 plants, reporting weekly statistics, had 21,576 at work. Chevrolet's Toledo division reopened last Monday with 1100 at work, and on the same day Spicer Mfg. Corp., where production was interrupted for a week by an interunion argument, resumed. Libbey-Owens-Ford Glass Co. reports capacity schedule for the balance of the year. Electric Auto-Lite has tripled its spark plug manufacturing facilities, dumping $1,500,000 into new construction and machinery since the first of the year.

Automobile Production

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

	1935	1936	1937
Jan.	300,335	377,244	399,634
Feb.	350,346	300,810	383,698
March	447,894	438,943	519,177
April	477,059	527,625	553,415
May	381,809	480,518	540,357
June	372,085	469,368	521,139
July	345,297	451,206	456,775
7 mos.	2,674,825	3,045,714	3,374,195
Aug.	245,075	275,934	*370,000
Sept.	92,728	139,820	.....
Oct.	280,316	230,049	.....
Nov.	408,550	405,799	.....
Dec.	418,317	518,958	.....
Year	4,119,811	4,616,274	.....

Estimated by *Ward's Automotive Reports*

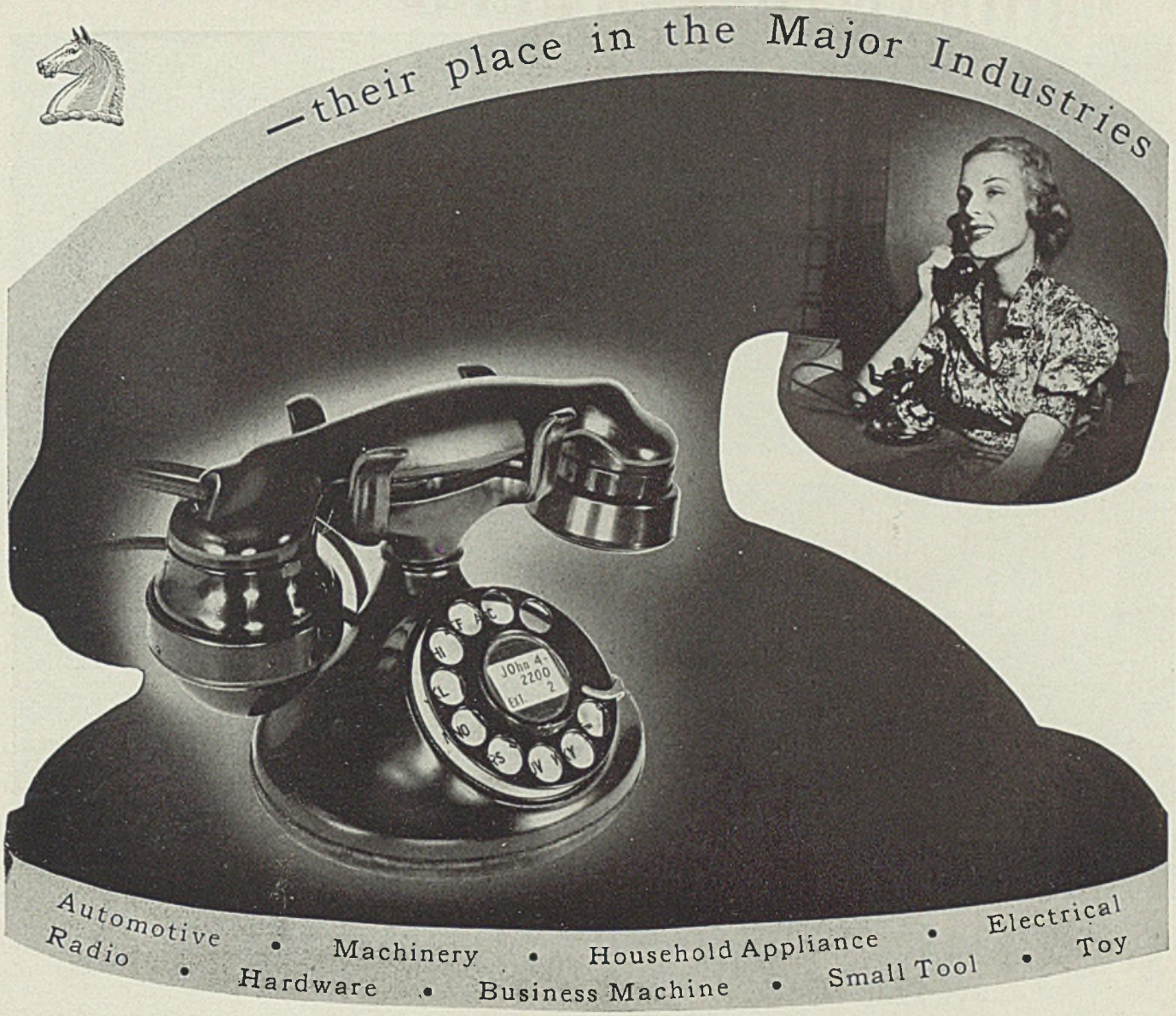
Week ended:

Aug. 21	93,339
Aug. 28	83,310
Sept. 4	64,200
Sept. 11	59,017
Sept. 18	29,000

	Week ending Sept. 18	Sept. 11
General Motors	13,700	23,096
Ford	4,000	26,000
Chrysler	1,950	5,800
All others	9,350	7,821

*Estimated.

ZINC ALLOY DIE CASTINGS



THE "SYMBOL OF SERVICE"
—is engineered into the telephone

THE TELEPHONE has become widely known as "The Symbol of Service"—a reputation developed through years of the best engineering experience.

It goes without saying that the specification of ZINC Alloy Die Castings for the base, cradle and plunger of the Bell Telephone was the result of extensive design and materials engineering. These castings have not only proved desirable from an appearance and quality standpoint, but they have achieved the required weight, smoothness, accuracy, toughness and strength, at reasonable cost.

Your problems may not be directly similar to those encountered in the production of a telephone, but ZINC Alloy Die Castings are producing effective results in all of the major industries. If you are not thoroughly acquainted with ZINC Alloy Die Castings and their potentialities we suggest you consult a commercial die caster — or write to this Company.

THE NEW JERSEY ZINC CO.
160 Front Street New York

The Research was done, the Alloys were developed, and most Die Castings are specified with

HORSE HEAD SPECIAL (99.99+% UNIFORM QUALITY) ZINC

and a clear realization of the temper of the times."

FURTHER DEMOCRATIC DISHARMONY PREDICTED

A fight between conservative Democrats and New Dealers is being predicted for the next session of congress. Reason for this suggestion is the certainty of two line-ups in the majority party on such questions as taxes, farm policies and hours and wage legislation.

Disagreement within the party sprang up last session over the Supreme Court fiasco, recurring many times. Many southern Democrats stayed away from a party caucus when a last-minute effort was made to pass wage-hour legislation at the request of the labor unions.

Added to all this is the intense feeling being aroused relative to the third term talk for Mr. Roosevelt. Many Democrats are opposed to such a move and a split on this subject alone is likely.

"MOMENTOUS ACTION" AT AFL MEETING AWAITED

Deliberations of the executive council of the American Federation of Labor, which is to meet in Denver Oct. 4, will be watched with great interest because officials of that organization are proclaiming "momentous decisions will be made."

Officials say "the importance and significance of the fifty-seventh annual convention of the AFL are appreciated and fully understood by all classes of people throughout the country." It is further stated that "such action as may be taken should fairly and adequately represent the well considered opinion of the millions of workers who are identified with the AFL."

SEES NEW TRADE BETWEEN LABOR, ADMINISTRATION

Another trade between the labor unions and the White House appears possible. This might include both the CIO and the AFL. It appears the labor unions will need the farm bloc vote in the house to force through their wage-hour legislation at the next session. On the other hand the President needs the labor vote in congress to carry through some of his measures.

A story has been heard around Washington ever since adjournment that the administration could have pushed the labor bill through the last session, had it really desired to "turn on the heat." Whether this is so or not, one thing is certain. Both Lewis and Green did all they could in a last-minute effort to get the wage-hour bill out of the house rules committee—but without effect.

Each time Lewis and his crowd enter some kind of deal with the administration it appears necessary for either the Lewis crowd or the White House to deny it. Then follows more talk of a break between the two, that is, Lewis and the President. No one really knows the inside of the situation but there are many straws in the wind. And back of it all is the fact that while Lewis formerly was seen frequently at the White House, it even having been whispered that he had the key to the back door, he is never seen around there any more and hasn't been for a number of months.

ROOSEVELT INVOKES PARTIAL EMBARGO ON ARMS SHIPMENTS

President Roosevelt last week invoked a partial embargo on arms shipments to the Far Eastern war zone. He announced government-owned vessels would not be permitted to transport arms or munitions to either China or Japan until further notice.

The order applies to 37 vessels owned by the government and operated privately under management contracts. Other American merchant ships carrying arms cargoes will do so at their own risk, the president said.

The action, while the most drastic yet taken in connection with the Sino-Japanese conflict, did not formally invoke the neutrality act. The government's policy on this remained on the "24-hour basis" of the last several weeks.

ROPER ANTICIPATES MAJOR SURGE IN FALL BUSINESS

Barring war or unforeseen emergencies, the United States within a few weeks will witness a major surge in fall business, Secretary of Commerce Daniel Roper told newsmen last week.

He pointed out that the threat of war, although apparently disturbing to speculative business, has not hampered the United States' trade and industry, either internally or from an export standpoint. The secretary said the outlook for fall business is encouraging and he personally has made a survey in several sections of the country which showed a widespread confidence in the situation.

"The accepted indices," he stated, "reveal great prosperity in trade, commerce and industry. In fact, the composite domestic business index is running from 10 to 15 per cent over the comparable period of last year."

KENNEDY FINDS LINES ARE UNABLE TO BUILD SHIPS

An unexpected crisis is threatening the government's merchant marine program, according to Joseph P. Kennedy, chairman, maritime commission. It is the "apparent inability" of certain private operators to finance their share of the construction costs.

Mr. Kennedy's statement was based on returns from a correlated survey of the shipping industry which he intends to make public about Oct. 1. He deferred comment at this time other than that the commission "would have to let the country know" it seemed impossible to proceed with plans for the merchant armada as laid down in the merchant marine act of last year.

He hesitated to say definitely that none of the new ships would be built because of the private capital situation but was emphatic that the government should neither build and operate the fleet nor "build it free of charge" for others to run. The latter remark was directed at reports New York steamship owners expect the government to build the ships and offer them for charter.

Meanwhile, shipping interests directed a broadside of criticism at "unsatisfactory provisions which make it impossible to operate on a government subsidy."

WILL SEEK TRADE PACT WITH CZECHOSLOVAKIA

Secretary of State Hull recently announced he intends to negotiate a trade agreement with Czechoslovakia. Applications for permission to appear at hearings Oct. 25 must be presented to the committee for reciprocity not later than Oct. 11.

The state department announcement shows some ten pages of commodities which will be given consideration in the agreement. This is a comparatively new procedure and was adopted in response to protests from American producers that they received no opportunity to present views or to defend their interests before the committee and before negotiations have been completed.

GERMANY SHOWS INCREASE IN MACHINERY INDUSTRY

Rolland Welch, assistant trade commissioner, reports to the department of commerce from Berlin that "the German machinery industry from January to April this year showed a great increase in business both in local and in foreign trade. At the close of April the number of workers in the industry had increased to 94 per cent of capacity."

The trade commissioner says exports for the first four months of this year were 31 per cent above those the first four months of last year, and 70 per cent above the exports during the first four months of 1935. The report also states foreign business was particularly good "in machine tools, metal and woodworking machinery, smelting and rolling-mill equipment, mining machinery, and similar equipment."

The domestic demand, says the report, was best for metal and woodworking machinery, cranes, conveying equipment, mining machinery and agricultural machinery.

Editorial

Behavior of Labor Board Endangers Wagner Act

IF THE national labor relations board continues in the course it has followed in certain recent decisions, it will soon make the Wagner act so ridiculous that even its most ardent sponsors will demand that it be modified or withdrawn from the statutes.

When the act was passed, most commentators declared that it was so one-sided that any board—even one composed of competent persons disposed to be impartial—would find it difficult if not impossible to administer it fairly. In the light of some recent decisions, it would appear that the members of the board are determined not only to invoke all of the possibilities of the act for discriminating against employers but also are going to great lengths to favor one union against other unions or against unorganized employes. In addition, there are signs that the board feels its acts are superior to the rulings of certain federal courts.

The net result of all of this is a state of confusion which inflicts great hardships upon employes, employers and the public. In some cases the decisions of the board involve arbitrary and absurd action more restrictive and more impractical than that which caused the failure of NRA.

Uncanny Decisions of Board Contravene Court Decisions; Transcend Dictates of Common Sense

The *Chicago Journal of Commerce* cites the case of a "man named Hopwood, who sold his retinning business in Brooklyn last spring. Although he had spent 18 years in developing his business, he had run afoul of labor organizations and was glad when he received his price from a firm in New Jersey. He thought he was free of his troubles, but he had not counted on the Wagner act."

"Now it is reported that after conducting hearings the local trial examiner of the labor board has recommended that Hopwood go back into the retinning business, reinstating workers who lost out when he quit business, or face a court action. The recommendation has not the force of an order, but the board has the right to go to a circuit court and obtain an order. Mr. Hopwood has no desire to go back into the retinning business. . . . Does it seem right that a federal board should be able to force a man to go back into business when he . . . doesn't want to resume?"

Another weird action of the labor board is reported in the case of the Fansteel Metallurgical Corp. of North Chicago, Ill. Trial Examiner T. E. Dudley ordered the Fansteel company to reinstate 83 dismissed employes, some of whom participated in a sitdown strike, and to pay $70,000 in back pay to 67 of these employes. The circuit court of Lake county had held the sitdown strike illegal, had cited the sitdown strikers for contempt of court and had sentenced them to jail. The action of the labor board trial examiner has the effect of ordering reinstatement and back pay for persons convicted for illegal acts.

Still another example is the handling of the case of the National Electric Products Corp. of Ambridge, Pa. The company entered into a contract with an A. F. of L. unit on May 27, 1937. The contract became effective June 1. On that day the plant was closed by a strike called by a CIO local. The plant reopened June 21 under an agreement with CIO.

Bias in Administration of Act Clearly Apparent; Persecution Will Cause Reaction

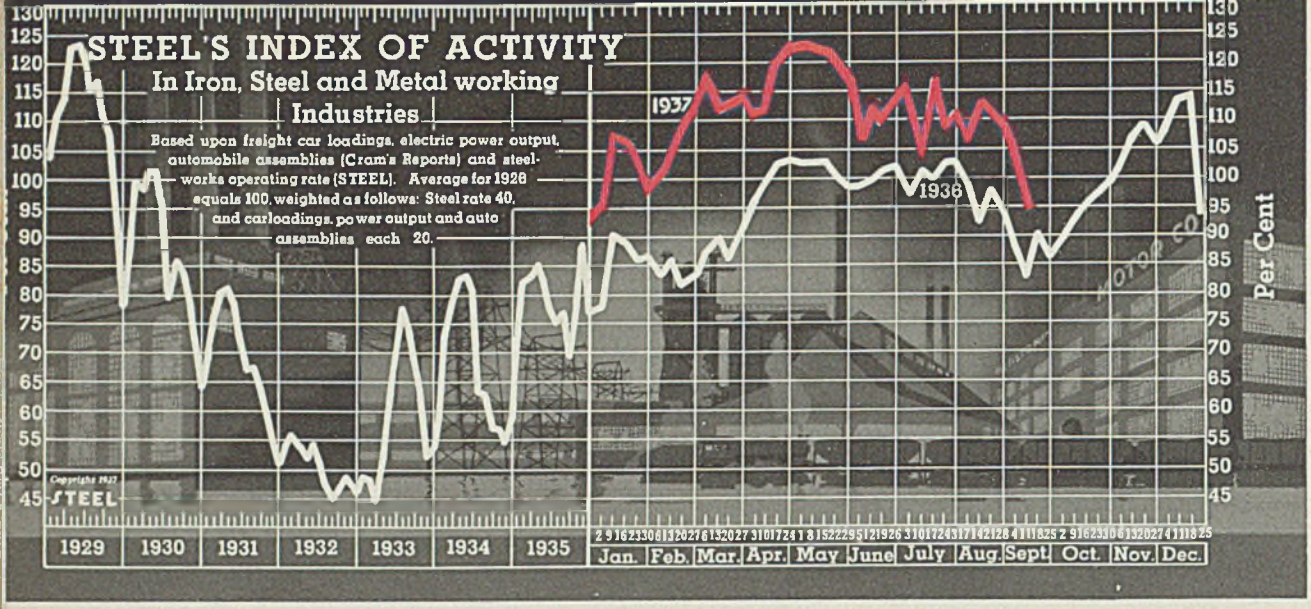
In the meantime A. F. of L. filed a bill of complaint with the United States district court, asking for specific performance of its contract. The court entered a decree requiring the company to carry out the terms of its contract. At this stage the CIO unit complained to the national labor relations board, charging that the company, in attempting to carry out its contract with A. F. of L., was guilty of an unfair practice.

This left the National Electric Products Corp. in the position of heeding the federal court, i.e. carrying out its contract, and thus exposing itself to a charge of violating the Wagner act. The labor board rendered a decision Aug. 31 stating that the company had violated the Wagner act when it entered into a contract with A. F. of L. because (a) the A. F. of L. did not represent a majority and (b) because the company assisted the A. F. of L. in enlisting members.

How the labor board can claim that A. F. of L. did not have a majority is a mystery. An election, held under the supervision of the board, resulted in a vote of 780 for A. F. of L. and 675 for CIO. This result is being protested by CIO.

While these and other recent cases testify to the bias of the administration of the Wagner act, they do not reveal the depth of the board's zeal to discriminate. To appreciate the intense partisanship of some of the trial examiners it is necessary to read the proceedings in detail. The constant baiting of employers' representatives, the treatment of defendants' witnesses and the admission or rejection of testimony all reveal, in some cases, a studied attempt to whitewash CIO and to persecute employers, other unions and unorganized employes.

If such tactics are continued, the act and the board administering it will fail of their own deficiencies.



STEEL'S index of activity declined 10.5 points to 94.3 in the week ending September 11:

Week ending	1937	1936	1935	1934	1933	1932	1931	1930
July 10	103.8	100.9	76.5	67.8	79.1	41.7	69.4	86.9
July 17	115.7	99.9	79.8	68.1	79.4	46.9	70.0	79.1
July 24	108.0	102.1	80.8	66.4	78.8	51.5	69.7	78.7
July 31	109.1	102.5	78.4	64.6	75.8	46.1	68.9	79.2
Aug. 7	107.3	98.7	73.4	64.6	74.7	45.1	67.0	85.6
Aug. 14	113.8	92.6	71.5	61.4	74.2	44.6	67.4	86.2
Aug. 21	110.3	97.7	77.0	60.3	71.6	44.9	67.3	88.5
Aug. 28	108.5	94.0	77.3	55.1	70.3	45.2	66.5	87.4
Sept. 4	104.8†	87.5	70.9	53.5	65.5	45.4	65.3	79.0
Sept. 11	94.3*	83.1	70.1	58.7	69.1	44.9	60.9	85.9

†Revised. *Preliminary.

Activity Recovering Slowly From Holiday Interruption

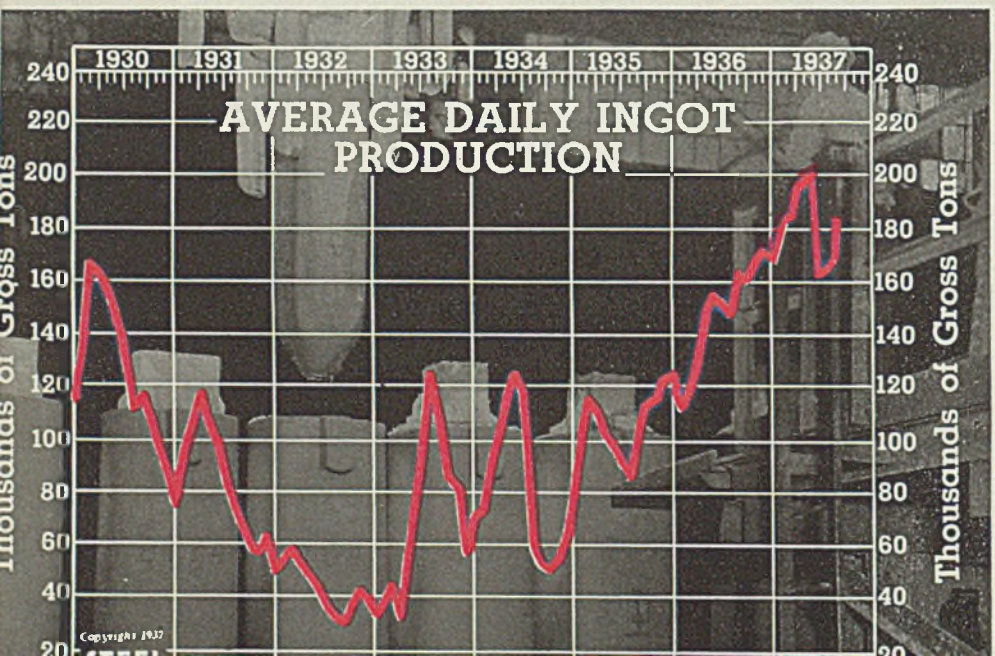
MORE time must elapse before industry can appraise the post-Labor day trend in activity. Preliminary reports on business for the week ending Sept. 18—the first unaffected week after Labor day—indicate a fairly substantial rebound from the holiday lows.

Steelworks operations, which have risen to a level only a few points below the pre-holiday percentage, are being maintained at a surprisingly good rate considering the fact that new orders generally are sluggish and that the specifications for steel and parts for new automobile models have been delayed.

Regardless of what the final figures show as to the rebound in the week ending Sept. 18, it is significant that the recession in industrial activity occasioned by the Labor day interruption was not unduly severe when compared with the experience of recent years.

STEEL'S index of activity for the week ending Sept. 11 stood at 94.3, as compared with 104.8 in the preceding week. From the week ending Aug. 28 through the week ending Sept. 11, the index declined from 108.5 to 94.3, a loss of 14.2 or 13 per cent. During the same period in 1936 the decline was from 94.0 to 83.1, a drop of 10.9 or 12 per cent.

The snap-back in the week ending Sept. 18 may not be as buoyant as could be desired, but it will be premature to judge the fall outlook until the effect of resumed automobile buying is more clearly defined.

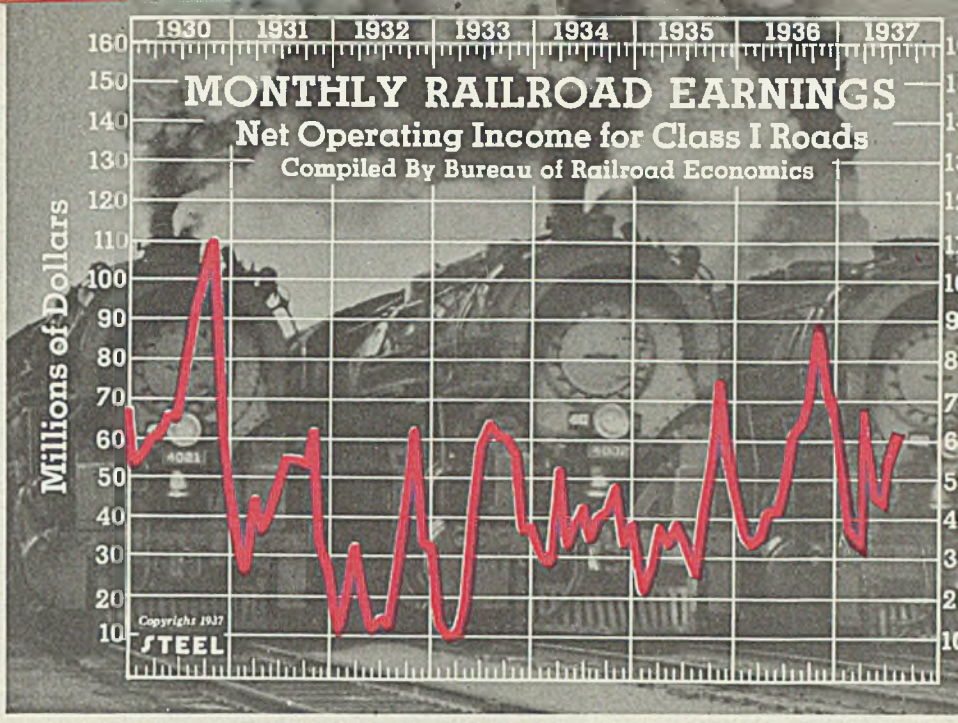


	Gross Tons		
	1937	1936	1935
Jan.	182,181	112,813	106,302
Feb.	184,361	118,577	115,595
March	193,209	128,576	110,204
April	195,072	151,625	101,562
May	198,213	155,625	97,543
June	160,914	153,263	90,347
July	168,763	150,874	87,224
Aug.	186,992	161,351	1079,97
Sept.	.....	160,043	113,000
Oct.	.....	168,333	116,398
Nov.	.....	173,496	121,170
Dec.	.....	170,448	122,936

BUSINESS TREND

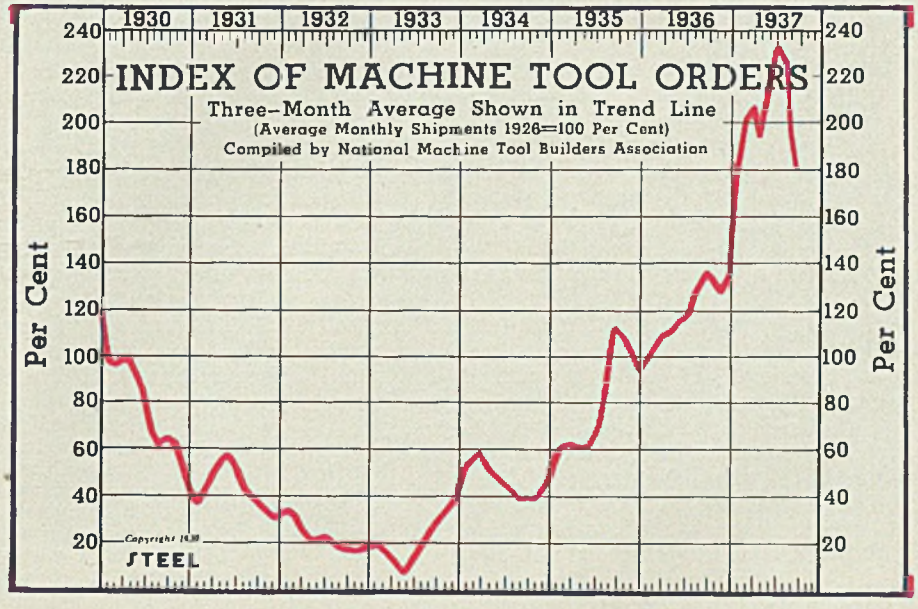
Railroads Earn 2.62 Per Cent On Investment in July

	1937	1936	1935
Jan....	$38,436,679	$35,728,532	$21,934,645
Feb....	38,358,638	33,594,718	26,296,411
March.	69,379,328	35,205,513	38,129,871
April..	47,807,447	41,493,455	34,708,718
May...	43,662,959	41,797,047	39,598,511
June .	58.939,875	50,312,580	34,102,703
July...	60,527,576	61,773,765	26,919,343
Aug...	.....	64,680,717	42,156,706
Sept...	.....	70,166,026	57,349,265
Oct....	.....	89,851,409	75,454,501
Nov...	.....	72,410,571	54,224,290
Dec....	.....	70,519,601	46,020,695



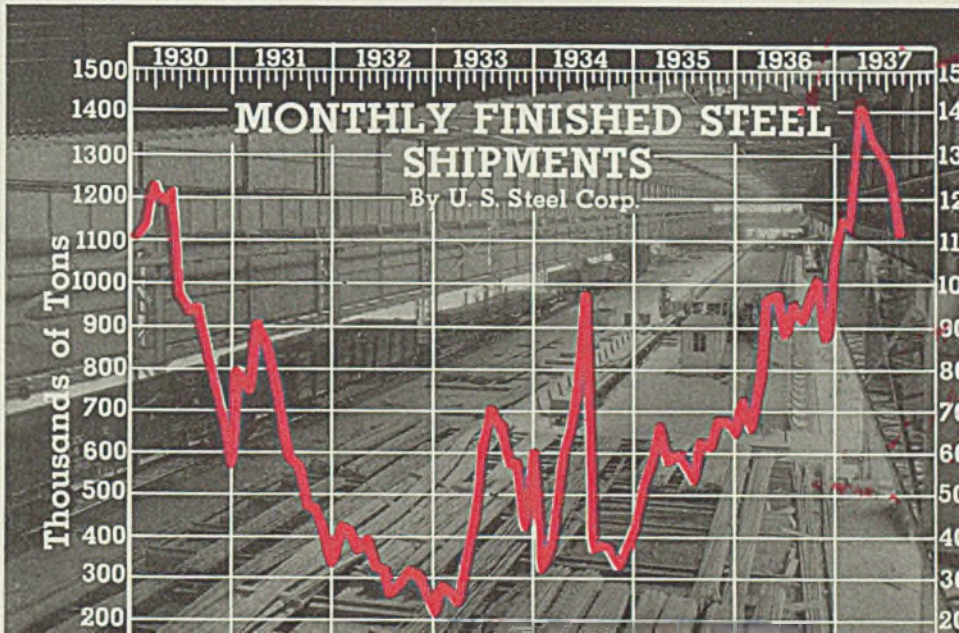
Machine Tool Index Off Slightly in August

	1937	1936	1935	1934
Jan.....	201.7	102.6	61.3	56.5
Feb.....	207.7	107.1	61.5	58.2
March....	192.4	109.4	60.3	50.9
April	219.8	114.4	60.3	48.5
May.....	234.2	116.6	67.1	46.8
June	227.6	124.5	76.7	42.6
July	190.5	132.6	94.7	38.6
Aug.	180.9	135.5	112.2	37.1
Sept.....	.....	132.0	108.5	37.4
Oct.....	.....	127.5	102.9	40.5
Nov.....	.....	134.0	93.8	44.2
Dec.....	.....	180.4	89.9	54.1



Steel Shipments Decline Moderately in August

	Gross Tons		
	1937	1936	1935
Jan.....	1,149,918	721,414	534,055
Feb.....	1,133,724	676,315	583,137
March.....	1,414,399	783,552	668,056
April.....	1,343,644	979,907	591,728
May.....	1,304,039	984,087	598,915
June	1,268,550	886,065	578,108
July	1,186,752	950,851	547,794
Aug.	1,107,858	923,703	624,497
Sept.	.....	961,803	614,933
Oct..	.....	1,007,417	686,741
Nov.	.....	882,643	681,820
Dec.....	.....	1,067,365	661,365



Production of Sterling Silver Flatware Involves Exacting Procedure

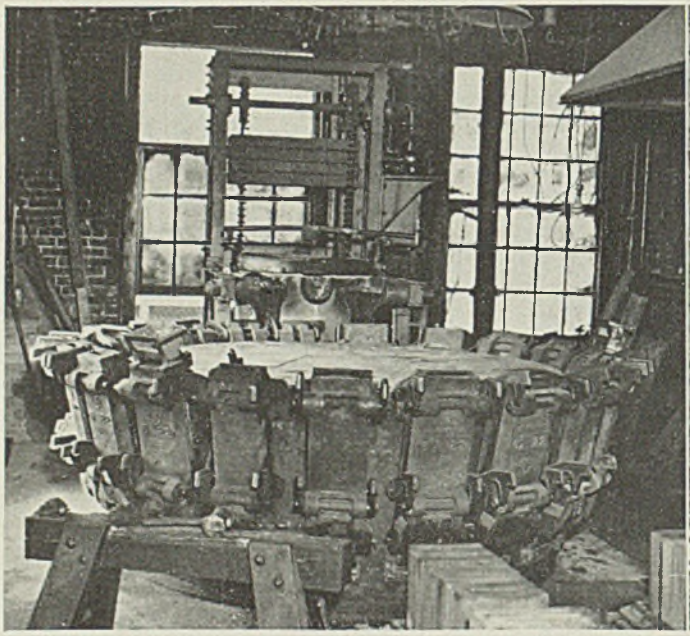
BY FRED B. JACOBS

DUE to its inherent beauty and intrinsic value, solid silverware has been popular since the most remote times. Silversmiths of old fabricated their wares entirely by hand. Today modern machinery and abrasive equipment have replaced many of the manual operations of other days. But manual skill on the part of the silversmith still is necessary for, while machinery reduces production time, it does not reduce the need for finesse associated with all skilled trades.

Tableware is divided into two varieties, flatware and hollow ware. Flatware comprises knives, forks, spoons and the like while hollow ware embraces such articles as pitchers, bowls, vases or, in fact, any article formed by deep drawing or spinning. In this article are illustrated and described several important operations followed at the plant of R. Wallace & Son Mfg. Co., Wallingford, Conn., pioneer silversmiths who have been in continuous operation for more than a century. The company produces both flat and hollow ware, but in the present article flatware only is considered.

The Wallace company is one of the few silversmiths in this country that casts and rolls its silver. Pure silver is received at the plant in the form of ingots. First manufacturing step consists of melting the silver and adding a small amount of copper. The addition of copper is necessary to give the material a certain amount of toughness. Only a small quantity of copper can be added, however, as more than that would cause the silver to lose its beautiful white appearance. A fineness of 0.925 silver, with 0.075 copper, is accepted as standard for sterling silver.

Usual practice at the Wallace plant is to melt the silver in the semi-automatic, oil fired furnace, shown in the background in Fig. 1,



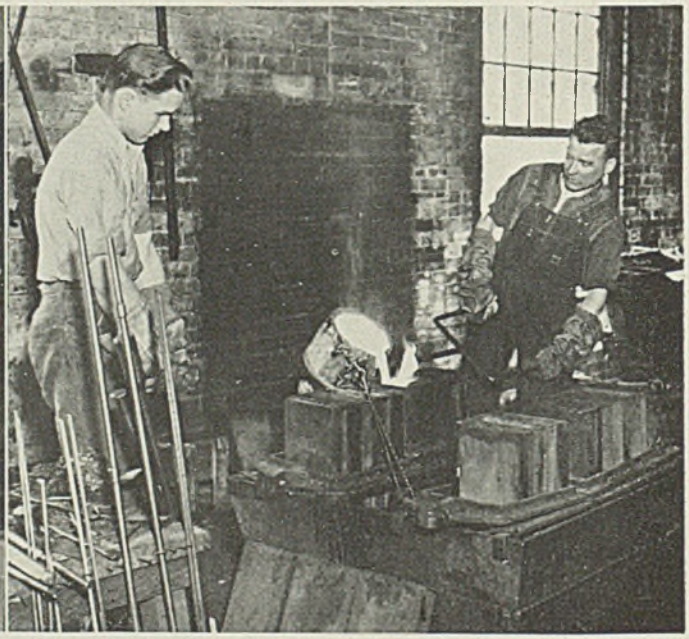


FIG. 1 (left) shows silver melting furnace in background with revolving ingot mold table in foreground. Fig. 2 (right) shows crucible melting equipment employed when smaller quantities of silver are required

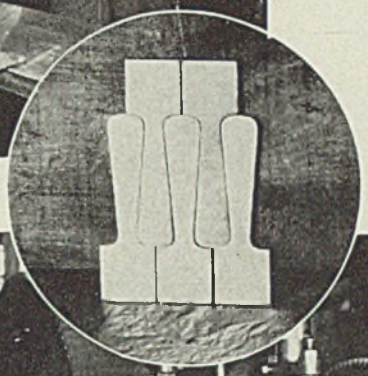
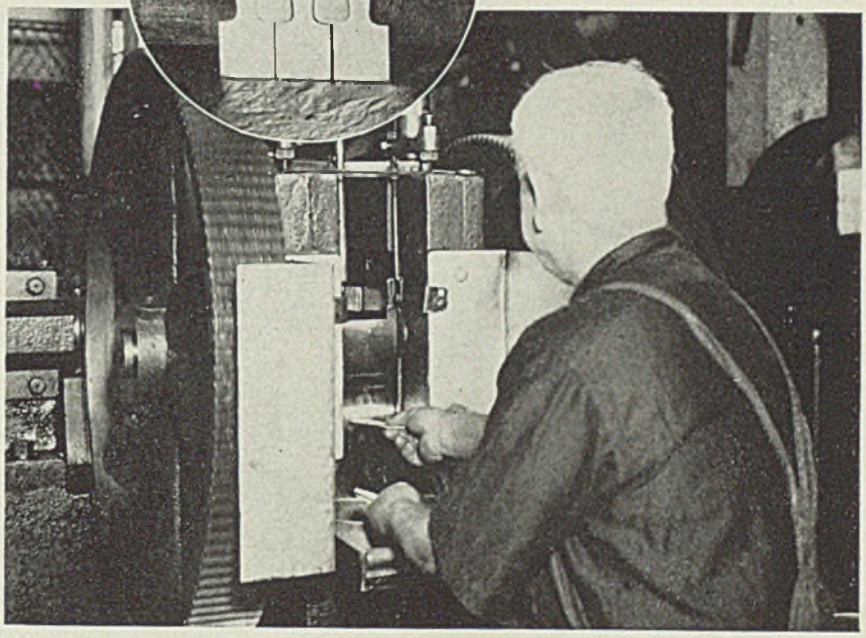


FIG. 3 (left) shows 2-high mill with 12-inch rolls having 16-inch face used in rolling silver for flatware. Fig. 4 (inset) shows teaspoon blanks so cut as to prevent wastage of metal. Fig. 5 (below) shows the "grading" operation, performed in a miniature rolling mill with one roll off center; this operation, used in forming flatware for teaspoons, leaves the stock thicker at the center than at the ends. Fig. 6 (at bottom) shows the "striking" operation, in a drop hammer, by which beautiful designs are formed on silver spoons and forks

which was supplied by the Monarch Engineering & Mfg. Co. Baltimore. This furnace holds a crucible which contains 200 pounds of the metal. The arrangement is such that the furnace can be tilted to bring the spout directly over a mold. When this mold is filled, the table accommodating 20 molds is moved to bring the next mold under the spout. The operation is practically continuous until the crucible is emptied. After the ingots have cooled sufficiently the molds are opened and the ingots removed. Then the molds are closed ready for another heat.

Not all silver is cast in the foregoing manner. It sometimes is melted in an oil fired furnace provided with a crucible holding about 60 pounds and poured by hand as shown in Fig. 2. This method always is followed in casting the alloy used as silver solder and again where it is necessary to cast a small amount for making silverware. In a case of this kind it would not be practicable to fire the semi-automatic furnace.

Ingots as they come from the molds are of various sizes. One size weighs 32 pounds and is 14 inches long, 6 inches wide and 1¾ inches thick with one end rounded over slightly to facilitate a subsequent rolling operation. After the ingots have been removed from the molds they are subjected to an operation technically termed scalping. The machine employed for this operation looks somewhat like a draw-cut shaper; it was furnished by the Waterbury Farrel Foundry & Machine Co., Waterbury, Conn. The ingot is placed on the machine table and the tool fed over it by hand, removing 1/32 to 1/16-inch from each surface. This operation is necessary to remove impurities from the surface. If these blemishes were not removed, they would be rolled into



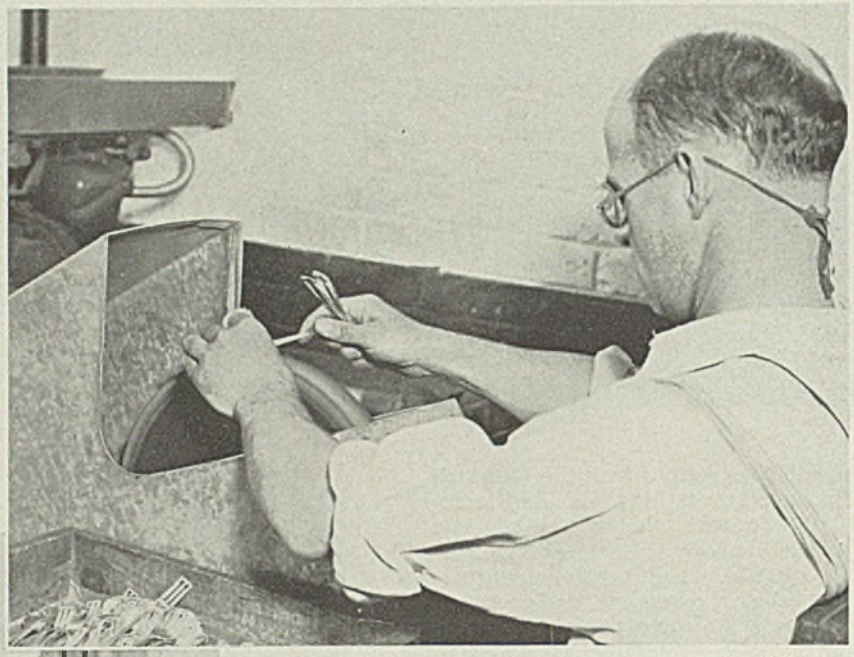


FIG. 7 (top left) shows an operation performed on equipment more than 100 years old; the operator is bending the shanks slightly so as to give the spoons a graceful shape and make them nest together evenly. Fig. 8 (above) shows the "trimming" operation which requires considerable skill. On a wood wheel faced with emery the spoon outline is trimmed evenly. Fig. 9 (lower left) shows a belt polishing operation to which spoon edges are subjected

the stock and the result would be imperfect sheets resulting in many rejections.

The rolling operation is shown in Fig. 3. The mill, furnished by Farrel Birmingham Co. Inc., Ansonia, Conn., is a 2-high unit with rolls 12 inches in diameter and with 16-inch face. Usually it takes 18 to 20 passes to reduce the metal to a thickness of 0.1-inch which dimension is common for making many varieties of flatware. During the rolling operation it is necessary to anneal the stock several times. Otherwise it would crack and split. Annealing is done in a special electric furnace provided by C. I. Hayes Inc. Providence, R. I. This furnace has a gas atmosphere and the heat for annealing runs from 1100 to 1350 degrees Fahr. After annealing, the stock is pickled in a sulphuric acid solution followed by a hot and cold water rinse.

The next step consists of blanking. Several blanks for teaspoons are shown in Fig. 4. As this illustration shows, the pieces are cut out, without wasting any metal, in an ordinary punch and die operation. Then the blanks are subjected to an annealing operation after which they are graded. This is a term used by silversmiths and applies to the thickness of the stock. If an ordinary solid silver teaspoon is examined it will be noted that the shank, or portion between the bowl and the handle, is thicker than at the extremities. The grading operation is done in a simple but ingenious manner as shown in Fig. 5. The equipment consists of a miniature rolling mill with two rolls, 4½ inches in diameter and 5 inches long. The arrangement is such that one roll is off center. It is obvious that as the stock passes between the rolls the off center condition of one roll will leave the stock tapered and thicker at the center than at the ends.

The pieces after grading are cut out to shape, which operation forms the outline of the spoon. This involves ordinary punch and die work. Then the blanks are annealed and brushed with a 6-inch brass wire brush wheel run at a speed of about 1500 revolutions per minute.

The beautiful designs seen on silver spoons and forks are formed by an operation between hardened steel dies called striking. The drop used is a special unit designed for the purpose by the Miner & Peck Mfg. Co., New Haven, Conn. The hammer is raised by a thick strap con-

Tungsten, Important Element in Tool Steels, Affected by Sino-Jap War

From STEEL, Aug. 30, 1937

DESPITE the intensity of hostilities in China, actual volume of steel buying for the Far East has shown little change. Tentative negotiations are noted, but they have not developed as yet in large orders, according to exporters.

It is pointed out that Japan has been a heavy buyer in recent months, particularly of scrap, pig iron, semifinished steel and ship steel. Japan has been conducting a shipbuilding campaign of broad scope.

In the first half of 1936, Japan's purchases of semifinished and finished steel in the United States amounted to only 28,832 tons, whereas in the first half this year the total was 345,685 tons. This tonnage was slightly more than 25 per cent of American exports of semi-finished and finish-

in New York per short ton, allowing for $8 duty, would be about $30 to $31. But such prices are too speculative to attract interest of the more conservative in the trade, who are inclined to mark time until the situation becomes further clarified and a sounder appraisal can be made. As a matter of fact, buyers of round tonnages declare that in the light of the present situation there is little for them to do but wait.

Price Trend Is Upward

With sellers of ferrotungsten waiting to see what the replacement value of their ore is going to be, the market on this product is largely nominal. Judging from scattered offerings, the

months this year the imports from China amounted to approximately 4,456,680 pounds, 69 per cent of the total. The value of imports from China in 1936 was 139,147, and for the first half this year approximately 84,722.

The United States is dependent on foreign sources for approximately 75 per cent of its requirements. The imported tungsten is obtained mainly from China, although the production of Burma, the Malay States and other countries, has become appreciable. However, the bulk of production having come from China, the price has been controlled principally by the amount of Chinese tungsten

HURRY

Molybdenum-Tungsten High Speed Steel

NOT AFFECTED!

A war flurry in the Far East (from which comes a large part of the world's supply of Tungsten) and the market for Tungsten is demoralized. Thus, a situation thousands of miles away affects industrial America.

MO-MAX Molybdenum-Tungsten High Speed Steel has for its basic alloy, Molybdenum, mined in America. It contains only a minor amount of Tungsten. Enough Tungsten to make it is mined in America. It is but little affected by this market situation.

Nearly four years ago, MO-MAX was introduced as a new product of superior quality. Now, after more than three years of ever increasing commercial use, it is an established, proven success.

It is now being manufactured and stocked by leading steel companies in North America and Europe.

Hundreds of consumers have already standardized on MO-MAX due to its high quality. They do not have to worry about the Tungsten situation.

SHIFT TO MO-MAX FOR QUALITY AND QUANTITY PRODUCTION

A booklet containing the essential data on MO-MAX may be had by addressing The Cleveland Twist Drill Company, Cleveland, Ohio.

*MO-MAX is a proprietary name owned and controlled by The Cleveland Twist Drill Company and its only licensed use by others is on steel made and sold by licensees under U. S. Patent Nos. 1,937,334; 1,998,953; 1,998,954; 1,998,955; 1,998,956; 1,998,957; and Canadian Patent Nos. 346, 506; 364,032 and 364,033.

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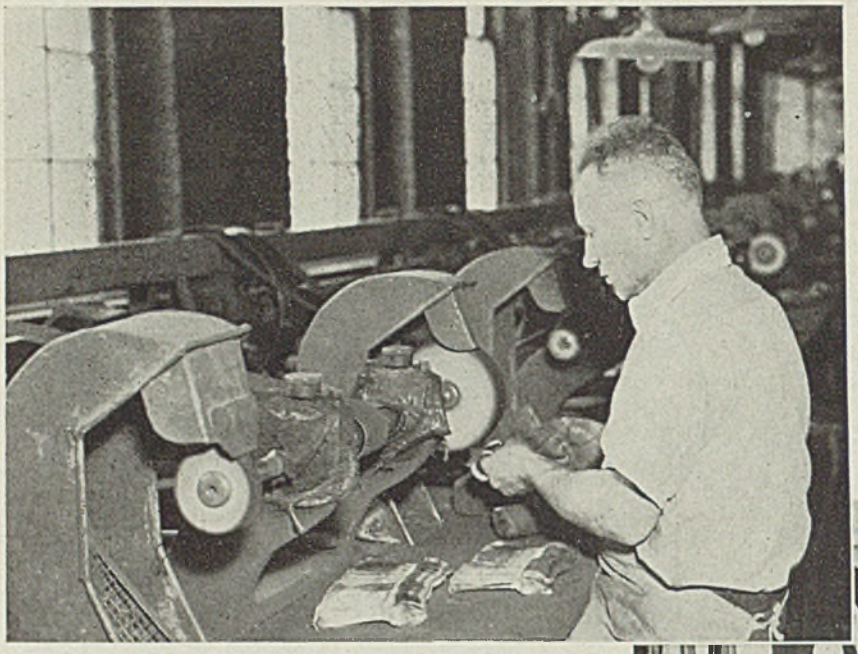


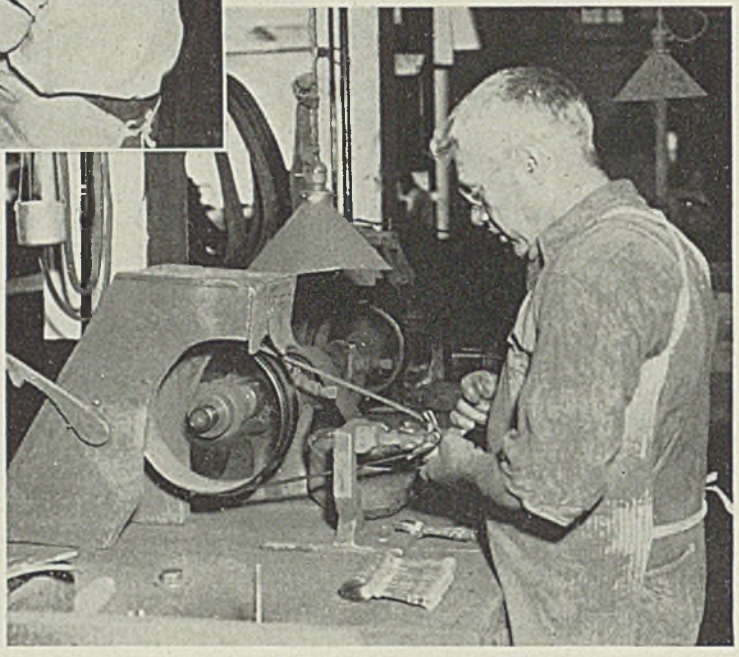


FIG. 10 (top right) shows how spoon bowls are polished on a felt wheel. This is an operation known as "sand polishing" and calls for great skill. The abrasive is pumice mixed with water and oil. Fig. 11 (above) shows the method used for buffing spoon handles. Usually muslin wheels are used, with tripoli as the abrasive. This operation is followed by buffing with rouge. Fig. 12 (at right) shows the final polishing of spoon bowls, an operation performed with an exceedingly fine clay silt

nected to an overhead arm. When the trip is released the hammer falls by gravity and is raised to its former position where it stops automatically. In some instances one striking operation is sufficient and again two strikes may be necessary, while some heavily decorated designs require as many as six. It all depends on the design and depth of the impression. A striking operation in forming table forks is shown in Fig. 6.

The operation of shaping the bow is called raising and is done between two steel dies in a Miner & Peck drop. Usually one strike is all that is necessary. Deep bowls such as seen on certain kinds of ladles cannot be raised in one strike. In an operation of this kind the upper member is called a force and is made of Hobson metal, combination of copper, tin and bismuth. With very deep bowls as many as 15 applications are necessary.

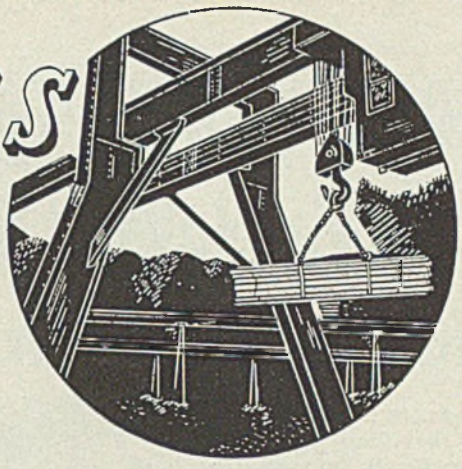
The operation shown in Fig. 7 is of more than usual interest as the simple equipment used is over 100 years old. The operator is bending the shanks slightly so as to give the spoons a graceful shape. The spoon is laid on a leather lined die and struck a slight blow with a steel hammer mounted as shown. As a result of this operation, the spoons nest together evenly.

Abrasive operations on flatware are many and varied and only a few of the most important will be described. The operation shown in Fig. 8 is called trimming and is one requiring considerable skill. The wheel used is wood without a leather face, 16 inches in diameter, 1½-inch face set up with No. 160 emery and operated at a surface speed of about 9500 feet per minute. This wheel turns away from the operator. As the illustration shows, he holds and guides the work wholly by hand and the object is to trim the spoon outline evenly. Attention is called to the forks in the tray. Here it is shown that the tines have a bar across them. This is to keep them in place during several finishing operations. Before the tines are edged, however, the brace is clipped off.

Then the edges are subjected to a belt polishing operation shown in Fig. 9. The belt is canvas set up with No. 180 emery and quartz sand. The object of the sand in the mixture is to facilitate the cutting. This belt travels at an approximate speed of 6000 feet per minute. As

(*Please turn to Page* 149)

MATERIALS HANDLING



Electric Trucks and Trailers Basis Of Machine Plant Handling System

BECAUSE silk stockings are a prime necessity to the well-dressed woman, the manufacture of silk hosiery has grown to be an important American industry. This is of special significance to the metals industry, for considerable amounts of iron, steel and nonferrous metals are utilized each year in the manufacture of machinery and equipment for hosiery producers.

As the demand for silk stockings has expanded, the hosiery manufacturing industry has grown rapidly and has spread to all parts of the United States. Coincidentally, there arose a need for better and more economical machines with which to satisfy consumers' insistence on style and quality at lower costs. As a consequence, the builders of these machines are obliged to keep pace with, or rather a step ahead of, the hosiery manufacturers, and as their business developed, the contribution of metals likewise was enlarged.

As in most instances where manu-

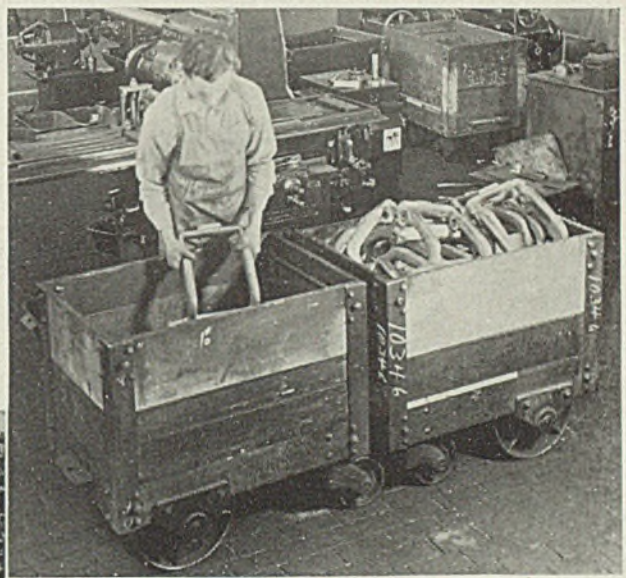


FIG. 1 (below)—Electric platform truck carrying pans of small parts and drawing train of five special box trailers. Note the wide and well defined aisles; floors are of impregnated wood block

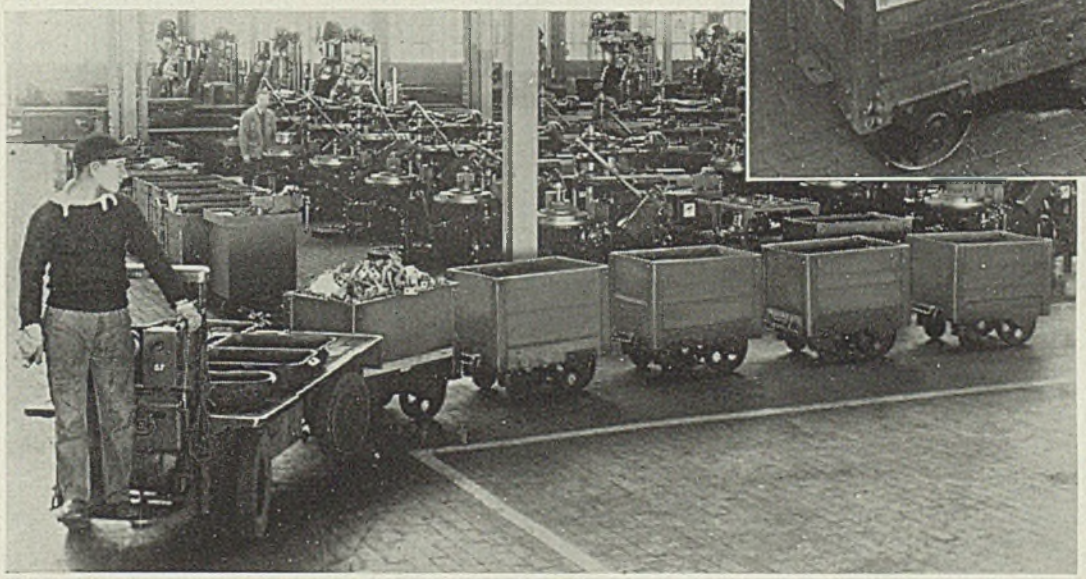
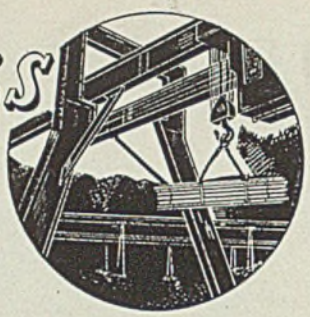


FIG. 2 (above)—Close-up of two box trailers designed and used in the textile machine plant for transporting parts through the processing departments to final assembly

MATERIALS HANDLING



facturing waste must be eliminated, materials handling operations became increasingly important as the hosiery machine industry grew. This is illustrated appropriately in the reliance placed on its handling system by the Textile Machine Works, Reading, Pa., which has manufactured over two-thirds of all the full-fashioned knitting machines in use in the United States today.

Company Grows Steadily

This organization has been in the machine building business for 45 years. It is an outgrowth of a partnership of "Thun & Janssen" which was established in 1892. The original plant was located in Reading, but in 1896 was moved to its present site in Wyomissing, a suburb. From a most modest beginning, the company developed steadily until today it occupies 914,300 square feet of floor space for manufacturing and office purposes, employes over 2500 men and has an average payroll of $3,500,000 a year.

In a recent analysis of its materials handling problem, the company found that it required approximately 13,000,000 pounds of steel in one year for the manufacture of its products, which include full-fashioned knitting machines, machines and accessories for the braiding and wire covering industry, centrifugal extractors, accessories for the knitting trade and also gray iron, aluminum and bronze castings. In addition to the steel, raw materials used in one year included 23,681,946 pounds of cast iron, 164,537 pounds of aluminum and 597,166 pounds of bronze.

Considering the foregoing quantities and adding as an item for consideration the fact that some of the machines which the company produces require as many as 130,000 separate parts, it is not difficult to imagine the importance of the plant transportation system. The main machine shop alone is 500 feet long and 275 feet wide, while the foundry is 820 feet long and 245 feet wide.

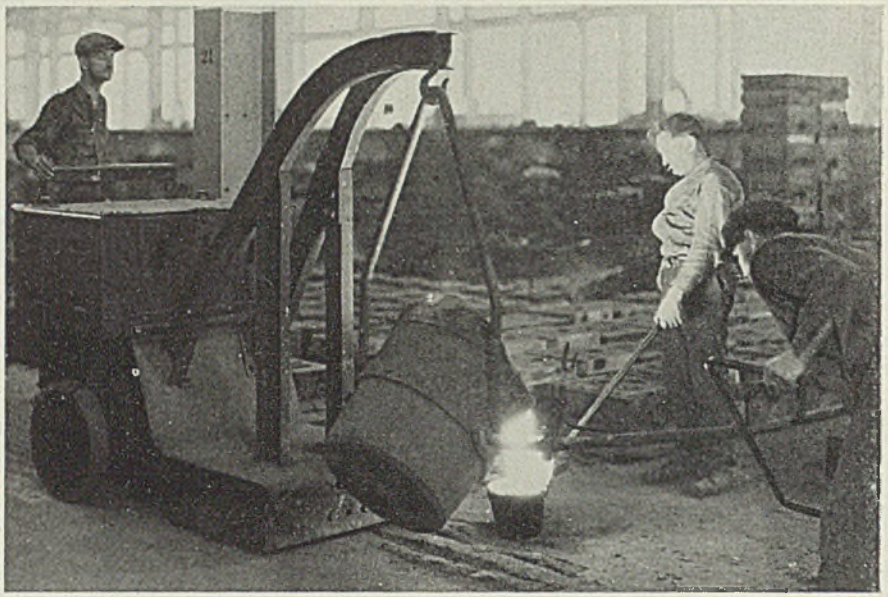


FIG. 4—Some of the electric trucks are equipped for special jobs such as this one—that of handling hot metal in ladles

Because of the wide area over which the plant buildings are scattered and the immense quantities of small parts which must be manufactured and then brought to assembly stations, the basis of the materials handling system throughout the plant is an electric lift-truck and tractor-trailer combination. Supplementing this is a plentiful supply of overhead electric cranes and hoists, located wherever heavy lifting operations are performed.

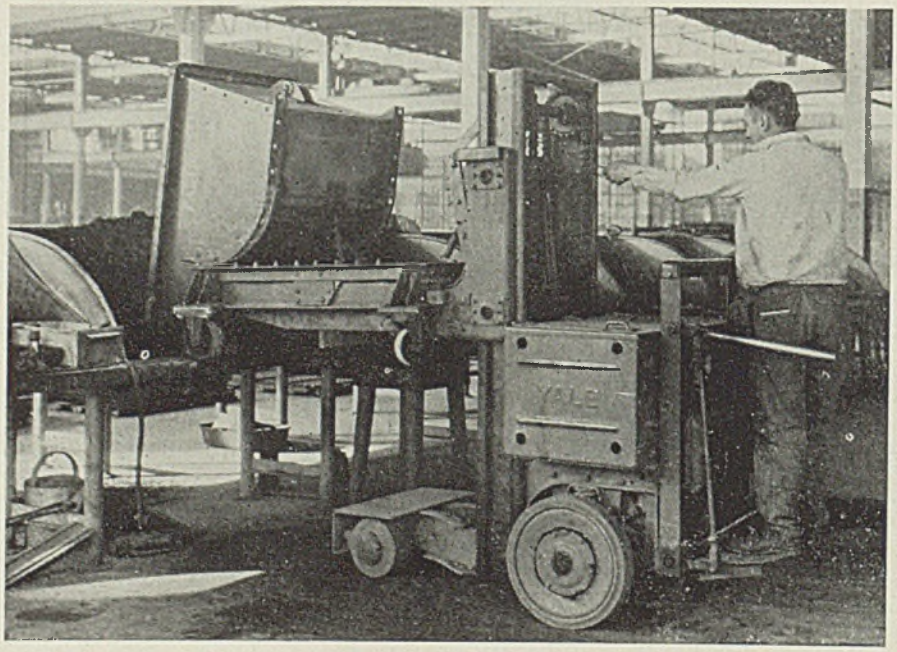
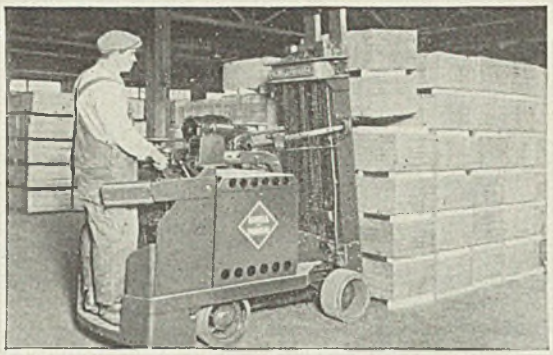


FIG. 3—High-lift electric truck picks up a special dump body platform and deposits a load of core sand at the point of use

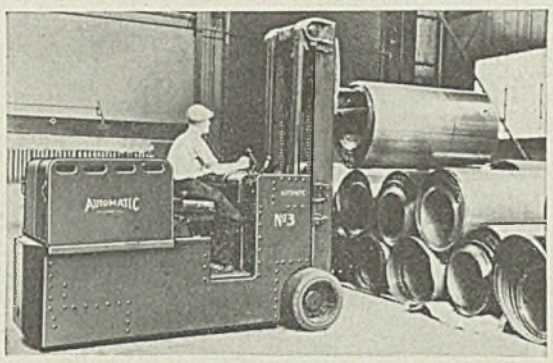
Aisles Are Made Wide

Fundamentally, the success of this floor-handling plan has been augmented by a sound policy, which is attested in the following statement of the company:

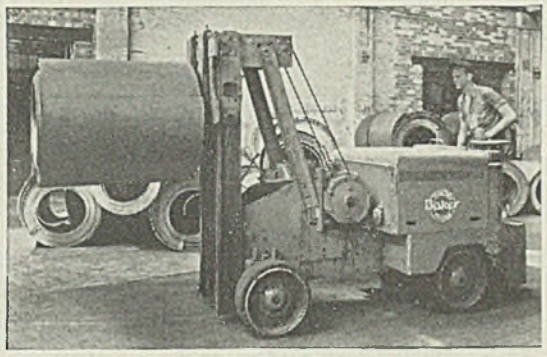
"Efficient and adequate handling of shop materials has always received particular attention at the Textile Machine Works. Back in the days when the plant was all under one roof the firm insisted on having aisles of ample breadth to allow materials to be moved. This policy has been maintained in the design of every unit built since then—wide 'streets' or aisles which permit fast and uninterrupted shop transporta-



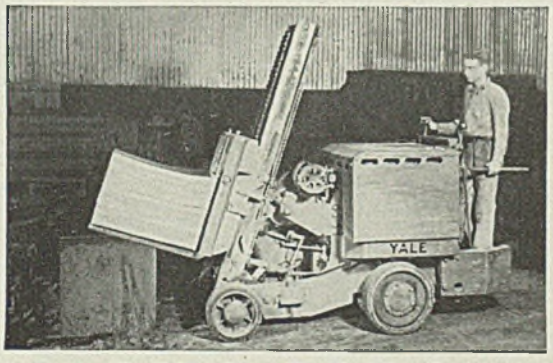
The Elwell Parker Electric Company



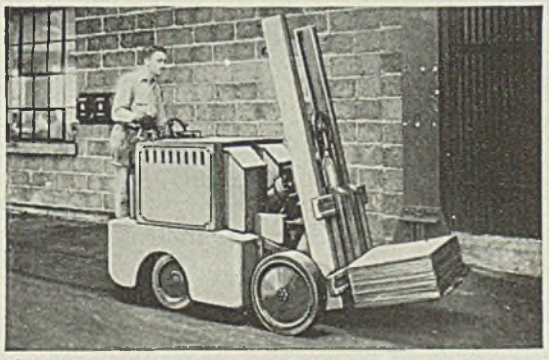
Automatic Transportation Co., Inc.



Baker-Raulang Company



The Yale & Towne Manufacturing Co.



Mercury Manufacturing Co.

FOR MODERN STEEL MILL SERVICE a battery has got to have POWER . . . . .

STEEL mill service today is *heavy duty* service. Only the toughest, strongest men, materials and equipment can fill the bill. Electric industrial trucks have got to be big and sturdy to handle present-day loads . . . and it takes batteries of extra power, extra capacity to run those trucks efficiently. Not only large battery capacity but high capacity at high rates of discharge. And that describes Exide-Ironclads . . . they deliver plus-power *and keep on delivering.*

Exide-Ironclad Batteries have enormous power ability. They can deliver an increasing power output up to 20 times the normal rate! And maintain a high average voltage even at high rates of discharge. Exide-Ironclads can *give* it . . . and Exide-Ironclads can *take* it. They last for years . . . and require a minimum of attention.

Engineers and Maintenance Men everywhere agree that for efficient steel mill material handling service, Exide-Ironclads are the answer.

THE ELECTRIC STORAGE BATTERY CO., Philadelphia
The World's Largest Manufacturers of Storage Batteries for Every Purpose
Exide Batteries of Canada, Limited, Toronto

Visit Exide Booth #65 at the Iron and Steel Exposition, Chicago

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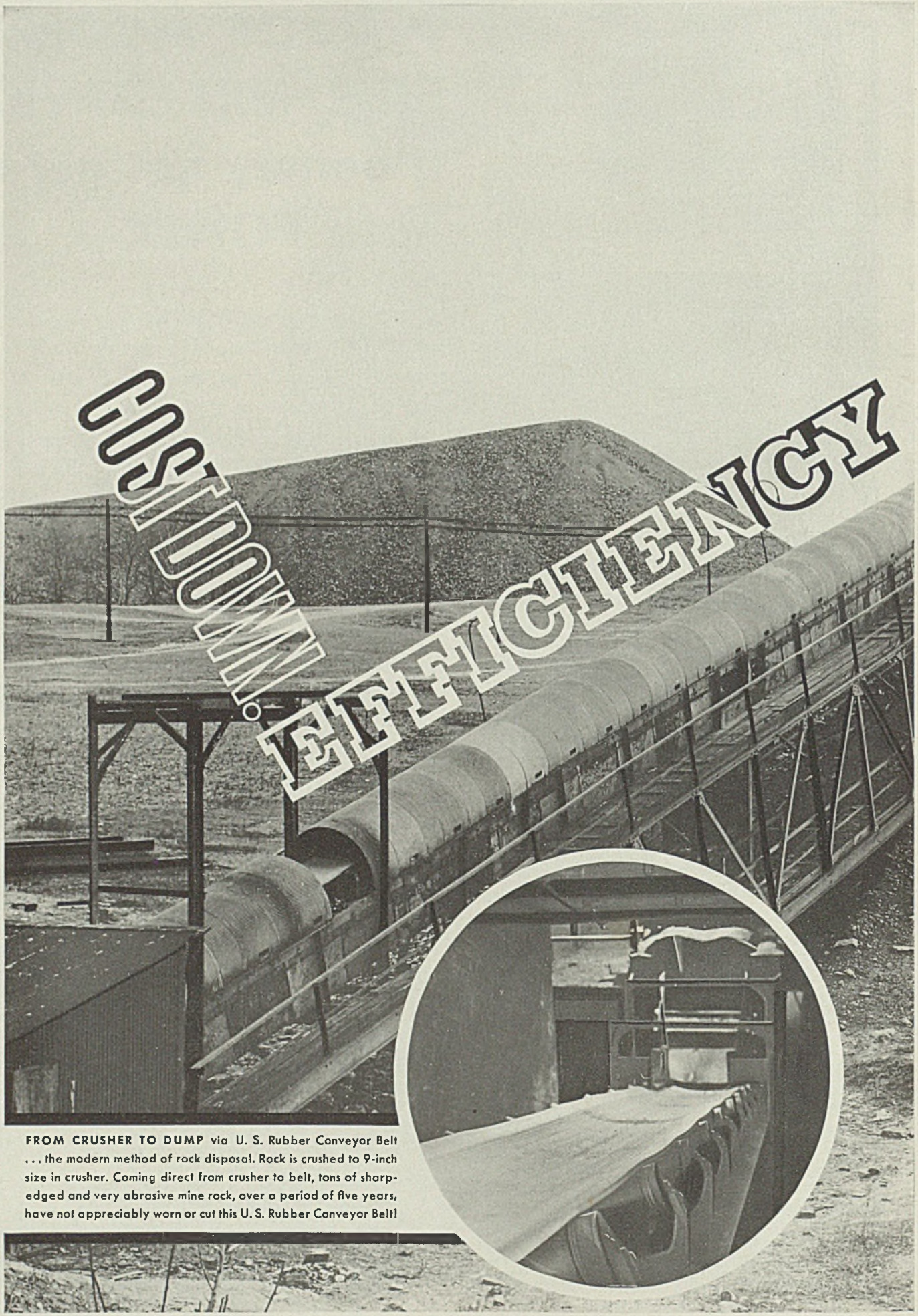
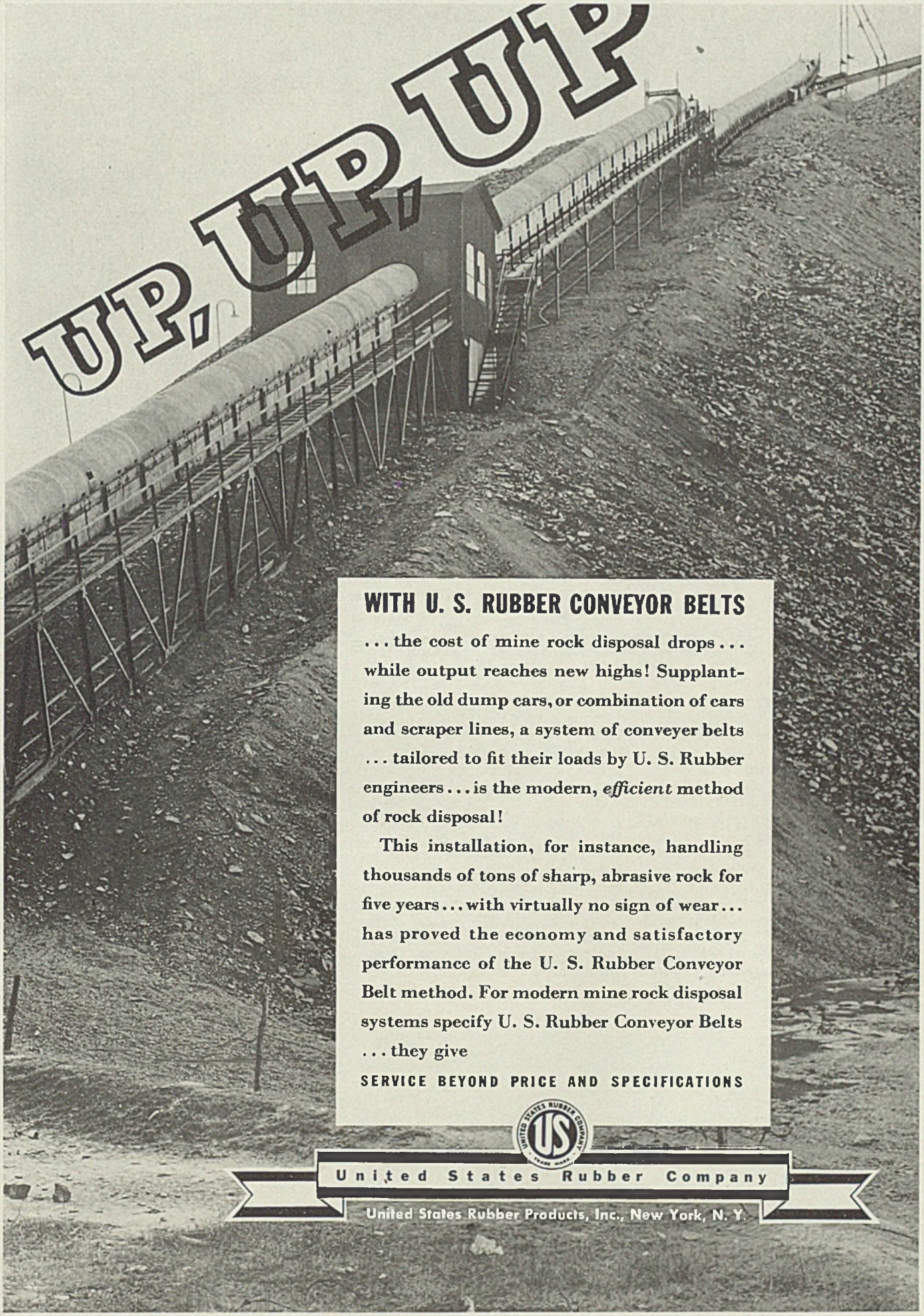


FROM CRUSHER TO DUMP via U. S. Rubber Conveyor Belt . . . the modern method of rock disposal. Rock is crushed to 9-inch size in crusher. Coming direct from crusher to belt, tons of sharp-edged and very abrasive mine rock, over a period of five years, have not appreciably worn or cut this U. S. Rubber Conveyor Belt!



WITH U. S. RUBBER CONVEYOR BELTS

. . . the cost of mine rock disposal drops . . . while output reaches new highs! Supplanting the old dump cars, or combination of cars and scraper lines, a system of conveyer belts . . . tailored to fit their loads by U. S. Rubber engineers . . . is the modern, *efficient* method of rock disposal!

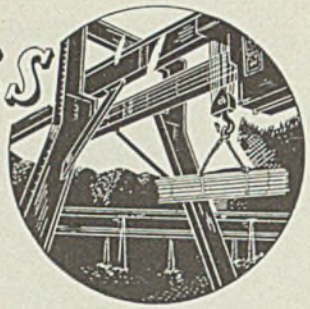
This installation, for instance, handling thousands of tons of sharp, abrasive rock for five years . . . with virtually no sign of wear . . . has proved the economy and satisfactory performance of the U. S. Rubber Conveyor Belt method. For modern mine rock disposal systems specify U. S. Rubber Conveyor Belts . . . they give

SERVICE BEYOND PRICE AND SPECIFICATIONS

United States Rubber Company

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

MATERIALS HANDLING



tion. In the Textile foundry a special 'street' has been laid of cast iron, to insure a permanent, level surface on which electric trucks transport ladles of molten iron in perfect safety. The transportation equipment is adequate and suitably chosen or designed to fit the job it is meant to do."

Included in the floor-operated equipment, which does the bulk of the handling in and between departments, are 24 electric industrial trucks and two tractors, in connection with which are utilized approximately 3500 special box trucks. The latter are equipped with coupling devices so that a number of them may be operated in a train for tractor haulage. The company's own engineering department designed, developed and supervised manufacture of these special trucks.

In addition to the trucks, tractors and trailers, the company utilizes a total of 22 electric cranes and hoists and eight hand cranes, the latter for lighter overhead handling in the machine shop.

Believing that real economies of operation of its materials handling system accrue when floors are in first class condition, the company had the floors of the main assembly building and machine shop built of impregnated wood block, aisles being carefully defined by painted white lines.

In Fig. 1 of the accompanying illustrations is shown one of the electric platform trucks serving both as a burden carrier and as power unit for a train of five of the special shop boxes. The operator, as may be noted, is exceedingly careful to make his turn within the prescribed aisle limits, but the comfortable width of the aisles makes this a simple matter. He has already gathered one box load at one of the stations, and en route to the assembly department or to storage will drop the other empties and pick up loaded trailers.

In Fig. 2 is shown a close-up of two of the trucks in the machine shop. Parts to be machined are transported to the machine tools in one of these trucks and when the necessary operations have been performed, they are reloaded into an empty truck. The fleet of approximately 3500 units provides sufficient float of trucks so that all machine stations have a steady supply at all times.

While interdepartmental handling is largely of a character which requires only standard trucks and trailers, in the foundry many tasks are made easier by the use of special trucks. One such unit is shown in

(*Please turn to Page* 155)

New Locomotives Serve Steel Plant

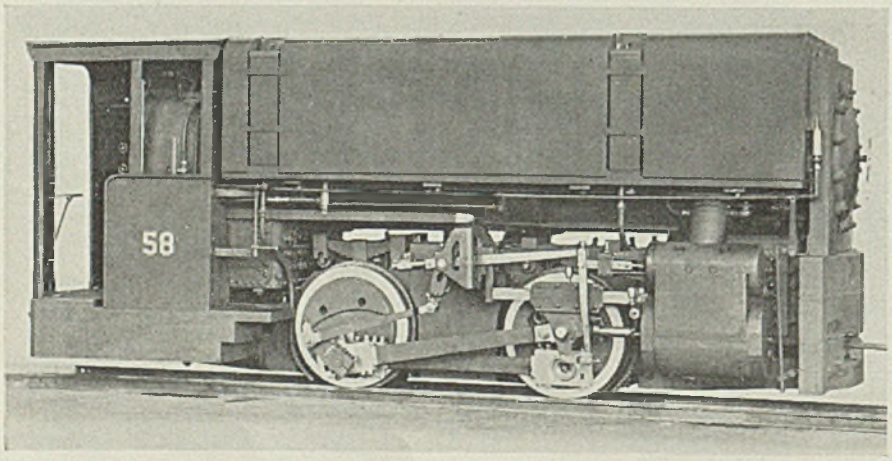
A WEIGHT of 94,000 pounds, ability to run in restricted clearances and stability on a gage of 23 inches were the specifications which H. K. Porter Co., Pittsburgh, was obliged to meet in building two locomotives for operation at the South Side works of Jones & Laughlin Steel Corp., Pittsburgh. In spite of the fact that such a locomotive would be unusually heavy to run in such confined clearances and the track load per square foot also would be excessive, the problem was worked out successfully.

The locomotives, one of which is shown in the accompanying illustration, are proving satisfactory in 24-hour service, and each is pulling trains which previously were handled by two smaller units.

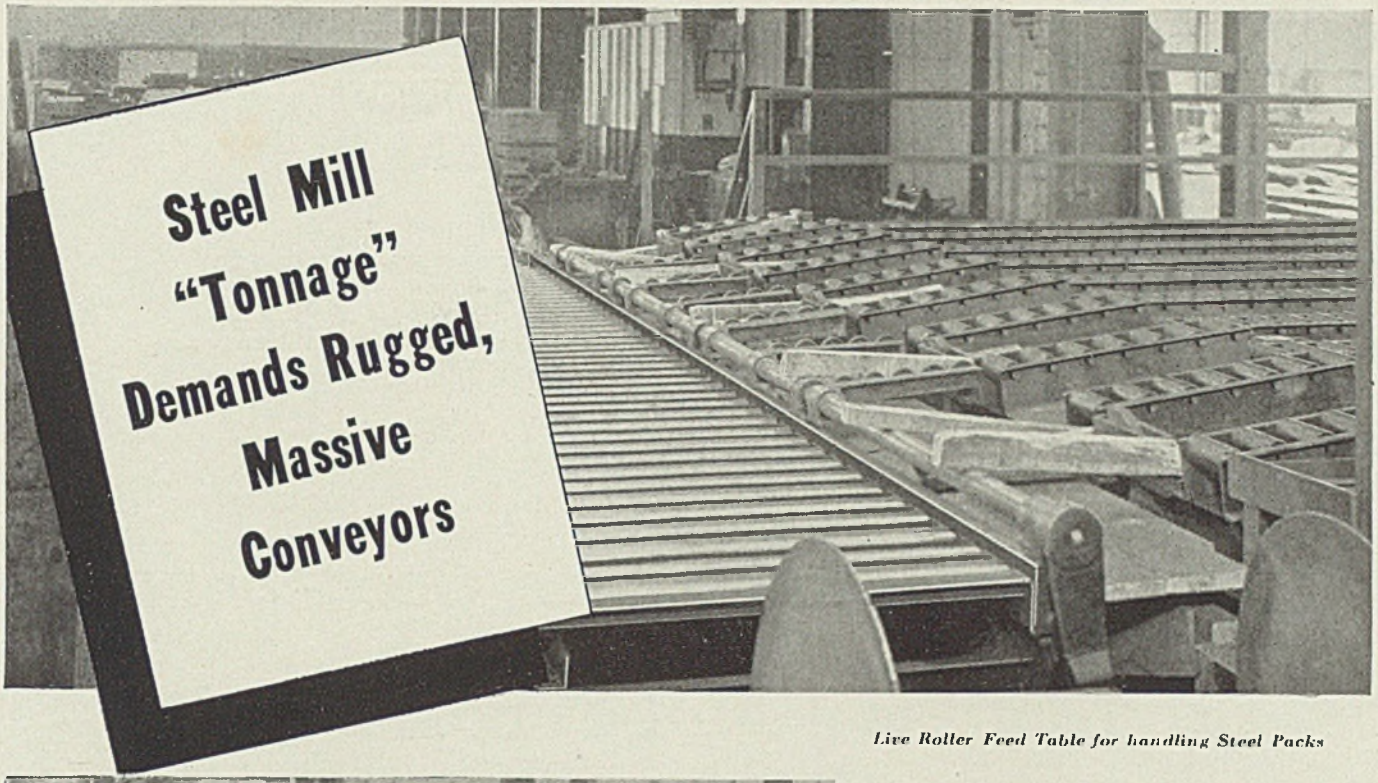
Height of the new locomotives from top of rail is 93½ inches; width over all, 68 inches. The tractive force is 18,550 pounds. Some of the other interesting features are: Cylinder diameter, 15 inches; cylinder stroke, 16 inches; wheel diameter, 33 inches; wheel base, 5 feet; steam pressure 200 pounds; length over bumpers, 19 feet 3 inches.

Solution of the problem of designing the locomotives to the difficult specifications was accomplished by placing between the right-hand and left-hand frames a third frame completely filling the space. The frames, bumpers and driving wheels were cut from solid slabs. The three frames and bumpers, after being machined, were welded into one integral unit weighing slightly less than one-half the running weight of the locomotive.

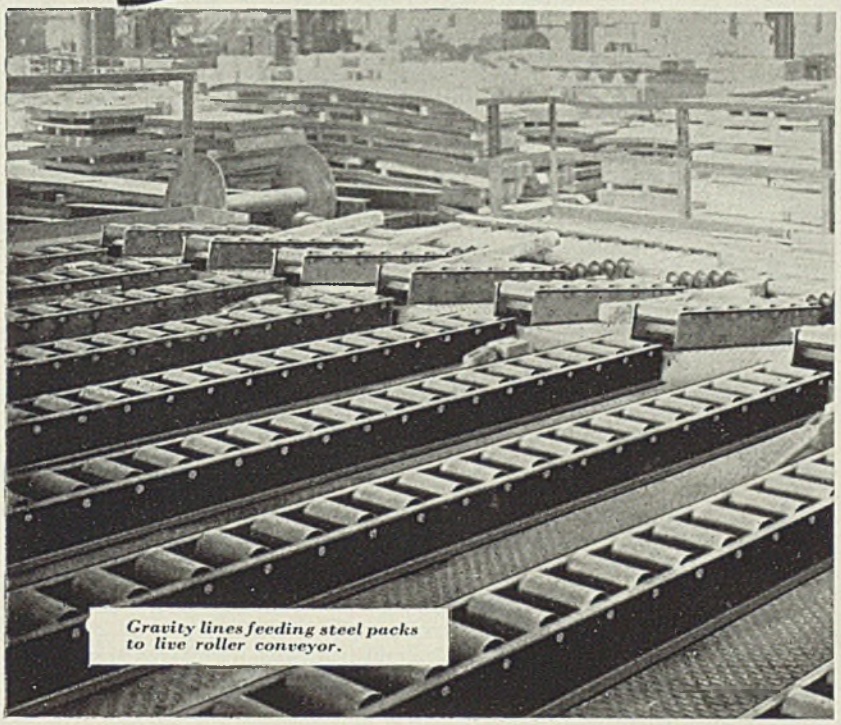
Driving wheels are of cast steel and the axles are mounted on tapered roller bearings. One interesting feature is that when the first locomotive was finished its weight in working order was only 400 pounds over the estimated weight.



TWO specially-designed locomotives of the type shown here are performing satisfactory service in a Pittsburgh steel plant. Weighing 94,000 pounds each, they operate 24 hours a day in restricted clearances on a track of 23-inch gage



Live Roller Feed Table for handling Steel Packs



Gravity lines feeding steel packs to live roller conveyor.

The movement of heavy, concentrated loads of coils, sheets, packs, or bars places heavy burdens on conveying equipment. Sturdy, rugged, massively built conveyors are needed to carry these loads at the high speeds required to keep handling costs at the minimum.

Standard has built dependable conveyors for steel mills for more than thirty years . . . Why not have a Standard engineer check the handling needs of your mill—there's no obligation. His experience will aid you to plan efficient, economical handling.

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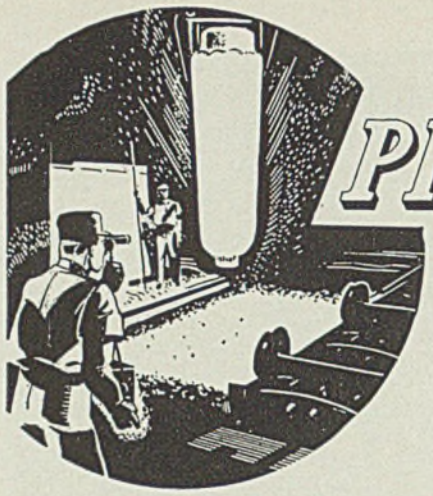


PROGRESS IN STEELMAKING

Laminated Bearings Give Good Service On Tool Steel Mill Pinion Stands

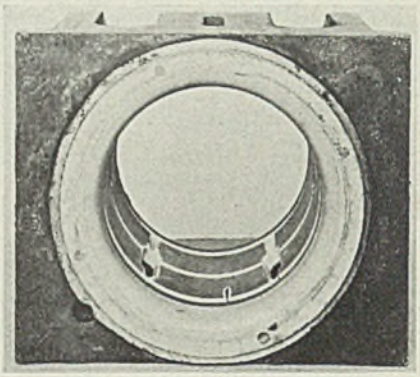
BY V. E. ENZ
Industrial Engineer, Westinghouse Electric & Mfg. Co., Trafford, Pa.

LAMINATED bearings cooled and lubricated with water have been applied to roll necks in pinion stands with exceptional results; they last much longer than the babbitt previously used, they do not hammer out and they run more quietly with less care.

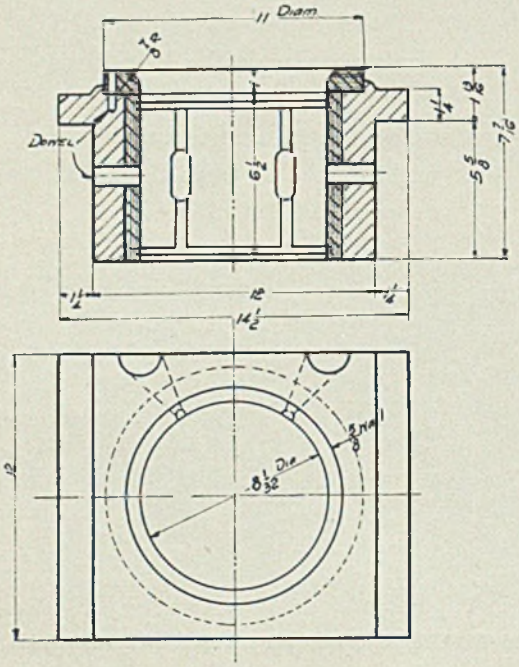
Bearings of pinion stands of tool steel rolling mills always have been a problem to the operating and maintenance men. These bearings, when worn very little, cause the teeth in the pinion to mesh poorly. The stand becomes noisy and wear is very rapid on the pinion teeth. Combined with the wear in the bearing is the whip or hammering of the neck on the babbitt lining which causes the latter to flatten out. In normal operation these bearing boxes are replaced with a spare set every four weeks to three months and the set is removed and rebabbitted.

Due to the continued success of laminated bearings on the work rolls of almost every type of rolling mill, it was logical to try them on this hard job. Since the bearing boxes were solid, the design worked around to a complete 360-degree bushing and a thrust ring. The babbitt was removed and the rough castings were bored clean on the inside so there would be a smooth backing for the bearing pieces. The bushing was made with a 1/32-inch clearance for a running fit and the wall thickness was ⅝-inch. Slots and circular grooves were machined in the castings so that rubber hoses could be inserted. These slots and grooves gave good distribution and circulation of the water.

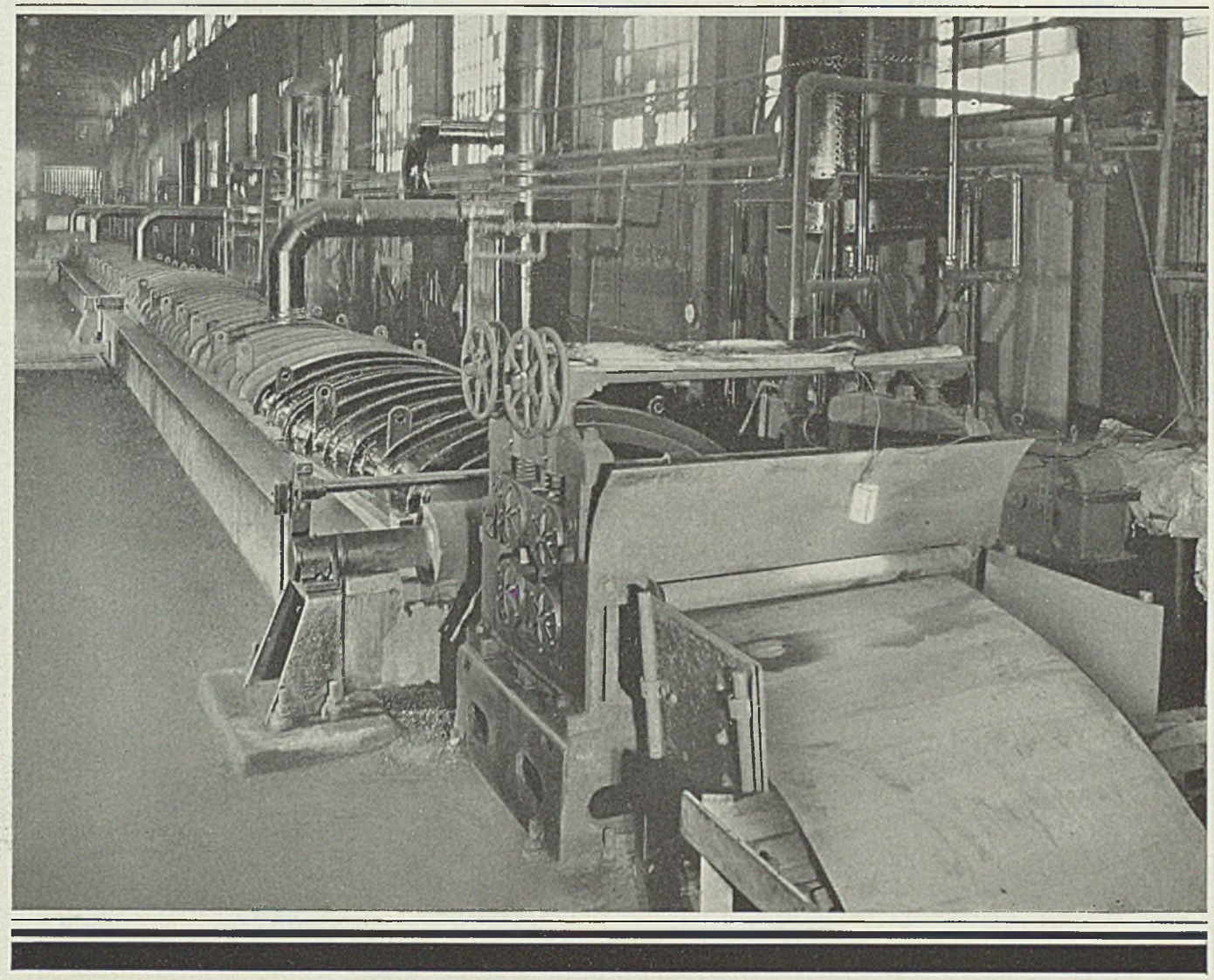
Now, what about the life of these bearings? After six months' operation there is only slight wear. Since the bearings have already outlasted four sets of babbitted bearings, a



CLOSE-UP view of Micarta lined bearing showing the location of slots and grooves for the distribution and circulation of water



DETAILS of Micarta lined, water cooled and lubricated, bearing boxes for 12-inch pinion stand with 8-inch necks



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It not only more than pays for itself through savings in acid and metal, but it minimizes acid brittleness . . . blistering . . . pitting . . . smut coating . . . and eliminates fumes in the pickling room.

Booklet for the asking

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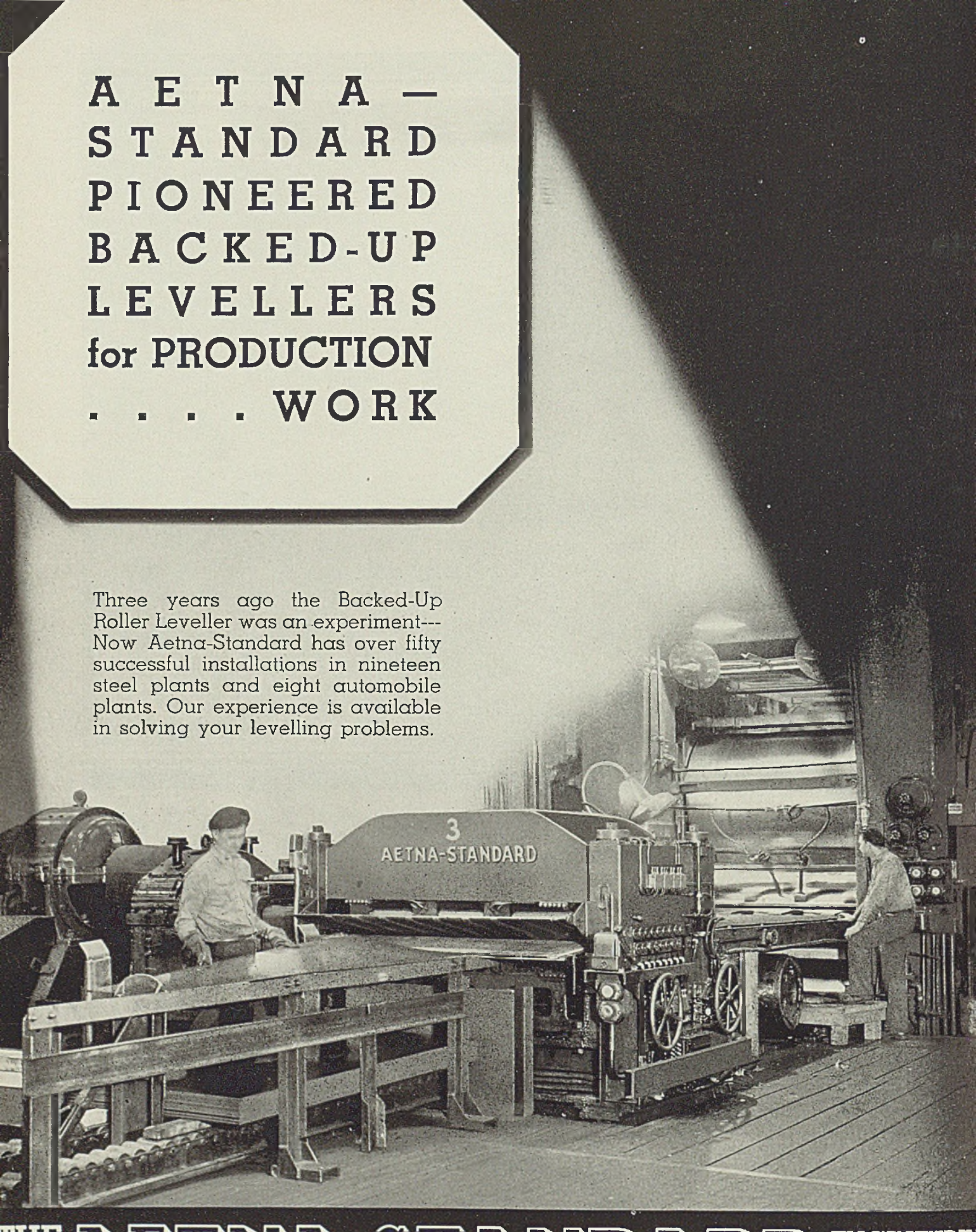
AETNA — STANDARD PIONEERED BACKED-UP LEVELLERS for PRODUCTION . . . . WORK

Three years ago the Backed-Up Roller Leveller was an experiment--- Now Aetna-Standard has over fifty successful installations in nineteen steel plants and eight automobile plants. Our experience is available in solving your levelling problems.



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YOUNGSTOWN « OHIO » U.S.A

conservative estimated life for the laminated bearings would be from 18 months to two years. Over an 18-month period, probably 12 to 14 sets of babbitted bearings would have been used, and maybe more.

What about the water getting into the grease on the pinion teeth? After trying several methods to keep the water off the pinion teeth, it was found that by using 330 Penzoil surface lubricant the water would run right off like water off a duck's back. This surface lubricant is applied every two days and keeps the gear teeth well lubricated.

One installation contemplates using oil as lubricant and cooling agent employing a 50 to 100-gallon drum to hold the oil as it is pumped from the bearing circulating grooves. This should work just as well as water for a lubricant and cooler, but there is no good reason why water cannot be used as shown by the installation already operating.

* * *

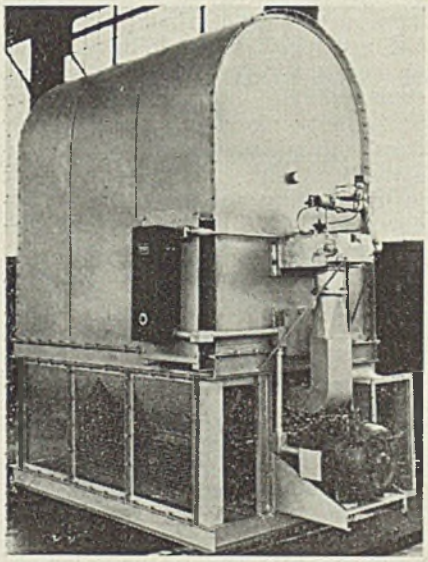
Exhaust System Clears Fog From Pickling Plant

Removal of vapors from pickling tubs or other sources usually is desirable, particularly from the standpoint of obtaining proper working conditions, and of avoiding corrosion of steel work in building.

If the pickling department is walled off from the rest of the building, the desired results can be obtained by maintaining an effective temperature throughout the space and providing necessary ventilation at the top of the building. This implies taking a certain amount of air from the outside, or indirectly through adjoining building.

If the department is not walled in, but opens up into a larger building that is not fully heated, the foregoing procedure is usually impractical. Under such conditions, considerable success has been obtained by blowing hot air across the pickling tubs, close to the surface of liquid, and drawing the air away at the other end by means of an exhaust system.

The Lee direct-fired heater, built by Dravo Corp., Pittsburgh is being used with both methods. In most cases this application requires an appreciable amount of heat, regardless of how heated, whether with steam or otherwise. Considering the fact that the demand for such heat is seasonal, the Lee heater should normally work in more advantageously. Steam lines have to be made large enough to take care of this demand in addition to the process load, and when heat is not required these lines are too large, and consequently the condensation losses are high. Whereas, if low cost natural gas or coke-oven gas is available, either fuel can be used to advantage economically.



Direct-fired unit heater of the bottom end discharge type. The unit is fired with coke-oven gas

* * *

Rolls with Hard Surfaces Are Being Developed

Now in process of development are numerous attempts to produce rolls which will not be marked by the steel being rolled and which, in turn, will not impart surface blemishes to the product. This problem has been attached in various ways and it begins to look as if rollls with extremely hard surfaces will be available in the near future. Progress along these lines is being observed with interest by steel mill engineers, particularly those concerned with the product of continuous strip mills. They say that a warm welcome awaits rolls hard enough to resist being marked and which are satisfactory in other ways as well.

* * *

Individual D-C Generator For Each Auxiliary Drive

A recently built blooming mill has an individual direct current generator for each principal auxiliary drive. These are six in number and include the screwdowns, front and rear tables, right and left side guards and the slab shear. This arrangement simplified electrical control, causes smoother operation, tends to prevent serious losses in production due to breakdowns and reduces cost of maintenance.

* * *

Reduces Cost of Operation

Cost of power consumed in push benches is reported to have been reduced substantially by using roller dies instead of ring dies. The roller dies, invented by Manfried Weiss, Budapeth, Hungary, are being used to an increasing extent on the Continent. An installation now is being made in England. While few push benches are used in the United States, considerable thought is being given to the new development, so that installation in this country of some push benches equipped with roller dies would not be a surprise, particularly at plants where tubing of uniform concentricity is the objective.

Safety Council Announces Metals Section Program

Three sessions dealing with safety in the metals industry are being arranged by the Metals section of the National Safety council during the organization's twenty-sixth National Safety congress and exposition in Kansas City, Mo., Oct. 11-15. These will be held in Municipal Auditorium which will house the large display of equipment for safeguarding operations of all kinds.

C. M. Allen, American Rolling Mill Co., Middletown, O., is chairman of the Metals section; R. A. Chaffin, Continental Steel Corp., Kokomo, Ind., is vice chairman; and Mell E. Trammell, Republic Steel Corp., Alabama City, Ala., is secretary.

The program announced for the Metals section is as follows:

Tuesday, Oct. 12

AFTERNOON

"Activities of the Metals Section," by C. M. Allen, American Rolling Mill Co., Middletown, O., chairman of Metals section.

"Safety as a Builder of Morale," by Roy W. Kelly, chief, personnel and training division, soil conservation service, Washington.

Election of officers.

"Welding and Cutting Fires Are Preventable," by H. F. Reinhard, secretary, New York, and J. I. Banash, consulting engineer, Chicago, International Acetylene association.

Wednesday, Oct. 13

AFTERNOON

"How I Made Safety Effective in My Department," by Ben J. Harlan, superintendent, blast furnace division, Lackawanna plant, Bethlehem Steel Co., Lackawanna, N. Y.

"Safe Use and Abuse of Wire Rope and Wire Rope Slings," by R. B. Whyte, general superintendent, MacWhyte Co., Kenosha, Wis.

"Planning Your Safety Program," by Burrell T. Dye, safety supervisor, Warren district, Republic Steel Corp., Warren, O.

Thursday, Oct. 14

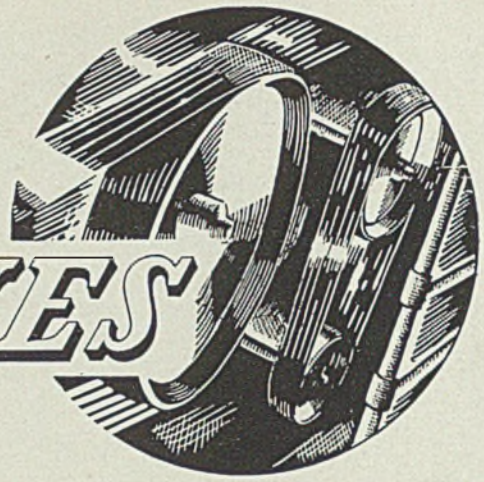
AFTERNOON

Presentation of awards in Metal section safety contest.

"How to Make Accident Statistics Interesting and Useful," by W. T. Filmer, safety supervisor, Youngstown Sheet & Tube Co., Youngstown, O.

"Maintenance and Repair and Its Relation to Safety in the Metals Industry," by Clifford J. Smith, superintendent of maintenance, Gary works, Carnegie-Illinois Steel Corp., Gary, Ind.

POWER DRIVES



Combine Group and Unit Drives For Straight-Line Production Layout

IN REVISING the layout and arrangement of machines to obtain straight-line production in a midwestern plant manufacturing plain bearings for the trade, machines are set up in combinations of group and individual drives. The work flows from the machines making the shells through the cleaning and babbitt-casting equipment and on to the rows of finishing machines.

Each row is set up to bore, ream, drill, mill or perform the other necessary finishing operations in sequence. Work flows or is passed on from operator to operator to final inspection and packing at the end of the lines.

Machines are driven in short groups from 10-horsepower motors, a single motor to each shaft with a few machines in the group lines individually driven. In some cases the lineshaft motors are slightly underloaded but this is considered preferable to using motors of various sizes because of the opportunity to standardize and interchange drives.

Each group contains 10 to 15 machines of different types. Previous to the rearrangement of the layout, machines had been grouped according to type of machine. The revised layout to give straight-line production decreased materials handling because of the flow of work from operator to operator, and increased production from 25 to 30 per cent, together with a considerable saving in floor space.

To mount the lineshafting, 3 double rows of 4-inch channels mounted back-to-back, with spacers between to provide openings for the insertion of bolts, are attached to the building trusses. This structure forms the support for similar channel lineshaft stringers mounted crosswise as the lineshafts extend parallel to the building trusses.

Lineshafts are operated at 240 revolutions per minute with a single-reduction belt drive from the 1200-revolutions per minute motors. Plain lineshaft bearings from the previous installation were used as available, but all new bearings purchased were of the antifriction type.

Machines which require heavy loads or produce shocks at starting cuts, such as millers and other units, were redesigned for individual motor drive by attaching brackets for the motor and connecting with V-belts. These machines are placed in line with those group driven. A few machines on the turn of the U-shaped production flow are also individually driven.

Instead of extending conduit lines to each motor, lines of special duct containing three heavy copper feeders extend down each line of machines. To connect up a motor, rigid or flexible conduit drops from these feeders to the motor. Thus changes can be made by reconnecting to the enclosed-duct feeder lines at any point. All motors are push button controlled.

* * *

Idler Drives

IDLER drives do not have to cause trouble. Frequently an idler or some other device is necessary for satisfactory operation. If properly designed and placed in the correct position an idler drive should operate without trouble.

Of course the belt, because of the reverse bend over the idler, cannot be expected to last as long as a similar belt on an open drive without the reverse bend. Also, belt drives with idlers usually operate at more nearly full load, and often with shock loads, than do open center drives, all of which may be expected to affect the operating life.

Idler drives serve either of two purposes. They are used to wrap the belt on the small pulley to provide an increased arc of contact, or they serve to dampen vibration or whip due to shock or pulsating loads. Sometimes both conditions are found in the same drive, as on air compressor and on belted gas engine drives. Incidentally, the combination of a gas engine belted to air compressor is one of the most severe operating conditions for a belt drive.

Idlers depend on their weight, springs, screw-downs or dashpots to maintain their position and tension on the belt. On pulsating loads the gravity idler must have excessive weight to prevent jumping, and thus maintain high tension on the belt when idle. If the heavy idler does jump under such circumstances, an extremely severe shock is imposed on the belt. The screw-down and fixed idler also maintain tension when idle.

For most pulsating loads, the dashpot, either oil or air cushioned, permits using a lighter idler and at the same time retards excessive movement with pulsations and prevents jumping or bouncing. Also, the tension is eased when idle.

In no case should an idler of smaller diameter than the minimum recommended for the weight and thickness of belt be used. Common practice is to make the idler diameter equal to that of the smaller pulley.

The exact position of the idler is

● Working smoothly and quietly in their oil-retaining casings, many Link-Belt silent chain drives have been on the job continuously for one, two, even three decades.

Think what this means in terms of cost. Starting with a low first cost (frequently lower than belts), each additional year that a Link-Belt silent chain drive is in service brings down the overall cost until it is negligible. Usually, after it is written off the books — it still goes on delivering every R. P. M. of the motor (no-slip) in a smooth, steady "flow."

That's efficiency — qualities which assure steady top production with little time out for maintenance and repairs.

The nearest Link-Belt Positive Drive Specialist can show you how this drive can be profitably applied in your plant. Send for engineering data book No. 125.

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SILENT CHAIN DRIVES

a careful engineering problem which is influenced by the judgment and experience of the engineer. Such design is too expensive for a novice to experiment with and should be left to an experienced engineer.

♦ ♦ ♦

Chinese Maintenance

IT is often stated, although not verified by this department, that the Chinese doctor charges his patients while they are well and goes off the payroll when they get sick.

One plant tried a modified form of this practice with its maintenance department. A special cost account was set up against the maintenance department for all emergency breakdowns. This included the time lost in production, wages of idle men and the overhead charge for the production machines idle.

During the second and third years of operation of this plan the total time down for all groups was less than 45 minutes in a 250-man plant. In addition, the total cost of maintenance, inspection and servicing was no greater per operating hour than it had been. Although no separate records had been kept of breakdown interruptions previously, estimates indicated that they had been between 10 and 15 times greater.

During the depression and with new management the "Chinese doctor" practice was dropped along with a drastic reduction in maintenance force and personnel. Comparative results under present conditions cannot be obtained.

It always pays to know what stoppages cost, irrespective of the account to which they are charged. If the maintenance department is charged with this expense, no reasonable restriction can be placed on its activity or judgment on inspection, servicing, changes or overhauling. For that matter this department should be free under any conditions to apply all conservative corrective measures its judgment indicates are necessary.

♦ ♦ ♦

Powering Reversing Loads

STEAM engine drives are often misleading in rating the power delivered and load requirements on the connecting units because of the ability of the engine and flywheel to absorb momentary overloads considerably beyond the normal rating of the engine.

Where the engine reverses, the flywheel creates a heavy shock load. In one plant an engine rated at 350 horsepower is used on a drive reversing in operation. At this point the load on the chain obviously exceeds the normal engine rating.

When the equipment was installed, the chain ordered was also rated at 350 horsepower, without consulting the manufacturer or receiving his recommendations. After the drive had been in operation for some time it began to show evidence of impending failure and the engineer of another manufacturer was called upon for replacement. This man insisted upon inspecting the drive before accepting the order.

Since the plant manager insisted that he did not need and would not pay for a chain rated at over 350 horsepower, the engineer wrote out the order listing such a chain but instructed the plant to ship a 500-horsepower chain. The difference in cost was covered by stating that it was special steel and that he would guarantee satisfactory operation.

Although such subterfuges are seldom practiced by transmission engineers, sometimes they are necessary to install equipment which can be guaranteed to do the work satisfactorily where the purchaser has preconceived, obstinate ideas of the power requirements and load conditions on a drive.

Power drive connections on reversing loads always require rating above the nameplate rating of the motor or engine, whether connected by chain, belt, gears or other means. Such overload characteristics are built into the special motor or engine but other drive elements are rated usually for strength required for normal operation with an expected allowance for abnormal service.

♦ ♦ ♦

Lubricating Wire Rope

THE life of wire rope or cable depends to a large extent upon the lubricant and how it is applied.

Satisfactory lubrication is not always discernible by inspection of the surface, because the interior strands and hemp core require lubricant as well as the surface.

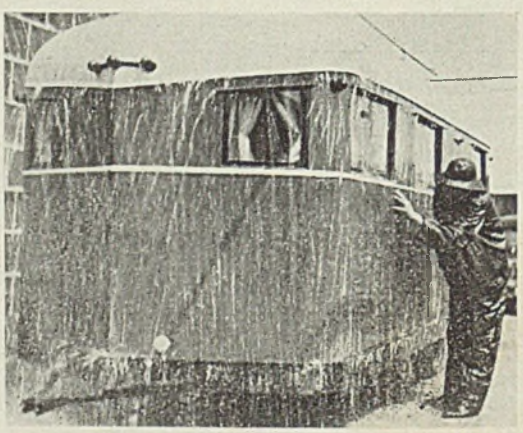
A lubricant that hardens and glazes on the surface prevents the penetration of additional lubricant to the interior of the cable and on superficial inspection may appear to be well lubricated. In such cases the hemp core may deteriorate from dry rot, friction of the wire strands increase, corrosion set in and the inner strands receive damaging wear, none of which shows on the surface. This condition may result from the first improper application and the interior never lubricated in use.

After the surface is gummed and glazed, additional lubricant protects only the cable from sheave wear. Where cables are in this condition, special penetrating oils must be applied first to cut and loosen this hard surface. This treatment is then followed by the application of the lubricant most suitable for the operating and temperature conditions.

If a cable has been in operation for a long time with a hard glazed surface, the use of penetrating oil will not replace the life lost by the failure of the lubricant to reach the interior strands. All that may be expected is to receive the full value of the life remaining in the cable and to prolong its usefulness beyond what would have been obtained if the improper conditions had been permitted to continue.

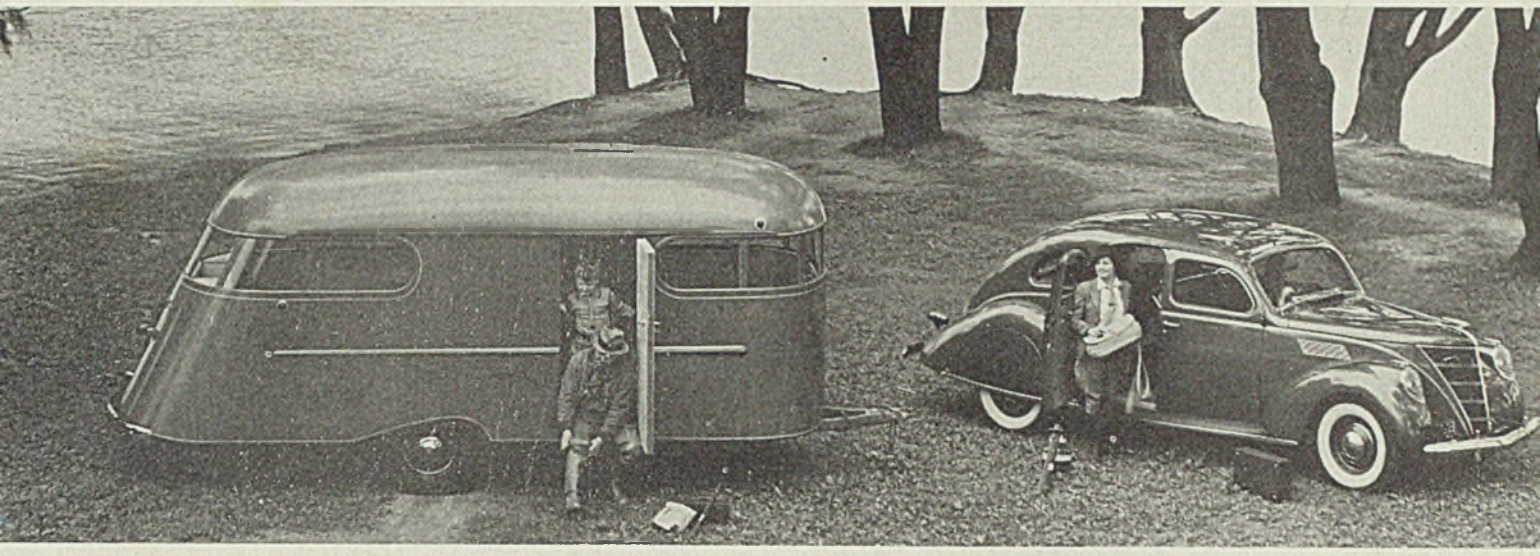
Long, satisfactory life results when the proper lubricant is used at the necessary intervals, depending on temperature and service. Cable replacement is expensive not only for the cost of the new cable but in the expense of its installation. An additional year's life decreases both cable and replacement expense. The cost of the lubricant and the amount used varies but little, whether it penetrates to the interior or remains on the surface of the cable.

It Looks Like Rain

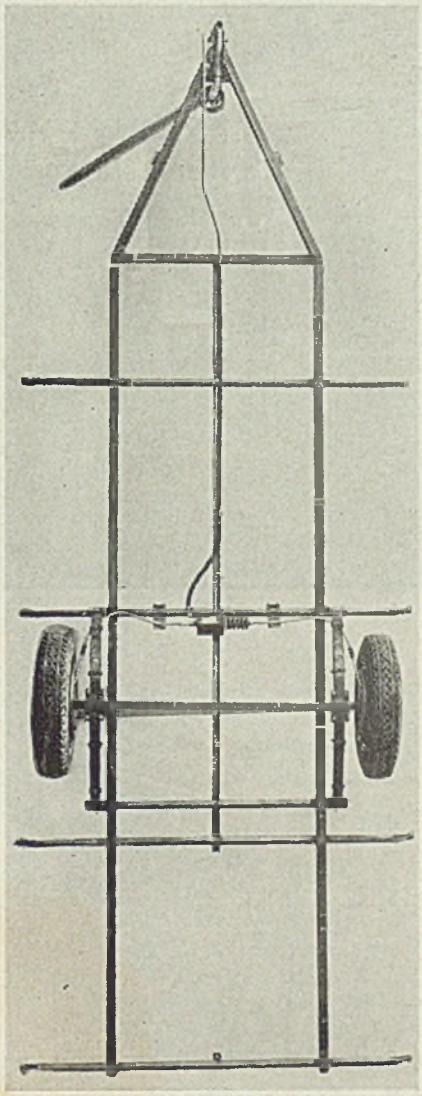


HOME-MADE rain from overhead piping is subjecting this trailer to a more severe watertight test than it would undergo in the hardest rainfall. Inspectors check inside and out for possible leaks or seepage. Side panels are of Shermanite, a steel-faced plywood. All joints and seams are calked and sealed. Photo courtesy Covered Wagon Co., Mt. Clemens, Mich.

Automotive Methods Applied to Trailers



CURVED plate glass permits windows which follow the streamline body contour and give extra light in the interior. Below is shown tubular steel frame for trailer with cross members welded into pierced longitudinal box members



BY A. H. ALLEN

DESIGN and construction of the Stream-Lite trailer — recent newcomer to the booming trailer industry—are based upon motor car production methods in that the manufacturer, General Body Corp., Detroit, builds a custom-type body and then mounts it on a motor car type of chassis. The company is just now in process of building up production to a rate of 30 trailers per day, proposing to build three standard models—15½, 17, 19½ feet in length—one of which is already on the assembly line.

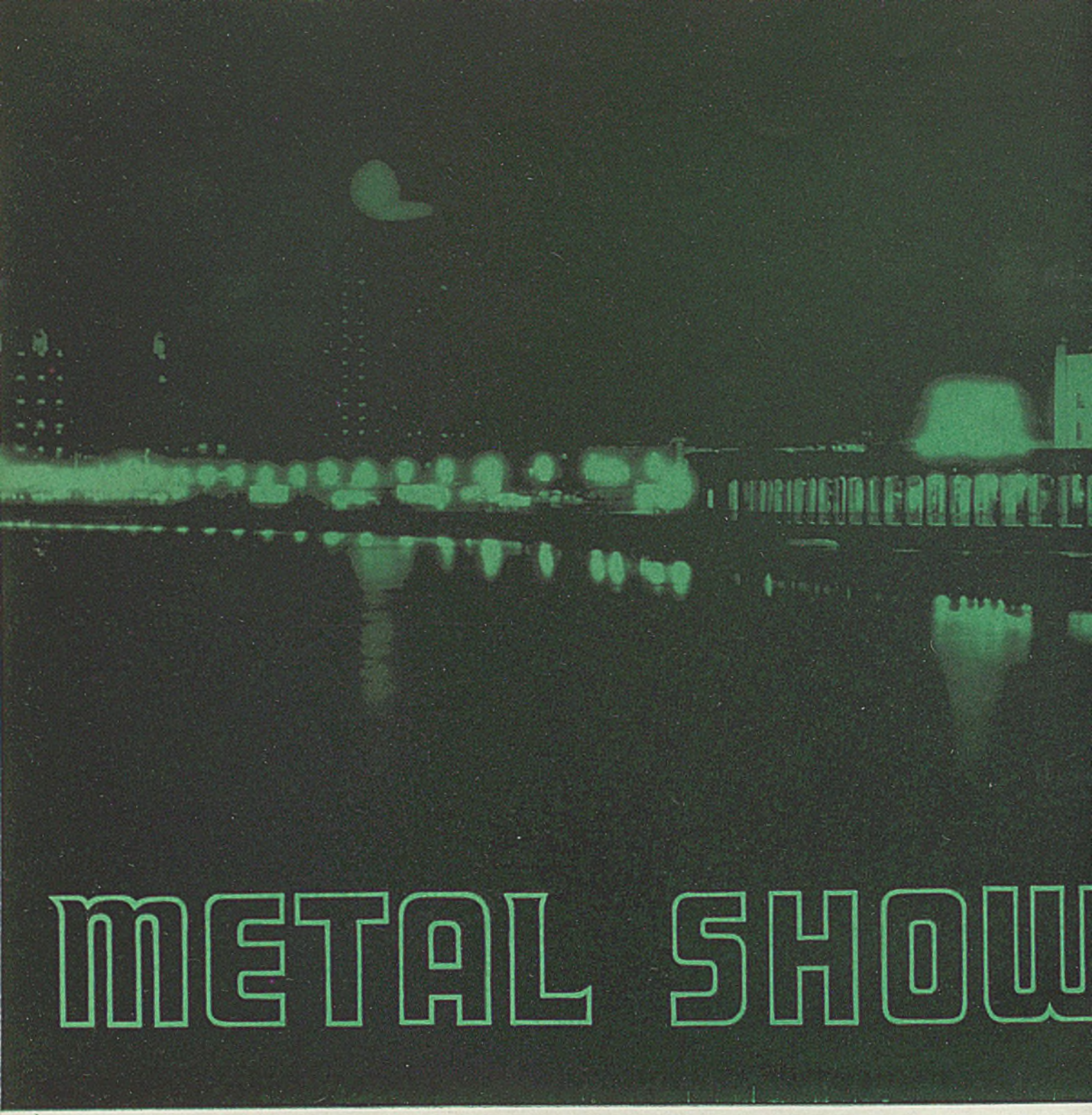
Shown in an accompanying illustration, the frame or chassis is largely of tubular steel sections, having two longitudinal box members of 1¾-inch width by 3-inch depth and wall thickness of ⅛-inch. Pierced through these longitudinal members and welded in place are five tubular cross members of 1⅝ inches outside diameter. The longitudinal box members, with shackles mounted on round cross members, insure stability in spring and axle suspension, minimizing sidesway which is often troublesome in trailers. By taking advantage of welded construction and tubular members, high strength with light weight has been obtained.

Axle is a 1½-inch drop-type, square section, drop forged bar, carrying 38-inch 9-leaf springs 2 inches in width. Spring eye ends are bushed and spring bolts are equipped with pressure-type lubricating fittings. Tread is 62 inches, and 16-inch drop-center rims are equipped with 6.50 by 16 tires. Pressed steel wheels are mounted in tapered roller bearings. Vacuum brakes are carried on the wheels and may be arranged to be connected to the brakes of the towing car or to an auxiliary trailer brake control.

A ball-type hitch with 2-inch diameter ball is used and a parking jack working on a worm screw permits height adjustment by crank. A parking leg, equipped with a 7-inch wide faced wheel, folds under the frame when the trailer is being towed, and the trailer can be disconnected from the towing car only when this leg is in the down position. Safety chains provide further insurance against disconnection.

Outside shell of the body comprises 12 steel stampings, four for the roof of 22-gage steel, four side panels of the same gage, and four corner panels of 20-gage sheet. In assembly, edges of the stampings are bent in at about right angles to the surface, and the mating edges spot welded for a tight joint.

Body frame structure is of wood, treated to prevent moisture absorption, with all joints mortised, glued and screwed. Unusual feature is the application of windows around three-quarters of the rear and three-quarters of the front, as shown in one of the illustrations. Curved plate glass, 3/16-inch thick, is used on the corners, said to be the first time curved glass has been used in trailer construction. Windows are 14 inches high and extend 12½ feet across the front and over 14 feet across the rear. Three of the front windows and two of the rear open with auto-



Night view, Atlantic City Auditorium

CLOSING DATES—Final forms will close Thursday, September 30. Reservation and copy requiring composition should be in Cleveland not later than Saturday, September 25.

ISSUE ○ 1937

METALLURGISTS, metals and methods, together, make the annual Metal Shows events of utmost importance to all those working with metal whether it be iron, steel, copper, aluminum or some other metal.

The 1937 Metal Congress will be held in Atlantic City, October 18 to 22 inclusive. STEEL is working closely with the various interests in order that this show may be well attended and may accomplish its purpose. Our October 11 issue will be devoted largely to these same interests and will be in our readers' hands exactly one week prior to the show—ample time to make plans.

The traditional editorial and advertising insert section, which has proved so valuable over the years, will be a feature of the October 11 issue. This will serve to bring the show to those who cannot attend and will enable those attending to plan in advance the things they wish to do and see, thus insuring that their time will be spent to the best advantage.

Naturally, this studied readership makes for a most extraordinary advertising opportunity. The October 11 issue has all of the elements for successful advertising—timeliness, unusual reader interest, effective presentation to the proper people—plus additional distribution at the show. Write for further details now.

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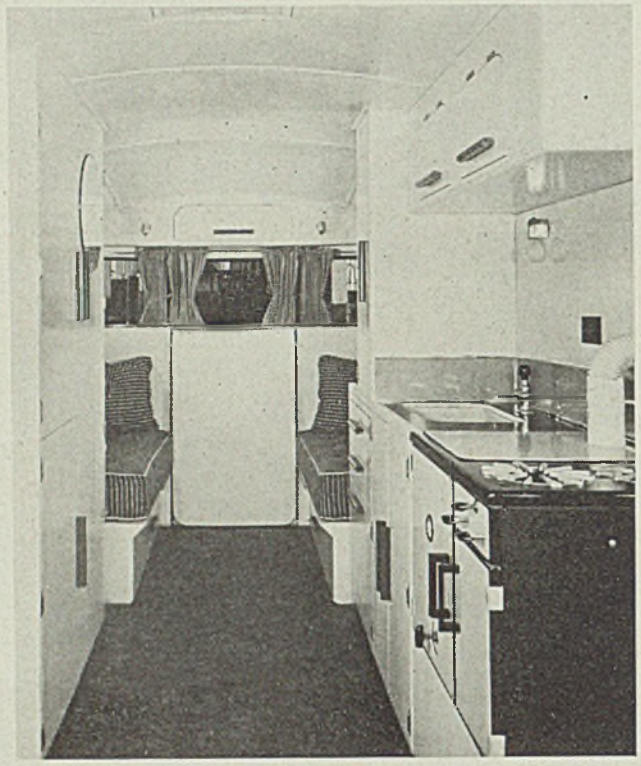


INTERIOR view showing rear compartment with table that folds down to provide a mattress clear across the end. At right are sink and stove; lower left is refrigerator cabinet. Above stove are dish cabinets

mobile-type window regulators; drain sumps in the body catch water leakage when the windows are open. All opening windows, as well as the door are equipped with 16-mesh bronze screens.

Standard types of automotive finishes are applied to the sheet metal exterior, although extra coats are applied to provide a thicker finish than that used on most automobiles. Two ground coats are applied, with wet sanding before spraying on seven finishing coats. A variety of colors is offered. An illustration shows a section of the painting department, with several trailers in process.

A few details of some of the interior specifications and appointments may prove interesting to those who are not familiar with what is being accomplished by trailer builders in this respect. Clear floor space with beds in day position and table folded into the rear wall is 44 square feet. Front bed provides sleeping space of 48 inches by 6 feet 3 inches. A rear bed has the same length and 46 inches width. The front bed folds into a davenport for day use. Total wardrobe space of 16½ cubic feet is provided, as well as three dresser drawers, a silver cabinet with three compartments, three bookshelves, a radio shelf, two bedding drawers, a cooking utensil cabinet under the sink, and a dish cabinet over the sink. End roof cabinets also are furnished both front and rear.

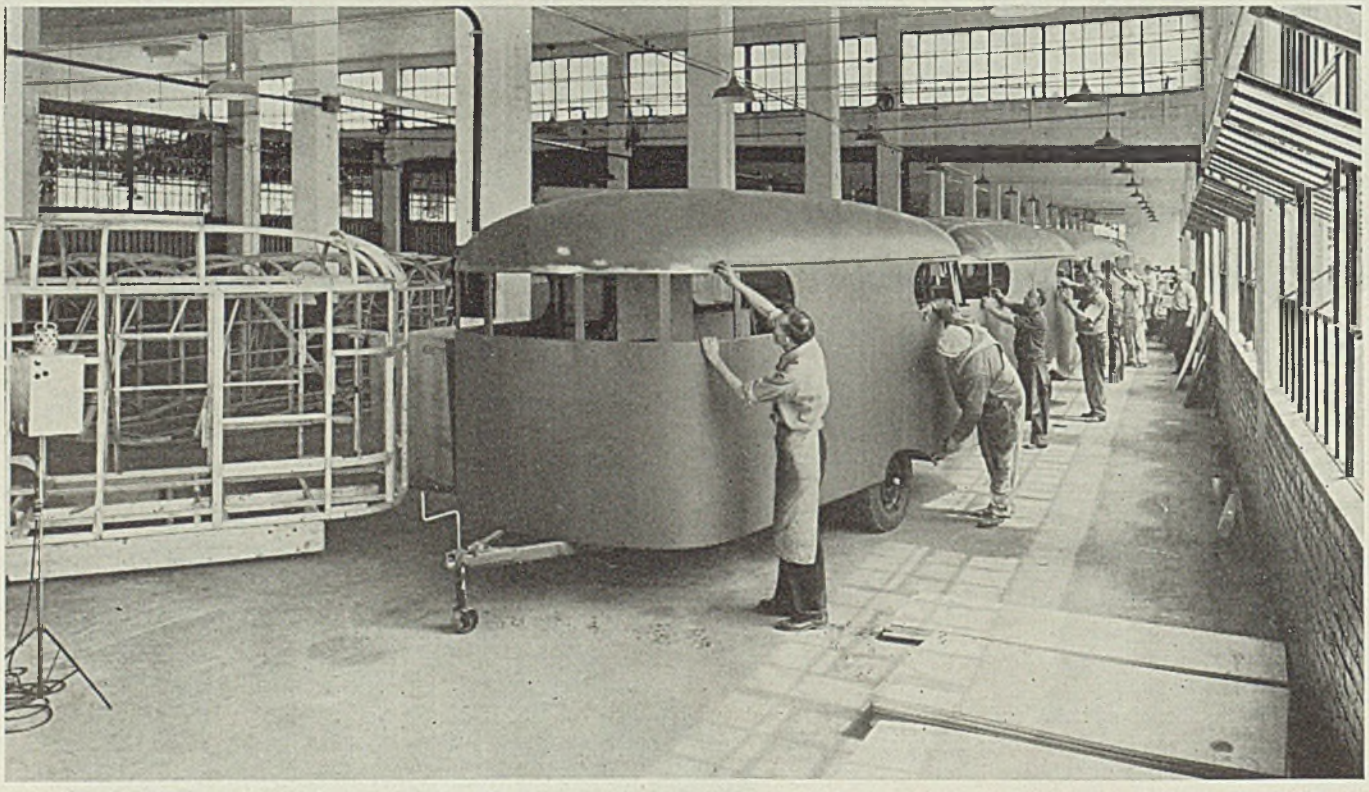
Has Fan Ventilator

A roof ventilator 12 x 18 inches operates with a worm gear mechanism without dropping the screen. An electric fan ventilator over the stove is of the reversible type and may be used to exhaust cooking odors.

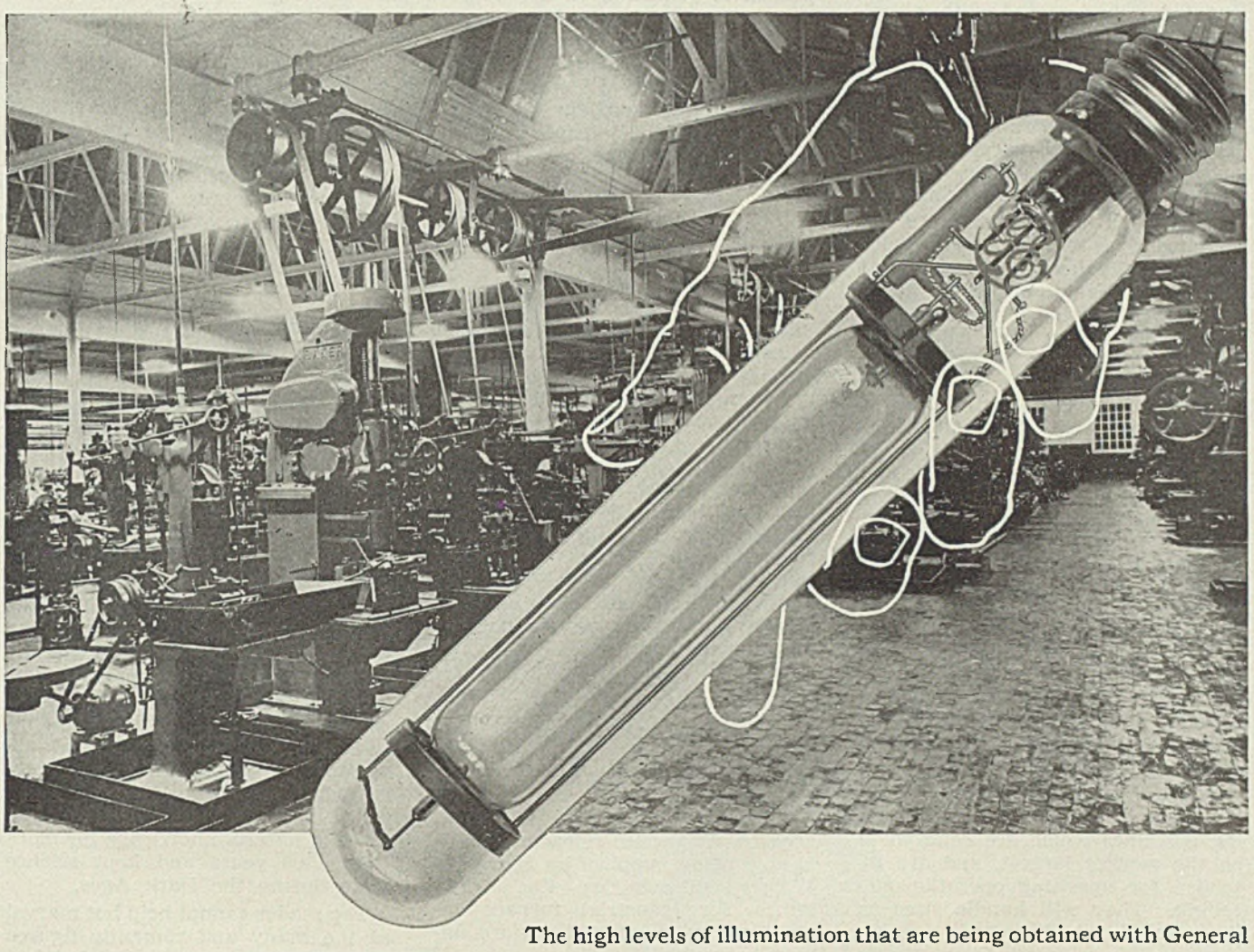
Standard equipment includes a 50-pound ice refrigerator, 20-gallon water tank with pump faucet, external filler cap and outside drain, enamel sink 12 x 18 inches in size, gasoline stove, with two top cooking burners and full size oven with outlet for exhausting gasoline fumes from the oven.

The streamline design of the rear quarters of the body permits space for storage inside the body without

TWO ground coats and seven finishing coats are applied to the sheet steel body panels, following standard automotive application methods. Note wood frame at left before application of insulation and panels



Light that reduces spoilage...



The 400-Watt Mercury Lamp is 60 to 140% more efficient than other available light sources. It burns vertically only.

By combining Mercury and Incandescent Lamps in many conventional type luminaires, a psychologically cool, white light can be obtained.

The high levels of illumination that are being obtained with General Electric Mercury Lamps make it easier for workers to see without effort. Wasted time is minimized, for eye-strain and its resultant fatigue are greatly reduced. Production is speeded up and spoilage is held down materially. Economy, too, is promoted—for General Electric Mercury Lamps provide more light per watt than other comparable light sources.

The Type-H General Electric Mercury Lamps are adapted for use on either 115- or 230-volt lines and have a rated life of 2,000 hours. Combined with incandescent lamps, these mercury lamps produce an illumination which simulates and blends well with daylight. Full details may be obtained from either address.

Order your auxiliary devices which were designed especially for this lamp from the General Electric Vapor Lamp Co.

GENERAL ELECTRIC

General Electric Vapor Lamp Co. 795H Incandescent Lamp Department
885 Adams Street, Hoboken, N. J. Dept. 165, Nela Park, Cleveland, Ohio

any projecting parts. The body is constructed to provide complete insulation against outside heat or cold. Next to the steel panels is a layer of sound deadener, then pack insulation, over the wood frame. On the inside of the frame is a layer of corrugated paper coated with aluminum foil over which the composition inside panels are mounted. Tape over the frame members prevents any metal-to-frame contact. The floor comprises a bottom panel and insulator, with air space between it and the wood floor, over which is laid an insulating pad and linoleum.

Weight of the trailer with all equipment is 2620 pounds, with weight on the drawbar calculated at 320 pounds. Frame clearance varies from 13½ inches at the front to 16½ inches at the rear, while axle clearance, loaded, is 8½ inches. The model now being built measures 20 feet from back edge of the bumper to the front edge of the hitch. Extreme outside body length is 17 feet. Body is 6 feet 3 inches wide and has a head clearance of 6 feet 2¼ inches in the center.

Ship Two of Largest Forging Machines

FORGING machines have become a highly important master tool of industry and, with broadened range and capacity, their serviceability becomes more extended.

National Machinery Co., Tiffin, O., has shipped two heavy-duty forging machines which are believed to be the world's largest, and are intended for upsetting operations on tubing. They will handle sizes as large as 14-inch diameter.

The new units follow the standard design of National forging machines and have a massive underslung bed frame, suspended over-arm type heading and gripping slides, longitudinal and cross tie bars for added rigidity, and an air-operated friction clutch.

The fact that the bed frame is made in two sections, each as large as can be shipped, gives some idea of the size.

Each machine is assembled on location and the bed is held together by enormous tie bars shrunk in place. A further idea of the size may be realized by the fact that the stroke of the heading ram is 30 inches and the machine uses gripping dies up to 52 inches long. Weight of each machine is 500,000 pounds and a 150-horsepower motor is required as a drive.

Produces New Battery Stamper of Zinc Alloy

For one-blow stamping of sales dates on storage batteries, Willard Storage Battery Co., Cleveland, has produced a novel zinc alloy stamping ring to eliminate the necessity of fumbling through numbering punch sets and stamping each digit separately. With the ring, one hammer blow does the job, and dates for all twelve months of a year are carried on a single ring. Unit is die cast of zinc alloy in one operation and considered most economical in view of its toughness and resistance to hammer blows.

New Refractory Brick Is Encased In Steel

An improved form of steel-encased, magnesite refractory brick is now being supplied by Harbison-Walker Refractories Co., Pittsburgh, for industrial furnace applications where operations are unusually severe.

Known as H-W Improved Metalkase, the brick itself is of chemically bonded magnesite, providing the high refractory qualities and resistance to corrosive basic slags that are characteristic of this material. After being molded to accurate size under heavy pressure, each brick is encased on three sides in a form-fitting jacket of mild steel. As these bricks are generally laid as headers, furnace wall or lining will be built up with each brick completely steel jacketed except at the ends.

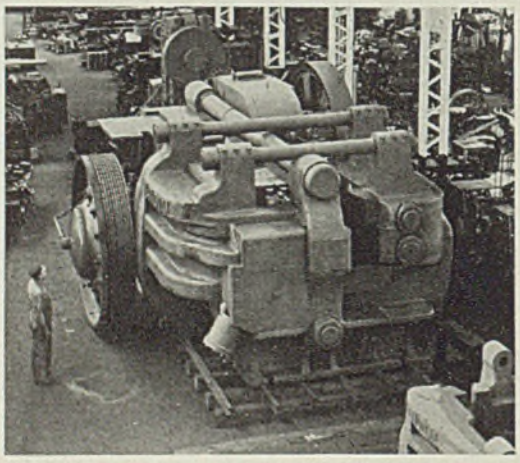
At the operating temperatures, the ends of the steel jackets at the heated face oxidize and melt, fusing with the brick itself to form a monolithic surface. However, at a short distance back from the hot face the steel remains intact, adding greatly to the resistance of the wall to spalling influences and to the internal strength of the entire structure.

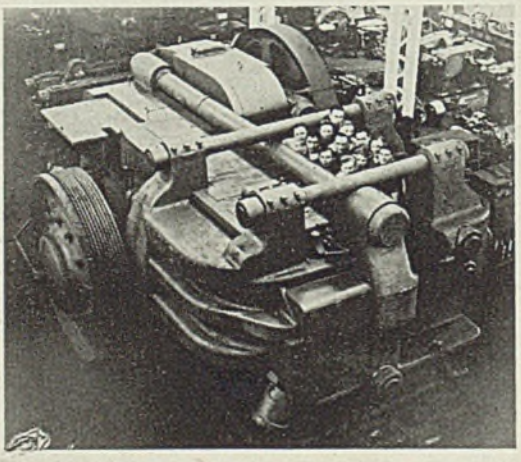
Alchemists Kept Science Alive in Dark Ages

A Prelude to Chemistry, by John Read; cloth, 328 pages; published by the MacMillan Co., New York; supplied by STEEL, Cleveland, for $5; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London.

An interesting discussion of the beginnings and the early history of chemical science is presented in this volume. Early in the volume the true meaning of alchemy in its broader sense is discussed. The author points out that it is a science of vast implications, a system of research possessing innumerable absorbingly interesting links with other fields of thought. The learned sages of alchemy handed down the torch of natural knowledge for more than 1500 years and kept science alive during the Dark Ages.

The reader cannot help but marvel at the many and romantic figures which flitted across the alchemical stage in the course of its 15 centuries or more of existence. It is a close glimpse of these characters and their work which makes this book exceedingly interesting and readable. More than 100 rare and amusing illustrations add to the pleasure of the text.





VIEW at left illustrates size of the machine as it stands finished in the shop. Right view shows that a dozen men can stand in the die box space

IRON & STEEL

Engineers

SECTION

Thirty-Third Annual
Convention and Exposition
Association of Iron and Steel Engineers

* * *

Chicago — Sept. 28 - Oct. 1

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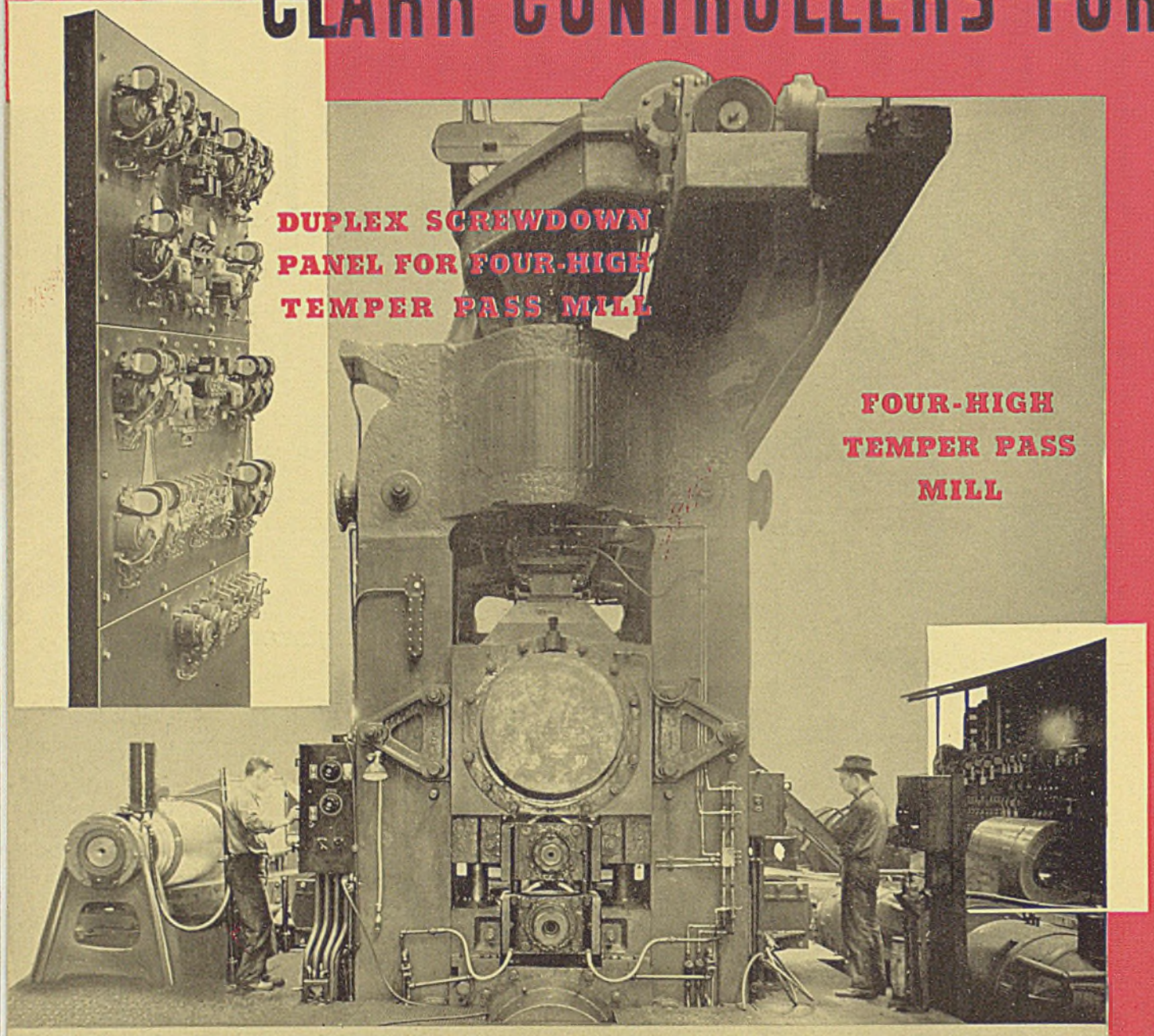

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FOUR-HIGH TEMPER PASS MILL

Tons of steel castings withstanding crushing pressures —yet so accurately built that steel strips passing through the rolls are uniform and even—this calls for accurate control. • Clark "3C" Screwdown Panels for Temper Pass Mills provide steady, consistent control for production of steel of uniform thickness. • Built to high precision standards, Clark "3C" Heavy Duty Mill controls give long-time, dependable service that speeds continuous production.

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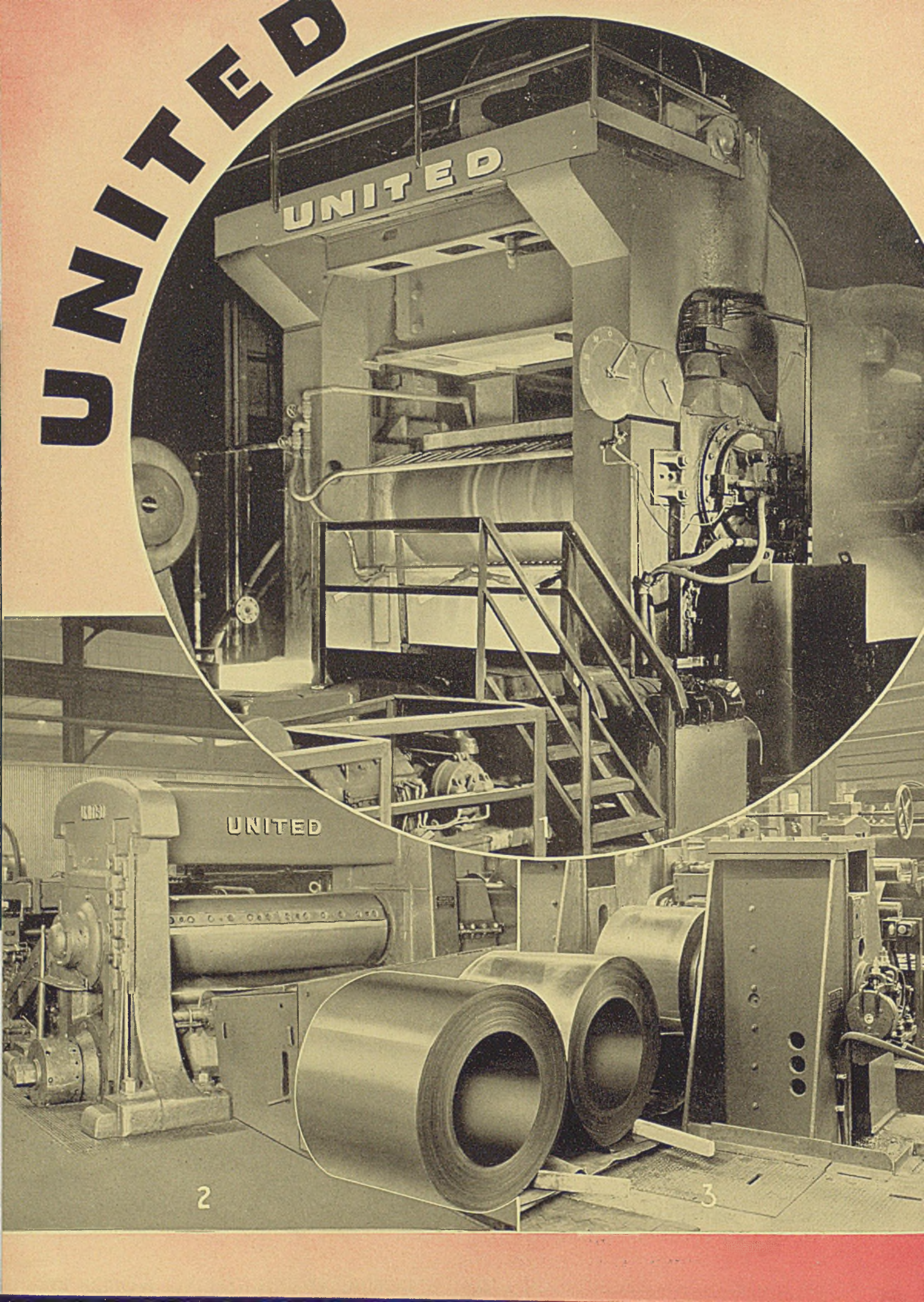

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During the Association of Iron and Steel Engineers' inspection trip, you will see UNITED Hot and Cold Strip Mills, shearing lines, cleaning lines, and other processing equipment in operation.

1

40" & 54" x 130" Broadside Mill Stand of 80" Continuous Hot Strip Mill

2

76" Drum Type Flying Shear

3

Cone Type Uncoiler at entry end of Tin Plate Shearing Line

4

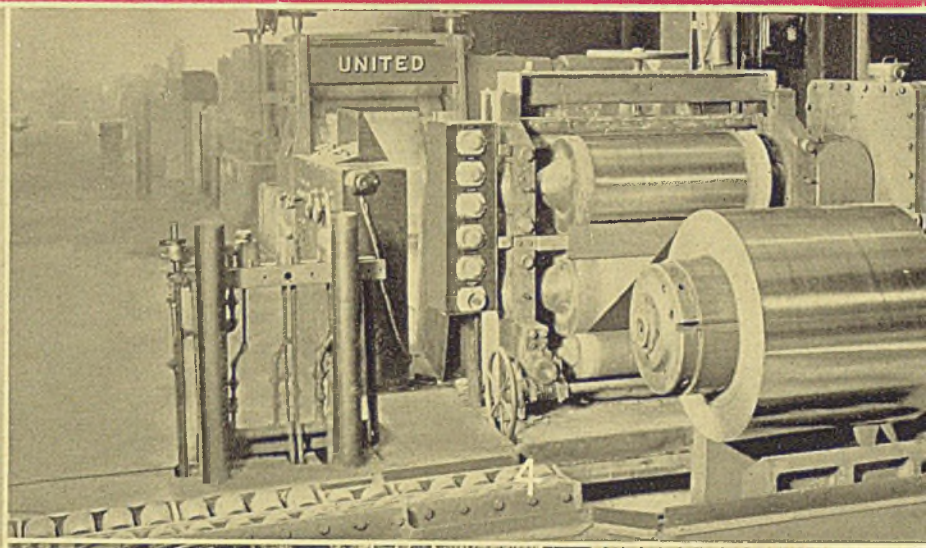
Delivery end of Tin Plate Electrolytic Cleaning Line

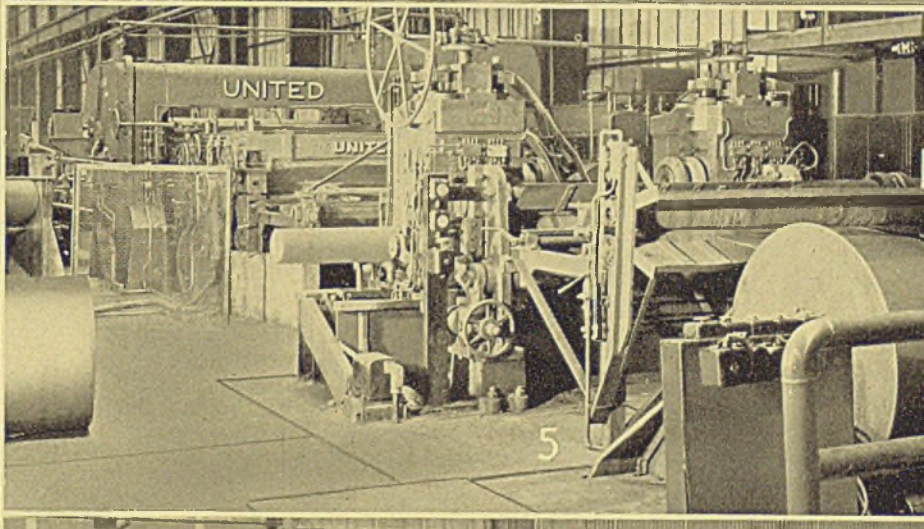
5

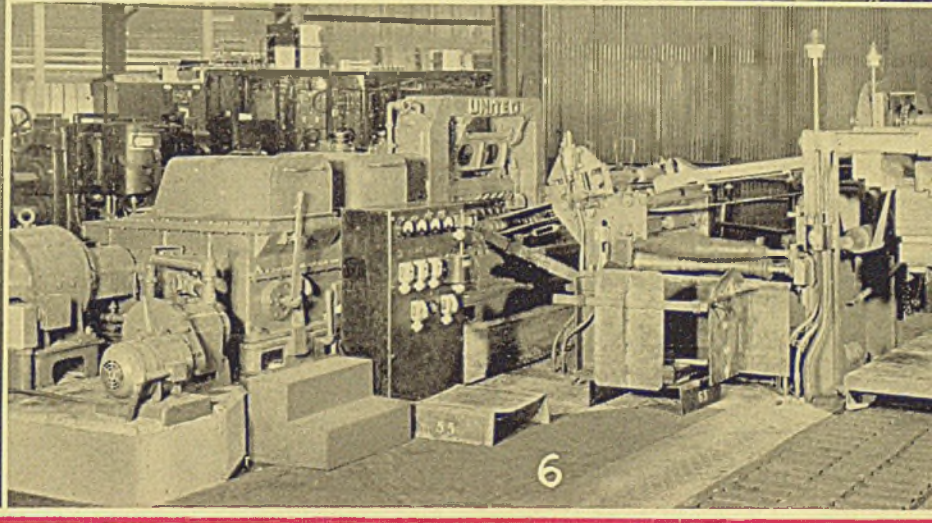
76" Reciprocating Flying Shear Line

6

Standard Reciprocating Tin Plate Flying Shear







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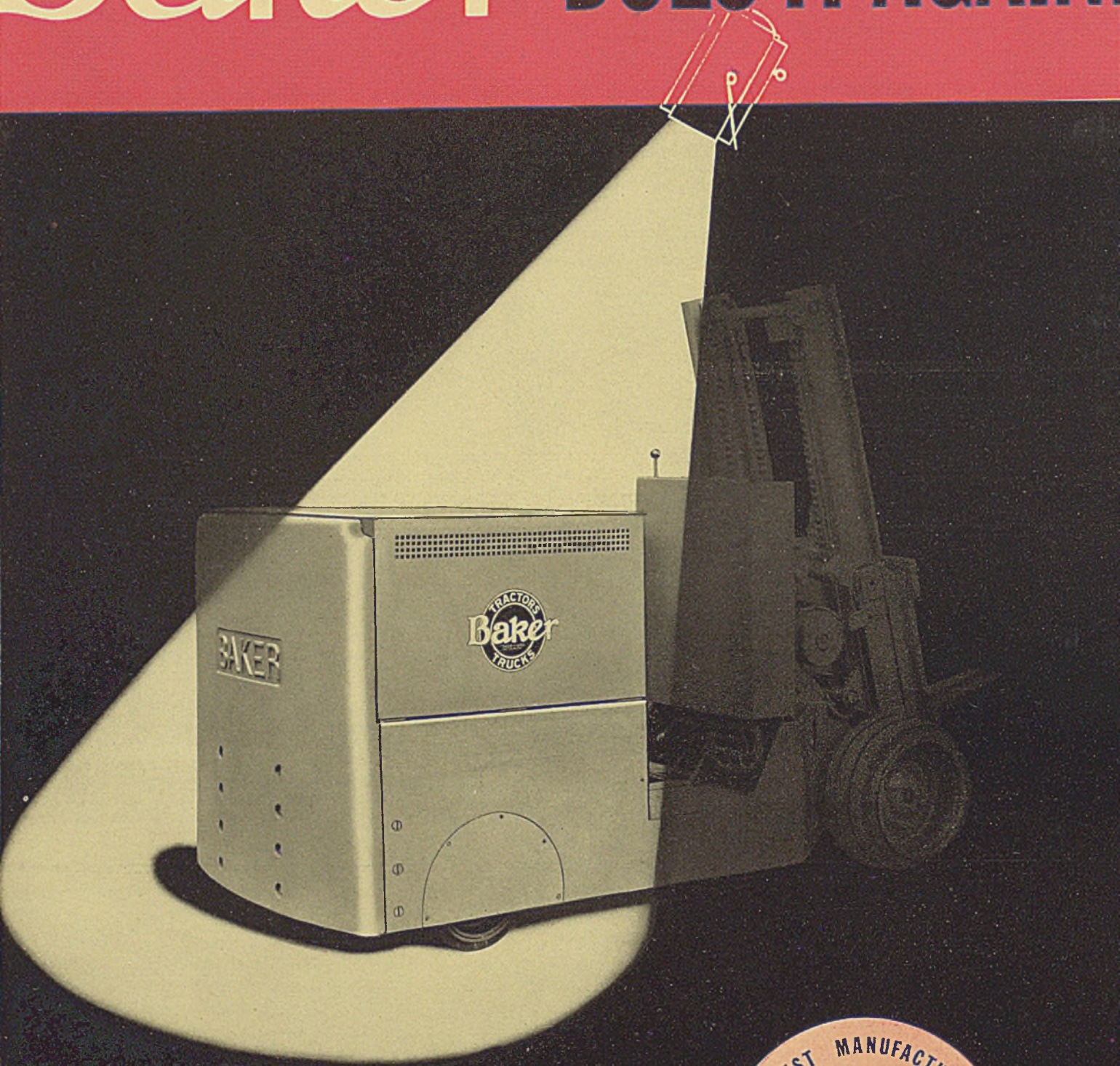

A new super-duty, center-control ram truck especially designed to meet the handling requirements of the new wide continuous strip mills. See it at our booths 75 and 76, Iron and Steel Exposition, Chicago. BAKER INDUSTRIAL TRUCK DIVISION *of the Baker-Raulang Company,* 2166 West 25th St., Cleveland, Ohio.

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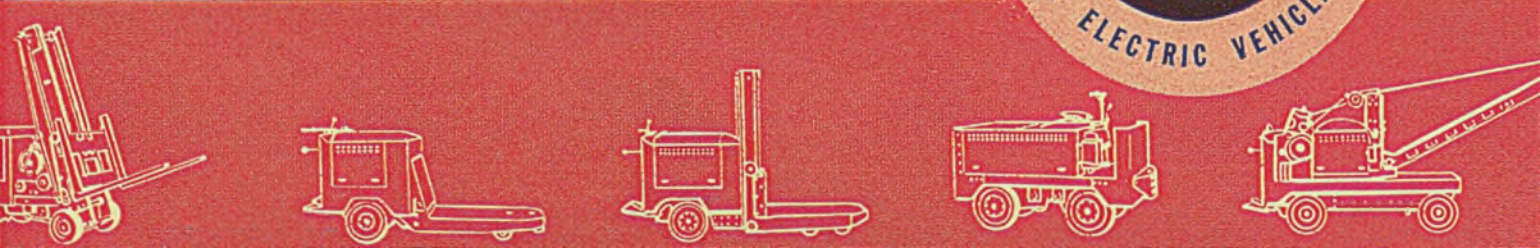


Achievements of the A. I. S. E.

BY H. G. R. BENNETT
PRESIDENT OF THE A.I.S.E.

AT AN informal meeting of some twenty electrical engineers held in Pittsburgh in 1907, a proposal was made that an association of electrical engineers of the iron and steel industry be formed with the idea that, by the cooperation of the members, this branch of engineering in the industry could be advanced.

Today the modern steel plant is practically universally electrified, and during the period of its development, electrical engineering soon became closely identified with every department and branch of engineering in the steel industry. This intimate and valuable contact made it evident that the activities had outgrown the name of Association of Iron and Steel Electrical Engineers, and in August 1936 a broader designation, namely, the Association of Iron and Steel Engineers was adopted, embracing practically all departments, electrical, mechanical, metallurgical, combustion, lubricating and welding.

In addition to two national yearly meetings, the association holds winter meetings in five different sections, viz; Pittsburgh, Chicago, Cleveland, Philadelphia, and Birmingham. During the thirty years of its existence, more than 1000 technical papers have been presented.

L. F. COFFIN

Superintendent of the mechanical department, Bethlehem Steel Co., Sparrows Point, Md., and first vice-president of the A.I.S.E.

H. G. R. BENNETT

Assistant general superintendent, Duquesne, Pa., works, Carnegie-Illinois Steel Corp., and president of the A.I.S.E.

The principal achievements of the association summed up briefly are as follows:

(1) It has carried out a program which has developed the original organization of some twenty men to one international in character, with representatives in twenty-one foreign countries, namely: Australia, Canada, China, Czechoslovakia, England, France, Germany, Holland, India, Japan, Manchuria, Mexico, Rumania, Philippine Islands, Scotland, South Africa, South America, Spain, Sweden, Russia and Wales. Wales.

(2) It has been a guiding factor in the development of electrical engineering as applied to the steel industry to its present high standing and completeness. Standardization of apparatus has been an important item in this development and it has included one of the most revolutionary and important changes in mill practice—namely, the adoption of motors for the main drives of all classes of mills.

(3) It was the leader in establishing a most important factor in industrial relations — the National Safety Council, an achievement of which the members can well be proud.

(4) It has broadened the viewpoint and the ability of the members by means of technical papers, exhibition of apparatus and association with others having mutual interest, thus extending their fund of knowledge and their friendship.

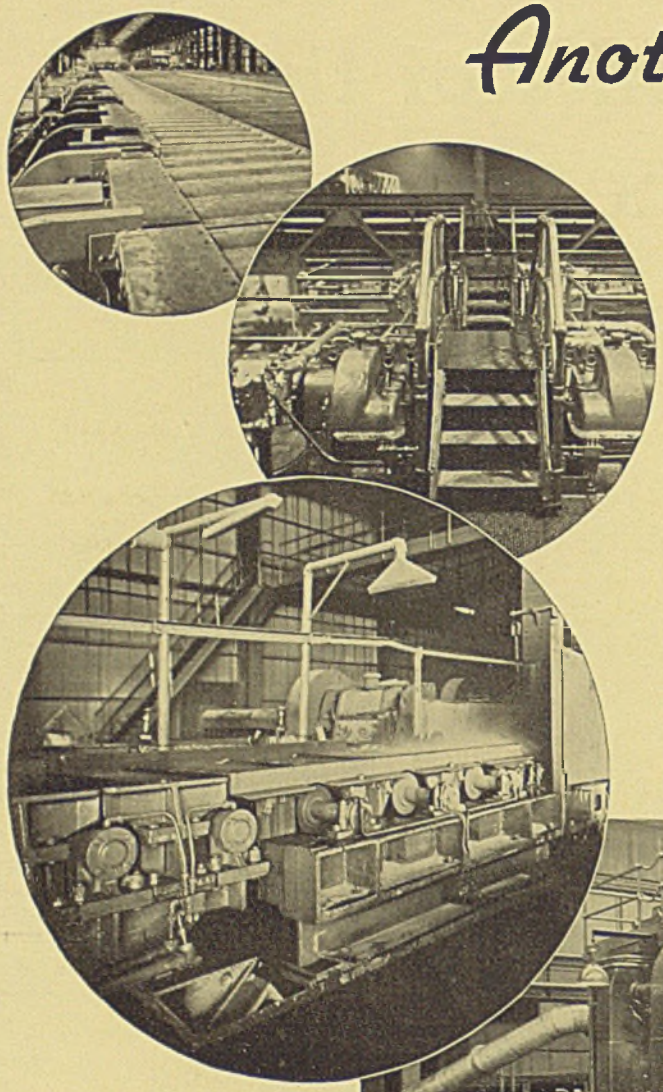
(5) It has taken a leading part in the development of a spirit of close cooperation not only between members of the association and between men of various departments of the steel industry, but also between these men and representatives of machinery and material supplying companies.

(6) It has assisted materially in the education of all those concerned regarding the value of a thorough analysis of problems of manufacturing and operation, also regarding available sources of information in reference to the latest designs of apparatus and of operating experience, all of which have a direct bearing on the determination of the best method of procedure.

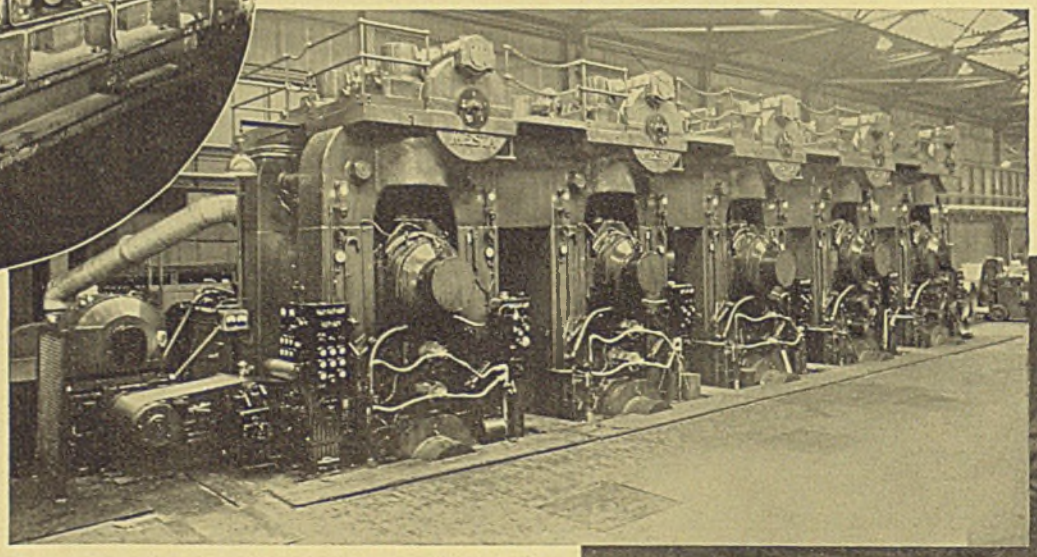
C. C. WALES

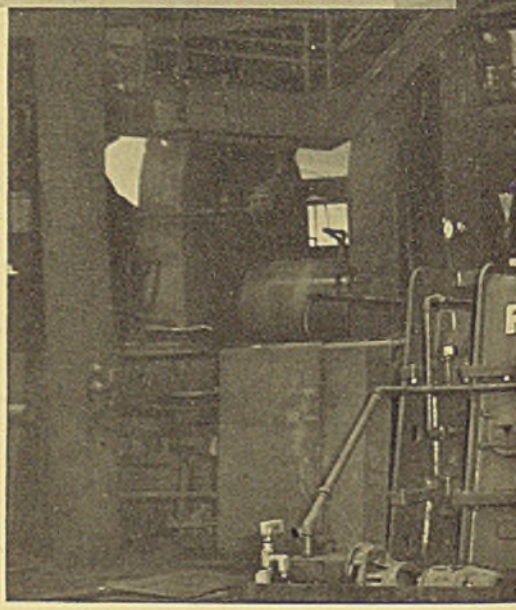
Chief Engineer of the Otis Steel Co., Cleveland, and second vice-president of the A.I.S.E.

Another MODERN SKF -



More than 20 tons of SKF Spherical Roller Bearings are used on applications pictured and described here. In addition, hundreds of SKF Bearings are used in cranes and processing and auxiliary equipment. This widespread use of SKF Spherical Roller Bearings is due to a desire to obtain an equalized load distribution insuring full bearing capacity and long life. SKF Industries, Inc., Front Street and Erie Avenue, Philadelphia, Pa.





SKF

STRIP MILL uses equipped machines

AGAIN SKF Spherical Roller Bearings assure real performance to a modern strip mill.

CONTINENTAL ROLL & STEEL FOUNDRY COMPANY built the 3-stand tandem 20-½" x 56" x 84" cold mill, and the design of the screwdowns required 12 SKF Bearings per stand.

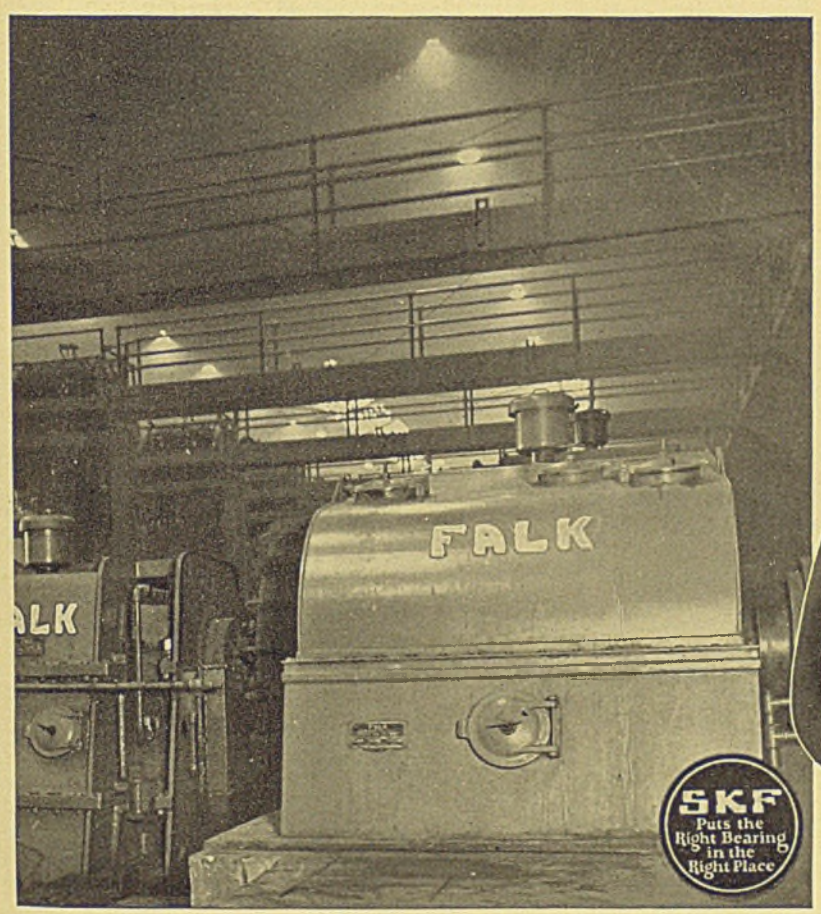
MESTA MACHINE COMPANY supplied two 5-stand tandem 42" wide cold mills with one SKF Bearing to stabilize each back-up roll.

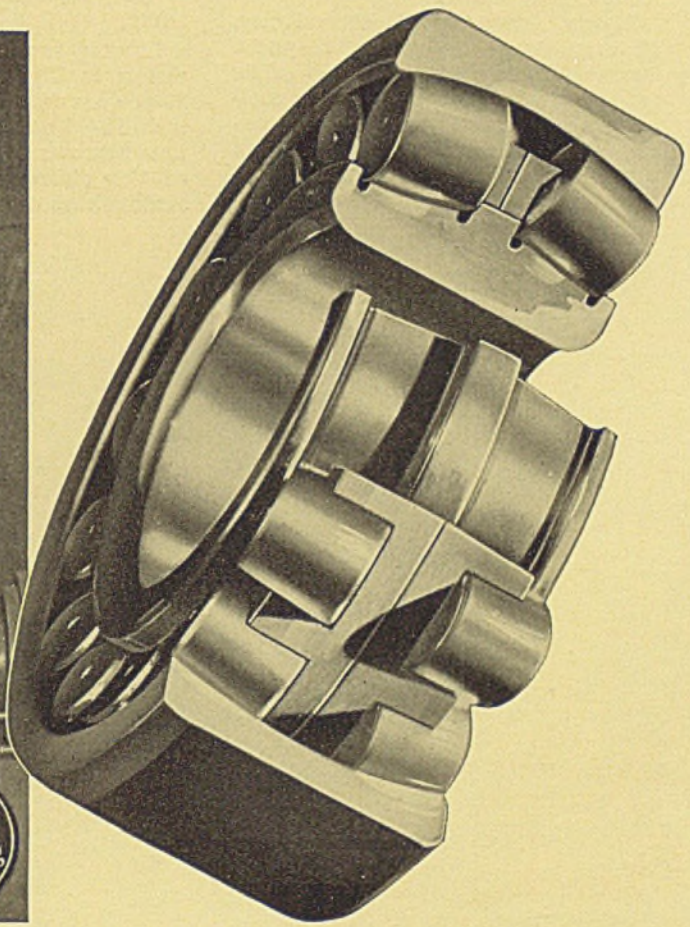
E. W. BLISS COMPANY used SKF Bearings and Pillow Blocks for the individually driven table rollers, transfer chain line shafting and idler sprockets in the cooling beds for the hot strip mill.

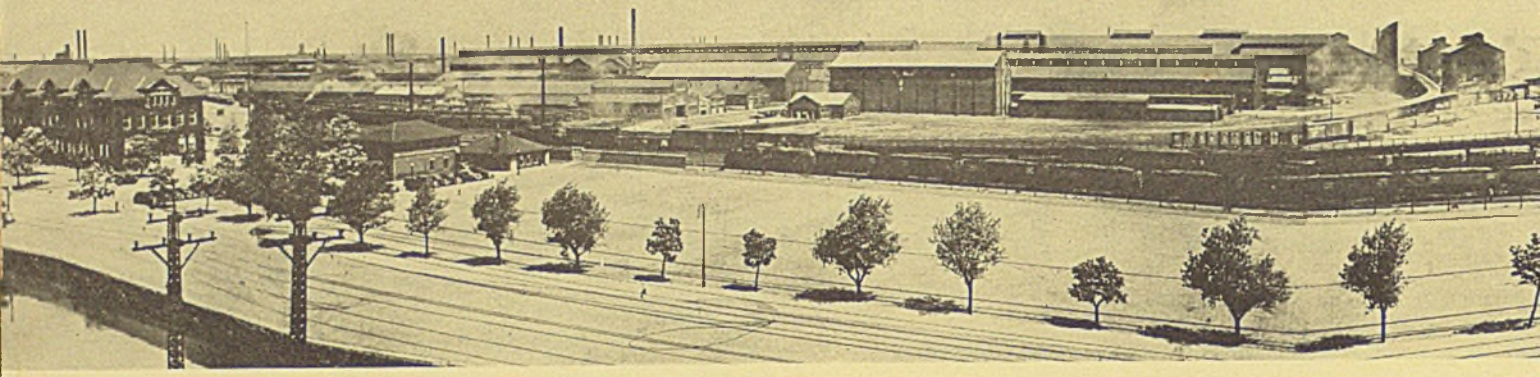
CONTINENTAL ROLL & STEEL FOUNDRY COMPANY equipped the hot mill rollers between stands and in the shear table with SKF Bearings mounted in SAF Type Pillow Blocks. The screw-downs of the hot strip mill tandem stands are 100% equipped with SKF Bearings.

FALK CORPORATION built one 800 h.p. double reduction and three 4500 h.p. single reduction drives. All bearings are SKF Bearings.

3972







CHICAGO » »

CHICAGO, giant of the Central West, was a mere stripling of 100,000 population when the iron and steel industry of that district was founded 80 years ago. Although predated by iron companies of the East and exceeded in size by a half-dozen other cities of the United States, both Chicago and her youthful industry were destined for an amazing growth.

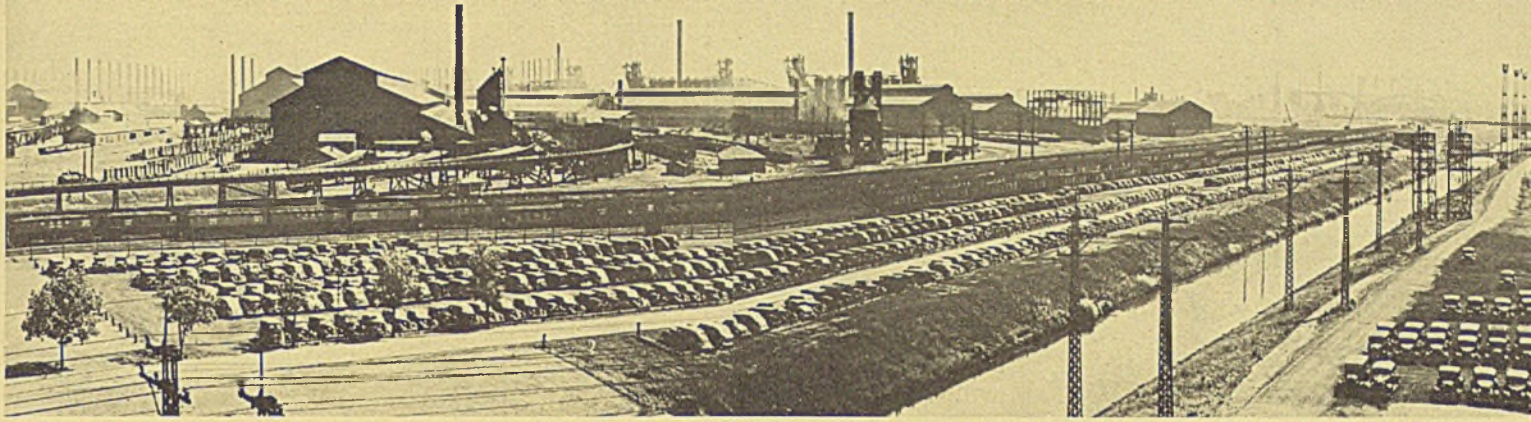
Today, the country's second city, Chicago leads in many respects. Known best perhaps as the world's largest railroad center and greatest grain, livestock and produce market, she occupies front rank also as a producer of iron and steel.

Chicago's steel mills serve a diversified list of consumers. Railroads and the farm equipment industry rank among the best customers, but the many miscellaneous steel users support a broad demand for bars and flat-rolled steel. For this reason, mill capacity devoted to the heavy steel products, although substantial, represents a smaller proportion of the total than is true of some of the eastern districts.

Ingot capacity of Chicago's steelworks is 13,899,000 tons, or about 20 per cent of the total for the country. Pig iron capacity of 10,303,000 tons represents 22.5 per cent of that of the entire nation. Since 1910, steelmaking capacity at Chicago has nearly tripled. The gain since 1924 has been 57 per cent, or five times as rapid as the growth of the whole industry. Capacity at Chicago has increased about 20 per cent since 1929, compared with a gain of less than 5 per cent for the entire industry.

This rapid expansion has brought steelmaking capacity at Chicago close to that of the immediate Pittsburgh area, though in size the steel industry of the Central West still lags well behind the total of Western Pennsylvania, West Virginia and Eastern Ohio. Nevertheless, nowhere else in the world is there such a concentration of steel producing facilities as in the area in-

Indiana Harbor plant of the Youngstown Sheet & Tube Co., Indiana Harbor, Ind.



Gary works, Carnegie-Illinois Steel Corp., known as the world's largest steel plant, Gary, Ind.

GIANT OF STEEL

BY W. G. GUDE
Chicago Editor, STEEL

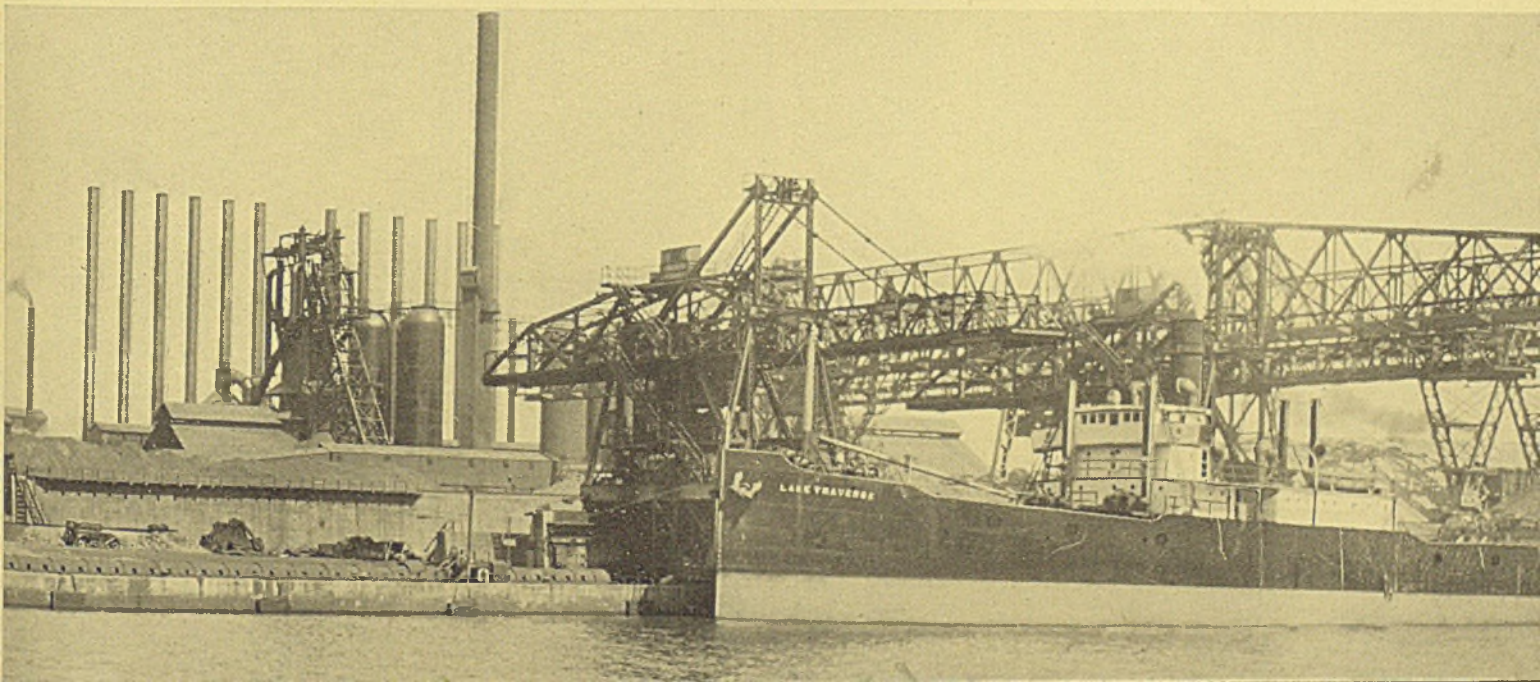
cluding South Chicago, East Chicago and Gary.

Chicago's iron industry dates from 1857, when Capt. Eber B. Ward, of Detroit, with a small group of associates from Boston, built the North Chicago Rolling Mill Co. on the north branch of the Chicago river. This plant had a rolling capacity of 100 tons of iron rails a day and employed 200 men. From this humble beginning descended the Illinois Steel Co., now a part of Carnegie-Illinois Steel Corp.

In 1864 the North Chicago company was merged into the Chicago Rolling Mill Co., and a puddling department was added. On May 24 of the next year this plant rolled the first steel rails to be made in America, employing blooms produced by Captain Ward at Wyandotte, Mich., where for a number of years he had been experimenting with a bessemer, or Kelly, type of steel converter.

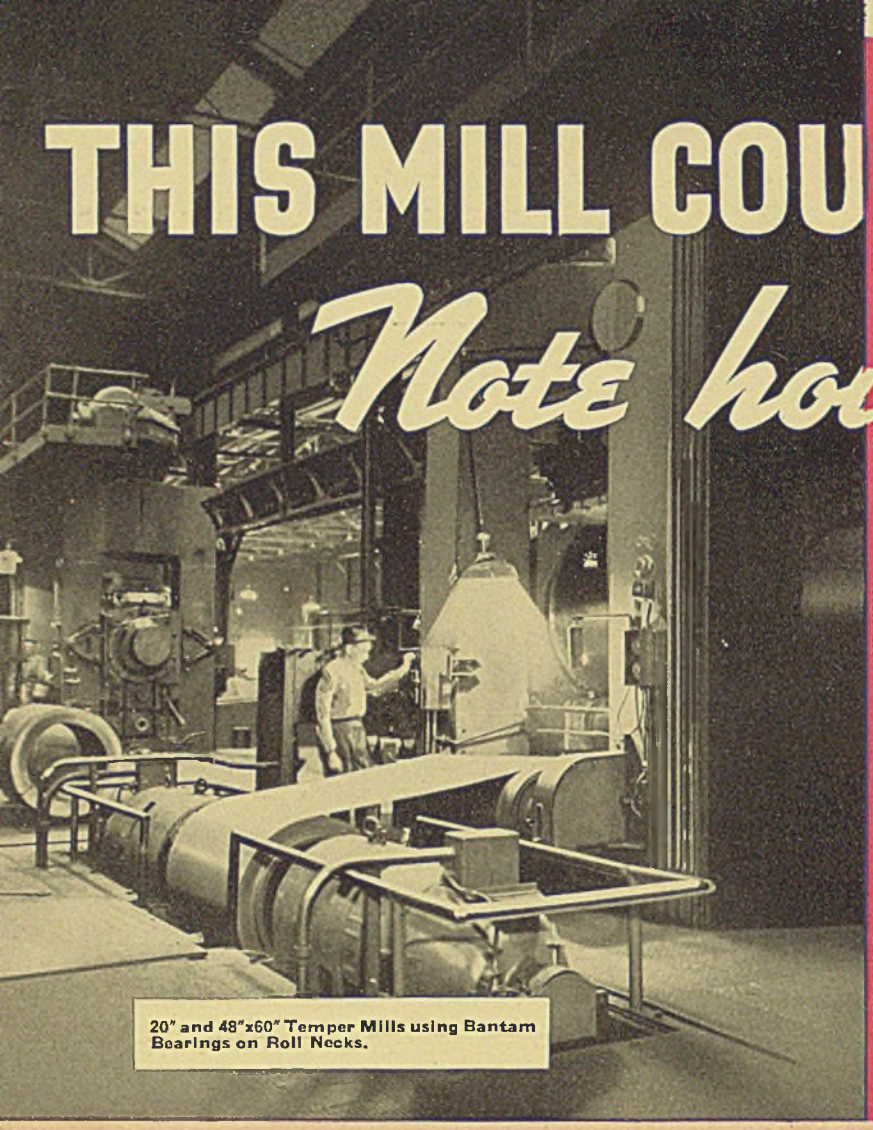
Other companies followed the North Chicago Rolling Mill Co. These included the Union Rolling Mill Co., built in 1863 on the south branch of the Chicago river and the Union Coal, Iron & Transportation Co., established in 1869 at Joliet, Ill., and later known as the Joliet Iron & Steel Co. Both of these companies started as iron rail producers. The former built two blast furnaces in 1868 and a bessemer plant in 1871, while the Joliet company completed a bessemer plant in 1873. In 1879 the North Chicago Rolling Mill Co. bought the Milwaukee Iron Co. which had been organized prior to 1861 as the Swedes Iron Co.

What is now the site of the South works of Carnegie-Illinois Steel Corp. was acquired by the North Chicago Rolling Mill Co. in 1880 in order to permit additional expansion. The original plant included four blast furnaces, a bessemer plant and a rail mill. The bessemer steel was blown and the first rail rolled on June 14, 1882. Seven years later the North Chicago Rolling Mill Co. joined with the Union Steel Co., formerly the Union Rolling Mill

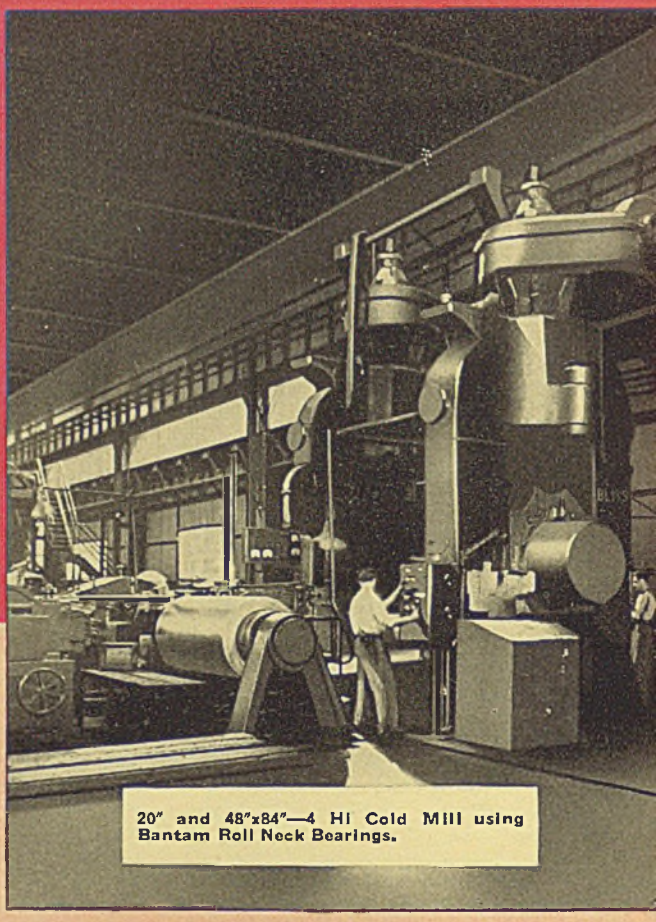


THIS MILL COULD AFFORD

Note how Bantam

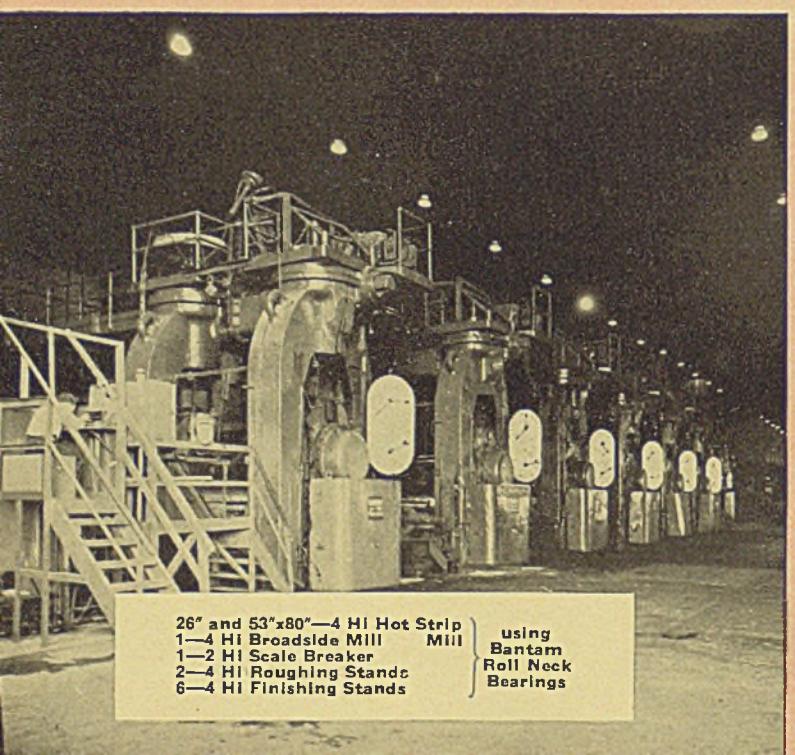


20" and 48"x60" Temper Mills using Bantam Bearings on Roll Necks.



20" and 48"x84"—4 Hi Cold Mill using Bantam Roll Neck Bearings.

★ NO PHOTOGRAPH SHOWN OF 100% BANTAM INSTALLATION ON 18" AND 43" x 38" HOT STRIP MILL.



26" and 53"x80"—4 Hi Hot Strip Mill
1—4 Hi Broadside Mill
1—2 Hi Scale Breaker
2—4 Hi Roughing Stands
6—4 Hi Finishing Stands
} using Bantam Roll Neck Bearings

18" and 42½"x42"—4 Hi Temper Mill using Bantam Bearings on Roll Necks.

ONLY THE BEST . . .

Bearings Predominate!

20" and 36"x42"—4 Hi Cold Mill used for Planishing Tin Plate, using Bantam Roll Neck Bearings.

42"—4 Hi Hot Strip Roughing Mill—using Bantam Bearings on Roll Necks.

As a result of performance over a period of years Bantam Bearings were selected for the roll necks on the majority of the stands in the world's largest steel plant.

Anything we might say here about our aim to give superior quality, finer workmanship, better engineering or closer tolerances in Bantam Bearing construction would be superfluous. The fact that they are being used on these mills, plus the fact that during the past several years the majority of new mills listed as being equipped with roller bearings have used Bantam, is conclusive proof of the position they now hold.

When you want a new and finer degree of bearing service and satisfaction, use Bantam Bearings. They have well proven their ability to accept responsibility.

BANTAM BEARINGS CORPORATION

SOUTH BEND, INDIANA

SUBSIDIARY OF THE TORRINGTON COMPANY, TORRINGTON, CONN.

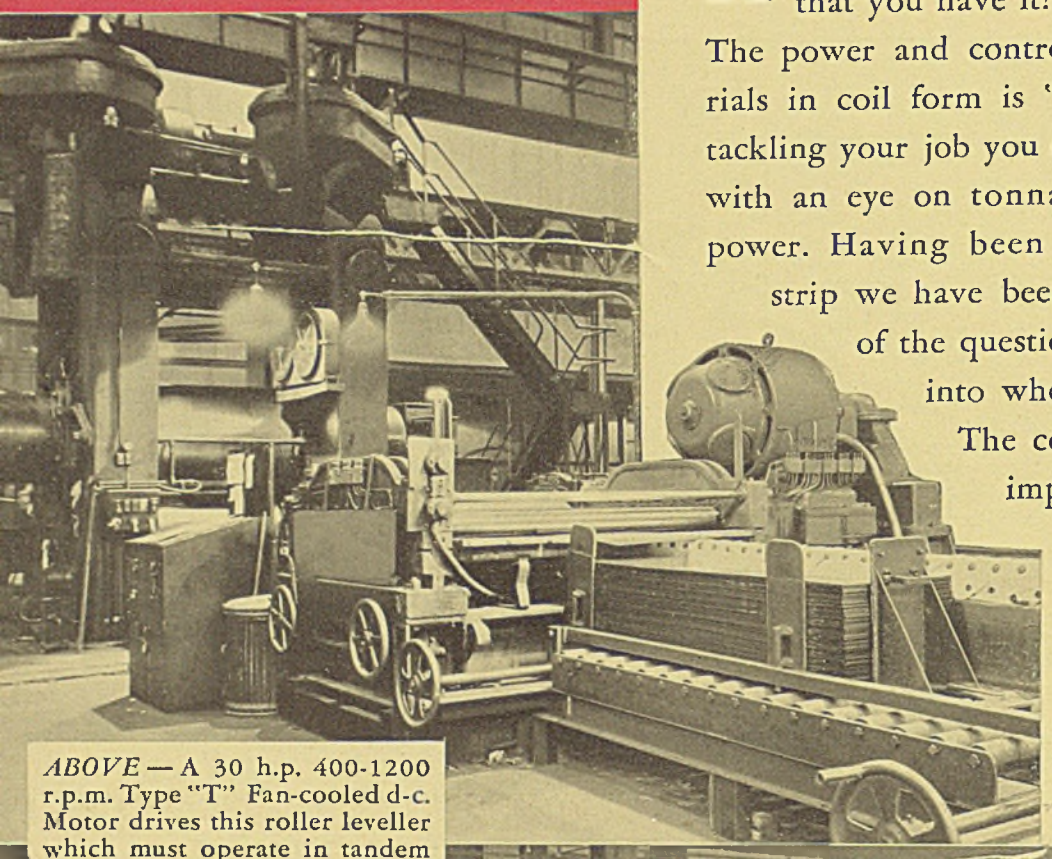
BANTAM

TAPERED ROLLER BEARINGS

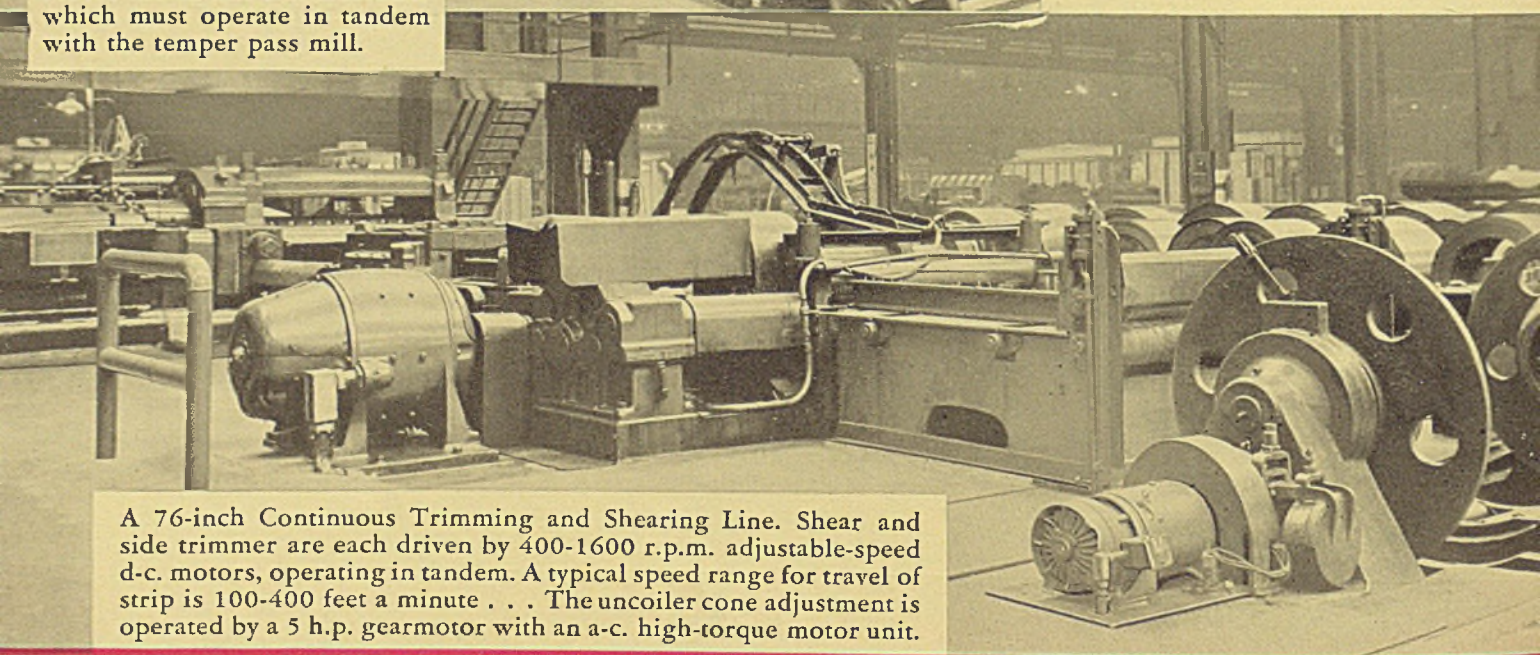
COINCIDENTAL DRIVES

RELIANCE

HOW are you going to process that coil now that you have it? Maybe we can be of help. The power and control end of processing materials in coil form is "right down our alley." In tackling your job you can be sure of our working with an eye on tonnage and quality — not just power. Having been in on the production of strip we have been thinking ahead on some of the questions you are going to bump into when you come to processing. The coincidental drive will be an important factor and we have ideas on how to put it to work. Some samples are shown here. If these interest you, any Reliance man can tell you more about them . . . Ask him.



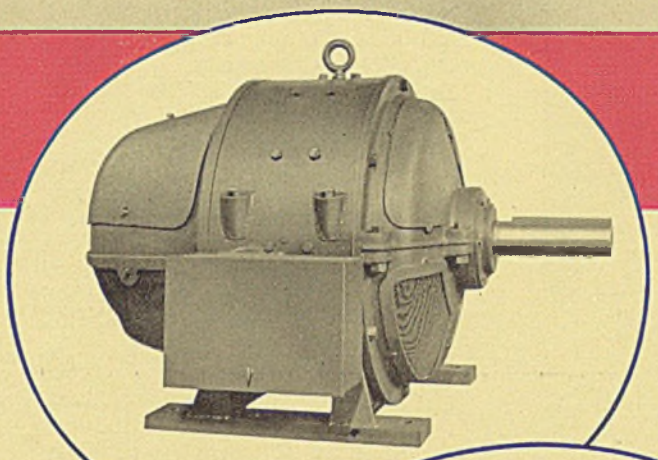
ABOVE — A 30 h.p. 400-1200 r.p.m. Type "T" Fan-cooled d-c. Motor drives this roller leveller which must operate in tandem with the temper pass mill.



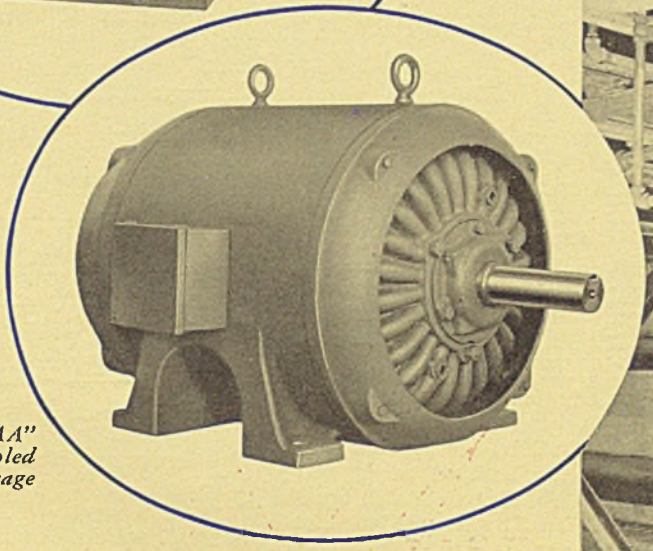
A 76-inch Continuous Trimming and Shearing Line. Shear and side trimmer are each driven by 400-1600 r.p.m. adjustable-speed d-c. motors, operating in tandem. A typical speed range for travel of strip is 100-400 feet a minute . . . The uncoiler cone adjustment is operated by a 5 h.p. gearmotor with an a-c. high-torque motor unit.

RELIANCE A-C D-C MOTORS

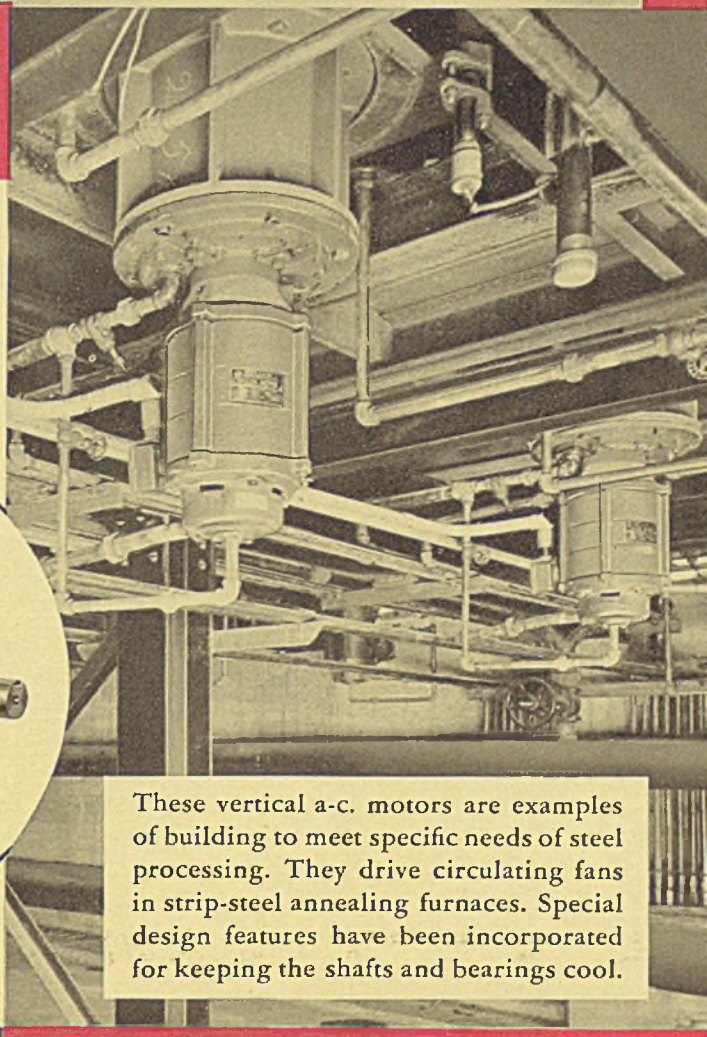
FOR PROCESSING *Strip*



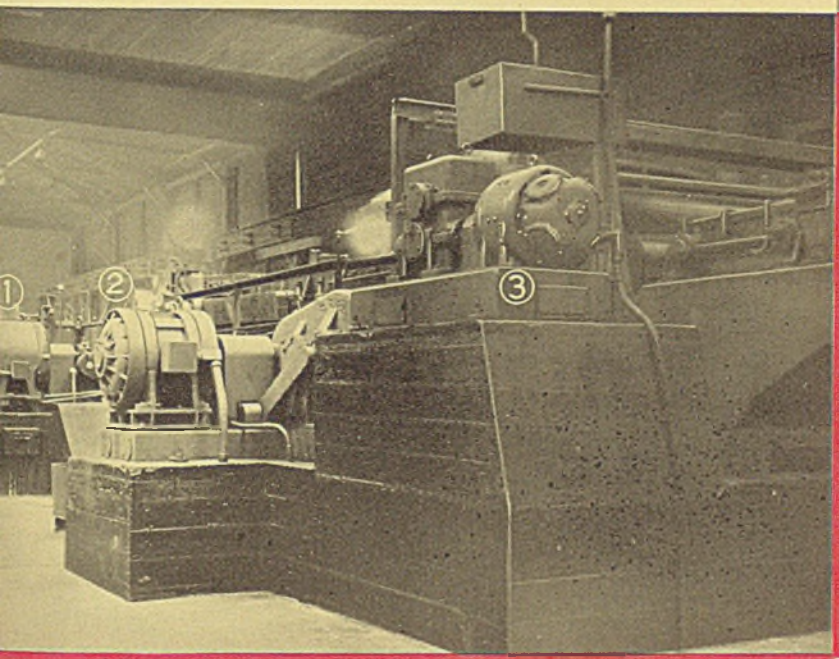
ABOVE — Type "T" Heavy-duty Reliance 6-pole D-c. Motor with anti-friction bearings. Solid cover over top openings, screen covers over lower portion.



RIGHT — Type "AA" Enclosed, Fan-cooled Reliance Squirrel-cage Motor.



These vertical a-c. motors are examples of building to meet specific needs of steel processing. They drive circulating fans in strip-steel annealing furnaces. Special design features have been incorporated for keeping the shafts and bearings cool.



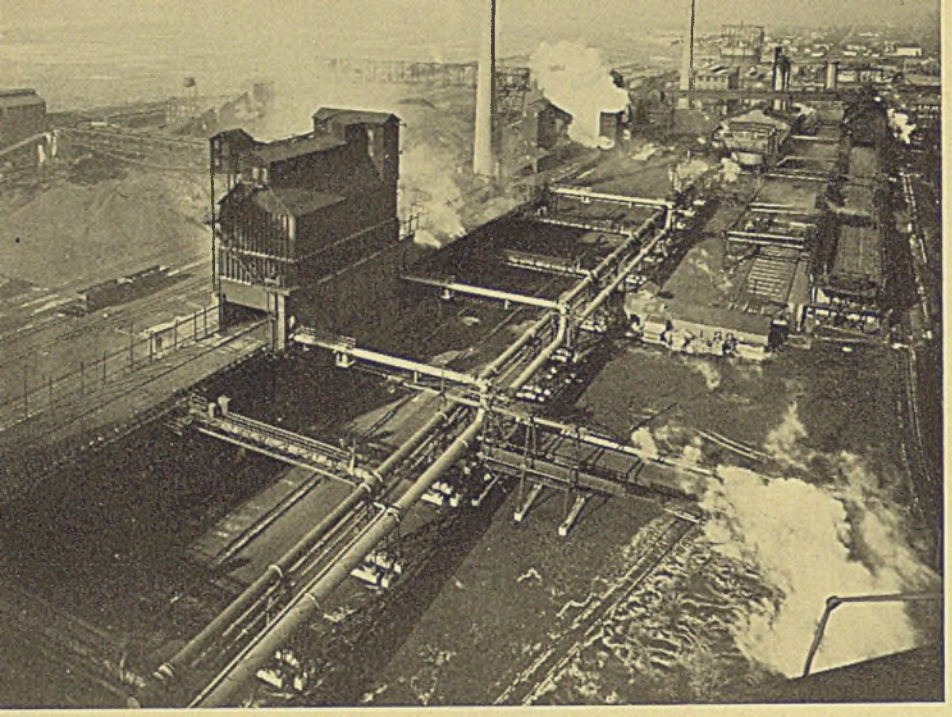
LEFT — Delivery end of 80-inch Continuous Strip Pickling Line. Eleven motors supply the power for main drives throughout the line. Six d-c. adjustable-speed motors operating in tandem are employed when required to suit the rate of pickling which varies over a 1 to 4 range. For the more rapid operations such as shearing and stitching, a-c. squirrel-cage motors with special torque characteristics are used . . . The illustration shows master pinch roll (1) with 40 h.p. d-c. fan-cooled motor; up-cut shear (2) with 50 h.p. enclosed a-c. motor; shear pinch-roll (3) with 10 h.p. d-c. fan-cooled motor.

RELIANCE ELECTRIC & ENGINEERING COMPANY

1088 IVANHOE ROAD

CLEVELAND, OHIO

Branches: Birmingham, Boston, Buffalo, Chicago, Cincinnati, Detroit, Greenville (S. C.),



By-product coke plant of the Interlake Iron Corp., South Chicago, Ill.

Co., to become the Illinois Steel Co. The Joliet Steel Co. was purchased two days later, giving the new organization five plants.

Joliet was best known years ago for its wire production and has often been referred to as the cradle of the wire industry. The first barbed wire was produced there in 1878. Early methods of manufacturing were crude, the barbs being hand-set. By 1892 there were ten wire mills in the Joliet district, when the Consolidated Barbed Wire Co. was organized. Nails and woven wire fence were other important products of these plants. In 1898 the American Steel & Wire Co. was organized and acquired the Consolidated company. The American company recently completed two continuous rod mills, the fastest and most modern in the world, at Joliet, where it also makes wire and wire products. Another wire mill is at Waukegan, Ill.

Illinois Steel Co. entered into the United States Steel Corp. in 1901 as a part of the Federal Steel Co. The latter was formed in 1898, consolidating Illinois Steel Co., the Minnesota Iron Co., Minnesota Steamship Co., Mount Pleasant Coke Co., Elgin, Joliet & Eastern Railway Co. and the Johnson Co. of Pennsylvania.

Further expansion at Chicago followed birth of the Steel corporation. Early in 1906 the present site of Gary, Ind., consisted of barren sand dunes. Construction of a steel plant was started there on March 12 of that year and on Feb. 3, 1909 the first steel was made. Today Gary works is the largest steel plant in the world and Gary is a thriving city of more than 100,000 population.

Gary works consists of 976 coke ovens and a by-product recovery plant; 12 blast furnaces; 52 open-hearth furnaces; three 25-ton converters; a rail, billet, two blooming, slabbing, two plate, 13 merchant and axle mills; tie plate and steel wheel plant; and, in addition to the producing departments, a complete set of mechanical shops. Repair shops alone occupy 300,000 square feet and employ about 2000 men. The entire plant, covering about 1200 acres, employs nearly 16,000 men. Annual capacity is 3,500,000 tons of pig iron, 5,228,000 tons of steel ingots and 3,511,500 tons of finished hot-rolled products.

Rivaled in size only by Gary works, South works of Carnegie-Illinois Steel Corp. has grown from its humble beginning to one of the principal properties of the United States Steel Corp. and the second largest plant in capacity in the country. Annual capacities are rated at 3,087,625 tons of pig iron, 4,352,000 tons of steel ingots and 2,021,000 tons of finished hot-rolled products. Combined ingot capacity of Gary and South works is almost equal to that of all remaining plants of Carnegie-Illinois.

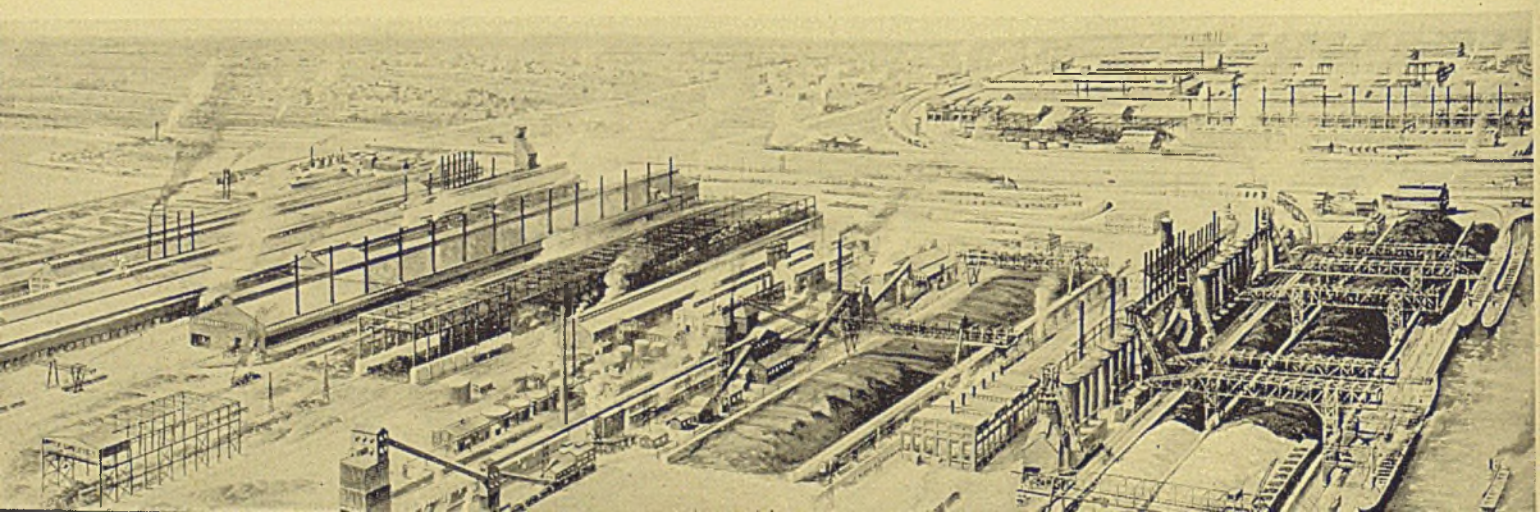
Produces Stainless Steel

Steelmaking facilities at South works include 40 stationary open-hearth furnaces, three large tilting open-hearth units, three converters, six electric furnaces and eight metal mixers. South works is a large producer of stainless steel, while principal finished rolled products are shapes, plates, bars and light rails.

Gary also is the site of the principal sheet and tin mills of Carnegie-Illinois Steel Corp., these being the former property of American Sheet & Tin Plate Co. As in the past, semi-finished material is obtained from the now parent company. The Gary mills have a rolling capacity of 1,450,000 tons of various types of flat-rolled steel, while the tin mill can produce 365,000 tons of tin plate annually.

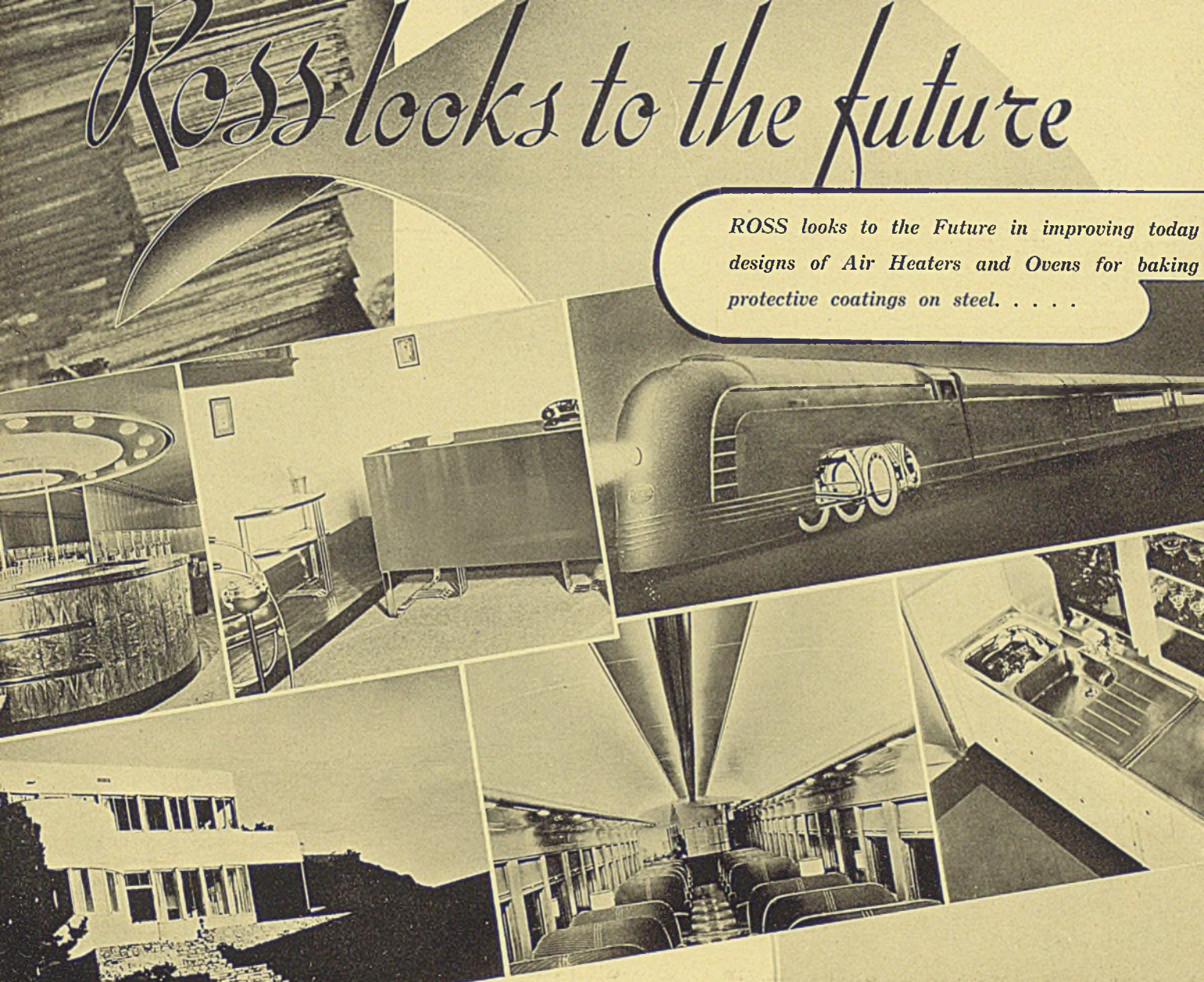
Honors for earliest development of the iron and steel industry in the South Chicago area go to what

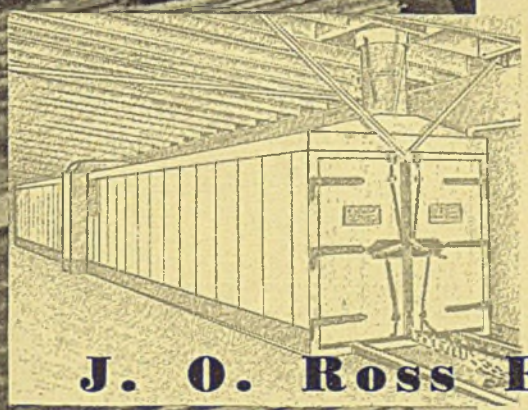
General view of Indiana Harbor plant, Inland Steel Co., Indiana Harbor, Ind.



Ross looks to the future

ROSS looks to the Future in improving today designs of Air Heaters and Ovens for baking protective coatings on steel. . . . .





THEY are speeding along just as fast as the streamlined "Mercury" designed by Henry Dreyfuss. The coming generation will see more and more the miraculous change from steel sheets in the raw to beautiful interiors, prefabricated homes, steel kitchens, etc.

The J. O. Ross Engineering Corp. will do its part in handling the problems of designing the equipment for protective coatings on these products.

The background obtained by the J. O. Ross Engineering Corp. in providing air heaters and industrial ovens to the majority of automobile and metal furniture companies qualifies them to take part in this advance.

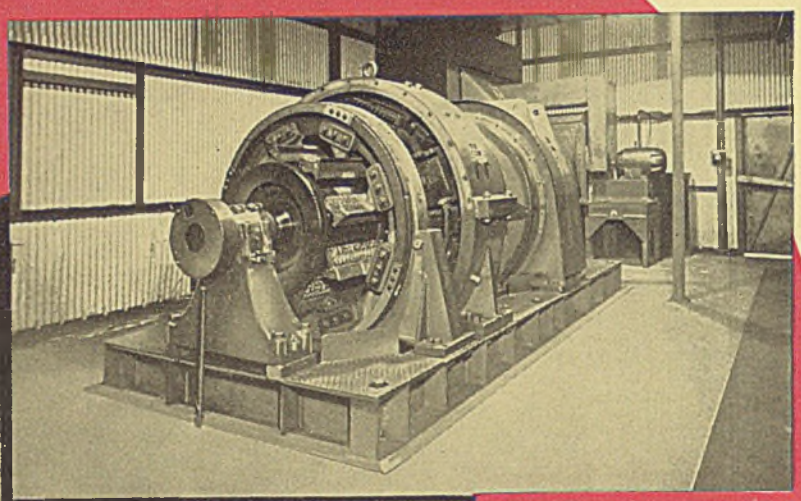
Consult with our engineers, or write for bulletins Nos. 122 and 123.

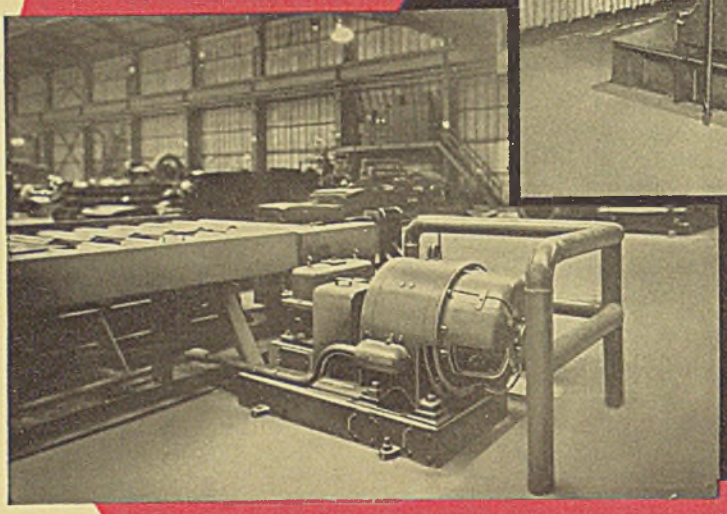
J. O. Ross Engineering Corporation

Main Office—350 Madison Avenue, New York

201 North Wells St., CHICAGO, ILL. 12953 Greeley Ave., DETROIT, MICH. 2860 N. W. Front Ave., PORTLAND, ORE.

CO-OPERATION makes STEEL





THE TIME—1904: The Steel Industry is having trouble finding a motor that will perform satisfactorily. Railway motors are being used without success. The insulation cannot withstand the injurious effects of an atmosphere laden with moisture, dust, and fumes. The motors are not designed for the terrific heat. Crocker-Wheeler offers to design a motor just for the Steel Industry. Steel engineers tell what they want. The motor is built and proves a success. Co-operation.

THE TIME—TODAY: A new 80-inch, hot-strip mill is turning out steel at a speed impossible to visualize thirty-three years ago. Crocker-Wheeler continues to co-operate by building each motor, each generator, each motor-generator set for its particular job. Whether it is (1) a 1000 kw. motor-generator set or (2) a 15 hp. motor to drive a shear line, you know that if it is "Crocker-Wheeler" it was built to suit its application.

Visit booth 177 at the Iron and Steel Exposition.

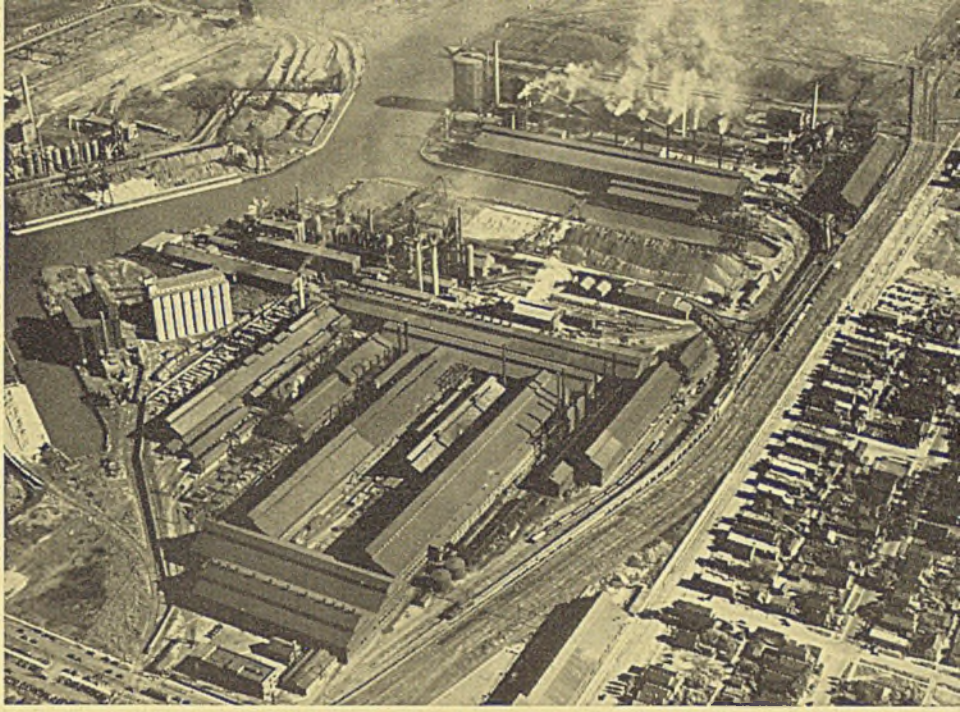
CROCKER-WHEELER
TRADE MARK REG. U.S. PAT. OFF.

EXCELLENT ENGINEERING

CROCKER-WHEELER ELEC. MFG. CO.
Main Office and Works: AMPERE, N. J.
SALES OFFICES IN PRINCIPAL CITIES

now is International Harvester Co.'s Wisconsin Steel Works. This plant, located on the Calumet river in South Chicago, passed into possession of its present owners at the time of the latter's organization in 1902. The works had been acquired a short time before by the Deering Harvester Co., one of the constituent units merged in the formation of the International Harvester company.

Dating back to 1875, the plant was founded by the Joseph H. Brown Iron & Steel Co., and had been owned subsequently by the Calumet Steel Co. and the South Chicago Furnace Co. The Deering company purchased the property in pursuance of its program for the integration of raw materials facilities, but the formation of the Harvester company took place before any important additions were made to the plant.



Wisconsin Steel works of the International Harvester Co., South Chicago, Ill.

Plant Greatly Expanded

When the plant was acquired in 1902 it consisted of a rolling mill, a cut nail mill and one old blast furnace, known as the "A" furnace. Of these three units, only the blast furnace was still in operation by 1902. Nevertheless, the plant, with its 55 acres of land, since enlarged to 202 acres, had important potential industrial values, among which were its excellent docking facilities and slip connecting with the Calumet river, from which lake vessels could discharge their iron ore cargoes. During 1903 the Harvester company completed one new blast furnace, a bessemer steel department (dismantled in 1936) a blooming mill and a merchant bar mill.

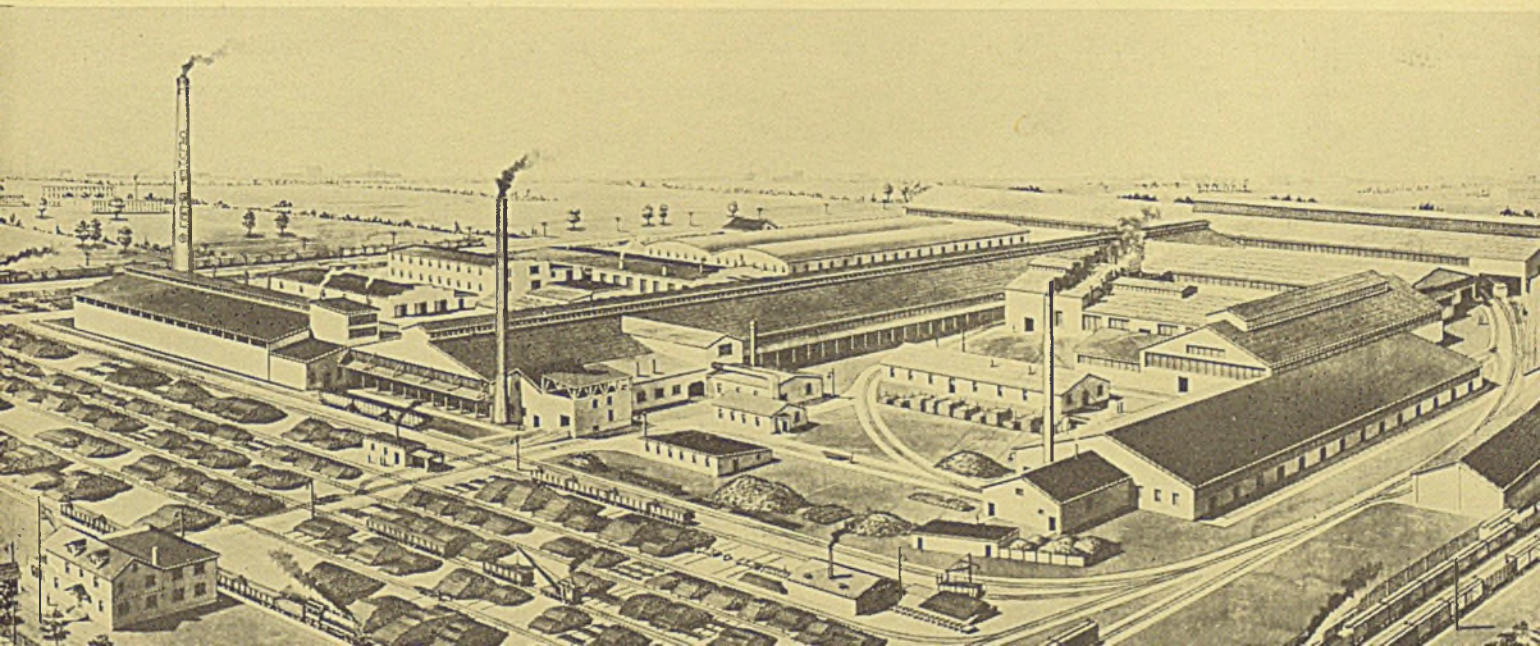
Since that time other major units have been added, the latest improvements being a $6,000,000 modernization program completed within the last few weeks. This included the building of a 32-inch reversing blooming mill, a 21-inch continuous billet mill and the rehabilitation of one of the plant's four merchant bar mills. The company now has 133 by-product coke ovens, three blast furnaces and nine open-hearth furnaces.

Wisconsin's production capacity has increased from 108,000 tons of rolled steel in 1903 to 564,000 tons in 1937, and from 200,000 tons of pig iron in 1903 to 643,000 tons today. Open-hearth capacity now is 600,000 tons. Principal products rolled are bars, strip, universal plates and special shapes. About one-half of the output goes to the various agricultural implement, tractor and automotive plants of the Harvester company, the balance being sold to outside customers.

History of the development of Inland Steel Co., largest independent steel company in the Chicago district, is a remarkable chapter of the city's industrial progress as well as tribute to the company's management. Sensing the possibilities of Chicago as a steel producing center, Joseph Block of Cincinnati in 1893 joined G. H. Jones and others in incorporating Inland Steel Co. and proceeded to acquire a plant in Chicago Heights. This was a rerolling mill for the production of bars and small shapes from old rails. The plant still is operated but today is a relatively minor part.

The advantages of a lake site in availability of water and accessibil-

This plant of the Calumet Steel Co. is located in Chicago Heights, Ill.



South works, Carnegie-Illinois Steel Corp., South Chicago, Ill.

ity of boat transportation prompted Inland to purchase barren land along Lake Michigan where East Chicago and Indiana Harbor, Ind., now thrive. This was several years before United States Steel Corp. chose its Gary site. The Indiana Harbor works started production in 1902 with a monthly capacity of 20,000 tons of steel ingots. Four years later this capacity had been nearly doubled. Iron ore properties were acquired in 1906 and blast furnaces were built. By 1917 steel producing capacity had been expanded to 1,000,000 tons. Steady growth has marked succeeding years. Ingot capacity of 2,000,000 tons in 1928 now is 2,340,000 tons and will reach 2,800,000 tons when five new open-hearths, or 36 in all, are available early next year. Pig iron capacity of 1,000,000 tons is being increased by a fifth blast furnace.

Inland was one of the pioneers in the use of the continuous mill for production of flat-rolled steel, adding this unit and a tin mill during the depression in time to benefit from the subsequent heavy demand for sheets and tin plate.

The Chicago division of Youngstown Sheet & Tube Co. was acquired by purchase from Steel & Tube Co. of America early in 1903. Control of these properties passed to Youngstown on July 1 of that year. This purchase brought to the latter a large addition to its ore and fuel reserves, as well as two plants having desirable water front sites on Lake Michigan.

One of these plants was a modern blast furnace and steel plant at Indiana Harbor and the other the Iroquois Iron Co., consisting of a blast furnace plant on the lake at South Chicago. While the properties practically adjoin one another, they are located in different states. In addition, the purchase included a conduit plant, tube mills and pump parts plant at Evanston, Ill.

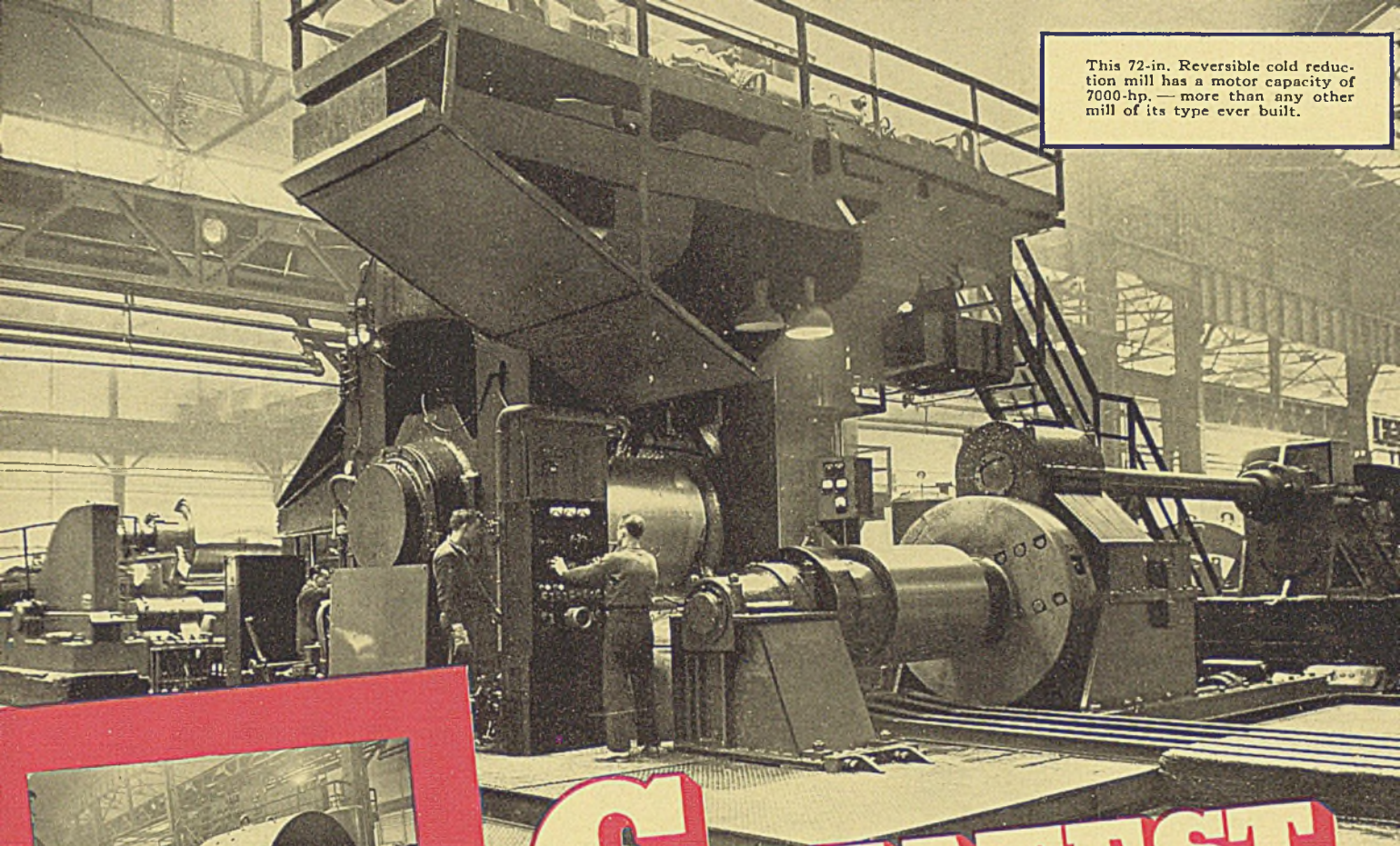
Continues Additions

Since the acquisition of these properties, extensive improvements and additions have been made by Youngstown. In 1926 new tin plate mills were placed in operation; during 1929 the erection of the extensive bar mills at the Indiana Harbor plant was completed. One of the bar mills is a combination unit, consisting of both 14-inch and 18-inch roll stands and auxiliary equipment; the other is a 10-inch mill. Alloy steels manufactured by Youngstown are produced at the Indiana Harbor plant.

Inland's Chicago Heights mill originally had been established by J. F. Porter. The latter's sons started another rerolling plant in the same locality about 30 years ago, and this company—Calumet Steel Co.—now is part of Borg-Warner Corp. Calumet has a yearly capacity of about 75,000 tons of billet, rail and axle steel bars, sections, structural tubing and fence posts.

Republic Steel Corp.'s entry into

Below is plant of the La Salle Steel Co., Hammond, Ind.

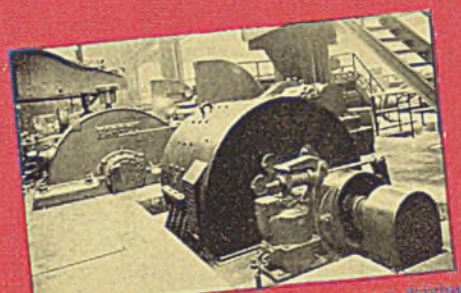


This 72-in. Reversible cold reduction mill has a motor capacity of 7000-hp. — more than any other mill of its type ever built.

GREATEST POWER

EVER APPLIED TO A REVERSING COLD MIL

The main rolls of the 72-in-h mill are driven by this 4000-hp., 110-300-rpm. Westinghouse motor.



One of the 1500-hp., 130-375-rpm. motors driving the reels. Long, multi-diameter armatures keep inertia of these motors at a minimum.

This Westinghouse switchboard constitutes the control for the world's most powerful single-stand reversing cold mill.

Seven thousand horsepower — that's the motor capacity on th 72-inch reversing cold strip mill. Made up of a main roll drive moto of 4000-hp. capacity, and two 1500-hp. motors for reel drive, this mi is the most powerful of its type ever built.

Cold reduction in this mill is accomplished by both roll pressure an tension. Forward tensions of around 150,000 lbs. are possible, whil back tensions as high as 200,000 lbs. can be developed.

Whatever the problem of your mill may be, its electrical phases ca be solved with Westinghouse equipment, or by the ingenuity of West inghouse steel mill engineers. Call on them for your every electrica requirement.

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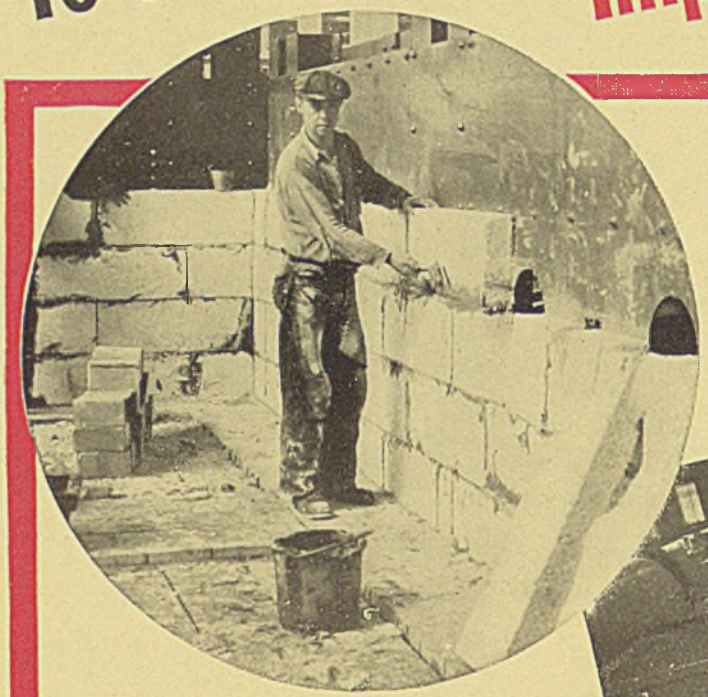
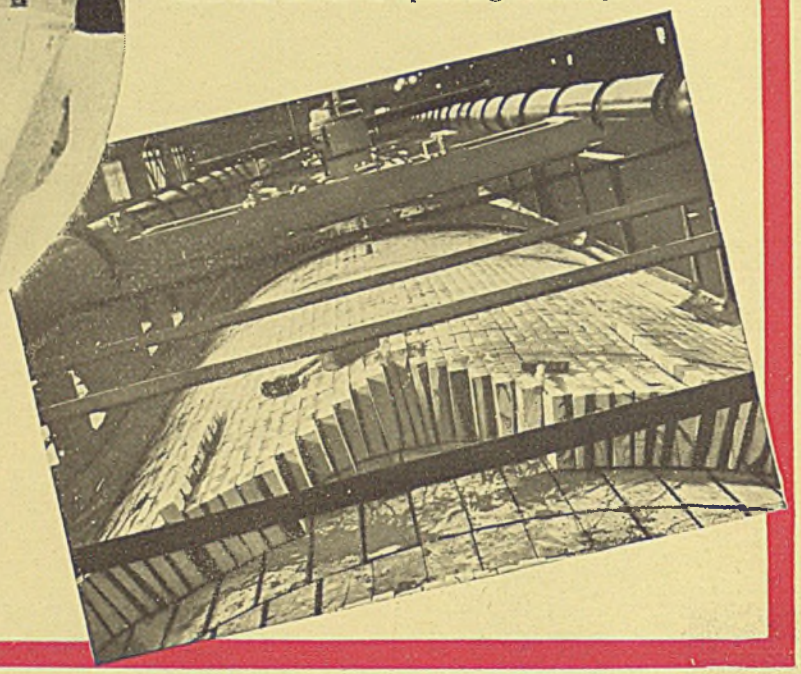


J-M SUPEREX BLOCKS, shown above on a soaking-pit installation, are recognized as the outstanding block insulation behind refractory linings in service up to 1900° F. Unequaled in insulating efficiency, they actually cost less to install.

(Below) BOTH SIL-O-CEL C-22 and JM-20 BRICK are equally effective as back-up insulations and as insulating refractories for temperatures up to 2000° F. This normalizing furnace is constructed entirely of Sil-O-Cel C-22 Brick, a construction which makes possible thinner furnace walls and increased operating efficiency.



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the Chicago district dates back to 1930 when its acquisition of various companies brought Central Alloy Steel Corp. into the fold. The latter a short time before had taken over the Interstate Iron & Steel Co. which had a steelworks at South Chicago and a wire mill in Chicago. The South Chicago plant has an ingot capacity of 408,000 tons annually, while its principal rolled products are bars and wire rods.

A short time ago Republic completed a modern wire mill at South Chicago for the production of drawn wire and wire products. This plant and American Steel & Wire Co.'s new rod mills at Joliet give the Chicago district the most modern facilities in the country for the processing of steel into wire and its products.

Although operating no steelmaking units, Acme Steel Co. in its particular field ranks among the leading interests of the country. Long established in the Chicago district, Acme specializes in production of strip steel. Its Riverdale, Ill., plant has a rated capacity of 430,000 tons of hot-rolled strip and 76,000 tons of cold-rolled strip annually.

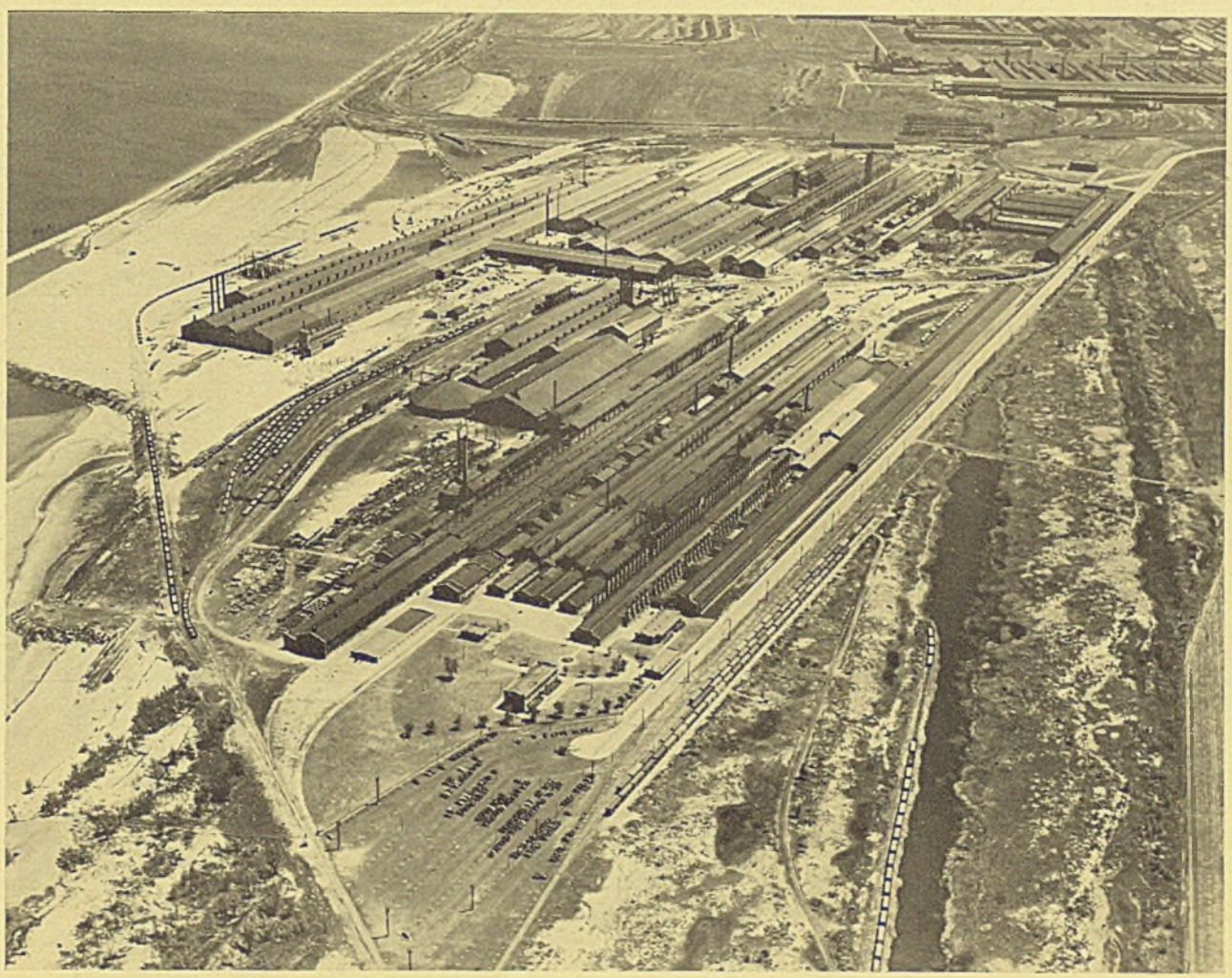
The Chicago district is a large consumer of merchant pig iron, and the city itself is the leading foundry center of the country. It is only natural, therefore, that Interlake Iron Corp., principal merchant iron interest, should have important properties located there. These include two blast furnaces with annual capacity of 421,000 tons, and a coke plant, the latter consisting of 230 by-product ovens.

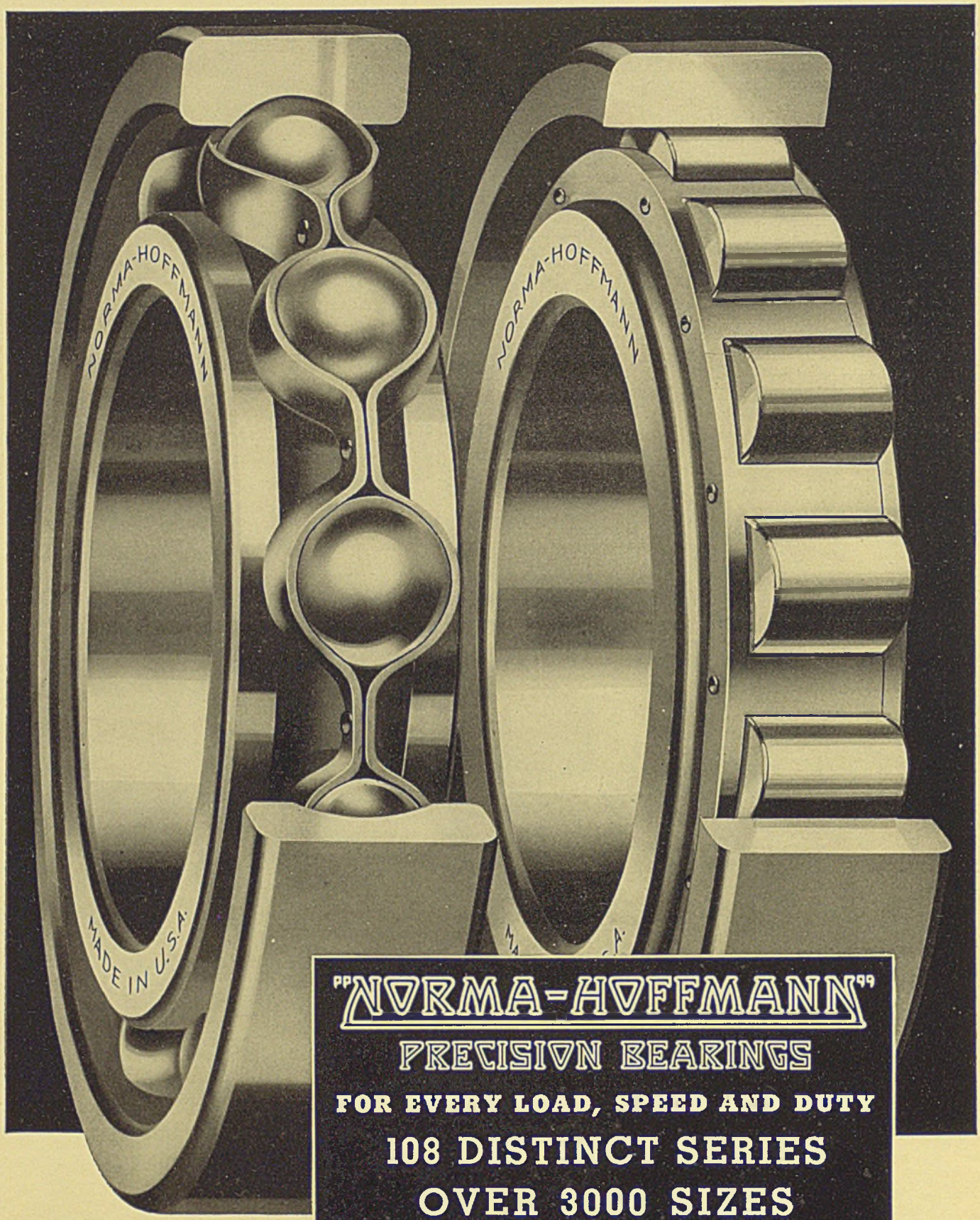
Several important producers of cold-drawn steel bars are located in the Chicago district. Bliss & Laughlin, a 46-year old concern, at Harvey, Ill., has a capacity of 80,400 tons annually. LaSalle Steel Co.'s plant at Hammond, Ind., can turn out 100,000 tons yearly, while Wyckoff Drawn Steel Co., Pittsburgh, has a capacity of 40,700 tons in its Chicago works.

LaSalle is celebrating its twenty-fifth anniversary this year. Its first mill located at Cicero, Ill., with five employes and was discontinued in 1921 when the present mill was opened. The company now has more than 300 employes. It is the only cold finished bar mill in the Chicago district equipped with a complete battery of heat treating and annealing furnaces for bar stock.

Among other nonintegrated steel companies is Clayton Mark & Co. whose Chicago plant is rated at 126,000 tons of black pipe, 60,000 tons of galvanized pipe and 16,000 tons of conduit annually.

Among the largest mills of their type, the Gary sheet and tin mills of Carnegie-Illinois Steel Corp. are also located at Gary, Ind.





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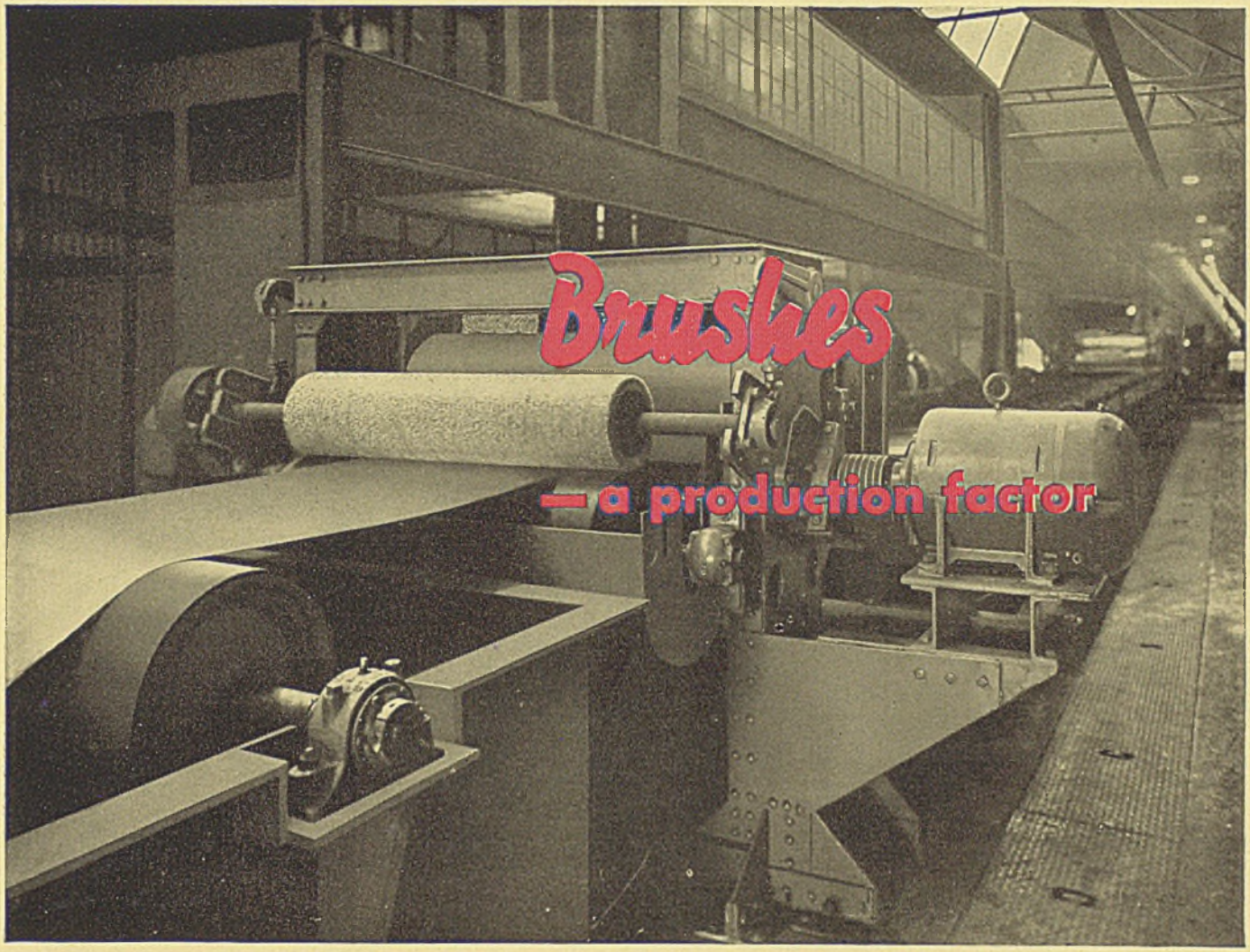

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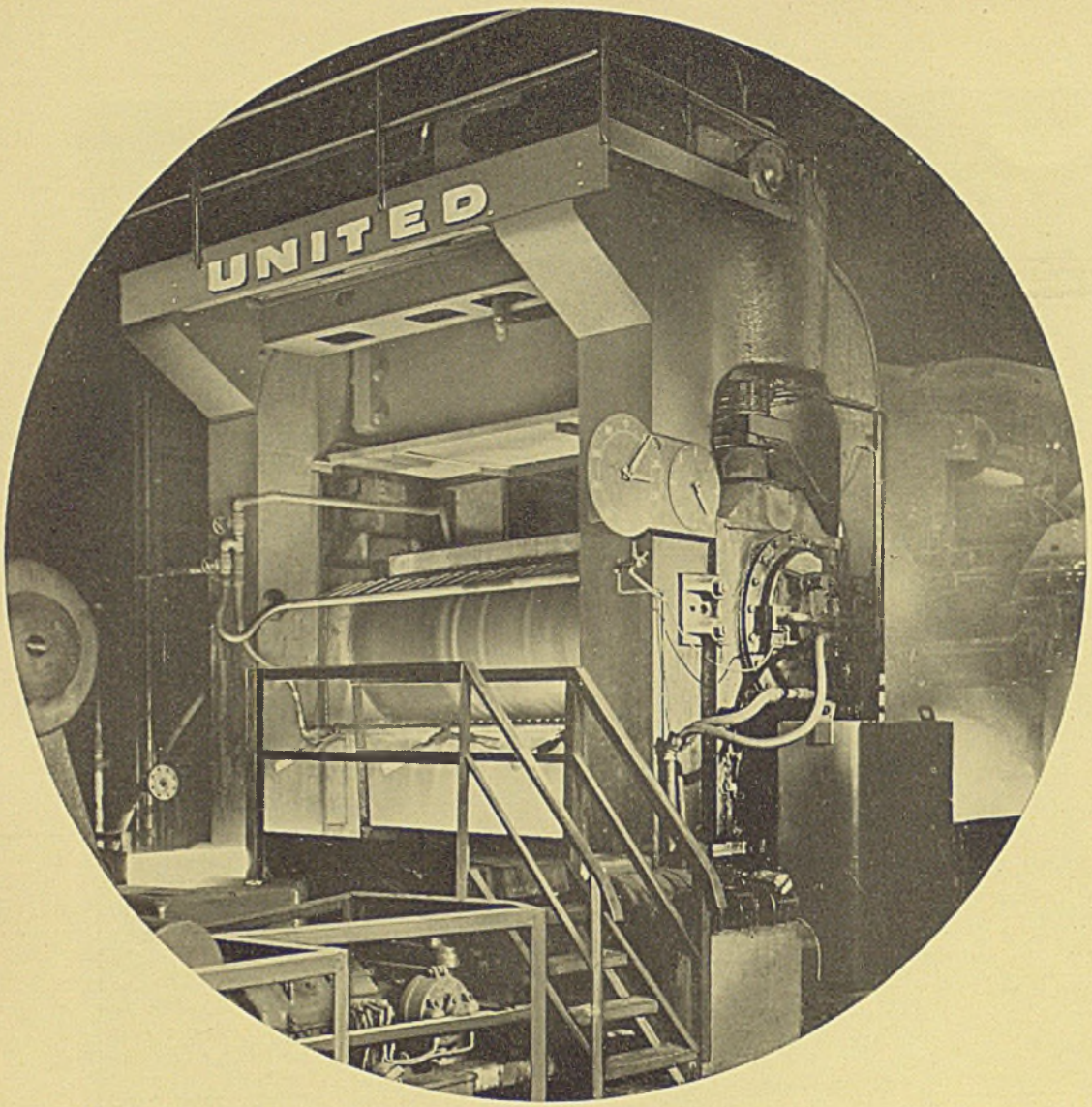


Broadside stand of 80-inch continuous hot strip mill

DURING the past ten years the development of the steel industry has been focused to a great extent upon strip steel. Whether or not further expansion is expected, desired or is essential to the industry has been a matter of speculation for at least the last five of these ten years. It was estimated when the first few hot and cold strip mills were installed that only a few of those mills would be necessary to produce the tonnage of the old type two-high sheet mills, but with the further development of the processing and use of strip steel, new fields were uncovered, or old fields were advanced to the point where even with all of the capacity now available in this country, still more mills are contemplated.

At the present time the speculation still goes on as to whether or not the additional mills are necessary, but with all of the hot and cold strip mills now in operation running at almost full capacity, the tendency seems to be a continuance of this development, both in the narrow strip and the wide strip field and even into the sizes classed as plate.

The lower production and selling costs have allowed the more extensive use of strip steel and the development in metallurgy that has paralleled the development of the rolling mill itself has further advanced the art.

The move on foot at the present time sems principally in the tin plate or lighter gage industries, and the production of light gauge strip in reversing or continuous cold mills has been the major development of the last few years.

The development of cold reduced strip for tin plate has been carried on principally by the larger producers whereas most of the independent tin plate producers are still carrying on with the two-high type of mill, either operated by hand, or with feeders and catchers. It seems logical to believe that these independent companies must study the problem thoroughly as to how they may proceed in competition with the larger companies with the better products produced by the cold reduction method. The installation of a continuous hot strip mill means a tremendous investment for these independent companies as well as tonnages that are far in excess of their requirements.

For a number of years studies have been made of the possibility of a low cost type of unit to take care of the modified tonnages required by these independent companies. The reversing hot strip mill in combination with cold reduction mills and skin pass mills has been the possible answer to this problem. One of these units has been in successful operation in the Chicago district for several years and another unit has been installed in Canada.

The most recent development is a unit between the full continuous hot strip mill and its companion cold reduction skin pass mills and the reversing mill development just mentioned, and within the next year at least one of these new units will be placed in operation.

An intermediate step in the hot strip mill process is a semi-continuous mill consisting of a universal

Affecting the Future of Steel Production

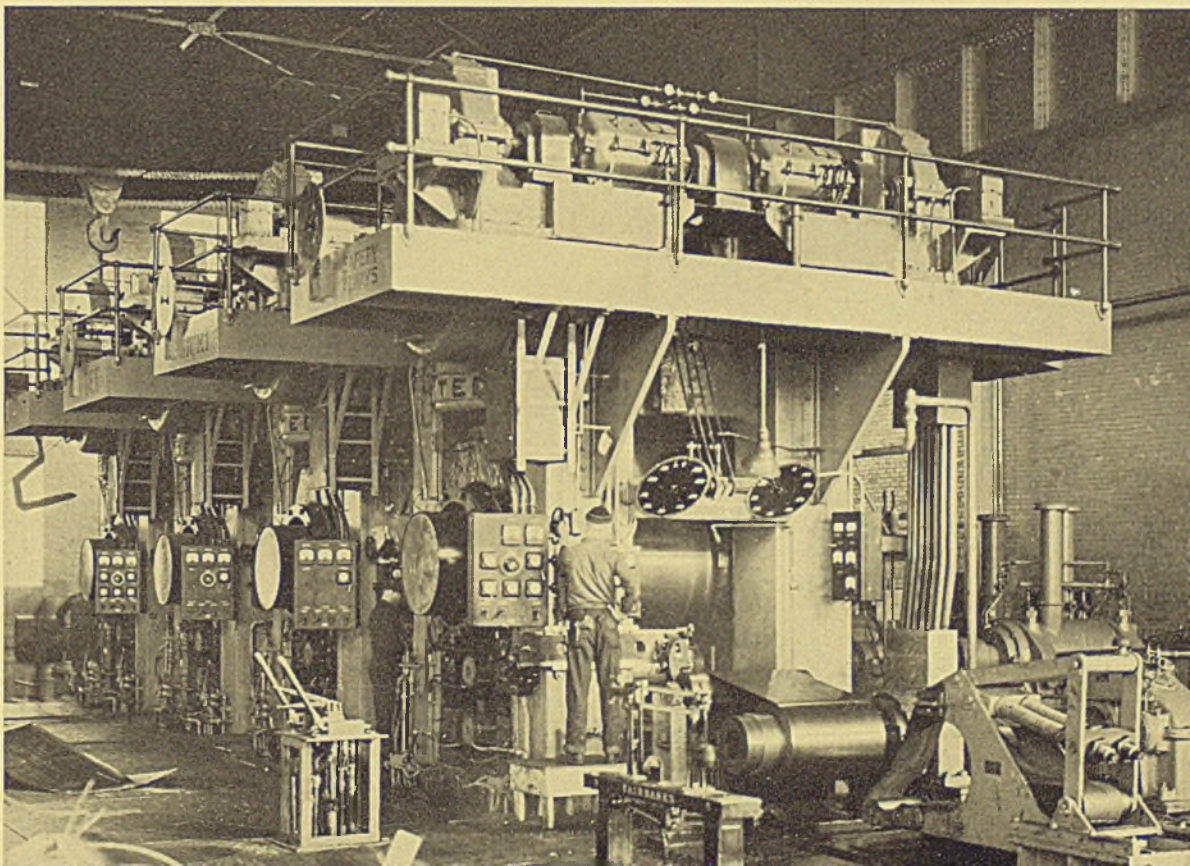
BY JOHN L. YOUNG
Manager, Machinery Sales Division
United Engineering & Foundry Co.
Pittsburgh

rougher and with four, five or six 4-high finishing stands. With this type of mill, it is necessary to have the additional cold reduction mills to handle the product of the hot strip mill for further processing. In order to overcome this difficulty where a limited amount of tonnage is required, the present thought is to use these 4-high hot finishing stands also as cold reduction stands. This is accomplished in the following manner:

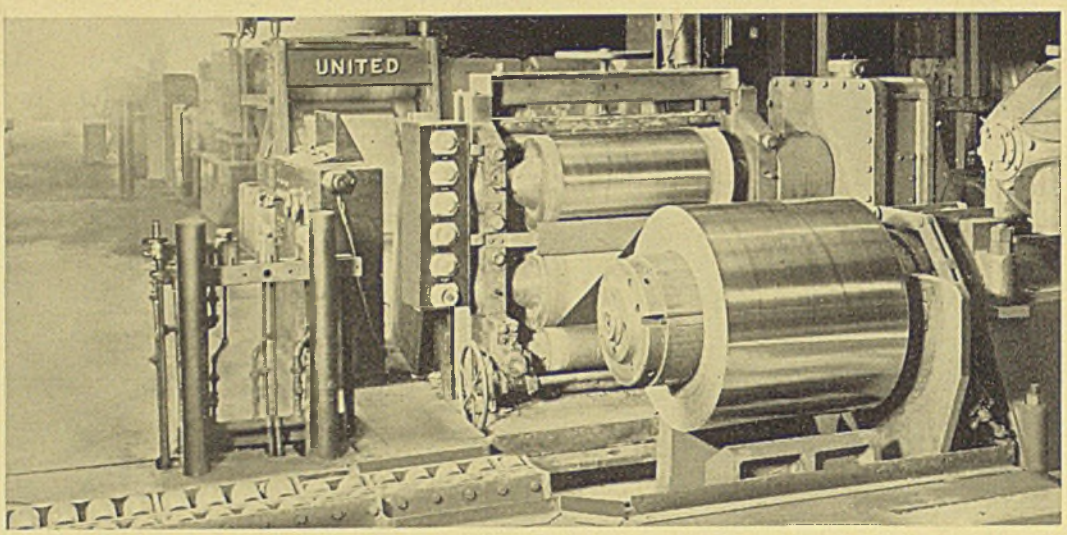
The mill can be set up as a semi-continuous hot strip mill and can operate for a number of days, producing hot coils for storage. After a certain number of days, the mill can be changed over by changing from cast to forged steel work rolls, changing the guides and lifting out removable tables before the first stand and after the last stand to allow the use of a coil box at the entering end and a tension reel and belt wrapper at the delivery end that will remain in place even during the hot rolling program. These units will be covered sufficiently during that time to keep them clean and ready for operation as cold units. The two tables will be removed by crane and stored in a convenient place until they are needed.

One question that has been raised in connection with this type of mill is the possibility of conceiving a hot strip mill clean enough to operate as a cold mill. It has been demonstrated in at least one instance that a hot mill can be kept clean, if it is the will of the operator to do so, and due to the fact that the mill will be alternating between hot and cold, it will be a much easier problem to keep the mill in proper condition for that purpose.

During the time the 4-high finishing stands are used as cold reduction stands, the universal mill can be used for the rolling of plate or



Tandem 42-inch 4-stand cold reduction tin plate mill with belt wrapper. Delivery speed 1350 feet per minute



Modern electrolytic cleaning line for 38-inch tinplate mill

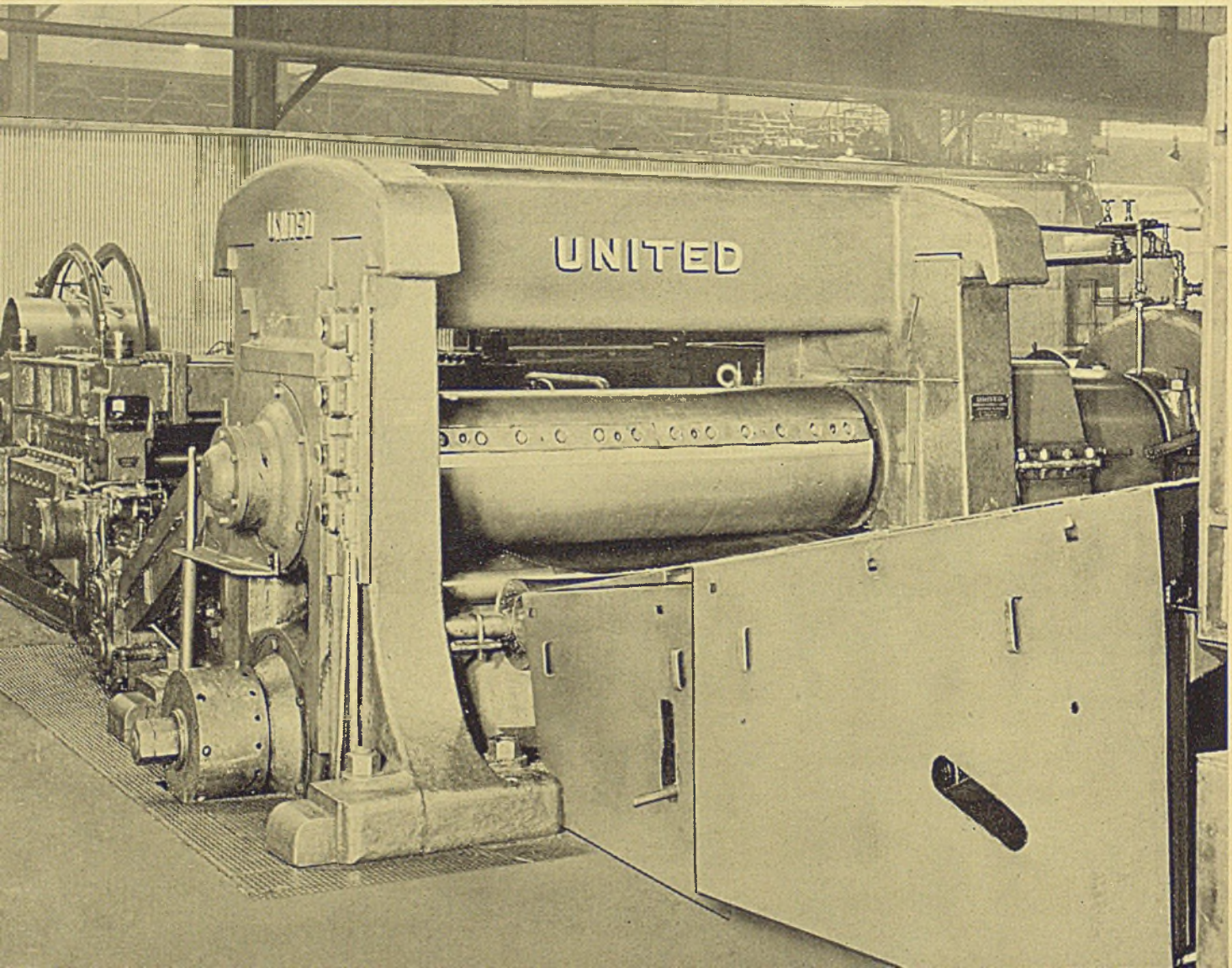
other products, if such products are desired.

The necessary processing equipment, including cleaning lines, shearing lines, skin or temper pass mills, annealing equipment and the like, will then be installed on a basis of the cold reduction capacity of this mill, or based upon the requirements of the individual company.

This allows a comparative low cost original installation for a limited amount of tonnage and if and when that company can justify the operation of the strip mill continuously as a hot strip mill, the equipment required to change over the finishing stands from hot to cold can be utilized in the installation of separate cold reduction equipment as the units will be standard in all cases, and will be interchangeable. This, of course, allows the development of additional capacity if and when it ever should be required.

Here in America we think in terms of big tonnages and the companion investment costs, but in Canada and the foreign countries, there are a number of smaller companies that have been investigating the possibility of entering the strip field. This new development allows such

Drum type flying shear on 76-inch strip mill



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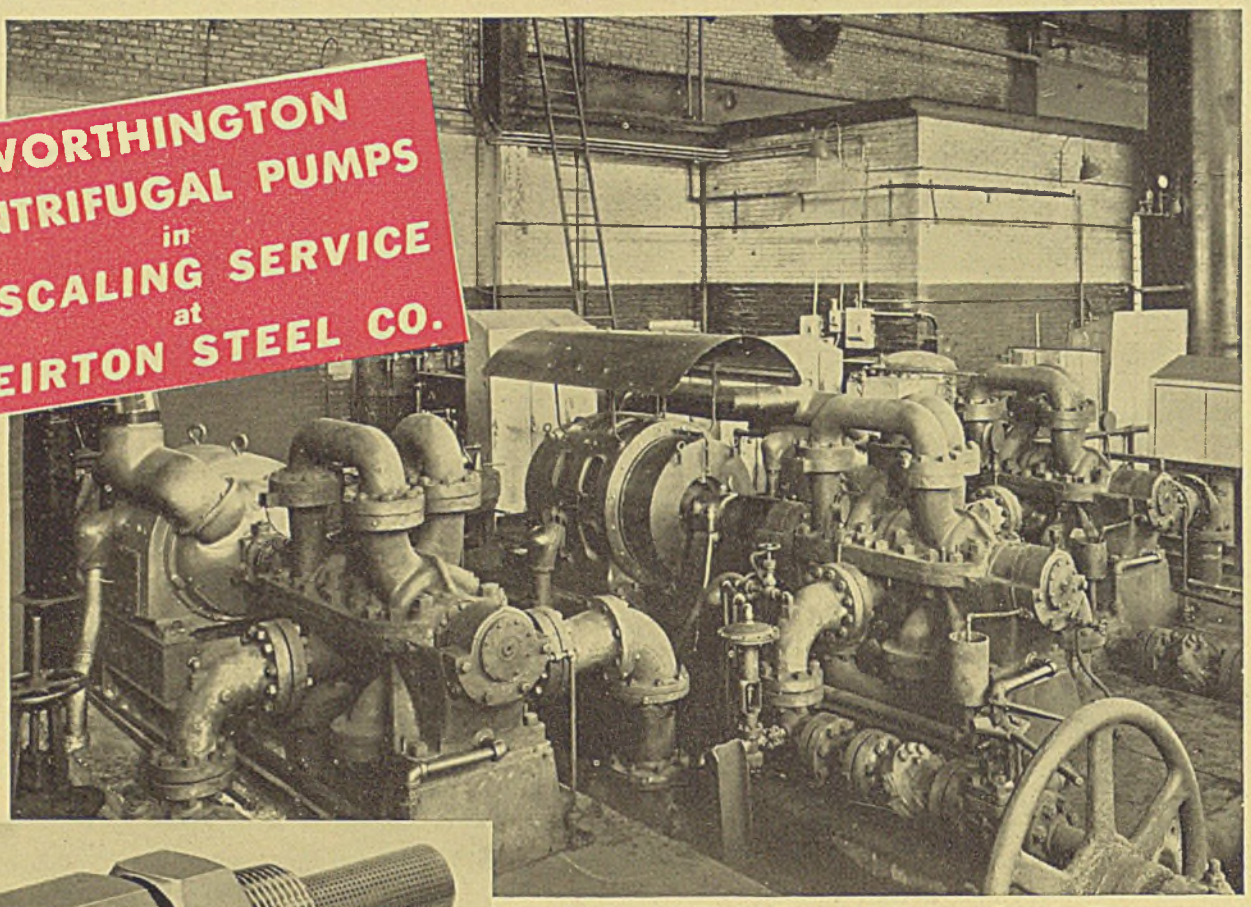

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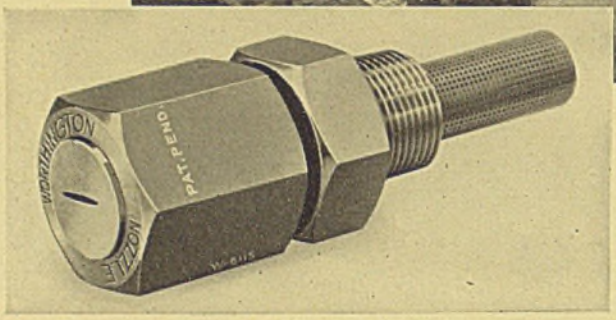

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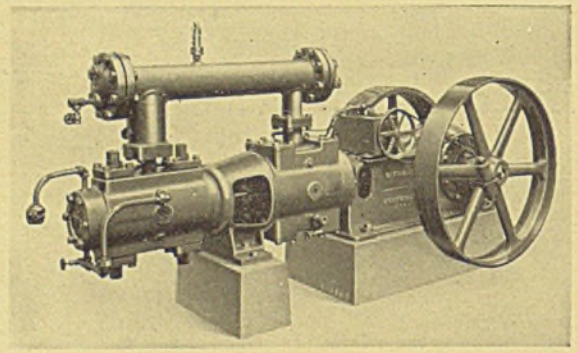

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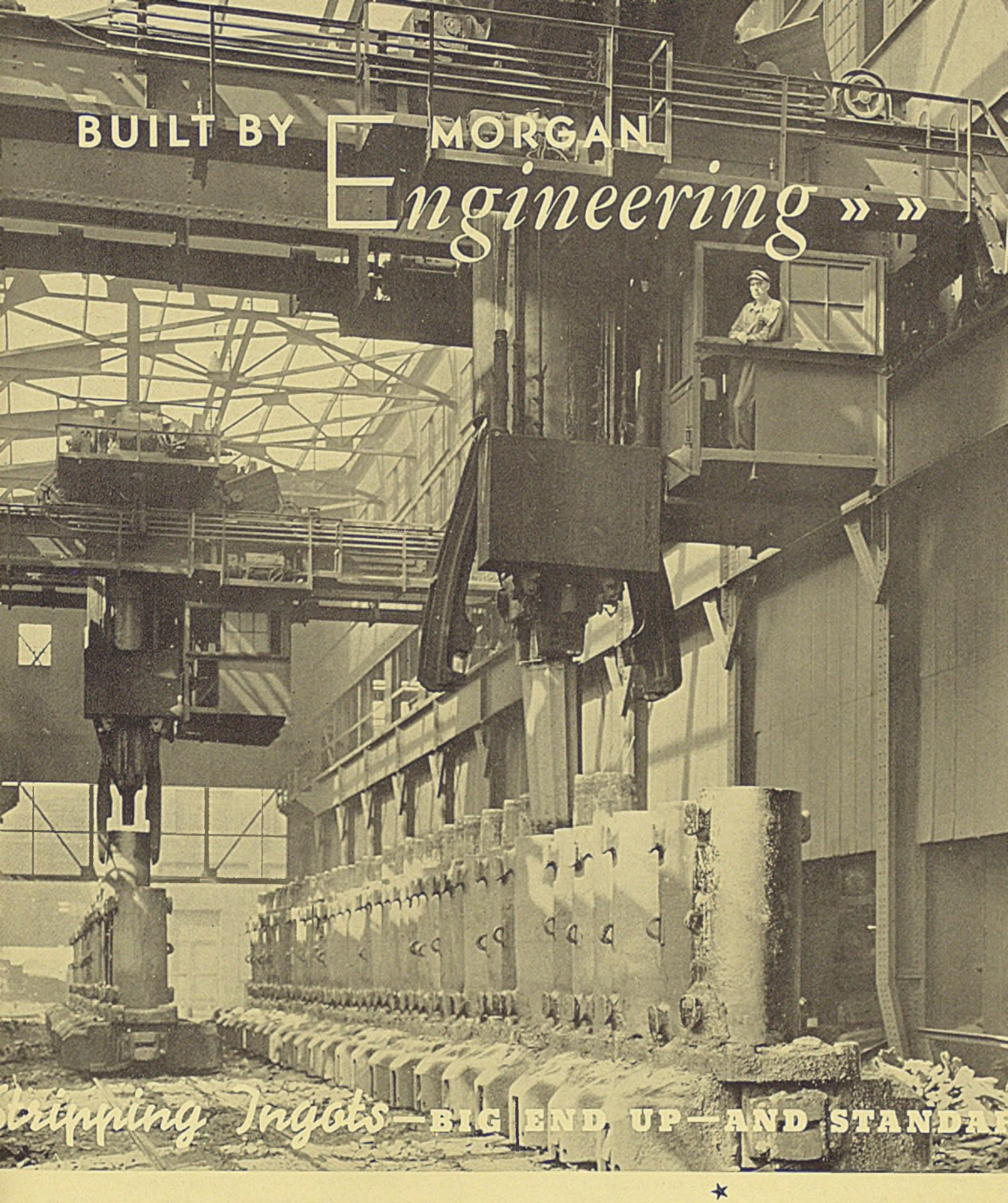

● Two of the Morgan 150-ton, 73′6″ span, screw type Ingot Strippers at work stripping standard and big-end-up ingots in a northern Ohio mill. Efficient, rugged, dependable—such huge machines play an important part in stepping up steel production to meet demands of the blooming mills. Morgan Engineering has designed and developed strippers to perform three distinct stripping operations without making changes in the stripping unit. Today this machine is designed to (1) strip small-end-up or standard ingots; (2) strip big-end-up ingots; (3) break small-end-up ingots loose from stools. Faster, more easily controlled than older machines but built to the same high standards of Morgan Engineering integrity.

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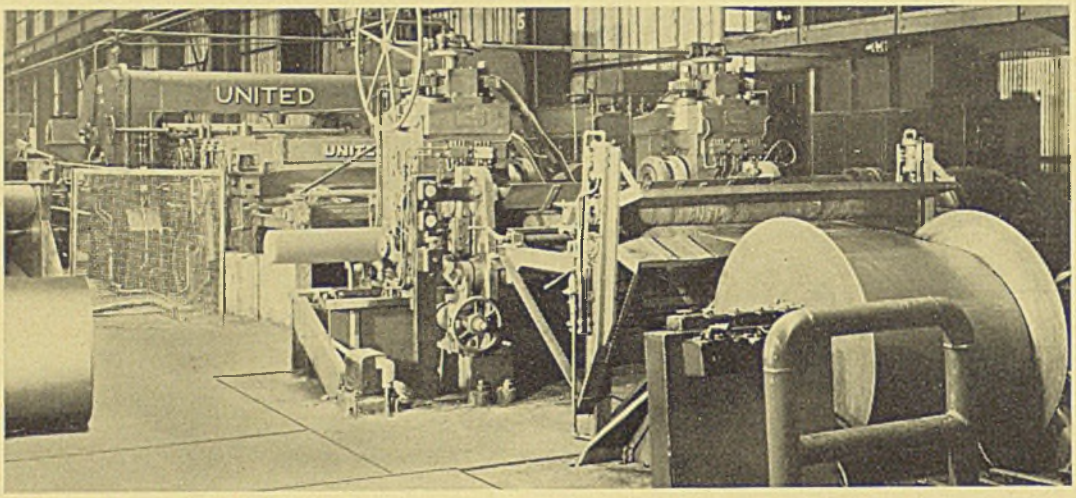


Coil shearing line on 76-inch strip mill

companies to consider seriously the installation of modern strip mills, and as such this development opens an entirely new field for the advancement of the art.

As stated previously, the development over the past ten years has been largely in the strip field, whereas the development of rolling mills for other products has somewhat been sidetracked. During the last year this picture has been changing and the present indication is that during the next several years, the other products of the steel plants will be given serious thought and consideration.

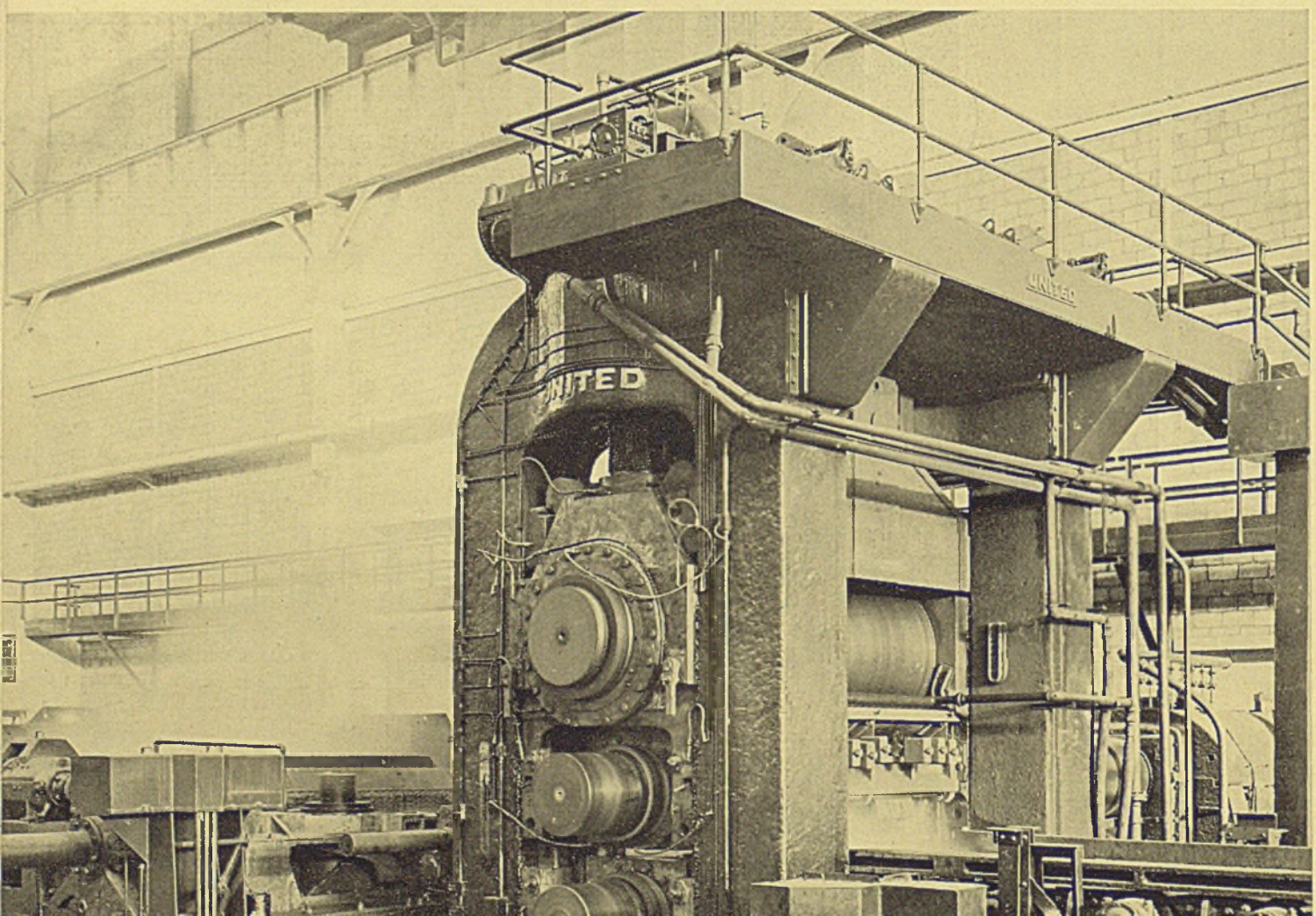
Modern developments of antifriction bearings for rod and merchant mills along with other developments in companion machinery construction will naturally bear fruit and several such mills are planned.

This is also true of the seamless tube industry, structural, rail, blooming, and allied mills.

In addition to the mill development over these past few years, there has been a great development in the steel industry of processing and handling equipment such as continuous pickling lines, rotary coil picklers, electrolytic cleaning lines, continuous shearing lines and now we are in the development stage of electrolytic coating in strip form, and this development promises most activity in the next two years.

At the present time the operating speeds of mills or processing equipment are determined entirely by the present facilities or equipment available to handle the product. Research and development is now being carried on by the machinery builders and the mill operators toward better schemes and methods of developing higher speed precision machinery and equipment that will handle the material into and out of the line.

Reversing 4 - high intermediate roughing stand, 100-inch semi-continuous plate mill



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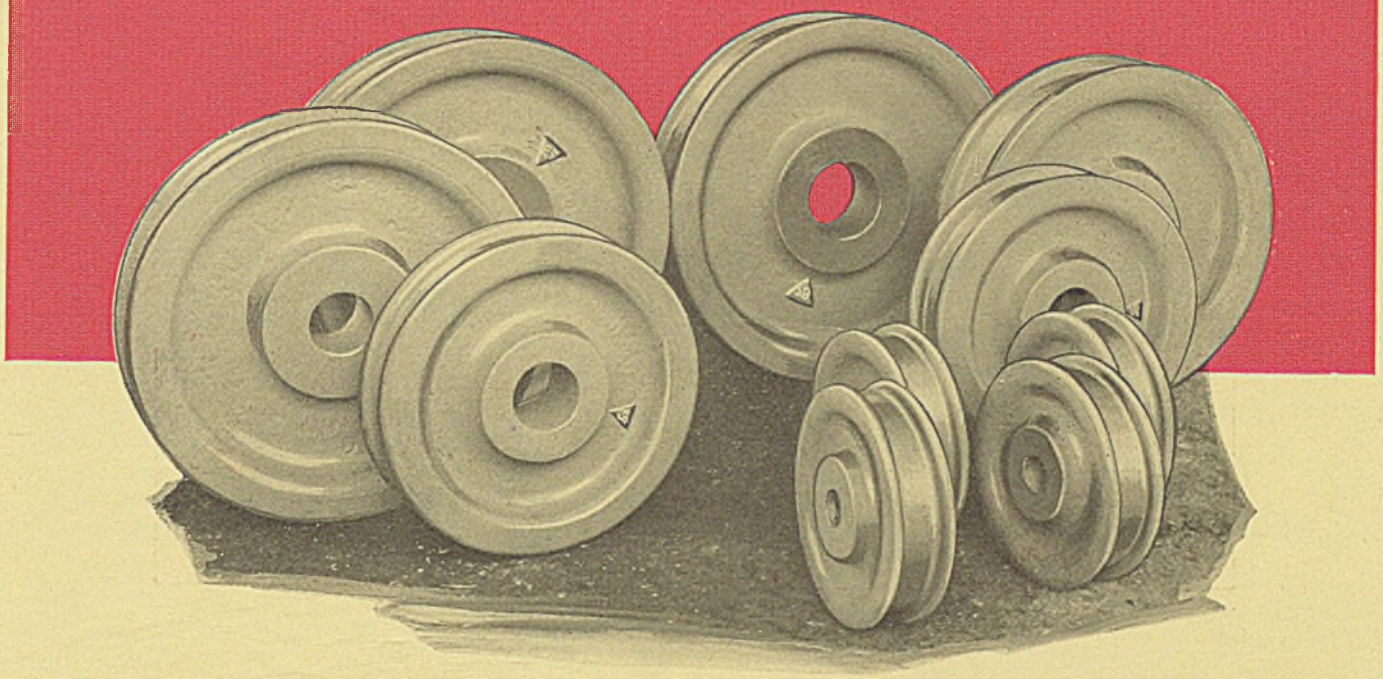

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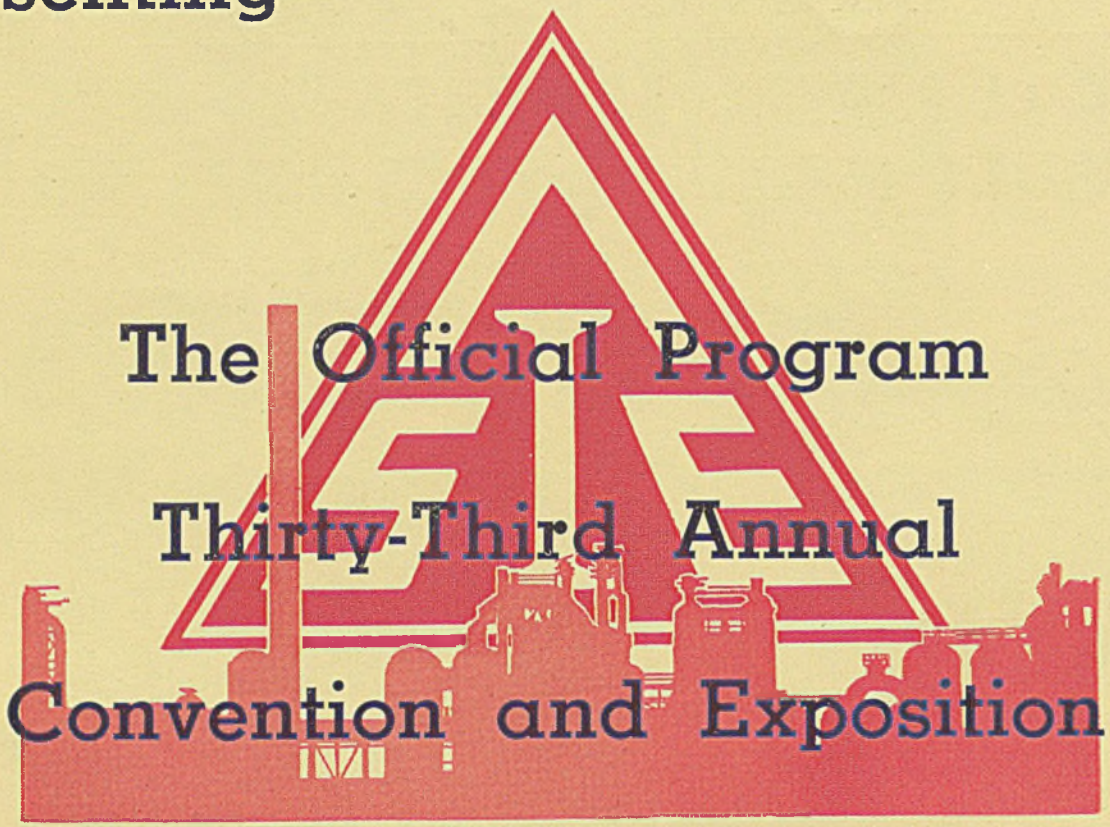
Presenting—



SUBJECTS relating to electrical, mechanical, lubrication and welding problems in the steel industry today will be covered by 25 papers to be presented during the annual convention of the Association of Iron and Steel Engineers to be held in Chicago's Hotel Stevens on September 28, 29, 30 and October 1. The annual Iron and Steel Exposition will be held in the grand ballroom and the exposition hall of the same hotel. Technical papers will be presented at sessions held Tuesday, Wednesday and Thursday, while Wednesday will present a trip to the sheet and tinplate division of Carnegie-Illinois Steel Corp.'s Gary works. Friday has been set aside for an inspection trip through the Indiana Harbor works of the Inland Steel Co. The exposition will be open from Tuesday afternoon through Friday evening. According to the association, one of the outstanding features of the exposition will be widespread use and display of various working models of steel mill machinery.

Tuesday, Sept. 28

9:15 A.M.—North Ballroom

Third Floor

Annual meeting and business session

"The Testing Department of a Large Steel Company," by Birger Thele, test engineer, Tennessee Coal, Iron & Railroad Co., Fairfield, Ala.

"Layout and Installation of Low Voltage D. C. and A. C. Systems in Steel Plants," by Donald Nelson, assistant electrical engineer, Jones & Laughlin Steel Corp., Pittsburgh.

"Surges and Their Effect on Transformers," by H. Weichsel, consulting engineer, Wagner Electric Corp., St. Louis, Mo.

9:30 A.M.—South Ballroom

Third Floor

Combustion Engineering Division

"Protective Atmosphere for Annealing Furnaces in Steel Mills," by A. N. Otis, General Electric Co., Schenectady, N. Y.

"Complete Control of Recuperative and Regenerative Soaking Pits," by A. E. Krogh, market development department, Brown Instrument Co., Philadelphia.

12:15 P.M.—Boulevard Room

Welcome Luncheon

Tuesday, Sept. 28

2:00 P.M.—North Ballroom

Combustion Engineering Division

"Steam Power Developments," by Charles W. E. Clarke, consulting engineer, United Engineers & Constructors Inc., Philadelphia.

"Design and Operation of New Boiler House—Ohio Works, Carnegie-Illinois Steel Corp." by C. H. Williams, assistant chief engineer, Carnegie-Illinois Steel Corp., Youngstown, O.

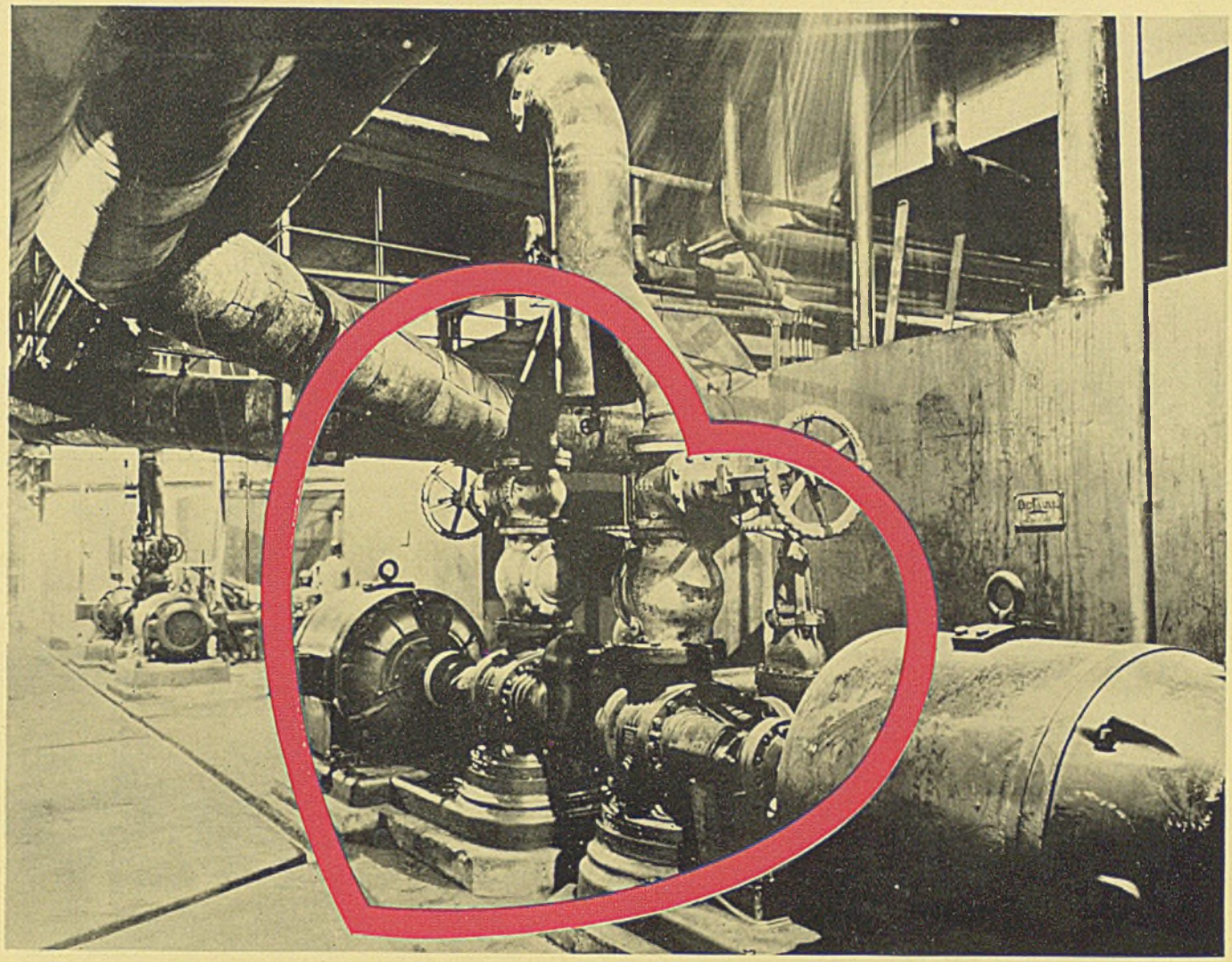
"The Development of Steam Generation from Gas Engine Exhaust in America," by T. A. Lewis, assistant combustion engineer, Bethlehem Steel Co., Bethlehem, Pa.

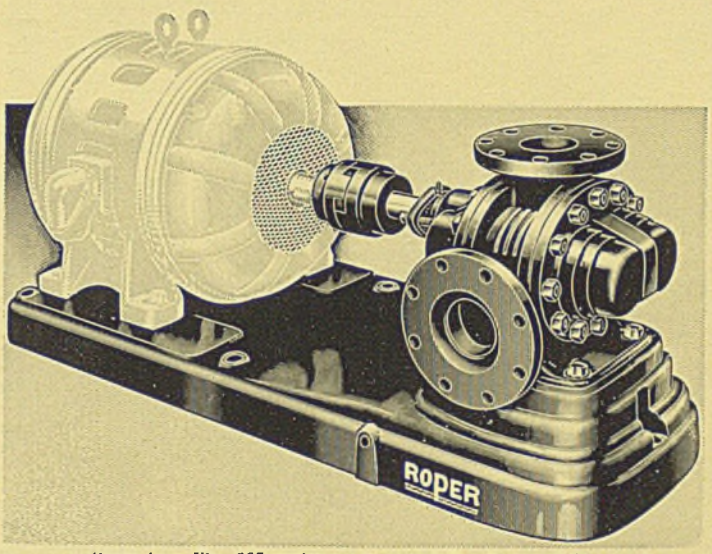
Wednesday, Sept. 29

9:00 A.M.—North Ballroom

Third Floor

"Organization and Functions of a





Above is a Fig. 997 series unit especially designed for steel mill lubricating systems, but is adaptable for any application requiring up to 700 GPM against 100-pound pressure. Other models designed for pressures up to 750 lbs. Do you have our catalog of Roper Pumps—for all purposes?

GEO. D. ROPER CORPORATION, ROCKFORD, ILLINOIS

ROPERS AT THE *heart* *OF ANOTHER NEW MILL!*

This new high speed hot mill wouldn't operate five minutes without lubricants under pressure. The unfailing operation of Roper Rotary Pumps is as vital to this mill as the performance of your heart is to you. Because Roper Pumps have proven to be dependable pumps—they were picked for the "heart" of this installation.

Offices: PITTSBURGH and Other Principal Cities

ROPER Rotary PUMPS

DEPENDABLE - SINCE 1857

Steel Plant Maintenance Department," by T. E. Hughes, superintendent of maintenance, Carnegie-Illinois Steel Corp., Duquesne, Pa.

"Factors Influencing the Selection of Insulated Cables for Steel Mills," by F. L. Aime, electrical engineer; S. J. Rosch, manager insulated products development and R. B. Steinmetz, district engineer of the Anaconda Wire & Cable Co., Hastings-on-Hudson, New York.

9:00 A.M.—South Ballroom

Third Floor

Lubricating Engineering Division

"Reasons Governing the Use of E. P. Lubricants — Applications and Methods of Use," by Ralph C. Walters, Penola, Inc., Chicago.

"Lubrication of Morgoil Roll Neck Bearings," by H. H. Wood, engineer, Morgan Construction Co., Worcester, Mass.

"Steel Mill Lubrication and Lubricants for Anti-Friction Bearings," by O. L. Maag, Timken Roller Bearing Co., Canton, O.

12:30 P. M.

Inspection trip to Gary Sheet and Tin Plate Division, Carnegie-Illinois Steel Corp., Gary, Ind.

Thursday, Sept. 30

9:00 A.M.—North Ballroom

Third Floor

"D. C. Drives for Mill Runout Tables and Coilers," by L. A. Umansky, General Electric Co., Schenectady, N. Y.

"Corrosion Proof Tank Linings," by Roy C. Werking, National Carbon Co., Cleveland, O.

"Electrolytic Cleaning Lines for Removal of Oil From Strip Steel," by M. Stone, engineer, development, United Engineering & Foundry Co., Pittsburgh.

"The Future Possibilities of Producing Various Structural Shapes by the Cold Roll Forming of Strip Steel," by Howard W. Kane, Kane & Roach, Inc., Syracuse, N. Y.

9:00 A.M.—South Ballroom

Third Floor

Welding Engineering Division

"Welding Economics and Application," by E. W. P. Smith, consulting engineer, Lincoln Electric Co., Cleveland.

"The Development and Application of Covered Electrode Arc Welding," by A. M. Candy, consulting engineer, Hollup Corp., Chicago.

"Alternating Current Arc Welding Advance," by C. J. Holslag, Electric Arc Cutting and Welding Co., Newark, N. J.

Motion pictures by Clyde Bassler, Taylor Winfield Corp., Warren, O.

Thursday, Sept. 30

1:30 P.M.—North Ballroom

Third Floor

"The Manufacture and Use of Iron and Steel Rolls," by Walter H. White, general superintendent and F. L. MacQuarrie, chief engineer, Pittsburgh Rolls Corp.

"Notes on Blast Furnace Design and Practice," by A. J. Boynton, vice president, H. A. Brassert & Co., Chicago.

"Developments in Rolling Flat Steel Products During 1937," by Stephen Badlam, consulting engineer, Pittsburgh.

6:30 P.M.—Boulevard Room

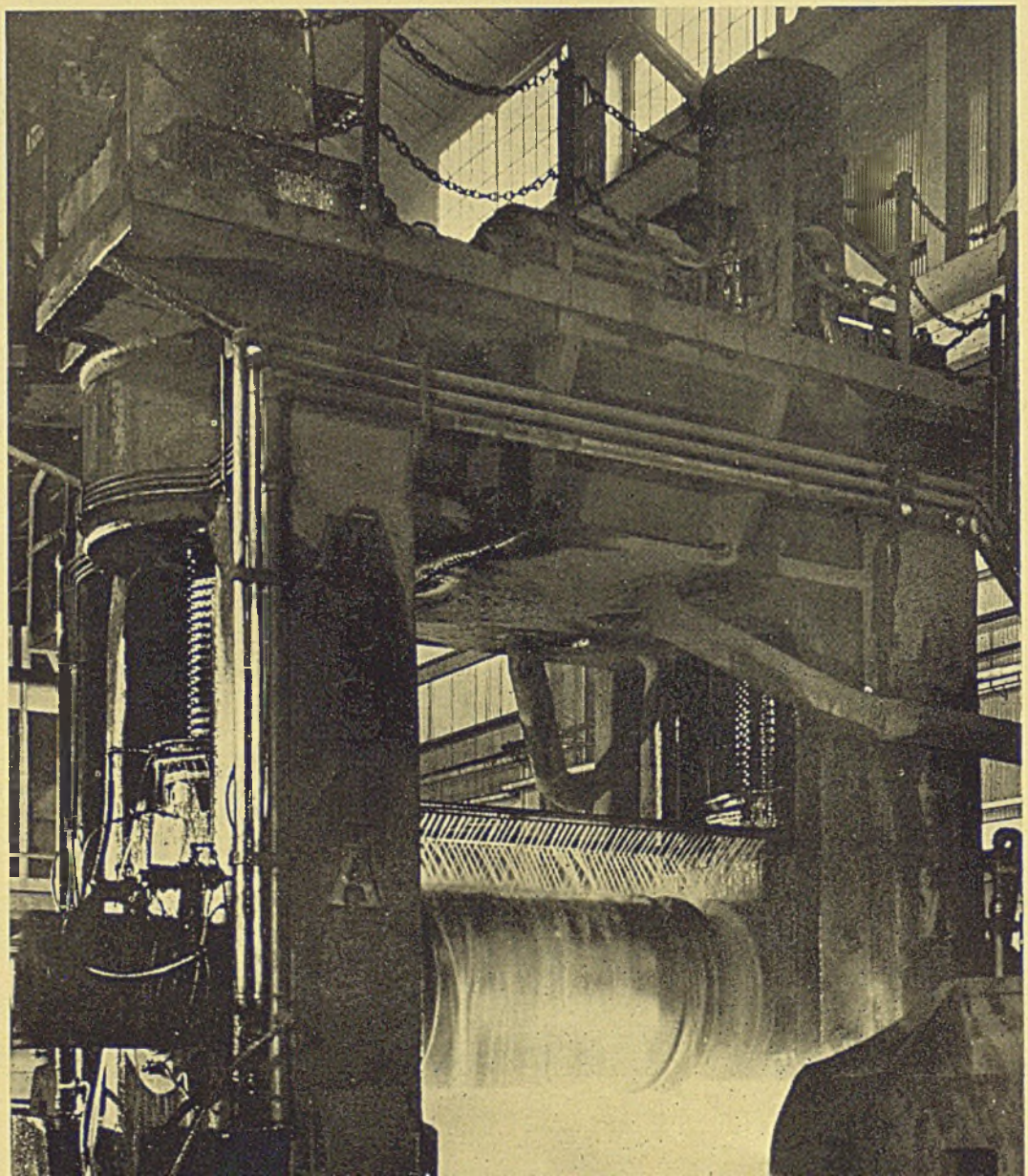
Second Floor

Banquet and Dance

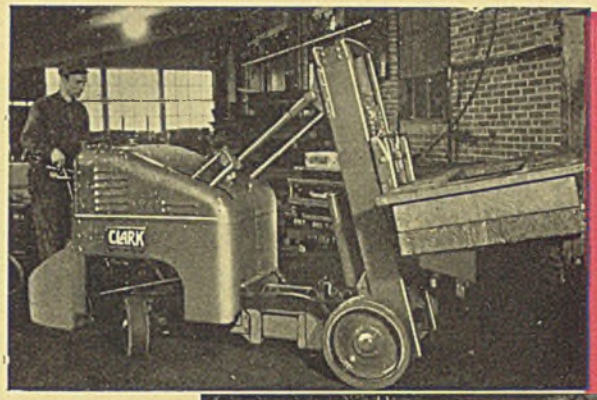
Friday, Oct. 1

9:00 A.M.

Inspection trip to hot and cold steel mills, Inland Steel Co., Indiana Harbor, Ind.

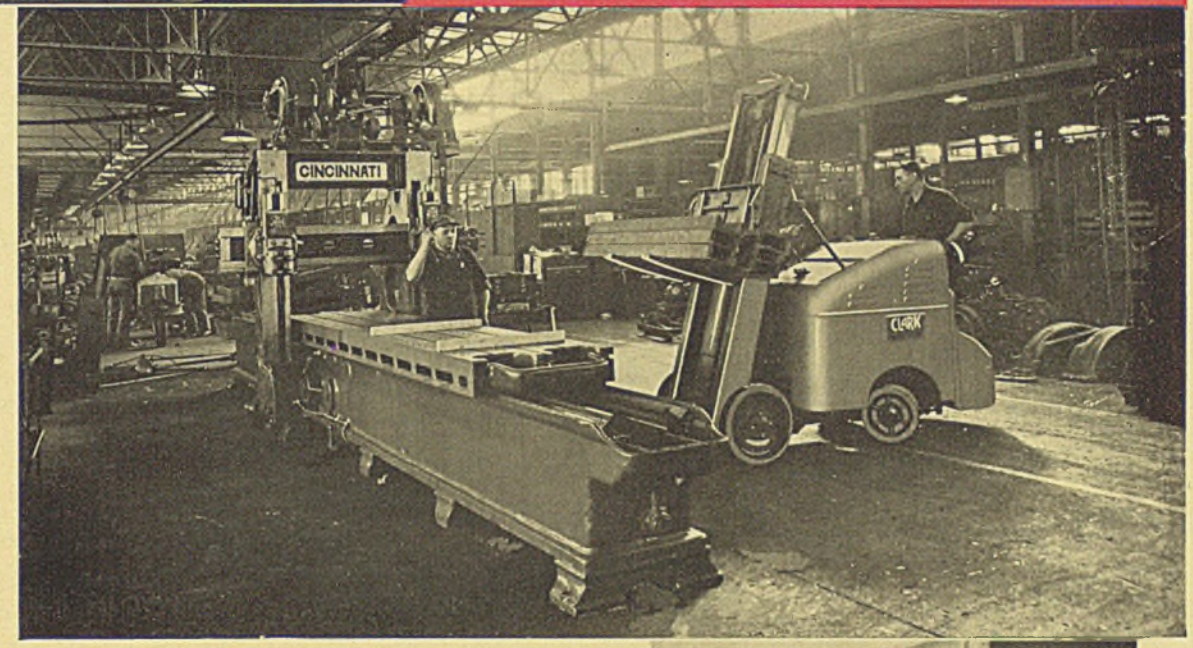


APPROACH side of reversing blooming mill, Indiana Harbor plant, Inland Steel Co. This is one of the plants on the inspection tours scheduled for the A.I.S.E. meeting



CLARKS help you lift bonuses

Heavy dies quickly handled from storage to press by Clark 3-ton Finger Tilting "Tructier".



Clark 3-ton Finger Tilting Telescopic "Tructier" keeps machine tools supplied with raw stock.

Colorado Fuel & Iron Co. handles 8,000-lb. loads of steel balls with Clark Truclift - 6-wheel steer, rear-wheel drive.

With stiff production quotas set (and desirable bonuses hung up for meeting them) you'll find "Clarks" doubly profitable. These powerful, versatile, tireless lifters and carriers perform a hundred tough moving jobs. They keep machines and men busy, decrease down time, keep materials and finished product from piling up in the way. They're on the job 24 hours a day—require a reasonable minimum of attention. They operate economically. *They speed production.*

Get an Intra-Plant Traffic Survey

Our engineers will be glad to survey your plant haulage problem—suggest economical means for solving it. Asking for a careful survey places you under no obligation. Write for details.

CLARK TRUCTRACTOR

Div. of Clark Equipment Co.

Battle Creek, Michigan

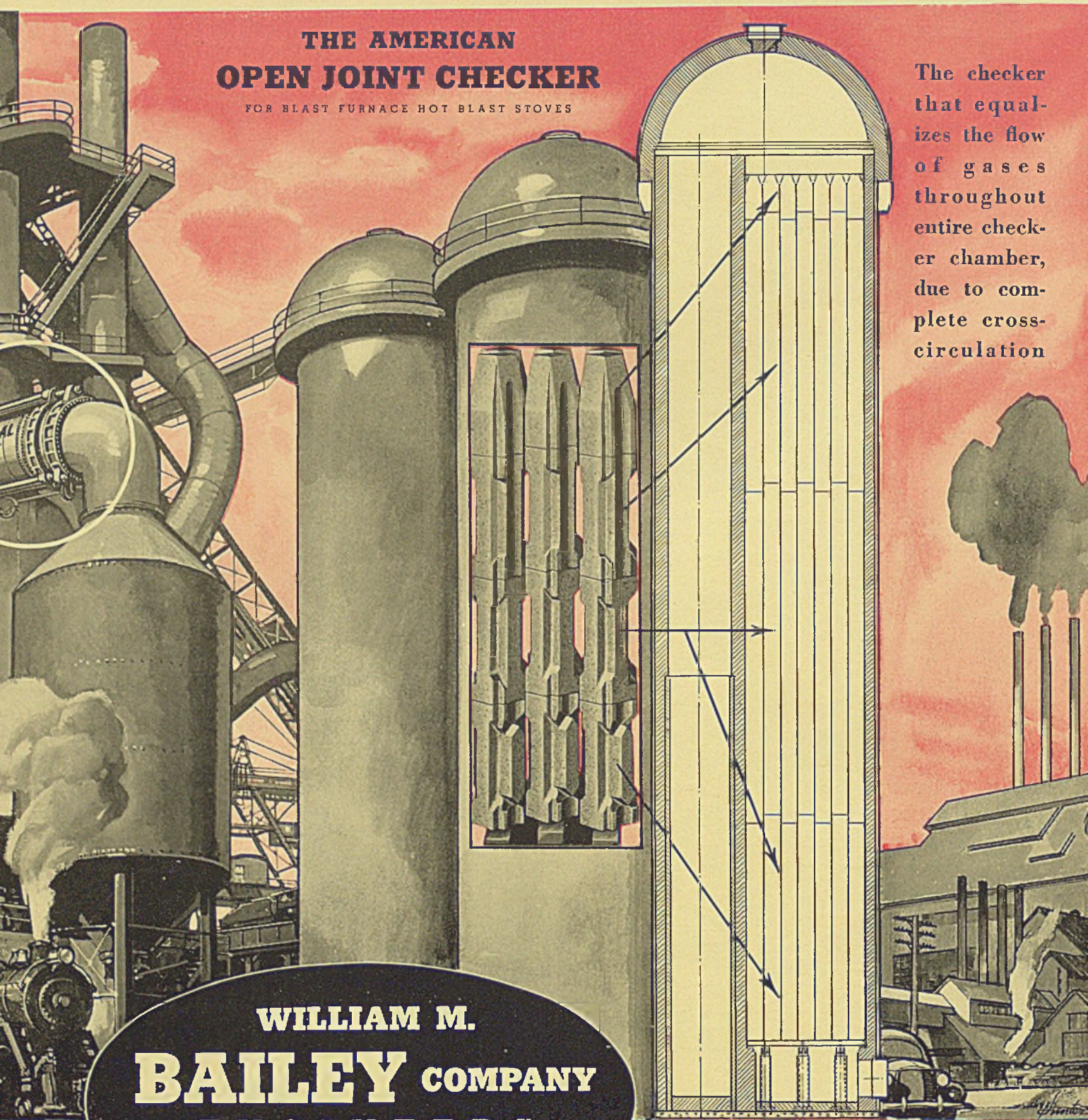
Direct Gas Powered —always. Since 1917

BAILEY BLAST

THE AMERICAN
OPEN JOINT CHECKER

FOR BLAST FURNACE HOT BLAST STOVES

The checker that equalizes the flow of gases throughout entire checker chamber, due to complete cross-circulation



WILLIAM M. BAILEY COMPANY
ENGINEERS
PITTSBURGH, PA.
U. S. A.

MAXIMUM BRICK WEIGHT
STABLE CONSTRUCTION • LOW BRICK COST • LOW LABOR COST
CHANNELLING ELIMINATED

FURNACE *Specialties* +++

LOOK OVER THIS COMPLETE SERVICE!

1. The Thermal Expansion Goggle Valve
2. The American Mechanical Goggle Valve
3. The American Open Joint Checker for Blast Furnace Hot Blast Stoves
4. The American Cold Blast Valve
5. Blast Furnace Blow Off Valve
6. The American Safety Cinder Notch Stopper
7. Vreeland Pug Mill Equipment for Blast Furnace Dust Catcher
8. American Water Metering Method for Blast Furnace Skip
9. American Mixer and Check Relief Valve
10. The American Steel Bottom for Blast Furnace Hot Blast Stoves
11. The American Chimney Valve
12. Blast Furnace Mixer and Drop Valve
13. American Globe Strainer
14. American Sintering Plant Pug Mill
15. American Pig Releaser for Pig Casting Machines
16. American Gas Seal for Gauge Rods
17. "Superior" Checker for Regenerative Furnaces

17

SEPARATE SPECIALTIES MAKES **ONE** *COMPLETE SERVICE TO THE INDUSTRY*

GET IN TOUCH FOR FULL INFORMATION.
OUR ENGINEERS ARE YOUR ENGINEERS.

Presenting—

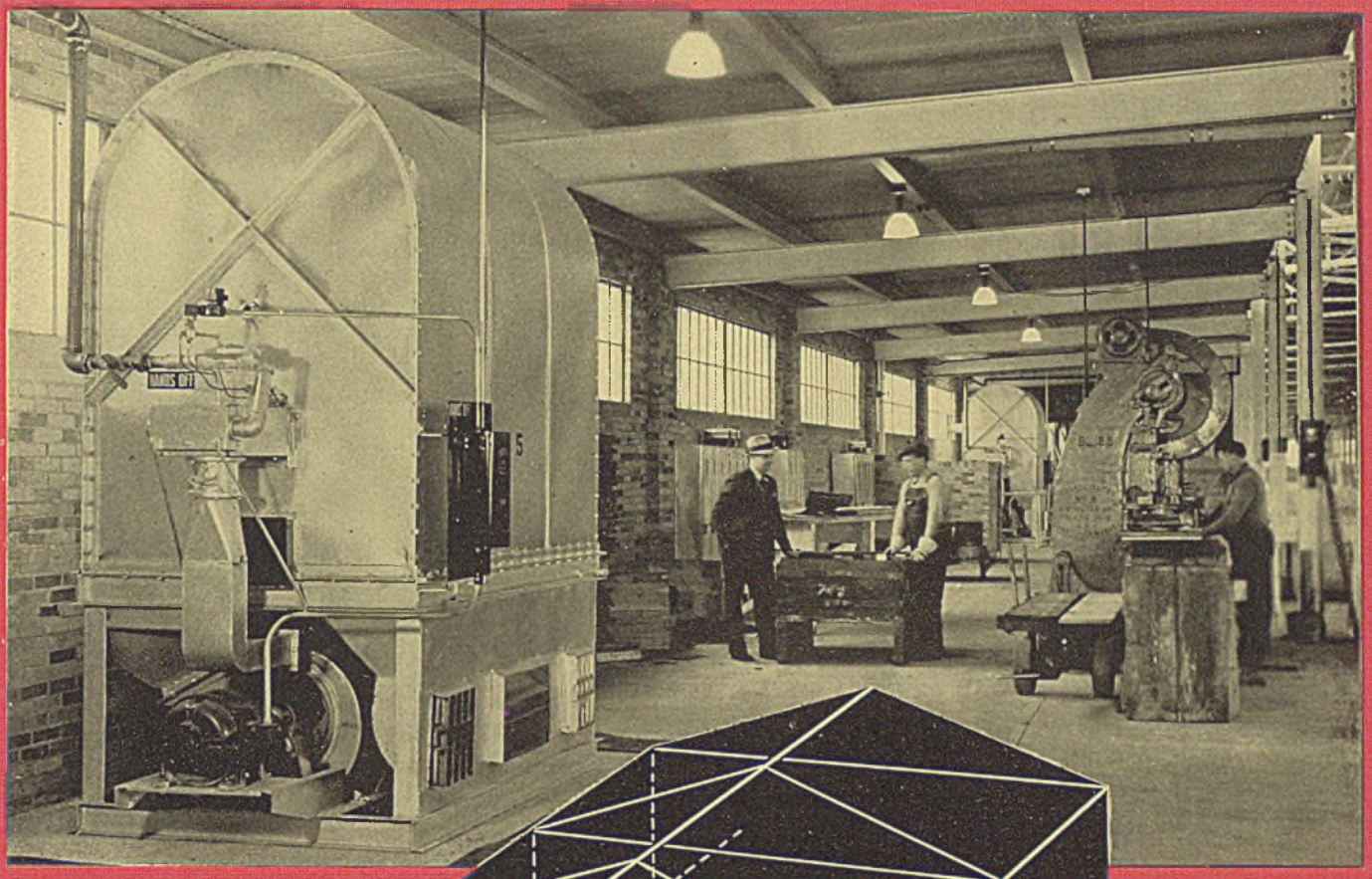
EXPOSITION HOURS

Tuesday	1:00 P.M. to 10:00 P.M.	Thursday	10:00 A.M. to 10:00 P.M.
Wednesday	10:00 A.M. to 10:00 P.M.	Friday	10:00 A.M. to 10:00 P.M.

LOCATION — STEVENS HOTEL, CHICAGO

LEE HEAT IS FLEXIBLE • ECONOMICAL • SAFE • AND THOROUGHLY MODERN

FOR INDUSTRIAL HEATING



WHEREVER YOU HEAT

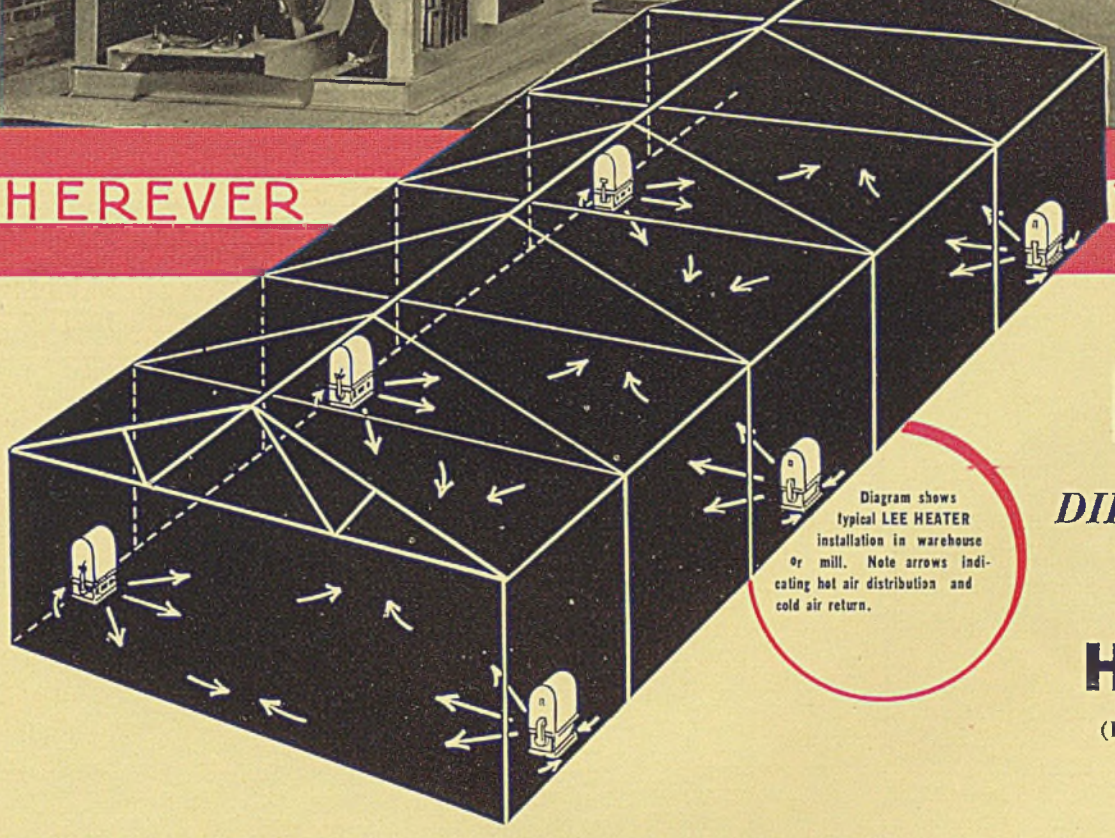


Diagram shows typical LEE HEATER installation in warehouse or mill. Note arrows indicating hot air distribution and cold air return.

LEE

DIRECT FIRED

UNIT HEATER

(PATENT PENDING)

The LEE System of industrial heating will give you, the plant and mill owner, provable dollar and cents savings every day it is in your plant.

LEE Heaters will save for you because of the following reasons. (and it will pay you to ask for proof of every one.)

LOWER FIRST COST—Usually substantially less.

LOWER ANNUAL FUEL COSTS—Higher efficiency and less stand by loss. Uses oil, gas, coal, coke, with equal facility.

LOWER MAINTENANCE COSTS—Possibility of, leaking valves, freezeups, and broken traps are entirely eliminated.

LOWER LABOR COSTS—Skilled or licensed operators are not required because of the extreme simplicity of LEE Unit Heaters.

QUICKER STARTING—Heat distribution starts immediately with the fire.

EVEN DISTRIBUTION OF HEAT—Warm air is delivered over entire floor area or in localized sections as required with minimum temperature differential between floor and ceiling.

LESS VAPOR AND MOISTURE—Dry warm air eliminates rust in warehouse products.

SUMMER VENTILATION AND COOLING—The system is used in summer for air circulation and cooling and in winter for heating.

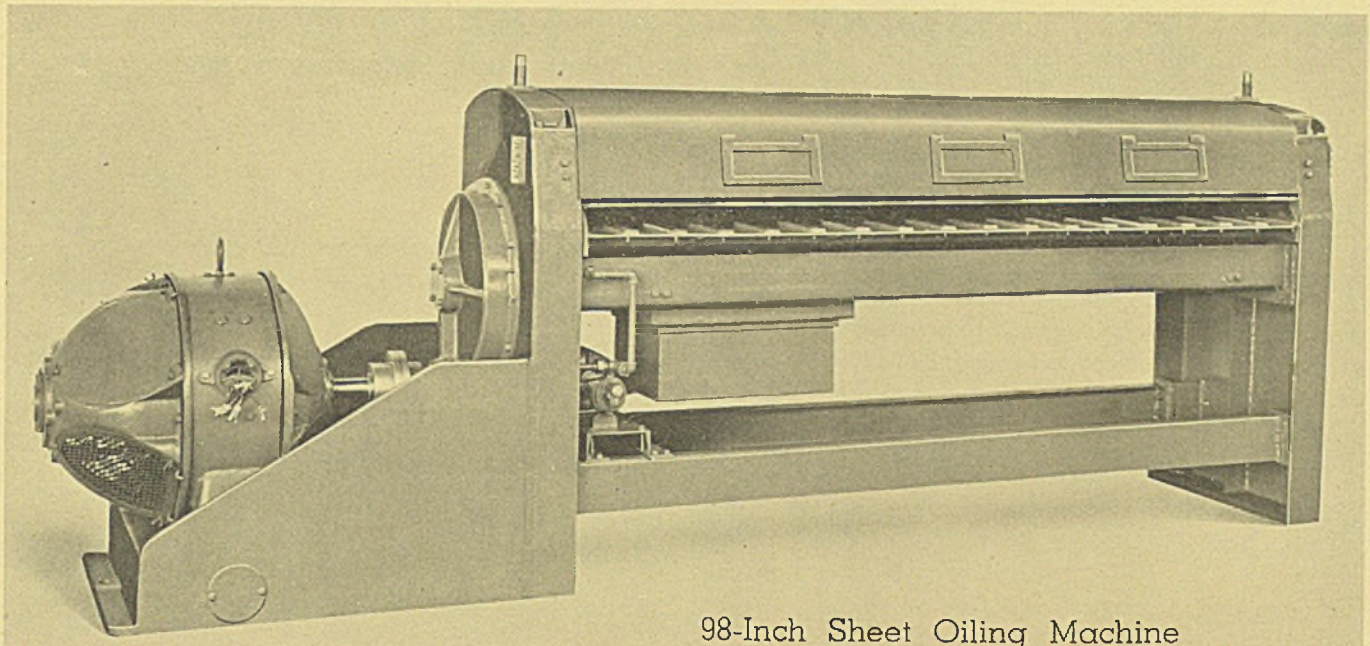
Your inquiry is invited. We will gladly give full information. No obligation.

Write for new bulletin—Just off the press.

DRAVO CORPORATION

MACHINERY DIVISION

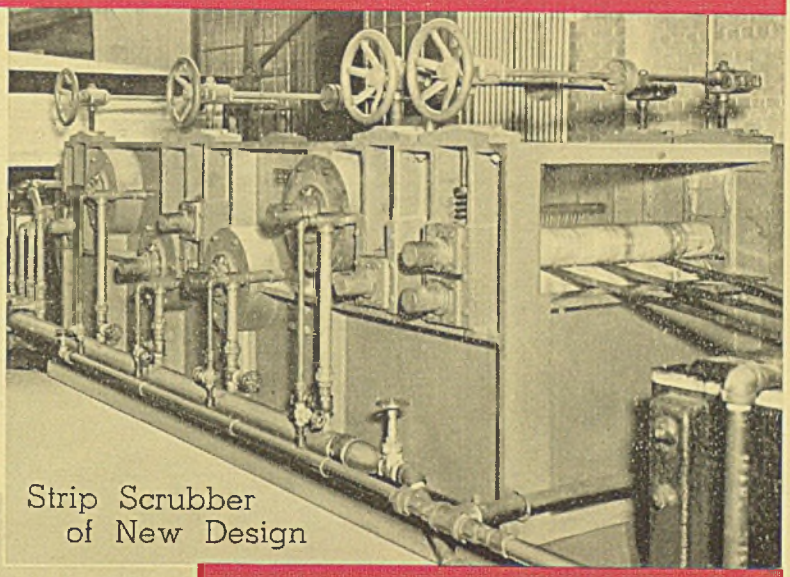
DRAVO BLDG. PITTSBURGH, PENNA.



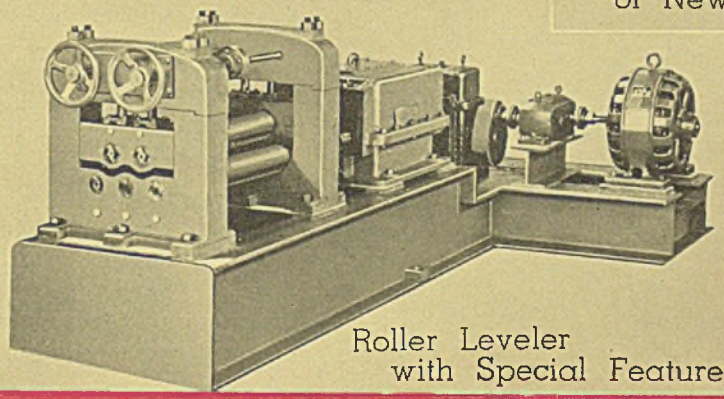
98-Inch Sheet Oiling Machine

SHEET AND STRIP...

MACHINERY . . . designed and built by the Fessler Machine Company to meet the most exacting specifications. Our unexcelled engineering service can be used in co-operation with your own expert engineers to develop machinery to meet your special requirements. Our machines incorporate advanced features of engineering design. Call on Fessler for modern machinery development.



Strip Scrubber
of New Design



Roller Leveler
with Special Features

ROLLER LEVELERS — RECOILERS
OILING MACHINES — REEL BLOCKS
SCRUBBERS — PINCH ROLLS
SHEARS — UNCOILERS
SHEET AND STRIP PROCESSING MACHINERY
CONTRACT MACHINE WORK

FESSLER MACHINE CO.

ENGINEERS AND MANUFACTURERS
SHARON, PENNSYLVANIA

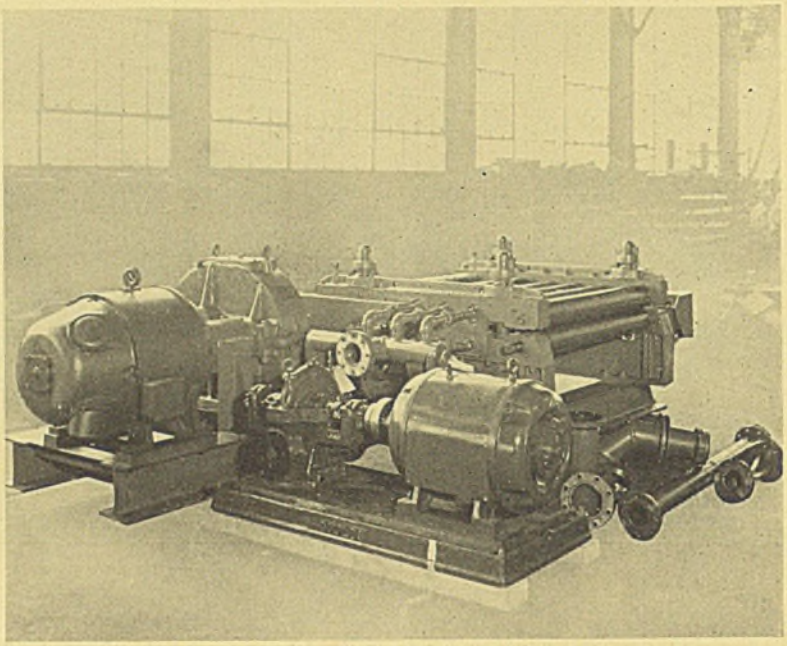
HYDRO SCRUBBER . . .

PATENTED

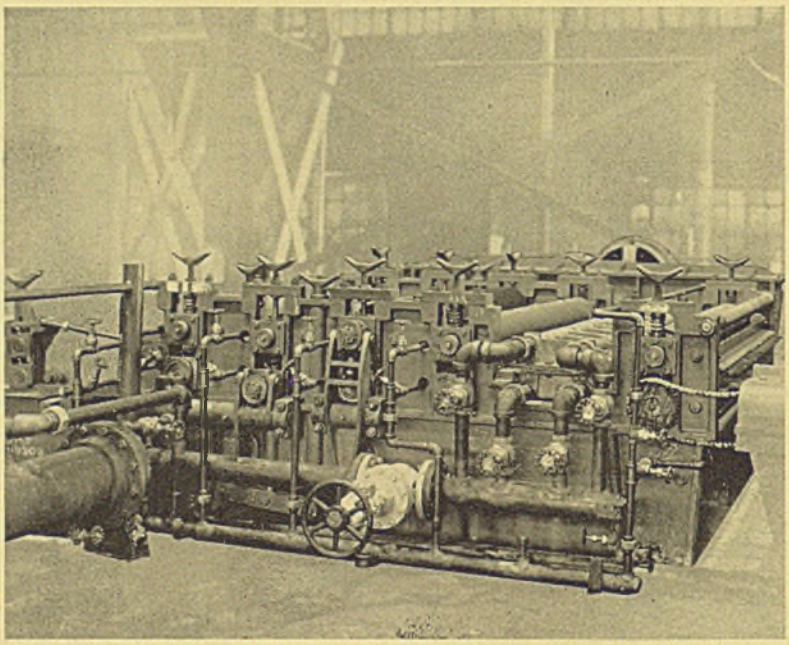
This Scrubber uses no brushes or drier. It uses high temperature water for the scrubbing action. The water heats the sheet to such a temperature that after passing through the wringing rolls, the sheet will dry on the runout conveyor and can be piled without sweating.

The water is reused, requiring considerably less water than other types of machines. The water in the tank need be changed only twice a day. The water is heated by steam and since it is reused, the consumption of steam is very low.

This unit is furnished complete with pump, tank and conveyors.



Revolving Brush Scrubber



This is our high production type of scrubber. It is equipped with anti-friction bearings throughout, and operates at speeds of 100 to 300 ft. per minute. All rolls are driven from separate drive box through universal couplings. Brush rolls are high speed and have a longitudinal oscillating motion, which eliminates brush streaks.

This Scrubber is furnished with complete auxiliary equipment such as Acid Dip Tanks, Water Spray Tanks, Caustic Spray Tanks, Oilers, etc.

When arranged with the proper auxiliary equipment this machine will—

1.—Bright pickle, scrub and dry previously wet pickled sheets and strips.

2.—Clean, scrub and dry Hot Rolled sheet and strip steel in the "as rolled" state or in a pickled, normalized, or annealed condition.

OUR ENGINEERS ARE AT YOUR SERVICE AT ANY TIME

Chilled and Alloy Iron Rolls
Iron and Iron Alloy Castings up to 50 Tons

The Youngstown Foundry & Machine Co.

Youngstown, Ohio

—FIFTY YEARS OF SERVICE TO THE STEEL INDUSTRY—

ship to anticipate Modern Production plus expert experience to design and build completely new Heavy Duty Equipment.

*Of Greater Capacity — for increased tonnage transportation at lowest cost.

*Completely equipped with every proven "AUTOMATIC" feature:

— For Utmost Efficiency and Economy.
— For Dependable Performance.
— For Maximum Safety with speed.
— For Most Flexible Operation.

STEEL MEN HERE'S A RECORD YOU CAN PROFIT BY

All "AUTOMATICS" are designed and built in this large modern plant at Chicago.

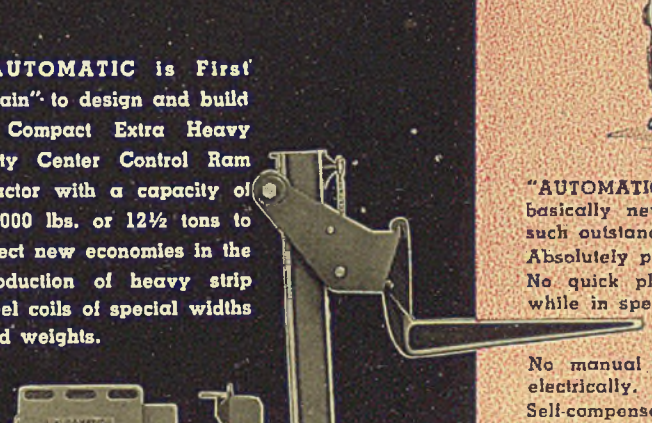
AUTOMATIC was First" to design and build the most compact Ram and Fork Tractor having these features:

Shortest overall length and turning radius for greatest flexibility and ease of operation.
Center control for safe clear vision driving.
Front wheel drive for greater traction.
Rear wheel Power Steer for quick right angle pick up.
Uniform load distribution for low center of gravity and stability, plus Tilting uprights for safety in handling.

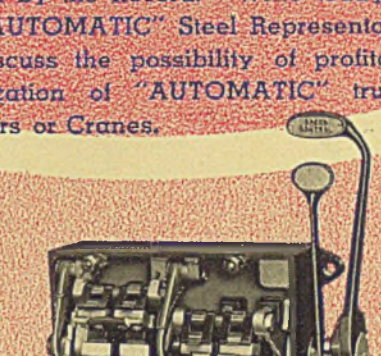
"AUTOMATIC was First" to develop and build a Heavy Duty traveling motorized upender on an industrial center control tractor—to afford new opportunities for more flexible and economical handling of strip steel coils during the process of manufacture.

"AUTOMATIC was First" to design and build a Heavy Duty Center Control Bosh Truck for more efficient storage and safer transportation of bosh tanks in connection with the process of producing tin plate.

"AUTOMATIC is First Again" to design and build a Compact Extra Heavy Duty Center Control Ram Tractor with a capacity of 25,000 lbs. or 12½ tons to effect new economies in the production of heavy strip steel coils of special widths and weights.



AUTOMATIC was First" to design and build a eavy Duty Motorized Conveyor platform Lift uck for quick and efficient distribution of sheet eel loads to and from conveyor ends in finish- g departments.



"AUTOMATIC was First" to design and build a basically new Industrial Truck Controller having such outstanding features as:
Absolutely plug proof and fool proof operation.
No quick plowing into high speed or reversing while in speed.

No manual adjustment required mechanically or electrically.
Self-compensating Rotor Brushes, constant tension.
Commutator type extruded segments unit molded in permanent insulated bases.
No voltage load on return to neutral. Built in dynamic brakes.

Reviewing this record you can readily understand why so many Steel Men have placed their confidence in the ability of "AUTOMATICS." Such confidence must be merited. We believe the hundreds of successful "AUTOMATIC" installations in the steel industry and the continually increasing purchases of such "AUTOMATIC" equipment are by far the answer.

So if you have steel handling problems, "Profit by the Record." Write today for an "AUTOMATIC" Steel Representative to discuss the possibility of profitable application of "AUTOMATIC" trucks, tractors or Cranes.

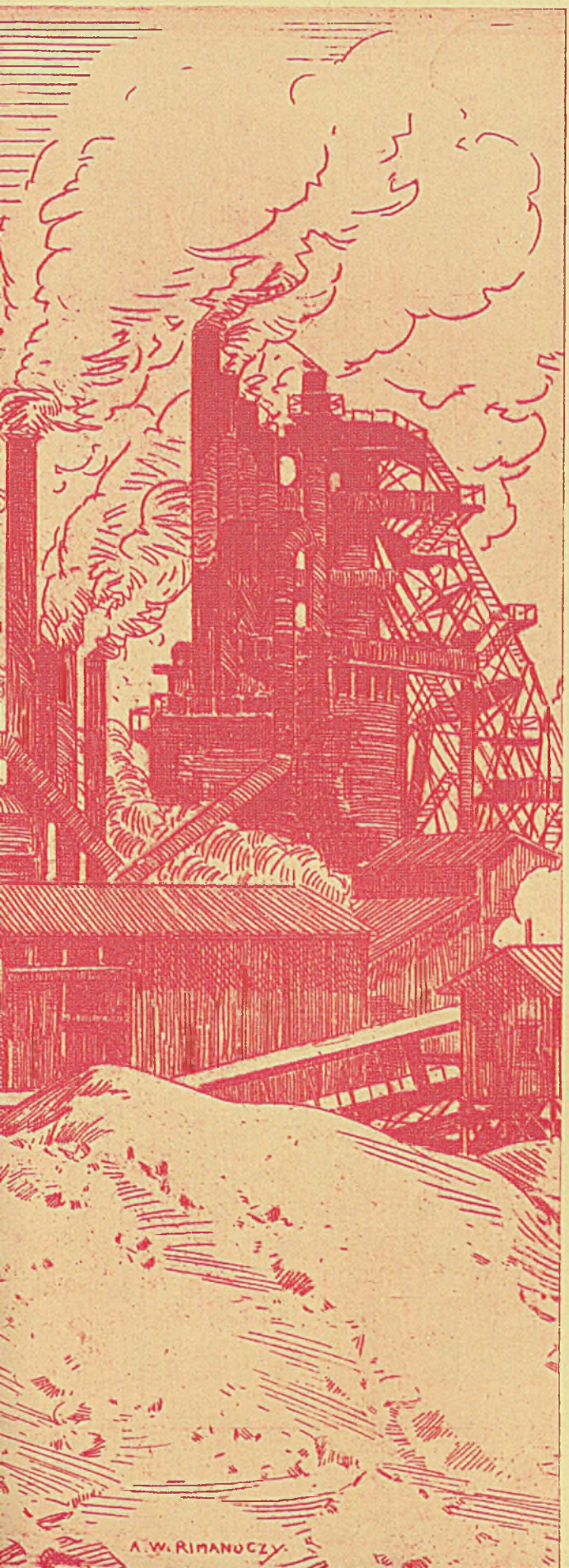
AUTOMATIC TRANSPORTATION COMPANY
73 WEST 87TH STREET CHICAGO, ILL.

PIONEER MANUFACTURERS OF POWER TRUCKS - TRACTORS & CRANES

WELCOME TO CHICAGO . . . ASSOCIATION OF IRON AND STEEL ENGINEERS . . . AT THE HOTEL STEVENS

The Seven Ages of Steel

According to reports published by the American Iron and Steel Institute, the 34,000,000 tons of finished steel produced in the United States in 1936 will have an average life of 33½ years.



"Then shall the dust return to the earth as it was."
—(*Ecclesiastes* 12-7)

Under Earth's old wrinkled surface,
'Neath her corrugated hide,
And as ancient as an heirloom from the stars,
Lies the ore of master metal,
Lies the king of ores, the iron,
Lies the sterling red brown oxide, chief of ores.

From the ranges of Wisconsin,
And the Minnesota Mines,
Where the magic hematite is heaped in dunes:
Out from Michigan and Sweden,
Alabama, Cuba, Spain,
Comes the ferric dust, the treasure of the earth.

Staining deeper, ever deeper
The night skies of twenty states
Is a flaming, seething tempest, whirling up
From a holocuast of ore,
From a coke and limestone welter,
And the molten metal sinks, and gushes forth.

Into maws infernal, hellish,
Into blinding open hearths,
Into Bessemer converters, pigs and scrap
Like dumb offerings to Moloch
Are consigned unto the flames,
But where Moloch winnowed ashes, here is steel!

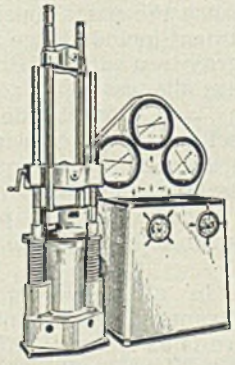
Yea, the ingots glow and glimmer
As they ride into the mills,
But they fade and scale when jarring through the rolls;
Oh, the thunder of the hammers,
And the rumble of the rolls
Is the jangling, strident marching song of steel!

Ho, the great Djinn of Aladdin
Never dreamed a dream like steel!
In its finished state it serves a million needs;
Yea, it serves in ships and fish hooks,
In machines, and trucks, and rails:
It's been mankind's witness to a conquered earth.

Though it's conquered, Earth is jealous,
And the steel that rules it now,
Like the men who took and fashioned it from ore,
Soon will fall into the scrap yard,
Or will moulder into rust,
And in one score, thirteen years—return to dust!

—*Pat Dwyer Jr.*

Leadership IN TESTING METHODS and EQUIPMENT



Rule-of-thumb gives way! Buyers want facts and figures! To provide them . . . the testing machine, once solely a laboratory tool for research purposes, has taken on added duties. Now, in many progressive plants, it is providing test data not only to guard product quality, but to supply buyers with detailed information about the goods they purchase.

Thus United States Steel Corporation Subsidiaries, as shown in one of their recent advertisements, extend to users of U. S. S. Stainless, a metallurgical service, wide in scope, to help them solve their individual problems.

It is a noteworthy fact that practically every steel company that has installed testing equipment during the past five years purchased Southwark-Emery Hydraulic Testing Machines and, in most cases, Southwark Stress Strain Recorders and other accessory equipment.

TESTING MACHINES • STRESS STRAIN RECORDERS and CONTROLLERS • EXTENSOMETERS, STRAIN GAGES • VIBROGRAPHS • TORSIOGRAPHS

BALDWIN-SOUTHWARK CORPORATION

SOUTHWARK DIVISION, PHILADELPHIA

SURFACE TREATMENT AND FINISHING OF METALS

UNIT finishing operations are kept simple as possible. Left is shown rack of enameled parts being wheeled into electric oven. Center is general view of plating department showing orderly arrangement of equipment. Right is shown type of still plating tank found by this company to be most economical for its particular work

Selection of Finishing Equipment Is Dictated by Manufacturing Economy

PRIME object in laying out a finishing department and selecting methods and materials to be used, is to obtain the best possible finish at the lowest possible cost. Type of finish, of course, is determined by appearance requirements, service conditions, type of material being finished and innumerable other conditions.

Finishing equipment is selected as dictated by manufacturing economy or at least it should be. Use of automatic equipment and straight line methods of production are not always the most economical, as is shown by the methods used at Addressograph-Multigraph Corp., Cleveland. This company manufactures a highly specialized line of automatic office equipment which requires the utmost precision in its manufacture. Since a large proportion of the machines are custom built, the volume of individual parts is not large when judged by modern heavy production standards. The overall number of small intricate parts required for these machines, however, is very large and the equipment required to finish them must be as flexible as that used in a modern job shop.

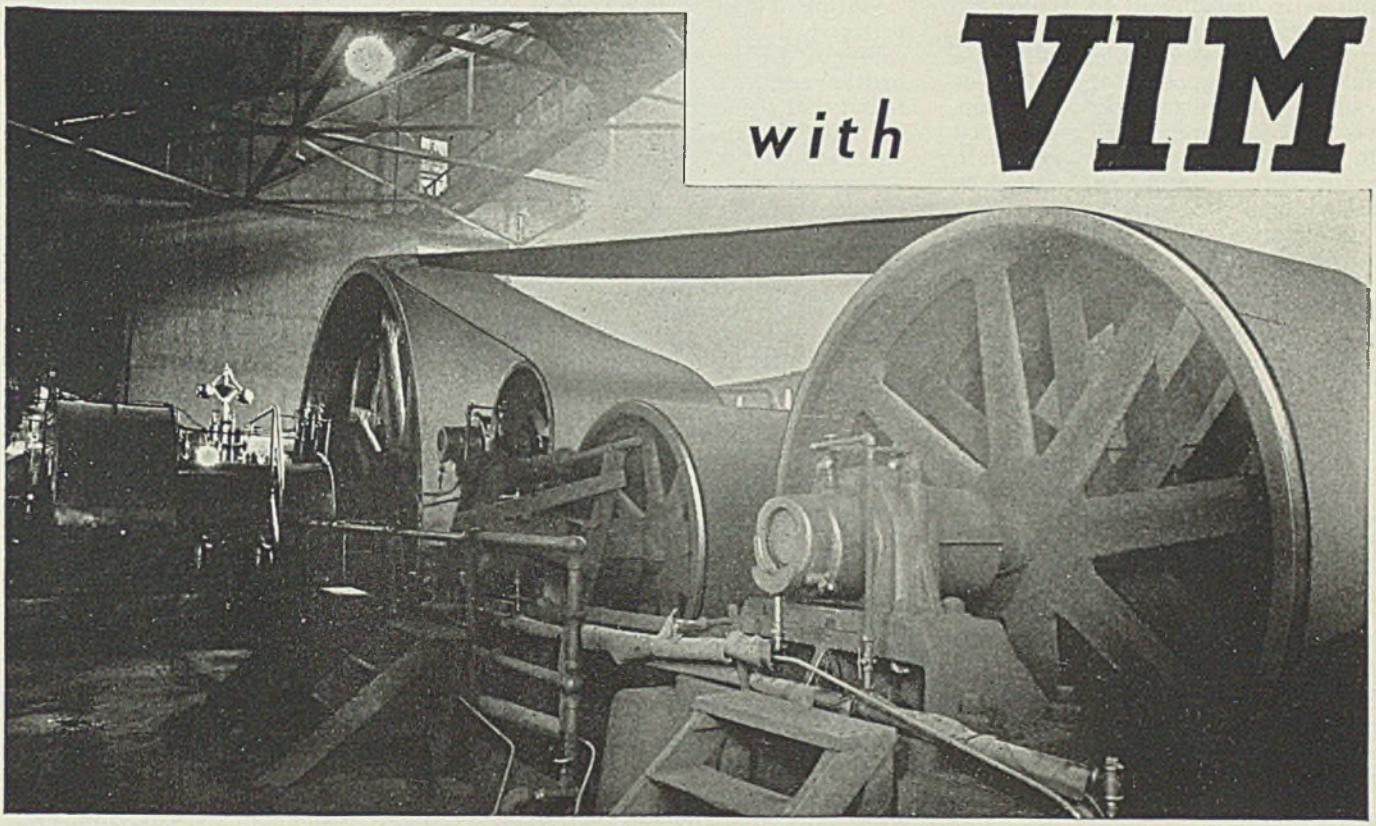
Three Types of Finish Applied

The finishing department is divided into two sections—electroplating and enameling—each in charge of a foreman well trained in his particular field.

In the electroplating department, three types of finish are applied—nickel, cadmium and oxidized copper. Straight copper is also applied but not as an individual finish. It is used either as an undercoat or as a temporary finish for selective hardening, about which more will be said later. Since the parts finished in this department include large flat steel pieces, gray iron sand castings, aluminum base die castings, some brass castings, and a multitude of machined steel parts, all of which must be plated in the same equipment, considerable ingenuity and planning are required on the part of the foreman in handling each lot of parts.

First step in electroplating is cleaning. In general, the cleaning cycle used here is as follows: First is an electrolytic cleaning in a solution containing caustic soda, a proprietary alkaline cleaner and sodium cyanide. This is followed by a hydrochloric acid pickle, cold water rinse, cyanide dip and hot water rinse in the order named. This pro-

MILLION TON PRODUCTION



with VIM

Skelp mill drives manned with VIM Leather Belts have broken all tonnage records! Above is one that has passed a million tons and still going strong. You well know it's the cost of belting per ton of steel that counts.

Many a belt has been tried and found wanting on these killing rod mill drives. Recently we learned of a competitive belt that was removed because it failed to deliver even one-half the tonnage the average VIM belt provides.

Reasons why are self-evident to the man who knows VIM—its hide origin, its care in tannage and manufacture, its rigid inspection.

There's a book that tells the story, and helps your belt man because it's full of practical transmission data. Write for "How to Belt Your Drives for More Profit."

●

E. F. HOUGHTON & CO.
Chicago - PHILADELPHIA - Detroit
(Remember, too, that VIM Leather Packing Service is highly regarded by steel men; you can use it!)

VIM TRED LEATHER BELTING

cedure is varied, of course, to suit individual cases.

All parts to be plated are given a preliminary copper "strike" to speed subsequent plating operations. This is true even in the case of brass castings which are nickel plated. All plating is done either in still tanks or barrels. Wherever possible, small parts which can be tumbled are plated in barrels. Cyanide copper baths are used throughout and in connection with this, mention should be made of the cleaning cycle which follows copper plating. Cyanide plating salts are difficult to remove by ordinary rinsing methods and if not completely removed they will cause subsequent deposits of nickel or cadmium to blister and peel. Copper deposits are, therefore, dipped in hydrochloric acid and rinsed in water before plating with nickel or cadmium.

Standard nickel and cadmium baths are used in this department with slight modifications by the plater in charge. Organic brighteners are used in varying amounts to produce the degree of brightness required on the various parts. In some cases a slight amount of nickel is added to the cadmium bath and cadmium is occasionally added to the nickel baths to improve brightness.

This company uses nickel anodes of 96 per cent purity enclosed in filter bags and obtains nickel deposits which satisfy high standards of quality. No "high purity" anodes are used at any time. Nickel coatings are buffed to bring them to the desired degree of brightness. Cadmium coatings are given a satin finish by rubbing them with a fine grade of steel wool.

Hardened Parts Are Plated

A large number of case hardened parts and spring steel parts are plated in this department. Special precautions are required in each case. Parts which are entirely case hardened and all heat treated tool steel parts are given the complete cleaning cycle described above. This is sometimes not sufficient to entirely remove the oxide film and hand brushing is resorted to to insure thorough cleaning. The parts are then copper flashed and coated with nickel or cadmium as the case may be. Some parts require case hardening only on certain surfaces. This is accomplished by plating the entire part with copper and buffing the coating from the surfaces to be case hardened. The part is then immersed in the case hardening bath which affects only the unplated surfaces. The remaining copper is stripped in a cyanide solution, the part is thoroughly cleaned and plated with cadmium.

Plating of steel springs with nickel is frowned on by many plants because of the fear of hydrogen embrittlement. This company has found that the embrittling effect can be entirely removed by boiling the parts in water after plating. Nickel adherence is assured by thorough removal of the blue oxide before plating. The ductility of the nickel deposits is demonstrated by the fact that some flat steel parts are beaded after plating damage to the deposit.

In the enameling department, just as in the plating department, a wide variety of parts in many shapes and materials are finished. Again the number of parts of any particular kind is not sufficient to warrant conveyor methods of finishing.

Two Colors Are Used

Most parts are finished with a wrinkle enamel which is applied by spray. The Addresograph line is finished with a green wrinkle and the Multigraph line with black. Black is used on the latter line because it will not show stains from the black ink used in the machines. Wrinkle finish is used not only because of its pleasing appearance but because it hides small surface defects and does not require the touching up so often necessary when smoothly finished parts reach the assembly floor.

The majority of enameled parts are cast iron though there is a considerable amount of both flat and machined steel parts as well as die castings. Iron castings are sandblasted or tumbled before reaching this department and it is only necessary to grind and file the surface imperfections before finishing.

Approximately 80 per cent of the castings are machined prior to finishing and the remainder are machined after finishing. Some parts are partially finished, machined and then completely finished. The order of operations is a matter of manufacturing economy and is decided upon after a thorough cost survey. Metal masks are used to protect machined surfaces when finishing machined parts. Holes are usually protected with rolls of paper.

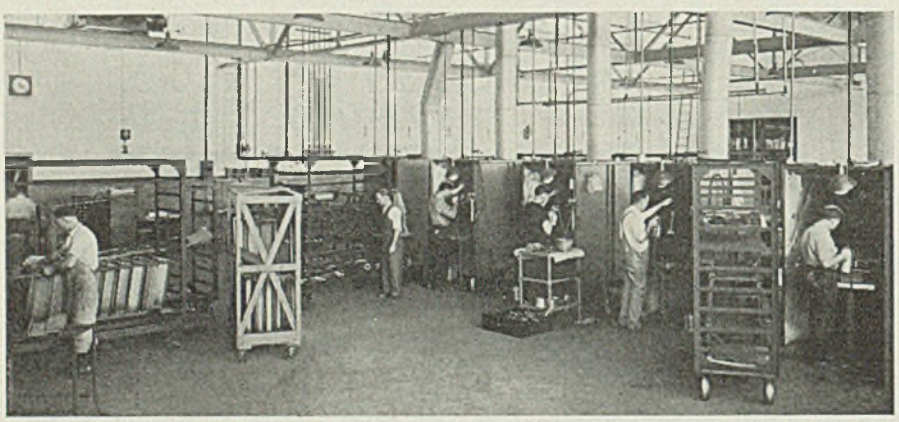
Batch Ovens Are Used

All parts are given one coat of enamel and placed in racks which are wheeled into batch ovens. Both gas and electric ovens are used Wrinkle finishes are baked at 200 degrees Fahr. for 45 minutes, during which time the wrinkle forms; the temperature is then raised to 300 degrees Fahr. and held there for 2 hours. Wrinkle enamels are sensitive to changes in baking conditions and must be watched closely. Ovens are automatically controlled and equipped with elaborate safety devices.

Supplementary equipment such as drawers and tabs for filing purposes are finished in this department with smooth baking enamels. Tabs are finished in 14 colors and baked at 200 degrees Fahr. for 4 hours. Drawers are finished in green and baked at 300 degrees for 1¼ hours. A noteworthy economy measure enters into the baking of these parts. Since baking conditions need not be watched as closely as in the case of wrinkled finishes, these parts are placed in the ovens just before the workmen leave for the day. The night watchman checks temperatures during his rounds and shuts off the heat when the baking cycle is completed. This procedure not only frees the ovens for wrinkle enamel work during the working day but eliminates the necessity for investing in more ovens to do this work.

Parts which come to this department coated with heavy grease are cleaned in a proprietary caustic cleaner and rinsed with cold and hot water before finishing.

The entire department is well organized and all work to be enameled is routed and scheduled to obtain maximum efficiency and speed of operation. Good housekeeping is characteristic of the entire plant and in keeping with precision and accuracy of the work turned out.



ENAMELING department has all the flexibility of a job shop. Parts are all sprayed in booths, placed in racks and wheeled into ovens. No time losing changeovers are required when operations shift from one type of part to another

● *Entire fabrication of this boom and bucket is by Welding. Boom is 18 feet long. Bucket capacity is ½ cubic yard.*

WELDING reduces the fabrication costs 33% on this boom and bucket. It increases structural strength and eliminates cracked rivets.

Using Page Hi-Tensile **"F"** Electrodes, the welder is able to produce sound welds and maintain fast production. Hi-Tensile **"F"** is a real all-purpose rod—efficient for production, maintenance or shop welding. It satisfactorily welds the new alloy steels, such as Cromansil, Corten and H.T.-50. It operates on straight polarity and has low spatter and slag loss.

Page Hi-Tensile **"F"**—and other Page Electrodes—are shop-tested. You can be certain of their uniformity and excellence. Your local Page distributor carries these shop-tested rods . . . a specific rod to meet any welding requirement.

PAGE STEEL & WIRE DIVISION
AMERICAN CHAIN & CABLE COMPANY, Inc.
MONESSEN, PENNSYLVANIA

In Business for Your Safety

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ACCO

PAGE *Welding* WIRE

WELDING, ETC.

BY ROBERT E. KINKEAD

Old Gold and New Weld Contests

AWARD of a $100,000 prize to a navy man for winning an Old Gold prize contest calls attention to this particularly American custom. In Europe, similar and even greater prizes are awarded on lotteries, horse races and schemes similar to the numbers racket.

In the arc welding field, a leading manufacturer proposes to give away $200,000 in prizes for ideas that save money by use of arc welding. Entrants are asked to study their own business or industry, the things they know most about, and find means of saving money by welded construction. There are so many prizes in widely different fields that the number of contestants in the money will be large. The sponsor announces that the contest is not to display the most expert draughtsmanship or English composition but to bring out valuable ideas.

In a former contest an army officer won $10,000 on an idea of how to save weight on field gun mounts. The idea has been applied to Diesel engines, road building machinery, motor trucks, passenger and freight cars and many other kinds of machinery. The $10,000 seemed like a lot of money to the army officer but it was very small compared with the value of the idea to the country as a whole.

Not the least value of such a contest is the effect on the winners. Winning a sweepstakes prize indicates no particular intelligence; it is pure luck. Winning a welding prize marks a man as having a good head, and past records show that prize winners in industry advance in position and salary about twice as fast after winning as before.

♦ ♦ ♦

Induction Welding

PIPE with the longitudinal seams welded by an induction welding process has been on the market for several years and is entirely successful.

In contrast with other welding methods where technical knowledge is widely disseminated, there are only about a half a dozen men in the country who are familiar with induction welding. There are many applications of the process which have not been made, for the simple reason that people do not know how the process operates.

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

In induction welding, an alternating-current field of high density is produced by the inductor. The edges to be welded are brought into this field and heated to a temperature suitable for welding. In pipe welding, sufficient energy is put into the edges of the steel contacted to cause flashing. The process is continuous in pipe welding. The inductor may be placed on the inside or outside of the pipe. The distinguishing feature of the process is that the electrical energy is induced in the pipe without necessity of contacts between the source of energy and the metal of the pipe.

A variation of induction welding is the surface hardening process developed by Ohio Crankshaft Co. Here the eddy currents produced by a high frequency field are used to heat the surface to be hardened and it is immediately quenched in order to obtain the desired degree of hardness.

Combination Furnace Uses Gas, Coal or Oil

A combination furnace known as the Gascol burns coal, gas, or, with slight change in equipment, oil. Addition of a blower converts it into a year round air purifier.

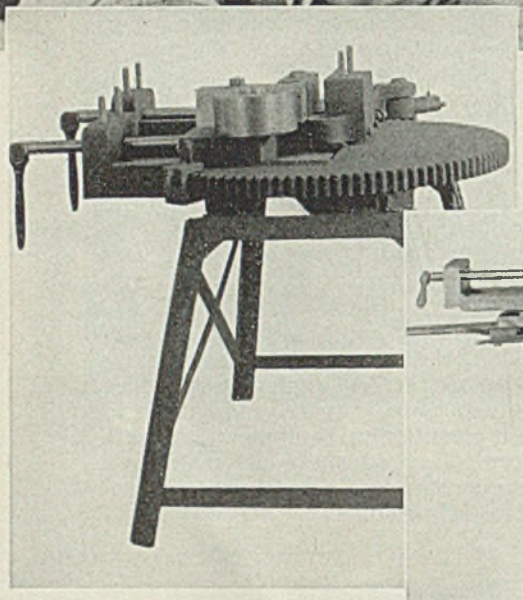
The new unit is manufactured by Stewart Furnace Co., 2250 Oliver building, Pittsburgh, and has a high grade heavy steel, permanently tight body preventing leakage of smoke, dirt or gas fumes. A secondary air passage conveys oxygen, preheated enroute, to the volatile gases which are said to escape to a degree as high as 38 per cent of the coal's weight from most furnaces. Perfect combustion takes place and the fuel is utilized with maximum efficiency. Not passing through the coal, this secondary air loses none of its oxygen, nor are there any slots in the firepot to be clogged with dry ash.

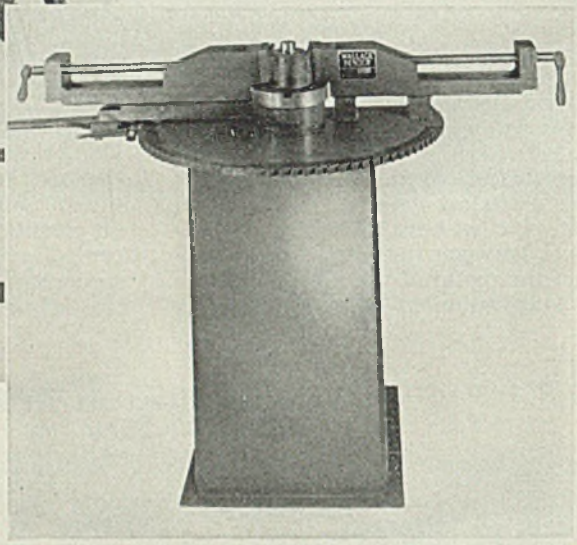
An amply proportioned humidifier provides proper humidity and the attractive square casing of the furnace is readily adaptable to air conditioning equipment. A draft control chain shuts off main and secondary drafts for complete control of the fire.

Welding Shop on Wheels

CARRYING the latest types of General Electric arc welding equipment, this demonstration truck is covering territory from the Atlantic seaboard to the Rockies. Included in the traveling exhibit are the new mutator set for light gage arc welding, a new model direct-current single-operator set, three kinds of alternating-current transformer-type arc welders, and a large variety of new electrodes and accessories. Demonstrations before welding operators, superintendents, plant managers and other interested persons are being conducted by a General Electric arc welding expert in cooperation with local General Electric distributors

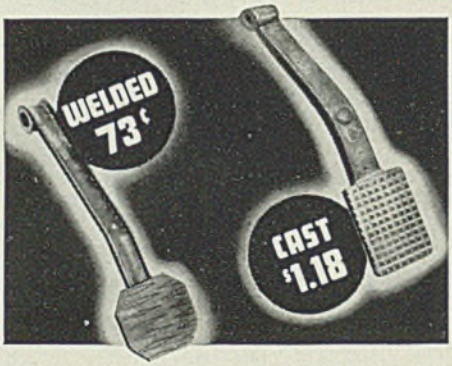
BILL, YOU HAVEN'T THE RIGHT ANSWER. TRY AGAIN. IT'S *BOUND* TO COST LESS BY WELDING.





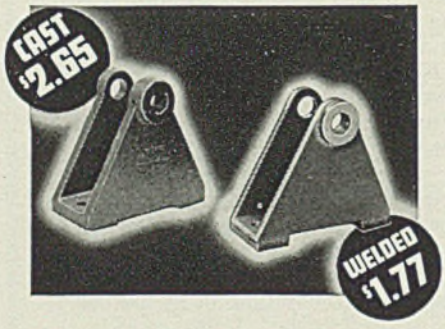
Saved $28 on the Rack Top Plate Alone—*Redesign of this bar bending machine cut costs on every part. The rack top plate alone was reduced from $60 to $32. The weight of the machine was reduced from 1250 lbs. to 736 lbs. The welded machine can be operated by one man whereas the old one required two men. And note how the appearance has been improved.*

Courtesy of Wallace Supplies Mfg. Co., Chicago, Ill.



The Welded Treadle Costs 45c Less—*Built from a piece of 2-inch channel and a checkered plate, this welded foot treadle costs only 73 cents—38% less than the old design. In addition, the welded part is unbreakable.*

Courtesy of Jones Superior Machine Co., Chicago, Ill.



This Change-Over Yielded 88c Per Part—*This cast iron sheave housing for a gas reducing valve was changed to welded design, using standard steel shapes. Cost was reduced from $2.65 to $1.77.*

Welded Steel is Stronger—This Manufacturer Proved Its Superiority by Actual Destruction Test

Supported at both ends and loaded at the center, the cast steel design shown below failed at 61,760 lbs. Under the same set-up, the welded steel design shown at the right withstood a loading up to 105,000 lbs. The weight and cost of each is practically the same.

This test was made by the Athey Truss Wheel Co., Chicago, to prove the superiority of their new welded rocker beam for "Forged-Trak" wheels.

The welded design employs 5/16" pressed steel stampings as the main members. Hubs are cast steel. The part is welded in a positioning jig so that all welding is downhand. Two passes of 1/4" "Fleetweld 7" are used. The total welding time is 3 hours. A new "Shield-Arc SAE" welder contributes to the speed and quality of the welding.

THIS MANAGER, FIRMLY CONVINCED THAT WELDED DESIGN WILL CUT COSTS AND IMPROVE THE PRODUCT, IS *BOUND* TO INCREASE THE PROSPERITY OF HIS COMPANY

Today, countless manufacturers of iron and steel products are more firmly established and are enjoying good fortune because of one lone individual in the organization—an enthusiast for welded design.

This engineer or manager wages a determined drive to apply welded fabrication to *every* product which his company manufactures. He succeeds because he stands by his guns. If first attempts fail, he tries again...and again. He believes in welding because—

HE KNOWS that rolled steel costs ⅓ to ½ as much as the traditional material.

HE KNOWS that welded fabrication eliminates pattern costs.

HE KNOWS that welded steel designs are from 2 to 6 times as strong as the cast designs which they replace.

HE KNOWS that welded steel construction permits the use of steels of various types and that they can be combined in a part to give any desired service qualities.

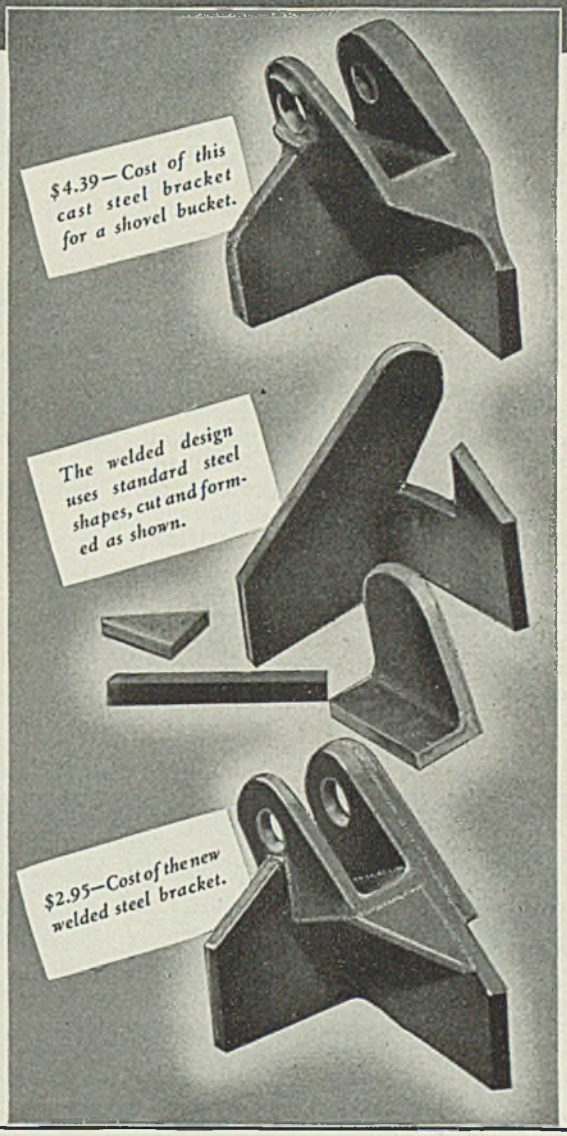
HE KNOWS that welded steel permits greater freedom on the part of the designer to improve the appearance of the product.

HE KNOWS that the more welding he can put in his shop, the more he will absorb his company's fixed charges.

HE KNOWS that his Company will profit.

You, too, will profit by designating some experienced, strong-willed individual in your organization to make welded design pay the dividends that it does pay.

You can start welding easily and with little investment in equipment because you can change over one part at a time. May we be of assistance to you? THE LINCOLN ELECTRIC COMPANY, Dept. Y -426, Cleveland, Ohio.



THE LINCOLN ELECTRIC COMPANY
Dept. Y -426 Cleveland, Ohio

Send the FACTS about welded design.

Name Position

Company

Address

City State

LINCOLN *SHIELD-ARC WELDING*

BUILDS LIGHTER AND STRONGER PRODUCTS...FASTER...AT LESS COST

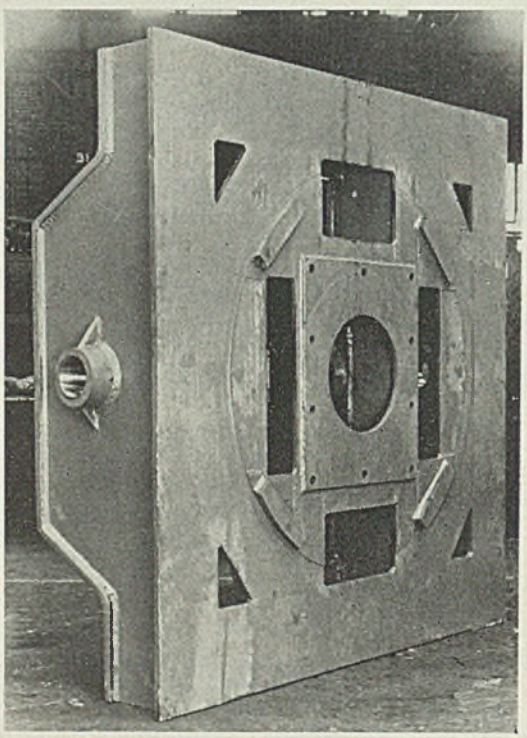
Welded Excavator Parts Built To Take Large Shock Loads

BY H. S. CARD

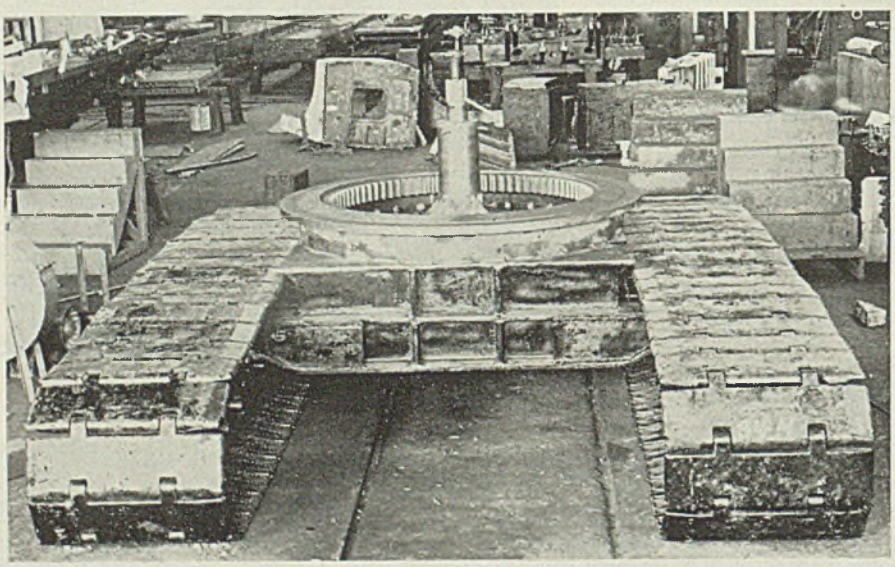
Development Director, National Electric Manufacturers Association, Electric Welding Section

DURING the past year the applications of electric arc welding in the works of Marion Steam Shovel Co., Marion, O., have been extended to the heaviest structures of power excavators, with notable success. The company's main reasons for going into welded construction were (1) to reduce weight, (2) to maintain low manufacturing cost, (3) to obtain a more flexible design to meet special requirements, and (4) to permit making modifications more readily.

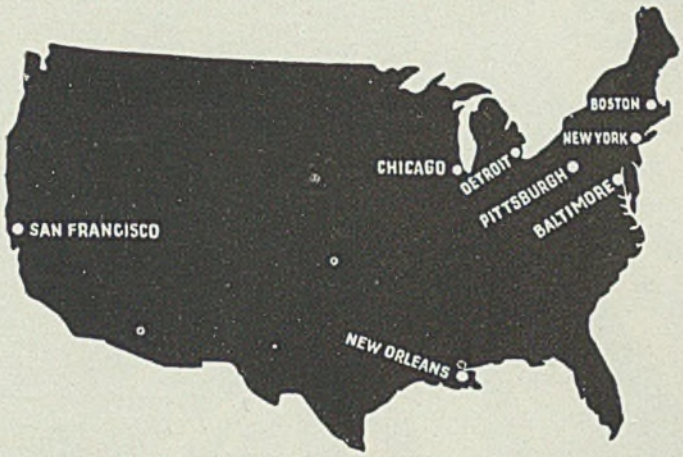
The occasion for changing over to welded fabrication occurred when certain of their equipment was about to be redesigned. A study of the welding possibilities indicated that increased flexibility of design for special requirements and important savings in weight would be the outstanding advantages. These were so attractive to the management that several engineers were asked to make a study of the design and procedures that had been developed over a period of years in the welded fabrication of important structures, as practiced by another large manufacturer. By adapting the results of that practical study the engineering staff prepared a complete new design for the Marion type 39-A drag line shovel which normally uses a 2¼-yard bucket. Production was started and three of these shovels were completed on so satisfactory a schedule that the new design and method were put into regular production, and plans were made for working out the necessary designs to apply this construction to other sizes. The fact that three large shovels were built at the start is important, because this was an entirely new experience for the shop personnel and it would have been very misleading to draw conclusions from

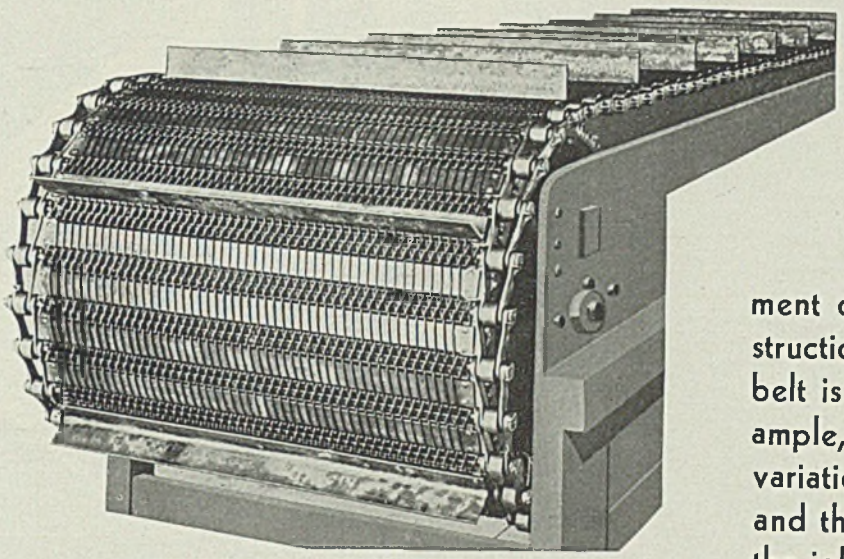


Right photo shows top view of the lower frame of an excavator after machining, while below is shown the lower frame and crawler assembly for the latest type heavy duty excavator.

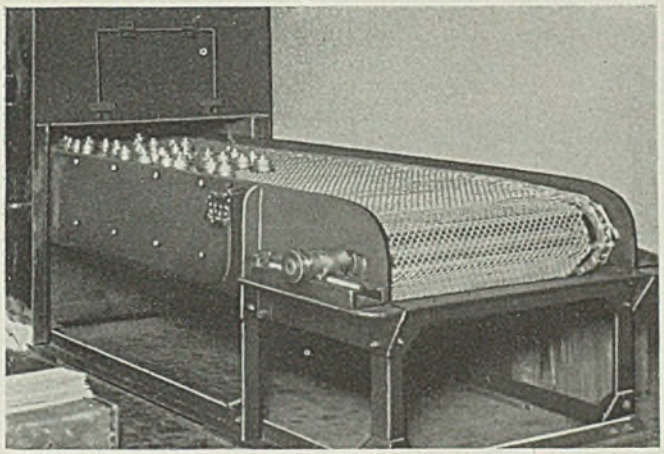


PUT YOUR CONVEYOR BELT PROBLEMS *up to a Skilled* CAMBRIDGE ENGINEER ★





"CAMBRIDGE" *QUENCH TANK BELT*



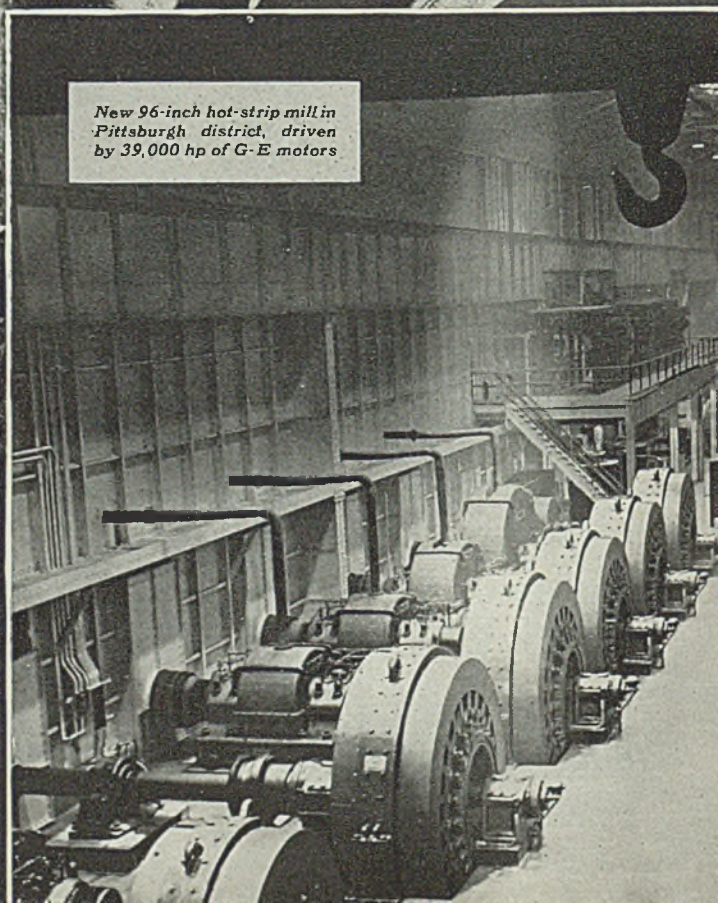
"CAMBRIDGE" *WOVEN WIRE CONVEYOR BELT*

★ In nearly every case in the continuous handling or treatment of metal parts, the type and construction of the most practical conveyor belt is an individual problem. For example, there are over 1,000 construction variations of Cambridge Conveyor Belts and the selection of the proper type for the job can mean important savings in operating costs through increased efficiency.

To do just this . . study each conveyor belt problem . . make recommendations, based upon years of experience and proved capabilities in their field, is the work of our engineers. Strategically located throughout the country they are quickly available for an efficient analysis of your problems.

CAMBRIDGE WIRE CLOTH CO.
CAMBRIDGE, MARYLAND
Boston - New York - Baltimore - Pittsburgh - Detroit - Chicago - San Francisco - New Orleans

"Sure,



New 96-inch hot-strip mill in Pittsburgh district, driven by 39,000 hp of G-E motors

We Keep the Steel Rolling!"

STEVE is right. He and his fellow workers keep the steel strip rolling, and a lot of steel it is, too. Delivery speeds are as high as 2000 feet a minute—200 tons and more an hour.

But Steve and the others don't do all the work. There are machines and electricity—plenty of both—to help them do the jobs that would be too heavy for even their strong arms and backs.

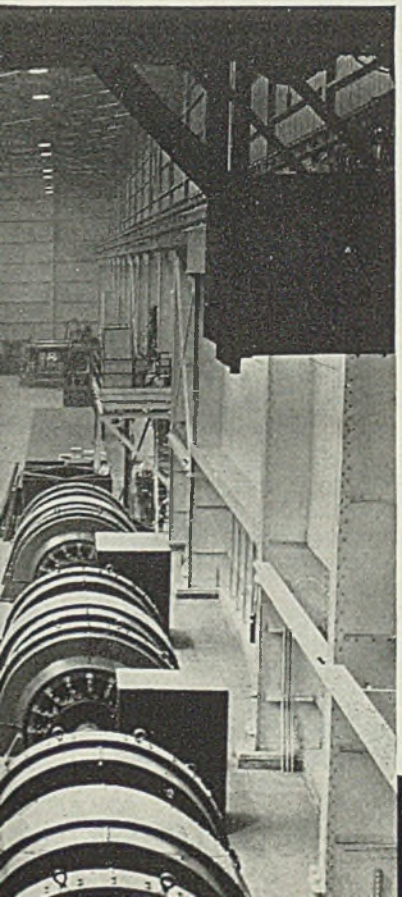
Ten years ago, a ton of steel sheets an hour was fast production for a crew of steel workers. Men equipped with tongs fed sheets to the rolls by hand. It was hard work, and it was slow. But then came the machines that made possible the continuous rolling of strip sheet, and with them the erection of the first continuous wide hot-strip mills. It was a tremendous step toward the fast and continuous rolling of strip with which we are familiar today.

Without electricity, however, this phenomenal progress in improving machines and methods would have been impossible.

Mighty electric motors that develop thousands of horsepower, and electric control that makes possible precision control of the rolling process—these are vital in the handling of steel. Thus, electrical engineers, through their ability to design electric equipment exactly suited to the new requirements, have greatly contributed to the advance.

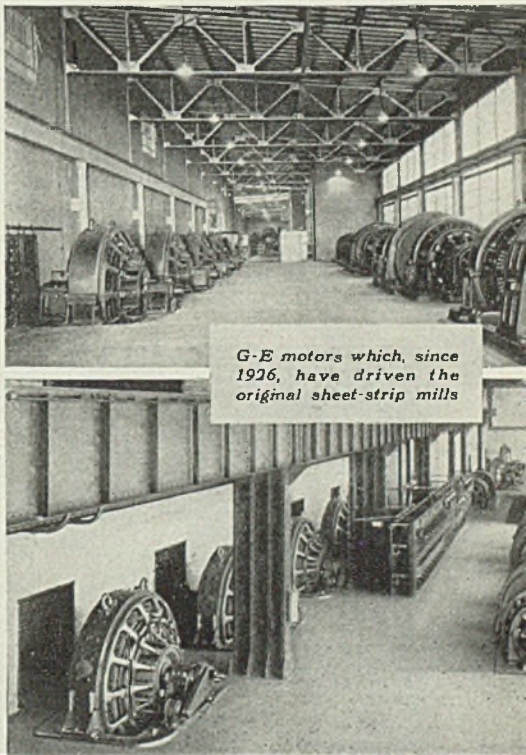
Their assistance, of course, could be effective only through close co-operation with the steel industry. In a sense, a partnership was formed—a partnership of electricity and steel that has achieved great results by applying experience gained in different fields to common problems.

This partnership exists today, and its efforts are still directed toward the same goal—faster and more efficient production of steel. It is an assurance that continued progress will be made.



THE first continuous wide hot-strip mills were built in 1926 at Butler, Pa., and at Weirton, West Va., and the electric equipment for them was designed and installed by General Electric. These installations were outstanding pioneering achievements, to which General Electric has since added many others. The application of variable-voltage control to strip mills, the design of heavy-duty switchgear, the effective ventilation of motor rooms, and the development of tension control are a few examples.

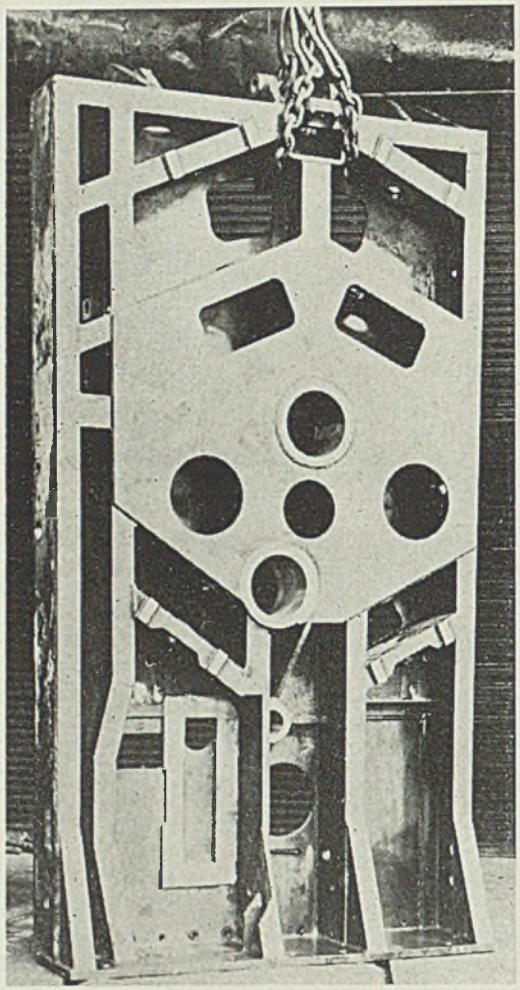
The great 96-inch and 98-inch hot-strip mills of today, with delivery speeds of 2000 feet and more a minute, are in every instance driven by G-E motors, a fact that demonstrates impressively the recognition by the steel industry of General Electric's contributions to better strip-sheet rolling. General Electric, Schenectady, New York.

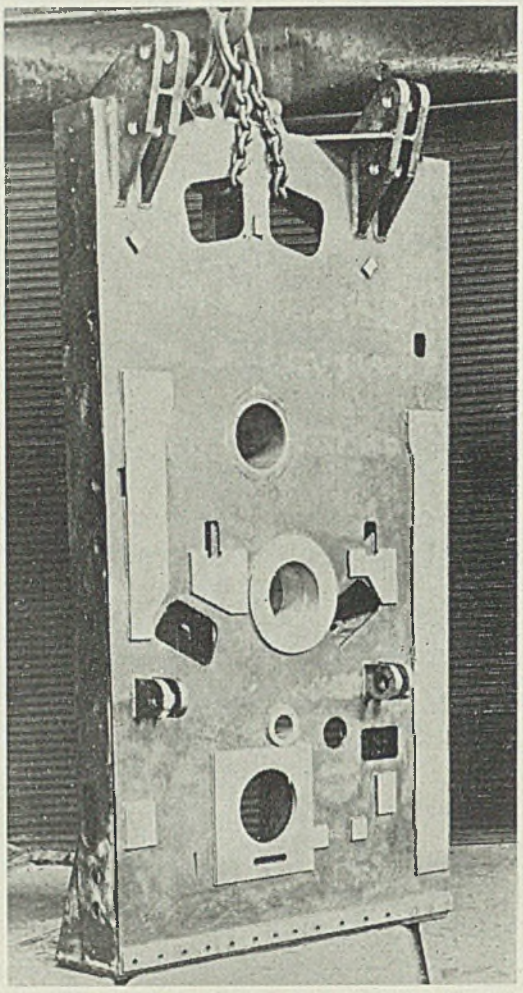


G-E motors which, since 1926, have driven the original sheet-strip mills

011-212

GENERAL ELECTRIC

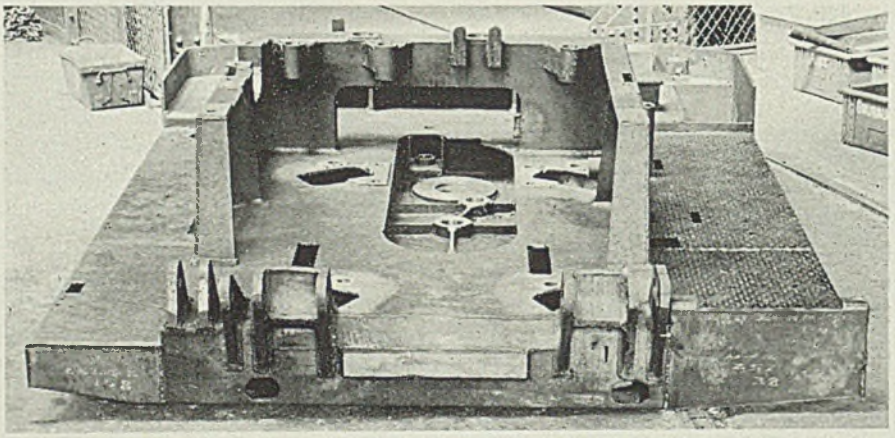




View of under side of arc welded rotating frame is shown at left, while at right is the top view of the same part after machining

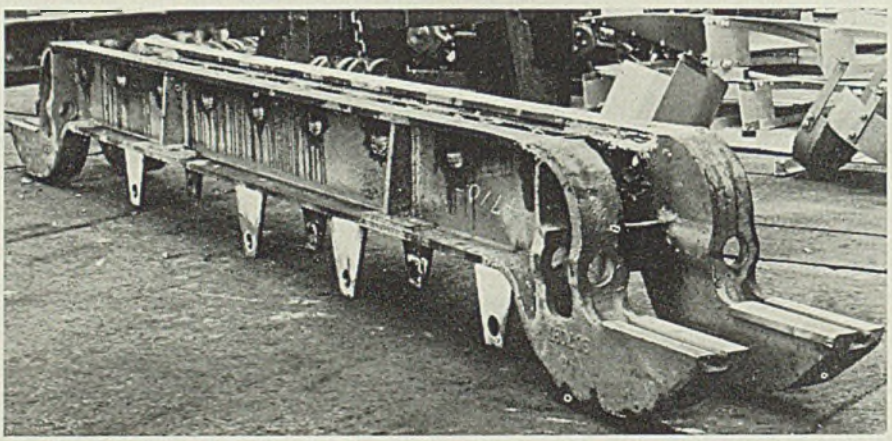
the time required to build the first one. The shop records show that the first took 631 hours of welding time, the second 578 and the third only 507½, almost a 20 per cent reduction in welding time.

Welded fabrication was applied to crawler side frames and axles, lower frame, rotating frame and machinery side frames. An idea of the weight saving is obtained by considering the lower frame which formerly weighed 8000 pounds and now weighs only 5500 pounds, a saving of 2500 pounds of material which does not have to be handled in the shop and of dead weight which does not have to be moved by the motor.

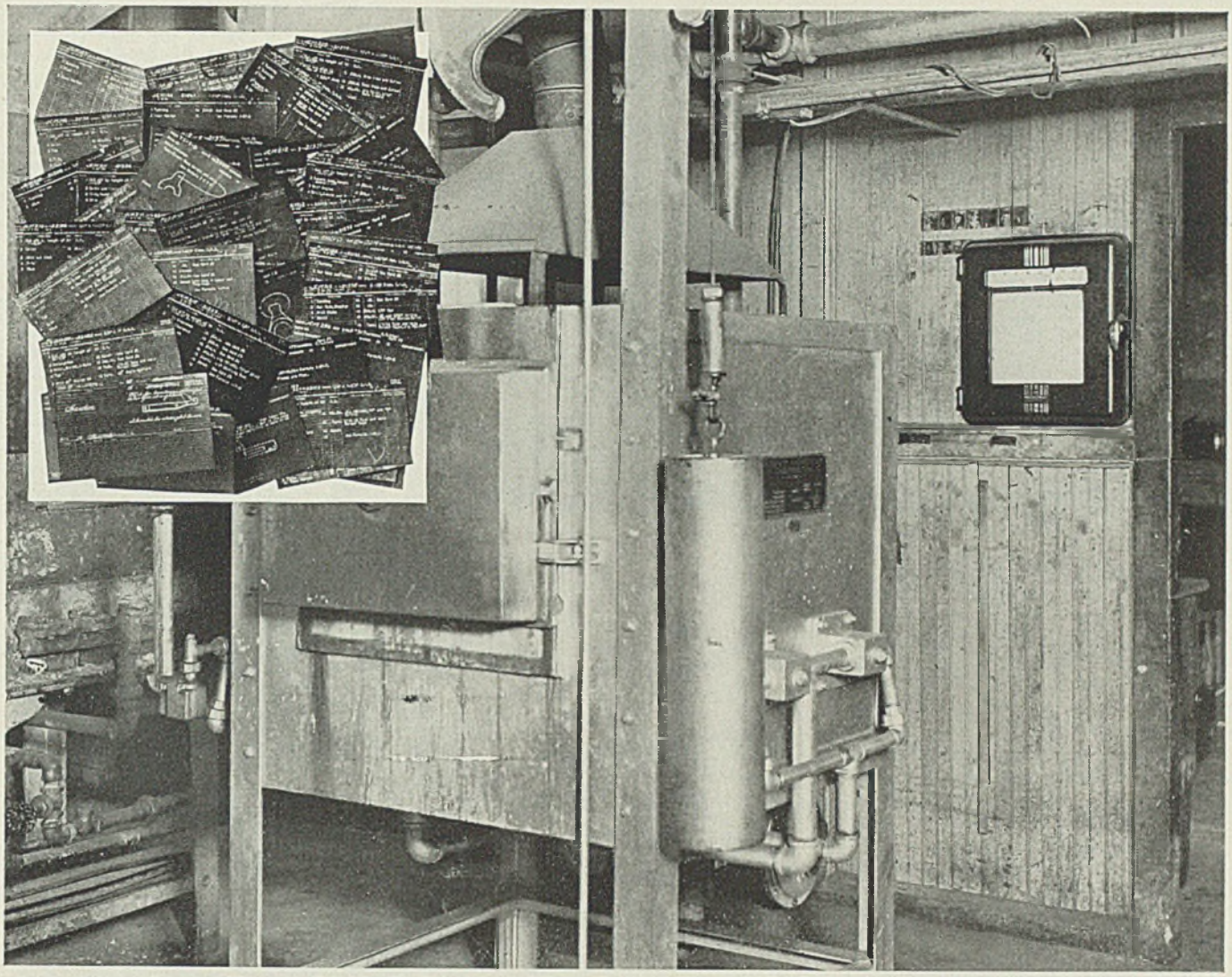


Top view of the upper frame. By arc welding, seven units have been formed into one

The two crawler treads are mounted on longitudinal crawler side frames which are connected together by the axle portion of the lower frame. The lower base carrier, the swing ring, the rotating base, machinery and the cab. A combination of special steel castings with



Crawler side frame showing castings combined with rolled steel sections



Lanston Monotype Machine Co. heat-treats the parts for monotype molds in this Micromax-controlled furnace.

Hundreds OF HEAT-TREATING SPECS

are met with the help of this MICROMAX ELECTRIC CONTROL

HOLDING THIS FURNACE at desired temperature is a difficult task, handled automatically by Micromax Electric Control.

Furnace load consists of metal parts, in wide variety. Weight of load, time of heating or temperature of soak is sure to change when the furnace operator shifts from one heat-treating specification to another; for each change, there may be adjustment for load, for lag or for both. When adjustment is needed it is made simply—positively—accurately. The Recording Controller's temperature record is where the operator can see it at a glance. He goes on with his work—but never goes near the valve.

In other plants, identical Micromax Electric Controls are doing the same kind of job on big box-type furnaces—on continuous furnaces — open hearth — towers — heat-using equipment of all kinds. Adjustable to the requirements of any furnace, this Control can be standard for every temperature control in the plant.

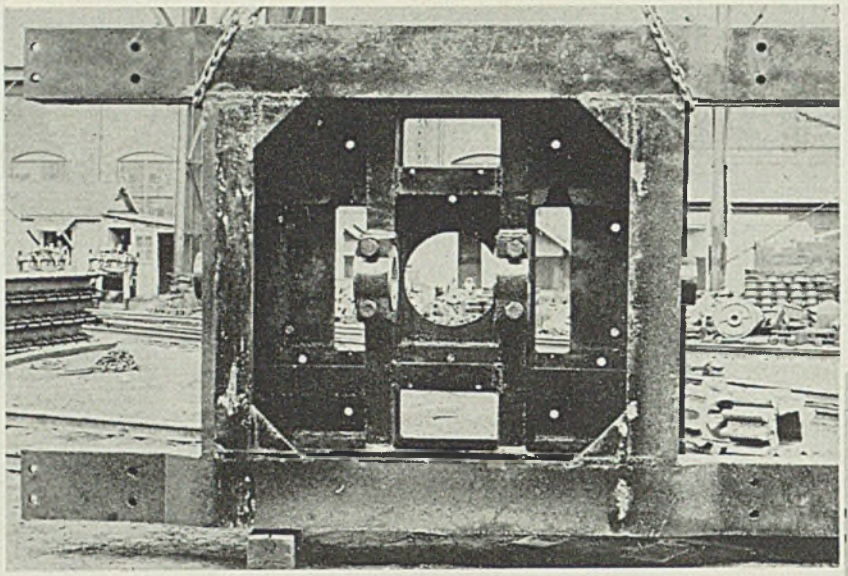
J-NA(4)

See Micromax and Other L&N Instruments at the Iron and Steel Show

LEEDS & NORTHRUP COMPANY, 4957 STENTON AVE., PHILA., PA.

LEEDS & NORTHRUP

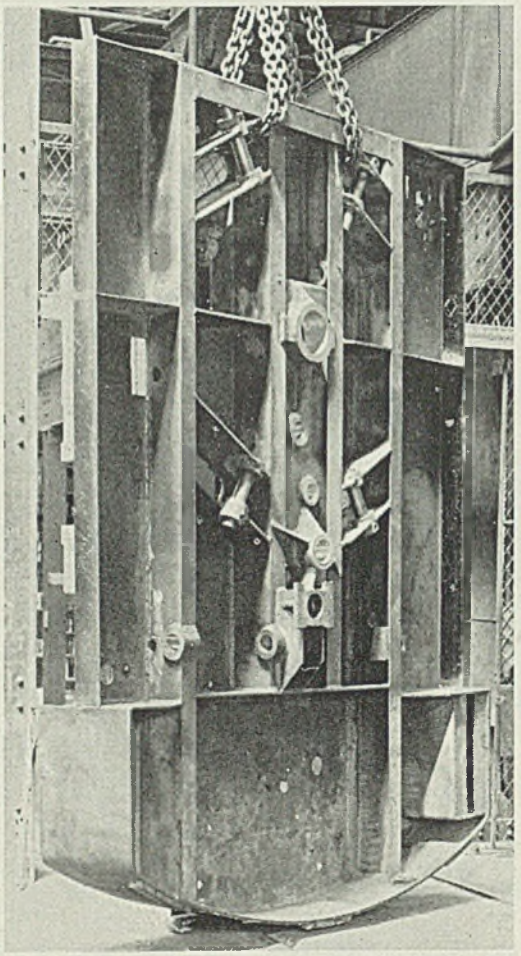
MEASURING INSTRUMENTS · TELEMETERS · AUTOMATIC CONTROLS · HEAT-TREATING FURNACES



rolled steel was considered to be the most economical design practiced for the crawler side frame. Stiffeners are added to the web and flange where needed, directly under the bolt holes for the axle; and light plate brackets are added for the crawler idler rollers. The axle portion of the lower frame is made from a standard H-beam with part of the web cut out at each end and this flange bent and welded in to form an underslung axle.

The lower frame contains the shafting and gears for driving the crawler and also supports the entire shovel. It has to be a rigid structure because when in service it is subjected to shock loads of great magnitude and in every direction. Heavy ribbing and flanges are used to resist these stresses. In the welded structure, steel members are placed wherever needed for strength, design changes can be made at short notice, and the soundness of every component part is under full control at every stage in the assembly program. Although it has undergone a weight reduction of more than 30 per cent, the finished appearance of the lower frame is that of strength, ruggedness and symmetry.

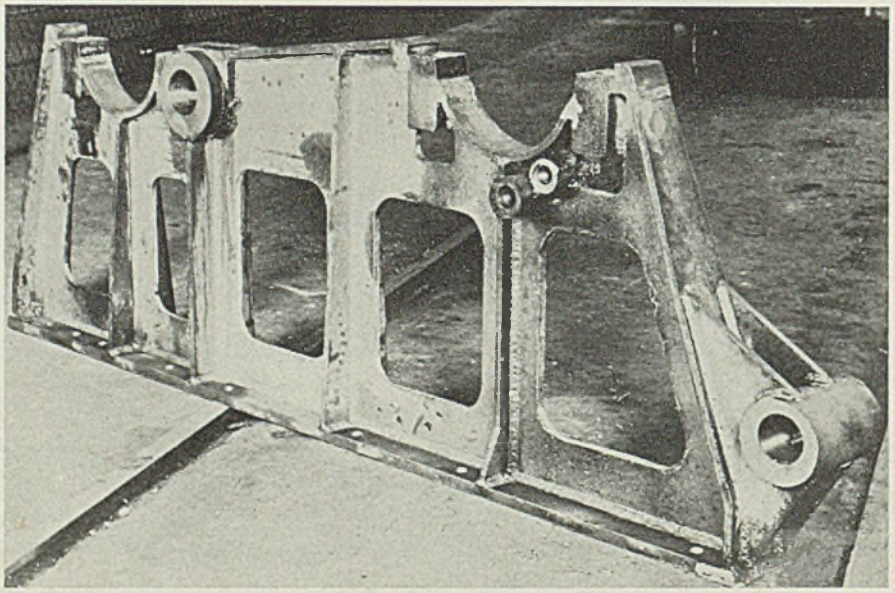
The rotating frame mounts the machinery, the cab and the boom. Obviously this structure needs to be rigid, and it is therefore thoroughly braced longitudinally as well as crosswise. The flexibility of welded design makes this comparatively



Bottom view of the lower frame is shown above. Note welded construction and reinforced corners.

At right is bottom view of the upper frame. Several of the small parts in this assembly are machined before the welding is done

Below is shown arc welded machinery side frame for power excavator



easy to accomplish. After all crossbracing has been completed a bearing plate is welded to the frame around the center vertical shaft bearing and the surfaces which must be machined are all taken care of at once. This insures perfect alignment of these machined parts. There are also several surfaces on the top of this frame which must be machined and which must line up with each other. By completing the welding first, any distortion from the welding heat will not affect the accuracy of assembly.

These welded side frames are interesting because at first inspection they look very much like castings. Both side frames are similar in design, a combination of plate and small steel castings. How modern welding techniques control distortion is illustrated here in the fact

that after assembly the shaft bearing must line up perfectly, and that this is being accomplished with very little machining. In this connection it is noteworthy that several of the small parts assembled into the upper frame are machined before assembly, resulting in a reduced cost on these operations.

The welding time on each of the first three 2½-yard shovels has already been stated. The electrode consumption for each shovel was 895 pounds of heavily coated electrode. For tack welding and for the first bead in multiple pass welds, 5/32-inch electrodes were used. For all other work ¼-inch electrode was used. Welding currents were about 200 to 225 amperes on the 5/32-inch electrode and 280 to 320 on the ¼-inch electrode, with arc voltages of 32 to 38 volts.

The writer desires to make acknowledgement to the Marion Steam Shovel Co. and to the General Electric Co. for very helpful co-operation in furnishing data and photographs and in checking the manuscript before it was released for publication.

Production of Silver Flatware

(*Concluded from Page 54*)

this is wholly a manual operation considerable skill is necessary in holding and guiding the work. The end of the handle often is finished on a formed polishing wheel set up with No. 180 emery. The face of the bowl generally is faced on the type of belt used on the edges. Fork tines also are polished and pointed on belts.

Bowls are polished as shown in Fig. 10. The wheel used is felt, 4 inches in diameter, 1½-inch face, run at a speed of 2700 revolutions per minute. Such an operation is technically called sand polishing. The abrasive is 2-F pumice mixed with enough water and oil to make it stick together. The abrasive is applied to the work and the wheel by hand. This is an exacting operation calling for more skill than would be imagined.

Buffing Operations

After the polishing operations described above comes the buffing. In buffing the handles, as in Fig. 11, a skilled polisher will finish the edges of several at a time. Bowls and handles, of course, must be finished individually. The wheel used on the machine shown in Fig. 11 is 6 inches in diameter, 1-inch face, operated at a surface speed of 7000 feet per minute. These wheels usually are muslin while the abrasive agent is tripoli. Tripoli takes out all sand scratches in the bowls and smoothes other surfaces to prepare them for buffing with rouge on wheels similar to the above except that they usually are made of alternate layers of canton flannel and muslin.

Bowl polishing is done with a special abrasive called blue grit which is an exceedingly fine clay silt. In Fig. 12 the operator is polishing bowls, this operation being termed bowling out. It is done on a leather belt rounded to fit into the bowl. The abrasive mixed with oil is applied to the belt and the work.

Use Two Finishes

Two types of finishes are used on sterling. One is called bright finish and the other gray finish. Completed articles in general bear the finish most appropriate to the article's design and style. The bright finish was described above. Gray finish is a dull finish, though it is very often brightened a little, which gives an article a finish called "lustrous gray." A wool wheel in conjunction with No. 3F pumice, white, is used to obtain the regular gray finish. In order to brighten this up and get the lustrous gray finish, burnt alberine and No. 35 white composition on a wool buff also are used.

While the foregoing constitute the principal abrasive operations mention should be made of the process called oxidizing. If the handle of a high grade, solid silver spoon is examined minutely it will be noted that the bottoms of the embossing depressions are of a darker color than the highlighted portions. To get this effect the handles are dipped in an oxidizing solution which instantly turns the silver black. Then the handle is gone over with a hair or bristle wheel which removes all the oxidation except what remains in the recesses. The result is a beautiful contrast. Careful washing is necessary after the parts have been oxidized and put over the bristle wheels. Following this operation it is necessary again to go over the bowls to make sure that the most minute scratches caused by handling are removed. This is accomplished on canton flannel wheels with rouge or tripoli.

Manufacture of solid silver flatware involves a large number of intricate operations which cannot be hurried if a high grade product is desired. In working solid silver, a comparatively expensive material, it is obvious that there must be some waste of stock. The percentage of waste, however, actually is only about 1 per cent. All the scraps and trimmings can be melted over again and all lint and abrasive grit from the various polishing and buffing operations are salvaged for silver. Thus the loss is kept at normal.

Complete Program for Battelle Foundry Meeting

American Foundrymen's association announces the program for the first fall technical foundry conference at Battelle Memorial institute, Columbus, O., Sept. 30-Oct. 1. This is the first strictly metallurgical meeting sponsored by the association and will take the form of three roundtable conferences dealing with steel, gray iron and nonferrous castings. In addition to the conferences, the second day's program includes a luncheon at the institute and a dinner at the Deshler-Wallick hotel.

Details of the technical program are as follows:

Thursday, Sept. 30

MORNING

Meetings of various American Foundrymen's association committees.

AFTERNOON

Nonferrous Castings

"Effect of Chromium in Copper-Base Alloys." Discussion leader: Dr. Bruce Gonser, supervising metallurgist, Battelle Memorial institute.

"Melting Methods in the Nonferrous Casting Industry." Discussion leader: H. M. St. John, metallurgist, Detroit Lubricator Co., Detroit.

Friday, Oct. 1

MORNING

Steel Castings

"Effects of Alloys on Cast Steels." Discussion leader: Walter Crafts, Union Carbide & Carbon Co., Niagara Falls, N. Y.

"Effects of Aluminum on Physical Properties of Steel Castings." Discussion leader: C. E. Sims, supervising metallurgist, Battelle Memorial institute.

AFTERNOON

Relation of Structure to Properties of Cast Iron

"Cupola Cast Irons." Discussion leader: J. W. Bolton, metallurgist, Lunkenheimer Co., Cincinnati.

"Electric Furnace Irons." Discussion leader: Richard Schneidewind, University of Michigan, Ann Arbor, Mich.

"Fundamental Structures of Gray Cast Iron." Discussion leader: Alfred Boyles, metallurgist, Battelle Memorial institute.

Stainless Working Methods Book Offers New Approach

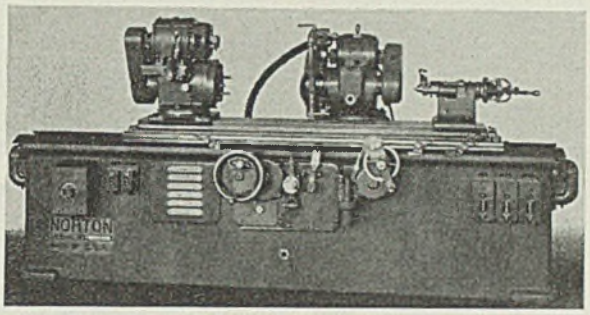
A new technical publication by Ludlum Steel Co., Watervliet, N. Y., entitled, "The Working of Silcrome Stainless Steel," links up detailed instructions on methods of fabricating stainless steel with information as to the grades of tool steel best suited to each operation.

This data book has been prepared for the use of engineers, designers and other technical men interested in practical working methods. It contains practical advice on all the usual metal working operations, such as sawing, drilling, milling, threading, tapping; also on hot upsetting and forging, shearing, drawing, punching, spinning, brazing, soldering, welding, and the like. In addition, the book contains information on the proper selection, heat

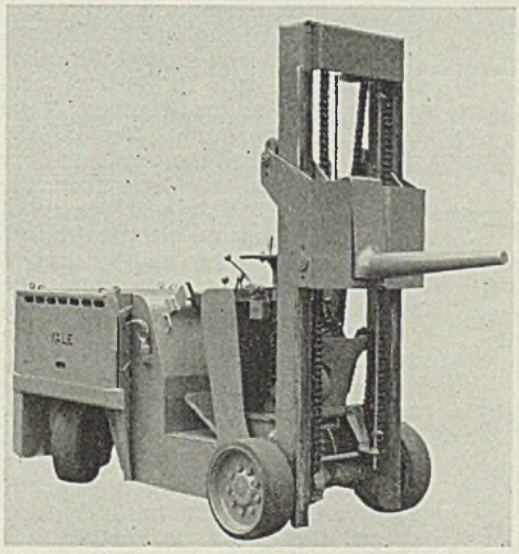
NEW EQUIPMENT

Ram Truck—

Yale & Towne Mfg. Co., Philadelphia, has recently designed and built a new electric, drop-frame ram truck to be furnished in capacities of 4000 to 16,000 pounds, with end or center control. Drive wheels are of the non-steer type and are on the load end of the truck. Steering trailer wheels are under the battery and designed to give a steep angle of steer to reduce turning radius to a practical minimum consistent with capacity. This construction provides a rigid, non-steer drive axle, with widely spaced Timken bearings in each of the wheels, and takes the heavy load directly through the axle rather than through steering knuckles. In normal ram truck service the load will project approximately as far beyond the drive or load wheels as does the front or battery end of the truck. Thus, the pivot or focal point of steer will be approximately in the center of truck-plus-extended-load, providing a minimum steering radius and ability to turn in minimum aisles. The non-steering drive wheels under the load permit making the truck of minimum overall width at the load end; loads can be deposited close to a wall. An articulating frame feature provides maximum stability of the truck, loaded or empty, and a degree of side articulation that keeps all wheels on the ground with an exactly equalized load condition on the right hand wheel as compared with the load on the left hand wheel. The counterweight and load distribution in this design is such that a minimum of 25 per cent of the total load of the vehicle is on the drive wheels when the machine is operating without load and a minimum of 25 per cent of the total weight of the truck, plus the weight of the load, is on the trailing wheels when the truck is loaded to full capacity. This distribution gives ample weight on the drive wheels to propel the vehicle when running empty and ample weight on the steering wheels to give an accurate response when the truck is fully loaded.



Redesigned Norton Multipurpose grinder has individual drive for each of the principal mechanisms



Yale & Towne ram truck has drive wheels of non-steer type at load end and steering trailer wheels under battery end

◆ ◆ ◆

Universal Grinding Machine—

Norton Co., Worcester, Mass., has announced a redesigned model Multipurpose grinder in 14-inch swing and in three lengths, 36, 48 and 72-inch. Features include hydraulic power work table traverse; a universal wheel head and work head, the latter being so arranged that either live spindle or dead center are instantly available; force feed lubrication of the table ways; and a wheel spindle of large proportions, each bearing being individually and automatically lubricated. The machine is designed for direct motor drive only, a feature being that the principal mechanisms are driven each by its individual motor. Five motors are used, three of which for the hydraulic oil, lubricating oil and coolant pumps are built into the machine and included in the regular equipment. A flat top swivel table is used having a large tee slot its entire length. The swivel adjustment at the right end of the table comprises a screw and nut arrangement providing close adjustment. Universal headstock is mounted on a swivel base clamped to the table by two bolts in a manner that prevents distortion. The headstock may be turned through the entire

360 degrees and clamped in any desired position. Work table traverse is by hand wheel or by hydraulic power. One universal grinding wheel head rests on a swivel base and compound slide, and wheels for either external or internal grinding may be set at any desired angle with the work. A hand operated grinding wheel feed indexes to 0.0001-inch and also provides for rapid movement when locating with respect to the work.

♦ ♦ ♦

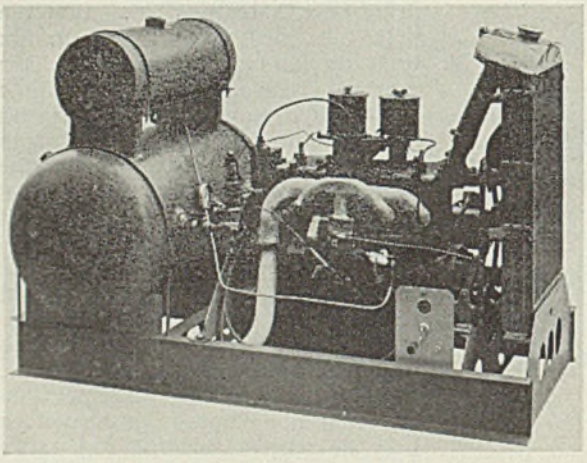
Reversing Motor Starter—

Allis-Chalmers Mfg. Co., conduit works, Boston, has announced a new reversing motor starter designated as type AP 7-R and furnished for 7½-horsepower, 550 volts, or less. The starter consists of two type AP-7 motor starter units, mechanically interlocked so that neither unit can be closed if the other unit is closed. The starter units are equipped with Ruptors, enclosing chambers which combine and depotentiate the arc formed by circuit interruption and which are said to increase interrupting ability of the contacts and form individual isolating barriers between contacts of opposite polarity. Other features include large silver double-break contacts requiring no contact dressing; solenoid operated, vertical make and break; silent operation; unit construction; enclosed temperature overload relays, and undervoltage protection.

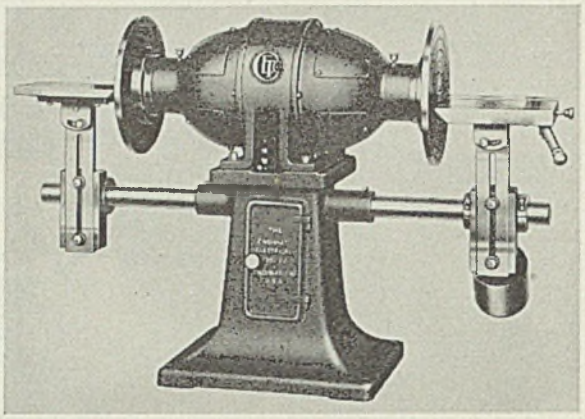
♦ ♦ ♦

Air Compressor—

Metallizing Co. of America Inc., 1351 East Seventeenth street, Los Angeles, has announced the addition of the model A Mogul compressor to its line of equipment. Using a model B Ford motor, the motor-compressor unit is mounted on a specially designed chassis that holds the air tank and radiator as well. This frame is light but strong and is only 58 inches long, making a unit of minimum length. The air receiver is of 18-inch diameter and 41 inches long, rests on a cradle support and is firmly strapped to the frame. Gasoline tank is mounted on top of the air receiver. A truck radiator of ample capacity assures adequate cooling of the assembly. The unit weighs less than 775 pounds without gas or water, and crated for shipping weighs less than 900 pounds. At 1000 revolutions per minute the displacement is approximately 58 cubic feet per minute while at 1500 the displacement reaches 87. Gas consumption is one gallon per hour.



Mogul air compressor uses a model B Ford engine mounted on specially designed chassis



Cincinnati disk grinder is also furnished with a conventional type grinding wheel on one side

♦ ♦ ♦

Disk Grinder—

Cincinnati Electrical Tool Co., Cincinnati, has announced the addition of several sizes of disk grinders to its line. These grinders may be had in the double-end disk type illustrated or with a disk on one side and a conventional type grinding wheel and wheel guard on the other side. The disks are of high grade steel accurately machined and balanced to assure true running. The spindle is of nickel steel, dynamically balanced and mounted on extra large ball bearings with special provision for both radial as well as thrust loads. On the double disk grinder a table with hand lever feed is regularly supplied on the right-hand side of the machine with a plain table on the opposite side, but this equipment may be changed to suit individual requirements. On the combination type unit, a table with hand lever feed is regularly furnished on the right-hand side, with a fully enclosed safety wheel guard for the grinding wheel on the other. The steel disks furnished as standard equipment may be had for gluing on abrasive disks or may be properly drilled for mounting steel-back abrasive disks. A disk press can be supplied for gluing on abrasive disks. Motor supplied is of the fully enclosed type with magnetic starter, overload and no voltage protection, and push-button control.

♦ ♦ ♦

Reclosing Fuse Cutout—

General Electric Co., Schenectady, N. Y., has announced a new fuse cutout, porcelain-housed and with reclosing features. The reclosing mechanism is entirely in the door, which is so constructed that it is interchangeable with the door of present G-E 50-ampere indicating and drop-out cutouts, making it possible to convert the latter into reclosing cutouts by adding the new door. The reclosing door of the new unit contains two fuse holders. Should the first fuse link blow, the door is pushed outward at the button—a positive indication. After a time delay of one second the other fuse holder with its link is connected, thus restoring service if the fault is temporary. Should the second fuse blow, the complete door drops open and is isolated from the circuit. The two fuse holder tubes of the new unit are electrically connected at the upper end by a rigid clamp, but are not connected at the lower end. The tubes are held in the door by a clip which permits the door to pivot outward at the bottom, except when held in by the outer fuse link. When the outer fuse link blows, the door is released and a spring pushes the door outward a sufficient distance to give clear indication that this link has blown and opened the circuit. A further indi-

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Diamond Expansion Bolt Company, Inc. Garwood, N. J.
Enterprise Galvanizing Co., Philadelphia, Pa
The Fanner Mfg. Company, Cleveland, Ohio
John Finn Metal Works, San Francisco, Cal.
Thomas Gregory Galvanizing Works Maspeth, N. Y.
Hanlon-Gregory Galvanizing Company Pittsburgh, Pa.
The Hodell Chain Company, Cleveland, Ohio
Independent Galvanizing Co., Newark, N. J.
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Joslyn Co. of California, Los Angeles, Cal.
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Lehigh Structural Steel Co., Allentown, Pa.
Missouri Rolling Mill Corp., St. Louis, Mo.
The National Telephone Supply Co. Cleveland, Ohio
Penn Galvanizing Co., Philadelphia, Pa.
Riverside Foundry & Galvanizing Co. Kalamazoo, Mich.
The Sanitary Tinning Co., Cleveland, Ohio
Standard Galvanizing Co., Chicago, Ill.
Wilcox, Crittenden & Company, Inc. Middletown, Conn.
The Witt Cornice Co., Cincinnati, Ohio

cation is given by the red end of a transfer contact which becomes visible. The transfer contact also snaps quickly to the contact on the lower end of the inner fuse holder. It takes one second before the snap action occurs, allowing sufficient time for a temporary fault to clear itself and for the arc gases from the outer fuse link to be blown away. This time delay is controlled by a completely housed timing mechanism of the escapement type with free-running gears. It will operate accurately over a long period of time under severe atmospheric conditions and over a wide range of temperatures. Metal parts of the timing mechanism are of non-corroding materials, nickel plated. Springs are of stainless steel. If the fault persists, or when another short circuit occurs before the blown fuse link is replaced, the inner fuse link will blow, releasing the toggle mechanism and permitting the door and fuse holder to drop to the open position. In this position the door is completely isolated from the circuit.

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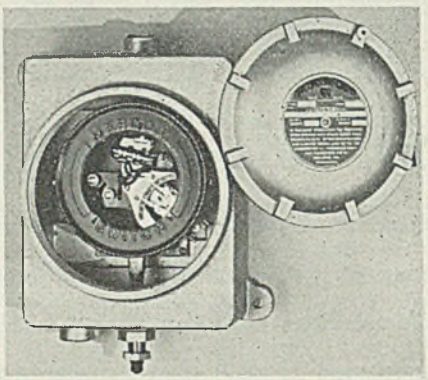
Roof Ventilator—

Swartwout Co., 18511 Euclid avenue, Cleveland, has announced a new rotary roof ventilator for industrial and commercial building application. Improved features include stainless steel, fully enclosed, dust tight, oilless ball bearings on which the head turns with the wind. Interior construction is of streamlined steel tubing welded into a one-piece head frame of high strength and minimum friction resistance. The body is designed along modern lines, resulting in a low appearance with a slightly increased area in the discharge opening. Greater capacity per size is secured in addition to strong and substantial construction. The new rotary is made in sizes from 12-inch to 72-inch throat diameter and is especially adapted to ventilation, as well as removal of smoke, fumes, excessive heat, or moisture.

◆ ◆ ◆

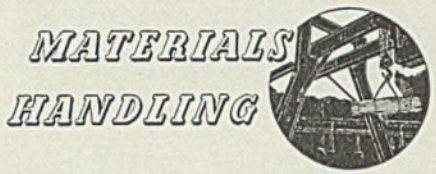
Explosion Proof Controls—

Mercoid Corp., 4213 Belmont avenue, Chicago, has announced explosion proof automatic controls contained within explosion proof cases. Cases and several types of controls for a variety of applications are shipped as complete assembled units ready for installation in danger zones. Consisting of a glass tube



Mercoid explosion proof automatic controls are housed in explosion proof cases

containing sealed contacts of special material and a quantity of mercury to make or break the circuit when the tube is tilted, the Mercoid switch used in these automatic controls is built so there is no open arcing, oxidation or corrosion. For extremely hazardous places the combined case and control furnish double protection for the electrical installation. Pressure controls, ranging from 0 to 2500 pounds for use with air, oil, water, steam, ammonia or other chemicals not injurious to brass or steel, are available. Temperature controls for temperatures from 30 degrees below zero to 450 degrees Fahr. are manufactured with explosion proof cases. Transformer relays and lever arm and float operating controls can also be encased to provide complete safety.



Trucks and Trailers Basis Of Plant Handling System

(*Concluded from Page* 62)

Fig. 3. This unit, a high-lift electric truck and special dump bucket is delivering a load of core sand. Shown in Fig. 4 is a useful special-purpose truck designed specifically to handle hot metal ladles.

As may be imagined, parts storage is a real problem where thousands of parts constitute a single machine. In the Textile Machine Works plant, the problem has been simplified by the employment of a simple system of storage bins and racks located in a special storage department in the basement of the main assembly building. Parts to and from storage are handled in shop boxes pulled by electric trucks. Access between storage and main assembly floor is by means of an 8000-pound capacity freight elevator amply large to carry a truck and four or five trailers.

Keeps Perpetual Inventory

Each aisle in the storage department is numbered, as is each bin. A card index is operated on a perpetual inventory basis, record keeping being in charge of a foreman and four or five stock clerks maintaining the records. A trailer operator receives his order for a load from the foreman, the card indicating in what sections and bins the supply of parts called for may be found. Posted at each bin is a "Bin Record Card" on which are printed pattern or unit numbers and the aisle and bin designations. After picking up the load, the operator passes the record station where the quantities are entered on the proper index cards.

To assist in keeping stocks adequate at all times, shortage boards are placed at strategic locations in the storage department. On these the stock chasers note any items which are at a "shortage" point. This information is forwarded to the requisition department, but until replenishment is effected, the item remains in full display on the shortage board. Electrical stock and expensive accessories purchased from outside sources of supply are stored in protected areas where they may be kept under lock and key.

Machines ready for shipment are moved by overhead cranes equipped with special chain and bar slings to the shipping department. In the latter, shipping boxes of wood are constructed, and plenty of interior packing is provided to assure safe delivery of the machine parts. For certain parts, returnable boxes are used, the latter being designed to provide special suspension of parts during transportation. Boxes are handled into the freight cars by means of overhead crane and special floor trucks.

At the other end of the shipping platform is the receiving department, both incoming and outgoing freight being handled in cars on switchtracks which run into the building. Bar stock is stored in 6-tier racks located near the receiving platform, and adjacent is a bar-straightening department where all straightening is performed manually.

Through all the materials handling operations there is apparent smoothness and ease. This same good housekeeping is observed in all other departmental operations, as is evident in the rigid cleaning and painting regulations, which extend even to such details as building girders, one or more of which are hand cleaned every day, and each one of which is repainted frequently so that the plant is spick and span at all times.

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

Blast-Gates—W. S. Rockwell Co., 50 Church street, New York, has issued bulletin No. 371 covering threaded Butterfly type blast-gates.

Motors—Dumore Co., Racine, Wis., has published another issue of Dumore Shop Talk and also a bulletin describing the new No. 12, one-horsepower electric motor.

Plastic Coupling — Continental-Diamond Fibre Co., Newark, Del., has published a bulletin on its new Celeron moulded plastic, flexible coupling with dimension and rating tables.

Wire—John A. Roebling's Sons Co., Trenton, N. J., has issued booklet No. A-832 dealing with Roebling wire aircraft products, such as power and lighting cables, ferrules, thimbles, and galvanized wire.

Punching Unit—Progressive Welder Co., 737 Piquette avenue, Detroit, has issued a new bulletin illustrating and describing the new Progressive hydraulic, self-stripping, punching unit.

Electric Hoist — Northern Engineering Works, 210 Chene street, Detroit, has published bulletin No. H-101 illustrating and describing the type H Hi-Lift electric hoist, built in capacities of 1 to 10 tons.

Lighting—Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has issued a catalog section dealing with Reflectolux Sr. Luminaires and including dimension outlines and distribution curves.

Piston Feed Pump—W. F. & John Barnes Co., Rockford, Ill., has released a circular illustrating and describing the Barnes piston feed pump and showing many construction features and details of this hydraulic unit.

Salt Dispenser—Mine Safety Appliances Co., Braddock, Thomas and Meade streets, Pittsburgh, has issued a bulletin describing a tablet dispenser for distributing salt as a preventative of heat sickness in industrial plants.

Diesel Generating Sets—Fairbanks, Morse & Co., Chicago, is distributing bulletin No. 3600-A2 describing the model 36-A diesel generating sets and giving engine, generator and alternator construction details, as well as showing representative installations.

Tools—J. H. Williams & Co., 75 Spring street, New York, has issued a new catalog describing its entire industrial line of drop-forged wrenches and other standard stock specialties. In this 184-page catalog are included many new additions.

Insulations — Johns-Manville, 22 East Fortieth street, New York, has published a new edition of "Barriers To Industrial Waste," an illustrated booklet dealing with J-M insulations. Added features include a section on JM-20 brick and a page describing Stonefelt.

Steel Market Revealing Its Autumn Pattern

Auto Output Down; Scrap Near Bottom; Production in Gain

MARKET IN TABLOID

DEMAND . . . . Slight improvement in most lines.

PRICES . . . . Steady, scrap declines further.

PRODUCTION . . Operations up 8 points to 80 per cent of capacity.

SHIPMENTS . . . Steady, with deliveries closer.

THE steel market is gradually assuming its fall pattern, with improvement continued in lighter products and a better outlook for bookings in heavier steel. Buying is 15 to 20 per cent better than in August, in the important centers, though this is a comparison with practically the low point of the summer.

It seems apparent that various factors are combining to bring a quieter situation for the remainder of the year, although substantial business is probable, without the congestion that marked the early months. Railroad buying is interfered with by questions of rates and wages and automotive buying has not developed to the extent expected. One reason for the latter is that models have been changed little and steel already in stock can be utilized.

Since prices have been determined for the remainder of the year and deliveries are not difficult, consumers have no incentive to press for further contracts. A heartening factor for platemakers in the East is probability of award soon of a liner for United States Lines, which will require about 16,000 tons of hull steel. Export inquiry continues in good volume though individual lots are not large.

Steel production, emerging last week from the influence of the Labor day holiday, rebounded 8 points to a national rate of 80 per cent of capacity. Practically all important centers made major increases and some shortening was noted in various smaller centers. Pittsburgh regained 15 points to 84 per cent, Chicago 10 points to 83, Wheeling 13 points to 89, Youngstown 5 to 70, Cleveland 1 to 63, and New England 10 to 75. Eastern Pennsylvania declined 1.5 points to 63, Buffalo 9 to 70, Detroit 5 to 95, Cincinnati 9 to 80 and St. Louis 3 to 74. No change was made at Birmingham, Ala., at 91 per cent. The rate of 80 per cent is slightly below that prevailing in August and may be due in some measure to repair work in getting open hearths in condition for fall activity.

A factor in sustained ingot production in the face of light buying of finished steel is scarcity of semifinished steel. Demand has been so strong for many months that stocks in the hands of producers and rerollers have become depleted and advantage is being taken of the opportunity to replenish the supply. Non-integrated producers of finished steel have been in need of the semifinished steel and have been hard pressed to obtain sufficient for their needs.

Imports of steel and iron products into the United States in July were slightly larger than in June, 47,012 gross tons compared with 44,771 tons. For seven months imports, excluding scrap, were 306,945 tons, compared with 291,396 tons in the same period of 1936. While the gain in quantity was 5.3 per cent, the increase in value was 27.3 per cent, a reflection of the higher world prices now prevailing in steel.

British steel markets are strong, with bookings well into next year and some deliveries not available until then on current buying. Resumption of iron ore shipments from the Bilbao district in Spain has eased the pig iron situation somewhat. Semifinished steel continues scarce in spite of large imports from the Continent. Production in August fell off somewhat from July, due to midsummer holidays.

Influence of the changes in automobile models had its sharpest effect last week, total production being 30,150 cars, compared with 59,017 the preceding week. General Motors produced 13,700 cars compared with 23,096, Ford 5000 compared with 26,000 and Chrysler 1750 compared with 2100. Other builders showed a slight gain with 9700, compared with 7821 the previous week.

Continued weakness in steel scrap, resulting from absence of buying, has depressed prices of steelmaking grades further and STEEL'S composite declined last week to $19.08, a drop of 25 cents, placing this indicator practically at the level of the fourth week of July. This is $2.08 higher than in late June and $3 under the high point at the beginning of April. The same influence brought the iron and steel scrap composite down 2 cents to $40.19. The finished steel composite is unchanged.

COMPOSITE MARKET AVERAGES

	Sept. 18	Sept. 11	Sept. 4	One Month Ago Aug., 1937	Three Months Ago June, 1937	One Year Ago Sept., 1936	Five Years Ago Sept., 1932
Iron and Steel	$40.19	$40.21	$40.27	$40.34	$39.82	$34.15	$28.93
Finished Steel	61.70	61.70	61.70	61.70	61.70	53.10	47.50
Steelworks Scrap ..	19.08	19.33	19.75	20.41	17.15	16.18	7.04

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

A COMPARISON OF PRICES

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

Finished Material	Sept. 18 1937	Aug. 1937	June 1937	Sept. 1936
Steel bars, Pittsburgh	2.45c	2.45c	2.45c	1.95c
Steel bars, Chicago	2.50	2.50	2.50	2.10
Steel bars, Philadelphia	2.74	2.74	2.74	2.26
Iron bars, Terre Haute, Ind.	2.35	2.35	2.35	1.95
Shapes, Pittsburgh	2.25	2.25	2.25	1.90
Shapes, Philadelphia	2.45½	2.45½	2.45½	2.11½
Shapes, Chicago	2.30	2.30	2.30	1.95
Tank plates, Pittsburgh	2.25	2.25	2.25	1.90
Tank plates, Philadelphia	2.43½	2.43½	2.43½	2.09
Tank plates, Chicago	2.30	2.30	2.30	1.95
Sheets, No. 10, hot rolled, Pitts.	2.40	2.40	2.40	1.95
Sheets, No. 24, hot ann., Pitts.	3.15	3.15	3.15	2.50
Sheets, No. 24, galv., Pitts.	3.80	3.80	3.80	3.20
Sheets, No. 10, hot rolled, Gary	2.50	2.50	2.50	2.25
Sheets, No. 24, hot anneal., Gary	3.25	3.25	3.25	2.90
Sheets, No. 24, galvan., Gary	3.90	3.90	3.90	3.50
Plain wire, Pittsburgh	2.90	2.90	2.90	2.40
Tin plate, per base box, Pitts.	$5.35	5.35	5.35	5.25
Wire nails, Pittsburgh	2.75	2.75	2.75	1.95
Semifinished Material				
Sheet bars, open-hearth, Youngs.	$37.00	$37.00	$37.00	$30.00
Sheet bars, open-hearth, Pitts.	37.00	37.00	37.00	30.00
Billets, open-hearth, Pittsburgh	37.00	37.00	37.00	30.00
Wire rods, No. 5 to ⅜-inch, Pitts.	47.00	47.00	47.00	38.00

Pig Iron	Sept. 18 1937	Aug. 1937	June 1937	Sept. 1936
Bessemer, del. Pittsburgh	$25.26	$25.26	$25.26	$20.8132
Basic, Valley	23.50	23.50	23.50	19.00
Basic, eastern del. East Pa.	25.26	25.26	25.26	20.81
No. 2 fdy., del. Pittsburgh	25.21	25.21	25.21	20.3132
No. 2 fdy., Chicago	24.00	24.00	24.00	19.50
Southern No. 2, Birmingham	20.38	20.38	20.38	15.50
Southern No. 2, del. Cincinnati	23.69	23.69	23.69	19.44
No. 2 X eastern, del. Phila.	26.135	26.135	25.26	21.68
Malleable, Valley	24.00	24.00	24.00	19.50
Malleable, Chicago	24.00	24.00	24.00	19.50
Lake Sup., Charcoal, del. Chicago	30.04	30.04	30.04	25.2528
Gray forge, del. Pittsburgh	24.17	24.17	24.17	19.6741
Ferromanganese, del. Pittsburgh	107.29	107.29	107.29	80.13
Scrap				
Heavy melting steel, Pittsburgh	$20.75	$21.85	$18.40	$17.75
Heavy melt. steel, No. 2 East Pa.	16.75	18.00	15.25	14.00
Heavy melting steel, Chicago	17.75	19.75	16.00	16.15
Rail for rolling, Chicago	20.25	21.75	19.50	16.75
Railroad, steel specialties, Chicago	21.75	22.25	19.50	17.65
Coke				
Connellsville, furnace ovens	$4.40	$4.50	$4.65	$3.90
Connellsville, foundry, ovens	5.25	5.30	5.30	4.25
Chicago, by-product foundry, del.	11.00	11.00	11.00	9.75

Steel, Iron, Raw Material, Fuel and Metals Prices

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

Sheet Steel

Prices Subject to Quantity Extras and deductions (Except Galvanized)

Hot Rolled No. 10, 24-48 in.

Pittsburgh	2.40c
Gary	2.50c
Chicago, delivered	2.53c
Detroit, del.	2.60c
New York, del.	2.73c
Philadelphia, del.	2.69c
Birmingham	2.55c
St. Louis, del.	2.63c
Granite City, Ill.	2.60c
Pacific ports, f.o.b. dock	2.95c

Hot Rolled Annealed No. 24

Pittsburgh	3.15c
Gary	3.25c
Chicago, delivered	3.28c
Detroit, delivered	3.35c
New York, del.	3.48c
Philadelphia, del.	3.44c
Birmingham	3.30c
St. Louis, del.	3.38c
Granite City, Ill.	3.35c
Pacific ports, f.o.b. dock	3.80c

Galvanized No. 24

Pittsburgh	3.80c
Gary	3.90c
Chicago, delivered	3.93c
Philadelphia, del.	4.09c
New York, delivered	4.13c
Birmingham	3.95c
St. Louis, del.	4.03c
Granite City, Ill.	4.00c
Pacific ports, f.o.b. dock	4.40c

Tin Mill Black No. 28

Pittsburgh	3.30c
Gary	3.40c
St. Louis, delivered	3.53c
Granite City, Ill.	3.50c

Cold Rolled No. 10

Pittsburgh	3.10c
Gary	3.20c
Detroit, delivered	3.30c
Philadelphia, del.	3.39c
New York, del.	3.43c
St. Louis, del.	3.33c
Granite City, Ill.	3.30c
Pacific ports, f.o.b. dock	3.70c

Cold Rolled No. 20

Pittsburgh	3.55c
Gary	3.65c
Detroit, delivered	3.75c
Philadelphia, del.	3.84c
New York, del.	3.88c
St. Louis	3.78c
Granite City, Ill.	3.75c

Enameling Sheets

Pittsburgh, No. 10	2.90c
Pittsburgh, No. 20	3.50c
Gary, No. 10	3.00c
Gary, No. 20	3.60c
St. Louis, No. 10	3.13c
St. Louis, No. 20	3.73c

Tin and Terne Plate

Gary base, 10 cents higher

Tin plate, coke, (base box), Pittsburgh	$5.35
Waste-waste, 2.75c; strip	2.50c
Long ternes, No. 24, unassorted, Pitts.	4.10c

Corrosion and Heat-Resistant Alloys

Pittsburgh base, cents per lb.

Chrome-Nickel

	No. 302	No. 304
Bars	24.00	25.00
Plates	27.00	29.00
Sheets	34.00	36.00
Hot strip	21.50	23.50
Cold strip	28.00	30.00

Straight Chromes

	No. 410	No. 430	No. 442	No. 446
Bars	18.50	19.00	22.50	27.50
Plates	21.50	22.00	25.50	30.50
Sheets	26.50	29.00	32.50	36.50
Hot strip	17.00	17.50	23.00	28.00
Cold stp.	22.00	22.50	28.50	36.50

Steel Plate

Pittsburgh	2.25c
New York, del.	2.53c
Philadelphia, del.	2.43½c
Boston, delivered	2.65c
Buffalo, delivered	2.50c
Chicago or Gary	2.30c
Cleveland, del.	2.44½c
Birmingham	2.40c
Coatesville, base	2.35c
Sparrows Pt., base	2.35c
Pacific ports, f.o.b. cars, dock	2.80c
St. Louis, delivered	2.52c

Structural Shapes

Pittsburgh	2.25c
Philadelphia, del.	2.45½c
New York, del.	2.50¼c
Boston, delivered	2.63½c
Bethlehem	2.35c
Chicago	2.30c
Cleveland, del.	2.45c
Buffalo	2.35c
Gulf Ports	2.65c
Birmingham	2.40c
Pacific ports, f.o.b. cars, dock	2.80c
St. Louis, del.	2.52c

Bars

Soft Steel

(Base, 3 to 25 tons)

Pittsburgh	2.45c
Chicago or Gary	2.50c
Duluth	2.60c
Birmingham	2.60c
Cleveland	2.50c
Buffalo	2.55c
Detroit, delivered	2.60c
Pacific ports, f.o.b. cars, dock	3.00c
Philadelphia, del.	2.74c
Boston, delivered	2.85c
New York, del.	2.78c
Pitts., forg. qual.	2.80c

Rail Steel

To Manufacturing Trade

Pittsburgh	2.30c
Chicago or Gary	2.35c
Cleveland	2.35c
Moline, Ill.	2.35c
Buffalo	2.40c
Birmingham	2.45c

Iron

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

Reinforcing

New billet, straight lengths, quoted by distributors

Pittsburgh	2.55c
Chicago, Gary, Buffalo, Cleve., Birm., Young.	2.60c
Gulf ports	2.65c
Pacific coast ports, f.o.b. car docks	2.95c
Philadelphia, del.	2.84c

Rail steel, straight lengths, quoted by distributors

Pittsburgh	2.40c
Chicago, Buffalo, Cleveland, Birm., Young.	2.45c
Gulf ports	2.80c

Wire Products

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

Base Pitts.-Cleve. 100 lb. keg.

Standard wire nails	$2.75
Cement coated nails	$2.75

(Per pound)

Polished staples	3.45c
Galv. fence staples	3.70c
Barbed wire, galv.	3.40c
Annealed fence wire	3.15c
Galv. fence wire	3.55c
Woven wire fencing (base C. L. column)	$74.00
Single loop bale ties, (base C. L. column)	63.00

To Manufacturing Trade

Plain wire, 6-9 ga.	2.90c

Anderson, Ind. (merchant products only) and Chicago up $1; Duluth and Worcester up $2; Birmingham up $3.

Spring wire, Pitts. or Cleveland	3.50c

Do., Chicago up $1, Worc. $2.

Cold-Finished Carbon Bars and Shafting

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

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

Alloy Steel Bars (Hot)

(Base, 3 to 25 tons)

Pittsburgh, Buffalo, Chicago, Massillon, Canton, Bethlehem 3.00c

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

Piling

Pittsburgh	2.60c
Chicago, Buffalo	2.70c

Strip and Hoops

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

Hot strip to 23/64-in. Pittsburgh	2.40c
Chicago or Gary	2.50c
Birmingham base	2.55c
Detroit, del.	2.60c
Philadelphia, del.	2.69c
New York, del.	2.73c
Cooperage hoop, Pittsburgh	2.50c
Chicago	2.60c
Cold strip, 0.25 carbon and under, Pittsburgh, Cleveland	3.20c
Detroit, del.	3.40c
Worcester, Mass.	3.40c

Carbon	Cleve. Pitts.	Worcester, Mass.
0.26—0.50	3.20c	3.40c
0.51—0.75	4.45c	4.65c
0.76—1.00	6.30c	6.50c
Over 1.00	8.50c	8.70c

Rails, Track Material

(Gross Tons)

Standard rails, mill	$42.50
Relay rails, Pittsburgh, 20—100 lbs.	32.50-35.50
Light rails, billet qual., Pittsburgh, Chicago	$43.00
Do., rerolling quality	42.00
Angle bars, billet, Gary, Pittsburgh, So. Chicago	2.80c
Do., axle steel	3.35c
Spikes, R. R. base	3.15c
Track bolts, base	4.35c
Tie plates, base	$46.00

Base, light rails 25 to 60 lbs.; 20 lbs. up $2; 16 lbs. up $4; 12 lbs. up $8; 8 lbs. up $10. Base railroad spikes 200 kegs or more; base tie plates 20 tons.

Bolts and Nuts

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

Carriage and Machine

½ x 6 and smaller	65-5 off
Do. larger, to 1-in.	60-10 off
Do. 1⅛ and 1¼-in.	60-5 off
Tire bolts	50 off

Plow Bolts

All sizes	65-5 off

Stove Bolts

In packages with nuts attached 70 off; in packages with nuts separate 70-10 off; in bulk 80 off on 15,000 of 3-inch and shorter, or 5000 over 3-inch.

Step bolts	50-10-5 off
Elevator bolts	50-10-5 off

Nuts

S. A. E. semifinished hex.: ½ to ⅞-inch	60-10 off
Do., 9/16 to 1-inch	60-5 off
Do., over 1-inch	60 off

Hexagon Cap Screws

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

Square Head Set Screws

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

Rivets, Wrought Washers

Structural, Pittsburgh, Cleveland	3.60c
Structural, Chicago	3.70c
⅞-inch and smaller, Pitts., Chi., Cleve.	65-5 off

Wrought washers, Pitts., Chi., Phila. to jobbers and large nut. bolt mfrs. l.c.l. $5.40; c.l. $5.75 off

Cut Nails

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

Welded Iron, Steel Pipe

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

Butt Weld

Steel

In.	Blk.	Galv.
⅛	59½	49
¼	62½	53
1—3	64½	55½

Iron

⅛	26	8
1—1¼	30	14
1½	34	16½
2	33½	16

Lap Weld

Steel

2	57	47½
2½—3	60	50½
3½—6	62	52½
7 and 8	61	50½
9 and 10	60½	50

Iron

2	26½	10
2½—3½	27½	12½
4	29½	16
4½—8	28½	15
9—12	24½	10

Line Pipe

Steel

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

Butt Weld

Iron

	Blk.	Galv.
⅜	25	7
1 and 1¼	29	13
1½	33	15½
2	32½	15

Lap Weld

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

Boiler Tubes

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

Lap Weld

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

Seamless

	Hot Rolled	Cold Drawn
1" OD x 13 Ga.	$ 8.41	$ 9.46
1¼" OD x 13 Ga.	9.96	11.21
1½" OD x 13 Ga.	11.00	12.38
1¾" OD x 13 Ga.	12.51	14.09
2" OD x 13 Ga.	14.02	15.78
2¼" OD x 13 Ga.	15.63	17.60
2¼" OD x 12 Ga.	17.21	19.37
2½" OD x 12 Ga.	18.85	21.22
2¾" OD x 12 Ga.	19.98	22.49
3" OD x 12 Ga.	20.97	23.60
4½" OD x 10 Ga.	40.15	45.19
3½" OD x 11 Ga.	26.47	29.79
4" OD x 10 Ga.	32.83	36.94
5" OD x 9 Ga.	50.38	56.71
6" OD x 7 Ga.	77.35	87.07

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

6-in. & over, Birm.	$46.00-47.00
4-in., Birmingham	49.00-50.00
4-in., Chicago	57.00-58.00
6 to 24-in., Chicago	54.00-55.00
6-in. & over, east fdy.	50.00
Do., 4-in.	53.00

Class A Pipe $3 over Class B
Stnd. fitgs., Birm., base $100.00

Semifinished Steel

Billets and Blooms

4 x 4-inch base; gross ton

Pitts., Chi., Cleve., Buffalo, Young., Bham.	$37.00
Philadelphia	42.30
Duluth	39.00

Forging Billets

6 x 6 to 9 x 9-in., base

Pitts., Chicago, Buffalo	43.00
Forging, Duluth	45.00

Sheet Bars

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

Slabs

Pitts., Chicago, Cleveland, Youngstown	37.00

Wire Rods

Pitts., Cleve., No. 5 to ⅜-inch incl.	47.00
Do., over ⅜ to 41/64-inch incl.	52.00

Chicago up $1; Worcester up $2.

Skelp

Pitts., Chi., Young., Buff., Coatesville, Sparrows Pt.	2.10c

Coke

Price Per Net Ton

Beehive Ovens

Connellsville, fur.	$4.35- 4.50
Connellsville, fdry.	5.00- 5.50
Connell. prem. fdry.	6.00- 6.50
New River fdry.	6.50- 6.75
Wise county fdry.	5.75- 6.00
Wise county fur.	4.75- 5.00

By-Product Foundry

Newark, N. J., del.	10.85-11.30
Chi., ov., outside del.	10.25
Chicago, del.	11.00
Milwaukee, ovens.	11.00
New England, del.	12.50
St. Louis, del.	11.00-11.50
Birmingham, ovens.	7.25
Indianapolis, del.	10.50
Cincinnati, del.	10.50
Cleveland, del.	11.00
Buffalo, del.	10.50
Detroit, del.	11.10
Philadelphia, del.	10.60

Coke By-Products

Spot, gal. Producers' Plants

Pure and 90% benzol	16.00c
Toluol	30.00c
Solvent naphtha	30.00c
Industrial xylol	30.00c

Per lb. f.o.b. Frankford and St. Louis

Phenol (200 lb. drums)	16.25c
do. (450 lbs.)	15.25c

Eastern Plants, per lb.

Naphthalene flakes and balls, in bbls. to jobbers	7.25c
Per ton, bulk, f.o.b. oven or port	
Sulphate of ammonia	$28.50

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.	$25.00	$25.50	$23.50	$26.00
Birdsboro, Pa.	25.00	25.50	24.50	26.00
Birmingham, Ala.‡	20.38	.....	19.38	25.00
Buffalo	24.00	24.50	23.00	25.00
Chicago	24.00	24.00	23.50	24.50
Cleveland	24.00	24.00	23.50	24.50
Detroit	24.00	24.00	23.50	24.50
Duluth	24.50	24.50	.....	25.00
Erie, Pa.	24.00	24.50	23.50	25.00
Everett, Mass.	25.75	26.25	25.25	26.75
Hamilton, O.	24.00	24.00	23.50	.....
Neville Island, Pa.	24.00	24.00	23.50	24.50
Provo, Utah	22.00	.....	.....	.....
Sharpsville, Pa.	24.00	24.00	23.50	24.50
Sparrows Point, Md.	25.00	.....	24.50	.....
Swedeland, Pa.	25.00	25.50	24.50	26.00
Toledo, O.	24.00	24.00	23.50	24.50
Youngstown, O.	24.00	24.00	23.50	24.50

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

Delivered from Basing Points:

Akron, O., from Cleveland	25.26	25.26	24.76	25.76
Baltimore from Birmingham	25.58	.....	24.46	.....
Boston from Birmingham	26.37	.....	25.87	.....
Boston from Everett, Mass.	26.25	26.75	25.75	27.25
Boston from Buffalo	26.25	26.75	25.75	27.25
Brooklyn, N. Y., from Bethlehem	27.27	27.77	.....	.....
Brooklyn, N. Y., from Bmghm.	27.05	.....	.....	.....
Canton, O., from Cleveland	25.26	25.26	25.76	25.76
Chicago from Birmingham	24.22	.....	24.10	.....
Cincinnati from Hamilton, O.	24.07	25.01	24.51	.....
Cincinnati from Birmingham	23.69	.....	22.69	.....
Cleveland from Birmingham	24.12	.....	23.62	.....
Mansfield, O., from Toledo, O.	25.76	25.76	25.26	25.26
Milwaukee from Chicago	25.00	25.00	24.50	25.00
Muskegon, Mich., from Chicago, Toledo or Detroit	26.90	26.90	26.40	27.40
Newark, N. J., from Birmingham	26.01	.....	.....	.....
Newark, N. J., from Bethlehem	26.39	26.89	.....	.....
Philadelphia from Birmingham	25.38	.....	25.26	.....
Philadelphia from Swedeland, Pa.	25.76	26.26	25.26	.....
Pittsburgh district from Neville Island	Neville, base plus 63c, 76c, and $1.13 switch'g charges			
Saginaw, Mich., from Detroit	26.25	26.25	25.75	25.75
St. Louis, northern	24.50	24.50	24.00	.....
St. Louis from Birmingham	†24.12	.....	23.82	.....
St. Paul from Duluth	25.94	25.94	.....	26.44

†Over 0.70 phos.

Low Phos.

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

Gray Forge

Valley furnace $23.50
Pitts. dist. fur. 23.50

Charcoal

Lake Superior fur. $27.00
do., del. Chicago 30.04
Lyles, Tenn. 26.50

Silvery†

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

Bessemer Ferrosilicon†

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

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

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

Refractories

Per 1000 f.o.b. Works, Net Prices

Fire Clay Brick

Super Quality

Pa., Mo., Ky. $64.60

First Quality

Pa., Ill., Md., Mo., Ky. ... 51.30
Alabama, Georgia 51.30
New Jersey 56.00

Second Quality

Pa., Ill., Ky., Md., Mo. ... 46.55
Georgia, Alabama 41.80
New Jersey 51.00

Ohio

First quality 43.70
Intermediate 39.90
Second quality 35.15

Malleable Bung Brick

All bases $59.85

Silica Brick

Pennsylvania $51.30
Joliet, E. Chicago 59.85
Birmingham, Ala. 51.30

Ladle Brick

(Pa., O., W. Va., Mo.)

Dry press $30.00
Wire cut $28.00

Magnesite

Imported dead-burned grains, net ton f.o.b. Chester, Pa., and Baltimore bases (bags) .. $45.00
Domestic dead-burned grains, net ton f.o.b. Chester, Pa., and Baltimore bases (bags) .. 43.00

Base Brick

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

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

Fluorspar, 85-5

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

Ferroalloys

Dollars, except Ferrochrome

Ferromanganese, 78-82%, tidewater, duty pd. ... $102.50
Do., Baltimore, base .. 102.50
Do., del. Pittsburgh ... 107.29
Spiegeleisen, 19-21% dom. Palmerton, Pa., spot .. 33.00
Do., New Orleans 33.00
Do., 26-28%, Palmerton 39.00
Ferrosilicon, 50% freight allowed, c.l. 69.50
Do., less carload 77.00
Do., 75 per cent 126-130.00
Spot, $5 a ton higher.
Silicoman., 2½ carbon .. 106.50
2% carbon 111.50; 1%, 121.50
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb. del. 10.50
Ferrotungsten, stand., lb. con. del. cars ..... nom.
Ferrovanadium, 35 to 40% lb., cont. 2.70-2.90
Ferrotitanium, c. l., prod. plant, frt. all., net ton 142.50
Spot, carlots 145.00
Spot, ton lots 150.00
Ferrophosphorous, per ton, c. l., 17-19% Rockdale, Tenn., basis, 18%, $3 unitage 63.50
Ferrophosphorus, electrolytic, per ton c. l., 23-26% f.o.b. Anniston, Ala., 24% $3 unitage 80.00
Ferromolybdenum, stand. 55-65%, lb. 0.95
Molybdate, lb. cont. 0.80
†Carloads. Quan. diff. apply

Nonferrous

METAL PRICES OF THE WEEK

Spot unless otherwise specified. Cents per pound

	Copper, Electro, del. Conn.	Copper, Lake, del. Midwest	Copper, Casting, refinery	Straits Tin, New York Spot	Straits Tin, New York Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 99%	Antimony American Spot. N. Y.	Nickel Cathodes
Sept. 11	14.00	14.12½	13.75	59.50	58.87½	6.50	6.35	7.25	20.00	15.75	35.00
Sept. 13	14.00	14.12½	13.75	59.50	58.75	6.50	6.35	7.25	20.00	15.75	35.00
Sept. 14	14.00	14.12½	13.75	59.87½	59.25	6.50	6.35	7.25	20.00	16.75	35.00
Sept. 15	14.00	14.12½	13.75	59.87½	59.25	6.50	6.35	7.25	20.00	16.75	35.00
Sept. 16	14.00	14.12½	13.75	59.25	58.62½	6.50	6.35	7.25	20.00	16.75	35.00
Sept. 17	14.00	14.12½	13.75	59.25	58.62½	6.50	6.35	7.25	20.00	16.75	35.00

MILL PRODUCTS

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

Sheets

Yellow brass (high) 19.75
Copper, hot rolled 21.87½
Lead, cut to jobbers 10.00
Zinc, 100-lb. base 12.25

Tubes

High yellow brass 22.50
Seamless copper 22.62½

Rods

High yellow brass 16.25
Copper, hot rolled 18.62½

Anodes

Copper, untrimmed 19.12½

Wire

Yellow brass (high) 20.00

OLD METALS

Nom. Deal, buying prices

No. 1 Composition Red Brass

*New York 8.50-8.75
Cleveland 9.25-9.50
*Chicago 9.00-9.25
*St. Louis 8.50-8.75

Heavy Copper and Wire

*New York, No. 1 .. 10.75-11.00
*Cleveland, No. 1 ... 10.75-11.00
*Chicago, No. 1 ..... 10.75-11.00
*St. Louis, No. 1 .... 10.50-10.75

Composition Brass Borings

*New York 8.00-8.25

Light Copper

*New York 8.50-9.00
*Cleveland 8.75-9.00
*Chicago 8.75-9.00
*St. Louis 8.75-9.00

Light Brass

Cleveland 5.25-5.50
*Chicago 5.75-6.00
*St. Louis 5.25-5.50

Lead

New York 5.75
*Cleveland 5.25-5.50
Chicago 5.50-5.62½
St. Louis 5.00-5.25

Zinc

New York 4.25- 4.50
*Cleveland 3.75- 4.00
St. Louis 4.00- 4.25

Aluminum

Borings, Cleveland 9.75-10.00
*Mixed cast, Cleve. 13.75-14.00
*Clips, soft, Cleve. 15.25-15.50
Mixed cast, St. L. .. 12.75-13.00

SECONDARY METALS

Brass, ingot 85-5-5-5, lcl, 14.25
Stand. No. 12 alum. 18.50

Warehouse Iron and Steel Prices

Cents per pound for delivery within metropolitan districts of cities specified

STEEL BARS

Baltimore	4.00c
Boston††	4.05c
Buffalo	3.90c
Chattanooga	4.21c
Chicago (j)	3.85c
Cincinnati	4.05c
Cleveland	3.75c
Detroit	3.93½c
Houston	3.10c
Los Angeles	4.30c
Milwaukee	3.96c-4.11c
New Orleans	4.20c
New York‡ (d)	4.12c
Pitts. (k)	3.80c
Philadelphia	4.00c
Portland	4.50c
San Francisco	4.20c
Seattle	4.45c
St. Louis	4.09c
St. Paul	4.10c-4.25c
Tulsa	3.35c

IRON BARS

Portland	3.50c
Chattanooga	4.21c
Baltimore*	3.25c
Cincinnati	4.05c
New York‡ (d)	3.65c
Philadelphia	4.00c
St. Louis	4.09c
Tulsa	3.35c

REINFORCING BARS

Buffalo	3.10c
Chattanooga	4.21c
Cleveland (c)	2.55c
Cincinnati	3.75c
Houston	3.25c
Los Angeles, c.l.	2.975c
New Orleans*	3.24c
Pitts., plain (h)	2.55c
Pitts., twisted squares (h)	3.95c
San Francisco	2.97½c
Seattle	2.975c
St. Louis	3.99c
Tulsa	3.25c
Young	2.30c-2.60c

SHAPES

Baltimore	3.90c
Boston††	3.92c
Buffalo	3.80c
Chattanooga	4.11c
Chicago	3.75c
Cincinnati	3.95c
Cleveland	3.86c
Detroit	3.95c
Houston	3.10c
Los Angeles	4.30c
Milwaukee	3.86c
New Orleans	4.10c
New York‡ (d)	3.97c
Philadelphia	3.90c
Pittsburgh (h)	3.70c
Portland (i)	4.25c
San Francisco	4.05c
Seattle (i)	4.25c
St. Louis	3.99c
St. Paul	4.00c
Tulsa	3.60c

PLATES

Baltimore	3.90c
Boston††	3.93c
Buffalo	3.80c
Chattanooga	4.11c
Chicago	3.75c
Cincinnati	3.95c
Cleveland, ¼-in. and over	3.86c
Detroit	3.95c
Detroit, ⅜-in.	4.15c
Houston	3.10c
Los Angeles	4.30c
Milwaukee	3.86c
New Orleans	4.10c
New York‡ (d)	4.00c
Philadelphia	3.90c
Phila. floor	5.25c
Pittsburgh (h)	3.70c
Portland	4.25c
San Francisco	4.05c
Seattle	4.25c
St. Louis	3.99c
St. Paul	4.00c
Tulsa	3.60c

NO. 10 BLUE

Baltimore	3.95c
Boston (g)	4.00c
Buffalo, 8-10 ga.	3.97c
Chattanooga	4.16c
Chicago	3.85c
Cincinnati,	4.00c
Cleveland	3.91c
Det. 8-10 ga.	3.93½c
Houston	3.45c
Los Angeles	4.50c
Milwaukee	3.96c
New Orleans	4.35c
New York‡ (d)	4.07c
Portland	4.25c
Philadelphia	4.00c
Pittsburgh (h)	3.75c
San Francisco	4.30c
Seattle	4.50c
St. Louis	4.39c
St. Paul	4.10c
Tulsa	3.80c

NO. 24 BLACK

Baltimore*†	4.50c
Boston (g)	4.75c
Buffalo	4.80c
Chattanooga*	4.06c
Chicago	4.45c-5.10c
Cincinnati	4.75c
Cleveland	4.66c
Detroit	4.68½c
Los Angeles	5.05c
Milwaukee	4.56c-5.21c
New York‡ (d)	4.82c
Philadelphia	4.65c
Pitts.** (h)	4.75c
Portland	5.15c
Seattle	5.35c
San Francisco	5.15c
St. Louis	4.84c
St. Paul	4.75c
Tulsa	4.85c

NO. 24 GALV. SHEETS

Baltimore*†	4.70c
Buffalo	5.45c
Boston (g)	5.30c
Chattanooga*	4.76c
Chicago (h)	5.10c-5.75c
Cincinnati	5.40c
Cleveland	5.31c
Detroit	5.40c
Houston	4.50c
Los Angeles	5.75c
Milwaukee	5.21c-5.86c
New Orleans*	5.75c
New York‡ (d)	5.47c
Philadelphia	5.30c
Pitts.** (h)	5.40c
Portland	5.90c
San Francisco	5.85c
Seattle	5.90c
St. Louis	5.49c
St. Paul	5.40c
Tulsa	5.20c

BANDS

Baltimore	4.20c
Boston††	4.25c
Buffalo	4.22c
Chattanooga	4.41c
Cincinnati	4.25c
Cleveland	4.16c
Chicago	4.10c
Detroit, ⅛-in. and lighter	4.185c
Houston	3.35c
Los Angeles	4.80c
Milwaukee	4.21c
New Orleans	4.75c
New York‡ (d)	4.32c
Philadelphia	4.10c
Pittsburgh (h)	4.00c
Portland	5.00c
San Francisco	4.80c
Seattle	4.95c
St. Louis	4.34c
St. Paul	4.35c
Tulsa	3.55c

HOOPS

Baltimore	4.45c
Boston††	5.25c
Buffalo	4.22c
Chicago	4.10c
Cincinnati	4.25c
Detroit, No. 14 and lighter	4.185c
Los Angeles	6.55c
Milwaukee	4.21c
New York‡ (d)	4.32c
Philadelphia	4.35c
Pittsburgh (h)	4.50c
Portland	6.50c
San Francisco	6.50c
Seattle	6.30c
St. Louis	4.34c
St. Paul	4.35c

COLD FIN. STEEL

Baltimore (c)	4.50c
Boston*	4.65c
Buffalo (h)	4.35c
Chattanooga*	4.86c
Chicago (h)	4.30c
Cincinnati	4.50c
Cleveland (h)	4.30c
Detroit	4.30c
Los Ang. (f) (d)	6.85c
Milwaukee	4.41c
New Orleans	5.10c
New York‡ (d)	4.57c
Philadelphia	4.53c
Pittsburgh	4.15c
Portland (f) (d)	7.10c
San Fran. (f) (d)	6.80c
Seattle (f) (d)	7.10c
St. Louis	4.54c
St. Paul	4.77c
Tulsa	4.80c

COLD ROLLED STRIP

Boston	3.845c
Buffalo	3.79c
Chicago	3.87c
Cincinnati	3.82c
Cleveland (b)	3.60c
Detroit	3.43c
New York‡ (d)	3.92c
St. Louis	4.54c

TOOL STEELS

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

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

Uniform extras apply.

BOLTS AND NUTS

(100 pounds or over)

	Discount
Chicago (a)	55 to 60
Cleveland	60-5-5
Detroit	70-10
Milwaukee	60 to 65
New Orleans	60
Pittsburgh	65-5

(a) Under 100 lbs., 50 off.

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

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

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

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, Sept. 16

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

	British gross tons U. K. ports £ s d	Continental Channel or North Sea ports, metric tons Quoted in dollars at current value	**Quoted in gold pounds sterling £ s d
PIG IRON			
Foundry, 2.50-3.00 Silicon	$29.76 6 0 0	$24.11	3 0 0
Basic bessemer	19.47 3 18 6	23.71	2 19 0
Hematite, Phos. .03-.05	35.96 7 5 0*	.....	.....
SEMIFINISHED STEEL			
Billets	$39.06 7 17 6	$43.20	5 7 6
Wire rods, No. 5 gage	53.69 10 16 6	49.22	6 2 6
FINISHED STEEL			
Standard rails	$50.22 10 2 6	$46.20	5 15 0
Merchant bars	2.43c 11 0 0	2.18c to 2.28c	6 0 0 to 6 5 0
Structural shapes	2.35c 10 12 6	1.96c	5 7 6
Plates, †¼ in. or 5 mm.	2.56c 11 11 3	2.59c	7 2 6
Sheets, black, 24 gage or 0.5 mm.	3.32c 15 0 0	3.18c	8 15 0††
	4.14c 18 15 0	3.99c	11 0 0
Sheets, gal., 24 gage, corr.	3.03c 13 15 0	2.36c	6 10 0
Bands and strips	4.31c 19 10 0	2.54c	7 0 0
Plain wire, base			
Galvanized wire, base	5.14c 23 5 0	3.18c	8 15 0
Wire nails, base	4.09c 18 10 0	2.90c	8 0 0
Tin plate, box 108 lbs.	$ 6.45 1 6 0	.....	.....

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

Domestic Prices at Works or Furnace—Last Reported

	£ s d	French Francs		Belgian Francs		Reich Marks
Fdy. pig iron, Si. 2.5	$25.05 5 1 0(a)	$17.02	505	$26.24	825	$25.29 63
Basic bessemer pig iron	24.80 5 0 0(a)	.....	.....	.....	.....	27.90 (b) 69.50
Furnace coke	8.80 1 15 6	5.32	158	7.01	215	7.63 19
Billets	39.06 7 17 6	25 53	757.50	31.30	960	38.74 96.50
Standard rails	2.24c 10 2 6	1.58c	1,050	2.06c	1,375	2.38c 132
Merchant bars	2.53c 11 9 0	1.49c	995	1.65c	1,100	1.98c 110
Structural shapes	2.44c 11 0 6	1.46c	970	1.65c	1,100	1.93c 107
Plates, †¼-in. or 5 mm.	2.59c 11 14 3	1.86c	1,240	2.06c	1,375	2.29c 127
Sheets, black	3.48c 15 15 0§	2.48c	1,650‡	2.36c	1,575‡	2.59c 144‡
Sheets, galv., corr., 24 ga. or 0.5 mm.	4.31c 19 10 0	3.38c	2,250	2.85c	1,900	6.66c 370
Plain wire	4.31c 19 10 0	2.22c	1,480	2.49c	1,650	3.11c 173
Bands and strips	2.70c 12 4 0	1.75c	1,165	2.33c	1,550	2.29c 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. Middlesbrough. b hematite. ††Close annealed.

**Gold pound sterling carries a premium of 65 per cent over paper sterling.

Iron and Steel Scrap Prices

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

HEAVY MELTING STEEL

Birmingham,† No. 1	15.00-16.00
Birmingham,† No. 2	14.00-15.00
Bos. dock No. 1 exp.	18.00
N. Eng. del. No. 1	17.00
Buffalo, No. 1	19.00-19.50
Buffalo, No. 2	17.00-17.50
Chicago, No. 1	17.50-18.00
Cleveland, No. 1	19.50-20.00
Cleveland, No. 2	18.00-18.50
Detroit, No. 1	16.00-16.50
Eastern Pa., No. 1	19.00-19.25
Eastern Pa., No. 2	16.50-17.00
Federal, Ill.	15.00-15.50
Granite City, R. R.	17.00-17.50
Granite City, No. 2	15.00-15.50
New York, No. 1	†16.50
N. Y. dock No. 1 exp.	16.50
Pitts. No. 1 (R. R.)	22.00-22.50
Pitts., No. 1 (dlr.)	20.50-21.00
Pittsburgh, No. 2	18.50-19.00
St. Louis, R. R.	17.00-17.50
St. Louis, No. 2	15.00-15.50
Toronto, dlrs. No. 1	11.00-12.00
Toronto, No. 2	10.00-11.00
Valleys, No. 1	21.00-22.00

COMPRESSED SHEETS

Buffalo, dealers	17.00-18.00
Chicago, factory	16.75-17.25
Chicago, dealer	16.50-17.00
Cleveland	19.00-19.50
Detroit	17.50-18.00
E. Pa., new mat.	19.00-19.25
E. Pa., old mat.	13.50-14.00
Pittsburgh	20.50-21.00
St. Louis	12.50-13.00
Valleys	20.50-21.00

BUNDLED SHEETS

Buffalo	13.00-13.50
Cincinnati, del.	13.00-13.50
Cleveland	14.00-14.50
Pittsburgh	18.50-19.00
St. Louis	11.50-12.00
Toronto, dealers	8.00

SHEET CLIPPINGS, LOOSE

Chicago	13.25-13.75
Cincinnati	11.50-12.00
Detroit	13.25-13.75
St. Louis	10.50-11.00

STEEL RAILS, SHORT

Birmingham	17.00-18.00
Buffalo	23.50-24.50
Chicago (3 ft.)	20.50-21.00
Chicago (2 ft.)	21.50-22.00
Cincinnati, del.	21.00-21.50
Detroit	22.50-23.00
Pitts. 3 ft. and less	25.00-25.50
St. Louis, 2 ft. & less	20.00-20.50

STEEL RAILS, SCRAP

Boston district	†15.50-15.75
Buffalo	21.00-22.00
Chicago	17.50-18.00
Cleveland	21.00-21.50
Pittsburgh	22.50-23.00
St. Louis	18.50-19.00

STOVE PLATE

Birmingham	10.00-10.50
Boston district	†11.00-11.25
Buffalo	15.50-16.50
Chicago	11.00-11.50
Cincinnati, dealers	10.00-10.50
Detroit, net	12.25-12.75
Eastern Pa.	15.50
New York fdry.	†12.00
St. Louis	12.00-12.50
Toronto, deal'rs, net	9.50-10.00

SPRINGS

Buffalo	23.00-23.50
Chicago, coil	23.50-24.00
Chicago, leaf	21.50-22.00
Eastern Pa.	24.50-25.00
Pittsburgh	25.00-25.50
St. Louis	22.00-22.50

ANGLE BARS—STEEL

Chicago	19.50-20.00
St. Louis	18.50-19.00

RAILROAD SPECIALTIES

Chicago	21.50-22.00

LOW PHOSPHORUS

Buffalo, billet and bloom crops	22.50-23.00
Cleveland, billet, bloom crops	24.50-25.00
Eastern Pa., crops	24.50-25.00
Pittsburgh, billet, bloom crops	25.50-26.00
Pittsburgh, sheet bar crops	25.00-25.50

FROGS, SWITCHES

Chicago	17.50-18.00
St. Louis, cut	18.00-18.50

SHOVELING STEEL

Federal, Ill.	15.00-15.50
Granite City, Ill.	15.00-15.50
Toronto, dealers	9.00- 9.50

RAILROAD WROUGHT

Birmingham	13.50-14.00
Boston district	†10.00-10.25
Buffalo, No. 1	17.00-17.50
Buffalo, No. 2	19.50-20.00
Chicago, No. 1 net	15.50-16.00
Cincinnati, No. 2	16.00-16.50
Eastern Pa., No. 1	21.00-21.50
St. Louis, No. 1	14.00-14.50
St. Louis, No. 2	17.00-17.50
Toronto, No. 1 dlr.	15.00

SPECIFICATION PIPE

Eastern Pa.	17.00-17.50
New York	†12.00-12.50

BUSHELING

Buffalo, No. 1	17.00-17.50
Chicago, No. 1	16.50-17.00
Cincin., No. 1, deal.	15.00-15.50
Cincinnati, No. 2	8.00- 8.50
Cleveland, No. 2	13.50-14.00
Detroit, No. 1 new	16.00-16.50
Valleys, new, No. 1	19.50-20.00
Toronto, dealers	9.00

MACHINE TURNINGS

Birmingham	6.00- 7.00
Buffalo	12.50-13.00
Chicago	10.50-11.00
Cincinnati, dealers	10.00-10.50
Cleveland	13.00-13.50
Detroit	11.50-12.00
Eastern Pa.	13.00-13.50
New York	†9.00- 9.50
Pittsburgh	14.50-15.00
St. Louis	9.00-9.50
Toronto, dealers	8.00- 8.50
Valleys	14.75-15.25

BORINGS AND TURNINGS

For Blast Furnace Use

Boston district	†8.50
Buffalo	12.50-13.00
Cincinnati, dealers	9.50-10.00
Cleveland	14.00-14.50
Detroit	12.25-12.75
Eastern Pa.	12.00-12.50
New York	†9.00
Pittsburgh	15.00-15.50
Toronto, dealers	8.00- 8.50

CAST IRON BORINGS

Birmingham	8.00- 8.50
Boston dist. chem.	†10.00
Bos. dist. for mills	†8.75
Buffalo	12.50-13.00
Chicago	11.00-11.50
Cincinnati, dealers	9.00- 9.50
Cleveland	13.50-14.00
Detroit	12.25-12.75
E. Pa., chemical	14.50-15.00
New York	†9.00- 9.50
St. Louis	8.00- 8.50
Toronto, dealers	9.00

PIPE AND FLUES

Cincinnati, dealers	10.50-11.00
Chicago, net	13.00-13.50

RAILROAD GRATE BARS

Buffalo	13.50-14.00
Chicago, net	12.00-12.50
Cincinnati	10.00-10.50
Eastern Pa.	15.50
New York	†12.00
St. Louis	12.00-12.50

FORGE FLASHINGS

Boston district	†11.50-11.75
Buffalo	17.00-17.50
Cleveland	17.50-18.00
Detroit	15.50-16.00
Pittsburgh	18.00-18.50

FORGE SCRAP

Boston district	†9.50-10.00
Chicago, heavy	21.50-22.00

ARCH BARS, TRANSOMS

St. Louis	20.00-20.50

AXLE TURNINGS

Boston district	†11.00-11.50
Buffalo	15.50-16.00
Chicago, elec. fur.	18.00-18.50
Eastern Pa.	18.00-18.50
St. Louis	14.00-14.50
Toronto	9.50

STEEL CAR AXLES

Birmingham	19.00-20.00
Buffalo	21.00-21.50
Boston district	†24.00-25.00
Chicago, net	25.50-26.00
Eastern Pa.	26.00-26.50
St. Louis	24.00-24.50

SHAFTING

Boston district	†18.00-18.50
New York	†18.00-18.50
Eastern Pa.	24.50-25.00
St. Louis	19.50-20.00

CAR WHEELS

Birmingham	18.00-19.00
Boston dist., iron	†15.00-15.25
Buffalo, iron	23.00-23.50
Buffalo, steel	23.00-24.00
Chicago, iron	19.50-20.00
Chicago, rolled steel	21.50-22.00
Cincinnati, iron	18.00-18.50
Eastern Pa., iron	20.50-21.00
Eastern Pa., steel	24.50-25.00
Pittsburgh, iron	20.50-21.00
Pittsburgh, steel	25.00-25.50
St. Louis, iron	19.00-19.50
St. Louis, steel	21.00-21.50

NO. 1 CAST SCRAP

Birmingham	15.50-16.00
Boston, No. 1 mach.	†15.00
N. Eng. del. No. 2	15.50-15.75
N. Eng. del. textile	18.50
Buffalo, cupola	17.50-18.00
Buffalo, mach.	18.50-19.50
Chicago, agri. net	13.00-13.50
Chicago, auto	14.00-14.50
Chicago, mach. net	14.50-15.00
Chicago, railr'd net	13.50-14.00
Cincin., mach. cup.	14.50-15.00
Cleveland, mach.	19.50-20.50
Eastern Pa., cupola	20.00-20.50
E. Pa., mixed yard	18.00
Pittsburgh, cupola	19.50-20.00
San Francisco, del.	13.50-14.00
Seattle	8.00- 9.00
St. Louis, No. 1	14.00-14.50
St. L., No. 1, mach.	15.00-15.50
Toronto, No. 1, mach., net	16.00-17.00

HEAVY CAST

Boston dist. break.	†14.00
N. Eng. del.	15.00-15.25
Buffalo, break.	16.00-16.50
Cleveland, break.	17.00-18.00
Detroit, break.	14.00-14.50
Detroit, auto net	15.50-16.00
Eastern Pa.	18.50-19.00
New York, break.	†14.50
Pittsburgh	17.00-17.50

MALLEABLE

Birmingham, R. R.	12.50-13.50
New England, del.	20.00
Buffalo	19.50-20.00
Chicago, R. R.	18.50-19.00
Cincin., agri. del.	16.00-16.50
Cleveland, rail	21.50-22.00
Detroit, auto	16.00-16.50
Eastern Pa., R. R.	19.50-20.00
Pittsburgh, rail	21.00-21.50
St. Louis, R. R.	18.00-18.50

RAILS FOR ROLLING

5 feet and over

Birmingham	19.00-20.00
Boston	†17.50-18.00
Chicago	20.00-20.50
Eastern Pa.	21.00-21.50
New York	†17.50
St. Louis	19.75-20.25

LOCOMOTIVE TIRES

Chicago (cut)	22.00-22.50
St. Louis, No. 1	19.50-20.00

LOW PHOS. PUNCHINGS

Buffalo	22.50-23.00
Chicago	21.50-22.00
Eastern Pa.	24.50-25.00
Pittsburgh (heavy)	24.00-24.50
Pittsburgh (light)	23.00-23.50

Iron Ore

Lake Superior Ore

Gross ton, 51½ %

Lower Lake Ports

Old range bessemer	$5.25
Mesabi nonbess.	4.95
High phosphorus	4.85
Mesabi bessemer	5.10
Old range nonbess.	5.10

Eastern Local Ore

Cents, unit, del. E. Pa.

Foundry and basic 56.63% con.	9.00-10.00
Cop.-free low phos. 58-60%	nominal

Foreign Ore

Cents per unit, f.a.s. Atlantic

Foreign manganiferous ore, 45.55% iron, 6-10% man.	*17.00
No. Afr. low phos.	20.00
Swedish low phos.	nominal
Spanish No. Africa basic, 50 to 60%	*16.00
Tungsten, Nov.-Dec. sh. ton, unit, duty pd.	nominal
N. F., fdy., 55%	7.00
Chrome ore, 48% gross ton, c.i.f.	$25.50-26.50

*Nominal asking price for spot.

Manganese Ore

(Nominal)

Prices not including duty, cents per unit cargo lots.

Caucasian, 50-52%	nom. .52.00 to 53.00
So. African, 50-52%	nom. 52.00 to 53.00
Indian, 50-52%	Nominal

Sheets

Sheet Prices, Page 158

Pittsburgh—Sheet bookings have been irregular in this district recently. Although the trend is upward and will be bolstered by automotive tonnages, specifications are still below shipments. Certain automobile manufacturers were still finishing up on 1937 models last week, with some divisions producing parts for 1938 assemblies, and other manufacturers were encountering unexpected delays in getting the 1938 program under way. In addition to forthcoming heavier automotive requirements, jobbers report improved demand for galvanized roofing sheets in agricultural districts. On galvanized the new price setup is scheduled to take effect Oct. 1. Delivery promises of the mills in this district vary widely, with the leading interest offering six to seven weeks on cold or hot-rolled and seven on galvanized. Pressure has relaxed from miscellaneous consumers, although they apparently are still busy.

Cleveland—Most sellers report a moderate increase in aggregate tonnage over corresponding period in August. While heavy buying from automotive sources is absent, miscellaneous requirements have held at an encouraging volume. Most tonnage is for prompt delivery with little interest shown in forward contracting. Stove and barrel manufacturers continue below normal operations, but are expected to improve considerably over the next 30 days.

Chicago—Small additional gains are noted in sheet demand from the automotive industry though this situation is ascribed partly to the fact that the industry entered its model changing period with somewhat larger stocks than usual. Demand from miscellaneous consumers lack improvement common to this period but mills still are fairly well fortified with backlogs to continue active schedules for several more weeks.

Boston—Sheet specifications from miscellaneous industrial consumers are well maintained, but new and advance buying lags, aggregate volume showing slight improvement. Jobbers continue to purchase for fill-in needs, but with few exceptions replacements in tonnage lots have not been placed.

New York—Sheet orders still lag, and in some cases, although still much the exception, there have been requests for suspensions, but no cancellations. Some of the smaller mills at least are offering protection

over the entire fourth quarter, with others at the moment still naming Nov. 1 as their deadline. Due to typographical error it was reported in last week's issue that several leading bidders quoted $6.80 per square on 170 tons of copper-bearing 2½-inch corrugated galvanized sheets for the Panama Canal. This price should have been $6.82, as compared with $6.80 quoted by the Central Supplies Co. of America, regarded as likely to receive the tonnage.

Youngstown, O.—Mills providing automobile sheets are in comfortable position with four to six weeks rolling on books and orders coming in steadily. Some larger suppliers have backlogs of eight to ten weeks.

Philadelphia—The hot-rolled sheet situation, with respect to deliveries, shows further easing, with the larger interests now quoting four to six weeks and smaller mills somewhat less. Even more favorable delivery is avilable in cold-rolled, with the maximum three to five weeks. Hot-rolled annealed can not be obtained within seven to eight weeks in some directions. New sheet buying is negligible, with both auto and miscellaneous consumers covered for most requirements for several weeks. Tin plate backlogs are heavy and extend close to the end of fourth quarter.

Cincinnati—Sheet mills are looking to automotive demands for late September expansion, fresh ordering so far this month holding close to August tonnage. Continued shipments in excess of bookings, in recent weeks, have shrunk backlogs until prompt deliveries in almost all grades are available. Miscellaneous needs, excepting in household equipment, are inactive.

St. Louis—Producers and distributors of steel sheets report little improvement in demand since the end of August. Requirements of the stove industry, which figured prominently since early spring, have receded, and takings by refrigeration and other household appliance manufacturers have also fallen off noticeably.

Birmingham, Ala. — Sheets, the bright spot in steel operations for weeks, continue to lead demand with no indication of a recession in buying. Mills report a steady accumulation of business in sheets despite record productions last month.

Strip

Strip Prices, Page 159

Pittsburgh—Slow improvement in strip bookings continues. While market has lacked spectacular forward movement, producers anticipate better ordering before the end of this month, principally in delayed specifications from partsmakers and automobile manufacturers. In the last ten days several good-sized buys have come from miscellaneous sources, such as manufacturers of sleds and allied products. Meanwhile, activity in the electrical equipment industry is well maintained and office equipment manufacturers are entering their big season. Little concern is apparent among consumers over fourth-quarter needs, prompt deliveries being easily obtainable.

Cleveland—Requirements for both wide and narrow strip have shown little change this month. Electrical equipment manufacturers remain at a fairly active pace and are specifying freely for immediate needs. Little interest has been shown in forward purchases as most consumers have ample stocks. Most sellers can make deliveries within one to two weeks, depending on the grade.

Chicago—A lag still prevails in steel strip demand as a result of

the slowness in automotive buying and small changes in orders from miscellaneous users. While further gains in needs of motor car interests are in prospect within the next two to three weeks, the pickup in total business now is thought likely to fall below previous expectations. Prices generally are steady.

Boston—Spasmodic improvement in narrow cold strip buying with moderate covering for partial fourth quarter needs by a few consumers may be traced back in a mild degree to more interest by automotive partsmakers. There is limited general covering for advance requirements and a good portion of incoming volume is still for urgent delivery. Incoming orders aggregate about 70 per cent of shipments with most mills. Backlogs are down and sellers are actively soliciting business.

New York—Covering fourth quarter needs by cold strip consumers is light, most buying being for fillins for prompt delivery. Most large consumers appear to be still well stocked with only scattered open specifications around which purchasing centers. Aggregate volume reaching mills holds at about the recent rate. Sellers look to the automotive parts industry to bolster tonnage within the next two weeks. Hot-rolled strip demand is light with cold-rollers still well stocked.

Philadelphia—A large stovemaker in this district, whose plant has been down for several weeks on account of a strike, has issued specifications for hot-rolled strip against orders and is reported to have sufficient material under contract to carry operations through the end of the year. New strip buying continues at its recent slow pace with little immediate improvement in sight.

Youngstown, O.—New business in narrow strip of hot and cold-rolled grades continues to show gains although sales are not equal to production and backlogs are diminishing.

Birmingham, Ala.—Strip demand remains second only in volume to that for sheets, due primarily to continued buying of cotton ties with a noticeable lack of business in other specifications. Deliveries, however, are somewhat improved over recent weeks.

Tin Plate

Tin Plate Prices, Page 158

Pittsburgh—Tin plate producers in this district are confident that the remaining contract plate will probably be rolled and shipped by the Sept. 30 deadline. In the last week progress has been made in catching up with shipments and overcoming the time lost earlier this month. In districts where strikes delayed production it is probable that shipments will be carried over into fourth quarter. Some of the hot mills here have been working in excess of the regulation number of turns per week, the cooler weather permitting more activity than could be obtained during July and August. Meanwhile, bookings for fourth quarter continue fair and export inquiry is good.

New York—Leading sellers of tin plate are still forcing production to the limit in an effort to work off tonnage against contracts due to expire Sept. 30, and in this the principal consumers are lending every encouragement for they feel it would be to their interest to have the deadline observed. It would make for a stability of market on tin plate which would be beneficial to them, in turn, in making contracts with their customers. Some producers, seriously affected by labor strikes late last spring, will find it impossible to work off their con-

tract tonnage by the end of this month, however.

Plates

Plate Prices, Page 158

New York—Plate buyers show a disposition to mark time. Most are reasonably well fixed as to stock, and as for construction and industrial expansion programs, which would account for a substantial aggregate tonnage of plates, there is a tendency to await developments. However, in no case have these programs been definitely dropped, it is said.

Newport News Shipbuilding & Dry Dock Co., recently announced as low bidder on the steamer for the United States Line, will probably buy the steel here, should it be awarded the contract. This company recently moved its major purchasing operations to Newport News, Va., but, nevertheless, in this case, with the steel having been originally figured through New York sellers, it is believed that such purchases as may be made will be done here. About 16,000 tons of hull steel will be required.

The ship outlook, otherwise, is far from promising for this fall, with little encouragement from Chairman Kennedy's recent statement that the United States maritime commission's survey thus far revealed either an inability or a lack of disposition on the part of private operators to finance their share of the building program.

Pittsburgh—Due to a few good-sized inquiries, outlook for plate bookings has improved in this district from the preceding weekly period. While these requirements would temporarily bolster schedules, a considerably more active market is necessary to counterbalance the decline which has been felt during the last six weeks. Producers are encountering a moderate flow of miscellaneous specifications, but tank fabricators, railroad shops, and some of the other heavy consumers are much less active than they were in the early part of the summer.

Cleveland—Sellers report a moderate increase in aggregate tonnage booked this month in contrast with the corresponding period in August. Shipments can be made within two or three weeks and on some sizes even sooner if necessary. Considerable tonnage has recently been placed by local shipping concerns for miscellaneous ship repairs. Little buying from railroads is expected until late in fourth quarter or possibly not until early next year.

Chicago—Plate sales are heavier here, due to better demand from tank fabricators and miscellaneous users. Plate buying for railroad equipment use still lags and no major orders are in early prospect. Plates commonly are available within four to five weeks though longer time is required on certain sizes.

Boston—Plate specifications from most fabricating shops, including boiler and structural, are slightly heavier, releases being usually for quick delivery, and with mill backlogs lower, shipments are more prompt, being normal on most sizes. Several hundred tons for tanks at South Boston have been tentatively closed while bids are also in on 1955 tons for the Portsmouth, N. H., navy yard.

Philadelphia—Two independent mills report both buying and specifications from miscellaneous sources improved slightly in the past few days. In general plates display the lassitude apparent for the past two or three weeks. Prospects are poor for additional railroad buying this year but interest in ship plates is enlivened by award of a liner to a nearby yard. Much of the municipal tank work now planned probably

will be held up until after the fall election.

Birmingham, Ala. — Dwindling backlogs are evident in plates as anticipated fall buying is slow. While some new business is evident, it is mostly in comparatively small lots for miscellaneous structural jobs.

San Francisco—The general contract for the welded steel pipe line for the metropolitan water district, Los Angeles, requiring 9000 tons of plates, was awarded to J. F. Shea Co., Los Angeles at $2,361,581 on the basis of gunite coated welded steel pipe. No award has been made yet for the fabrication of the pipe but it is reported that Consolidated Steel Corp. is in line for the work. Denver has just opened bids 18,965 feet of 30 to 60-inch welded steel pipe or concrete pipe and Ed. H. Honnen Construction Co., Colorado Springs, Colo., appears to be low bidder on welded steel pipe at $233,412 with Lock-Joint Pipe Co. low on concrete pipe at $249,521.

Seattle — Local shops report a fair volume of tank and boiler repair jobs and the largest Seattle plant is booked to capacity until the end of the year. Jobbers anticipate an active fourth quarter, demand for plates in small lots having increased noticeably this month. Mill deliveries are now causing no worries.

Plate Contracts Placed

160 tons, 500,000-gallon elevated steel tank, Willis, Tex., to Wilson & Seaward, Plano, Tex., bids Sept. 3; R. E. Watson, mayor.

145 tons, tanks, American Cyanamid & Chemical Corp., Bridgeville, Pa., to Buffalo Tank Co., New York.

140 tons, Panama, to Central Iron & Steel Co., Harrisburg, Pa.; bids Aug. 13, schedule 3276, classes 3 and 4.

105 tons, 54-inch i.d. steel pipe, flanges and fittings, flood control project, Winooski river, Waterbury, Vt., to Taylor Forge & Pipe Works, Chicago, $16,224.20, delivered; bids Sept. 10, U. S. army engineer, first district, New York; half-inch plates required for pipe.

Unstated tonnage, 300 truck collection bodies, City of New York, to Gar Wood Industries Inc., Detroit.

Plate Contracts Pending

9000 tons, welded steel pipe, metropolitan water district, Los Angeles; general contract to J. F. Shea Co., Los Angeles at $2,361,581.

Cold-Finished

Cold Finished Prices, Page 159

Pittsburgh—While incoming business is considerably ahead of the corresponding August period, due to the steady improvement in the last three weeks, producers point out that comparisons are apt to be misleading because requirements were so light in the first part of the preceding month. Nevertheless, most cold finishers are encouraged over gain shown recently, not only in automotive bookings which had been expected, but in demand from the machinery field and miscellaneous sources.

Whiting Corp., Harvey, Ill., recently awarded service emblems to 279 employes of whom 42 have been employed continuously for over 25 years, 176 for over 10 years and 61 over 5 years.

Bars

Bar Prices, Page 158

Pittsburgh — Bookings continue small but improved in comparison with other recent weekly periods. Forging shops and jobbers are specifying a little more activity, and shipments to bolt and nut manufacturers are maintained as well as could be expected under the circumstances. Machine tool builders'

requirements are steady. The decline in railroad car shop needs, however, has been appreciable. Fairly prompt deliveries are easily obtainable, with two to four weeks required on certain sizes.

Cleveland—Only a slight improvement in specifications for carbon steel bars has been noted. Most of this increase has come from local forging concerns starting work on parts for 1938 automobiles. While this tonnage has not been up to expectations considerable improvement is expected before the end of the month. No decrease in operations has been reported by producers although shipments continue to exceed specifications by a wide margin.

Chicago—Improvement in steel bar demand is confined principally to automotive buying, with little change shown in orders of miscellaneous users. Implement and tractor companies hold their bar needs at a high rate but absence of heavier demand elsewhere is resulting in a further decrease in backlogs. Deliveries vary according to size of material ordered, shipment generally being available within 30 days.

Boston—Continued gradual improvement in bar demand is centered largely on alloy stock, orders for which are more numerous, but in small tonnage. The advance in high-speed tungsten steels Oct. 1 has stimulated some buying by machine tool builders, mostly from district distributors. Consumption of high-speed steel is relatively high, but due to its cost is not generally stocked in large lots. Forging bar buying also shows spotty improvement with soft steel bars still slack with a few instances of moderate replacement orders.

New York—Commercial bar deliveries are slightly more extended, reflecting apparently some improvement in automotive demand in the middle west; it appears certain that this is not due to an increase in buying in this district, for sellers generally report no increase over the August rate. Railroad repair work is taking somewhat more tonnage, but this, on the other hand, is being offset by a lag in other directions. Deliveries are still available for relatively prompt shipment in several quarters.

Philadelphia—New business and specifications for steel bars continue slow, with hot-rolled available within two to three weeks. Consumption is reported holding up well, especially among agricultural implement and tool builders. One cold-drawing mill is also taking material in excellent volume.

Youngstown, O.—Better flow of orders for steel bars has been coming to mills in this district. A wider variety of consumers is represented than since early summer. Agricultural implement and tractor builders are covering in a way indicating uninterrupted heavy production. Automotive demand for alloy bars is also increasing.

Birmingham, Ala.—Demand for bars continues perceptibly below current shipments. Mills have expressed disappointment at failure of manufacturers of agricultural implements to place anticipated business, a condition attributed mainly to adverse weather for cotton. Backlogs, as in most other specifications, are fast disappearing.

Ferro Enamel Corp., Cleveland, will create a new central purchasing department, effective Oct. 1, with D. D. Macbeth as purchasing agent, in charge.

Pipe

Pipe Prices, Page 159

Pittsburgh — Incoming tubular goods specifications are still light. With producers cutting into backlogs, the delivery situation has become a little better recently, although on certain products promises are hard to obtain under six weeks.

Cleveland — Jobbers' stock turnover has shown little change since the first of the month. A moderate improvement is expected soon. With prompt deliveries available, most distributors are fairly well stocked. Cast pipe requirements are confined to small jobs, with little improvement noted in the last two weeks.

Boston—Cast pipe buying in small lots has improved slightly with several attractive tonnages out for estimates, although bids have not been formally asked. Merchant steel pipe, small sizes, continues to move at a fair rate. Taylor Forge & Pipe Works, Chicago, is low on a 105-ton, 54-inch steel pipe line for delivery at Waterbury, Vt., for the Winooski river flood control project.

New York—Cast pipe buying is light and in small lots with few tonnage inquiries active. A good part of the current volume is being shipped from stock. Except for backlogs embracing recent purchases by New York city, several eastern foundries have less business on the books. New York Central is taking bids on fourth quarter steel pipe and tube requirements, closing Sept. 30.

Birmingham, Ala.—No outstanding pipe business is reported from southern plants. A smattering of business continues to come in from widely separated points, but sufficient only to keep operations at around 60 per cent or slightly under for the week just closed.

San Francisco — Cast iron pipe market remains exceptionally quiet for this season and only one new inquiry of over 100 tons developed last week. Roy, Utah, has voted a $90,000 bond issue for a water improvement system calling for 8 miles of cast iron pipe.

Seattle—Interest in cast iron is slight although prospects have improved. No sizeable tonnages are up definitely for figures but many proposed improvements are on engineers' boards. California-Oregon Power Co., Klamath Falls, Oreg., has begun work of extending its water service by laying 8500 feet of 2 to 6-inch pipe. Vancouver, Wash., ture of $50,000 for water system imhas approved an immediate expendiprovements, bids soon, including 115 tons of 6 and 8-inch cast iron.

Steel Pipe Placed

4000 feet of 42-inch, steel water pipe, for Newark, N. J.; bids Sept. 22.

Cast Pipe Placed

160 tons, WPA procurement officer, Syracuse, N. Y., to United States Pipe & Foundry Co., Burlington, N. J.

Cast Pipe Pending

210 tons, 6, 8, and 16-inch, Panama; United States Pipe & Foundry Co., Burlington, N. J., low.

115 tons, 6 and 8-inch, Vancouver, Wash.; bids soon.

105 tons, 4 and 6-inch, Indian Service, Billings, Mont., for delivery at Nespelem, Wash.; bids in.

Coke By-Products

Coke By-Product Prices, Page 159

New York—Phenol prices have advanced to 15.25c a pound for 450-lb. drum lots, this price applying for U.S.P. 40 degree Cent. melting point grade in l.c.l. shipments with drums returnable. For 200-lb. drums the price is 16.25c, f.o.b., Frankford and

St. Louis. Another adjustment in phenol prices is expected Oct. 1 to cover the next contracting season. Current demand is active. Distillate supplies are short, despite heavy production and most distributors are unable to take on much spot business for early shipment. The rubber industry is taking heavy shipments of benzol while the various finishing trades, including lacquer-makers, are specifying actively against toluol and xylol contracts. Naphthalene and sulphate of ammonia demand is light. Most contracts for sulphate of ammonia needs to June, next year, have been made and new buying is light, although specifications in equal monthly shipments are steady. Prices advance 50 cents a ton on spot lots Nov. 1 to $29.

Transportation

Track Material Prices, Page 159

Railroad equipment demand continues light, with domestic freight car orders so far this month involving only 125 units. These include 20 steel caboose cars which the Lehigh Valley has just announced it will build in its Sayre, Pa., shops. Little inquiry is pending, with indications that activity will continue restricted until after the railroad wage and freight questions have been adjusted.

In addition to the New York Central inquiry for 5000 tons of rails and splice bars, reported last week, a southern railroad is reported to be in the market for about 7000 tons of material for repairs to over 1000 cars.

Car Orders Placed

Illinois Central, 1000 box cars, to the General American Tank Car Corp., Chicago.

Lehigh Valley, 20 caboose cars, to its own shops in Sayre, Pa.

Pennsylvania, 19 lightweight coaches, reported placed with the Edward G. Budd Mfg. Co., Philadelphia.

United States navy, 3 flat cars, to Haffner-Thrall Car Co.

Car Orders Pending

Navy department, Charleston, S. C., one flat car, Haffner-Thrall Car Co., Chicago, low.

Buses Booked

American Car & Foundry Motor Co., New York: Twenty 35-passenger for Memphis Street Railway Co., Memphis, Tenn.; ten 30-passenger for Montreal Tramways Co., Montreal, Que.; seven 35-passenger for Dallas Railway & Terminal Co., Dallas, Tex.; five 35-passenger for Aronomink Transportation Co., Llanerch, Pa.; four 35-passenger for Safeway Trails Inc., New York; two 30-passenger for Scranton Transit Co., Scranton, Pa.; two 28-passenger for Sacramento Northern Railway, Sacramento, Calif.; two 35-passenger for Eastern Michigan Motorbuses, Detroit; two 30-passenger for Boston, Worcester & New York Street Railway Co., Framingham, Conn.

Twin Coach Co., Kent, O.: Ten 41-passenger for Railway Equipment & Realty Co., Oakland, Calif.; ten 25-passenger for Pacific Electric Railway Co., Los Angeles; five 23-passenger and four 27-passenger for Savannah Electric & Power Co., Savannah, Ga., eight 23-passenger for Toronto Transportation Commission, Toronto, Ont.; seven 31-passenger for Wichita Transportation Corp., Wichita, Kans.; six 35-passenger for Birmingham Electric Co., Birmingham, Ala.; four 25-passenger for Southwest Missouri Railroad Co., Joplin, Mo.; four 35-passenger for Dallas Railway & Terminal Co., Dallas, Tex.; three 23-passenger for Superior Products Inc., Boise, Idaho.

Metallurgical Coke

Coke Prices, Page 159

With Connellsville beehive coke more readily obtainable now than at any time this year, little anxiety is shown by consumers over future requirements. Operators are heartened by possibility of another fur-

nace coming in within the next month. While some spot coke might be picked up as low as $4.25 per ton, fourth quarter contracts generally are being written at $4.50 per ton. The expected increase in coal prices under the bituminous coal commission will have little effect upon coke, except that some indirect strengthening may possibly result.

Wire

Wire Prices, Page 159

Pittsburgh—Demand for wire displays no uniformity, either by areas or trades, but it is generally agreed conditions have improved slightly in the last two weeks. Conditions are spotty, along with stocks. Some manufacturers and jobbers are well supplied, while others have low inventories. Pressure from rod buyers for quick shipment has been noticed recently. Certain divisions of the automotive industry are in need of material promptly. Good inquiry for barbed wire has been encountered recently from abroad.

Cleveland — Producers of manufacturing and merchant wire products have been disappointed so far this month with the small improvement in specifications. Most sellers have considerable number of orders on their books but to date many consumers have been in no hurry to specify against contracts. Apparently most have ample stocks and present demand from their own customers is below former expectations.

Chicago—Recovery in manufacturers' wire demand is retarded by slowness with which automotive builders are increasing schedules and also by lag in miscellaneous users' requirements. A better call for merchant wire products from farm areas is expected soon, when more time is available for installation of fencing and barbed wire. Active buying of these products is in prospect in view of the sustained rate of agricultural income.

Boston—Improvement in wire buying has been spotty, incoming volume being at about the recent rate. Fill-in orders for manufacturers' wire are well sustained and the upward trend in the demand for light spring material continues. Several sellers note a slight gain in inquiry for wire rods, although rod users are in many instances operating with rather heavy stocks.

New York—Cable for Bronx-Whitestone suspension bridge, closing Oct. 13, takes 4175 tons of wire: also 100 tons of wrapping wire; 67,000 linear feet of suspender ropes and 15,600 feet of hand ropes. This is the largest inquiry of its kind in the East in several years. Demand for wire products holds steady, the recent mild improvement having leveled off with only slight and spotty gains in orders, most of which are for early delivery.

Youngstown, O.—A significant sign of improvement in autumn business is the important gain in specifications for manufacturers' wire, which is widening, indicating better demand for products of smaller manufacturers in many lines. Near exhaustion of stocks is indicated by current demand. Plain wire and other products are being bought in routine way.

Shapes

Structural Shape Prices, Page 158

New York—Closing Oct. 13, the Bronx-Whitestone bridge, main floor and approach viaduct, takes 13,150

tons of silicon and carbon structural steel. Awards are lower and except for the above inquiry, new work is slack, although two board of transportation projects closing early in October take 1700 tons. The next west side elevated highway project, New York, will include the Canal street bridge, taking about 3000 tons, not yet out for bids. The New York Central railroad closes Sept. 30 on last quarter needs, shapes, plates and bars.

The five week strike at several northern New Jersey structural shops by AFL employes has been settled on an open shop basis, with classification of employes for various operations with increases up to 10 per cent for some operations with others practically unchanged.

Philadelphia—Other than Pennsylvania state program, structural volume continues to lag. A finance building and farm show arena at Harrisburg will take 7500 tons, but are not out for bids yet. Several other jobs including a hospital, Norristown, Pa., will take additional substantial tonnage, few private jobs involving over 100 tons are noted.

Boston—Structural contracts are fewer, approximately 800 tons of new work having reached district shops. New inquiry mounts steadily, notably for bridges, although most such projects are for small tonnage individually.

Pittsburgh—Bethlehem Steel Co., Bethlehem, Pa., has been awarded 1100 tons of structural shapes by Richfield Oil Co., Los Angeles. Inquiries remain light, including 650 tons for an extension to the blooming mill building of Republic Steel Corp., South Chicago, Ill.

Cleveland—Structural awards increased somewhat last week with a few good size jobs both private and public placed. Outstanding industrial project was a storage and bottling plant for the Brewing Corp. of America, Cleveland, awarded to Bethlehem Steel Corp., Bethlehem, Pa. The same company received 162 tons for a state bridge in Hocking county, Ohio, the largest local public letting in some time. Pending work includes well over 1000 tons for state projects and an encouraging amount from industrial sources.

Chicago—Fabricated shape orders and inquiries hold at their recently restricted rate and producers of plain material have small order books. Relatively prompt delivery can be effected on new business. Inquiries total around 7000 tons.

San Francisco — Volume of new structural business is far from encouraging and awards aggregated only 2019 tons, bringing the total for the year to 123,598 tons as compared with 132,251 tons in 1936. Largest award went to Consolidated Steel Corp. and called for 950 tons for buildings for the Johns-Manville Corp., Los Angeles.

Seattle—Important new projects featured the market this week. Supply officer, Puget Sound Navy yard will receive bids Sept. 30 for 810 tons involved in proposed Sand Point air station hangar, original bids having been rejected earlier this year. Bids will likely be called

Shape Awards Compared

	Tons
Week ended Sept. 18	16,548
Week ended Sept. 11	23,743
Week ended Sept. 4	21,387
This week, 1936	42,737
Weekly average, 1936	16,332
Weekly average, 1937	25,419
Weekly average, August	21,801
Total to date, 1936	879,798
Total to date, 1937	965,917

Includes awards of 100 tons or more.

early in October for the Washington state 1077 foot steel and concrete span over the Skagit river, to cost $450,000 and requiring large tonnages of shapes, concrete bars and sheet piling.

Shape Contracts Placed

1100 tons, furnace material, Richfield Oil Co., Los Angeles, to Bethlehem Steel Co., Bethlehem, Pa.

1065 tons, addition, Hotel Roanoke, Roanoke, Va., to Virginia Bridge Co., Roanoke, Va.

950 tons, buildings for Johns-Manville Corp., Los Angeles, to Consolidated Steel Corp., Los Angeles.

855 tons, additions, buildings 20 and 35, Aluminum Co. of America, Mobile, Ala., to Ingalls Iron Works, Birmingham, Ala.

700 tons, steel sheet piling, Queens approach Bronx-Whitestone bridge, New York, to Bethlehem Steel Co., Bethlehem, Pa.; through National Excavation Corp., New York.

680 tons, building, Keasby & Mattison, St. Louis, to Mississipi Valley Structural Steel Co., St. Louis.

675 tons, crossing, Grand avenue, Ames, Ia., to Pittsburgh-Des Moines Steel Co., Des Moines, Iowa.

610 tons, building additions, Republic Steel Corp., Alabama City, Ala., to Southern Steel Works Co., Birmingham.

555 tons, manufacturing building, Inland Mfg. division, General Motors Corp., Clark township, N. J., to R. C. Mahon Co., Detroit.

500 tons, building, Fisher Body Co., Cleveland, to R. C. Mahon Co., Detroit.

460 tons, addition, building 32, Aluminum Company of America, Alcoa, Tenn., to Virginia Bridge Co., Roanoke, Va.

460 tons, caissons, Mississippi river bridge, Baton Rouge, La., to St. Louis Shipbuilding Co., St. Louis.

450 tons, addition, Heidelburg Hotel, Jackson, Miss., to Decatur Iron & Steel Co., Decatur, Ala.

430 tons, building, Motor Wheel Corp., Lansing, Mich., to Jarvis Engineering Co., Lansing, Mich.

421 tons, fermenting, storage and bottling plant, Brewing Corp. of America, Cleveland, to Bethlehem Steel Corp., Bethlehem, Pa.

360 tons, gates and machinery, Keystone, Neb., to Omaha Steel Works, Omaha.

340 tons, building, Glidden Co., Chicago, to Wendnagel & Co., Chicago.

325 tons, building, Jewish sanitarium and hospital for chronic diseases, Brooklyn, N. Y., to Simon Holland & Son, Brooklyn, N. Y.

310 tons, bridge FAP-125, Sweet Grass county, and bridge FAP-281E, Madison county, Montana to Midwest Steel & Iron Co., Denver.

300 tons, factory building, Shewanigan Resins Corp., Springfield, Mass., to Haarmann Steel Co., Holyoke, Mass.; Adams & Ruxton, Springfield, Mass., general contractors. Reinforcing to Bethlehem Steel Co., Bethlehem, Pa.

300 tons, dumping platform, Fifty-second street, Brooklyn, N. Y., to Harris Structural Steel Co., New York; through General Engineering & Construction Co., New York.

300 tons, fishways and other equipment, Bonneville dam, to Star Iron & Steel Works, Tacoma, Wash.

290 tons, steel sheet piling, Consolidated Gas Electric Light & Power Co. Baltimore, to Bethlehem Steel Co., Bethlehem, Pa.

285 tons, federal court house, Erie, Pa., to Erie Steel Construction Co., Erie.

260 tons, plant extension, Ohio Rubber Co., Willoughby, O., to Burger Iron Co., Akron, O.

225 tons, store, S. H. Kress & Co., Rockford, Ill., to Mississippi Valley Structural Steel Co., Decatur, Ill.

220 tons, four sub-stations, Loup river public power district, Columbus, Neb., to International-Stacey Corp., Columbus, O.

220 tons, addition to factory building, Puget Sound Pulp & Timber Co., Bellingham, Wash., to Isaacson Iron Works, Seattle.

210 tons, office building, Fidelity Investment association, Wheeling, W. Va., to Wheeling Structural Steel Co., Wheeling, W. Va.

200 tons, shapes and bars, hospital, Little Falls, N. Y., to Utica Structural Steel Co., Utica, N. Y. and Concrete Steel Co., New York; J. J. Turner & Sons, Inc., Amsterdam, N. Y., general contractor.

200 tons, shapes and bars, additional buildings, Sacred Heart hospital, Manchester, N. H., to Lyons Iron Works Inc., Manchester; L. H. Shattuck Inc., Manchester, general contractor.

195 tons, bridge, Canon City, Fremont county, Colorado, to Midwest Steel & Iron Co., Denver.

162 tons, state bridge, Hocking county,

Ohio, to Bethlehem Steel Corp., Bethlehem, Pa.
150 tons, trash racks, specification 952-D, Imperial dam, Calif., to Independent Iron Works, Oakland, Calif.
145 tons, bridge FAP-66, Blain county, Montana, to Minneapolis-Moline Power Implement Co., Minneapolis.
140 tons, telephone building, Compton, Calif., to Minneapolis-Moline Power Implement Co., Minneapolis, Minn.
135 tons, bridge X1 of 52-2-20, Marquette, Mich., to American Bridge Co., Pittsburgh.
125 tons, cathedral house, Garden City, N. Y., to Post & McCord, New York; William L. Crow Construction Co., New York, general contractor.
125 tons, building, South Chester Tube Co., Chester, Pa., to Belmont Iron Works, Eddystone, Pa.
120 tons, factory addition, Heald Machine Co., Worcester, Mass., to Stafford Iron Works, Worcester; E. J. Cross Co., Worcester, general contractor.
120 tons, hangar extension, Anacostia, D. C., to Lehigh Structural Steel Co., New York; through W. F. Martens, Newport News, Va., general contractor.
120 tons, bridge FA-811-A-B, Harrison county, Missouri, to St. Joseph Structural Steel Co., St. Joseph, Mo.
115 tons, I-beam spans, Dallas county, Iowa, to Des Moines Steel Co., Des Moines, Iowa.
110 tons, spillway bridge, Polson, Mont., to Kansas City Structural Steel Co., Kansas City, Mo.

110 tons, factory addition, Gilman Fanfold Corp., Niagara Falls, N. Y., to The Austin Co., Cleveland.
110 tons, bridge, San Antonio river, San Antonio, Tex., to Alamo Iron Works, San Antonio, Tex.
105 tons, two-span I-beam bridge, state project 119-L, Johnson, Vt., to Burlington Structural Steel Corp., Burlington, Vt.; B. A. Barton Construction Co., Inc., Burlington, general contractor. Albany Steel & Iron Supply Co., Albany, N. Y., awarded reinforcing bars.
105 tons, building addition, Franklin Fire Insurance Co., Philadelphia, to Bethlehem Fabricators Inc., Bethlehem, Pa.
100 tons, addition Pacific Bone Coal & Fertilizer Co., South San Francisco, to Judson-Pacific Co., San Francisco.
Unstated tonage, addition, library, naval war college, Newport, R. I., to Central Iron Works, Providence, R. I., shapes, and Bethlehem Steel Co., Bethlehem, Pa., reinforcing; New England Concrete Co., Providence, R. I., general contractor.
Unstated tonnage, warehouse, custom house wharf, Portland, Me., to Mequier & Jones Co., Portland, Me.

Shape Contracts Pending

13,150 tons, including 4950 tons, silicon structural steel, main span and viaduct approaches, and 8200 tons, carbon structural steel, same sections, Bronx-Whitestone suspension bridge, East river, New York; bids Oct. 13, Triborough Bridge authority, New York, contract WB-5. In addition, project also takes following steel: 4175 tons, cable wire; 100 tons, wrapping wire; 67,000 linear feet, suspender ropes; 15,600 linear feet, hand ropes, 520 tons, cast and forged steel for cable saddles, cable bands, anchorage saddles and miscellaneous needs; 34,200 lbs., high tensile bolts.
3000 tons, bridges, west side elevated highway, Canal street, New York; to be bid to borough president, Manhattan, N. Y., date not fixed.
1200 tons, extension, Willets Point boulevard station, New York; bids Oct. 1, board of transportation, New York.
1000 tons, cloverleaf intersection for route 21, near Bedford, O., includes construction of seven bridges, straightening of a quarter mile of the Cuyahoga river and linking of Granger and Schaaf roads; total cost about $1,500,000.
810 tons, Sand Point hangar, Seattle; bids to supply officer, Puget Sound navy yard, Sept. 30.
700 tons, store, Lit Bros., Philadelphia; out for new bids Sept. 23.
610 tons, trash racks, Parco, Wyo., for United States bureau of reclamation.
600 tons, second crossing over Los Angeles river, Southern Pacific Co., Los Angeles.
600 tons, addition to public school No. 22, board of education, Bronx, N. Y.
600 tons, plant extension, Republic Steel Corp., South Chicago, Ill.
600 tons, hangar, Baltimore municipal airport; bids Sept. 22.
500 tons, structure and track changes, Steinway tunnel line, Queens Plaza, New York; bids Oct. 5, board of transportation, New York.
500 tons, Boulder dam, Nevada.
445 tons, school, Upper Darby, Pa.; M. & L. Construction Co., Philadelphia, low.
350 tons, store and office building, DiSabatino Holding Co., Wilmington, Del.
350 tons, plant addition, Pullman-Standard Car Mfg. Co., Michigan City, Ind.
350 tons, addition to Procter & Gamble plant, Long Beach, Calif.; bids soon.
300 tons, reconstruction wing A, Metropolitan Museum of Art, New York;

bids Sept. 24, department of parks, New York.
250 tons, miscellaneous material, Rayon Machinery Corp., Cleveland.
250 tons, United States bureau of reclamation, Potholes, Calif.
200 tons, state bridges, Williamstown, Ky.
200 tons, plant, Lindermie Co., Euclid, O.; bids Sept. 20.
200 tons, store, Woolworth Co., Upper Darby, Pa.; out for new bids Sept. 23.
150 tons, small steel bridges, various locations, department of agriculture, Washington; bids in.
150 tons, state bridge, Richland county, Ohio; bids in.
127 tons, building, Cocoa Cola Co., Atlanta, Ga.; bids Sept. 28.
125 tons, alterations and remodeling, post office, Buffalo, N. Y.; Griffon Construction Co., Inc., New York, low, $169,796; bids Sept. 14.
108 tons, Garcia river bridge, Mendocino county, California; bids Sept. 29.
102 tons, steel sheet piling, sewer, contract 2, project 2, Queens, N. Y.; bids Sept. 20 to borough president, Queens, N. Y.
100 tons, extension to armory, Harrisburg, Pa.
Unstated, 1007 foot state span, Skagit river, Wash.; bids at Olympia, probably in October.

Reinforcing

Reinforcing Bar Prices, Page 159

Pittsburgh—Awards are headed this week by 2300 tons for the pumping stations and grit chambers for the Detroit sewage disposal plant placed with Carnegie-Illinois Steel Corp., Pittsburgh. Other awards have been confined to less than 500 tons. Inquiry is headed by 450 tons for a building in St. Paul and 400 tons for a psychopathic hospital in St. Louis.

Cleveland—Reinforcing bar market continues unchanged with local fabricators fairly active on small jobs up to 50 tons. Mills are able to make prompt deliveries and most fabricators are well stocked and have little trouble in making schedules. Prices have held well, but no real test has been offered for some time.

Chicago—Concrete bar sales are fairly heavy in spite of a decrease in number of large lots. Producers find new business insufficient to expand backlogs, but shipments have been steady recently. Only small orders have been placed for state bridges, private work constituting a large share of total business.

Boston—Reinforcing steel buying has declined and with few exceptions, contracts are for small lots, under 100 tons each. Such purchases, however, are fairly numerous. New inquiry is off slightly with a fair volume pending. Prices continue weak and erratic.

Bids close Sept. 23 on stores and cold storage building, Gloucester, Mass., fish pier, taking several hundred tons reinforcing and about 100 tons miscellaneous structural steel.

New York—Led by 4425 tons for two sewer contracts, Queens, N. Y., the largest inquiry in several months, reinforcing steel tonnage being figured is heavier. Highway mesh active involves 1650 tons for New York state. Demand for building construction lags. Price shading continues to unsettle the market.

Philadelphia—The small amount of work now being figured by fabricators, is indicated by the fact no more

Concrete Awards Compared

	Tons
Week ended Sept 18	7,278
Week ended Sept. 11	12,097
Week ended Sept. 4	5,339
This week, 1936	8,834
Weekly average, 1936	6,005
Weekly average, 1937	6,396
Weekly average, August ...	9,495
Total to date, 1936	266,791
Total to date, 1937	243,065

Includes awards of 100 tons or more.

than 20 small jobs involving less than 100 tons each are now before the trade. Pennsylvania state program probably will take more steel than previously expected.

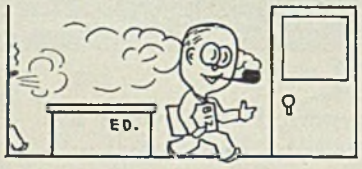
San Francisco—A fair volume of reinforcing business was placed last week and aggregated 1575 tons. This brought the year's total to 73,574 tons, compared with 178,551 tons a year ago. Consolidated Steel Corp. took 300 tons for buildings for Johns-Manville Corp., Los Angeles. Lord & Bishop were awarded the general contract for a bridge at Soledad, Calif., calling for 800 tons but no sub-contract has yet been made.

Seattle—While demand is not active, the number of small tonnages is increasing and mills expect improved business during the last quarter. The largest tonnage pending is 1250 tons for the Roza canal project, bids to reclamation bureau, Yakima, Sept. 22. Miscellaneous state jobs pending in Washington and construction projects involve about 500 tons with most jobs far below 100 tons each.

Behind the Scenes with STEEL

It's New

HELLO, there, avid readers of this, the most progressive business paper in its field. We're howling at you from the press box located high above the new masthead which appears on page 25. This attractive setup was the brain-child of Don Cadot, whom you will find near the top of the heap on the left hand side. Old hands at the game will probably see a few other changes in the line-up. E. L. Shaner, for ten years editor, becomes editor-in-chief. Ed. C. Kreutzberg moves in as the new editor, after many years of experience in every branch of editorial activity. Erle F. Ross, one of the better boilermakers from Purdue and author of many a technical dissertation on subjects dear to the hearts of readers in the iron, steel and metalworking industries, is the new



engineering editor. Down near the bottom of the column one might find after a diligent search that Jim Zuber has been called upon to head the staff of the Readers' Service department. Service, according to Mr. Z, is to be offered both with and without the customary smile to bonafide readers who will write in on their business letterheads or any other hunk of paper which might be convenient.

* * *

Insert At A. . . .

SEE that big mess of yellow paper in the middle of this book? Well, sir, that is the annual Iron and Steel Engineers' Insert, and the pressmen and paper experts tell us that color is not yellow but India tint. We made the private reservation that India tint was a wee bit shadier than that, having seen a few Maharajahs in our day, but we learned never to argue with a pressman and we took it in silence. No matter, the thing is done, God save the Thing. We feel proud when we see the lovely looking ads in its many pages, the fine appearance of the editorial pages and the bang-up job Bill Gude of Chicago and John Young of Pittsburgh have done on the featured articles. It's the nuts, to put it mildly, even if it is yellow.

* * *

Banger

WHITE hot were the arguments between the attorneys for the NLRB and Weirton Steel down in Steubenville last week. As the tumult grew, so did the hammerings on the table by gavel-wielder Edward G. Smith, high muckamuck for the NLRB who was attempting a bit of order. Crash! down came the gavel. Tinkle, tinkle went the plate glass desk top. Clearing away the debris, lackeys brought in a marble slab to sooth the hammerings. On and on went the arguments and the hammerings. Crack! The marble was suddenly reduced to powder. Out of somewhere came the lackeys, bearing a new marble slab. In an incredibly short time that, too, bit the dust. Marble bearers gave up in disgust. Next morning when hammerer Smith approached the desk he found a shiny new slab of steel awaiting his efforts. Neatly lettered thereon were the words "Weirton Steel Co."

* * *

Get Hep

WANT to find out what key men in the industry think are the important developments in the metals industry through the past year? Well, get yourself lined up for a copy of the October 11 issue of the most attractive and readable publication in the iron, steel and metalworking industries. On that date the magazine STEEL will present to 68,000 fortunate readers its annual Metal Show issue. One of the highlights will be the results of putting the above question to the men who alone can answer it. You will be interested in seeing what they think and why.

—SHRDLU

Reinforcing Steel Awards

2300 tons, pumping stations and grit chambers, sewage disposal plant, Detroit, to Carnegie-Illinois Steel Corp., Pittsburgh.

500 tons, foundations and substructure, Northern boulevard grade separation and Flushing river bridge on Queens approach, Bronx-Whitestone bridge, New York, to Bethlhem Steel Co., Bethlehem, Pa.; through National Excavation Corp., New York, general contractor.

500 tons, mesh, highway project RC-3900, county line-Adams Center, Jefferson county, New York, to Bethlehem Steel Co., Bethlehem, Pa.; Madison County Construction Co., Inc., Madison, N. Y., general contractor.

400 tons, water department, Minneapolis, Minn., to Cowin & Co., Minneapolis.

350 tons, municipal power and steam heating plant, Lansing, Mich., to Truscon Steel Co., Youngstown, O.

350 tons, storage building, 217 Beverly drive, Beverly Hills, Calif., to unnamed interest.

325 tons, building, Allis-Chalmers Mfg. Co., West Allis, Wis., to Joseph T. Ryerson & Son Inc., Chicago.

300 tons, building, Johns-Manville Corp., Los Angeles, to Consolidated Steel Corp., Los Angeles.

250 tons, state prison, Oldham, Ky., to Concrete Steel Co., New York.

225 tons, stockyard building, Forty-first street, New York, for Central Railroad of New Jersey, to Truscon Steel Co., Youngstown, O.

200 tons, tuburculosis hospital, Franklin county, Ohio, to Goldberg Iron & Steel Co., Columbus, O.

200 tons, warehouse, First National bank, Chicago, to Inland Steel Co., Chicago.

175 tons, laboratory, Shell Development Co., Emeryville, Calif., to Soule Steel Co., San Francisco.

140 tons, state bridge, Carroll county, Ohio, to Joslyn Mfg. & Supply Co., Fort Wayne, Ind.; M. L. Maddocks Co., Newark, O., general contractor. Pan American Bridge Co., New Castle, Ind., awarded 44 tons, structural steel.

138 tons, apartment building, Blair Properties Inc., Washington, to Rosslyn Steel & Cement Co., Rosslyn, Va.

125 tons, WPA procurement officer, Syracuse, N. Y., to Bethlehem Steel Co., Bethlehem, Pa.

100 tons, state highway project WP-37-6, Wantagh parkway extension, Nassau county, New York, to Concrete Steel Co., New York; E. L. North, Islip, N. Y., general contractor.

100 tons, road work, Chester county, Pennsylvania, to Bethlehem Steel Co., Bethlehem, Pa.; Kempt Bros., New Cumberland, Pa., general contractors.

100 tons, paper plant addition, Port Angeles, Wash., to Bethlehem Steel Co., Seattle.

Reinforcing Steel Pending

2555 tons, sewer contract 2, project 2, to proposed bulkhead line of Flushing bay, second ward, Queens, N. Y.; bids Sept. 20 to president, borough of Queens.

2075 tons, highway widening Scotch Plains, N. J.; Grecco-Alferi Co., Newark, low.

1870 tons, sewer, contract 3, project 2, across Grand Central parkway extension from proposed pierhead and bulkhead line of Flushing Bay, Queens, N. Y.; bids Sept. 20, to president, Borough of Queens.

800 tons, bridge, Soledad, Monterey county, California.

615 tons, St. Louis Psycopathic hospital;

I. E. Millstone Construction Co., St. Louis, low.

600 tons, bridges and highway, Connecticut, including 200 tons of mesh for latter at Trumbull.

450 tons, building, Minnesota Mining & Mfg. Co., St. Paul.

369 tons, mesh, highway project RC-3911, Tioga county, New York; Connell & Laub, Roscoe, N. Y., general contractor; bids Sept. 14, Albany.

300 tons, mesh, Merritt parkway extension, Connecticut; Frione Construction Co., New Haven, Conn., general contractor.

300 tons, mesh, highway project RC-3913, Orange county, New York; J. E. Burns, Dumont, N. J., general contractor; bids Sept. 14, Albany.

275 tons, city warehouse, Richmond, Va.

225 tons, Ottawa generating plant, Lansing, Mich.

200 tons, mesh highway project RC-3910, Livingston county, New York; C. P. Ward, Inc., Rochester, N. Y., general contractor; bids Sept. 14, Albany

200 tons, mesh highway project RC-3908, Wayne county, New York; Dolomite Products Co., Inc., Rochester, N. Y., general contractor.

200 tons, crossing, Redmond, Alameda county, California; bids Sept. 29.

175 tons, building, Allis-Chalmers Mfg. Co., LaCrosse, Wis.

150 tons, overhead bridge, Williamstown, Ky., for Southern railroad.

130 tons, mesh, highway project RC-3907, Ontario county, New York; Bero Engineering & Construction Co., North Tonawanda, N. Y., general contractor.

125 tons, floor, main bridge and approach viaducts, Bronx-Whitestone suspension bridge, East river, New York; bids Oct. 13, Triborough Bridge authority, New York, contract WB-5.

120 tons, warehouse, Kirby Transfer Co., Pittsburgh.

100 tons, mesh, highway project RC-3909, Westchester county, New York; A. E. Ottaviano, Inc., Croton-on-Hudson, N. Y., general contractor.

100 tons, bridge, Pierce county, Washington; S. R. Gray, Puyallup, general contractor.

100 tons, store, Woolworth Co., Upper Darby, Pa., out for new bids Sept. 23.

Pig Iron

Pig Iron Prices, Page 160

Pittsburgh—Spot buying remains inactive, and in small amounts. Shipments against contracts are fairly well maintained, however, and September movement is expected to be close to August deliveries. For fourth quarter, some producers expect moderate improvement. Export inquiry continues light. Prices are steady.

Cleveland—Pig iron producers report little change in current demand as most foundries continue to absorb their own stocks and are ordering only for spot delivery. Little interest has been shown in contracting for fourth quarter. Shipments to auto foundries has improved moderately and some sellers expect a marked increase in requirements from this source over the next two weeks. Agricultural implement foundries continue above normal operations.

Chicago—Pig iron shipments continue ahead of the rate a month ago and while the improvement has been less than was expected, a continuation of recent gains is in prospect. Rising activity in foundry operations is confined mostly to producers of automotive castings but a fairly good melt is shown among other industries. New pig iron business is quieter following rather extensive coverage for fourth quarter during previous weeks. The market is firm at $24, furnace, for No. 2 foundry and malleable.

Boston—While buying for fourth quarter delivery gains momentum slowly, pig iron demand has improved slightly and tonnage booked this month will be well ahead of August in view of covering for the next three months. Foundry melt is higher in spots, resulting in additional small-lot buying for quick delivery. Foreign inquiry, although less active, continues from several

European countries. Imports of Indian iron continue, generally against orders.

New York—Pig iron is moving slightly better, but still far short of volume predicted a month ago. Foundries which depend much upon activities in the building field, such as soil pipe and builders' hardware, show little interest; and the slump in the railroad field is also reflected in purchases by foundries producing equipment specialties. This latter development, however, is not necessarily disappointing to sellers of pig iron, for there is usually a lull in the railroad market at this season of the year. A sustained demand is noted from machinery builders and in some miscellaneous lines there is an actual improvement, reflected in jobber specifications for iron. Noteworthy also is the fact that certain leading factors in the heating equipment industry are laying in some stocks. Foreign demand remains spotty.

Philadelphia—The surprising rate at which shipments are being made indicates the maintenance of foundry melt at fairly active pace. Sellers report the order backlog reduced as a result and expect more active buying within the next few weeks. Current purchases generally are for two to three carloads. Some export inquiry is noted but mostly for lots of less than 1000 tons. Talk of a price advance in fourth quarter is less evident, apparently as a result of weakness in the cast scrap market.

Buffalo—A small increase in pig iron shipments over last month is noted. Shipments continue to hold up well, and in excess of last year, as sellers have substantial tonnage on the books for the current quarter. Some spot orders are appearing. A strong tone dominates foundry operations. Added impetus is shown in the contracting movement for fourth quarter requirements. Producers generally seem to be paying little attention to talk of higher prices.

Cincinnati—Shipments are slow to improve, although the melt on automotive parts is much heavier than last month. Furnace interests believe that despite active fourth quarter coverage much iron remains to be sold in meeting quarter requirements. Buying by smaller foundries appears tardy, with spot shipments near the year's low.

St. Louis—Shipments of pig iron against contracts are holding up well, but with most melters well covered for the next two or three months, new buying is small. According to sellers shipments this month are expected to fall slightly below the August record, but the aggregate will still exceed that of a year ago by a liberal margin. Jobbing foundry reports reflect spotty conditions, activities in some instances having fallen off sharply, with several plants operating only three to four days per week.

Birmingham, Ala.—Some hesitancy is noted in pig iron buying, but the product continues to move steadily, for both contract and spot delivery.

Scrap

Scrap Prices, Page 162

Pittsburgh—In complete absence of mill buying, No. 1 heavy melting steel at $20.50 to $21 per ton is unchanged from the previous weekly period. Apparently mills were well stocked through purchases in the early part of August. The leading interest's embargo is still in effect, although slightly modified. Sale of a large tonnage for export from the East will keep scrap away from this district, especially at present quoted levels.

Cleveland—Steel and iron scrap appears weaker in sentiment but in the absence of buying prices are nominally unchanged. Shipments are being made steadily except to some mills in the Youngstown district where restrictions are in force.

Chicago—Scrap prices continue easy and heavy melting steel is off another 50 cents on a sale at $18. Sellers are able to pick up this grade at $17.50 and low prices also have prevailed on bids for railroad lists. The trade generally is bearish and lower levels are being predicted.

Boston—Weakness which appeared in heavy melting steel scrap for dock delivery late last week when the price was reduced $1 a ton, quickly spread to most other active grades. Not only are dock prices lower, but bids on material for Pennsylvania and New England delivery are down, notably for the former; some grades being off fully $1 a ton.

New York—Further weakness in scrap prices is accompanied by light buying and shipments to eastern mills, most steelmaking grades being lower. The best price for No. 1 heavy melting steel for export now is $16.50, with No. 2 bids $15.50. Domestic consumers are definitely pressing for lower prices, successfully since the downward turn about two weeks ago. Leading dealers believe the bottom has been about reached.

Philadelphia—The scrap market shows further weakness, with several grades down 50 cents per ton. Although the last important sales of No. 1 heavy melting steel were at $19.50 it is reported $19 flat might be done. The leading independent consumer has reduced its price on local material to $17.50 for No. 1 and $16 for No. 2. Most consumers profess to be well covered on nearby requirements. Dealer accumulations of No. 1 steel are light and it is felt any increase in steel buying would immediately be reflected in a stronger scrap market.

Buffalo—Iron and steel scrap prices leaned definitely to the down-

side. The weakness has carried the nominal price on No. 1 heavy melting steel down to $19 to $19.50 a ton, with the $2 differential on No. 2 offerings. No tonnage sales have been reported at these figures, with leading consumers staying out of the market.

Detroit — Further weakness in scrap reflects uncertainties and apprehension on the part of buyers. Quotations on nearly all grades of scrap are off about 50 cents per ton. An unusually large list of bundles from Fisher Body plants, comprising 280 cars was up for bids Thursday.

Cincinnati—Buying, except for coverage on contracts, is absent from the iron and steel scrap market, causing a further drop of 50 cents in quotations. This district is without drastic embargoes on shipments but there is an increase in frequency of rejections. Market activity is below normal, and prices are soft.

St. Louis—Iron and steel scrap continues distinctly weak, with purchasing at a minimum and offerings by dealers on a freer scale. The saving factors are absence of distress scrap and a fair sized short interest. Another staying influence is the fact that mills and foundries are willingly taking in all quotas due on contracts.

Birmingham, Ala.—The scrap market is inclined to mark time, with prices unchanged from last week and no outstanding buying reported. Dealers are having less difficulty obtaining stocks, but inquiries from consumers are considerably off.

Toronto, Ont.—Scrap demand continues steady with sales chiefly in special grades. Heavy melting steel and turnings are in demand from Canadian mills and it is stated that good shipments are being made to melters in the Hamilton district, both against contract and on new order account. Automobile scrap is piling up in the local district despite large shipments to the United States recently.

Warehouse

Warehouse Prices, Page 161

Cleveland — Warehouse distributors report little change in aggregate sales volume but confidently expect a general improvement before Oct. 1. The present dullness has spread to all products, with the possible exception of some grades of sheets. Distributors have ample stocks.

Chicago—Sales are fairly steady but have yet to start upturn which usually develops after Sept. 15.

Gains are anticipated over the next several weeks.

New York—Warehouse steel sales are slightly more numerous, but tonnage has not gained in proportion. Distributors of high-speed tungsten steels are marking up prices Oct. 1, following mill advances, averaging about 20 per cent higher. Sheet buying is spotty. Cold-finished buying is light.

Philadelphia—A somewhat spotty situation is noted in steel sales, with some interests reporting moderate improvement and others finding sales running under August levels. All report business ahead of last year.

Nonferrous Metals

Nonferrous Metal Prices, Page 160

New York — Major nonferrous metal prices slumped abroad last week on a heavy selling wave induced by business and political uncertainties. Publication of a bearish statistical report in the copper market also contributed to the weak undertone. Prices on the London Metal Exchange were around the lows for the year to date. The only effect on domestic markets was a drying-up of consumer buying, prices holding steady.

Copper—Export copper firmed on Friday and the trend appeared upward, indicating that the bottom may have been reached. The close was quoted around 13.39c, c.i.f. European ports compared with a low of 13.05c. Sales here were light at 14.00c, Connecticut, for electrolytic. World refined stocks increased 15,496 tons last month.

Tin—Buying held up fairly well early in the week sustaining prices at a steady level but the market weakened toward the end of the week. Straits spot closed at 59.25c.

Lead — Sales tapered but prices held firm at 6.35c, East St. Louis, and 6.50c, New York.

Zinc — Total sales for the week were estimated at not much over 2000 tons or at about the same slow rate as for the previous week. Tightness of supplies again supported the market firmly at 7.25c, East St. Louis.

Antimony — Prices advanced ¾-cent per pound on Chinese spot to 18.25c, duty paid New York, and 1-cent to 16.75c, New York, for American spot. Supplies of Chinese metal are negligible and shipments from China during August were reported as nil. Consumption on the other hand is increasing.

Bolts, Nuts, Rivets

Bolt, Nut, Rivet Prices, Page 159

New York city, through the department of purchase, is taking bids on fourth quarter requirements of bolts, nuts, rivets, screws and washers for the various city departments, closing Sept. 23.

Several hundred tons of bolts, nuts and screws have been placed by the navy department with Reed & Prince Mfg. Co., Worcester, Mass.; Russell, Burdsall & Ward Bolt & Nut Co., Port Chester, N. Y., and Buffalo Bolt Co., North Tonawanda, N. Y. Total contracts approximate $55,000.

Bolt, nut and rivet demand shows no improvement and sellers are anticipating only moderate gains at best, in view of the unfavorable outlook for heavier consumption by railroads and freight car builders. Specifications from jobbers are slow though stocks are regarded as only moderate. Farm implement and tractor manufacturers continue heavy buyers in keeping with brisk schedules. Structural fabricators find no improvement in rivet needs, operations being relatively light, but

tank fabricators are busy. Fourth quarter contracts are being issued at unchanged prices.

Iron Ore

Iron Ore Prices, Page 162

Cleveland—The heavy iron ore movement over the lakes this season, was reflected in stock piles at Lake Erie docks Sept. 1. These had failed to show increase until the past month, due to heavy movement from docks to furnaces. By Sept. 1 they had mounted above those of the corresponding date last year, but remained approximately 2,000,000 tons below the corresponding date of 1929, the previous record year.

Receipts of Lake Superior ore at lower lake ports this season to Sept. 1, shipments to interior furnaces and dock balances follow:

Port	Receipts Season	Shipments Season	Dock Bal. Sept. 1 '37
Buffalo ..	3,866,736	485,578	3,505
Erie	1,835,358	1,709,566	173,648
Conneaut	6,895,158	6,704,263	1,457,305
Ashtabula	4,931,292	4,109,401	1,568,361
Fairport	1,455,868	1,429,632	428,764
Cleveland	7,036,818	5,320,369	575,932
Lorain	2,664,719	1,132,067	33,863
Huron	766,213	764,406	205,966
Toledo	1,385,951	795,221	34,382
Total	30,838,113	22,450,503	4,481,726
Year Ago	17,527,029	13,988,096	4,150,072

Receipts at other than Lake Erie ports for August and the season to Sept. 1 follow:

Port	Month	Season
Detroit	284,688	799,477
Indiana Harbor.....	672,233	1,680,227
Gary	857,743	4,251,831
S. Chicago (loc. furs.)	1,128,309	5,047,629
Slt. Ste. Marie, Ont.	87,860	353,199
Hamilton, Ont.	108,406	427,854
Total	3,139,239	12,560,217
Year ago	2,005,355	7,501,470

American Ship Building Co., Cleveland, has announced the freighter WILLIAM A. IRVIN, one of the four new 600-foot freighters now under construction for the Pittsburgh Steamship Co., Cleveland, will be the first launched. The launching is scheduled for Oct. 28. The Gov. MILLER, her sister ship, now under construction at Lorain, O., will be launched about three weeks later. No launching dates have yet been announced for the other two large freighters now being constructed in the Ecorse yards of the Great Lakes Engineering Co., Detroit.

Egyptian Ore Imported

Philadelphia — Manganese ore imports for the week ended Sept. 11 totaled 2540 tons, all of which came

from Egypt. Steel imports amounted to 242 tons, comprising 107 tons of shapes, 89 tons of bars and three tons of bands from Belgium, 37 tons of billets from Sweden and six tons of shapes from France.

Steel In Europe

Foreign Steel Prices, Page 161

London—(*By Cable*)—Production of steel ingots in Great Britain fell off in August from the July output, as did pig iron. Steel ingot production in August was 987,700 gross tons, compared with 1,059,200 tons in July, a decline of 71,500 tons. Pig iron August production was 712,600 tons, compared with 729,300 tons in July, a decline of 17,700 tons. At the end of August 130 blast furnace stacks were blowing, compared with 126 stacks a month earlier.

Imports of steel in August were 213,421 tons, compared with 202,300 tons in July, an increase of 11,121 tons. Exports in August were 201,352 tons, in July 235,800 tons, a decline of 34,448 tons.

Steel and iron backlogs on books of producers now extend well into 1938. Pig iron is more easily obtainable, especially hematite, as shipments of iron ore from Bilbao, Spain, have been resumed.

Finished steel deliveries have become extended into 1938. Rerollers continue to complain of lack of semi-finished steel, in spite of enlarged import quotas from the Continent.

Reports from the Continent indicate export markets are quiet. Belgium reports booking contracts for cotton ties from India and the United States.

Equipment

New York—Manning, Maxwell & Moore Inc., New York, has been awarded the bulk of additional crane equipment for the 207th street shops, Independent Rapid Transit Railroad, New York, including two 30-ton units with 60-foot, 5½-inch spans, and eight 5-ton cranes with 17 to 18-foot spans. Contracts in excess of $125,000 have been closed. On the 30-ton cranes the low bid was $37,517, and on the 5-ton units, $55,636.

Other machinery orders continue numerous and well diversified. Practically all is for future delivery, many types of tools being on order for shipment well into the first quarter next year. A feature has been heavy purchasing by machine builders. Inquiry is substantial and a large volume is being figured. More than a score of machines are being figured or bid for the Frankford, Pa., arsenal with several contracts being closed. Eastern railroads are not buying much.

Cleveland—Reaction to general uneasiness is manifest in the machine tool and equipment market. Many large potential buyers practically have withdrawn from the market following bearish financial developments after Labor day, increasing seriousness of the international situation and uncertainty of the national political situation. Belief generally, however, is that the current attack of jitters will pass and that business during most of the remainder of the year will be good.

Notwithstanding bearish influences of the past several weeks, manufacturers have a number of large inquiries, many for export. Deliveries have improved considerably. Dealers' business generally is limited to small orders. Agricultural implement manufacturers are among the best buyers.

Chicago—Machine tool orders and

inquiries are slightly more numerous though insufficient time has elapsed to indicate a sustained expansion in buying. Business is coming principally from larger users and is well distributed. Gains in small tool sales are best among larger items such as electric hoists. An occasional inquiry is coming from railroads for prices to be included in 1938 budgets. A list has appeared from the Monon railroad totaling about 20 tools. This is the largest in many months. Allis-Chalmers Mfg. Co. is placing additional items for various plants. Electro-Motive Corp. practically has completed buying for its plant extension here. Machine tool deliveries gradually are improving and shipments of 12 to 14 weeks now are being offered on items which earlier in the year were available in five to six months.

Youngstown, O.—McKay Machine Co. has received orders from Italy for large sheet processing machinery and a large order for strip uncoilers from the Ford Motor Co. and has a backlog insuring capacity operations for several months. A plant addition recently completed is now in full operation.

Seattle—Demand for electric equipment for transmission lines and installations is strong. Pumping machinery is also moving in heavier volume. Strikes are handicapping lumber, logging and shipping which are buying less. Road construction and maintenance machinery is moving actively.

Construction and Enterprise

Ohio

BELLE CENTER, O.—Village, John E. Osborn, mayor, has approved bond issue of $19,225 for construction of waterworks system, total cost of which is estimated at $90,000. Edison Ellis, 922 State street, Lima, O., is engineer.

CANTON, O.—Timken Roller Bearing Co. plans erection of a one-story tube mill unit in Gambrinus, near here, to cost $100,000. Total expenditure with equipment amounts to $750,000.

CLEVELAND—American Steel & Wire Co. has let contracts for erection of five new additions to buildings at its Cuyahoga works. American Bridge Co., a subsidiary of the United States Steel Corp., will do the work.

CLEVELAND—Marquette Metal Products Co., 1145 Galewood drive, will install motors and controls, conveyors, electric hoists and other equipment in connection with expansion and improvements in plant. (Noted STEEL, Sept. 6).

DAYTON, O.—National Cash Register Co., South Main and K streets, plans building a new plant at a cost of $80,000.

DAYTON, O.—Hoban Brass Foundry, recently damaged by fire, is rebuilding a new plant at a cost of about $30,000.

EDON, O.—Village, E. C. Bingaman, mayor, will have preliminary plans ready for bids soon for construction of waterworks system, including 100,000-gallon steel tank, 105 meters, etc., costing about $43,600. PWA grant of $19,636 has been allocated.

NEW PARIS, O.—Village, F. G. Wiley, mayor plans sewage disposal plant and sewer system, costing $99,000. Maturity dependent upon WPA approval and passage of $25,000 bond issue to be presented to voters Nov. 2.

PAINESVILLE, O.—Light Alloys Mfg. Co., recently organized to succeed Light Alloys Co., whose plant was recently destroyed by fire, has leased the former factory of Bakelite Co., for the production of aluminum castings and similar specialties. A. E. Walton is president and R. E. Palmer, vice president and treasurer.

TOLEDO, O. — Owens-Illinois Co. has awarded contract to Austin Co., Cleveland, for erection of an addition to the Libbey Glass Co.

UTICA, O.—Village, W. F. Babb, mayor, plans sanitary sewage system and sewage disposal plant, for which bond issue of $36,000 has been approved. Total cost estimated at $173,000. Jennings-Lawrence Co., 12 North Third street, Columbus, O., is consulting engineer.

WARREN, O.—Brainard Steel Corp. will make plant additions and install new equipment. Estimated cost $240,000.

Connecticut

BRIDGEPORT, CONN. — Remington Arms Co. Inc. has let contract for the erection of a new 90 x 210-foot building, costing approximately $75,000, to Edwin Moss & Son Inc., Bridgeport. The building will contain 19,000 square feet of floor space.

COLCHESTER, CONN.—Town, town clerk, South Main street, is preparing plans for waterworks, including storage pumping and distribution facilities. PWA has allotted $40,023 out of a total cost of $100,000.

NEW HAVEN, CONN.—A. C. Gilbert Co., Blatchley avenue, has had plans prepared for erection of a three-story factory addition costing $60,000.

Massachusetts

PEABODY, MASS.—Town plans rebuilding of portion of municipal electric power station on Endicott street which was recently damaged by fire.

New York

BUFFALO—Morrison Steel Products Co. Inc., maker of truck panels, cowls and other automotive parts, is negotiating to purchase the plant of the American Lithographic Co. here, and will spend approximately $40,000 in building additions and making alterations.

CANLON, N. Y.—Dairy Farmers Union of Chateaugay is considering erecting a milk products plant at a cost of about $50,000.

COLLINS, N. Y.—J. H. Gray Milling Co., Gowanda, N. Y., will build a factory building to replace structure recently destroyed by fire. Cost $40,000.

MAYVILLE, N. Y.—Chautauqua Lake Boat Yards Inc. will purchase and install cranes, hoists, transmission and conveying equipment in the new boat manufacturing and repair plant it is erecting on the shore of Lake Chautauqua.

NEW YORK—Harris Hardware & Mfg. Co. Inc., 99 Chambers street, will erect a plant at a total cost of $100,000.

NEW YORK—Consolidated Edison Co., 4 Irving place, plans betterments and plant additions and distribution services at various locations. Estimated expenditure $50,000,000.

SCHENECTADY, N. Y.—General Electric Co. has let general contract for erection of one-story addition to its branch plant on East Lake road, Erie, Pa., for expansion in foundry. Cost over $50,000 with equipment.

WATERVLIET, N. Y.—Ludlum Steel Co. will install heavy duty motors and controls, regulators, conveyors, electric hoists and other equipment in connection with expansion and improvement in plant. Entire project to cost about $1,400,000.

New Jersey

ATLANTIC CITY, N. J.—Coca Cola Bottling Co., care of A. M. Day, 16 Orchard street, East Hartford, Conn., plans building a plant on a 145 x 225-foot site here. Estimated cost $100,000.

Pennsylvania

BRADFORD, PA.—Taylor Aircraft Co. is remodeling the plant of the Susquehanna Silk Mills, Lock Haven, Pa., which it recently purchased. The company plans building an airport at new location with hangars, parts production and assembling departments, replacing its former works at Bradford destroyed by fire several weeks ago.

PITTSBURGH—Canada Dry Ginger Ale Inc., 100 East Forty-second street, New York, is considering erection of plant here, to cost $100,000.

PITTSBURGH—Blaw-Knox Co., W. P. Witherow in charge, will make improvements and expansion to plant of R. M. Gordon & Co., recently acquired. Cost to exceed $40,000.

PITTSBURGH — Kelsey-Hayes Wheel Co., 3600 Military avenue, Detroit, has acquired a tract on Neville Island here, on which it will build a $1,000,000 plant that will use 100,000 tons of flat steel annually.

Michigan

DETROIT—Expert Tool & Die Co. has let contract to Krueger Construction Co., Detroit, for erection of a factory building on Mt. Elliott avenue. Estimated cost $30,000.

ESCANABA, MICH.—City council has voted in favor of building municipal central heating plant and has authorized George Bean, city manager, to proceed with project as soon as sufficient contracts for service have been signed.

MENOMINEE, MICH.—Signal Electric Mfg. Co. is about to take bids through Derrick Hubert, local architect, for a two-story factory addition, 40 x 140 feet, estimated to cost $35,000 complete.

Illinois

ALTON, ILL.—Duncan Bros. sustained severe damages to their foundry Aug. 25.

ALTON, ILL.—Duncan Foundry & Machine Works plans making repairs and alterations to shop and plant. Cost to exceed $60,000.

CHICAGO—Mid-West Electric Mfg. Co. has let general contract for building a one-story addition, 37 x 105 feet, to its plant. Cost estimated at $30,000, with equipment.

CHICAGO—Royal Mfg. Co., 2632 South Dearborn street, has had plans drawn by D. S. & J. H. Klafter, 100 North LaSalle street, for construction of a two-story plant addition, 100 x 125 feet. Total cost about $50,000.

CHICAGO—Sherman Klove Co., 3531 West Forty-seventh street, has plans prepared by A. Epstein, 2001 West Pershing road, for one-story factory addition, costing $125,000.

CHICAGO—Nicro Steel Products Inc., 188 West Randolph street, has been incorporated by Harry Wohl, Helen Wohl and I. T. Pollenz, to deal in iron, steel and ores. Correspondent: Raymond I. Suekoff, 188 West Randolph street.

CHICAGO — Ceco Steel Products Co., 1926 South Fifty-second avenue, plans installation of motors and controls, regulators, transformers and accessories, conveyors, electric hoists and other equipment in new local mill. Estimated cost $500,000.

CHICAGO—Anderson Welding & Boiler Repair Corp., 116 East Thirty-third street, has been incorporated by J. D. Anderson, J. Parks, B. M. Becker, to engage in general maintenance and boiler repair, fabricate materials, and manufacture trailers and parts. Correspondent: Warden & Becker, 111 West Washington street.

ROCKFORD, ILL.—Mechanics Universal Joint Co., a division of Borg-Warner Corp., is constructing a new $500,000 factory here.

TAYLORVILLE, ILL.—Tips Tool Co., maker of tools, has been purchased by A. B. Chance Mfg. Co., Centralia, Mo., and will be moved to Centralia in the near future.

Indiana

FRANCISVILLE, IND.—Town board has preliminary plans for new waterworks and distribution system, costing about $40,000. PWA has granted $19,000 and approved loan of $18,000 for the project. W. Scott Heer Engineering Co., Pekin, Ill., engineer.

KENDALLVILLE, IND. — Newman Foundry Co. is repairing and remodeling its plant recently damaged by fire.

LAPORTE, IND.—LaPorte Foundry Co. is building an addition, 60 x 127 feet, to its plant, to be ready for occupancy about the middle of October.

ROSSVILLE, IND.—Town board plans constructing waterworks and distribution system. Total cost is $36,000 and PWA has granted $16,364. C. Hurd, 1039 Architects and Builders building, Indianapolis, engineer.

Alabama

BIRMINGHAM, ALA. — W. W. Pickle & Canning Co., 98 Cooper street, plans to build a steam power house at its canning plant near Dallas, Tex. Cost over $60,000.

BIRMINGHAM, ALA.—Virginia Carolina Chemical Corp. has placed contract for construction of a sulphuric acid plant on a site adjacent to its East Birmingham factory. The plant will be of the contact type, with an annual capacity of 25,000 tons, and will represent an investment of approximately $200,000.

CARTON HILL, ALA. — Galloway Coal Co. will build a power house in connection with the Hope mine, including a coal tipple and compressor. Cost over $250,000.

TUSCUMBIA, ALA.—Electro-Metallurgical Co., 30 East Forty-second street, New York, plans erection of large electric furnace works on tract of land near here, comprising several operating units. A power substation will be built, and electrical equipment including motors and controls will be installed. Cost $600,000.

Delaware

NEWARK, DEL.—R. M. Hadley Mfg. Co., 709 East Sixty-first street, Los Angeles, is considering erection of a plant here which will cost approximately $50,000.

District of Columbia

WASHINGTON—Bureau of supplies and accounts, navy department will take bids until Sept. 24 for one motor-driven textile testing machine, schedule 1599; miscellaneous railroad rails and fittings, delivered White Plains, Md., sched-

ule 1584; 50 tons medium rivet and bar steel, schedule 1591.

WASHINGTON — Bureau of supplies and accounts, navy department, will take bids until Sept. 24, schedule 1596, for 13 steel camshafts, delivered Brooklyn, N. Y.; schedule 1606, nickel-copper-alloy forgings, delivered Washington; schedule 1610, one hydraulic hoist, delivered Keyport, Wash.; schedule 1623, motor-driven bench and milling machine lathe and equipment, delivered White Plains, Md.; schedule 1633, one hydraulic universal grinding machine, delivered Washington; until Sept. 28, schedule 1608, preformed wire rope, delivered San Pedro, Calif.; schedule 1516, alloy steel forgings, delivered Newport, R. I.; schedule 1634, steel valves; until Oct. 1, turbine and motor-driven pumps.

Kentucky

BUTLER, KY. — City plans to build waterworks plant costing $31,500, and PWA has allocated $14,175. Deep well turbine pump and chlorinator will be installed.

DANVILLE, KY. — Inter-county Rural Electrification Corp. has plans in progress for primary and secondary lines for rural electrification, with outdoor power substations, totaling about 400 miles. Approximate expenditure $380,000.

FULTON, KY.—City plans new municipal electric plant, including installation of two diesel engines.

NICHOLASVILLE, KY.—Blue Grass Rural Electric Cooperative Corp., Philip R. Holloway, superintendent, is completing plans for primary and secondary lines totaling about 225 miles, with outdoor substations and facilities. Fund of $120,000 secured through federal aid.

Florida

CHATTAHOOCHEE, FLA.—Town has PWA grant of $174,000 for power house building, 80 x 100 feet, installation of cold storage plant, two water filters, each of 1,000,000-gallon-per-minute capacity, two boilers, two turbogenerator sets and low lift pumps for waterworks. Estimated cost $400,000.

JACKSONVILLE, FLA.—Florida Glass Mfg. Co., A. Zeakise, president, Huron and Eleventh streets, has begun work on erection of one-story steel and corrugated addition. An additional unit will be built later.

MACCLENNY, FLA.—Town has PWA allotment of $22,909 for complete waterworks system, consisting of wells, pumping equipment, distribution system, etc. Total cost about $50,000.

Georgia

ATLANTA, GA.—City has plans in progress for construction of a filter plant and work probably will be let in October. Approximate cost $250,000. Wiedeman & Singleton Inc., 1404 Candler building, is engineer.

ATLANTA, GA.—Evans Metal Co., Box 97, North Side branch, has been formed to manufacture lead pipe and fittings. A new plant will be completed about Oct. 1. C. F. Evans is president.

North Carolina

DURHAM, N. C. — Duke Power Co., Charlotte, N. C., plans new power substation at mill of Erwin Cotton Mills Co., here, in connection with central station service for mill operations.

South Carolina

CHESTER, S. C.—City voted $90,000 waterworks and sewer bonds.

COLUMBIA, S. C.—Comptroller-general A. J. Beattie, secretary of state, rural electric authority, will soon call bids for constructing 300 miles of rural power lines. Allotment of $265,000 is available.

West Virginia

BEECH BOTTOM, W. VA.—Ohio Power Co., Newark, O., has approved plans for new additions to steam-electric generating station here. Construction will begin immediately.

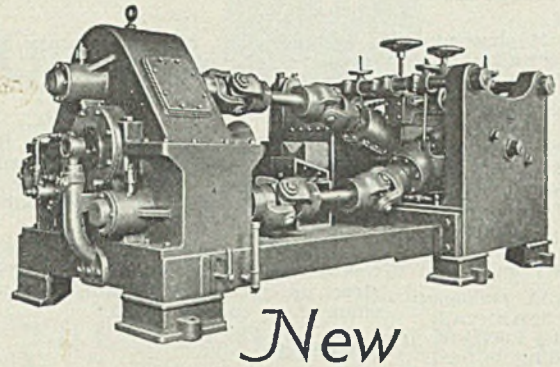
HUNTINGTON, W. VA.—Appalachian Electric Power Co is starting work on construction of a substation here.

LUMBERPORT, W. VA. — Harrison County Electrification association, E. V. Richardson, chairman, is having plans completed by Louis T. Klauder, Lincoln-Liberty building, Philadelphia, for steam-electric generating plant, on which work is to start soon. Fund of $100,000 is being arranged.

Virginia

CULPEPER, VA.—Ward-Rue Lumber Yard suffered damages by fire to its saw mill and equipment.

SALEM, VA.—Moore Milling Co., D. E.



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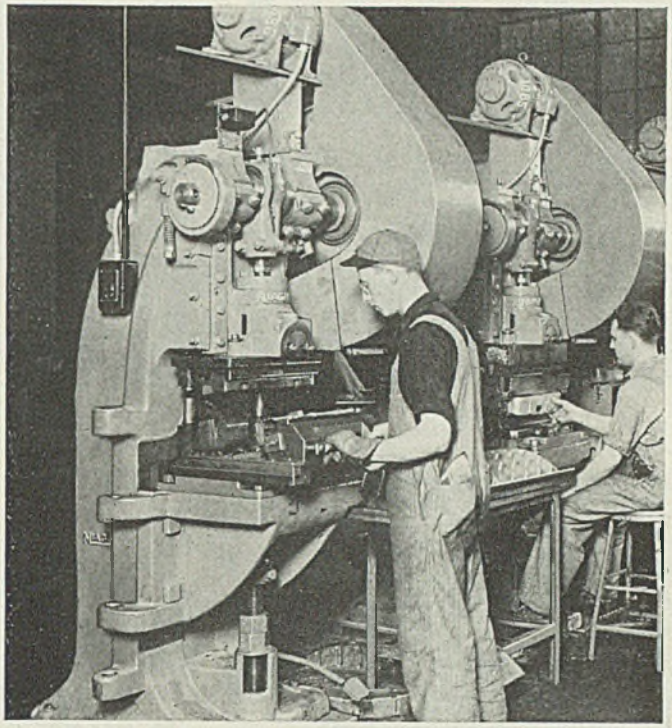

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NIAGARA MACHINE & TOOL WORKS

New York BUFFALO, N. Y. Detroit

NIAGARA

Moore, president, will rebuild its burned mill on Roanoke river just west of here.

Missouri

BUCKLIN, MO.—City will soon take bids for waterworks improvements. Estimated cost $70,000. PWA grant of $29,250 approved. W. B. Rollins & Co., Railway Exchange building, Kansas City, Mo., engineers.

KIRKSVILLE, MO.—City will vote Sept. 21 on $60,000 waterworks bonds.

ST. LOUIS—National Stoker Co. Inc. has been incorporated with 2500 shares of no par value to manufacture coal stokers, by O. T. Lademan, Maplewood, Mo. Alexander Kerckhoff, attorney, Pierce building, is representative.

VANDALIA, MO.—City soon takes bids for constructing municipal waterworks improvements and distribution system, total cost of which is figured at $121,818. Black & Veatch, 4706 Broadway, Kansas City, Mo., engineers.

Arkansas

LITTLE ROCK, ARK.—J. H. Hamlen & Son Inc., foot of East Seventeenth street, James C. Hamlen Jr., Portland, Me., president, plans rebuilding burned cooperage plant here. Temporary plant to be erected immediately.

Oklahoma

ANTLERS, OKLA.—City will spend $50,000 for proposed extension to waterworks. Tom G. Banks, engineer, 538 Liberty National building, Oklahoma City, Okla.

OKLAHOMA CITY, OKLA.—Oklahoma Gas & Electric Co., 207 Southwest Tenth street, is erecting a one-story brick machine shop, costing $7000.

Wisconsin

MARSHFIELD, WIS.—Marshfield Industrial Foundation Inc. is considering bids for erection of two additions to manufacturing group estimated to cost $50,000, without equipment. Architect G. A. Krasin is in charge.

MILWAUKEE — Allis-Chalmers Mfg. Co. has booked contract to furnish Southern Kraft Co. a large rotary kiln for its new paper mill at Spring Hill, La., at a cost of $62,500. It will be 250 feet long, 11 feet in diameter, with a daily capacity of 800 tons of pulp.

MILWAUKEE—Frank A. Endres Mfg. Co., metal fabricator, has leased 22,000 square feet in manufacturing group at 4202 West Monarch place and will install new equipment for stamping, welding and other operations.

Minnesota

FARIBAULT, MINN.—City plans purchasing portable air compressor complete with tools.

MINNEAPOLIS — General Metalware Co., 1401 Central avenue, plans altering and repairing plant damaged by fire. Cost to exceed $40,000. (Noted STEEL, Sept. 6.)

MINNEAPOLIS—City rejected bids taken July 7 for furnishing 12 electric motors for waterworks department, costing about $25,000; will readvertise.

Texas

BEAUMONT, TEX.—Beaumont Aluminum & Brass Foundry has been organized to engage in foundry business, by L. B. Jones and E. Best.

CLEVELAND, TEX.—PWA has granted $54,000 to city for waterworks and sewer system, on which bids will be taken about Sept. 30. Garrett Engineering Co., P. O. Box 1726, Houston, Tex., is engineer.

DALLAS, TEX.—Humphrey Steel Products Inc. has been formed with $50,000 capital stock to engage in manufacturing, by Dee E. Humphrey, Burt building, and G. T. Humphrey Sr.

DICKINSON, TEX.—Thrift Packing Co., Dallas, Tex., plans improvements to present plant here, including complete remodeling and reconditioning, and installing considerable machinery and equipment for vegetable canning. Estimated cost $40,000.

HOUSTON, TEX.—Program of improvement has been presented to city council involving $4,000,000 for new wells, storage tanks, mains for waterworks. Principal features of recommendations include installation of three suction storage tanks, from 500,000 to 5,000,000-gallon capacity; erecting four high lift pumps with capacity of 3,000,000 to 12,000,000 gallons per day; building three elevated storage tanks, and laying of 200 miles of distribution mains.

PLEASANTON, TEX.—City, William Housewright, mayor, will construct a waterworks system at a cost of $45,000, and make extensions and additions to

sewer system, costing $30,000. Garrett Engineering Co., engineer, P. O. Box 1726, Houston, Tex.

ROCKWALL, TEX.—Rockwall County Co-operative Electric Co. has plans maturing and will take bids soon for primary and secondary lines for rural electrification approximating 200 miles, with outdoor substations and service facilities. Fund of $200,000 arranged through federal aid.

Kansas

HAYS, KANS.—Central Kansas Power Co., Abilene, Kans., plans steam-electric power plant. Cost to exceed $40,000.

LOGAN, KANS.—City, W. M. Parham, mayor, has submitted plans to WPA for approval of construction of sanitary sewer and sewage disposal plant costing $75,000. Paulette & Wilson, 311 Farmers Union building, Salina, Kans., consulting engineers.

SILVIA, KANS.—City, H. A. Lewis, city clerk, is making plans for waterworks system, costing $38,600. PWA has approved grant. A. W. Hefling, Hutchinson, Kans., consulting engineer.

ST. FRANCIS, KANS.—City has accepted PWA grant of $40,000 and is completing plans for construction of additions to present power plant building and installation of two new diesel generating units to cost about $90,000. E. T. Archer & Co., 609 New England Bldg., Kansas City, Mo., is consulting engineer.

TOPEKA, KANS.—REA has made an allotment to the Kaw Valley Co-operative Electric Co. for $200,000 to finance construction of about 370 miles of rural transmission lines. Total cost $395,000.

Iowa

ALLERTON, IOWA—PWA has approved allotment for construction of waterworks costing $21,680.

GRUNDY CENTER, IOWA—Grundy County Rural Electric Co-operative, Luther Brindle, Felix, Iowa, secretary, is preparing plans for its second section consisting of the construction of 150 miles of rural transmission lines at a cost of $150,000. Young & Stanley Inc., Muscatine, Iowa, consulting engineers.

JEWELL, IOWA—Air Electric Machine Co. has been formed to manufacture wind electric machinery and equipment. C. H. Christiansen is president.

PELLA, IOWA—City, A. C. Kruyper, city clerk, is taking bids to Oct. 5 for construction of alterations to power plant building and equipment foundations. Young & Stanley Inc., Muscatine, Iowa, consulting engineers.

Nebraska

HASTINGS, NEBR.—Central Nebraska Public Power and Irrigation district has plans maturing for two hydroelectric generating plants in Jeffrey canyon and Johnson canyon, respectively. Fund of $20,096,000 has been obtained through federal aid. George E. Johnson, chief engineer and general manager. Work scheduled to begin soon.

ST. PAUL, NEBR.—Howard County Rural Public Power district, James Fisher Jr., Elba, Nebr., secretary, is taking bids to Oct. 5 for furnishing approximately 974 meters and meter sockets required in construction of rural electric distribution system. Specifications obtainable from owner or H. H. Henningsen Engineering Co., 326 Union State Bank building, Omaha, Nebr.

Colorado

GREELEY, COLO.—Home Gas & Electric Co. plans electric power substation and additions to lines, for which $170,000 will be expended.

Pacific Coast

ALTURAS, CALIF.—A Sickler, engineer, Belli building, will soon let contract for erection of 900-horsepower diesel electric generator plant for Surprise Valley Electrification Corp.

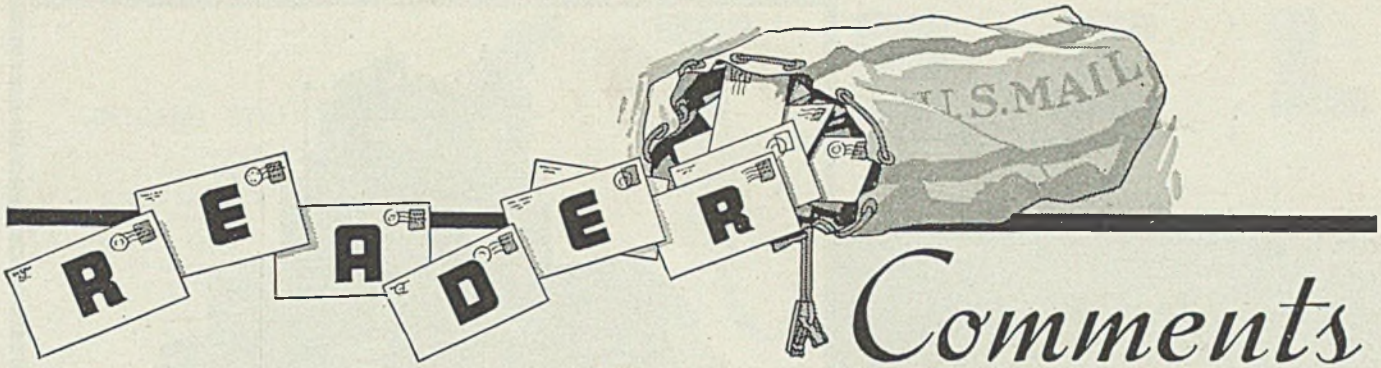
SAN PEDRO, CALIF.—White Machine Works will construct a new building costing $3000 near its present location, 477 West Nineteenth street, and will install $5000 worth of new machinery. D. E. White is proprietor.

SEATTLE—Austin Co. has completed construction of the second unit of the Boeing Aircraft Co.'s assembly plant. Equipment, including monorail cranes, is now being installed.

TACOMA, WASH.—Stoker-Lad Inc. has been organized by B. E. Johnson and associates, 926 Rust building, to manufacture coal stokers and equipment.

Canada

SAULTE STE. MARIE, ONT. — Great Lakes Power Co. Ltd. will begin work in 30 to 60 days on new 10,000 horsepower electric power plant. Cost close to $1,000,000.



Comments

Readers are invited to comment upon articles, editorials, reports, prices or other editorial material appearing in STEEL. The editors cannot publish unsigned communications, but at their discretion may permit a writer to use a pseudonym when a bona fide reason exists for withholding his identity. Letters should be brief—preferably not exceeding 250 words.

Control, but not Embargo

To the Editor:

I note in STEEL, Aug. 30, 1937, bottom of column 1, page 29, a reference to the "prohibition" of iron and steel scrap export. This term and the word "embargo" are occurring again and again in trade papers. I cannot believe it is planned but then, there you are!

There is no bill to either embargo or prohibit the export of scrap before congress to my knowledge. There are several to license it. It is my belief that an embargo would not only be undesirable but illegal.

The unprecedented export of scrap is alarming many steel and iron producers. It has had an unquestioned effect upon costs and thus threatens markets. On the other hand, where scrap exists but is not used and export markets more available than domestic, such as in Senator Sheppard's state of Texas, an embargo would be ridiculous. Prohibition of the export of surplus or undesirable scrap would be likewise.

This matter is yet to be determined and my purpose in writing is to stop the loose use of terminology by periodicals such as yours, whose statements will unquestionably be quoted as Holy Writ in the hearings still to come.

Do you not think that the half-baked reporters without knowledge of English grammar and a total disregard for fact are perhaps the greatest menace to the power of the press existing today? My impression of them, gained from personal contact and reading of the *New York Times* and local papers, is that the Fourth Estate has fallen very low in its selection of employes other than mechanical.

It is control, not prohibition, that is desired by scrap users.

W. W. ROSE

Executive Vice President,
Gray Iron Founders Society,
Cleveland.

Tie Sales and Service

To the Editor:

We are much interested in the article on page 32 of the Aug. 2 issue of STEEL, regarding the connection of salesmen to the production department.

The Michigan Tool Co. has had something along these lines in use for the last six years. All of our salesmen have to be shop trained men, able to service as well as sell. We have found that a man who is thoroughly shop trained will sell in a great many cases where a specialty salesman would not last or produce as many orders over a long period of time.

Any complaints our salesmen receive are gone into thoroughly in the office and taken up immediately with either the engineering, plant or both. We have found that this method does improve the business relation between the company and its customers and in many cases develops ways and means of improving your own line through a close investigation of competitive lines, which you will find when servicing your own materials.

Although our salesmen are not allowed in the shop, the general superintendent is called in and anything pertaining to the quality, engineering, delivery, or whatever might come up, is gone into thoroughly and methods devised to meet any conditions they might encounter in the field.

I am thoroughly in accord with the article and thoroughly sold upon using the methods described. I believe that as time goes on, sales, service and follow-up, together with quality and delivery, will govern the increase or decrease in sales for any of our modern companies.

GEORGE L. SHARPE

Sales Manager,
Michigan Tool Co.,
Detroit.

Calls it Streamlined

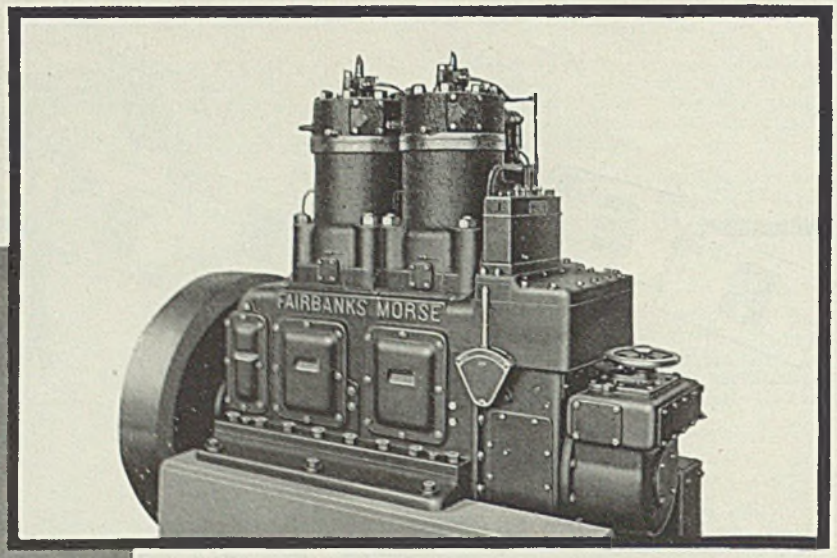
To the Editor:

In my estimation the streamlined presentation of tractor manufacture in STEEL, Aug. 30, is quite interesting and should prove an attractive feature of future issues. The growth of such publications as *Life* and *Look* seems to indicate a public preference for pictures, which probably extends to the readers of trade papers.

If I may be permitted to offer a suggestion, I would like to recommend that greater care be taken to bring the captions closer to the illustrations in order to eliminate any question as to which cut they refer to.

E. J. KOPF

Advertising Division,
Republic Steel Corp.,
Cleveland.



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