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For forty-eight years—IRON TRADE REVIEW

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As the Editor Views the News

INVITED guests who inspected the new 100-inch semicontinuous plate mill of the Carnegie-Illinois Steel Corp. at its Homestead works last Friday were amazed at the extraordinary engineering skill which is embodied in its design and construction. Here is massive equipment, consisting of scale breaker, spreading stand, edging press, roll edger, reversing roughing stand, four 4-high finishing mills, runout and transfer tables, levelers, shears, etc. (p. 38)—all co-ordinated and subject to such sensitive electrical control (p. 44) that the entire unit obeys the will of its operators as readily as a 50-pound sewing machine responds to the touch of an experienced seamstress.

• • •

Among the hundreds of guests in the inspection party (p. 19) were many who probably appreciated for the first time some of the significant aspects of modern rolling mill equipment of which the Homestead mill is an outstanding example. They saw with their own eyes the exceptional precision of this mill. They learned what it means in terms of higher quality of product and increased efficiency. And, if they are familiar with the economics of productive equipment, they sensed the fact that this mill and others of the continuous or semicontinuous type are important factors in broadening the markets for steel products.

Extend Uses Of Steel

Scores of those who inspected the mill represented the public press. Many of them exert influence upon the forming of public opinion. Undoubtedly the majority of them departed from the Monongahela valley with the impression that the tendency in the steel industry to install improved mechanical facilities is in the direction of economic and social betterment. If these writers can convey this truth to the American public effectively enough to offset the fallacious idea that mechanization as typified by mills of this kind is detrimental to the public interest, then the en-

"Sell" Public On New Mills

terprise of Carnegie-Illinois in proudly displaying its new marvel to its guests will have served a worthy purpose. U. S. Steel, Bethlehem, American Rolling Mill and other companies which have been exhibiting their new equipment to representatives of the public are pioneering in a long-neglected phase of public relations.

• • •

To this writer, the spectacle of modern achievement as reflected by the Carnegie-Illinois mill at Homestead, Bethlehem's continuous wide strip mill at Lackawanna and other notable new units recently exhibited, implies that industry has almost unlimited capacity for tremendous accomplishment. The Homestead mill is the result of an unprecedented concentration of skilled engineering talent upon a single objective. It is said that 244 different contractors participated in this work. The success which crowned their co-ordinated effort in the field of engineering prompts this query: What would happen if industry, by individual company or co-operative effort, were to address talent of comparable skill and concentrated force to the single objective of either labor relations or public relations?

• • •

This question does not necessarily infer that industry today is subject to criticism for what it is doing in labor relations or public relations. During the past year it has increased by many fold its facilities for dealing with these problems. In labor relations, its efforts (p. 17) are beginning to show encouraging results. However, it may be that values still are out of balance. If it is good business to put the effort of 244 groups of experts to the task of developing one mill, possibly it would be good business to direct the skill of 244 units of competent specialists to the current problem of finding the best way to deal with employes. After seeing what concentration of skill can accomplish in engineering, we need not fear the outcome in labor. Industry has ample resources for the problem, if it cares to utilize them effectively.

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Labor Board, LaFollette Stir Up Steel; Employes' Council To Resist

FOCAL point in the CIO's drive against the steel industry last week was in Washington, where the national labor relations board resumed hearings on complaints instigated by the CIO that the Carnegie-Illinois Steel Corp.'s employe representation plan violates the Wagner act.

While the hearings were in progress loyal employes of the corporation redoubled efforts to prove to the board that they were satisfied with the plan, and to prevent the John L. Lewis group forcing a situation which might lead to plant suspensions and loss of work. These employes organized defense committees and employed lawyers to see that their views were presented before the board.

The attitude of the employe representatives to the board was expressed when a resolution to abide by the board's coming decision was voted down 29 to 2, with 5 not voting. According to the general council's news release last week "the board's decision is expected to be against the legality of the employe unions . . . in such event the board is expected to call for a dissolution of such unions."

Cites Causes for Removal

Elmer J. Maloy was on the stand several days. He charged that his membership in the Amalgamated Association of Iron, Steel and Tin Workers "seemed to be the entire reason" for his recent removal as chairman of the Carnegie-Illinois employes' Pittsburgh district general works council.

Maloy, who was an avowed CIO advocate, alleged that his ouster was accomplished at a secret meeting of the 25 delegates who had voted against him. He said delegates later told him that their expenses and wages were paid by the company for this meeting. He testified that he still is a member of the general council and general chairman of the Duquesne plant group.

Under cross examination by William Beye, attorney for the Carnegie-Illinois Corp., Maloy said he did not know all of the "effective provisions of the plan of employe representation."

Changes or amendments to the plan are posted on plant bulletin

boards, he said. Asked by Donald W. Smith, a member of the labor board, if he knew of any occasion where amendments were not posted in bulletin form, Maloy failed to recall such instance. Asked if the plan is "something that rests entirely with employes, and determined by their election whether they want it to continue," Maloy testified this to be true and added that the "management cannot terminate it."

Organizer for Amalgamated

Hours of time during the course of the investigation were taken up with descriptions of various plant operations with which Maloy was familiar and details pertaining to the operations of the representation plan.

Maloy returned to the stand Thursday and was cross-examined all day. He said that in his opinion "and in the opinion of a majority of representatives I have talked

to, industrial engineers that investigate these jobs (wages and working conditions) are not qualified. They do not have sufficient actual experience to be able to reckon the amount of skill necessary or the amount of fatigue encountered on the job."

He said he is an organizer for the steel workers organizing committee. He admitted he had received pay both from the CIO and the company for attending employe meetings, at the same time.

William E. Garrity, chairman employe representatives group of the Edgar Thomson plant and a delegate to the Pittsburgh district general council identified several exhibits, including minutes of employe representative meetings involved wages and working conditions.

Garrity testified there were numerous instances in which he felt that there had been injustices to employes. He stated that one meeting was held in an effort to obtain

Weirton Workers Parade in Protest Against CIO



NEARLY 9000 Weirton Steel Co. employes—practically all who were not working at the time—joined in a parade recently as a protest against outside interference in their labor relations. At least 2000 cars jammed Weirton, W. Va., and Hollidays Cove during the demonstration which was led by employes' representatives, to whom the Weirton Steel Security League has pledged support. Marchers and automobiles bore placards inscribed: "We don't want a dictator; we can think for ourselves"; "We are steel men, not coal miners"; "We don't want Lewis nor his CIO"

the reinstatement of an employe named Duffy and that Garrity "demanded a meeting with the company's president," which was granted.

Two Chicago lawyers appeared before the board at the beginning of the hearings asking that they be allowed to intervene on behalf of Carnegie-Illinois employes for continued operation under the framework of the employe representation plan. They explained that this move was entirely voluntary on the part of their clients, the steel workers, and was not instigated in any way by the corporation.

There was considerable argument on this point and finally after an overnight interval they were allowed ten days in which to file a petition.

A telegram from 12 of the employe representatives of the Gary works was read into the record by Chairman Madden in which it was stated that the attorneys were not authorized to intervene for them at the hearing. However, the attorneys explained that there are 34 employe representatives in that plant, of which a majority, 22, sponsored the attorneys appearance.

Company To Support Plans

As a prelude to the hearing last week the Carnegie-Illinois corporation filed a formal answer to the complaint lodged by the board. The principal point disclosed was a confirmation that the employes' plans will be supported by the company "through every proper legal means."

The men, the answer stated, now as always "are free to select any form of collective bargaining that they desire for negotiating purposes."

It emphasized that a vast majority of the employes had adopted the plans, which vary in substance in the several mills as the employes have amended them.

In answer to an allegation that the plans did not provide for mass meetings, the company pointed to the fact that the employes actually had held such meetings and always at times and places determined alone by the men.

An accusation that the company makes newly hired workers "subject to" the plan in effect at their mills brought the response that in addition to handing them copies of the plan, they also received copies of various safety rules and were informed of provision for group insurance.

In reply to a charge that the company had refused to negotiate a wage question with a committee chairman, the answer declared that no request for such a discussion was received, and that plan rules provide for open rather than secret

negotiation in all matters for adjustment.

The company made no secret of the fact that it had borne certain necessary expenses in the administration of the plans.

The labor board announced that it would no longer be able to sit as a board to hear the case because of press of other business and the hearings were turned over to trial examiner C. A. Wood of the board.

While the labor board's hearing was under way, the LaFollette civil liberties subcommittee of the senate was taking testimony on complaints that the Tennessee Coal, Iron & Railroad Co., United States Steel Corp. subsidiary, has actively combated outside union activity.

Karl L. Landgrebe, vice president, and Ernest L. Lemay, assistant to the president of the company, both denied on the stand that the company employs private detectives to spy on labor activities. Borden Burr, company counsel, presented certain records to the committee as ordered, but declined to submit employment records, saying they were considered confidential.

Officials of the American Bridge Co., another Steel Corp. subsidiary, are to appear soon before the subcommittee regarding alleged interference with union activities.

B. F. Fairless, president, Carnegie-Illinois Steel Corp. has granted authority to a "grievance committee" of four employe representatives to act as a "supreme court" in settling disputes between the company and its 101,000 employes.

Naming of the committee fol-

lowed statements made by a few delegates to the Pittsburgh district general council that some supervisors and foremen of the company have not given full co-operation in the application of the employe representation plan and that attempts have been made to dominate some employe representatives. The council, after selecting the four members of the committee, asked President Fairless if he and the company would co-operate in the findings made by the committee. His decision to make the committee an authoritative body, with powers to enter any of the company's plants to investigate conditions and to call before them plant superintendents and other officials of the company, is unprecedented in the history of employe representation plans.

Chairman of the committee is Owen Jones, a hot mill heater in the Laughlin plant at Martins Ferry. Secretary is Ralph H. Martin, charging machine operator at No. 3 open hearth, Homestead, Pa. plant. The other members are Joseph Budday, molten metal distributor at the Duquesne plant, and R. Elmer Glover, shearman in the tin mill at the Farrell-Mercer works.

Ten delegates from Pittsburgh district plants of American Steel & Wire Co. were in Cleveland, Jan. 14 and 15, for their second annual conference, which was attended also by 26 delegates from other plants of the company, and for joint meetings with employer representatives on industrial relations. Each of the concern's 18 plants sent two employe representatives.

"Supreme Court" in Carnegie-Illinois Corp. and Employes Disputes



WILLIAM R. HILL, 46, Canton, O., new chairman of the employe union, representing the 60,000 employes of the plants in the Pittsburgh district of the Carnegie-Illinois Steel Corp., in conference with the four members of the employe's grievance committee which President Benjamin F. Fairless has authorized as a "supreme court" in settling disputes between the company and the employes. Left to right are: Joseph Budday, Dravosburg, Pa.; Owen Jones, Martins Ferry, O.; Chairman Hill, who succeeded Elmer J. Maloy, Duquesne, Pa.; Ralph H. Martin, Munhall, Pa.; and R. Elmer Glover, Farrell, Pa.

Announce \$60,000,000 Expansion at \$10,000,000-Mill Dedication

FOUR hundred guests last Friday attended the formal opening and inspection of Carnegie-Illinois Steel Corp.'s new 100-inch semicontinuous plate mill in Homestead, Pa.

At a banquet in the evening in the William Penn hotel, Pittsburgh, at which addresses were made by Myron C. Taylor, chairman, United States Steel Corp., William A. Irvin, president of the corporation, and Charles G. Dawes, former vice president of the United States, Mr. Irvin announced that plans have been completed for construction and modernization work at the Clairton, Pa., and Edgar Thomson mills, Braddock, Pa., involving an expenditure of \$60,000,000.

This program, Mr. Irvin said, includes a hot strip and a cold strip mill at Clairton, with annual capacity for 600,000 tons of sheets and tin plate, the largest amount of which is for an 80-inch hot mill. The program also provides for a new slabbing mill at the Thomson works

with annual capacity for 1,000,000 tons, chiefly to supply slabs for the new Clairton mill.

The third provision is for additional extensive electric power facilities at the Thomson works and transmission lines from Braddock to Clairton.

The new plate mill at Homestead, which the guests had just inspected, cost \$10,000,000 to \$11,000,000. Exclusive of the United States Steel Corp. subsidiaries, 244 separate contractors participated in the work incident to its construction. This mill has an annual capacity for 729,000 gross tons. (Engineering details will be found in the articles beginning on page 38, this issue.)

First Plate Mill in Six Years

This is the first mill for production of plates built since 1931, when Bethlehem Steel Co. completed a two-high, 160-inch sheared plate mill at Sparrows Point, Md. Illinois Steel Co., since merged into Car-

negie-Illinois Steel Corp., built a 96-inch sheared plate mill at South Chicago in 1930.

The new mill at Homestead increases the Carnegie-Illinois Steel Corp.'s capacity for shear plates from 1,703,500 tons to 2,432,500 tons. Carnegie-Illinois also can produce 740,000 tons of universal plates.

With the new mill, total capacity in the country for sheared plates is 4,812,120 tons. Total capacity for universal plates is 1,581,200 tons.

The mill covers an area of 1800 by approximately 300 feet over all, with a floor area under roof of 404,210 square feet, about 9¼ acres. It includes:

Four continuous type re-heating furnaces.

One 36 by 100 inches two-high, non-reversing scale breaker stand.

One 42-inch and 52 by 120 inches four-high, spreading stand.

One slab squeezer.

One 36-inch and 54 by 100 inches, four-high, reversing roughing stand, with vertical edging stand.

Four 27-inch and 54 by 100 inches, four high, continuous finishing stands, with shears and normalizing equipment.

Connecting tables and gear drives.

The average slab used by the mill will be 54 by 6 by 90 inches and the finished product will measure 20 to 90 inches, inclusive in width by 3/32-inch to ¾-inch, inclusive in gage. The product will range from standard carbon steel to high tensile steels, such as USS Cor-Ten and Man-Ten and Sil-Ten.

Rocking Shear an Innovation

To the men of the Homestead works perhaps the single tool that arouses the most interest is the rocking shear, an 80-ton device that was born in the mind of A. W. Soderberg, chief of the Homestead engineering staff, one night in the study of his home, from observation of a rocking chair he teetered.

Long puzzled over the problem of shearing plates 90 inches wide and ¾-inch or less in thickness without causing arch, or bow, Soderberg found his answer in the shape of the chair rocker.

With this as a beginning, he built a working model and experimented with sticks of chewing gum in preparation for the construction of the monster successful tool that now shears high tensile steel as easily as the model snipped gum.

Committee Organized to Defend Representation Plan



CARNEGIE-ILLINOIS STEEL CORP. employes combating the CIO have organized a "defense committee of the employe representation plan." Last week this committee engaged a Pittsburgh attorney to represent it, and set up headquarters at 707 Plaza building, Pittsburgh. Four members of the committee were subpoenaed by CIO lawyers to appear before the labor relations board in Washington. Photo shows, left to right, Ferd W. Bohne, chairman, Pittsburgh district joint council, and William B. Hadden, secretary, both members of the defense committee, conferring with their attorney before going to Washington

Base Scrap Prices on Steel, Proposal Made to Dealers

A PLAN for stabilizing iron and steel scrap prices, outlined by W. W. MacMillen, purchasing agent, National Malleable & Steel Castings Co., Cleveland, was one of the features of the Institute of Scrap Iron and Steel's ninth annual convention in Cincinnati, Jan. 14-16. Briefly, it contemplates basing the price of heavy melting steel on the average of prices of plates, shapes and bars at Pittsburgh.

Mr. MacMillen expressed the belief that the plan would not only stabilize scrap, but encourage its consumption, which he said normally amounts to about 30,000,000 tons annually.

"One economist has said that 'One hundred million a year is the nuisance tax the steel industry is paying to enjoy the luxuries of speculative scrap purchases,'" said Mr. MacMillen. "My opinion, however, is that you scrap men are not wholly responsible for all of this speculation."

He selected plates, shapes and bars as a base for figuring scrap because "in the first place their production involves a minimum of fin-

ishing processes, and hence reflect to a large degree the actual costs of the materials of which they are produced. In the second place, these products are universally used . . . are good barometers of general business conditions."

Compares Price Fluctuations

"Looking over the average prices of these three steel mill products for a ten-year period, we find a peak of \$53 and a low point of \$28," he said. "The maximum fluctuation from low to high was 89 per cent of the minimum figure. The corresponding extremes of heavy melting steel were high \$25.30 and low \$12, a movement from low to high of 111 per cent.

"Comparison of average prices over a 10-year period indicated 40 per cent of the average prices of plates, shapes and bars as being the correct percentage to use for heavy melting steel, with differentials for other markets based on freight rates from producing points as at present, so that the same relative delivered price differentials for scrap at the different consuming points would be preserved. Other grades of scrap would be based on their proper re-

lationship in value to heavy melting steel.

"The average fluctuation of scrap under present methods is \$4.72 per ton per year over a ten-year period, whereas on the stabilized plan which I have outlined the average fluctuation would be \$3.20 per ton per ten-year average, or a difference of \$1.52. These wide swings cost the consumer, the producer and you scrap men many millions of dollars annually.

"Had this plan been in effect during the last 15-year period, scrap would have reached a low of only \$11.20 and sold at the high of \$21.20, whereas under the present method the low was \$8.25 and the high \$25.30.

"In other words, I believe scrap prices should be based on the prices received for the finished steel it produces and should have the same relative value to that product one time as another.

"In working out this thought, I purchased an imaginary 1000 tons of heavy melting steel per month over a ten-year period, or a total of 120,000 tons, based on the average monthly price of plates, shapes and bars at Pittsburgh, and a like tonnage based on the average monthly price of heavy melting steel Pittsburgh, which resulted in a difference of \$1.52 per ton of scrap purchased. In a normal year the total saving affected would amount to approximately \$45,000,000. Parts of such saving would at various years have gone to the producer and dealer together and part to the consumer.

Affects Steel Producing Cost

"Other items entering steel production are contracted for long in advance but scrap fluctuates more rapidly than any other commodity, and this wide fluctuation has a large bearing upon the cost of steel production.

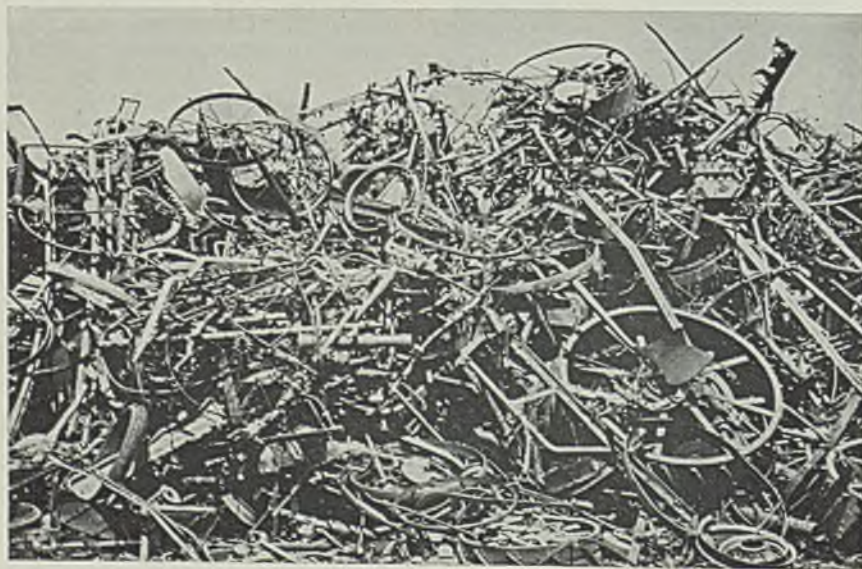
"Let us for illustration make an analysis of the scrap business for the year just closed: The average price of plates, shapes and bars on Jan. 1, 1936, was \$36.40 and remained the same until July. Therefore, the price of scrap on a stabilized basis would have been \$14.56 during that same period. On July 1 the average price of plates, shapes and bars advanced to \$38.20 while scrap would have correspondingly advanced to \$15.28 and remained at that figure until Oct. 1, when it would have been \$15.60 in line with a further advance in the price of the finished products.

"Under such an arrangement the average price of scrap for the year 1936 would have been \$15.15, with a low of \$14.56 and a high of \$15.60, and the fluctuation would have been \$1.04 instead of \$4.74 as under our present system with a high of \$18.31 and a low of \$13.57."

"During 1936 we reached the peak of our membership rolls when we registered 529 individual firms and corporations," said Darwin S. Luntz, president of the institute, in his report.

"It will be recalled that during the last era of prosperity, in 1929,

Flow of "Country Mixed" Scrap Is Accelerated



SCRAP from Minnesota, the Dakotas, Nebraska, Montana flows to Duluth and Superior as "country mixed." Plow points, tractor wheels, cultivator axles, Model T parts, tire rims—a multitude of grades make up this typical pile on the Superior Terminal & Dock Co.'s yard. The yard is 350 feet wide, 1500 feet long. Carloads of mixed scrap are unloaded, sorted, cut, then loaded by crane for water shipment to lower lake ports. In the 1936 season 314,937 tons of "pig iron" was locked through the Soo canals, compared with 239,791 tons in 1935. While scrap is not segregated, it is practically all this tonnage

we barely exceeded 400. Time, education and results have vanquished the most skeptical of scrap dealers and have enlisted their support in helping the Institute to reach new strength from the point of view of membership.

"In tonnage, this membership represents well over 90 per cent of all of the scrap iron handled by the scrap trade, establishing the spokesmanship and the representative capacity of the institute without challenge . . .

"The institute has been officially called into conference by producers and consumers of scrap to assist in the solution of problems affecting the mutual relations of the scrap industry and its customers. It is expected that negotiations now being undertaken will ultimately result in conferences and understanding between the American Iron and Steel Institute and the Institute of Scrap Iron and Steel, as the two representative spokesmen of both industries.

"Quietly and efficiently the institute has contributed a most useful service to the industry through its Arbitration Bureau. To date 240 cases have been handled through arbitration. It is to our credit that since the organization of the institute in 1928 not a single case involving a member of the institute has found its way into any court."

Discusses Government Issue

Louis J. Borinstein, A. Borinstein, Indianapolis, presented a paper, "Our Business and Its Relation to Government," in which he discussed the main issues in governmental policy.

"Time was when business regarded the functioning of government as of at least secondary concern to other problems of production, sales and general business promotion," he said. "It needs no crystal gazer to tell business men today that such a time now belongs to the ir-retrievable past." He spoke of the "confusing uncertainty" as to what congress will do, and urged business groups to give more attention to government.

"Competition in the scrap iron and steel industry is keener now than I have ever seen it," declared Sam Kasle, Kasle Iron & Metal Co., Toledo, O., president of the Cleveland chapter, in the chapter forum.

"Wealthy brokers are attempting to consume all the business by opening offices in the industrial cities and by sending traveling men to every little village or town which has a smokestack, paying more there than they are offering to the dealers. The problem is an important one. I, for one, am confident that the situation can be remedied. Surely the large brokers are sensible enough to see that they are try-

ing to swallow just a little more than they can digest well."

Organized effort to obtain lower carload freight rates on scrap iron and steel was advocated by D. Sloan Hurwitz, Hurwitz Bros. Iron & Metal Co. Inc., Buffalo, president of the Buffalo chapter.

"We all know rates are supposed to be based on the value of the merchandise shipped," he said. "The higher the value of the commodity, the higher the rate, and vice-versa. However, as regards scrap, this does not work out.

"Pig iron, a more or less finished commodity, enjoys rates at least 10 per cent lower than scrap. This was accomplished by producers of pig because they were organized when pig rates were established. Scrap rates 'just grew up'."

"Buy for Profit"

"Buying for profit," was urged by Milton Levenson, Roxbury Iron & Metal Co., Dorchester, Mass., president, Boston chapter. "Our business is unique in that at all times we have a ready market for our material. Price usually is fixed by prevailing markets.

"It is obvious then that our profits must come from the prices we pay for the goods. But a large part of our transactions are speculative, 'spite' and 'hunch' buying, and every other kind of buying, except buying for profit. So, it seems to me, we are troubled by a situation that is really our own fault and that only we can remedy. Instead of looking

for a solution through an attack on certain situations which have arisen from natural causes, I believe it would be far better to improve our own methods first."

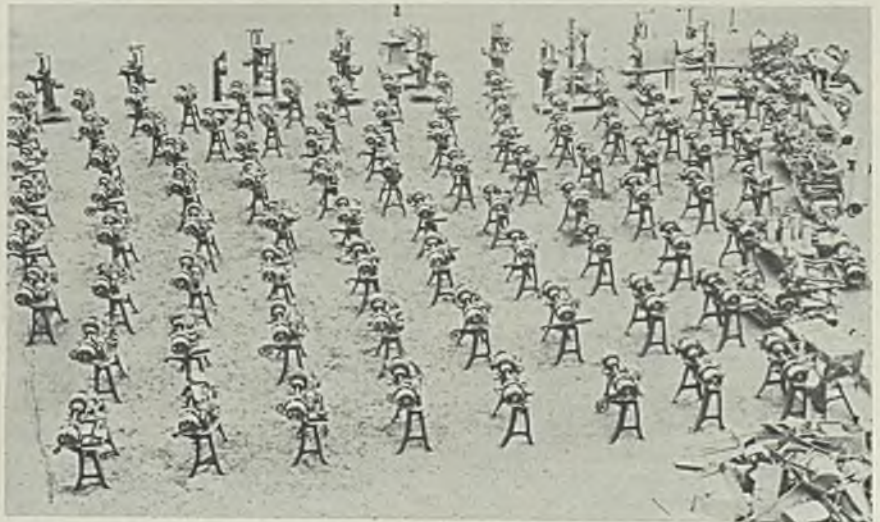
"The voluntary labor code developed by New York scrap dealers has prevented the scrap iron industry in this particular market from being unionized and has stopped the enforcement of the closed shop in our business," reported Joseph A. Moskowitz, Samuel Sons Iron & Steel Co., Brooklyn, president, New York chapter. "It has established a fair wage and hour schedule for our workers. It is the best answer we can give to public opinion, that the scrap iron industry in New York does not tolerate sweatshop conditions and unfair treatment of labor."

Avoidance of waste and loss caused by rejections was stressed by Joseph E. Jacobson of Luria Bros. & Co. Inc., Pittsburgh, president, Pittsburgh chapter. "To attempt to figure the cost to the scrap dealers of the nation on the rejected cars handled during a year is practically impossible. That it runs into thousands of dollars we are sure, and that at least half of this waste of money can be avoided, we are likewise sure."

E. C. Barringer, Cleveland, editor of *Daily Metal Trade*, urged that the scrap industry study the industrial mobilization plan developed by the army and navy and prepare to co-ordinate the scrap industry with it.

"This country is wisely attempt-

Scrap 49 Tons of Machine Tools in Modernization Step



ONE of the leading users of the modernization theme in selling has been the Diamond Chain & Mfg. Co., Indianapolis. The company recently gave its own plant a thorough "house cleaning" to take advantage of marked progress in machine development during the last few years. Forty-nine tons of machine tools costing many thousands of dollars were sold at scrap prices averaging \$10 a ton. The company says the machines had served their purpose, had earned more than their original price, and had begun to waste more than replacement cost

ing to assure its neutrality, but the hazard of another world war is great," declared Barringer.

Four hundred attended the convention. Atlantic City, N. J., was chosen for the convention in January, 1938. B. F. Fairless, president, Carnegie-Illinois Steel Corp., was unable to accept an invitation to be the chief speaker at the banquet Friday night. The banquet program included the following speakers: Mayor Russel Wilson, Cincinnati, toastmaster; C. E. Walsh, purchasing agent, Pennsylvania railroad; Maurice Pollak, president, Pollak Steel Co.; William J. Schroder, president, Peoples Savings bank, Cincinnati; President Luntz, and Benjamin Schwartz, institute's director general.

Newly elected directors are Joel Claster, Philadelphia; W. J. Ross, Chicago; Phil W. Frieder, Cleveland; L. J. Borinstein, Indianapolis; David Pollak, Pottstown, Pa.; Frank Contey, Jersey City, N. J. These with the presidents of 14 chapters comprise the board. All officers were re-elected.

Financial

OF THE \$30,000,000 3½ per cent convertible debentures issued by the Youngstown Sheet & Tube Co. last spring as part of its refunding program, \$11,547,000 has been converted into common shares, it was revealed last week in a report filed by the company with the securities and exchange commission.

Conversion was on the basis of 16 common shares for each \$1000 face value debentures was retired by call at 104 and accrued interest.

EARNINGS STATEMENTS

Landis Machine Co., Peoria, Ill., has net earnings of \$83,879, for the year ended Dec. 31. This compares with \$122,160 in 1935.

York Ice Machinery Corp., York, Pa., reports net profits for the year ending Sept. 30 of \$165,586 compared with \$72,216 in 1935.

DIVIDENDS DECLARED

Keystone Steel & Wire Co., Waynesboro, Pa., has declared a dividend of 15 cents a share payable Feb. 1 to holders of record Jan. 15, bringing the total dividends thus far for the fiscal year beginning July 1, last, to \$1.15 a share.

Directors of Continental Can Co. Inc. declared a regular quarterly dividend of 75 cents a share on the common stock, payable Feb. 15 to holders of record Jan. 25.

Keystone Machine Co., Sharon, Pa., has been acquired by C. E. Fessler, Pittsburgh, who will manufacture mill equipment.

Cast Iron Pavement May Be "Tuned" To Warn Motorist

EXPERIMENTS with cast iron highway paving blocks at the University of Minnesota under direction of E. W. Davis, superintendent of the mines experiment station, have suggested another idea. Mr. Davis is experimenting with treads for the cast iron blocks to give greatest non-skid results and has found various types produce a wide variety of sounds as automobile tires pass over them.

This suggested the possibility of a silent type for the center of the motor lane, with strips producing a higher pitched note placed just inside the curb and along the center line. This would serve as warning to the motorist when too close to the curb or the wrong side of the road.

Iron Ore Production up 59 Per Cent; Nears 1930 Mark

Iron ore mined in the United States in 1936, excluding that containing 5 per cent or more of manganese, is estimated by the United States bureau of mines at 48,618,000 gross tons, an increase of 59 per cent over 1935. This is the largest since 1930 when 58,408,664 tons was mined.

Shipments from mines in 1936 was 51,380,000 tons, valued at \$130,775,000, an increase of 54 per cent in quantity and 57 per cent in value over 1935. Shipments were only 6.9 per cent below the 55,201,221 tons moved in 1930.

Average value at mines in 1936 was \$2.55 per gross ton; in 1935 it was \$2.48. Stocks at mines at the end of 1936 were 5,265,000 gross tons, principally in Michigan and Minnesota, a decrease of 33 per cent

460 Tons of Steel Bars Used In World's Highest Chimney

CLAIMED to be the highest in the world, this chimney completed recently at Chinnampu, Corea, contains 460 tons of steel reinforcing bars. It is 618 feet high, and has an inside diameter at the top of 25 feet. The circular foundation is 18 feet thick, with a diameter of 97 feet. The chimney was built for the Nippon Mining Co., and its unusual height is for the purpose of avoiding destruction of vegetation by smelter gases. It was constructed under the system of the Weber Chimney Co., Chicago

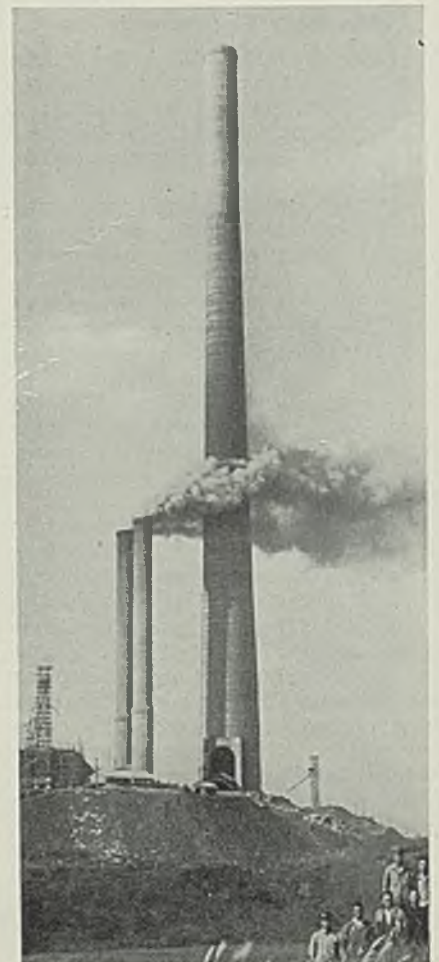
from the 7,786,725 at mines at end of 1935.

About 86 per cent of the ore came from the Lake Superior district, where 41,742,000 tons was mined and 44,367,000 tons shipped, increases of 65 and 58 per cent, respectively.

Southeastern states, in which Birmingham, Ala., is the largest producer, mined 4,125,000 tons and shipped 4,204,000 tons, an increase of 25 per cent over 1935.

97 Per Cent of Workers Vote for Representatives

Ninety-seven per cent of the employes of the American Rolling Mill company eligible to vote participated in the annual election of employe representatives for 1937, it was disclosed last week. In accordance with the employe representation plan in effect in Armco plants for thirty-three years, employes of each department elected their representatives who in turn will elect an executive committee to represent the workers in their relations with the management. In the last third of a century there has been no loss of either production or wages in the Armco plants due to labor troubles.



Meetings

CONFERENCE WILL SEEK TO FORMULATE LABOR POLICY

American Management association has issued a call to its 2182 member companies and to industry at large to attend a conference in Philadelphia, Feb. 9-11, to consider labor policies. Speakers will include Virgin Jordan, president, National Industrial Conference board, New York; W. H. Winans, Union Carbide & Carbon Corp., New York; J. W. Dietz, Western Electric Co., Kearny, N. J.; and C. S. Ching, United States Rubber Co., New York.

"Recent events," said Alvin E. Dodd, president of the association, "have brought forward so many new problems that thousands of business men, who ask nothing better than a chance to give their employes a fair deal, are being thoroughly confused. Within the limits set by legislation, politics, public opinion, and highest ethical standards, they are anxious to do the right thing, whatever that may be, but at the same time not put their enterprises in a hopeless position of disadvantage."

CHICAGO GROUP TO DISCUSS BLAST FURNACE OPERATION

Blast Furnace and Coke Association of the Chicago District announces the second regular meeting of 1936-37 to be held at Hotel Shoreland, Chicago, Jan. 22. An afternoon technical session will be devoted to a discussion of "Stock Line and Large Bell Diameter for Blast Furnaces." A dinner in the evening will be addressed by Dr. Donald McGibeny, news commentator for the National Broadcasting Co.

Organize Chapter of Tool Engineers in Pittsburgh

The eighth chapter of the American Society of Tool Engineers was established in Pittsburgh, Jan. 8, with a charter roll of 45 members. A dinner meeting, held at the Westinghouse Electric & Mfg. Co., East Pittsburgh, was attended by over 80 tool designers and engineers in the Pittsburgh district. The chapter was installed by National President Ford R. Lamb, Detroit, who also was the principal speaker.

J. R. Weaver, director of works equipment, inspection and test, Westinghouse Electric & Mfg. Co., was named chairman. D. L. Shelly, Westinghouse Air Brake Co., Wilmerding, Pa., was elected secretary, and M. F. Judkins, Firth-Sterling



Harry T. Woolson
Elected president, Society of Automotive Engineers

ing Steel Co., is program chairman.

Next meeting of the chapter is scheduled for Feb. 12 at the Westinghouse Air Brake Co.

Advanced Welding Course Offered in New York

Engineers, designers, architects, production managers, welding supervisors, foremen and operators, and others interested in welding in and near New York will have an opportunity of obtaining advanced instruction in the practical and theoretical aspects of arc welding the first week of February.

This opportunity is offered by Lincoln Electric Co., Cleveland. The course will begin Feb. 1 and last through Feb. 5.

Meetings will be held in the port of New York authority building, Fifteenth street and Eighth avenue. The course, which will consist of day and evening sessions, will be under the direction of E. W. P. Smith, nationally known welding authority, Cleveland.

Atlantic Refining Builds Largest Welded Ship

The new tanker to be built for the Atlantic Refining Co. in the Chester, Pa., shipyard of the Sun Shipbuilding Co., will be the world's largest welded ship, the Atlantic company reports. With a dead weight of 18,500 tons, the new oil carrier will also be the largest commercial vessel under construction in American shipyards. It is scheduled for delivery by the end of the year; will have a length of 521 feet between perpendiculars, a beam of 70 feet, a cargo capacity of 156,000 bulk barrels of gasoline, and a speed of over 13 knots.

2500 at S. A. E.

Annual Meeting

APPROXIMATELY 2500 gathered in Detroit last week for the annual meeting of the Society of Automotive Engineers, held Jan. 11-15 at the Book-Cadillac hotel.

Technical sessions were scheduled for mornings, afternoons and evenings, and the society's annual dinner, Thursday evening, drew a capacity crowd of 1300. Feature of the dinner was an address by Dr. Hugo Eckener, commander of the *Graf Zeppelin*, who spoke on the airship and its place in transportation.

New officers for the coming year were announced at the Tuesday evening business session. President for 1937 is Harry T. Woolson, executive engineer, Chrysler Corp., who succeeds Ralph Teetor, Perfect Circle Co., Hagerstown, Ind., in this post. Mr. Woolson has long been associated with the automotive industry, since 1915 having been active with Packard, Studebaker, Willys and Chrysler.

Other officers for 1937 include ten new vice presidents of the various society divisions and nine councilors.

Technical sessions were devoted to such subjects as fuels and lubricants, diesel engines, passenger car engines and bodies, aircraft engines, trailers, tractors and production.

Concurrent with the meeting was an exhibit of materials, parts and equipment, likewise held at the Book-Cadillac hotel, at which some 20 companies displayed animated evidence of recent developments in their respective fields.

Corporation License Bill Reintroduced in Senate

Senator O'Mahoney of Wyoming has reintroduced in the senate his bill to provide a national system of licenses and charters for corporations engaged in interstate commerce. The senator stated that "this bill goes to the heart of the new issue now rapidly developing in American politics—whether there shall be more or less government in the ordinary economic affairs of the people."

Senator O'Mahoney declared he does not propose "to take a single hostile act against any corporation, but that we establish a sound, equitable national rule for the self government of industry, there is no alternative but the continued growth of the bureaucracy at Washington. I am trying to restore to business the power to govern itself rather than to vest any new powers in the federal government."

Men of Industry

E M. VOORHEES, vice president and director, Johns-Manville Corp., has been appointed vice chairman of the finance committee, United States Steel Corp., New York. He has also been elected a director for the term expiring in 1938. Mr. Voorhees will assume his new post with the corporation April 1.

Mr. Voorhees began his business career with Hollis H. Sawyer & Co., Boston, later going to Manila, P. I., with the Pacific Commercial Co., an exporting and importing firm. This was followed by three years with the United States Rubber Co., New



E. M. Voorhees

York. Before joining Johns-Manville Corp. over nine years ago, where he has consecutively been general auditor, treasurer, secretary, vice president and director, Mr. Voorhees was engaged in industrial engineering for William A. Harriman & Co., and Sanderson & Porter.

Henry A. Roemer, president, of both Sharon Steel Corp., and Pittsburgh Steel Co., has been elected a director of the First National bank at Pittsburgh.

E. C. Felton has been elected vice president, Hunt-Spiller Mfg. Corp., Boston. He joined the company in 1918 as assistant to the vice president and later held the position of assistant treasurer.

R. E. Olds has resigned from the chairmanship of the board and as a director, Reo Motor Car Co., Lansing, Mich., so that he may be free to enjoy vacations unhampered by responsibility.

William E. Fischer has been added to the sales staff, San Francisco office, Lincoln Electric Co., Cleveland.

Mr. Fischer has had five years extensive experience in the welding field.

C. B. F. Young, instructor at Columbia and New York universities, has been appointed consultant by Hilo Varnish Corp., Brooklyn, N. Y., to handle problems relating to lacquering, enameling and japanning on metal.

Robert G. Guthrie, past president, American Society for Metals, and consulting metallurgist, Peoples Gas Light & Coke Co., Chicago, has been appointed chairman, ferrous metals committee of the industrial gas section, American Gas association

D. J. Gregory, designer of high-speed hydraulic presses, has been appointed chief engineer, hydraulic press division, A. B. Farquhar Co. Ltd., York, Pa. Mr. Gregory formerly had been associated with the Krupp plants in Germany and the Putilov works in Russia.

Dr. Lawrence Wade Bass has been appointed a member of the executive staff, Mellon Institute of Industrial Research, University of Pittsburgh. He formerly was director of research, Borden Co., New York. This is an amendment of a similar notice in the Dec. 28 issue of STEEL, in which Dr. Bass' full name was not given.

A. C. Childs has been appointed sales manager of the strip and strip sheet departments of the Weirton Steel Co., Weirton, W. Va. Mr. Childs was formerly assistant district sales manager of the Detroit office. He has been succeeded in that capacity by F. J. White, who for several years has been a member of the Detroit sales staff.

James T. Gow has been named research metallurgist, Battelle Memorial institute, Columbus, O. Mr. Gow was graduated from the University of Minnesota in 1929. From 1928 to 1930 he was employed by the Naval Research Laboratory as adviser on steel casting production, and from 1930 to the time of his going with Battelle, he was metallurgical engineer with the International Nickel Co.

Ellis T. Knobloch in addition to his duties as secretary, has been appointed general manager, Union Iron Works, Erie, Pa., manufacturer of high pressure steel boilers. Mr. Knobloch has been with the company since his graduation from college and has been its secretary for

the past two years. He succeeds E. H. Brevillier, who has resigned as general manager but will remain with the company as vice president.

Pierce T. Wetter, for the past ten years supervisor of the technical professional division, American Society of Mechanical Engineers, has resigned to become executive vice president, American Cutting Alloys Inc., New York. Mr. Wetter will have charge of developing the American company in the manufacture and sale of cemented carbide titanium tips and cuttings tools. Mr. Wetter also becomes vice president and assistant treasurer, American Electro Metal Corp., Lewiston, Me., manufacturer of molybdenum and tungsten products.

George R. Murray, formerly specialist sales engineer, Chambersburg



George R. Murray

Engineering Co., Chambersburg, Pa., has been appointed works manager. He joined the company in July, 1900, as a mechanic in the erecting shop. From 1917 to 1919 he was superintendent of production; from 1920 to 1923 he was service and sales engineer, and since 1924 until his present appointment, Mr. Murray served as sales engineer.

John E. Wray, since 1919 sales engineer, Philadelphia district office of Allis-Chalmers Mfg. Co., Milwaukee, has been appointed manager of that office, succeeding the late D. H. Kelly. A graduate of Penn State college in 1910, Mr. Wray entered the employ of Allis-Chalmers as a student apprentice at the Bullock works. He then became connected with the West Penn Power Co. on construction work, but returned to the Bullock works. Later he was assigned to the company's Cincinnati district office.

John Edward Dailly has been appointed district manager at Chicago by Youngstown Sheet & Tube Co., Youngstown, O. A graduate of Rose

Polytechnic institute, Mr. Daily entered the steel industry nearly 30 years ago, being first employed at the Ohio works of the former Carnegie Steel Co., Youngstown, O. When the Brier Hill Steel Co.'s works were first opened he was employed there. Mr. Daily subsequently served as vice president in charge of operations, Timken Steel & Tube Co., Canton, O., and in 1932 and 1933 was general manager, Wheeling Steel Co., Steubenville, O. He joined Youngstown Sheet & Tube Co. as general superintendent of its Indiana Harbor works Jan. 1, 1934.

Edward B. Zabriskie has been transferred from the position of manager, Ludlow, Ky., plant of the Magnus Metal division, National Lead Co., to the managership of the company's Denver plant.

C. C. Carr, formerly in charge of public relations, Aluminum Co. of America, has been appointed advertising manager. He succeeds W. C. White, who will devote his entire time to his duties as president, Aluminum Cooking Utensil Co.

D. E. Spencer, of the Stromberg Electric Co., Chicago, received head injuries, and T. Tillinghast, sales manager, Pratt & Whitney Aircraft Co., Hartford, Conn., received a fractured ankle in the crash of a Western Air Lines plane ten miles from Los Angeles Jan. 12.

Harvey L. Miller, assistant manager of tubular products sales, Jones & Laughlin Steel Corp., Pittsburgh, has been transferred to Dallas, Tex., where he will give special attention to facilitating service on oil country tubular products in the mid-continent, southwest and Gulf coast oil producing regions.

Louis B. Neumiller has been appointed sales manager, central sales division, Caterpillar Tractor Co., Peoria, Ill. Edward W. Jackson has been promoted to the office of general service manager, the position held by Mr. Neumiller before his advancement.

H. M. Hale is sales manager of the eastern division, H. H. Chambers of the western division and F. G. Nunnally of Canada. Mr. Chambers' headquarters are in San Leandro, Calif.; the others, in Peoria.

J. I. Robinson has been elected vice president, Crane Ltd., Montreal, Que., subsidiary of Crane Co., Chicago. He succeeds J. Austin Murphy, who has retired after 51 years with the company. Mr. Robinson joined Crane Co. in 1907 in the San Francisco branch. In 1919 when the company started its Canadian expansion he was transferred to Montreal where he worked his way up to the position of director and gen-



L. W. Harston

Who has been elected vice president in charge of sales, Steel & Tubes Inc., subsidiary of Republic Steel Corp., Cleveland, as noted in STEEL, Jan. 11, page 23

eral sales manager, from which position he has been advanced to take complete charge of Crane Ltd. and its subsidiaries.

Donald J. Reese, formerly manager, foundry equipment division, Whiting Corp., Harvey, Ill., has been appointed foundry engineer for research work on cast iron, and Frederick G. Sefing, formerly assistant professor of metallurgy, Michigan State college, East Lansing, Mich., has been made research metallurgist, Bayonne research laboratory, International Nickel Co., Bayonne, N. J.

Carl A. Gray has been elected a vice president and a director, Whitney Chain & Mfg. Co. Hartford, Conn. He formerly was vice president, Capewell Mfg. Co. Other officers: President, Charles E. Wertman; vice president and treasurer, Winthrop H. Whitney; vice president, A. S. Basten; secretary and assistant treasurer, Park C. Boyd. The new board consists of Robert T. Stevens, president, J. P. Stevens Co., New York, and Messrs. Wertman, Whitney, Gray and Basten.

Frederick B. Gleason, general commercial manager, Western Electric Co., New York, retired Jan. 1. He has been succeeded by Douglas F. G. Eliot, formerly personnel director. Gustaf A. Johnson, in charge of the company's installation department in the East, has been named to take Mr. Eliot's place as personnel director. David W. Reid, general accounting superintendent, installation department, succeeds Mr. Johnson as head of that department's eastern operations, and Beecher H. Clark has assumed the post vacated by Mr. Reid.

J. Kenneth Crosland, general commercial accountant, has been promoted to assistant comptroller.

Died:

JOHN F. MURPHY, 55, vice president, Sloan Valve Co., New York, at the United hospital, Rye, N. Y., Jan. 5. Mr. Murphy was actively engaged for 20 years in the building and construction industry in New York.

Rufus Swain, 68, retired secretary, Bryan Foundry, Indianapolis, in that city, recently.

Percy L. Lanning, 71, secretary-treasurer, Perseverance Iron Foundry Inc., Philadelphia, at his home in Elkins Park, a suburb, Jan. 10.

Levi A. Adams, 58, who for 16 years was timekeeper and paymaster, Struthers Furnace Co., Struthers, O., in that city, Jan. 8, after four years' illness.

Eugene N. Strom, 53, retired vice president, Pettibone Mulliken Co., and the former Strom Ball Bearing Co., Chicago, at his home in Golden Beach, Fla., Jan. 10.

Howard J. Evans, 53, regional sales manager, Lunkenheimer Co., Cincinnati, in St. Petersburg, Fla., Jan. 5. He had been associated with the Lunkenheimer company 34 years.

Frank Denison White, 73, a member of the Vermont bar for over 45 years, and president, Holmes Iron Co., and a director of the Lincoln Iron Works, Rutland, Vt., in Boston, Jan. 9.

Charles H. Dickerman, 26, salesman for International Business Machines Corp., and son of William C. Dickerman, president, American Locomotive Co., in Philadelphia, Jan. 10, of a heart attack.

Willis Lawrence, 68, mechanical engineer, Interboro Rapid Transit Co., New York, for the past 35 years, in that city, Jan. 9. He was a member of the American Society of Mechanical Engineers, American Society of Electrical Engineers and the National Association of Stationary Engineers.

William A. E. Drescher, 75, vice president, Bausch & Lomb Optical Co., Rochester, N. Y., at his home in Rochester, Dec. 30. Mr. Drescher's association with the company had extended over a period of 60 years and he had been active in the administration of the business until two weeks before his death.

Production

STEEL production eased downward $\frac{1}{2}$ point last week to 79 per cent, due principally to slight reductions in operating schedules at Youngstown and Cincinnati.

Youngstown—Averaged 78 per cent, off 1 point from the week previous.

Cleveland-Lorain—Held at 80 per cent. Corrigan-McKinney division of Republic Steel Corp. had 13 scheduled; Otis Steel Co. 8, and National Tube Co., Lorain, 10.

Chicago—Held at 77 per cent, a figure which has been practically unchanged since late November. Rearrangement of rolling schedules has prevented hold-ups of automotive shipments from affecting schedules.

Pittsburgh—Unchanged at 80 per cent. United States Steel Corp. subsidiaries are operating at close to 80 per cent, and the leading independent at 81 per cent.

Wheeling—Unchanged at 94 per cent, with 35 out of 37 open hearths active.

Cincinnati—Down 4 points to 92 per cent, with 22 open hearths active. This drop was not influenced by curtailment in automotive shipments.

New England—Open-hearth operations increased 3 points to 88 per cent. Schedules for this week indicate little change.

Central eastern seaboard—Unchanged at 53 per cent. To date little direct influence on operations by the automotive strike in the Middle West has been noted. Where suspensions of shipments have been requested, producers so far have been able to divert production into other channels.

Birmingham—Continued at 76 per cent, with 17 furnaces in production.

Buffalo—Bethlehem Steel Co. late last week lighted the second open hearth in its new battery of six units at the Lackawanna (Buffalo) plant. The other four, it was reported, will be lighted within the next two weeks. Each of these six units is rated at 150 tons daily capacity. They increase the total number available in the Buffalo district to 43. Steelworks operations in the district averaged 84 per cent.

Detroit—Gained 5 points to 100 per cent, as both producers in this district are operating at capacity. As yet no reflection of automotive stop-orders has been seen on steel operations here.

St. Louis—Unchanged at 80 per cent for the fifth consecutive week.

District Steel Rates

Percentage of Open-Hearth Ingot Capacity Engaged in Leading Districts

| | Week ended | | Same week | |
|-----------------|------------|--------|-----------|------|
| | Jan. 16 | Change | 1936 | 1935 |
| Pittsburgh ... | 80 | None | 41 | 33 |
| Chicago | 77 | None | 52½ | 56 |
| Eastern Pa. ... | 53 | None | 37 | 27½ |
| Youngstown ... | 77 | - 1 | 64 | 60 |
| Wheeling | 94 | None | 68 | 90 |
| Cleveland ... | 80 | None | 67 | 82 |
| Buffalo | 84 | None | 45 | 42 |
| Birmingham ... | 76 | None | 41 | 29 |
| New England ... | 88 | + 3 | 93 | 68 |
| Detroit | 100 | + 5 | 88 | 71 |
| Cincinnati ... | 92 | - 4 | 75 | † |
| St. Louis | 80 | None | † | † |
| Average ... | 79 | -½ | 52½ | 51 |

†Not reported.

Production Unhampered By Crucible Steel Fire

Fire damaged the new tin mill of the Crucible Steel Co. at Midland, Pa., Wednesday night, Jan. 13, but the company announced production would be virtually unhampered. The flames, confined to one side of the lower part of the building, caused damage estimated to be considerably below \$100,000. Officials of the company said the loss was fully covered by insurance.

Although some of the pickling tanks were damaged, the cold mill and furnaces were untouched by the fire. It was reported the blaze started when oil overflowed from tanks and ignited.

Machine Tool Orders at Highest Point Since 1919

The index of machine tool orders compiled by the National Machine Tool Builders' association reached 257 for December, representing the

U. S. STEEL CORP. SHIPMENTS
(Inter-company shipments not included)
(Tons)

| | 1936 | 1935 | 1934 | 1933 |
|-----------------|--------------|-----------|-----------|-----------|
| Jan. | 721,414 | 534,055 | 331,777 | 285,138 |
| Feb. | 676,315 | 583,137 | 385,500 | 275,929 |
| Mar. | 783,552 | 668,056 | 588,209 | 256,793 |
| April | 979,907 | 591,728 | 643,009 | 335,321 |
| May | 984,097 | 598,915 | 745,063 | 455,302 |
| June | 886,065 | 578,108 | 985,337 | 603,937 |
| July | 590,851 | 547,794 | 369,938 | 701,322 |
| Aug. | 923,703 | 624,497 | 378,023 | 668,155 |
| Sept. | 961,803 | 614,933 | 370,306 | 575,161 |
| Oct. | 1,007,417 | 686,741 | 343,962 | 572,897 |
| Nov. | 882,643 | 681,820 | 366,119 | 430,358 |
| Dec. | 1,067,365 | 661,515 | 418,630 | 600,630 |
| Y'rly adj. | | †23,750 | †19,907 | *44,283 |
| To. | \$10,825,132 | 7,347,549 | 5,905,966 | 5,805,235 |

*Addition. †Deduction. §Subject to adjustment.

highest volume of business placed in any one month since 1919, it was announced last week by C. R. Burt, president of the association. The previous highest volume in any month was placed in January, 1920, when the index stood at 234. The 1929 highest month reached 185. The index figure for November, 1936, was 147.1.

Mr. Burt stated the new business was due in large part to a realization on the part of machine tool users that higher taxes, higher material costs and higher wages constitute a threat to continued good business and employment opportunities unless improved materials and the latest developments in machinery methods are used.

Ingersoll Steel & Disc Takes Pressed Steel Firm

United States Pressed Steel Products Co., Kalamazoo, Mich., has been acquired by the Ingersoll Steel & Disc division of Borg-Warner Corp., Chicago. United States Pressed Steel Products Co., founded more than a quarter of a century ago, supplies automobile manufacturers with seat frames, hood handles, stabilizer bars, metal boxes and automobile stampings, and agricultural implement makers with various products. The Kalamazoo plant covers five and one-half acres and employs more than 250 men.

Census Shows Gain in Cranes, Excavating Machine

Manufacturers of cranes, dredging, excavating, and road-building machinery in the United States reported sharp increases in employment and production in 1935 over 1933, according to a report by the bureau of census last week.

They employed 10,807 persons in 1935, 63 per cent over the 6629 in 1933. Wage payments were \$12,571,730, exceeding the 1933 figure, \$5,118,464, by 145.6 per cent.

Total production in 1935 was valued, f.o.b. factory prices, at \$46,394,283, of which \$18,769,300 was contributed by road-building machinery, \$13,901,164 by excavating equipment, and \$12,784,443 by cranes, hoists and derricks, not including oil-well derricks.

DECEMBER STEEL SHIPMENTS BEST SINCE MAY, 1930

Shipments of finished steel by the United States Steel Corp. in December were 1,067,365 tons, the largest since May, 1930. This was a gain of 184,722 tons over November shipments and 405,850 tons more than shipments in December, 1935.

Activities of Steel Users and Makers

LEWIS FOUNDRY & MACHINE CO., subsidiary, Blaw-Knox Co., is building extensions to its plants at Groveton, Pa., to provide additional space for its roll foundry, pattern shop, machinery castings, and shop for the building of rolling mills and mill equipment. Included in the addition will be a new research laboratory to be used by the entire Blaw-Knox organization. The laboratory will be equipped for both physical and metallurgical experimental work.

Entire stock of Manufacturers Supply Co., Indianapolis, electric motor and electrical equipment supply house, will be sold on the premises at auction Jan. 26, 27 and 28.

Construction of a factory and office building for the Penn Electric Switch Co., Des Moines, Iowa, is

nearing completion at Goshen, Ind., where headquarters will be established about Feb. 1.

Engineering Industries Ltd., Dominion building, Leaside, Ont., has been appointed distributor throughout the Dominion of Canada of the heating and air conditioning products of Gar Wood Industries Inc., Detroit.

Tyne Co., Chicago, has been appointed distributor by Jones & Laughlin Steel Corp., Pittsburgh, to handle complete stocks of welded and seamless steel pipe, and seamless boiler tubes in Chicago and surrounding territory.

Swartz & White Mfg. Co., Binghamton, N. Y., maker of flexible shaft cores, cases, and equipment, whose plant at 243 Water street was completely destroyed by fire Nov. 24, has resumed full operations in new and larger quarters at 215 Washington street.

Manhattan Rubber Mfg. division of Raybestos-Manhattan Inc., Pas-

saic, N. J., has opened a new west coast branch office and warehouse to be located at 778 Brannan street, San Francisco. All standard brands of Manhattan hose and belting will be carried in stock. A. R. Bradshaw is in charge of the office.

Wider use of stainless steel in a greatly diversified list of products has been reflected in the volume of sales by the Firth-Sterling Steel Co., McKeesport, Pa., according to L. Gerald Firth, president. Shipments of stainless steel bar and wire products in the fourth quarter were the greatest in its history.

Avery Power Machinery Co., Peoria, Ill., has been succeeded by the Avery Farm Machinery Co. Inc. Officers of the new company are: Chairman of the board, Arthur G. Heidrich; president and treasurer, Thomas G. Lovelace; vice president and general manager, Fred C. Grether. The company manufactures harvesting equipment.

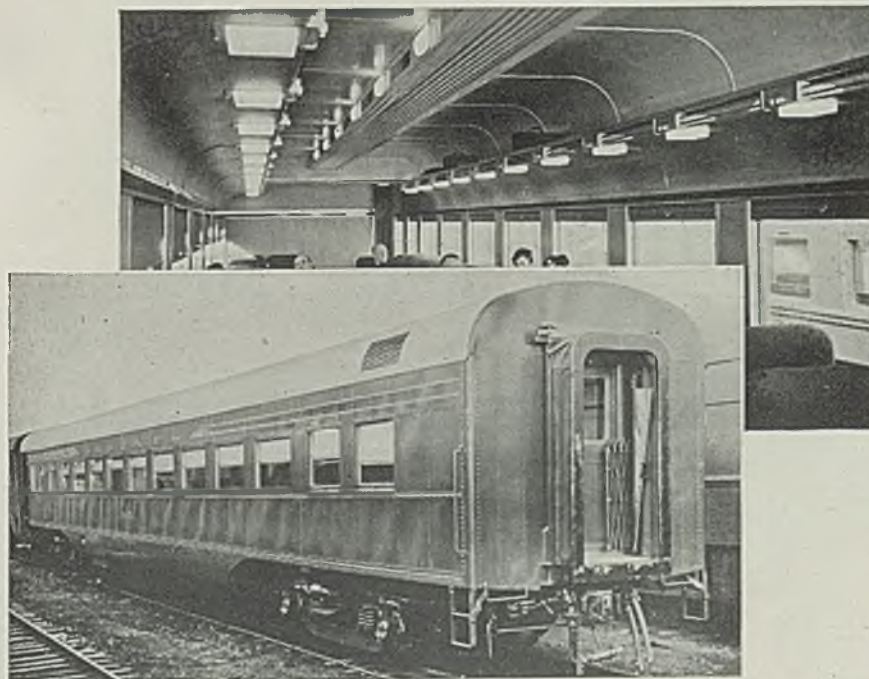
Upson-Walton Co., Cleveland, has purchased the entire capital stock of the Belleville Wire Rope Co., Belleville, N. J. With the acquisition of the eastern company the management of Upson-Walton plans to expand the facilities and install additional machinery. It is probable that eastern operations may be transferred to Cleveland.

Worthington Pump & Machinery Corp., Harrison, N. J., reports that it has entered the new year with the largest backlog of unfilled orders since 1930. This announcement is taken as a significant indication of resumption of large scale activity in the so-called "durable goods" or heavy equipment industry.

Ahlberg Bearing Co., Chicago, manufacturer of ball bearings, has completed negotiations for the acquisition of a new factory building. Recent developments perfected by the company, with generally improved conditions, have necessitated stepping up output. The company has begun making alterations, and present plans indicate full production in the new building will be attained May 1.

Manealoff & Co. Inc., iron and steel importer and exporter, 19 Rector street, New York, and East Westmoreland and Miller streets, Philadelphia, has opened a warehouse at 40 Binney street, Cambridge, Mass. This firm has not operated a warehouse in New England for several years. Thomas P. Walker, for the past three years assistant to the Philadelphia manager, Charles T. Walker, has been placed in charge of the new warehouse.

New Light-Weight Steel Coaches 98,000 Pounds Instead of 160,000



A NEW light-weight passenger coach of standard size recently was put into service by Santa Fe railroad between Kansas City, Mo., and Emporia, Kans., for test purposes. The car weighs only 98,000 pounds, while the weight of a conventional Santa Fe coach of this type is 160,000 pounds.

United States Steel Corp. Cor-Ten steel is used for the outer covering of the car and contributes to its reduction in weight. Equal in size to the 80-passenger type now in use, the new coach seats only 52 passengers; the re-

mainder of the space is occupied by lounging rooms at each end comparable to those found in deluxe trains.

The car is equipped with a steam ejector type air conditioning system. Greater riding comfort is provided through the use of special features, such as hydraulic shock absorbers, rubber insulation, special wheel contour and unit mounted brake cylinders actuating clasp brakes. Thick layers of cork and insulation blanket on the floor sound-proof the interior of the car from truck noises.

ACCURATE... FLEXIBLE... SIMPLE... ECONOMICAL

TYPE



BULLARD

Mult-Au-Matic

MIRRORS of

MOTORDOM

DETROIT

BOB RIPLEY should take a run out to this city for a few days. He would find a number of valuable additions to his collection of strange "believe-it-or-nots." For example, after a little investigation, he would discover that: A 35-year old ex-preacher, with horn-rimmed spectacles, whose connection with the automotive industry adds up to about six months in a Kansas City body plant takes fierce pride in the fact he and his union followers have made it impossible for some 115,000 men to work at jobs which paid them well above average wages.

He would discover that this same youthful Napoleon finds himself well-equipped to discuss major industrial relations problems with men like Knudsen and Sloan.

He would discover a 25-year old red-headed organizer, practically fresh from campus politics of Wayne University in Detroit, driving around in a sound truck during a disturbance at Flint, screaming into a microphone, "Don't give ground boys; fight for your lives. We will have 2000 men up here from Akron tomorrow to finish your fight." This as several hundred sit-down strikers fought off efforts of police to enter a Fisher Body plant.

Militant Minority

He would discover in this same plant scores of men armed with bricks, door hinges, nuts, bolts and other stray automotive parts hurling them with all their force at police.

Inside the plant he would discover a veritable shambles—windows broken, fire hose strewn across the aisles, unfinished bodies blocking passageways, floors flooded with water. And he would hear a striker boast, "We could hold this fort for a week!"

He would discover 175 insurgents forcibly keeping 6000 from gainful employment at the Cadillac plant. Of these 175, over 100 have not been with the company over three months, a check showed.

He would discover the majority of idle workers petitioning every-

one from the mayor to the president for the right to return to work—all to no avail.

All this in industrial America—1937 model—in an industry which has been notable throughout the world for its high wages and impartial treatment of labor.

How to end the vicious paralysis which spreads its virus slowly through the nation's No. 1 industry? Consensus of opinion is that government intervention will be the only answer, although conferences between General Motors, union and the state officials began Thursday. Many are even wondering whether the combined silver tongues of John L. Lewis and Homer Martin, CIO leaders, could restrain their men and persuade them to evacuate the plants to resume work; whether possibly these two gentlemen may not have built for themselves a sort of Frankenstein which at any moment might turn on its creators and devour them.

If public opinion means anything—and many look to this intangible factor eventually to settle the trouble—then General Motors has received a raw deal at the hands of a violent labor element. Other car builders are inclined to this viewpoint, and there is even talk of a recently sealed mutual agreement not to speed up production to take advantage of General Motors' position. Of course the strategy of the U. A. W. in striking at GM solely took cognizance of the embarrassing position in which the shut-down would place the corporation.

DETAILS are coming out now of the secret meeting held in Detroit recently under sponsorship of the automobile chamber of commerce and in which all auto manufacturers participated. It is reported that a plan was proposed at this meeting for the entire industry to shut down Jan. 15 if the difficulty at General Motors persisted. Agreement to this proposal naturally had to be unanimous if it were to be put through. That the agreement did not go through is now, of course, known; the reason is said to

be the dissension of Ford representatives—always keen watchdogs of public opinion and labor movements. They reasoned that for the entire industry to close its doors would place it in a bad light with the public and might even incite a panic, with so many thrown out of work. Without the co-operation of Ford the plan had to be junked.

That Ford is moving toward a 6-hour day is indicated from a recent radio speech by W. J. Cameron, astute public relations expert for Ford. He said: "The 6-hour day is coming, but not now. We have to build up to it." No doubt Ford realizes the tough spot the rest of the industry would be in if this change were effected immediately. But the shorter day seems to be on the way.

Regardless of how the current labor difficulties of General Motors are ironed out, the problem of glass shortage still remains, although beneath the surface opinion is that this matter is considerably overrated. A number of independent glass producers are still in operation and making shipments into Detroit. Foreign glass is being docked in Quebec, shipped by rail to Windsor and trucked across the river, but not in any great quantity. Prior to the stoppage of glass shipments from the large producers it is reported that a number of smart brokers anticipated the present situation and set about cornering all the glass they could lay hands on. This is now being unloaded to the advantage of these brokers.

While news reports have indicated that even if the glass strike is settled it will require some three weeks to condition furnaces for production, there is a large quantity of material in glass plants which only needs cutting, forming or trimming before it can be shipped. One estimate is that this semifinished material is sufficient for 275,000 cars, which should be ample to tide over until furnaces are pouring again.

STOP-ORDERS continue in effect for a vast amount of material for General Motors, and the throt-

Mirrors of Motordom

ting of this business is daily spreading out over a wider range of suppliers. However, this has not been entirely true of such items as machine tools, presses and other new equipment and builders are proceeding on orders for a considerable amount of this equipment.

Surprisingly enough, automobile production for the week ended Jan. 16 dropped only a little over 5000 units to an estimated 91,685. This despite the fact that by the middle of the week all General Motors divisions were reported down, including Oldsmobile and Pontiac. Barring unforeseen developments, the current week should see a sharp recession in output.

Naturally, work on new models is active and although it is a little early for specifications to be released on tools and dies, some observations can be made on next year's models. Body changes are likely to be fewer for 1938, with the emphasis being placed on mechanical improvements. Among the latter are improved brakes, made easier to operate by the addition of vacuum boosters; better carburetion; and alterations in engine design. On the latter score the trend is toward developing more horsepower per pound of engine, with the use of higher octane fuels.

ANOTHER development which is likely for 1938 is the automatic transmission and gearshift. Oldsmobile was supposed to have been tooled for an automatic transmission for this year, but at the last minute it was abandoned. Opinion in Detroit is that next year this improvement will be adopted on Olds, with the possibility that Buick and Pontiac may likewise move in this direction. The new Buick transmission plant in Flint is ideally suited to turn out this equipment, in sufficient quantity probably for these three makers.

Automatic transmissions are not new. Hudson's "electric hand" is a form of automatic transmission in which the gear ratio may be pre-selected by a lever on the dash, and the gears shifted through action of the clutch and accelerator. This is a development of Bendix which has been improved this year by the addition of a governor.

Another type of "semiautomatic" transmission (the term "automatic" is not used in its strictest sense on many of these units) is the Banker

Automobile Production

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

| | 1934 | 1935 | 1936 |
|------------|---------|---------|----------|
| Jan. | 155,666 | 289,728 | 364,004 |
| Feb. | 230,256 | 332,231 | 287,606 |
| Mar. | 338,434 | 425,913 | 420,971 |
| Apr. | 352,975 | 452,936 | 502,775 |
| May | 330,455 | 361,107 | 460,565 |
| June | 306,477 | 356,340 | 452,955 |
| July | 264,933 | 332,109 | 440,999 |
| Aug. | 234,811 | 237,400 | 271,291 |
| Sept. | 170,007 | 87,540 | 135,130 |
| Oct. | 131,991 | 272,043 | 224,628 |
| Nov. | 83,482 | 395,059 | 394,890 |
| Dec. | 153,624 | 404,528 | *460,000 |

Year 2,753,111 3,946,934 4,415,814
*Estimated.

Estimated by *Cram's Reports*

| Week ended: | |
|---------------|---------|
| Dec. 19 | 121,038 |
| Dec. 26 | 79,019 |
| Jan. 2 | 71,800 |
| Jan. 9 | 96,780 |
| Jan. 16 | 91,685 |

monodrive which has been installed on 100 rear-engine buses built by General Motors Truck Corp. and operated for some time in Chicago. Both gearshift lever and clutch are eliminated in this type of control, all shifting being done through the accelerator, with an auxiliary lever on the dash to shift back from high to second or second to low, or into reverse.

Rights to manufacture this device as original equipment for passenger cars and taxicabs were granted recently through licensing of the Warner Gear Co. at Muncie, Ind. The device was designed by Oscar Banker, an Armenian who came to this country after his family had been massacred by the Turks. An ingenious engineer of about 40, he is well known by many active in automotive industry.

The story is told of how he had one of his monodrive transmissions installed on a Ford V-8 which he drove around the city. One night he was visiting friends and left his car parked at the curb in front of his friends' house. Late in the evening some passing car thieves broke both door handles on the car, smashed two windows and finally worked their way into the car. After shorting the ignition switch preparatory to driving away they noticed the absence of both clutch and gearshift lever. Realizing the car could be identified immediately if they should be stopped, and further not knowing how to operate the gear-

shift, they beat a hasty retreat. Thus the monodrive proved to be good insurance against car theft, although this would not be true, of course, if the transmission should be widely adopted.

Warner Gear, incidentally, is a division of the Borg-Warner Corp. which has another subsidiary, the Detroit Gear & Machine Co., automotive gear division of Norge. Detroit Gear & Machine is reported to have developed a "full automatic" transmission of an interesting type, although it is said that the design may not be as foolproof as some of the others.

A simple type of automatic gearshift which can be installed on present transmissions has been originated by Vaco Products Corp. It involves a vacuum booster and governor, with four small cylinders which fit on top of the transmission case and through which the gear shifting is accomplished.

RETIREMENT of Ransom E. Olds—for the second time, incidentally—from the management of Reo, marks the passing of another big name in motordom. Two cars today owe their identity to his name or initials. Looking back over the career of this 72-year-old veteran, it is noted that he organized the Olds Motor Vehicle Co. in 1896, with annual production of six cars. Later, in 1899, he founded the Olds Motor Works in Detroit and turned out 400 cars in a year, a figure which two years later had jumped to 4000. In 1904 he aided in founding the Reo Motor Car Co. After being in virtual retirement several years ago, in 1933 he regained control of Reo and at the time of his resignation was chairman of the board and a director.

According to those who knew him, he was a quiet figure and not widely known or heard of. His retirement brings to mind a host of other names which appear on millions of cars but whose owners are remembered by only a few. Among this group are Buick, Packard, Chevrolet, Studebaker—once men, now automobiles.

MERGER of Nash and Kelvinator, together with the critical labor situation in Wisconsin, suggests to some the possibility of Nash moving a few or all of its
(Please turn to Page 83)

*"Why not make it of
STEEL?"*



The future of the Steel Industry lies, not merely in the reworking of old markets, but in the creation of new ones. Alert manufacturers are already pointing the way. Bath tubs and sinks, house frames and trim, home and office furniture, kitchen and storage cabinets . . . all are now available in steel, giving evidence that the possibilities of this material of a thousand uses have barely been tapped.

Great Lakes Steel—a unit of National Steel Corporation—aids in the extension of

such markets through its new and improved sheet. Available in widths up to 90" and gauges up to 5/16", the sheet eliminates costly welding and fitting operations once required. Highly ductile, the sheet is extremely responsive to drawing and shaping operations.

In the design of new products, or the redesign of old ones, ask yourself, "Why not make it of steel?" Then let us help you find the answer that may open new avenues of business and profit to you.



GREAT LAKES STEEL CORPORATION, DETROIT, MICHIGAN

Division of National Steel Corporation

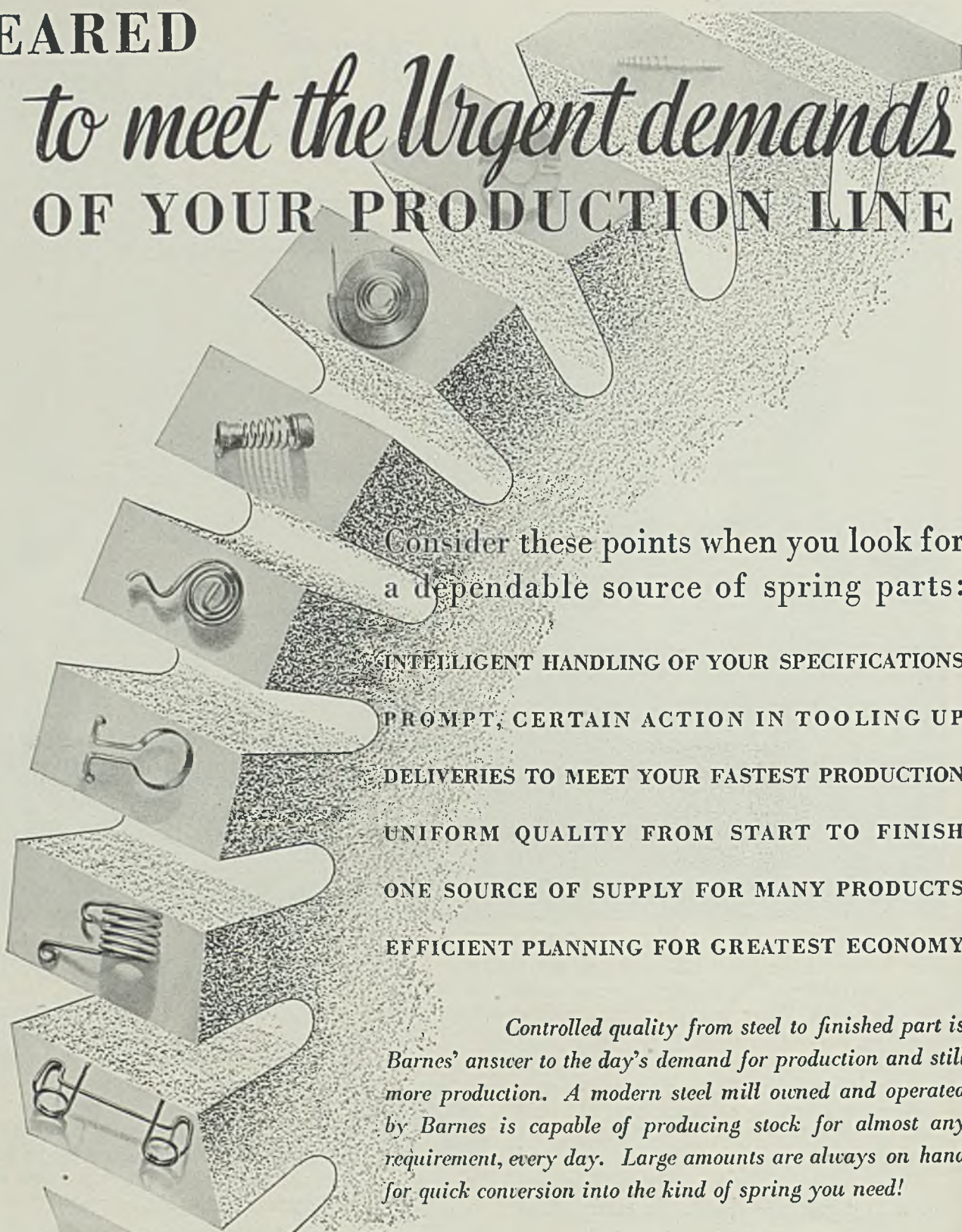
DISTRICT OFFICES: *Boston*, 1001 Statler Bldg.; *Chattanooga*, Hamilton Bank Bldg.; *Chicago*, 1026 Builders Bldg.; *Cleveland*, 820 Leader Bldg.; *New York*, 500 Fifth Avenue Bldg.; *Philadelphia*, 605 Liberty Trust Bldg.; *St. Louis*, E. R. Hensel Co., Cotton Belt Bldg.; *San Francisco*, Sharon Bldg.;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

HOT ROLLED STRIP...CARBON STEEL BARS...PLATES...SPRING STEEL...BILLETS...COLD ROLLED SHEETS...
PICKLED SHEETS...BLACK SHEETS...MICHIGAN METAL FOR VITREOUS ENAMELING...Widths up to 90".

GREAT LAKES STEEL

GEARED

to meet the Urgent demands
OF YOUR PRODUCTION LINE

A large, stylized hand is shown holding several different types of spring parts. The hand is rendered in a stippled, textured style. The parts include a coil spring, a torsion spring, a wire spring, a helical spring, and a wire spring with a hook. The background is a light, textured grey.

Consider these points when you look for
a dependable source of spring parts:

INTELLIGENT HANDLING OF YOUR SPECIFICATIONS
PROMPT, CERTAIN ACTION IN TOOLING UP
DELIVERIES TO MEET YOUR FASTEST PRODUCTION
UNIFORM QUALITY FROM START TO FINISH
ONE SOURCE OF SUPPLY FOR MANY PRODUCTS
EFFICIENT PLANNING FOR GREATEST ECONOMY

*Controlled quality from steel to finished part is
Barnes' answer to the day's demand for production and still
more production. A modern steel mill owned and operated
by Barnes is capable of producing stock for almost any
requirement, every day. Large amounts are always on hand
for quick conversion into the kind of spring you need!*

The Wallace Barnes Company . BRISTOL, CONNECTICUT

DIVISION OF ASSOCIATED SPRING CORPORATION

SPRINGMAKERS FOR MORE THAN THREE QUARTERS OF A CENTURY

***Barnes-made* SPRINGS**

WINDOWS of

WASHINGTON

WASHINGTON

TALK of reorganization of government departments has been heard in Washington for years. Many of them assuredly are antiquated. However, the message which the President sent to the congress last week asking for departmental reorganization was far beyond what had been anticipated even in the dreams of some of those hoping for reorganization. Doubtless the president will get what he wants in the end—but there will be some fighting first.

The President intends to change the name of the interior department to the conservation department. Also he wants two new government departments and consequently two new cabinet officers. These would be the department of public welfare and the department of public works. On the other hand he would put all of the commissions, organizations and what not, under the twelve government departments. He states in his message to congress that: "If we do this, we reduce from more than 100 down to a dozen the operating executive agencies of the government, and we bring many little bureaucracies under broad coordinated democratic authority."

Gives President Much Power

This whole new scheme is much more serious than it first appears. It undoubtedly will give the President of the United States more power than he has ever had up to this time. To meet this situation and bring the government administrative management up to date, the reorganization committee which worked out the plan presented a five point program which includes in its major recommendations the following:

1. Expand the White House staff to give the President a sufficient group of able assistants in his own office to keep him in closer and easier touch with the widespread affairs of administration, and to make the speedier clearance of the knowledge needed for executive decision.

2. Strengthen and develop the managerial agencies of the govern-

ment, particularly those dealing with the budget and efficiency research, with personnel and with planning, as management-arms of the Chief Executive.

3. Extend the merit system upward, outward, and downward to cover practically all non-policy determining posts; reorganize the civil service system as a part of management under a single, responsible administrator; create a citizen board to serve as the watch dog of the merit system, and increase the salaries of key posts throughout the service so that the government may attract and hold in a career service men and women of ability and character.

4. Overhaul the one hundred independent agencies, administrations, authorities, boards, and commissions, and place them by executive order within one or another of the following twelve major executive departments: state, treasury, war, justice, post office, navy, conservation, agriculture, commerce, labor, social welfare and public works, and place upon the Executive continuing responsibility for the maintenance of effective organization.

5. Establish accountability of the Executive to congress by providing a genuine independent postaudit of all fiscal transactions by an auditor general, and restore to the Executive complete responsibility for accounts and current transactions.

DISAGREE ON NEED TO AMEND CONSTITUTION

During the early hours of this new congress it has become apparent that the President and his congressional leaders are not at one relative to the need for a constitutional amendment to enable the federal government to extend its powers and activities in regulation of the country's economic processes. Just what this means no one is ready even to guess.

The President has said at several of his recent press conferences that he does not believe that any constitutional amendment will be needed to pass legislation, and legisla-

tion that will be upheld by the high courts, dealing with hours, wages and child labor. Many of his close associates, leaders and friends on Capitol Hill do not agree with this and everyone is just watching and waiting to see what will happen. Although it is true that when the President makes up his mind he generally gets his own way, sometime the worm will turn and then there will be something interesting happen. This is one of the very interesting things to watch.

ROPER COUNCIL READY TO REPORT ON WAGES

Many of the government boys are getting their wires crossed in trying to jump on the band wagon in regard to legislation regulating child labor, hours of labor and wages.

At a press conference last week Secretary of Commerce Roper stated that his business advisory council was about ready to make public a report on hours and wages. Close inquiry into the work of the council shows that while it intends to make public several reports shortly, it has not discussed, except in a most perfunctory manner, the question of hours and wages and has no idea of doing so at this time.

Mr. Roper was either confusing the work of his council with an idea set forth by his assistant secretary of commerce, Ernest Draper, or else he was thinking of what the Berry organization is doing. He probably was hoping that his business council would do this or something else that would get them into the papers. It is said on good authority that Mr. Roper is disgusted because the Berry organization seems to have stolen the thunder of his committee.

Some of the leading industrialists of the country are members of the Roper business advisory council, including Myron C. Taylor, chairman, United States Steel Corp., but the trouble is the council only meets for part of a day once a month, and it does not employ any experts to work up reports in the meantime. Furthermore, it is known that the

members of the council are now, and always have been, averse to publicity. This means that every step of the way the Berry outfit steals a march on the Roper committee.

The Berry groups have been drafting actual bills for congress on the industrial situation right along and it is expected that they soon will be forwarded to the President.

This makes for a most unusual situation because now Berry himself has come out for the CIO and the Lewis crowd and, of course, this is not playing ball very well with the industry men who are working with Berry. Berry came out for Lewis in his printers' union paper and not as head of the industrial group, so-called.

At any rate it appears that the White House will put up with almost anything from Major Berry—which is one of the riddles of the administration. Aside from being a strong labor man, no one understands why the President continues to play ball with Berry in view of the attitude of some of his close personal advisers toward the major and his crowd.

LABOR BOARD COACHES WITNESSES AT HEARINGS

Hearings took their usual course last week before the national labor relations board in its investigation of alleged conditions of labor unions in the United States Steel Corp. and the Carnegie-Illinois Steel Corp.

That the board's decision will be against the steel corporation is probable. The labor board actually coaches labor witnesses while they are on the stand. This applies not only to steel cases but to others held before the board.

Details of the news brought out at this hearing will be found on pages 17 and 18 this issue.

TRUCK BUILDERS CONFORM TO WALSH-HEALEY ACT

Much interest still attaches to the workings of the Walsh-Healey government contract bill—both from the standpoint of the manufacturers of the country and the government purchasing officers.

One of the latest developments is that the International Harvester Co. and the Reo Motor Car Co. have agreed to conform to the labor provisions of this act. It is said they are the first in their industry to bid without reservation on the full amount of government offerings, thereby agreeing to conform to the labor provisions of the act. The government is making much of this—having taken unto itself the task of giving much publicity to the fact.

Decision of the Harvester company to bid on proposals coming under the provisions of the act fol-

lowed a series of conferences between Secretary of Labor Perkins, her assistants, and some of the officials of the company, it is reported.

As the result of bidding without reservations the Harvester company was awarded a contract for 25 stake body trucks and 10 dump body trucks while the Reo company will furnish 11 dump body trucks.

These are the first large companies in any industry who have kicked in in this manner, it is believed. If there are any others, the government is not making much fuss about it—leading to the conclusion that there are none.

BUSINESS REGULATION MAY PASS TEST—RICHBERG

Business interests of the country again are beginning to pay some attention to the talks of one Donald R. Richberg, erstwhile custodian of the dead Blue Eagle, who evidently has a key to the backdoor of the White House and who is certainly again in the ascendency with the administration.

Richberg's name has been linked several times to the department of commerce, but more and more it is believed that the President cannot pry "Uncle Dan" Roper loose from his job. With continued talk of some organization to take the place of NRA Richberg again is being called to the White House for conferences.

In a speech last week Richberg made an implied prediction that any legislation to put business under federal regulation would pass a constitutional test, providing it was void of any infringement of civil liberties guarantees.

"Where there is a clear need for federal legislation to regulate business for its own protection and in the public interest * * * there are no constitutional limitations to obstruct the enforcement of laws which do not infringe upon the fundamental guarantees of civil liberty."

MAKES RECOMMENDATIONS ON ROBINSON-PATMAN ACT

A special committee of the United States chamber of commerce has just completed a survey of the Robinson-Patman act and on the results has made several recommendations. The committee included some leading industrialists.

Among other things the committee recommended that "the remedies of three fold damages at private suit should be made available only to those practices which are used after they have been found by the federal trade commission, with concurrence from the courts, to come within the prohibitions of the law."

The committee also recommended that "enactment of additional fed-

eral or state legislation should be postponed until, through the processes of the federal trade commission and judicial review, the practical applications of the present Robinson-Patman act have been worked out and uncertainties that exist are replaced by definite standards which all can be expected to understand and follow."

The report commends the federal trade commission for its prompt action in inaugurating a series of exploratory cases. The commission's purpose obviously, the report says, is to obtain examination of the facts in each case, presentation of all elements to be considered, and a clear decision which will serve as a guide with respect to similar situations.

STATE DEPARTMENT MAKES TRADE PACT CONCESSIONS

Renewed interest as to why the state department is making concessions in the presentations for trade agreements is evidenced. Certain interests have been hammering on this question ever since trade agreements began—but apparently with little evidence of success until now.

The state department is making important departures in the trade agreement procedure. Even before formal announcement of its forthcoming negotiations of a trade agreement with Ecuador the department has invited those interested in trade with that country to submit suggestions as to products that should be considered by the committee at its open hearings.

AUSTRALIA WILL BEGIN MANUFACTURE OF ALUMINUM

Domestic manufacture of aluminum in Australia is expected to begin soon, according to information received in the commerce department from Trade Commissioner E. C. Squire, Sydney.

The British Aluminium (Australia) Co. Ltd. was registered in Melbourne in November. The company was formed by the Electrolytic Zinc Co. of Australasia Ltd., in conjunction with the British Aluminium Co. Ltd., to manufacture the metal in the commonwealth.

A statement just issued by the Electrolytic Zinc company points out that the importation of aluminum into Australia has markedly increased in the last few years, approximately 1500 tons now being imported annually. The establishment of the motor car and aircraft manufacturing industries in the country and the increasing demand for the metal in many other industries, the statement declares, is expected to lead to a rapid expansion in domestic consumption of aluminum.

Editorial

Distribution of Steel Shows

Marked Shifts in Decade

BY A coincidence, steel ingot production in 1936 was approximately equal to that of 1926. The final official figures will show a difference of only a few hundred thousand tons in the totals for the two years. The similarity in volume of output in two 12-month periods spaced a decade apart suggests that the figures offer an unusual opportunity for significant comparisons.

Output of ingots in each year was approximately 47,000,000 gross tons, of which about 32,000,000 tons was distributed in the form of finished rolled steel. For each year, producers of finished steel reported to STEEL distribution figures accounting for slightly more than 29,000,000 tons of the 32,000,000-ton total. The analyses of distribution, as reported in the issues of Jan. 6, 1927, and Jan. 4, 1937, for the years 1926 and 1936, respectively, furnish a convenient basis for comparing the changes which have occurred in the past decade.

The reported distribution, according to consuming groups, expressed in gross tons and in percentages, is as follows:

| | 1926 Gross Tons | 1936 Gross Tons | 1926 Per Cent | 1936 Per Cent | Change |
|-------------------------|-----------------------|-----------------------|---------------------|---------------------|--------|
| Consumers | | | | | |
| Railroads ... | 6,914,809 | 3,293,326 | 23.31 | 11.33 | -11.98 |
| Buildings ... | 3,914,928 | 4,021,761 | 13.20 | 13.87 | + 0.67 |
| Automotive .. | 4,365,170 | 6,068,187 | 14.72 | 20.87 | + 6.15 |
| Oil, gas, water | 1,948,739 | 1,548,653 | 6.57 | 5.33 | - 1.24 |
| Metal Containers | 1,567,761 | 2,452,237 | 5.28 | 8.44 | + 3.16 |
| Machinery ... | 779,191 | 1,443,353 | 2.62 | 4.96 | + 2.34 |
| Agriculture .. | 800,154 | 1,038,719 | 2.70 | 3.57 | + 0.87 |
| Mining, lumbering | 1,099,517 | 183,202 | 3.72 | 0.63 | - 3.09 |
| Shipbuilding .. | 195,966 | 231,644 | 0.66 | 0.80 | + 0.14 |
| Exports | 1,581,814 | 1,102,937 | 5.34 | 3.79 | - 1.55 |
| All other | 3,366,816 | 3,570,080 | 11.36 | 12.28 | + 0.92 |
| Jobbers | 3,121,960 | 4,108,497 | 10.52 | 14.13 | + 3.61 |
| Total | 29,656,836 | 29,072,596 | 100.00 | 100.00 | 0.00 |

Eight consuming groups gained at the expense of four which sustained losses. In order of degree of increase, the gainers were automotive, jobbers, containers, machinery, miscellaneous, agriculture, buildings and shipbuilding and repair. Losses were suffered by railroads, "mining, lumbering, etc.," exports and "oil, gas and water" consumers.

It is significant that with the exception of exports, the losers are consumers clearly identified with the capital goods industries. Also, it is noteworthy that two of the most fortunate of the gainers—automotive and metal containers—are identified with the so-called consumers' goods industries. Also the small gain shown for buildings undoubtedly is due to increased

consumption of steel for building furnishings, which was sufficient to more than offset a serious decline in the consumption of steel for building construction.

The distribution figures also permit a comparison of the physical form in which steel was consumed in 1926 and 1936. The distribution by finished steel products is as follows:

| Products | 1926 Gross Tons | 1936 Gross Tons | 1926 Per Cent | 1936 Per Cent | Change |
|-------------------------|-----------------------|-----------------------|---------------------|---------------------|--------|
| Rails | 3,181,065 | 1,202,400 | 10.7 | 4.1 | -6.6 |
| Track accessories | 841,175 | 536,336 | 2.8 | 1.9 | -0.9 |
| Plates | 3,275,537 | 2,320,467 | 11.0 | 8.0 | -3.9 |
| Structural shapes | 3,083,332 | 2,156,659 | 10.4 | 7.4 | -3.0 |
| Bars | 5,683,263 | 5,195,494 | 19.2 | 17.9 | -1.3 |
| Tin plate | 1,681,231 | 2,235,357 | 5.7 | 7.7 | +2.0 |
| Sheets | 4,065,154 | 6,881,393 | 13.7 | 23.6 | +9.9 |
| Strip | 1,197,047 | 3,191,201 | 4.0 | 11.0 | +7.0 |
| Tubing and pipe | 3,499,926 | 2,660,317 | 11.8 | 9.2 | -2.6 |
| Wire products | 2,020,122 | 2,131,176 | 6.8 | 7.3 | +0.5 |
| All other | 1,128,984 | 561,796 | 3.9 | 1.9 | -2.0 |
| Totals | 29,656,836 | 29,072,596 | 100.0 | 100.0 | 0.0 |

Note that seven products gained and four lost in the 10-year period. In order of severity of decline the losers were rails, plates, shapes, tubing and pipe, miscellaneous, bars and track accessories. The products for which consumption increased were sheets, strip, tin plate and wire products.

Here again the widely divergent fortunes of the capital goods and consumers' goods markets are reflected clearly. Plates, shapes and bars are the traditional "heavy" products consumed in great volume by the railroad, building construction, shipbuilding and other industries which depend upon capital expenditures for expansion and rehabilitation. The products which fared better—sheets, strip, tin plate and wire—are used extensively in the markets which derive their support from income, not from investment of capital.

Another interesting sidelight on the figures can be observed by comparing the fortunes of consuming groups and finished steel products according to the degree with which they are identified with or lend themselves to the technique of mass production. Among the consuming groups, automotive, metal containers and furnishings or appliances for buildings employ mass production methods extensively. Among the products, sheets, strip, and tin plate probably are better adapted to mass production, as it is developed today, than some of the other products.

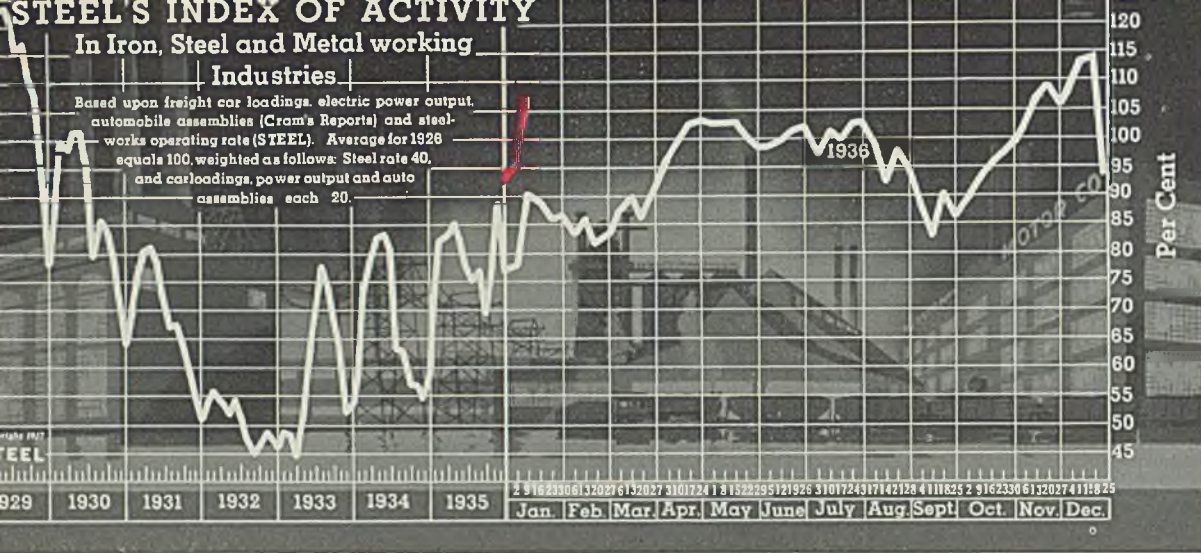
Consumers and products identified with mass production seem to have fared better than their contemporaries that are associated with unit or jobbing production.

Is this significant? Does it mean that this country is definitely committed to an important expansion of the mass production idea?

STEEL'S INDEX OF ACTIVITY

In Iron, Steel and Metal working Industries

Based upon freight car loadings, electric power output, automobile assemblies (Cram's Reports) and steelworks operating rate (STEEL). Average for 1928 equals 100 weighted as follows: Steel rate 40, and carloadings, power output and auto assemblies each 20.



THE

STEEL'S index of activity gained 11.2 points to 107.8 in the week ending January 9:

| Week ending | 1936 | 1935 | 1934 | 1933 | 1932 | 1931 | 1930 | 1929 |
|-------------|--------|------|------|------|------|------|------|------|
| Dec. 5 | 108.4 | 91.7 | 56.8 | 52.6 | 46.6 | 52.9 | 69.2 | 85.0 |
| Dec. 12 | 113.9 | 91.8 | 60.6 | 56.0 | 49.3 | 53.1 | 68.2 | 83.4 |
| Dec. 19 | 114.8 | 91.9 | 64.4 | 58.0 | 46.9 | 52.3 | 67.3 | 79.7 |
| Dec. 26 | 93.3 | 77.3 | 60.8 | 53.7 | 42.9 | 46.8 | 52.3 | 64.9 |
| Jan. 2 | 1937 | 1936 | 1935 | 1934 | 1933 | 1932 | 1931 | 1930 |
| Jan. 9 | 107.8* | 90.2 | 73.8 | 58.1 | 48.6 | 55.8 | 69.2 | 88.1 |

†Revised. *Preliminary.

Index of Activity Rebounds Sharply After Holidays

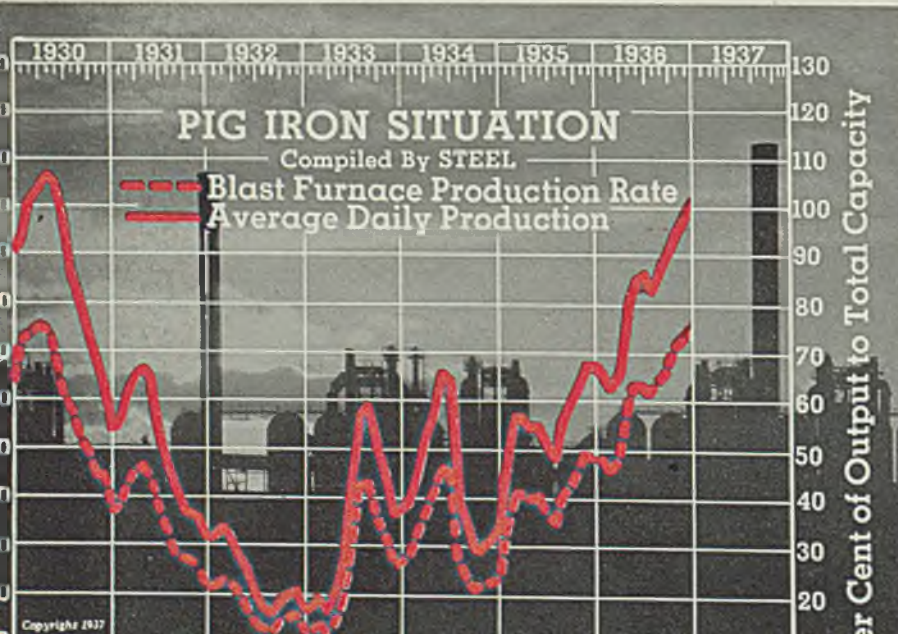
BUSINESS barometers for the week ending Jan. 9—the first full calendar week of the new year—showed substantial gains. Revenue freight car loadings rebounded to the 700,000-car level. Steelworks operations advanced half a point to 79.5 per cent of capacity. Electric power output was up moderately to 2,244,030,000 kilowatt-hours. Automobile production leaped from 71,800 to 96,780 units.

Reflecting these gains, STEEL'S index of activity advanced from 96.6 to 107.8. While this increase is

slightly less than that recorded in the corresponding week of 1936, it compares favorably with the rebounds in the majority of recent years. While labor difficulties unquestionably have restricted industrial activity in certain branches of industry, the effect does not yet show noticeably in the barometers. The reason lies in the fact that activity in other lines has served to offset in part the stoppage of work in some automobile and parts plants.

Commodity prices continue to rise. The average today is about 28 per cent above that of a year ago. Present conditions point to further advances.

Preliminary figures of the National Machine Tool Builders' association show that machine tool orders in December exceeded all records since 1919, when statistics of orders were first compiled. December orders topped the 1929 peak by 40 per cent.



| | Daily Average, Tons | | Blast Furnace Rate, Per Cent | |
|------------|---------------------|--------|------------------------------|------|
| | 1936 | 1935 | 1936 | 1935 |
| Jan. | 65,461 | 47,692 | 48.2 | 34.2 |
| Feb. | 63,411 | 57,675 | 46.6 | 41.4 |
| Mar. | 66,004 | 57,120 | 48.5 | 41.0 |
| Apr. | 80,316 | 55,710 | 59.1 | 40.0 |
| May | 85,795 | 55,986 | 63.1 | 40.2 |
| June | 86,551 | 51,949 | 63.6 | 37.2 |
| July | 83,735 | 49,043 | 61.5 | 35.2 |
| Aug. | 87,475 | 56,767 | 64.3 | 40.7 |
| Sept. | 90,942 | 59,009 | 66.9 | 42.5 |
| Oct. | 96,509 | 63,818 | 71.0 | 45.8 |
| Nov. | 98,331 | 68,876 | 72.3 | 49.5 |
| Dec. | 100,813 | 68,242 | 74.2 | 49.0 |

BUSINESS TREND

Daily Ingot Production Off Moderately in December

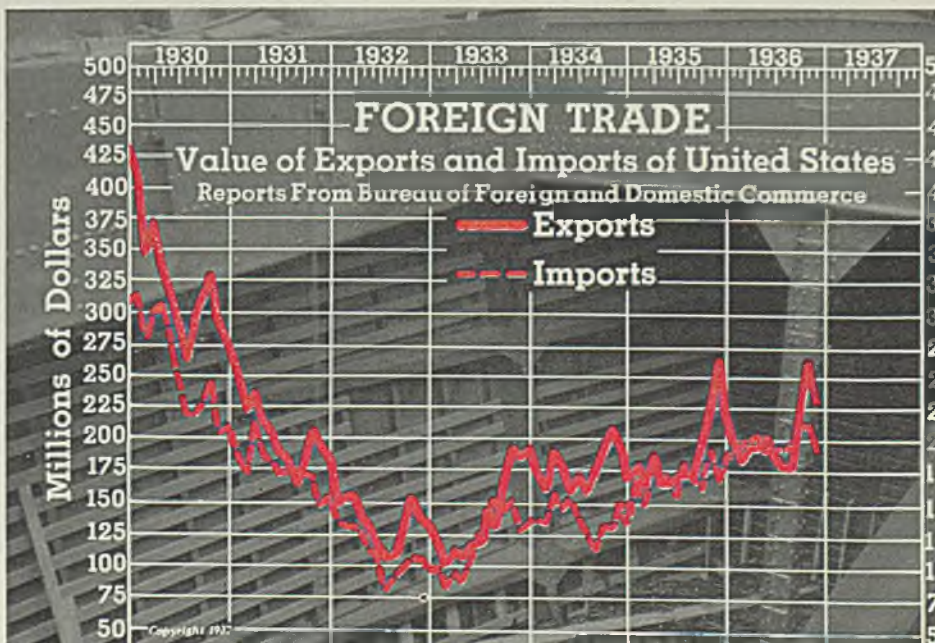
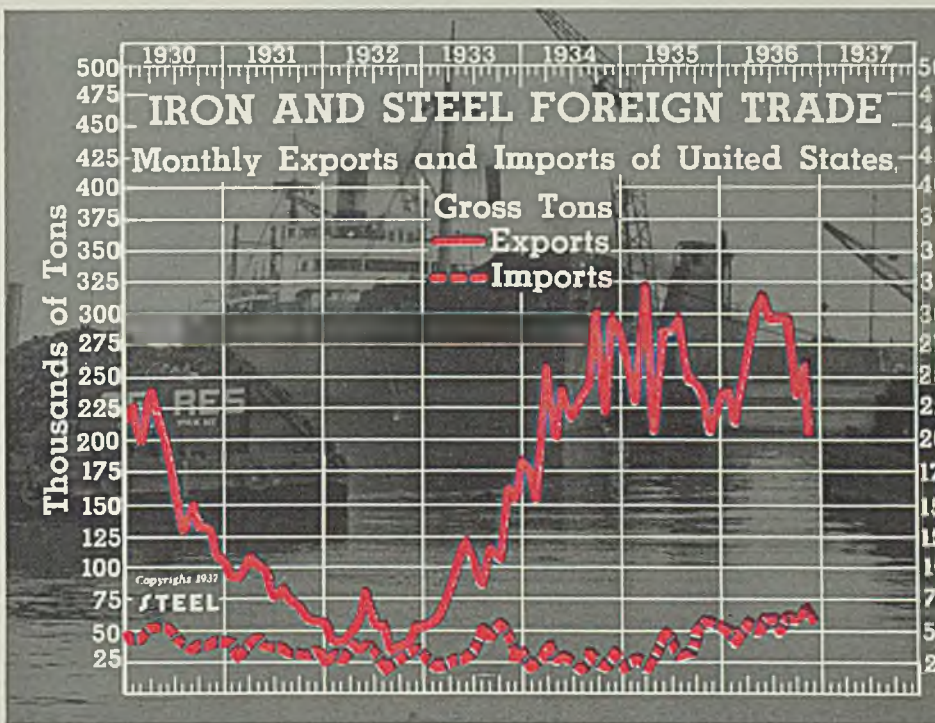
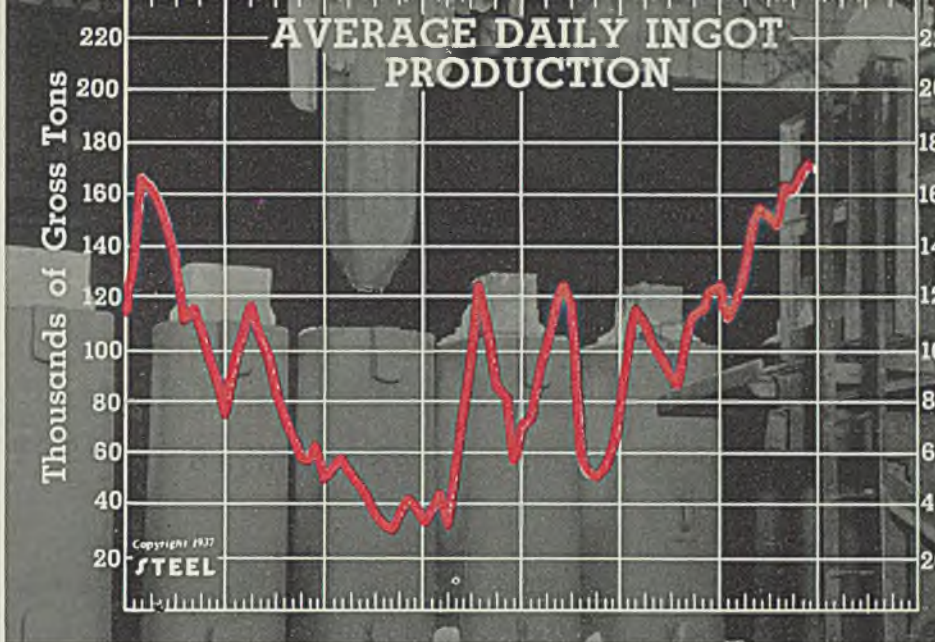
| | Gross Tons | | |
|------------|------------|---------|---------|
| | 1936 | 1935 | 1934 |
| Jan. | 112,813 | 106,302 | 73,968 |
| Feb. | 118,577 | 115,595 | 92,164 |
| March | 128,576 | 110,204 | 103,646 |
| April | 151,625 | 101,562 | 117,443 |
| May | 155,625 | 97,543 | 125,907 |
| June | 153,263 | 90,347 | 117,672 |
| July | 150,874 | 87,224 | 59,578 |
| Aug. | 161,351 | 107,997 | 51,161 |
| Sept. | 160,043 | 113,000 | 50,759 |
| Oct. | 168,333 | 116,398 | 54,885 |
| Nov. | 173,496 | 121,170 | 61,947 |
| Dec. | 170,448 | 122,936 | 78,570 |

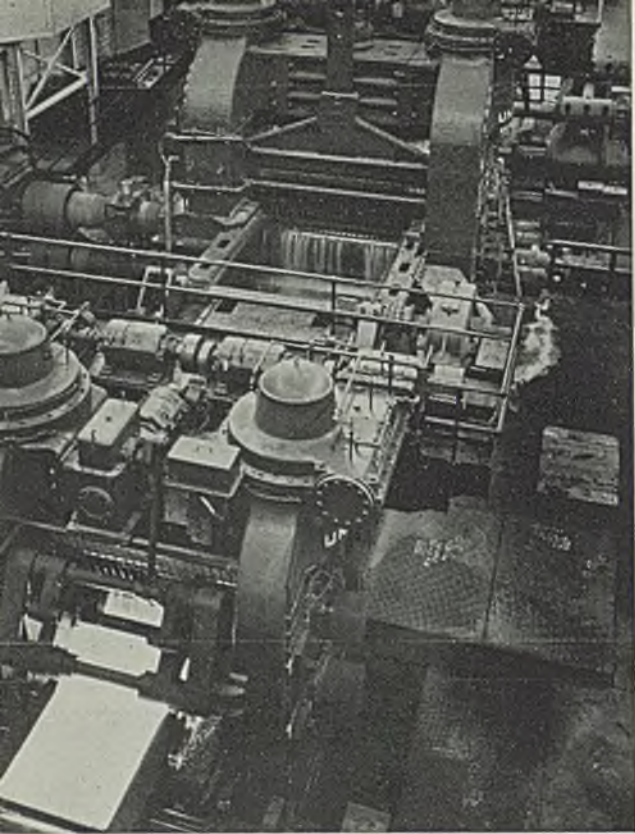
November Steel Exports Slightly Below Last Year

| | Gross Tons | | | |
|------------|------------|---------|---------|---------|
| | 1936 | | 1935 | |
| | Imports | Exports | Imports | Exports |
| Jan. | 50,489 | 241,564 | 22,784 | 262,740 |
| Feb. | 43,358 | 213,802 | 28,905 | 228,537 |
| Mar. | 56,720 | 264,337 | 21,409 | 323,035 |
| Apr. | 49,621 | 301,987 | 28,866 | 205,336 |
| May | 59,391 | 314,950 | 47,719 | 286,598 |
| June | 59,910 | 294,951 | 33,208 | 286,333 |
| July | 47,940 | 296,738 | 31,894 | 296,782 |
| Aug. | 60,697 | 295,341 | 32,312 | 247,312 |
| Sept. | 59,993 | 235,571 | 53,158 | 244,419 |
| Oct. | 64,509 | 261,882 | 59,569 | 238,358 |
| Nov. | 61,970 | 203,297 | 56,637 | 205,242 |
| Dec. | | | 53,678 | 239,268 |

Merchandise Foreign Trade Declines in November

| | Dollars (000 omitted) | | | |
|------------|-----------------------|---------|---------|---------|
| | 1936 | | 1935 | |
| | Exports | Imports | Exports | Imports |
| Jan. | 198,654 | 187,482 | 176,223 | 166,993 |
| Feb. | 182,030 | 192,771 | 162,999 | 152,491 |
| March | 194,790 | 198,686 | 185,603 | 177,279 |
| April | 193,490 | 202,437 | 164,350 | 170,567 |
| May | 201,042 | 191,110 | 165,457 | 170,207 |
| June | 185,188 | 192,233 | 170,193 | 156,756 |
| July | 178,324 | 193,409 | 173,371 | 177,698 |
| Aug. | 178,249 | 195,016 | 172,128 | 169,030 |
| Sept. | 219,976 | 215,525 | 198,189 | 161,653 |
| Oct. | 264,708 | 212,001 | 221,215 | 189,240 |
| Nov. | 225,766 | 196,423 | 269,400 | 168,955 |
| Dec. | | | 223,737 | 186,648 |





Reversing Roughing Unit

Features Homestead

Front end of the 100-inch semicontinuous plate mill showing scale breaker in foreground followed by broadside mill and slab edging press

INITIAL operation of the new 100-inch semicontinuous sheared plate mill of the Carnegie-Illinois Steel Corp. at its Homestead Steel Works, Munhall, Pa., started Dec. 1, 1936, one year after the first shovelful of earth was turned over. The first slab sent through the mill was finished a saleable plate that set a new high for accuracy and finish.

Years of experience have gone into the design of this mill, which embodies the best in standard practice plus many new developments. Even at first glance, a visitor is impressed with the obvious efficiency, smooth operation and good working conditions which prevail. The entire rolling process, from the time a heated slab leaves the furnaces until it reaches the last finishing stand, takes less than two minutes. Normal operation contemplates three slabs going through the mill at the same time, a plate leaving the finishing train on an average of every 40 seconds. With a six day week, rolling ordinary commercial plate, this mill is expected to turn out 729,000 gross tons of finished product each year.

Important characteristics of plate produced on this mill are accuracy, uniformity of gage, freedom from shear-bow and a surface finish comparable to that now found on high-quality hot rolled strip. Cor-Ten, Man-Ten, Sil-Ten and other alloy steels as well as commercial carbon steel will be rolled in plate ranging in width from 20 to 90 inches and from 3/32 to 3/8-inch thick. The runout table after the finishing

train will handle plate up to 150 feet long.

Slabs which may range from 22 to 54 inches wide, 3 to 9 inches thick and 48 to 180 inches long come to the new mill from the old slabbing mill at Homestead, being stacked six to eight high on a motor-driven roller table which delivers them to a magazine feeder. This in turn discharges one slab at a time to the roller table in front of the reheating furnaces. Three continuous-type double-row Rust furnaces now are installed, provision having been made for the installation of a fourth unit should occasion require it. These furnaces are 18 feet wide by 82 feet 10 inches long and each is capable of heating 50 gross tons of cold slabs per hour.

Controls B.t.u. Proportion

All furnaces are equipped with carborundum-type recuperators and operate under fully automatic temperature control which includes B. t. u. proportioning. Normal operation is with by-product coke oven gas, but the proportioning control will maintain a constant B.t.u. value of the fuel regardless of whether natural gas, coke oven gas, or any combination of those two gases may be used.

Each furnace is charged by two motor-operated slab pushers which work separately or in unison as needed. Slabs up to 7½ feet long are charged in two rows using the pushers separately, or slabs up to 15 feet long may be charged in a single row, both pushers working together. Main furnace doors are

motor operated and the furnaces are insulated completely and steel jacketed to conserve heat and improve working conditions.

As the heated slabs leave the furnaces, they advance over a heavy-duty delivery table to the mill, which consists essentially of:

One 2-high scale breaker, 36 x 100 inches.

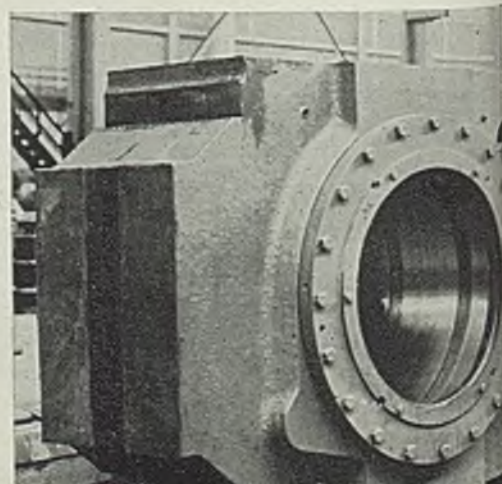
One 4-high spreading stand or broadside mill, 42 and 52 x 120 inches.

One horizontal slab edging press. One vertical roll edger (reversing), 40 x 10 inches.

One 4-high reversing roughing stand, 36 and 54 x 100 inches.

One double pinch roll device serving as a scale breaker.

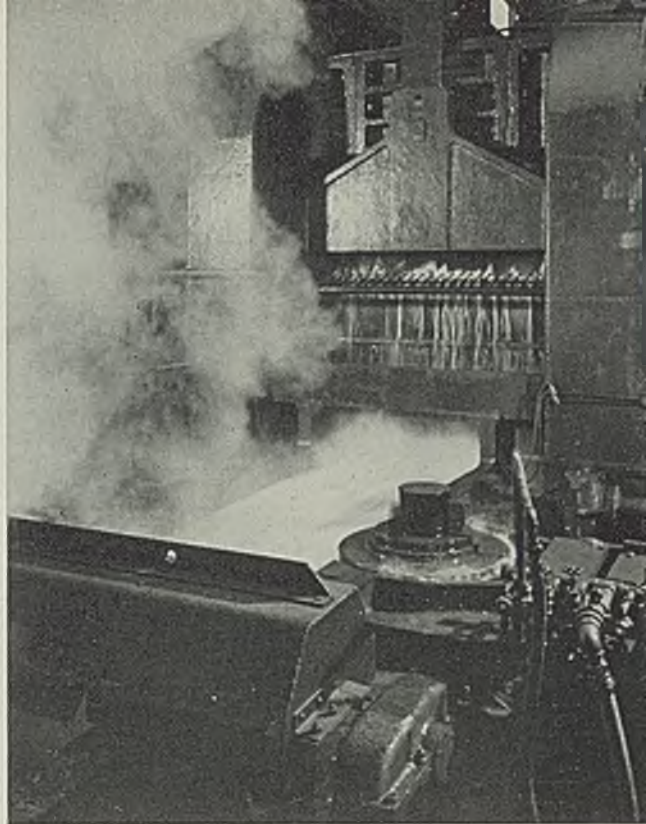
Chocks for backup rolls are shown in foreground. A work roll chock is shown at extreme right



with Vertical Roll Edger

Sheared Plate Mill

Four-high reversing stand, the first ever installed in a tandem mill, brings the slab to the desired size for finishing in from 3 to 7 passes



Four 4-high finishing mills, 27 and 54 x 100 inches.

Runout and transfer tables; levellers; crop, rotary and end shears; stacking beds, etc.

All rolling stands and considerable other equipment such as mill tables, rotary and scrap shears, etc., were designed and built by the United Engineering & Foundry Co., Pittsburgh, working in conjunction with the Carnegie-Illinois engineers at Homestead, Pa. Exclusive of U. S. Steel Corp. subsidiaries, 244 different contractors were engaged in the work connected with building this new mill.

The 2-high scale breaker operates at 190 feet per minute and is capable of handling slabs straight through or spreading them up to 94 inches. After passing this mill and a hydraulic descaler, where jets of water at 1000 pounds pres-

sure per square inch impinge at an angle on both top and bottom surfaces of the slab to remove the furnace scale loosened in the mill, the clean slabs advance to a broadside mill. This stand, which is preceded and followed by specially designed slab turning rigs, is a 4-high nonreversing mill, 42 and 52 x 120 inches, operating at approximately 185 feet per minute. In this mill slabs can be spread in a single pass to a maximum of 96 inches wide and 110 inches long. A heavy-duty motor-operated pusher at the entry side of this stand assures that the slabs enter the rolls squarely.

Slab Reducer Avoids Upsetting

On leaving the broadside mill the slab advances to a second slab turner which turns it 90 degrees to its original lengthwise position ready to move on to the slab reducer to square up its edges and true its width. This unit has a 7-inch stroke and is capable of a 3-inch penetration on a 6-inch thick slab. It is equipped with 16-foot heads. The eccentric shaft is forged steel, 26 inches diameter and with a 3½-inch throw. Special care was exercised in the design of this slab reducer to avoid the possibility of upsetting and operation has demonstrated that no difficulty of this nature will be experienced.

Two sections of roller tables advance the formed slab approximately 120 feet, under a hydraulic descaler, to a 4-high 36 and 54 x 100-inch reversing mill where a series of three, five or seven passes brings the slab to the desired size for fin-

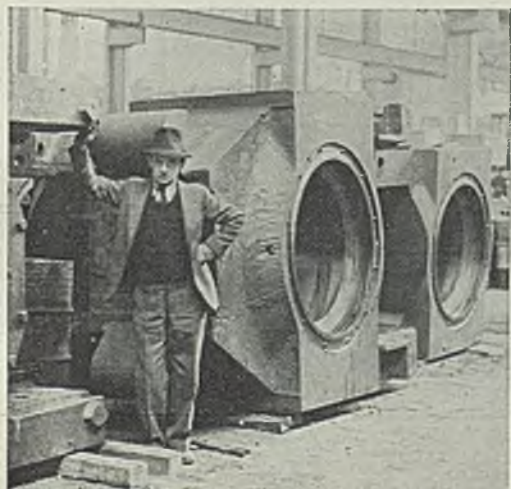
ishing. This stand is the first large 4-high reversing hot mill ever installed in a tandem mill and constitutes one of the many unique features in this new plant. The 40 x 10-inch vertical edger, which precedes the reversing mill, is used merely to maintain slab width.

Operating as this mill does on a semicontinuous basis, it is possible to make quick adjustment. Thus if a slab is lost for any reason it can be replaced within two or three hours instead of requiring rescheduling of the mill or holding up a shipment until the desired size plate again is rolled.

Immediately preceding the finishing train is a unique double pinch roll device which serves as the finishing scale breaker. Instead of the customary mill stand, two rolls operating under spring pressure give the slab a pinch which serves to crack and loosen the secondary scale just before the slab passes under the hydraulic descaler.

The finishing train, which consists of four stands of 4-high 27 and 54 x 100-inch mills, preceded by a hydraulic descaler to remove the secondary scale, is separated from the reversing mill by three sections of roller tables. The section which receives the slab as it comes from the reversing mill is designed to operate at 400 feet per minute and the next two sections at 150 to 600 feet per minute, the speeds being adjustable according to the rate of cooling and size of the slab so that it will enter the finishing train at the proper temperature.

Timken tapered roller bearings



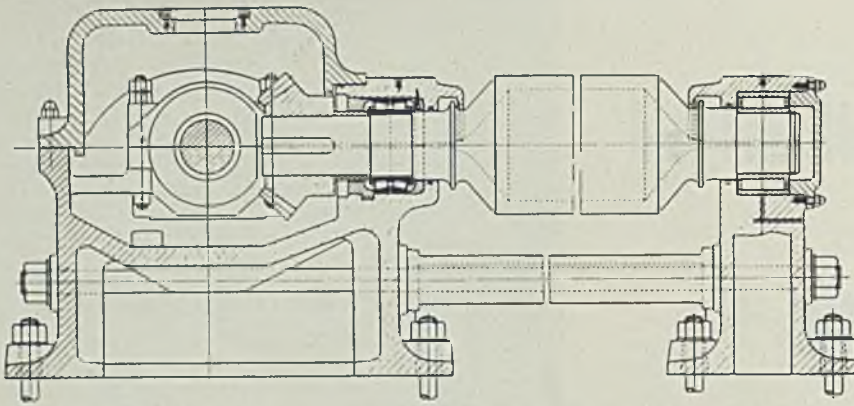


Table roller bearing mounting. A 2-row bearing is used at one end of the roll and a cylindrical roller bearing floating at the other end

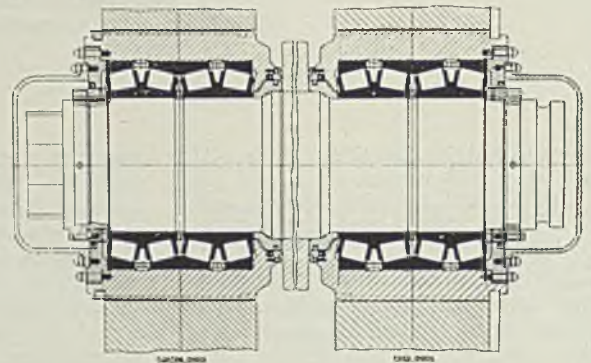
were furnished for the 4-high reversing and finishing mills while the scale breaker and broadside mill were equipped with babbit bearings of a new totally enclosed chock type. All backup roller bearings are 33 x 48 x 31 inches and the finishing mill work roll bearings 18 x 23½ x 11 inches, those on the reversing mill being 24 x 31 x 14¼ inches. At 500 revolutions per minute, the backup bearings have a rating of 1,133,280 pounds radial load and 217,000 pounds thrust load.

Assembled in Four Rows

Ground cup and cone spacers are used on these bearings, which are all 4-row assemblies, to give a pre-adjusted setting. The inner filler ring is shrunk on the roll neck and the chock has a special lip which fits close to the inner race of the bearing, making practically a sealed assembly when the bearing and chock are removed. The bearing application is illustrated in the accompanying diagram. Screwdowns on all stands likewise are equipped with Timken bearings, as are many other units such as drives, levelers, shears, tables, etc. Magnetic clutches between the motor shaft extensions on the screwdowns permit alignment of the rolls and syn-

chronous speeds of the motors. Sel-syn indicators are connected with each screwdown, readings showing in the operating pulpit for the roughing scale breaker, broadside

Four-row bearing mounting for backup rolls. Bearings are assembled in chocks and stored as unit assemblies ready to slip on roll necks



mill and reversing mill and on the mill housings of the finishing stands so that the operator knows his roll settings at all times and can adjust them quickly and accurately.

A special feature in connection with the reversing mill lies in the control mechanism, which can be pre-set. After the proper draft has been determined for each pass the electrical controls are set and continue to function automatically,

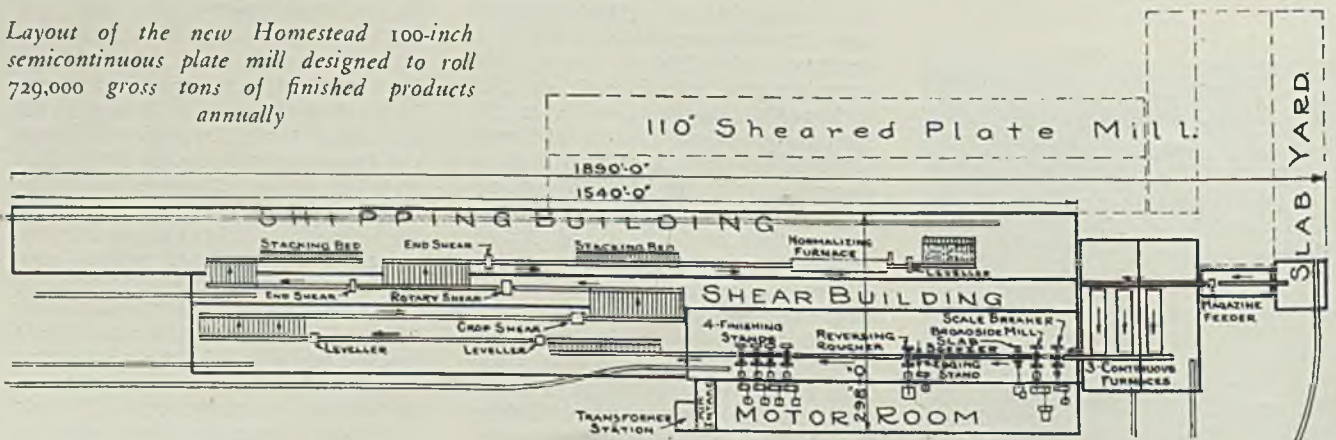
making the required changes in roll setting for each pass. When the slab advances to the finishing train the controls automatically restore the initial setting, ready to start the cycle again.

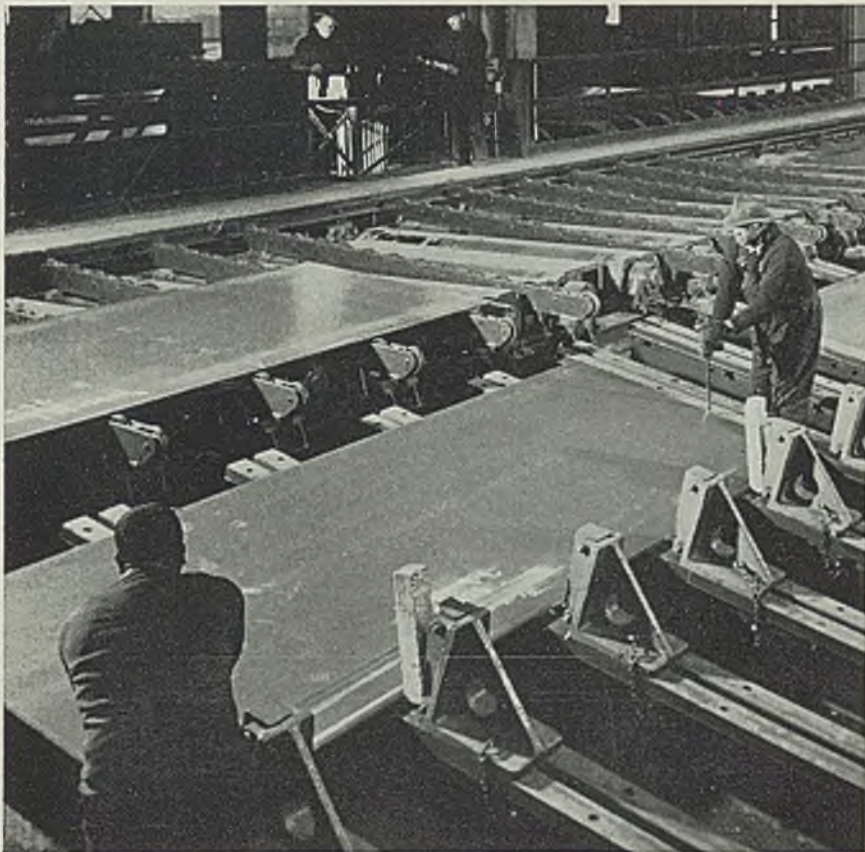
Top backup and work rolls are balanced hydraulically, the backup roll by means of carrier bars and links suspended from cylinders mounted in the top housing separator. The top work roll is balanced by hydraulic cylinders located in the bottom roll chocks. These cylinders operate under a pressure of 1500 pounds per square inch. This system of roll balancing avoids the necessity of disconnecting any hydraulic connections when backup roll changes are required.

To control rolling pressures and thus avoid undue strains on the mill equipment, all 4-high stands are equipped with United type pressuremeters. These utilize the stretch in the mill stand housing

to actuate indicating and recording instruments located in the operating pulpits. One post in each housing is recessed to receive a gage bar made of the same metal used in the mill housing. This bar is anchored firmly at one end and the other connected to an inductance-type strain gage, the whole assembly being surrounded by light oil and sealed to assure uniform temperature conditions between the housing and gage bar. Calibration

Layout of the new Homestead 100-inch semicontinuous plate mill designed to roll 729,000 gross tons of finished products annually





One of two stacking beds which receives side and end sheared plates by gravity from the roller table

approach side of each of the last three stands in the finishing train is equipped with a set of guards or "horns" to safeguard the mechanism from damage should a cobble occur while rolling heavy plate. Sections of roller tables are used in this train instead of the customary chutes to handle the heavy, wide plate smoothly and easily and avoid scratches.

Designed for Quick-Setting

All approach and delivery roller tables are equipped with motor-operated quick-setting sideguards and guides, and particular care was used in finishing all surfaces which come in contact with the metal as it enters and leaves the finishing train to avoid the possibility of scratching.

Work roll changes are made with a Porter bar and the backup roll changes with a specially designed motor-operated roll changing rig. This unit fits in a covered pit adjoining each 4-high stand, a heavy fork being advanced under the roll assembly by means of a motor-operated rack. The complete roll assembly including the chocks is lowered on the fork by the hydraulic cylinders located in the top housing separators. The assembly then is withdrawn on the carriage. Each roll assembly with bearings and chocks then can be picked up easily

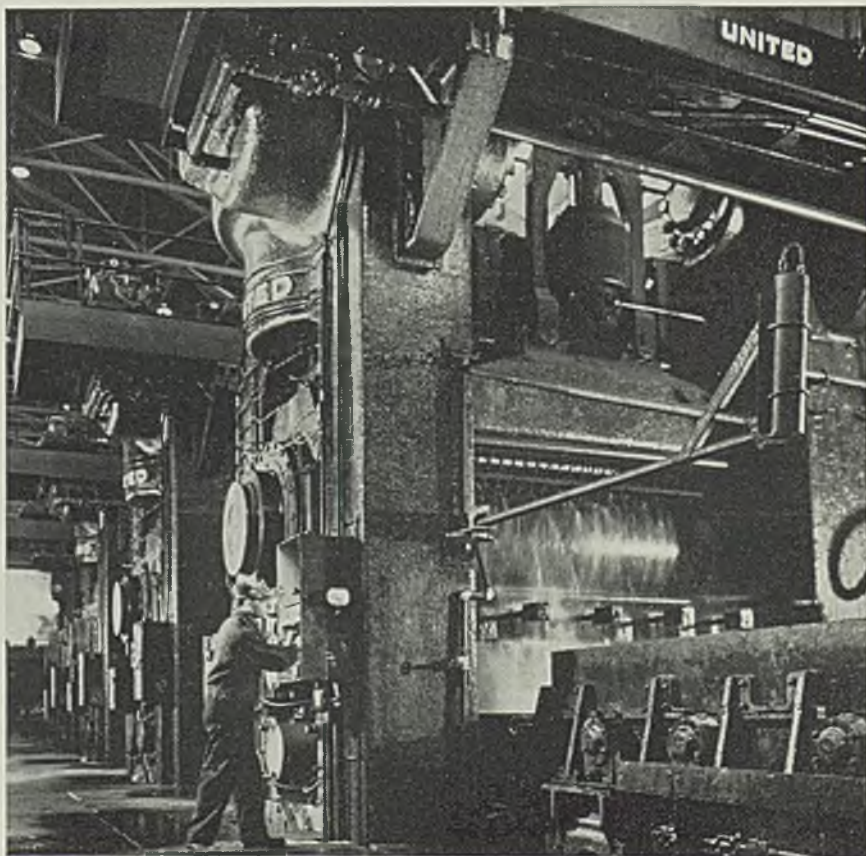
is obtained by loading the housing by means of hydraulic jacks to a separating force of approximately 4,000,000 pounds, the scales being marked to read directly in pounds of screw pressure.

As these gages are built into the mill housing, no additional height is required nor is there any difficulty involved when rolls are changed. The electrical circuits are provided with a zero point, so if a gradual relief of strains in the housing or temperature differences cause the gage to register incorrectly, the error readily is noticed and easily corrected. The general accuracy of this roll pressure measuring equipment is to within $\frac{1}{2}$ of 1 per cent when it is in proper condition.

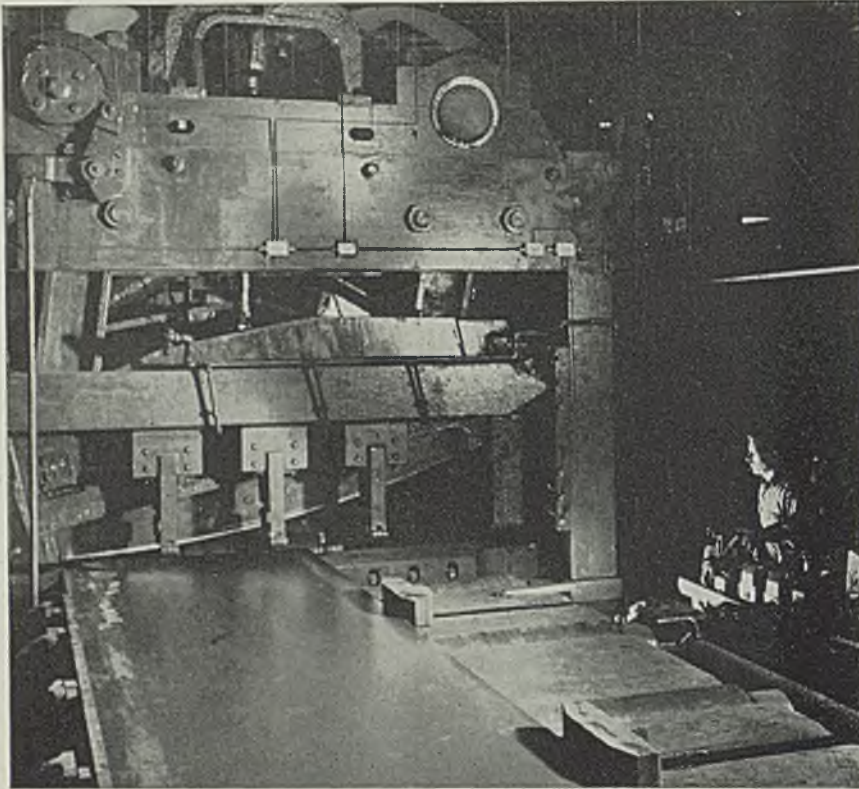
Provides for Extension

It will be noted from the layout that sufficient space has been provided to permit an additional finishing stand to be installed before and after the present finishing strain. This would make it possible for the mill to roll heavy wide strip or sheet if desired, as well as the accurate plate now being produced.

The finishing train is equipped with specially designed motor-operated guides and loopers and the entry and delivery guides equipped with motor-operated pullbacks to facilitate roll changing. Likewise the



Four-stand finishing train equipped with 27 and 54 x 100-inch rolls. Preceding the first stand is a hydraulic descaler



New end shear of the rocking type designed and built at the Homestead works. This unit eliminates "shear bow" formerly encountered in the shearing operation

by the crane and replaced by a new assembly, which allows a backup roll change to be made in a minimum length of time. The cycle of operation is reversed for entering the roll assemblies in the mill.

A large, well-lighted, well-ventilated and well-heated room is provided adjacent to the mill building for roll turning and grinding, bearing storage and maintenance. Present equipment includes a 60-inch x 20-foot roll turning lathe, a 60-inch x 20-foot roll grinder and a degreasing machine for use in bearing maintenance. This shop is served by a 100-ton crane and a specially designed transfer car for taking roll assemblies to and from the roll shop.

Affords Clear View of Mill

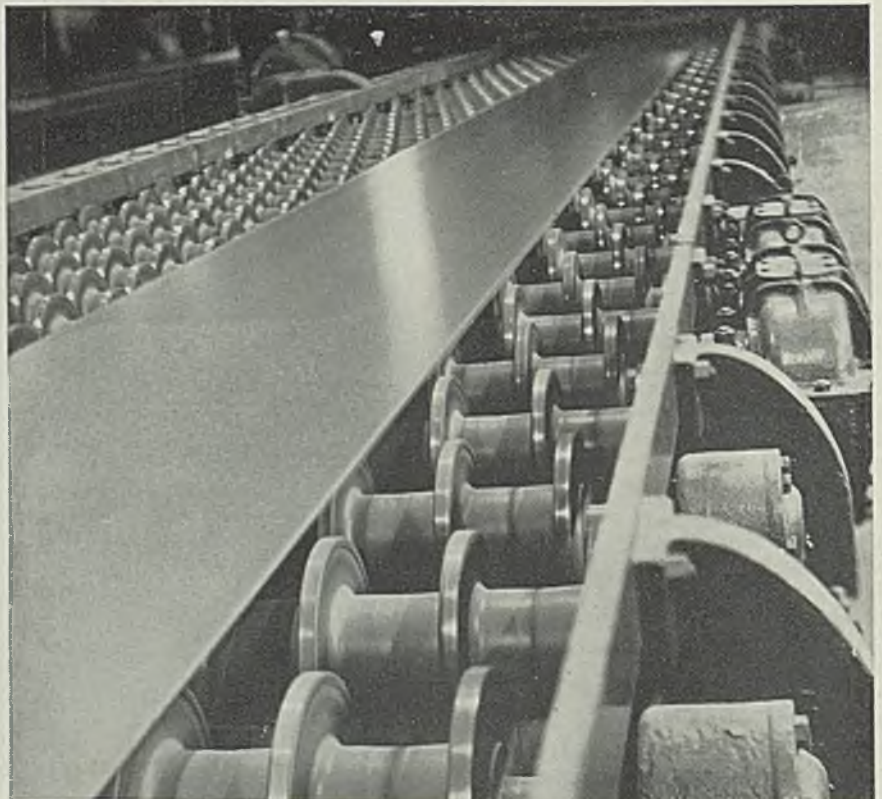
Four glass enclosed operating pulpits, 12 feet above floor level, give the mill attendants ideal working conditions and enable them to see clearly what is happening. The pulpit controlling the scale breaker and first slab turning rig is on the drive side of the mill, as is also the pulpit from which the slab pusher, broadside mill, second turning rig and slab reducer are controlled. The operating pulpit from which the 4-high reversing mill and reversing roll edger is controlled is on the operating side of the mill, immediately in front of the stand so that the operator has a clear view not only of his mill stand but also of the

approach and delivery tables. The finishing train similarly is handled from a pulpit centrally located on

the operating side of the mill also.

One large room, ventilated with filtered air under a slight pressure to keep out any dust, houses all the main motors, gear drives, motor-generator sets and switchboard equipment. Four 125,000 cubic feet per minute fans are used for forcing the filtered air into this room and two 65,000 cubic feet per minute booster units, one being held in reserve, furnish air to cool the big reversing mill motor. Power at 6600 volts comes in to switch gear centrally located on the outside wall of the motor room and is distributed to the equipment by cables running through conduit buried in the concrete floor. Alternating current at 220 volts is furnished by three 1000 kilovolt ampere 6600-220 volt transformers at one end of the room; 230-volt direct current for the cranes, tables and transfer motors, auxiliary mill motors, etc., is supplied by two 1500-kilowatt motor-generator sets in the motor room in conjunction with two other sets in an adjoining building.

At one end of the motor room is the 1000-horsepower, 6600-volt 500 revolutions per minute General Electric motor that drives the scale breaker. Next is the Westinghouse 4500 horsepower, 370 revolutions per minute, 6600-volt motor that drives the broadside mill. Then comes the 500-horsepower Crocker Wheeler 500 revolutions per min-



Disk-type cooling table with disks staggered to obviate spot cooling. The rolls are balanced dynamically and statically and are ground to a smooth finish

ute motor used for the slab reducer. Half way down the room is the big 7000-horsepower Westinghouse motor, direct connected to the 4-high reversing mill. This motor operates at 40-80 revolutions per minute. Adjacent to this unit is mounted another 600-horsepower, 700-volt direct-current compound Westinghouse motor operating at 125-406 revolutions per minute and driving the vertical edger through a gear reduction. Four 5000-horsepower Allis Chalmers motors connected to heavy gear drives furnish the power for the finishing train. The first three of these motors are 110-250 revolutions per minute units and the last operates at 125-265 revolutions per minute, mill delivery speeds ranging from 655 to 1386 feet per minute on the last finishing stand.

Antifriction Bearings Widely Used

On leaving the last stand of the finishing train, the plate advances to a runout table, equipped for the first 60 feet with a series of cooling sprays. The rollers on this table are individually motor driven and are made of centrifugally cast iron, ground to a smooth finish. Likewise, all apron plates and skids on the transfer tables are made of cast iron with a ground finish to eliminate the possibility of scratching the finished plate while it is still hot.

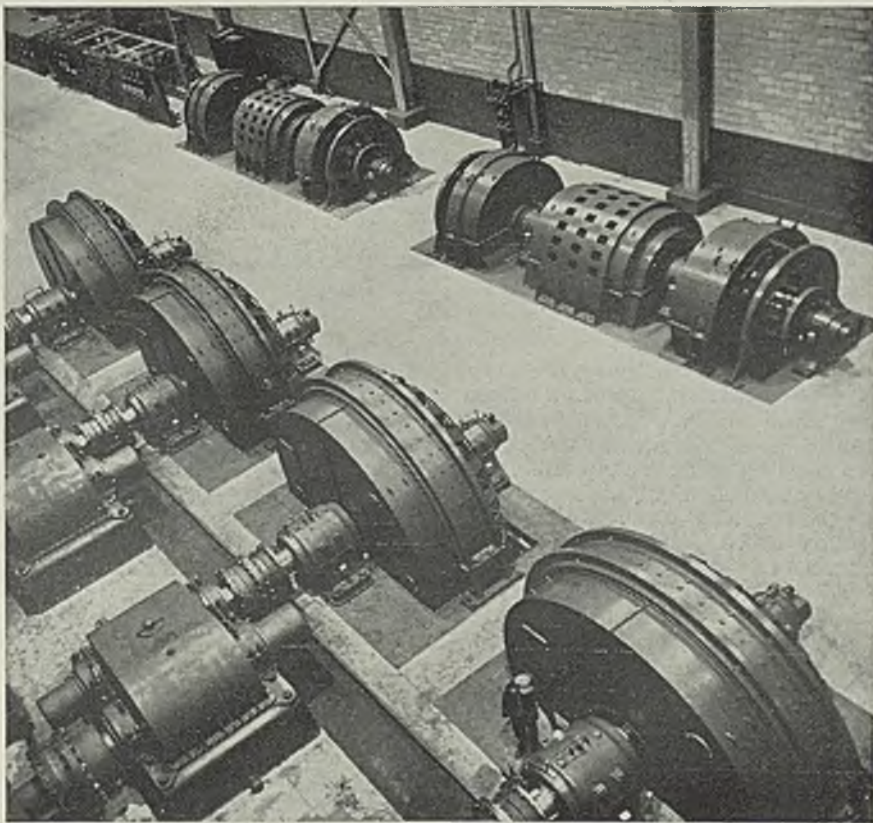
To assure smooth operation, freedom from friction and power losses as well as low lubrication and maintenance charges, all roller tables with the single exception of the low-speed unit, which brings the cold slabs to the magazine feeder, are equipped with antifriction bearings. Timken bearings are used on the driven ends of the rollers and cylindrical bearings on the floating ends as shown in the accompanying diagram.

From the runout table the plate is transferred by a cable type transfer to a second cooling table feeding to a specially designed roller leveler. This unit has two 12 x 108-inch pinch rolls and 17 leveling rolls, 8 x 108 inches, and flattens product up to 5/16-inch thick. Each corner is adjustable individually and the whole unit operates under a fully automatic screwdown mechanism. This leveler is oil cooled and oil lubricated. On passing this unit the plate again advances to a disk or spool type cooling table divided into six sections, each driven by shunt wound motors. The rolls are dynamically and statically balanced and are ground to a smooth finish to avoid scratching or marking of the plate. The disks are staggered to avoid spot cooling.

A second leveler equipped with two pinch rolls 12 x 108 inches and 11 leveling rolls of the same

size, water cooled and grease lubricated, is located at the end of the disk-type cooling table and flattens product 5/16-inch thick and over. This leveler is of the same type as the preceding one. It in turn delivers the leveled and nearly cold plate to another table from which a rack type transfer mechanism moves it across to a roller table. This in turn discharges to a disk type marking table leading to a shear which crops or divides the plate as required. It is interesting to note that the product of the mill

the Homestead plant, eliminate the difficulty known as "shear bow" which formerly was encountered in plate shearing. Four heavy pneumatic fingers hold the plate in place while a specially heat-treated curved shear blade rocks across with only point contact. This results in a clean, smooth and even cut without strain and leaves the plate without any visible bow. A 150-horsepower direct-current motor operates this unit through a gear reducer also built at Homestead to suit the special needs of this new and novel



Ventilated motor room showing four 5000-horsepower motors for driving the finishing mill rolls to effect delivery speeds ranging from 655 to 1386 feet per minute

comes to the crop shear without fishtails or ragged ends, and ordinarily a 10-inch crop will square up either end.

After cropping, the plate again is transferred, this time on a chain type mechanism, to a table leading back to the rotary shear which trims the edges. So accurate is the rolling operation that practically no camber exists in the plates, and as a result only about 1 inch to 1 1/4 inches need to be sheared off the edges of the plate to square it up into saleable material of uniform gage and width.

The plate again is transferred, this time by a cable type transfer, to the roller tables leading to either of two rocking type end shears. These shears, designed and built at

shear. Selsyn indicators at the operator's pulpits enable them to control plate lengths to 1/32-inch, with a maximum length of 60 feet, by means of overhead traveling gages.

All shears are equipped with the latest United design continuous scrap cutters which feed directly into scrap buckets easily accessible by the cranes. Conveyors bring the crop ends to the cutters except in the case of the rotary shear, where the side trimmings feed directly into scrap cutters operated in unison with the rotary shears.

From the rocking type shears the plates move on to the stacking beds, passing over recording scales which automatically print tickets for each plate, giving full details as to heat

(Please turn to Page 64)

Plate Mill SCREWDOWN CONTROL

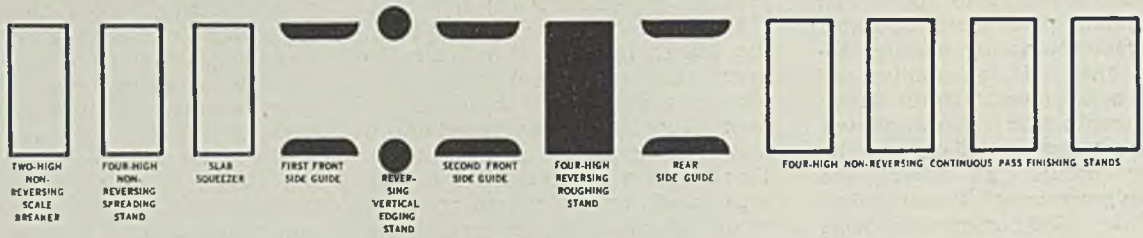


Fig. 1—Plan view of 100-inch semicontinuous plate mill showing sequence of operation

Roughing Operations on New Homestead Plate Mill Are Controlled Automatically

UNIFORMITY of gage, accuracy of shearing, freedom from shear bow, and a surface finish that is comparable with that produced on modern strip mills, are a few of the characteristics claimed for the products of the new 100-inch semicontinuous plate mill recently placed in operation at the Homestead Steel Works of the Carnegie-Illinois Steel Corp., Munhall, Pa.

After emerging from the furnace, the average slab is given one pass through a scale breaker, one pass through the spreading stand, and one pass through the squeezer which squares the edges and trues the width of the piece.

Upon completion of these operations, the piece is sent to the reversing roughing stand to be reduced by a preset rolling schedule and under automatic control, in three, five or seven passes to the thickness required for rolling in the four tandem 4-high finishing stands.

This reversing roughing stand has a set of horizontal rolls and a set of vertical rolls with individual motor drives and three sets of side guides. As shown in Fig. 1, one set of front side guides is located ahead of the vertical rolls, the other set between the vertical and horizontal rolls, and the third set at the rear side of the mill to guide the steel when entering the horizontal rolls from the rear.

How Guides Are Set

When entering the mill from the front, the slab is guided by the vertical rolls and two sets of front side guides and for this purpose, these are set to a dimension corresponding to the width of the slab being rolled. The rear side guides are set 4 inches wider than the width of the slab, so as not to interfere with the piece as it leaves the rolls at the rear side of the mill.

When the slab is reversed to enter from the rear, the rear guides are moved in to correspond to the width of the slab, and the vertical rolls and front side guides are moved out a maximum of 4 inches to give the necessary clearance.

Automatic operation of these movements of the vertical rolls and side guides and the proper horizontal roll drafts are secured from the single push button station. It is necessary to press this button only once for each pass. This gives horizontal roll drafts of exact dimensions corresponding to the preset schedule and vertical rolls and side guides move automatically to their correct positions.

The control equipment for the automatic operation of this mill was

designed and built by the Electric Controller & Mfg. Co., Cleveland, and includes:—

- 1—One synchronous tie-motor mounted on the mill housing and geared to the screwdown drive. Only five wires run from this motor to the differential cut-out and plug-in assembly which contains the other synchronous tie-motor.
- 2—One full magnetic, reversing, plugging, dynamic braking, duplex controller with armature shunt for operating the two 75-horsepower horizontal roll screwdown motors in parallel (mounted in control room). Fig. 4.
- 3—Two full magnetic, reversing, nonplugging, dynamic braking controllers with armature shunt for the two 25-horsepower vertical roll screwdown motors (mounted in control room).
- 4—Three full magnetic, reversing, nonplugging, dynamic braking



Fig. 2-A—Front of differential cut-out and plug-in panel assembly



Fig. 2-B—Rear of differential cut-out and plug-in panel assembly

controllers with armature shunt for three 7½-horsepower side guide motors (mounted in control room).

- 5—One synchronous tie-motor, differential cut-out and panel assembly. This contains the plug-in panel which is designed to permit pre-selection of roll openings for two complete rolling schedules, designated "A" and "B". This assembly is mounted in the operator's pulpit directly behind the operator. Rolling schedules can be set by the operator in accordance with the instructions of either the mill superintendent, or the metallurgist. Figs. 2-A and 2-B.
- 6—Operator's desk mounted in the front of the operator's pulpit, containing push buttons as shown in Fig. 5. Mounted on the sides of this bench are two master switches; one for hand operation of the vertical screw-down and side guide motors, and the other for hand operation of the horizontal screw-down motors. These master switches are for emergency operation in case of a mill cobble or similar condition.

- 7—Five waterproof cam-type limit switches, Fig. 3, complete with magnetic declutching units furnished for use on the two vertical rolls and the three side guides. A magnetic clutch for coupling the horizontal screw-down motors and two-limit switches for final limit of this drive also are used.

Mounted on the operator's desk is a row of lights, numbered 1 to 7, to keep the operator informed as to which pass is in use. Two other pilot lights indicate whether schedule "A" or schedule "B" is being used and two colored lights indicate the position of the vertical rolls and side guides; a green light shows them in the "in" position for odd numbered passes (1, 3, 5, 7) and a red light indicates the vertical rolls and side guides are in the "out" position ready for rolling even numbered passes (2, 4, 6).

The foregoing equipment is designed to provide full automatic operation of the seven motors (horizontal rolls, vertical rolls and side guides) from the one push button called the screwdown operating button. When this is pressed, all motors are started and are stopped automatically at their respective positions, the vertical rolls and side guides by their individual limit switches and the horizontal rolls at the proper opening called for by the preset differential cut-out.

For semiautomatic operation, the horizontal rolls are operated by the screwdown operating button and the vertical rolls and side guides are hand controlled by their common master switch mounted on one side of the operator's desk.

For entire hand operation, the

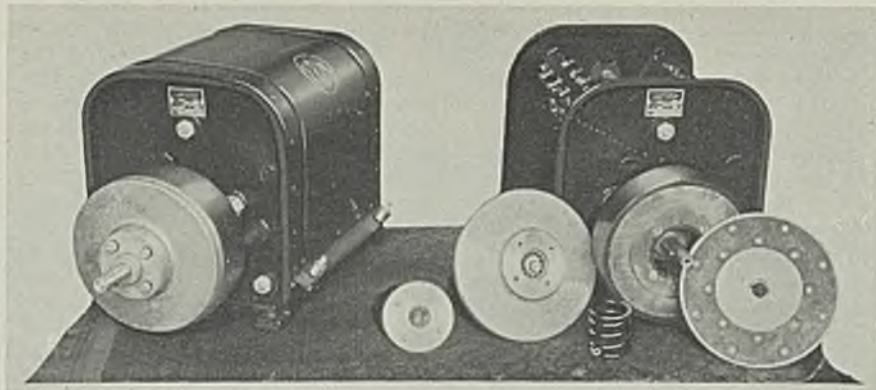


Fig. 3—Completely assembled and exploded views of rotating cam limit switch with spring-set, magnetically-released clutch

motors driving the horizontal rolls are operated by the master switch mounted on the other side of the operator's desk. They may be started, plugged and stopped by this master switch. The other five motors are started and stopped from their single master switch or stopped by their limit switches.

Equipment Mounted on Panel

The set-up or plug-in panel on which rolling schedules are preset contains on the left hand side, 20 rows of receptacles with indicating plate reading from 0.000 to 0.475 in increments of 0.025-inch per row. In the middle are four plates having numbers from 1 to 7 on each plate and with but one receptacle per row. The upper two plates are for seven passes on one schedule and the lower two for the maximum

of seven passes on the other schedule. There is a main and vernier plate for each schedule. On the extreme right is another group of receptacles (14 rows) with indicating plates reading from 0.000 to 6.50 representing increments of 0.50-inch per row. Fourteen flexible cords are provided for each schedule for making the setup.

For example, assume that it is desired to stop the horizontal screw-down at 4.575-inch for No. 1 position. To get this setting, cord No. 1 of the main rheostat is connected in receptacle 4.5 and cord No. 1 of the vernier rheostat is connected in receptacle 0.075. The sum of the two figures gives 4.575 or the desired stopping position. Cords No. 2 of the main and vernier rheostats then are connected in the desired receptacles the sum of which equals

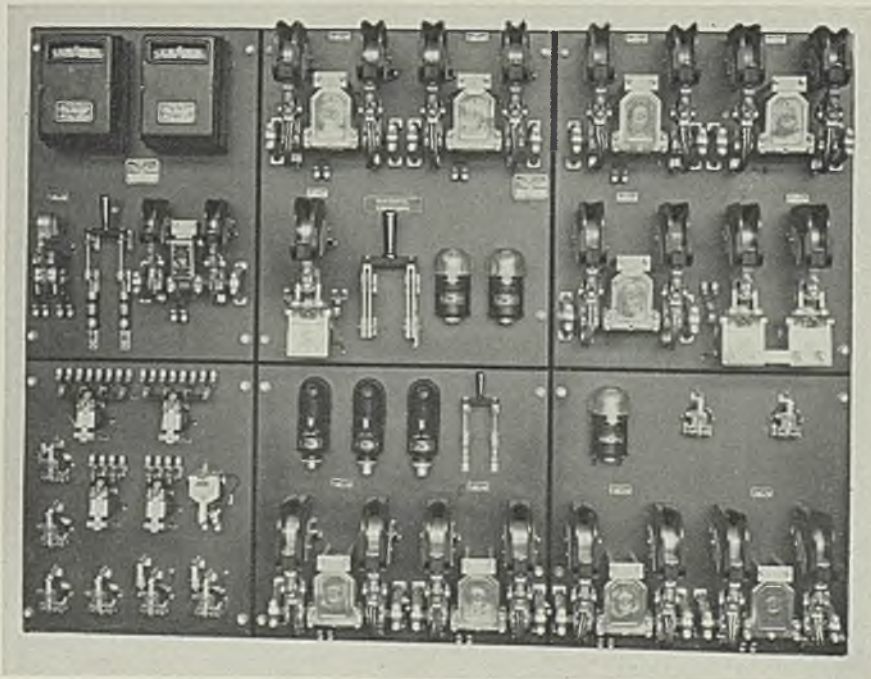


Fig. 4—Standard duplex screwdown controller. Meter and relay panel for automatic control system is shown at left

the desired stopping point for No. 2 pass. The other passes are set up in the same manner. On the upper part of this plug-in panel are mounted the two multipole schedule relays which are controlled remotely from the operator's desk to enable him to connect in either schedule "A" or schedule "B."

When operating on one schedule for example, schedule "A," it is possible to set up or change schedule "B" without interfering with the automatic operation of schedule "A," so that if it is desired to change the schedule, the push button "B" can be pressed, which disconnects schedule "A" and immediately connects in schedule "B." It

disengaged from their drives by pressing the "clutch" push button on the operator's desk, freeing the limit switch and permitting the vertical roll and side guide motors to be moved out to the new positions under control from individual push buttons located on the operator's desk for each drive. The position of these drives is indicated by productimeters located on the front of the operator's desk and when the vertical rolls and front side guides are moved to a position corresponding to the width of the next piece to be rolled, these motors are stopped and their respective limit switches re-engaged to operate within 4 inches of travel from this setting.

plug-in panel to connect in the proper schedule for rolling. If the indicating light shows the differential cut-out is set for any pass other than No. 1, he presses the "Return-to-1" button. The screwdown operating button then is pressed and the horizontal rolls move to the position for the first draft; the two sets of front side guides and vertical rolls being in a position corresponding with the width of the slab and the rear side guide in a position 4 inches wider than the slab. When the horizontal rolls move to the position required for the first draft, the differential cut-out immediately presets itself for pass No. 2, so that after the slab has passed through

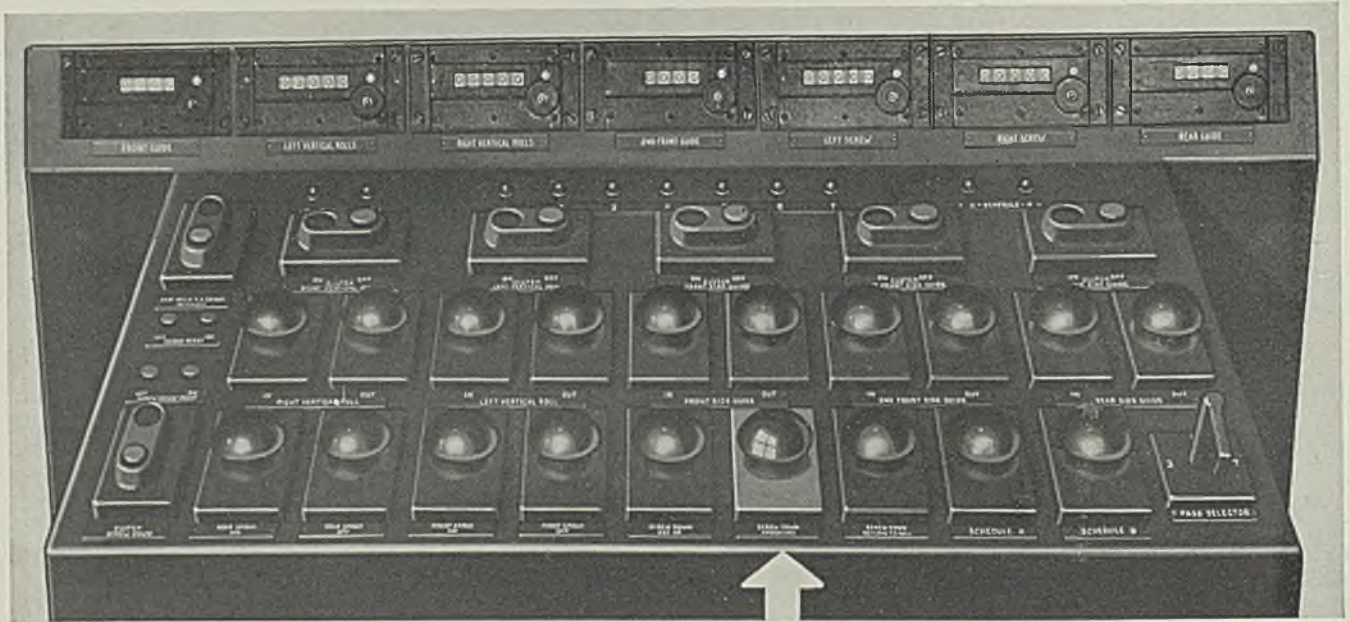


Fig. 5—Top view of operator's desk. Manually operated master switches for hand control are mounted on either side of the desk

is not necessary, therefore, to complete one rolling schedule before the other may be used in case an emergency necessitating this change, should arise in the course of operations.

Slabs used by this mill will vary from 22 inches wide up to the maximum width of the mill and to meet this wide range, the limit switches used on the vertical rolls and side guides are provided with spring-set clutches which are arranged for magnetic release from push buttons on the operator's desk. By this method of operation, compact limit switches requiring little space, can be used. These are of the rotating cam type and when making approximately 300 degrees rotation, allow a maximum travel of 4 inches within which the vertical rolls and side guides are controlled.

When it is necessary to change the width of vertical roll and side guide openings to accommodate a wider slab, the limit switches are

The rear side guides are moved out to a position corresponding to 4 inches more than the width of the new slab at which point their limit switch is reconnected to give 4 inches travel. A selector push button now is pressed for the automatic position and these drives automatically assume their correct position for each pass when the screwdown operating button is pressed.

Operation Is Automatic

After the rolling schedules have been preset on the plug-in panel and the vertical rolls and side guides set for the correct width, the mill is ready for the slab. Assume that seven passes are to be used, the operator moves the pistol grip switch (lower right hand corner of operator's desk) to the position designating this number of passes. He then pushes one of the two push buttons to close either of the multipole schedule relays on the

the horizontal rolls, the operator needs only press the screwdown operating button. This causes the horizontal rolls to move down and automatically stop at the correct position for the proper draft when the slab is returned through the mill. At the same time the horizontal rolls start, the rear side guides move in, the two sets of front side guides and vertical rolls move out and are stopped in their respective positions by their individual limit switches. This cycle of operation is repeated automatically until seven passes are made and then the differential cut-out returns to the No. 1 pass position, ready for the next piece. If only five passes are used, the differential cut-out returns to No. 1 pass after the fifth pass. For three passes, it presets to No. 1 pass when the horizontal rolls have moved to the correct position for No. 3 pass; this differential cut-out always presetting the limit switches

(Please turn to Page 61)

For a TIGHT TANK TIE-UP...



One of three large wood pickling tanks with Monel tie rods, nuts and washers built by Hauser-Stander Tank Company. Built of long leaf yellow pine timbers 8" thick, with 1" diameter hot rolled Monel tie rods. Each tank is 18' 4" long, 8' 9" wide and 9' 7" deep inside. Each tank used 74 tie rods weighing 2700 lbs.

Hauser-Stander relies on Tie-Rods of Monel

USERS of large pickling tanks know from long experience that Hauser-Stander tanks are good ones to tie up with.

All the properties it takes to keep a big tank tight, Monel* tie rods combine: First, of course, tie rods must have strength. Monel is both stronger and tougher than bridge steel.

Most tie rods can hold a tank when they're new. But what happens when rust and corrosion from strong pickling acids work on the rods a few months? Do tanks spring leaks then? Does rust or corrosion cause thread-stripping? Do repairs soon pile up costs, and does replacement come all too soon?

It's the way Monel answers those questions that accounts for its widespread use. Many owners have kept careful check on Monel rods they've used for years . . . and find small loss in weight with consequent retention of strength.

Rust? . . . Monel cannot, not in a life-

time. And when you tighten Monel rods, users say you need never worry about breakage, thread stripping, or frozen nuts.

So it's Monel's great tie-up that puts it in the modern pickling tank. It's the only usable metal that ties up the strength you need with the corrosion resistance to hold that strength.

Rods of course are not the only use for Monel. It is equally practical for pickling crates, racks, chains and hooks. Fabricate it to any shape you need.

Get the facts on Monel, then decide. Let us send you two practical booklets: "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.

News Flashes

CRATES AND TANKS FOR ETCHING GLASS

The resistance of Monel to hydrofluoric acid is demonstrated in the glass etching field. Recent reports from users state that some Monel crates purchased 15 years ago, handling glassware in the etching process, are as good as new. Likewise, after seven years' service, a Monel tank used to hold the concentrated hydrofluoric acid solution is showing no evidence of corrosion.

ADDITIONAL STRENGTH WITH LESS WEIGHT

Fifteen Pacific type steam locomotives, recently put in service on the Belgium-Luxembourg Railway system, are capable of hauling a 440-ton load at a speed of 75 miles per hour. A low carbon 2.15 per cent Nickel-carbon-steel having a tensile strength of 75,000 pounds per square inch was used for the boiler shell. Its additional strength permitting a decrease in plate thickness.

NI-HARD IN SAND BLASTING

In sand-blasting rooms it is often desirable to cease cleaning operations, yet to continue the blast. In this case, the nozzle is inserted in a length of steel pipe to prevent damage. The Symington Company of Rochester, New York, considered a life of two weeks average for such pipes—yet when they adopted NI-Hard made from a cast iron containing 4½ per cent Nickel and 1.5 per cent chromium, they found little wear after 5 months of service.

MONEL BOLTS IN BRIDGE CONSTRUCTION

Rusted steel bolts and other fastenings in the raising mechanism of the drawbridge over the Cuyahoga River, Cleveland, interfered with its proper operation. Replaced with Monel, these parts no longer cause difficulty.

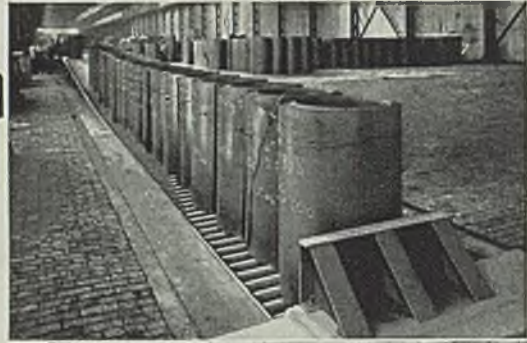
MONEL

*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.



YES... STEEL MILLS DEMAND THE BEST IN CONVEYOR CONSTRUCTION

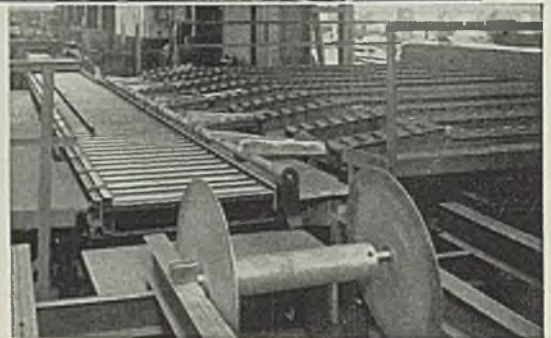
HEAVIER LOADS



HIGHER SPEEDS



ENGINEERING PRECISION



A steel mill installation demands the best that the conveyor engineer and builder can create. Why? Because the heavy concentrated loads of coils, sheets, packs, bar or moulds mean *heavier loads*, the pace of production in the mill requires *higher speeds*, and the constant demand for lower handling costs commands *engineering precision* throughout the job . . . For more than 31 years the Standard Conveyor Company has met the exacting requirements of the steel mill—as hundreds of successful installations in this industry prove . . . There is a Standard Engineer near you to study the special handling needs of your mill. Call him in or write for Bulletin S-1 "Conveyors by Standard for Steel Mill and Foundry."

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Materials

Handling

Tractor Is Redesigned To Combine Pleasing Appearance with Utility

KEEPING pace with the modern trend in design, even in things mechanical, manufacturers of materials handling equipment are tending toward streamlining and other effective means of coupling beauty of outward appearances with greater general utility of their machines. One of the most recent converts to this class is the Cleveland Tractor Co., Cleveland. This company has redesigned completely one of its line of tractors, and the accomplishment is best described by a comparison of accompanying illustrations. Fig. 1 shows the tractor before the changes had been wrought, while Fig. 2 shows the finished product after the redesign artists and plant

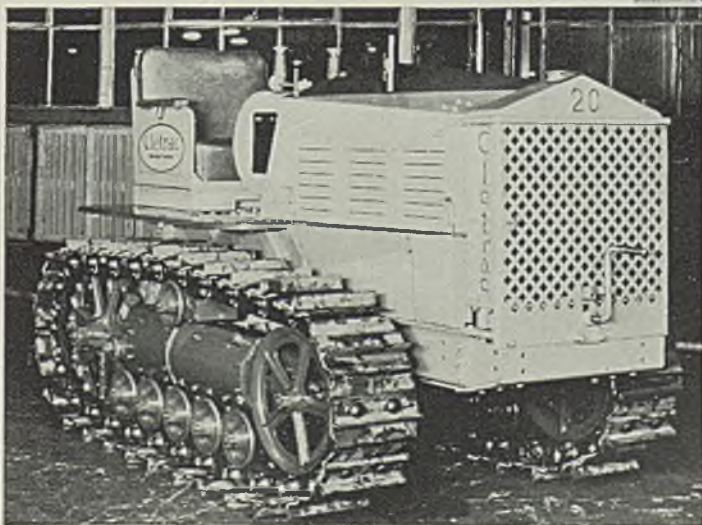
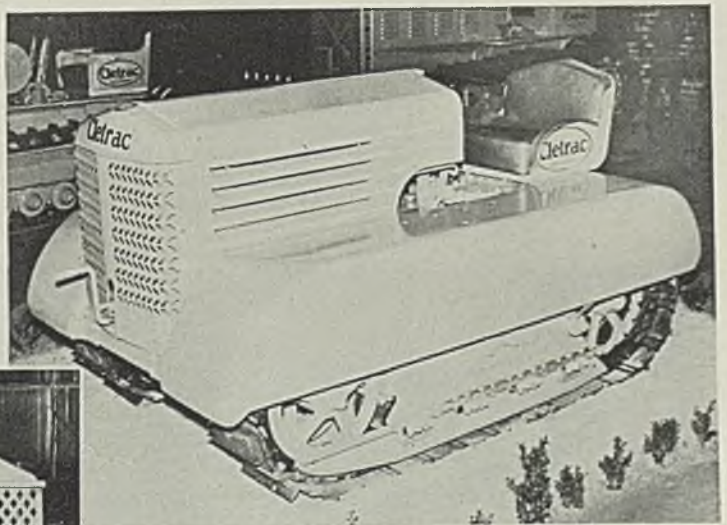
production force had completed their labor.

Actual work of redesign was done by Lawrence Blazey, a member of Designers for Industry Inc., Cleveland. The original machine displayed broken lines because of the irregular castings, projecting ribs, bolts and connections which were employed. Exhaust and air intake pipes protruded from the top of the hood. The major problem in

redesign, therefore, was to fabricate the metal so as to eliminate all projections and bad breaks in the contour.

The front radiator guard in the new machine is $\frac{3}{4}$ -inch thick, and its forming and piercing presented a problem, but experiments in the shop finally produced a solution. The pierced design carries out the directional lines of the louvres, which are indented for smoothness. The problem of smoothing the outside was carried out to make the radiator cap flush, likewise the gas tank cover and also the top of the seat were made to conform to the height and shape of the hood. For duty where needed, particularly in front orchard work where it was

FIG. 1 (Below)—The tractor as it appeared before redesign. It presents broken lines because of projections and parts of irregular shape. (Fig. 2 (Right))—The redesigned unit emphasizes smooth, sweeping lines that give a streamlined effect, adding immeasurably to appearance



essential that protection be afforded against damage to trees and to low-hanging fruit, a track guard was added. For regular duty, this guard is omitted.

In the construction of the tractor, materials were selected carefully. The radiator guard, for instance, is a steel plate; the hood is made of sheet steel; and in the water tanks heavy castings are used.

The air intake was diverted under

MATERIALS HANDLING

the gas tank where the air was found to be more free from contamination and the exhaust stack was directed underneath and to the rear. Use of heavy section metals for strength required their fabrication by welding and bolting. Driving controls were lowered and improved in mechanical operation. The seat is formed from two pieces of welded steel to which the leather upholstery is attached. In the old model, the bolts used for assembling the radiator were all exposed on the side; in the new design, the guard covers these and gives the radiator a smooth, even surface.

Even the water tank was cast to fit the sleek appearance of the hood. Side portions of the latter

are removed by sliding to the side, then lifting out, instead of the older method of using lever handles on the outside. Instead of tapering the hood to make it wider at the back and also slanting it up to the rear, the new design simplified manufacture by going back straight with horizontal and parallel sides, thereby reducing the apparent bulk and adding to the gracefulness of the contour. Group assembly of the gas tank, lever ratchets and instrument panel simplified the manufacturing of these parts and eliminated the need of several separate brackets to support each of them. The machine now presents a pleasing compactness and, in addition has production economics.

this degradation is the operation of transferring coal from cars to boats by means of car dumpers, the design of which has been influenced by the demand for high capacities, with only secondary regard for elimination of breakage. The machines now represent invested capital which must be utilized to maximum extent.

Some devices have been installed to permit control of the coal in its passage from the pans to the boats, such as cut-off gates on the chutes and coal retarders in the pans, which have been effective to some extent in regulating the coal flow after the coal has entered the pan. Most of the degradation, however, occurs before the coal reaches the point where it can be controlled by these devices.

Hood for Car Dumper Controls Coal Unloading and Eliminates Breakage

BY W. G. HILDEBRAN

Assistant Secretary, Wellman Engineering Co.

IN THE past few years many large coal companies have invested millions of dollars in plants for classification or preparation of coal to meet the demand for clean, sized coal for domestic consumption. This

coal leaves the preparation plant in perfect condition as to specification, but in transit it is subject to many conditions which result in severe degradation.

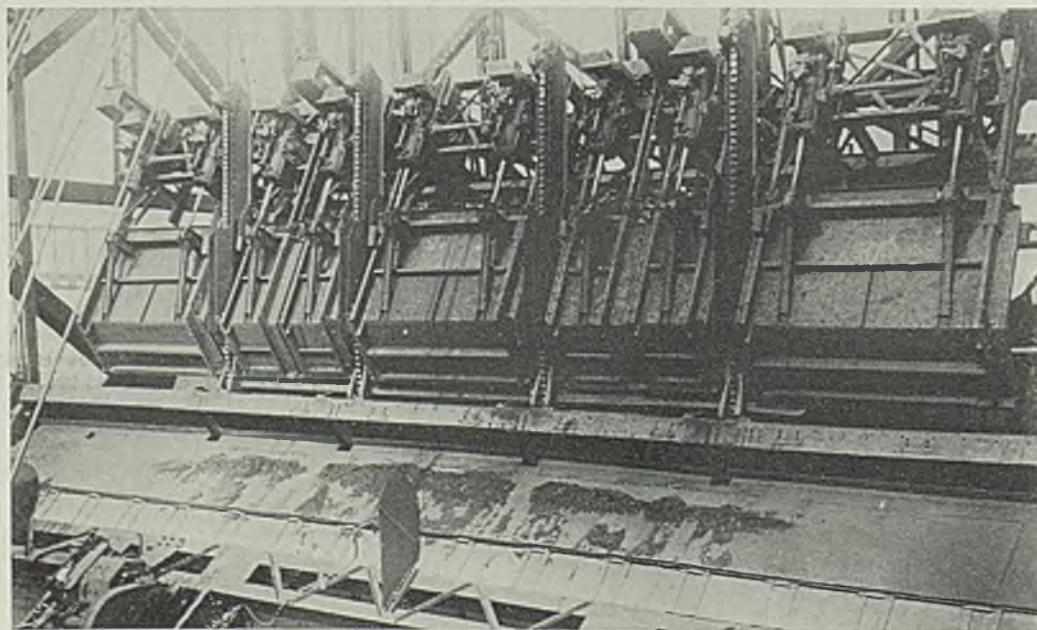
Among contributing factors to

Discharge Is Restricted

This degradation occurs, principally, in the avalanche of coal from the car to the pan, when the cradle and car are inverted to discharge the coal from the car. The coal in this operation rolls out of the car at terrific speed which is stopped only by its contact with the coal in the pan or by the pan retarder.

Past records indicate that the amount of degradation resulting from all operations between the classification plants and the final distribution at destination is between 25 per cent in splint type

(Please turn to Page 61)



FRONT view of coal hood installed on car dumper of New York Central railroad at Ash-tabula, O. Providing control of the speed of dumping, this hood eliminates coal breakage

SURFACE TREATMENT AND FINISHING OF METALS

Chemically Treated Galvanized Sheets Retain Paint and Resist Corrosion

FULL commercial production of a new kind of galvanized sheet which assures good paint bond on iron and steel products has been announced by The American Rolling Mill Co., Middletown, O.

Introduction of "Armco Galvanized Paintgrip" sheets follows several years of intensive research on the part of Armco's metallurgists and the technicians of the Parker Rust-Proof Co., Detroit. This new kind of galvanized sheet metal can be painted without special treatment of the surface by the user.

These sheets, the manufacturers say, are chemically treated to produce a finely crystalline phosphate coating which in itself is neutral to paint (being neither acid nor alkaline) and keeps the paint from direct contact with the zinc surface. This coating is an integral part of the sheet and is slightly granular in nature.

In the past it has been common practice for the user to prepare



Surface of ordinary galvanized sheet as it appears under microscope. X40

zinc coated sheets for painting by roughening the surface either by etching with acid or chemicals, or allowing the surface to weather by exposure to the elements. However, neither of these expedients has proved satisfactory, because it is the tendency of certain zinc compounds to dry up the elastic constituents which are essential to the life of paints and lacquers. As the elasticity disappears, the paint becomes brittle and shows a tendency to crack and peel as expansion and contraction occur with temperature changes.

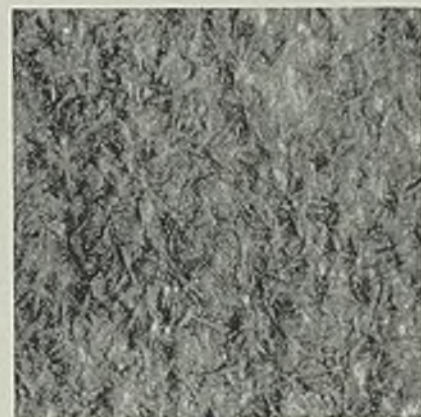
Sheets Available in Any Grade

These chemically treated sheets are available in any of the grades of galvanized sheets manufactured by the company. Analysis of the base metal can be that of Armco ingot iron, plain or copper-bearing steel. When it is required, all grades of these sheets can be supplied stretcher leveled.

Forming qualities of the sheets are the same as untreated galvanized sheets. They may be soldered satisfactorily with the use of hydrochloric acid as a flux. So-called "cut-acid" is not strong enough to penetrate the phosphate film, which must be dissolved before a good solder bond can be obtained.

While sheets shipped from the company's mills are prepared to receive paint without further treatment, handling and fabricating operations in customers' plants will often necessitate cleaning. Organic cleaners such as naphtha, benzine and lacquer thinners are preferred in all cases.

If alkaline cleaners are used, the phosphate surface will be attacked and partly removed by their action.



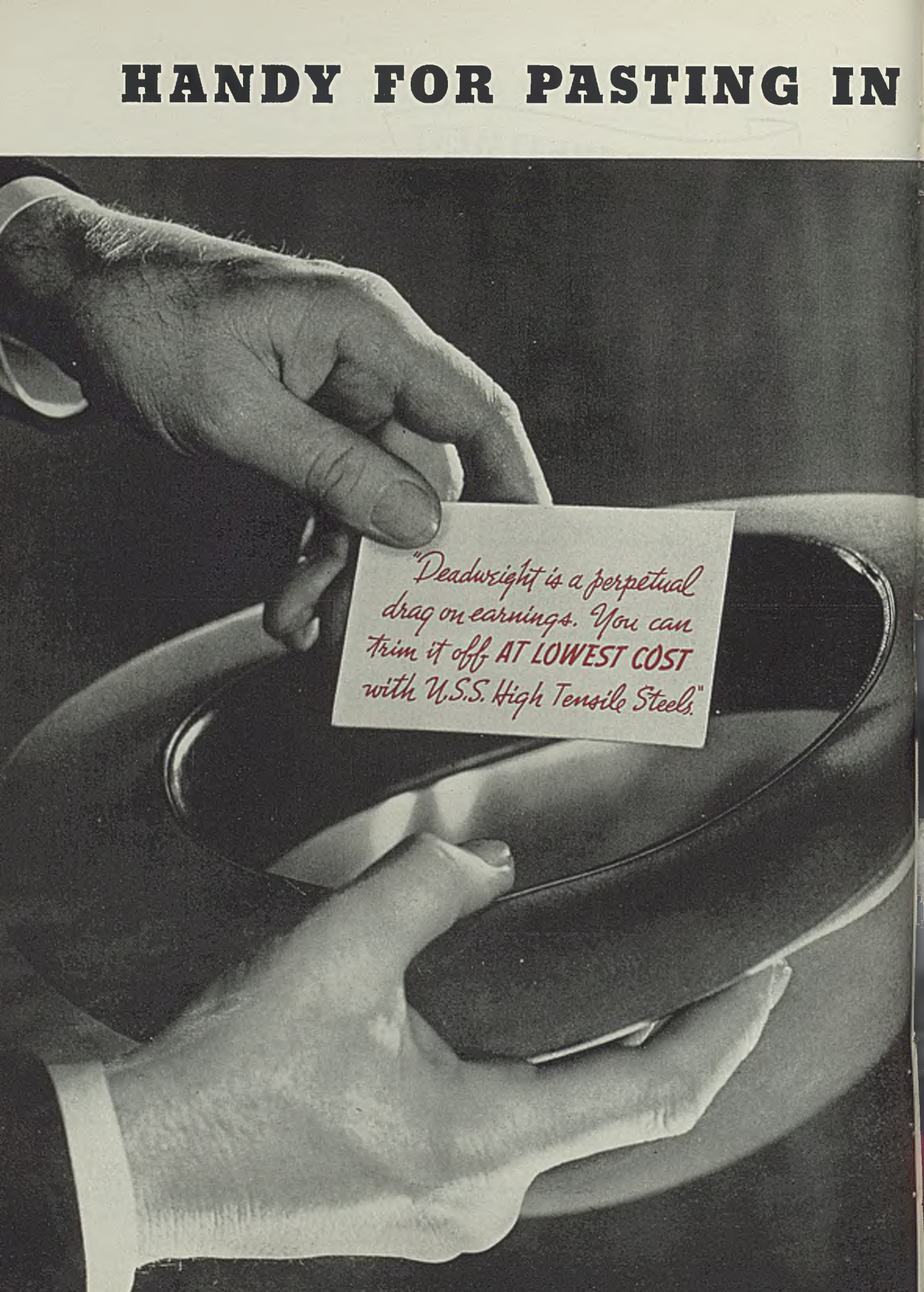
The paint gripping qualities of chemically treated galvanized sheets are made evident by this enlargement. X40

Because of its crystalline absorbent nature, the surface of these sheets will tend to absorb a certain amount of the alkalies which are difficult to remove. Alkaline conditions under a coat of paint are considered one of the most common causes of early paint failure.

Practically any good paint can be applied to these sheets. If baked finishes are used, the paint manufacturer usually recommends a suitable primer. Any good baking system will be found satisfactory, provided the baking temperature does not exceed 450 degrees Fahr. Higher temperatures are apt to be detrimental, particularly if the time of baking exceeds 15 minutes.

Formation of the coating on metal is dependent upon the fact that phosphoric acid solutions will dissolve zinc phosphate within certain definite limits. Passing zinc coated iron or steel products through such a solution results in the formation of the Paintgrip coating which becomes an integral part of the metal surface at the point of solution. Reaction takes place with the evolution of hydrogen, continuing until the metal surface is completely converted to a crystalline phosphate coating.

HANDY FOR PASTING IN



*"Deadweight is a perpetual
drag on earnings. You can
trim it off **AT LOWEST COST**
with U.S.S. High Tensile Steels."*

MACHINE DESIGNERS' HATS

EXCESS weight has no place in modern design or construction. Every pound should justify itself—or be ruthlessly trimmed off. It's not only good engineering—but sound economics.

WITNESS the seasoned opinion of operators of mobile machinery, who have seen at first hand the advantages of light design reflected in increased capacity—lower operating costs—greater revenue.

“Each pound of body weight saved is worth one dollar per year in added earning power,” says a large trucking company. “For each ton of tare eliminated, a ton of payload can be carried, at no increase in cost” is the way the railroads express it. And from a world famous builder of steam shovels comes this statement, “Every pound saved can be directly translated into greater capacity, less time to excavate, less cost for power, fewer equipment hours.”

You can achieve structural lightness, most economically, most safely, with least change in shop methods, by building with

USS COR-TEN and USS MAN-TEN.

In countless applications the greater tensile strength, the increased toughness, the greatly increased resistance to corrosion of these new low-alloy steels have been used to build equipment more than 30% lighter—yet without any sacrifice of strength, safety or durability. That's why among equipment users today “Built of COR-TEN,” or “Made of MAN-TEN” is the recognized mark of a superior, well designed product.

Find out how readily these better steels will fit into your modernization programs, how little it costs to use them, how much they will reduce the weight that now handicaps your equipment. Our engineers can answer all your questions, will be glad to assist you in the use of these steels from drawing board to finished product.

U·S·S HIGH TENSILE STEELS

AMERICAN STEEL & WIRE COMPANY, *Chicago and New York* · CARNEGIE-ILLINOIS STEEL CORPORATION, *Pittsburgh and Chicago* · COLUMBIA STEEL COMPANY, *San Francisco* · NATIONAL TUBE COMPANY, *Pittsburgh* · TENNESSEE COAL, IRON & RAILROAD COMPANY, *Birmingham*

COLUMBIA STEEL COMPANY, *San Francisco, Pacific Coast Distributors*
UNITED STATES STEEL PRODUCTS COMPANY, *New York, Export Distributors*



UNITED STATES STEEL

Electrochemist Reviews Progress in Electroplating Industry During 1936

IN COMMENTING on progress made in electrodeposition of metals, C. B. F. Young, Ph. D., instructor, Columbia university, New York, tells us as follows:

The keynote of the 1936 developments in the field of electroplating has been the production of smooth, thick, bright deposits without buffing.

Thanks to the investigations conducted by colleges, universities, and commercial laboratories the science of electroplating continues to progress. Finishes are now selected for their resistance to corrosion and abrasion, appearance, and durability. Selection of finishes is now handled by competent engineers. The common metals which are now deposited are copper, zinc, lead, tin, nickel, cadmium, chromium, cobalt, and iron. The precious metals now deposited are gold, silver, platinum, palladium, and rhenium. Alloys of brass, black nickel, cobalt nickel, and cadmium zinc are produced in the plating departments of many plants every day. Gold alloying, an ancient art, has

reached a new high peak of perfection.

In the year which has just closed many new ideas which have been developed in the research laboratory have been put to work in the plants. This has led to uniform thickness of deposits, faster production, and fewer rejections. Each year the science of electrodeposition of metals becomes less and less a field of exploitation by the unlearned, and the year 1936 was no exception to the rule.

Anodizing Methods Improved

Aluminum, being high in the electromotive series, is not in the list of platable elements. Although it is possible to deposit aluminum from organic solutions this is not commercially successful. It is quite possible to deposit other metals on aluminum and this is done in a few plants, but considering the number of plants equipped for electroplating, this is insignificant. The anodizing of aluminum continues to be an important finish. This year a new type solution was introduced

for carrying out this process. The process consists of anodizing in a solution of sodium carbonate and trisodium phosphate, and then in a solution of sodium bisulfate.

Cadmium continues to be rather expensive due to its demand in the automobile world. For this reason its sister element, zinc, is being substituted wherever possible.

Cobalt as a pure metal fails to attract attention but the attractive finish produced by alloying it with nickel is attaining wide popularity. Nickel alone has a yellowish tinge while cobalt is blue. United, they produce a hard, attractive, almost silver white alloy which is well adapted to commercial installations.

A new strike solution for depositing copper on iron has been developed. This contains copper sulfate, sodium oxalate, and triethanolamine.

The jewelry trade still demands the gold color on jewelry but desires a finish with the wearing quality of steel. Due to the art of electroplating alloys, this seemingly impossible task, has been accomplished by codepositing nickel, copper, and zinc along with the gold.

Advances Made in Electroplating

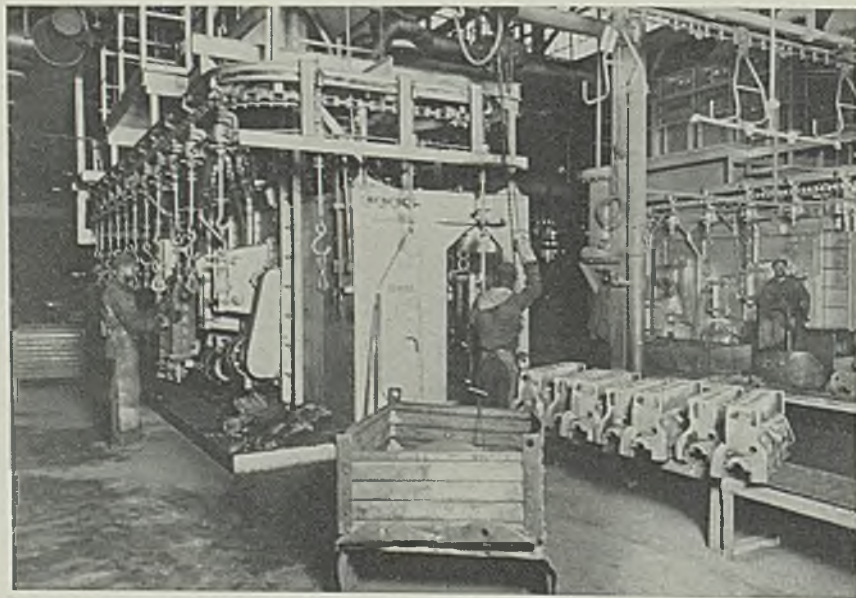
Due to the better coatings produced by electrolytic tin as compared with the thermal process of tin plate one corporation has decided to install the former method. The electrochemical process for producing tin plates is making definite progress over the hot dip method. This new process produces tin sheets free from mottles, porosity, and having an even coating of tin in all places.

Zinc continues to increase in popularity. It has been proven that zinc is better than cadmium for corrosion protection provided sulphur compounds are present in the atmosphere. The electrogalvanizing of wire has taken a very firm hold in the industry.

A new method of producing colored finishes will be introduced in the near future. This process, covered by patents, is rather simple in its application in that only one tank is required for the complete operation. By varying the variables in the electrolytic process almost any color or hue can be produced electrically. Electrocolor is the trade name which is registered in the patent office. The process is owned by United Chromium Inc., New York, who expect to make an announcement concerning this process in the near future.

Metal rectifiers for sources of direct current in electroplating plants have made their bow to industry. This from the point of view of research is a very important development.

Cylinder Block Castings Automatically Cleaned



DESIGNED and built especially for Buick Motor Co., Flint, Mich., these automatic shot blasting machines clean cylinder block castings without the usual discomfort to operators. The machines, built by Pangborn Corp., Hagerstown, Md., have four shot blasting stations, each independently driven, and each one set at a different level to reach a particular section of the casting. Geared hangers support the blocks and convey them from station to station where they are automatically turned to present new surfaces to the blast. Timing is variable and production varies from 180 to 300 blocks per hour, depending upon design

WELDING, etc.

by Robert E. Kinhead

Thin Metal Butt Welder Would Bring High Returns

CAPITALISTS who have difficulty finding places to put money where it will be safe and yield a return might consider putting it into research and development to find improved means of butt welding sheet metal in gages between 0.010-inch and 0.050-inch. The most modest success would pay dividends of such magnitude that the matter of decreased purchasing power of money could be wholly neglected.

Electric spot, flash and arc welding as well as gas welding are applied to thin metal. In the tube field, continuous electric butt welding is used. The difficulty with all of the processes where a butt weld may be made lies in the elaborate machinery and equipment required to do the job and the fact that each job usually requires a different machine. In many cases, the machinery and equipment required is so cumbersome that it simply cannot be applied to the job. Spot welding has been developed into a high speed precision process, but a spot welded seam is an expedient which is adopted because no suitable butt welding process may be applied to the job. The mechanical crudity of the sheet metal construction on aircraft and streamlined trains bears eloquent testimony as to the lack of butt welding methods that are applicable to the job.

Research Given Impetus

The excitement created by announcement of the Longoria welding process soon died out of the newspapers but not out of the industries which may be affected. Two powerful groups, one in Cleveland and one in Eastern Pennsylvania are working on new processes to butt weld thin metal. Whether Longoria had the answer, no one seems to know, but his publicity touched off the activity of at least two groups of people who know how to get the answers.

There is urgent economic need for

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.

improved methods of butt welding thin sheets. Development of such methods would constitute an opportunity for sound investment.

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Uncovering the Big Shots

IT MAY be true that a big shot never looks like one, but if the government continues to publish the salaries of corporate officials the plain citizens will soon have a pretty good idea of who is who among the working men at the top of the heap.

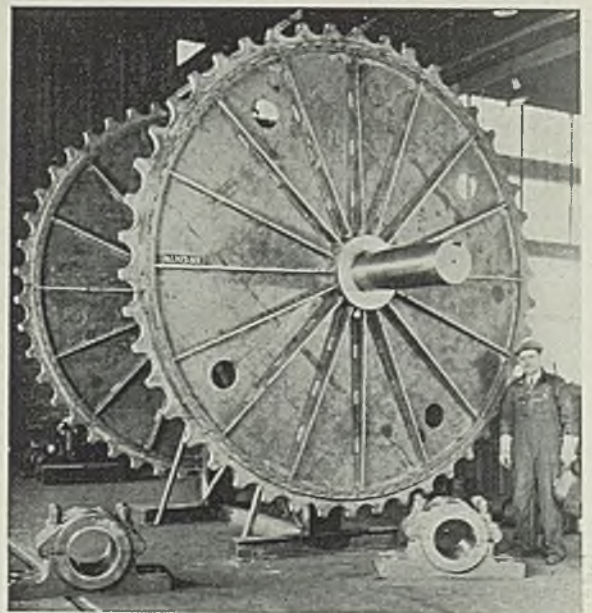
Since it is our privilege to have professional dealings with a good

many individuals in this class, we can testify that it is entirely untrue that a big shot never looks like one. They do look like exceptional people when you see them on their jobs doing the things they do well enough to command a salary of two or three hundred thousand dollars a year. The case is entirely analogous to that of Jesse Owens. On the street, and unannounced, Jesse is just a well dressed colored boy. On the track, he is the greatest runner the country has ever produced.

There are a number of men in the welding industry who earn more than \$50,000 per year. No one could pick them out of a crowd, but they would be easy to identify if they could be seen in action and on their jobs. No one can be good at everything. Possibly that is the reason the really big shot will never voluntarily abdicate from his job;—he knows that he will be just a plain dub at anything else. The bureau of internal revenue is publishing rather exact data on who the big shots are in this country.

Electric Welding Fabricates Giant Sprocket Wheel

MEETING specifications to within $\frac{1}{8}$ -inch limits, this sprocket wheel is claimed to be the largest ever built. Electric welding was used in fabricating the 13-foot wheel, which was fabricated by the Palmer-Bee Co., Detroit, for a vertical core oven in a manufacturing plant. Photo courtesy Lincoln Electric Co.





Profits from Overhead Result from Elimination of Waste in Power Loss

OVERHEAD is considered as a necessary but undesirable expense. To many executives reduction in overhead implies the removal of a few men from the force of so called non-productive workers. This is seldom, if ever, a real economy except where the duties required are then performed by some labor-saving device.

In most industrial plants two divisions of activity, materials handling and power service, usually offer the greatest opportunities for reduction of overhead expenses. "Power service" includes the entire range of power application from the coal pile, or incoming power lines, to the driven head or spindle of the machine and covers a lot of territory.

Factors in Overhead

A point often neglected is that the cost of wastes, losses, stoppages and ineffective operation go into overhead. This is particularly true of power service costs. Breakdowns, time out, repairs and losses in output because of poor drives are all non-productive or overhead expenses; of these the actual repair bill may be the smallest item.

Reduction of power service costs are most easily made by the use of equipment best suitable for the service requirements and by better care of it when installing and in operation. Usually better equipment reduces these losses and often, in addition, the amount of servicing required after installation. The application of systematic regular inspections to keep equipment in first-class operating shape is always an economy, even though it may require an extra man or two on the maintenance force. However, to keep equipment in good shape is more economical and usually requires fewer men than to wait until something happens and then fix

it. This reduction of force may not be possible while putting neglected equipment into good condition, nor may more men be needed for the first year or so in a new installation but after that maintenance and interruption costs mount rapidly if equipment is neglected.

Reductions of overhead through lower power or maintenance costs, elimination of wastes from poor or ineffective drives, providing correct speeds, prevention of frequent and unnecessary stoppages or the application of better and more productive drives are direct aids to profits. For example, \$1000 saved on overhead by any or all of these means is \$1000 earned. This is equivalent to the profit on \$20,000 in additional business, assuming a 5 per cent profit basis. Also, such reductions in overhead are continued on from year to year thus either adding to profits or permitting decreased costs and so increasing opportunities for meeting competitive quotations.

In no other element of plant operation does the adage, "A dollar saved is a dollar earned," apply as fully as in connection with overhead. Even though power service may represent a small percentage of total operating costs real dollar economies can result from careful study and planning of the drives and the entire power service facilities.

Replacing Fuses

SELDOME is it advisable to permit machine operators to replace fuses. If a fuse "blows" frequently the operator would like to replace it with a larger one and usually does, if he can get it. Checking the fuse rating should be one of the duties of the electrician on his periodic inspection trips. Finding solid metal in the fuse clips is a serious offense.

To simplify this checking of rat-

ings some plant engineers stencil the proper fuse rating in or on the box. This simplifies replacement as the proper fuse may be ordered by telephone when the blown fuse is reported, thus permitting the trouble man to bring the proper fuse with him and save time.

Another practice is to use a color scheme to identify fuse signs. A stripe or circle of color is painted in the box and also around the fuse cartridges. A replacement may be ordered by color. The check-up in that case is simplified as the colors must match.

As a fuse is a protective device it can protect only when the proper rating is used. If interruptions are too frequent, investigations are in order to see if the load has been increased or something has gone wrong in the circuits. If the frequency is unavoidable the use of some type of automatic interruption with hand reset may be advisable.

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When a large number of portable electric drills were purchased in one plant an extra unit was dismantled to supply a complete set of spare parts at lower cost than if purchased separately. This was in addition to the extra parts in most frequent demand.

♦ ♦ ♦

Make a careful study of clutches and be sure that the unit selected is designed for satisfactory operation under the speeds and service requirements before installing. Clutches can be a big nuisance; also they can give exceptionally satisfactory operation.

♦ ♦ ♦

Use of elongated pitch roller chain (long side bars) with large diameter rollers on conveyors which ride on guides or surfaces permits the chain to roll instead of sliding, thus decreasing wear on both chain and guides.

TWO GREAT PERFORMERS

THAT HELP *Cut*
Depreciation Costs
TO THE CORE

By adding years to the life of your motors and machines, Morse couplings help cut your depreciation costs to the core. Morse builds two types of couplings. *Standard* (all-steel) consists of two facing, hardened-steel sprockets wrapped in a silent chain which is the flexing medium. The entire assembly is enclosed in a grease-packed dust-proof case. *MORFLEX* couplings use rubber as the flexing medium. They are furnished with or without cover, and require no lubrication. Both *Standard* and *Morflex* couplings are easy to connect and disconnect. For more information, telephone the Morse Coupling engineer in your territory or write to us here in Ithaca, today.

Right: MORFLEX rubber-bushing-type coupling without cover. Center: Morse Standard Coupling on the job. Above: MORSE STANDARD chain and sprocket type coupling without case.



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PROGRESS IN STEELMAKING

New Instrument Measures Thermal Conductivity of Gas Mixtures

ELABORATE tests to determine the most important measurable factors in furnace atmospheres have resulted in the development of a new instrument. Tests covered electric and fuel-fired furnaces, two widely differing sources of gas feed, and a wide range of temperatures with varying air/gas ratio adjustments.

The recorder is of the potentiometer type and is equipped with a chart 12 inches wide. The chart is graduated so as to render the equipment applicable to measure atmosphere quality whether the said atmosphere results from complete or incomplete combustion, or from dissociation.

The equipment operates on the principle of measuring the thermal conductivity of the gas mixture, which is drawn continuously from the furnace. If the gas is the result of complete combustion, the thermal conductivity will be less than 1.00 because of the presence of car-

bon dioxide. If the sample has been produced by incomplete combustion or by dissociation, the thermal conductivity will exceed 1.00 except when there is less than 1 per cent combustible in the final mixture.

The instrument finds wide application in the heat treating industry



Recording instrument designed for chart 12 inches wide

where for best results in preheating, hardening, carburizing, etc., special gas atmospheres must be maintained around the metal. The quality of furnace atmosphere can be established accurately and can be maintained independent of normal variations in furnace pressure, room temperature, and atmosphere humidity. The large scale on the instrument permits operators to continuously observe the condition of their furnace atmosphere even at a distance. The instrument is made by the Brown Instrument Co., Philadelphia.

Peening Retards Cracking

Copper ingot mold stools have a tendency to firecrack after about 125 to 150 heats, according to an investigation completed by an Ohio

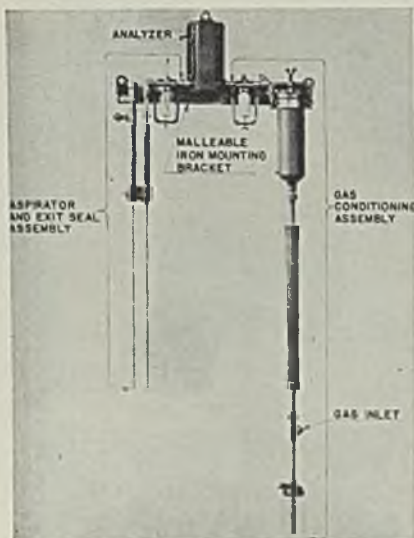
metallurgist. Firecracking may be retarded materially by peening shut the small cracks and thus stop their growth. This practice is followed at one steel plant where the surface of all copper stools are inspected every 50 heats and all cracks closed before they become enlarged.

Oil Becomes Demulsified

That pipe lines of lubricating systems should be removed or disconnected from the oiling system, is proven by a case at a plant in the Pittsburgh district. One of the roll stands and drives was removed from a 3-tandem cold rolling mill but the piping of the oil system was not disturbed because of its being located underground. Some time later many of the bearings in the remaining drives began running hot. Additional oil was added and air applied in hopes of remedying the condition. The bearings, however, continued to run hot. Inspection disclosed demulsification of the oil caused by the presence of sulphuric acid. Further investigation disclosed corrosion of one of the abandoned lubricating lines on account of leakage of acid from nearby pickling tanks. Due to sludge forming on the bottom of the oil reservoir, it was necessary to drain the system and refill with a fresh supply of lubricant.

Walls Are of Glass Block

Something new has been incorporated in the construction of a wire mill in this country. In the building housing the cleaning department glass block has been used throughout the walls to provide light without the introduction of sash which would be subject to destruction by the corrosive acids employed in the pickling process. Fifty-five hundred glass blocks, 7 $\frac{3}{4}$ inches square and 3 $\frac{3}{8}$ inches thick, are employed in this L-shaped cleaning station which has a total area of 11,000 square feet. Its roof covered with book tile is supported by structural tees which eliminate the need for reinforcement and are not subject to chemical reactions.



Equipment for determining quality of furnace atmosphere

MATERIALS HANDLING

Coal Breakage Eliminated By Hood on Car Dumper

(Concluded from Page 50)

coal to 60 per cent in smokeless coal, as handled by customary methods. Considering the value of these coals as represented by 4-inch block sizes and 1-inch slack or screenings, the degradation in handling represents an enormous loss, varying from \$0.50 to \$1.35 per ton.

These losses cannot be recovered but can be largely eliminated by the use of devices designed to prevent the degradation resulting from the ordinary car dumper operation.

In 1934, the New York Central railroad installed on the car dumper of its dock at Ashtabula, O., a coal hood developed by the Wellman Engineering Co., Cleveland. This dock is operated by the Pittsburgh Coal Co., the largest shipper of prepared coal. The device shown in the illustration on page 50 consists of an automatically operated hood which retains the coal in the car until the cradle is turned to an angle of about 100 degrees and is so arranged that at this point gates are opened, allowing the coal to leave the car through an aperture along the dumping edge of the car, and to enter the pan of the car dumper under complete control and without drop. This method of handling prevents the avalanche of coal occurring in unrestricted dumping and eliminates the resulting breakage.

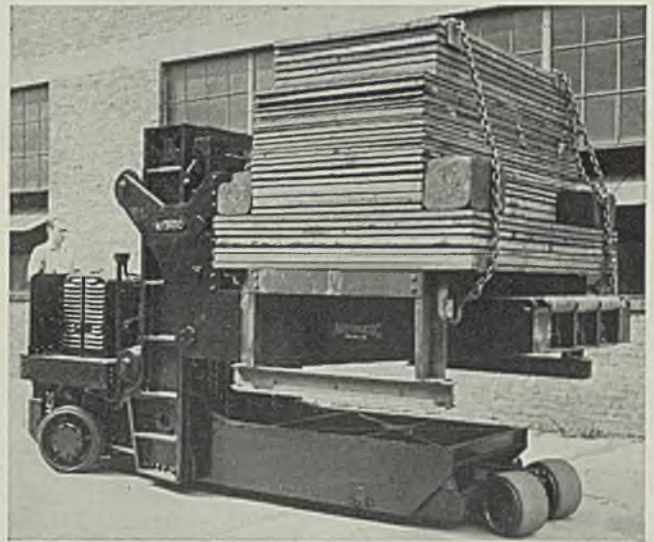
Operation Under Control

The gates are regulated and the speed of opening is adjustable, to suit conditions and the adjustment may be fixed so that all operation thereafter is uniform. If the particular coal does not require careful handling, the hood may be locked out and will not further engage the coal until it is desirable to release the locking device and restore operation of the hood gates.

All operations of the hood are automatic, and require no attention from the operator. Hood parts are so counterbalanced that the cradle balance is slightly disturbed. This feature makes its installation possible on existing types of car dumpers.

The device installed at Ashtabula has been in constant and satisfactory operation. Recently one of the hoods has been installed on the new Norfolk & Western railroad

THIRTY-TON loads at various heights are handled by the new platform truck built by Automatic Transportation Co., Chicago. Four roller chains lift the load



car dumper at Lambert's Point, Va. The Wellman company was recently granted a patent on the equipment.

Due to the restraining action of the hood, the capacity of the car dumper when handling block coal is increased about 25 per cent because slow operation of the cradle is not necessary. Before the installation of the hood at Ashtabula, it was customary to slow down the cradle operation, when handling block coal, to approximately 22 cars per hour. This speed has now been in-

creased to 30 cars per hour and the coal is said to be in better condition than before.

Since the first use of this equipment at Ashtabula, it is said that a great improvement has been noted in the condition of coal cargoes arriving at destination. While extremely difficult to estimate, opinions range from 18 to 35 per cent saving in amount of slack. This is a substantial saving on a single cargo, and many times the cost of the equipment on a season's operation.

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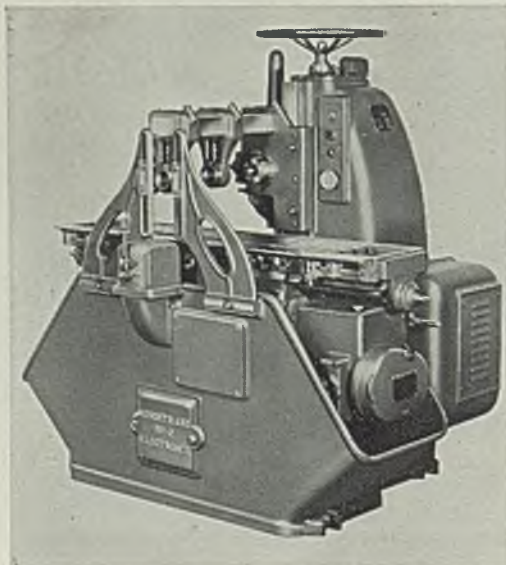
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NEW EQUIPMENT

Milling Machine—

Sundstrand Machine Tool Co., Rockford, Ill., is the maker of a new automatic milling machine known as the No. 2 Electromil. The new machine is a small rigid mill with automatic electric table control for high speed milling on parts for business machines, household appliances, electrical apparatus, fire arms and machinery parts. It can use very simple fixtures and can be set up or changed from one job to another very quickly. The machine has a heavy base, rigid column, rectangular overarm, all of which are common to machines built by this company. Two types are available, one with 18-inch cable feed and the other with 24-inch cable feed. Number of feed changes available is 27 on either machine, and 20 feed changes are available for the spindle. A self-contained pumping unit with independent motor drive is mounted on the rear of the base. Coolant is supplied directly to cutting edges through a pipe housed in the column in a flexible hose. Base, column



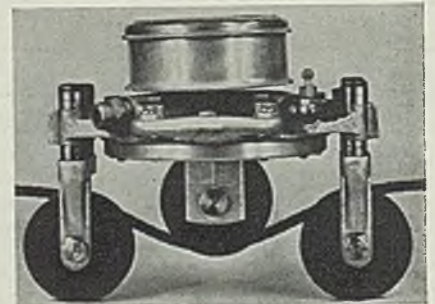
Sundstrand No. 2 automatic Electromil which has been built for high speed milling operations on a production basis

and saddle of the machine are incorporated in one box section casting which contains strainers, baffles and a large reservoir for coolant. Spindle head and feed box gears run in oil bath with convenient sight glasses for checking oil level. A master control station on the column facing the operator gives him finger-tip control of the Electromil. A single lever provides manual control on all table movement for setting up purposes. Automatic operating cycles are established by setting easily adjusted dogs under a guard rail on the front edge of the table.

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Line Weight Indicator—

Martin-Decker Corp., 3431 Cherry avenue, Long Beach, Calif., has recently placed on the market a new traveling line weight indicator which is designed to meet the requirements of those desiring to know the loads on small cables and wires while they are being pulled. The indicator can be placed on a hoist immediately in front of the



Martin-Decker traveling line weight indicator shows the load on small cables while they are being pulled

drum and will measure the load on a line while the line is being hauled in or played out. The device will operate on lines up to ½-inch in diameter and has a capacity of 5000 pounds. The mechanism weighs 15¼ pounds and has a maximum dimension of 12 inches.

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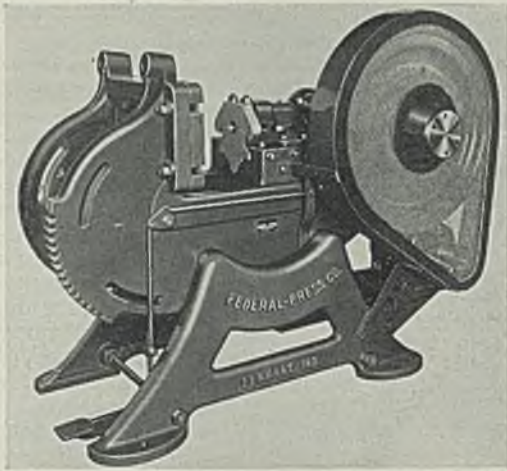
Flexible Couplings—

Boston Gear Works, North Quincy, Mass., has recently introduced a new series of special ball bearing type flexible couplings. This unit



Boston flexible coupling of special ball bearing type carries the balls in the insert

has three jaws and is equipped with an insert having hardened and ground balls, similar to those used in ball bearings, in contact with hardened and ground jaw surfaces to carry the load. The greater flexi-



Federal horizontal open back inclinable press which is well adapted to automatic feeds

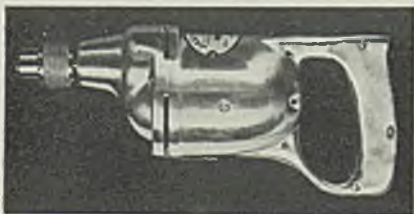
bility of this coupling over an ordinary jaw coupling removes the strain between motor and machine, permitting unrestricted end play of motor shaft. Holes and hubs are soft, which permits alterations to be made in the size of the form.

Inclinable Press—

Federal Press Co., Elkhart, Ind., announces a new line of Federal horizontal open back inclinable presses. Special features of this new press include unusually long ram guides with wide flat bottom and angular top, bearings fitted to gibs with adjustments from either side, making alignment easy. The new press is especially adaptable for automatic feeds such as roll or pinch feeds and is equipped with the improved sliding-key clutch mechanism. The flywheel is mounted on roller bearings, and the machine is equipped standard with bolster plate, upper knock-out bar in ram, knock-out bracket on the frame and is furnished with complete set of wrenches.

Hand Drill—

Jas. Clark Jr. Electric Co., Louisville, Ky., has recently placed on



Jasco junior drill is intended for light duty and intermittent operation

the market a ¼-inch drill of the light duty type which weighs 3¼

pounds with an overall length of 10½ inches. This drill has been designed especially for use in garages, repair shops, and for maintenance where the work is only intermittent. The frame, gear plates and gear heads are sand cast from a special aluminum alloy designed to have great strength and durability. The motor is universal, operating on either alternating or direct current.

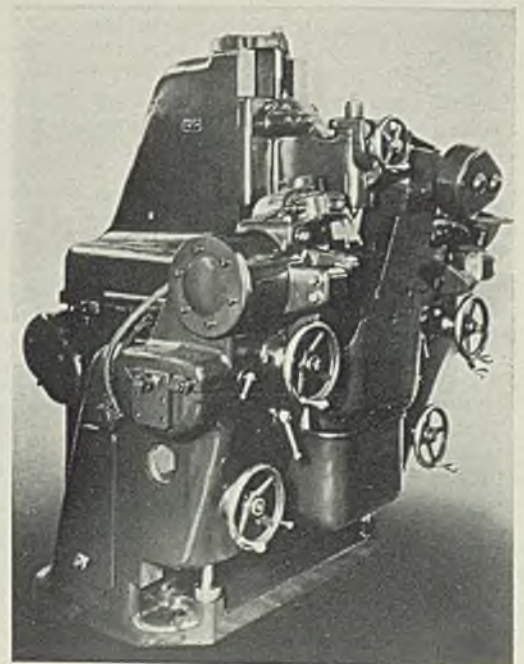
Industrial Analyzer—

Niagara Electrical Instrument Co., One West Genesee street, Buffalo, N. Y., has recently brought out a new industrial analyzer for operation on alternating current through test load conditions on electrical equipment, individual motors and feeder circuit. The meter is equivalent to a group of many separate units, including currents, transformers and multiplying resistors, and dispenses with a maze of con-

necting leads, according to company claims. For a complete power test consisting of the relationship of input kilowatts to output horsepower, volts per phase, and current, it is necessary only to make a current connection, usually accomplished through the dummy fuses, and the voltage connection through insulated snap-on clips and to note the readings on test report forms.

Gear Finisher—

Michigan Tool Co., Detroit, has recently placed on the market a new two-cutter, crossed-axis, rotary gear finisher which has been designed to meet gear finishing requirements of manufacturers who do not have sufficiently long production runs to take full advantage of the rack-type gear finisher. In this finisher the gears are mounted between centers and are passed between two crossed-axis cutters toward the rear of the machine during the working stroke. Feature of the machine is the two cutters can be used independently to finish simultaneously two gears of different characteristics in a cluster or both right and a left hand side of a herringbone gear, thus eliminating duplicate machines and cutting loading and cutting time in half. This is made possible by making the two cutters separately adjustable as to height, position with reference to axis of gears, and the amount of crossed axis settings. Feed of the work back and forth through the cutter is by individual motor drive through reduction gears or rapid return may be obtained by provision of separate motor drives, so that working or return stroke speed can be readily varied by changing pick-off gears.



Michigan Tool Co. is the builder of a new two-cutter crossed-axis rotary gear finisher

Reversing Roughing Stand Serves New Plate Mill

(Concluded from Page 43)

number, etc., as well as weight on the ticket.

Space is available and plans now are being perfected to install a normalizing furnace and leveler, as well as additional tables, etc. A roadway will encircle the entire plant, with convenient loading facilities in the shipping building. The railroad loading track, which runs the full length of the shipping building and is depressed to facilitate handling and accommodation for approximately 30 cars, is now available.

Every piece of machinery in the plant is under a crane. A 10-ton unit takes care of the slab yard and magazine feeder, while two 10-ton cranes serve the slab heating furnaces. A single 100-ton crane with runways 60 feet above floor level takes care of the needs of the mill building, with a 15-ton unit over the mill runoff tables. A 20-ton single hoist and a 20-ton double hoist crane are installed over the shear bay, while four 20-ton double hoist cranes serve the shipping building. These double hoist units, each hoist having a capacity of 10 tons, originally were developed by the Homestead engineers to serve their special needs and do so most efficiently. In the motor room a 75-ton crane is installed and a transfer car provided for moving equipment into and out of the room.

Controls Located in Basement

Although the operating pulpits are elevated the control rooms on the finishing end of the mill are located in the basement. Oil houses, pumps, filters, etc., also are in the basement. Two tunnels run the full length of the mill, one carrying oil lines and the other the high-pressure and cooling water lines. Each piping system is painted a distinctive color and fully identified. Five oil systems, using 32,000 gallons of oil, are installed. One takes care of the pinions and screw-downs, another the gear drive units, the third furnishes oil to the edger, the fourth supplies the motors, and the fifth system is used for reclaiming used oil. De Laval lubricating equipment is used for all oil and a Trabon system takes care of those points requiring automatic grease lubrication.

Full provision has been made for possible emergencies. Where oil circulation is essential, duplicate pumps are installed so that if one should fail the other immediately would take up the load. In the event of both units failing, sufficient quantity of oil always is available

in a reservoir to assure that any material in the mill can be cleared before any equipment could possibly be damaged through lack of lubrication. To avoid the possibility of flood damage through water backing up in the sewers, provision is made to seal all outlets and sumps have been built to take care of seepage, which easily can be pumped out of the plant.

All buildings are paved with concrete, with special wood block sections along those tables and pieces of equipment where men are constantly at work. Brilliant lighting, evenly distributed, is a feature of the plant and the height of the buildings assures good ventilation in warm weather, while forced draft unit heaters maintain comfortable working conditions in all parts of the plant during cold weather.

Roughing Mill Operations Controlled Automatically

(Concluded from Page 46)

for the horizontal rolls one pass in advance of that being used.

During reduction, should the steel become cobbled, or the condition of the piece indicate that reduced drafts or additional passes be required, the operator immediately can resort to hand control by operating the reversing master switch mounted at the side of the operator's desk. This instantly will allow him to move the rolls to any desired opening to meet the unusual conditions but does not disturb the automatic set-up. For example, suppose at the end of the third pass during a seven-pass rolling schedule, a cobbled end or similar unusual condition was encountered, and that one or two passes under manual control would correct the piece for finished rolling under the automatic system. After making the required number of passes under hand operation, the operator need only return this manual master switch to the "off" position to reinstate the automatic system and the remaining passes could be made automatically by operating the screwdown operating button. In case the cobble was removed from the mill unfinished, the "Return-to-1" button is pressed and the differential cut-out immediately presets for the first rolling pass to which the rolls will go

when the screwdown operating button is pressed.

The control is provided with an interlock so that when operating under the automatic system, the synchronous tie-motors must be energized before the screwdown motors can be operated. Overload relays are connected so that upon overload of any one motor, all motors are stopped. The operator's desk also is equipped with four momentary type push buttons for operation of the high-pressure spray system in front and at the rear of the mill which is used to keep the slab completely free from scale.

Accuracy in stopping the horizontal rolls the specified distance apart is within plus or minus 0.005-inch when operated under the automatic control system. In case the diameters of the rolls are changed, an adjustable coupling between the synchronous tie-motor and the gearing of the differential cut-out has been provided so that the system can be kept in step with the productimeter shown at the top of the operator's desk. One turn of the adjustable coupling equals 0.00625-inch change in stopping position or 40 turns equals one turn of the motor shaft which is equivalent to 0.25-inch. This would represent a reduction of 0.5-inch diameter of either roll.

New Book Covers Theory And Practice of Grinding

A course of 10 lectures on the "Theory and Practice of Grinding" has been prepared by the Norton Co., Worcester, Mass., as a result of numerous requests from schools throughout the country for information to be included in their courses. During the selection and preparation of this material the company received the cooperation of many educators interested in the subject and the course was assembled under their guidance. For this reason the lectures are virtually the product of the combined ideas of some of the country's leaders in education.

These lectures have been compiled in a 79-page illustrated book. They include general information on the history and development of grinding, natural abrasives, manufacture of artificial abrasives, manufacture of grinding wheels, characteristics of grinding wheels, their selection and care, fundamental principles used in practice and practical methods used in grinding. They are not intended to be exhaustive but to contain fundamentals which a student should know.

The Norton Co. reports that the book of lectures also is being used by a number of important companies in their apprentice courses.



Strong Demand Overcomes Strike Handicap

Heavy Scrap Buying Shows Confidence; Shape Tonnage Good

EFFECTS of suspensions of steel shipments to General Motors Corp. and other consumers affected by labor difficulties have been negligible. Mills have sufficient outlets for delivery to absorb more than the deferred tonnages. In some cases steel-makers feel sufficient confidence in an early settlement of the strike to continue production of steel on specifications for automobile users, to be prepared to ship promptly when need arises.

Proof of the small current effect on production rates is found in the decline of only one-half point last week from the week before, the rate for last week being 79, compared with 79½ a week earlier. Detroit operations gained five points and New England three; Cincinnati lost three points and Youngstown one. Other producing centers maintained production rates unchanged.

Quiet buying of scrap by large steelmakers in the Pittsburgh and Buffalo districts has been done under cover, only selected dealers being given tonnages. The Pittsburgh purchase is reported to involve 35,000 to 40,000 tons and it is believed \$20 was paid for No. 1 heavy melting, and \$20.50 for railroad steel. Buying of scrap for export is increasing in the East and prices for that purpose have been advanced 50 cents. Italy and Japan are reported to be the principal foreign buyers.

Increased buying of scrap indicates confidence on the part of important steel producers that present heavy demand for steel is likely to continue for some time.

Railroad buying is at a low ebb, partly because of heavy lettings of rails, cars and locomotives late last year and also in a measure because of reduction in freight rates by abolition of surcharges at the year end. Final statistics of freight car lettings in 1936 show a total of 64,643 units, the largest since 1929, when 106,105 were let. In December car bookings totaled 23,450, by far the largest number for any month in 1936. Effects of loss of revenue from removal of the surcharge is reflected in suspension of formal contract for 1500 cars by one railroad, awaiting evidence in its revenues of the effect of surcharge loss.

Rail mills have decided in some instances to spread rollings contracted late last year and extend deliveries beyond first quarter. This is in line with require-



MARKET IN TABLOID

DEMAND *Strong in all lines.*

PRICES *Scrap index again advances 29 cents.*

PRODUCTION . . *Operations ½ point lower.*

SHIPMENTS . . . *Steady, delivery improving.*

ments of railroads, which would not consume their entire purchases in three months.

Structural steel placements are maintaining a high level, a total of 29,346 tons being reported for last week, compared with 16,544 tons for the preceding week and 26,841 tons for the corresponding week in 1936. The largest lot in the past week is 5000 tons for a dam in the Mississippi river at Clinton, Iowa, which also took 613 tons of reinforcing bars.

Shipments of finished steel by the United States Steel Corp. in December, at 1,067,365 tons, surpassed all months since May, 1930, and the total of 10,825,132 tons for 1936 exceeds any recent year.

Advices from England show the steel production rate of more than 1,000,000 tons per month maintained for the fourth consecutive month and a total of 11,698,200 tons for 1936, the largest production in post-war history for Great Britain. This exceeds by about 2,000,000 tons the best year since the war. In pig iron also output is at a continuous high capacity level.

Effects of the automotive labor disturbance on automobile production for the week ending Jan. 16 are smaller than expected. Production estimated by *Cram's Reports* was 91,685 units, compared with 96,780 for the preceding week, a decline of 5095 cars.

Effective Jan. 15 makers of cold-rolled high carbon strip have advanced prices \$5 per ton. This followed an increase in the two lower brackets of cold-rolled strip Jan. 1.

Strength of steelmaking scrap has brought advances in all markets and STEEL'S composite of scrap prices advanced 29 cents to \$18.16. The iron and steel price composite is advanced three cents to \$36.55 for the same reason but the finished steel composite remains unchanged at \$55.80.

COMPOSITE MARKET AVERAGES

| | Jan. 16 | Jan. 9 | Jan. 2 | One Month Ago Dec., 1936 | Three Months Ago Oct., 1936 | One Year Ago Jan., 1936 | Five Years Ago Jan., 1932 |
|---------------------|---------|---------|---------|-----------------------------|--------------------------------|----------------------------|------------------------------|
| Iron and Steel | \$36.55 | \$36.52 | \$36.48 | \$35.15 | \$34.67 | \$33.34 | \$29.65 |
| Finished Steel | 55.80 | 55.80 | 55.80 | 53.90 | 53.90 | 53.70 | 47.28 |
| Steelworks Scrap.. | 18.16 | 17.87 | 17.58 | 16.92 | 16.44 | 13.15 | 8.03 |

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

A COMPARISON OF PRICES

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

| | Jan. 16, 1937 | Dec. 1936 | Oct. 1936 | Jan. 1936 | Pig Iron | Jan. 16, 1937 | Dec. 1936 | Oct. 1936 | Jan. 1936 |
|--|---------------|-----------|-----------|-----------|-------------------------------------|---------------|-----------|-----------|-----------|
| Finished Material | | | | | | | | | |
| Steel bars, Pittsburgh | 2.15c | 2.05c | 2.05c | 1.85c | Bessemer, del. Pittsburgh..... | \$22.31 | 21.8132 | 20.8132 | 20.81 |
| Steel bars, Chicago | 2.25 | 2.10 | 2.10 | 1.90 | Basic, Valley | 20.50 | 20.00 | 19.00 | 19.00 |
| Steel bars, Philadelphia | 2.49c | 2.36 | 2.36 | 2.16 | Basic, eastern del. East Pa..... | 22.26 | 21.8132 | 20.8132 | 20.81 |
| Iron bars, Terre Haute, Ind. | 1.95 | 1.95 | 1.95 | 1.75 | No. 2 fdy., del. Pittsburgh..... | 22.21 | 21.3132 | 20.3132 | 20.31 |
| Shapes, Pittsburgh | 2.05 | 1.90 | 1.90 | 1.80 | No. 2 fdy., Chicago | 21.00 | 20.50 | 19.50 | 19.50 |
| Shapes, Philadelphia | 2.25 1/2 | 2.11 1/2 | 2.11 1/2 | 2.01 1/2 | Southern No. 2, Birmingham.... | 17.38 | 16.88 | 15.50 | 15.50 |
| Shapes, Chicago | 2.10 | 1.95 | 1.95 | 1.85 | Southern No. 2, del. Cincinnati.. | 20.94 | 20.44 | 19.44 | 20.20 |
| Tank plates, Pittsburgh | 2.05 | 1.90 | 1.90 | 1.80 | No. 2X eastern, del. Phila. | 23.135 | 22.6882 | 21.6882 | 21.68 |
| Tank plates, Philadelphia | 2.23 1/2 | 2.09 | 2.09 | 1.99 | Malleable, Valley | 21.00 | 20.50 | 19.50 | 19.50 |
| Tank plates, Chicago | 2.10 | 1.95 | 1.95 | 1.85 | Malleable, Chicago | 21.00 | 20.50 | 19.50 | 19.50 |
| Sheets, No. 10, hot rolled, Pitts.... | 2.15 | 2.10 | 1.95 | 1.85 | Lake Sup., charcoal, del. Chicago | 26.54 | 26.2528 | 25.7528 | 25.25 |
| Sheets, No. 24, hot ann., Pitts.... | 2.80 | 2.75 | 2.60 | 2.40 | Gray forge, del. Pittsburgh | 21.17 | 20.6741 | 19.6741 | 19.67 |
| Sheets, No. 24, galv., Pitts.... | 3.40 | 3.35 | 3.20 | 3.10 | Ferromanganese, del. Pittsburgh.. | 84.79 | 82.65 | 80.13 | 90.13 |
| Sheets, No. 10, hot rolled, Gary.... | 2.25 | 2.25 | 2.05 | 1.95 | Scrap | | | | |
| Sheets, No. 24, hot anneal., Gary.. | 2.90 | 2.90 | 2.70 | 2.50 | Heavy melting steel, Pittsburgh.. | \$19.75 | \$18.55 | \$18.15 | \$14.50 |
| Sheets, No. 24, galvan., Gary.... | 3.50 | 3.50 | 3.30 | 3.20 | Heavy melt. steel, No. 2, east. Pa. | 16.25 | 14.12 1/2 | 13.95 | 11.37 1/2 |
| Plain wire, Pittsburgh | 2.60 | 2.60 | 2.50 | 2.30 | Heavy melting steel, Chicago.... | 18.25 | 17.00 | 16.25 | 13.40 |
| Tin plate, per base box, Pitts.... | \$4.85 | 5.25 | 5.25 | 5.25 | Rail for rolling, Chicago | 18.75 | 17.50 | 16.95 | 14.25 |
| Wire nails, Pittsburgh | 2.25 | 2.20 | 2.05 | 2.40 | Railroad steel specialties, Chicago | 19.25 | 19.00 | 17.75 | 14.45 |
| Semifinished Material | | | | | Coke | | | | |
| Sheet bars, open-hearth, Youngs.. | \$34.00 | \$32.00 | \$32.00 | \$30.00 | Connellsville furnace, ovens..... | \$4.00 | \$4.00 | \$4.00 | \$3.50 |
| Sheet bars, open-hearth, Pitts.... | 34.00 | 32.00 | 32.00 | 30.00 | Connellsville, foundry, ovens..... | 4.25 | 4.40 | 4.25 | 4.00 |
| Billets, open-hearth, Pittsburgh.. | 34.00 | 32.00 | 32.00 | 29.00 | Chicago, by-product foundry, del.. | 10.25 | 9.75 | 9.75 | 9.75 |
| Wire rods, No. 5 to 1 1/2-inch, Pitts. | 43.00 | 40.00 | 40.00 | 40.00 | | | | | |

Steel, Iron, Raw Material, Fuel and Metals Prices

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

| | | | |
|--|------------------------------|--|--------------------------|
| Sheet Steel | Tin Mill Black No. 28 | Corrosion and Heat-Resistant Alloys | Structural Shapes |
| Prices Subject to Quantity Extras and Deductions (Except Galvanized) | Pittsburgh | Pittsburgh base, cents per lb. | Pittsburgh |
| Hot Rolled No. 10, 24-48 in. | Gary | Chrome-Nickel | Philadelphia, del. |
| Pittsburgh | St. Louis, delivered | No. 302 No. 304 | New York, del. |
| Gary | | Bars | Boston, delivered |
| Chicago, delivered | Cold Rolled No. 10 | Plates | Bethlehem |
| Detroit, del. | Pittsburgh | Sheets | Chicago |
| New York, del. | Gary | Hot strip | Cleveland, del. |
| Philadelphia, del. | Detroit, delivered | Cold strip | Buffalo |
| Birmingham | Philadelphia, del. | | Gulf Ports |
| St. Louis, del. | New York, del. | | Birmingham |
| Pacific ports, f.o.b. | Pacific ports, f.o.b. | | Pacific ports, f.o.b. |
| cars, dock | cars, dock | | cars, dock |
| Hot Rolled Annealed No. 24 | St. Louis | Straight Chromes | |
| Pittsburgh | St. Louis | No. No. No. No. | Bars |
| Gary | Pittsburgh | 410 430 442 446 | (Base, 3 to 25 tons) |
| Chicago, delivered | Gary | Bars | Pittsburgh |
| Detroit, delivered | Detroit, delivered | Plates | Chicago or Gary |
| New York, del. | Philadelphia, del. | Sheets | Duluth |
| Philadelphia, del. | New York, del. | Hot strip | Birmingham |
| Birmingham | St. Louis | Cold stp. | Cleveland |
| St. Louis, del. | | | Buffalo |
| Pacific ports, f.o.b. | Enameling Sheets | | Detroit, delivered |
| cars, dock | Pittsburgh, No. 10 | Steel Plate | Pacific ports, f.o.b. |
| Galvanized No. 24 | Pittsburgh, No. 20 | Pittsburgh | cars, dock |
| Pittsburgh | Gary, No. 10 | New York, del. | Philadelphia, del. |
| Gary | Gary, No. 20 | Philadelphia, del. | Boston, delivered |
| Chicago, delivered | St. Louis, No. 10 | Boston, delivered | New York, del. |
| Philadelphia, del. | St. Louis, No. 20 | Buffalo, delivered | Pitts., forg. qual. |
| New York, delivered | | Chicago or Gary | |
| Birmingham | Tin and Terne Plate | Cleveland, del. | Rail Steel |
| St. Louis, del. | Gary base, 10 cents higher. | Birmingham | To Manufacturing Trade |
| Pacific ports, f.o.b. | Tin plate, coke base | Coatesville, base | Pittsburgh |
| cars, dock | (box) Pittsburgh | Sparrows Pt., base | Chicago or Gary |
| | Do., waste-waste | Pacific ports, f.o.b. | Moline, Ill. |
| | Do., strips | cars, dock | Cleveland |
| | Long ternes, No. 24 | St. Louis, delivered | Buffalo |
| | unassorted, Pitts. | | |
| | Do., Gary | | |

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. | Malle-able | Basic | Besse-mer |
|---------------------|-------------|------------|---------|-----------|
| Bethlehem, Pa. | \$22.00 | \$22.50 | \$21.50 | \$23.00 |
| Birdsboro, Pa. | 22.00 | 22.50 | 21.50 | 23.00 |
| Birmingham, Ala. | 17.38 | 17.38 | 16.38 | 21.50 |
| Buffalo | 21.00 | 21.50 | 20.00 | 22.00 |
| Chicago | 21.00 | 21.00 | 20.50 | 21.50 |
| Cleveland | 21.00 | 21.00 | 20.50 | 21.50 |
| Detroit | 21.00 | 21.00 | 20.50 | 21.50 |
| Duluth | 21.50 | 21.50 | 20.00 | 22.00 |
| Erie, Pa. | 21.00 | 21.50 | 20.50 | 22.00 |
| Everett, Mass. | 22.75 | 23.25 | 22.25 | 23.75 |
| Hamilton, O. | 21.00 | 21.00 | 20.50 | 21.50 |
| Jackson, O. | 20.25 | 20.25 | 19.75 | 20.25 |
| Neville Island, Pa. | 21.00 | 21.00 | 20.50 | 21.50 |
| Provo, Utah | 18.50 | 18.50 | 18.00 | 18.50 |
| Sharpsville, Pa. | 21.00 | 21.00 | 20.50 | 21.50 |
| Sparrows Point, Md. | 22.00 | 22.00 | 21.50 | 22.00 |
| Swedeland, Pa. | 22.00 | 22.50 | 21.50 | 23.00 |
| Toledo, O. | 21.00 | 21.00 | 20.50 | 21.50 |
| Youngstown, O. | 21.00 | 21.00 | 20.50 | 21.50 |

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

| Delivered from Basing Points: | | | | |
|---|---|-------|-------|-------|
| Akron, O., from Cleveland | 21.76 | 21.76 | 21.26 | 22.26 |
| Baltimore from Birmingham | 22.58 | 22.58 | 21.46 | 22.58 |
| Boston from Birmingham | 23.87 | 23.87 | 22.87 | 23.87 |
| Boston from Everett, Mass. | 23.25 | 23.75 | 22.75 | 24.25 |
| Boston from Buffalo | 23.25 | 23.75 | 22.75 | 24.25 |
| Brooklyn, N. Y., from Bethlehem | 24.27 | 24.77 | 23.27 | 24.27 |
| Brooklyn, N. Y., from Bmghm. | 24.05 | 24.05 | 23.05 | 24.05 |
| Canton, O., from Cleveland | 21.76 | 21.76 | 21.26 | 22.26 |
| Chicago from Birmingham | 21.22 | 21.22 | 21.10 | 22.26 |
| Cincinnati from Hamilton, O. | 20.82 | 21.58 | 21.08 | 22.26 |
| Cincinnati from Birmingham | 20.69 | 20.69 | 19.69 | 20.69 |
| Cleveland from Birmingham | 21.12 | 21.12 | 20.62 | 21.12 |
| Cincinnati from Hamilton, O. | 21.07 | 21.79 | 20.07 | 21.07 |
| Mansfield, O., from Toledo, O. | 22.76 | 22.76 | 22.26 | 22.76 |
| Milwaukee from Chicago | 22.00 | 22.00 | 21.50 | 22.00 |
| Muskegon, Mich., from Chicago | 23.90 | 23.90 | 23.40 | 24.40 |
| Toledo or Detroit | 23.01 | 23.01 | 22.51 | 23.01 |
| Newark, N. J., from Birmingham | 23.39 | 23.39 | 22.89 | 23.39 |
| Newark, N. J., from Bethlehem | 22.38 | 22.38 | 21.88 | 22.38 |
| Philadelphia from Birmingham | 22.38 | 22.38 | 21.88 | 22.38 |
| Philadelphia from Swedeland, Pa. | 22.76 | 23.26 | 22.26 | 22.76 |
| Pittsburgh district from Neville Island | Neville base plus 67c, 81c and \$1.21 switching charges | | | |
| Saginaw, Mich., from Detroit | 23.25 | 23.25 | 22.75 | 22.75 |
| St. Louis, northern | 21.50 | 21.50 | 21.00 | 21.50 |

| Delivered from Basing Points: | No. 2 Fdry. | Malle-able | Basic | Besse-mer |
|-------------------------------|-------------|------------|-------|-----------|
| St. Louis from Birmingham | \$21.12 | 20.82 | 20.82 | 23.44 |
| St. Paul from Duluth | 22.94 | 22.94 | 22.94 | 23.44 |
| †Over 0.70 phos. | | | | |

Low Phos.

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

Gray Forge

| | | | |
|-------------------|---------|--------------------|---------|
| Valley furnace | \$20.50 | Lake Superior fur. | \$23.50 |
| Pitts. dist. fur. | 20.50 | do., del. Chicago | 26.04 |
| | | Lyles, Tenn. | 24.00 |

Charcoal

Silveryt

Jackson county, O., base: 6-6.50 per cent \$24.50; 6.51-7—\$25.00; 7-7.50—\$25.50; 7.51-8—\$26.00; 8-8.50—\$26.50; 8.51-9—\$27.00; 9-9.50—\$27.50; Buffalo \$1.25 higher.

Bessemer Ferrosilicent

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

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

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

Refractories

Per 1000 f.o.b. Works

| | | | |
|---|---------------|---|---------|
| Fire Clay Brick | | Chester, Pa., and Baltimore bases (bags) | \$45.00 |
| Super Quality | | Domestic dead-burned grains, net ton f.o.b. | |
| Pa., Mo., Ky. | \$58.90 | Chester, Pa., and Baltimore bases (bags) | 42.00 |
| First Quality | | Domestic dead-burned gr. net ton f.o.b. Chelwelah, Wash. (bulk) | 24.00 |
| Pa., Ill., Md., Mo., Ky. | \$45.60 | | |
| Alabama, Georgia | \$38.00-45.00 | | |
| Second Quality | | | |
| Pa., Ill., Ky., Md., Mo. | 40.85 | Base Brick | |
| Georgia, Alabama | 36.10 | Net ton, f.o.b. Baltimore, Plymouth Meeting, Chester, Pa. | |
| Ohio | | Chrome brick | \$47.00 |
| First quality | \$40.85 | Chem. bonded chrome | 47.00 |
| Intermediary | 38.00 | Magnesite brick | 67.00 |
| Second quality | 29.45 | Chem. bonded magnesite | 57.00 |
| Malleable Bung Brick | | | |
| All bases | 54.15 | | |
| Silica Brick | | | |
| Pennsylvania | \$45.60 | | |
| Joliet, E. Chicago | 54.15 | | |
| Birmingham, Ala. | 45.60 | | |
| Ladle Brick | | | |
| (Pa., O., W. Va., Mo.) | | | |
| Dry press | \$25.00 | | |
| Wire cut | 27.00 | | |
| Magnesite | | | |
| Imported dead-burned grains, net ton f.o.b. | | | |

Fluorspar, 85-5

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

Ferroalloys

Dollars, except Ferrochrome

| | |
|---|------------|
| Ferromanganese, 78-82% tidewater, duty paid | 80.00 |
| Do., Baltimore, base | 80.00 |
| Do., del. Pittsburgh | 84.79 |
| Spiegeleisen, 19-20% dom. Palmerston, Pa., spot | \$26.00 |
| Do., New Orleans | 26.00 |
| Ferrosilicon, 50% freight allowed, c. l. | 69.50 |
| Do., less carload | 77.00 |
| Do., 75 per cent. Spot, \$5 a ton higher. | 126-130.00 |
| Silicomane, 2 1/2 carbon | 89.00 |
| 2% carbon, 94.00; 1%, 104.00 | |
| Ferrochrome, 66-70 chromlum, 4-6 carbon, cts. lb. del. | 10.00 |
| Ferrotungsten, stand., lb. eon. del. | 1.30-1.40 |
| Ferrovandium, 35 to 40% lb., cont. | 2.70-2.90 |
| Ferrotitanium, c. l., prod. plant, frt. all., net ton | 137.50 |
| Spot, 1 ton, frt. allow., lb. | 7.00 |
| Do., under 1 ton, lb. | 7.75-8.25 |
| Ferrophosphorus, per ton, c. l., 17-19% Rockdale, Tenn., basis, 18%, \$3 unitage | 58.50 |
| Ferrophosphorus, electrolytic, per ton c. l., 23-26% f.o.b. Anniston, Ala., 24% \$3 unitage | 75.00 |
| Ferromolybdenum, stand. 55-65%, lb. | 0.95 |
| Molybdate, lb. cont. | 0.80 |
| †Carloads. Quan. diff. apply. | |

Nonferrous

METAL PRICES OF THE WEEK

Spot unless otherwise specified. Cents per pound

| Copper | | | | Straits Tin | | Lead | | Zinc | Alumi-num | Antimony | Nickel |
|--|------------|---------------|------------------|--------------------------------|------------------|------------|-------------|------------------------------|-----------|----------|--------|
| Electro, del. | Lake, del. | Casting, del. | Midwest refinery | New York Spot | New York Futures | Lead N. Y. | East St. L. | | | | |
| Jan. 9 | 12.00 | 12.12 1/2 | 11.62 1/2 | 51.20 | 51.05 | 6.00 | 5.85 | 5.60 | *19.00 | 14.00 | 35.00 |
| Jan. 11 | 12.50 | 12.62 1/2 | 12.12 1/2 | 51.35 | 51.25 | 6.00 | 5.85 | 5.80 | *19.00 | 14.00 | 35.00 |
| Jan. 12 | 12.50 | 12.62 1/2 | 12.12 1/2 | 51.12 1/2 | 51.00 | 6.00 | 5.85 | 6.00 | *19.00 | 14.00 | 35.00 |
| Jan. 13 | 12.50 | 12.62 1/2 | 12.12 1/2 | 50.90 | 50.80 | 6.00 | 5.85 | 6.00 | *19.00 | 14.00 | 35.00 |
| Jan. 14 | 13.00 | 13.12 1/2 | 12.62 1/2 | 51.20 | 51.10 | 6.00 | 5.85 | 6.00 | *19.00 | 14.25 | 35.00 |
| Jan. 15 | 13.00 | 13.12 1/2 | 12.65 | 51.55 | 51.35 | 6.00 | 5.85 | 6.00 | *19.00 | 14.25 | 35.00 |
| *Nominal range 19.00 to 21.00c. | | | | | | | | | | | |
| MILL PRODUCTS | | | | OLD METALS | | | | Light Brass | | | |
| F.o.b. mill base, cents per lb. except as specified. Copper brass products based on 13.00. | | | | Deal. buying prices, cents lb. | | | | *Chicago | | | |
| Conn. copper | | | | No. 1 Composition Red Brass | | | | *Cleveland | | | |
| Sheets | | | | *New York | | | | *St. Louis | | | |
| *Yellow brass (high) | | | | *Chicago | | | | New York | | | |
| *Copper, hot rolled | | | | *Cleveland | | | | Cleveland | | | |
| Lead, cut to jobbers | | | | *Chicago | | | | Chicago | | | |
| *Zinc, 100-lb. base | | | | *St. Louis | | | | *St. Louis | | | |
| Tubes | | | | Heavy Copper and Wire | | | | Zinc | | | |
| *High yellow brass | | | | *New York | | | | New York | | | |
| *Seamless copper | | | | *Chicago | | | | *St. Louis | | | |
| Rods | | | | *Cleveland | | | | *Cleveland | | | |
| *High yellow brass | | | | *Chicago | | | | Borings, Cleveland | | | |
| *Copper, hot rolled | | | | *St. Louis | | | | Mixed, cast, Cleve. | | | |
| Anodes | | | | Composition Brass Borings | | | | Mixed, cast St. L. | | | |
| *Copper, untrimmed | | | | *New York | | | | Clips, soft, Cleve. | | | |
| *Yellow brass (high) | | | | *Chicago | | | | Aluminum | | | |
| Wire | | | | *Cleveland | | | | Borings, Cleveland | | | |
| *Yellow brass (high) | | | | *St. Louis | | | | Secondary Metals | | | |
| | | | | | | | | *Brass, ingt. 85-5-5-5, lcl. | | | |
| | | | | | | | | *Stand. No. 12 alum. | | | |

Bars

Bar Prices, Page 66

Pittsburgh—Bar sales are lighter, but the automotive labor situation has not yet made any large inroads on production. Moderate new business at the higher prices is being received. Japan is reported to have inquired recently for a sizable tonnage.

Cleveland—Bar mills are operating at an active rate, in spite of some holdups from auto partsmakers, particularly in alloy grades. Farm and roadmaking equipment concerns take up the slack. New business at the advanced prices is greater than many anticipated, because of heavy buying before prices were advanced.

Chicago—Bar specifications continue heavy from most consumers, except from those automotive interests affected by labor trouble. Cold bar finishers are taking substantial lots, though new business from that direction is restricted by prior coverage. Farm implement and tractor manufacturers in most instances are operating at equal or better rates than prevailed a month ago, with improvements shown compared with a year ago. With deliveries still extended several weeks, hold-ups on automotive shipments as yet have not affected total output.

Boston—Buying of soft steel bars has been heavier than expected in view of the active covering late last quarter. Numerous consumers are pressing for delivery. Some mills are booked two months ahead. Bolt and nut shops are not keeping pace with general consumption.

New York—Domestic commercial steel bar buying is fairly active notwithstanding heavy coverage before the recent advance. An interesting export inquiry involves 5000 tons for Japan, which country also has been a recent buyer of steel, pig iron and scrap.

Philadelphia — Bar demand is holding up surprisingly well, notwithstanding the heavy buying in the closing weeks of last year before the \$3 advance. Manufacturers of alloy and cold-drawn bars have received suspensions from the automobile industry in some cases, but have been able to divert much of this tonnage to other channels.

Tin Plate

Tin Plate Prices, Page 66

Pittsburgh—Tin plate mills are operating at close to 100 per cent for the entire industry, an unusual rate for this time of year. Specifications are coming in freely. Pro-

ducers are understood to have been advising consumers that a slight revision in differentials on lightweight tin plate has been decided upon.

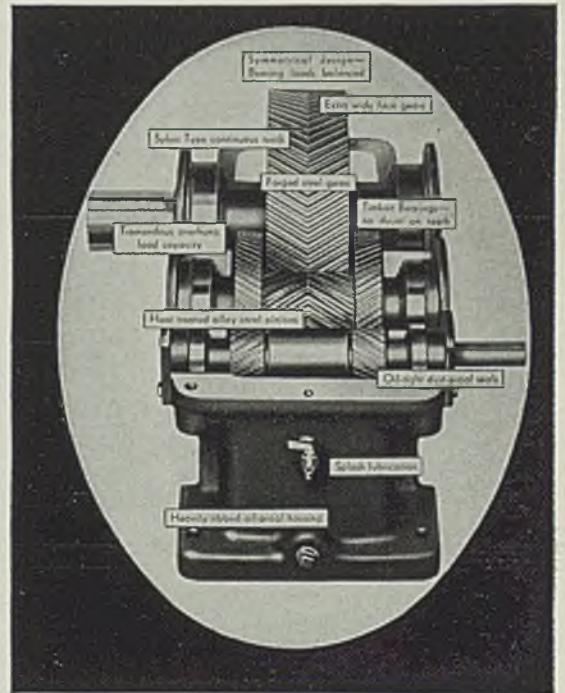
In some cases it is believed that the incoming specifications have been prompted by a desire on the part of a few buyers to be covered in the event of possible future labor controversies. Despite the fact that enamel ware manufacturers bought heavily before the first-quarter prices, tonnage from this

class of buyer has been attractive.

New York—Deductions from the basis weight for tin plate have been doubled on quantities from 55 to 95 pounds, inclusive. Heavy demand of both domestic and foreign sources is still being noted here. Countries which usually have relied upon European sources are turning here, in some cases for the first time, for supplies, offering prices virtually comparable with the domestic market.

Sales for export have been made

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at the equivalent of \$5, Pittsburgh, 15 cents above the domestic level. Premiums also are being obtained now on some other products for export.

Plates

Plate Prices, Page 66

Pittsburgh — Considerable tank and barge work is pending, including 20 to 25 barges for Wheeling Steel Corp. and five barges for the

Campbell Transportation Co. Bids were opened Jan. 12 on one derrick boat and one barge for the U. S. engineers at Huntington, W. Va. Bids will be opened on Jan. 22 on two flats, involving 145 tons, for the U. S. engineers' office in Omaha, Nebr.

Chicago — Plate demand from freight car builders and railroad shops is heavy, and sustained shipments are in prospect for several months. Additional freight car buying is anticipated shortly, though most western roads have completed current programs. Tank work is

fairly active, but few large pipe lines are up for early closing.

Cleveland—Plate fabricators report new business consists principally of tonnage on which price protection was previously given. Inquiries are negligible, involving only small jobs. The new steel plate price now quoted at 2.24½c, del. Cleveland, remains firm at the advanced figure.

Boston — Plate shipments are heavy against contracts with new business somewhat lighter at 2.45c, delivered, Boston. Most consumers are pressing for delivery with mills showing slight improvement in this respect.

New York—Miscellaneous plate buying is better, although orders against identified projects make up the larger part. The Panama Railroad Steamship Co. may bring out inquiries within a fortnight for three coastwise vessels. Miscellaneous tank work is more active but involves few important projects.

Philadelphia — Supporting substantial releases for identified work is much better volume of new miscellaneous tonnage than plate sellers expected in view of heavy buying last month before the \$3 advance. At least two mills are quoting quantity differentials, but whether they will be generally adopted at this time is not clear. The Pennsylvania railroad has awarded five steel deck barges to the Dravo Contracting Co., Pittsburgh. While fabrication will be done in the Pittsburgh district, it appears likely that assembly will be at Wilmington, Del.

Birmingham, Ala.—Plate mills are still active and demand for the product is steady. Several consumers believe demand will continue indefinitely. Chicago Bridge & Iron Works was awarded contract for 1,000,000-gallon tank for extension of waterworks system at Montgomery, Ala. Many smaller sized tanks have been sold or will be ordered shortly.

San Francisco—An award is expected within a few days on 3192 tons of 60-inch welded steel pipe for Crystal Springs pipe line No. 2, San Francisco, and it is reported that Western Pipe & Steel Co. will probably secure the contract.

Seattle—Promising orders are being delayed due to weather conditions and the quoting of rail rates on all prospective business while water transportation is interrupted. Indications are favorable for heavy business as soon as conditions clear.

Contracts Placed

860 tons, 4½ miles, 19-inch, o.d. steel water pipe, Mexico, to U. S. Steel Products Co., Pittsburgh.
800 tons, barges, United States engi-

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ON 2 CHAMPIONSHIP COURSES**

neers, St. Louis, to Dubuque Boat & Boiler Works Dubuque, Iowa.
 450 tons, filtration plant, Bristol, Conn., to Chicago Bridge & Iron Works, Chicago, 350 tons plates, remainder structural shapes and miscellaneous steel material; James A. Newlands, Hartford, Conn., consulting engineer.
 400 tons, five steel decked barges, Pennsylvania railroad, to Dravo Contracting Co., Pittsburgh.
 330 tons, 80,000-barrel tanks, Balley & Grant Inc., Fall River, Mass., to Chicago Bridge & Iron Works, Chicago.
 300 tons, 600,000-gallon water tank, Benton Harbor, Mich., to Pittsburgh-Des Moines Steel Co., Pittsburgh.
 110 tons, brick lined digester tank, Maine Seaboard Paper Co., Bucksport, Me., to Chicago Bridge & Iron Works, Chicago.
 100 tons, tanks, Newport Electric Corp., Newport, R. I., to Chicago Bridge & Iron Works, Chicago.
 100 tons, three phenol tanks, Merrimac Chemical Co., Everett, Mass., to Chicago Bridge & Iron Works, Chicago.
 Unstated tonnage, Icarde Mfg. Co., Icarde, N. C., 100,000-gallon tank, to Chicago Bridge & Iron Works, Chicago.

Contracts Pending

145 tons, two flats, for the federal engineers' office, Omaha, Nebr.; bids close Jan. 22.

Sheets

Sheet Prices, Page 66

Pittsburgh—The volume of orders for sheets at the new prices continues substantial and so far the numerous stop orders from General Motors have not been reflected in sheet mill operations. One automobile manufacturer who has been unaffected by labor controversies placed a number of fair sized orders late last week. Considerable material is being taken by railroad equipment manufacturers and makers of household appliances.

Cleveland—Heavy demand from stoves, refrigerators and air conditioning manufacturers has enabled mills to operate at a steady pace to make shipments to these concerns ahead of schedule. This is taking up the slack caused by the strike in General Motors plants. New business at advanced prices has offered much encouragement to producers here, in view of the heavy buying early last month.

Chicago—Sheet mill operations continue full and suspension in shipments of some automotive material has yet to affect schedules. Heavy demand elsewhere has prevented mills from accumulating stocks of automotive sheets, and it is anticipated that brisk schedules can be maintained for a large portion of this quarter unless a more severe drop should occur in consumption by motor car interests. Prices are steady on new business and bookings are in fair volume con-

sidering the amount of forward buying last quarter.

Boston—While most sheet consumers, notably hot-rolled, are stressing delivery there is an encouraging volume of new business at 2.55c, Boston, for No. 10 hot-rolled, and 3.20c, Boston, for No. 24. Other finishes are active, slitting operations for small consumer articles taking good volume.

New York—Sheet sellers express surprise over the volume of new business. It was believed that the

heavy volume of last month would result in a material tapering off, but the decline has been far less pronounced than expected. Deliveries in practically all grades are well extended.

Philadelphia—Sheet demand is holding better than sellers expected. Attractive deliveries in some instances by mills which have automotive suspensions, have stimulated certain purchases; however, there has been good miscellaneous buying regardless of deliveries. On



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some grades certain mills are sold into second quarter. Prices are strong.

Cincinnati—Backlogs are providing enough tonnage to keep sheet mills on capacity schedules despite suspension of considerable automobile tonnage. Earlier deliveries to other consumers are being made possible by the situation. A steady flow of new orders discloses heavy demand, especially from makers of household equipment.

St. Louis—Less affected by the automobile strike than in other sections producers and distributors of sheets

here report little change from the closing weeks of December. Demand from stove and implement makers continues large and miscellaneous users of standard and special sheets continue to take substantial tonnages.

Wire

Wire Prices, Page 67

Pittsburgh — Although spring wire has been affected by suspension orders from the automotive in-

dustry, specifications from other sources have been well maintained and producers have been able to turn their attention to getting out shipments which might otherwise have suffered temporary delays.

Cleveland—Wire producers report backlogs extending into March on some grades. Production schedules have been effected only slightly due to hold-up orders. Demand from those serving the agricultural trade and from wire specialty manufacturers have more than made up for the temporary delay in shipments to some spring manufacturers and others directly connected with the auto trade.

Chicago—Specifications for manufacturers' wire continue heavy and production is near the peak for recent months. Suspended shipments of some automotive material to a large extent are offset by active demand from other users. Plain wire specifications are relatively better than those for some wire products, though distributors are looking forward to improved markets for barbed wire and fencing in farm areas. A pickup in nail use also is in prospect.

Boston — With heavy backlogs, wire mills are pushed to make deliveries. Shipments are heavy and, while there have been some suspensions to the automotive industry, mills are moving up shipping time to other consumers. Demand is widespread with specialties notably active.

Pipe

Pipe Prices, Page 67

Cleveland — Jobbers' stocks have shown a high rate of turnover with most demand from industrial concerns. Gallagher & O'Hara, Youngstown, O., were low bidders on 8500 feet of 24-inch steel pipe for Barberton, O. Cast pipe requirements are confined to small tonnages of well under 100 tons. Prices remain firm at the advanced figures.

Chicago—Cast pipe business is slow. A few inquiries for moderate tonnages are pending. Additional work is expected to materialize later this quarter, but business is subsisting principally on installations already under way.

Boston—Cast pipe buying is light, but with prospects of an improvement shortly. Prices are fairly steady with some pressure for slight concessions by contractor buyers. Steel pipe buying is not in heavy volume, but steady in car lots. Wrought pipe demand holds well.

New York—Buying of cast pipe-



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D E T R O I T

has slackened, being confined mostly to small fill-in lots. Eastern foundry backlogs are materially lower with some curtailment in operations. A New Jersey utility has bids on a supplementary inquiry of several hundred tons of 16-inch in addition to approximately 750 tons, 4 and 6-inch recently placed. Prices are firm with some isolated shading to contractor buyers.

Seattle—No improvement in the cast pipe market is noted. Important projects are being postponed until bids can be obtained based on water shipment. Spokane will receive bids Jan. 21 for an unstated tonnage of ¾ to 2-inch galvanized iron pipe.

Cast Pipe Placed

125 tons, small sizes, Boston, to Warren Foundry & Pipe Corp., Phillipsburg, N. J.

Cast Pipe Pending

120 tons, 4 to 24-inch, class 150, South Pasadena, Calif.; bids opened.

Strip

Strip Prices, Page 67

Pittsburgh—Along with sheets and cold-finished material, suspension orders on strip from the automotive industry have been extensive, but backlogs and requirements of miscellaneous consumers have served to cushion effect of suspensions.

Effective Jan. 15, base prices on 0.51 to 0.75 carbon material are 3.95c, Cleveland and Pittsburgh, and 4.15c, Worcester; 0.75-1.00 carbon, 5.70c, Cleveland and Pittsburgh, and Worcester, 5.90c; and over 1.00 carbon, 7.75c, Cleveland and Pittsburgh, and 7.95c, Worcester.

Cleveland—Active requirements of small farm tool and electrical equipment manufacturers and jobbers have enabled mills to continue at the high rate reported a few weeks ago. This keeps backlogs well extended in spite of some hold-ups by auto partsmakers. Prices are firm at 2.85c, base Cleveland. The higher carbon grades followed the advance of the lower carbon with an increase of \$5 a ton, effective Jan. 15.

Chicago—Strip mill operations are steady, and while shipments of automotive material are being deferred in some instances, heavy order books are preventing material reduction in output. Some producers are stocking automotive steel in anticipation of heavier shipments upon the termination of labor differences. New business is in fair volume, but is restricted

by previous coverage. Prices are steady.

Boston—Cold strip buying has lessened. Shipments are heavy, with buyers pressing for delivery. Prices are firm. Hot-rolled strip is moving slowly following heavy buying by most cold-rollers late last quarter.

New York—Producers of cold-rolled strip are sold ahead five to 10 weeks, depending on specifications. Some sellers have little to offer over the remainder of the

quarter. Hot-rolled strip deliveries average three to four weeks. Strip-makers are booking substantial tonnages, with demand from diversified sources.

Transportation

Track Material Prices, Page 67

New buying by railroads is small, with some effect felt from loss of revenue by removal of freight sur-



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charges at the end of last year. This is holding back final award of 1500 steel cars by Baltimore & Ohio, which desires first to know how its revenues will be affected. Most current awards are for small lots of cars of special types.

Railmakers are understood to have decided that rails placed before the recent advance in price will be delivered over first half instead of only to March 31, as at first provided. Colorado Fuel & Iron Co. has reopened its rail mill at Pueblo, Colo., with a large backlog which will keep it active several months.

Missouri-Kansas-Texas has budgeted \$15,000,000 for equipment and maintenance. It is understood equipment to be bought includes 500 coal cars, 500 stock cars and 250 automobile cars. Passenger cars include 25 chair cars, three diners and one lounge car.

The Pennsylvania is expected to place its first requirements for electrification work between Paoli and Harrisburg, Pa., within a few days. This will probably include about 4000 tons of the 25,000 tons estimated for this work.

Final returns for last year indi-

cate the placing of \$64,643 freight cars by domestic lines, the best showing since 1929, when 106,105 cars were placed. The total compares with 19,308 in the preceding year, 23,829 in 1934 and 2460 in 1933. Domestic freight car awards in December were 23,450, by far the heaviest monthly total of 1936. Further comparisons are:

| | 1936 | 1935 | 1934 | 1933 |
|------------|--------|--------|--------|------|
| Jan. | 2,050 | 24 | 152 | 3 |
| Feb. | 6,900 | 806 | 19,725 | 0 |
| March | 632 | 0 | 30 | 5 |
| April | 4,427 | 350 | 800 | 50 |
| May | 8,900 | 2 | 717 | 8 |
| June | 5,220 | 5,151 | 1,895 | 500 |
| July | 7,229 | 500 | 19 | 306 |
| Aug. | 225 | 200 | 105 | 202 |
| Sept. | 1,750 | 875 | 7 | 23 |
| Oct. | 2,210 | 1,250 | 75 | 514 |
| Nov. | 1,550 | 100 | 254 | 583 |
| Dec. | 23,450 | 10,050 | 110 | 316 |

Total ... 64,643 19,308 23,829 2,460

Behind the Scenes with STEEL

OUR candid cameraman rigged up a couple of lights and took this picture of mail room boys filling last minute subscription orders and calls for additional personal copies of the Yearbook, on the evening of Jan. 4. Whether you believe it or not, there are only a few hundred copies of the Yearbook in the picture—less than 5 per cent of the total mailing for that issue!

SO MANY executives and business leaders have asked for personal copies of this issue, at a dollar a copy, that the results are alarming. We fear that this issue will be listed as one of the month's best sellers—and that would be bad, as our long and jealously guarded reputation for quality would be sacrificed for quantity.



through for the second or third time STEEL'S Yearbook of Industry and I presume I will go through it a half a dozen more times before I file it away. . . . I think it is the finest Yearbook you have ever gotten out. . . . Your book is really a work of art. . . . A great many trade and technical magazines come to our plant, and I presume they are all worth while.

There are so many, however, that I only have time to look over a few. I never miss a chance to read STEEL from cover to cover. . . . You are to be congratulated in getting out a publication that so completely meets the varied needs of the steel and metal working industries."

—And an orchid to the editorial department!

"It is the most pleasing and the most beautiful thing I believe that has ever been done in industrial history as expressing the highest of artistic conception and talent in advertising as applied to industry. . . ."—Ad copywriters take an orchid on this one!

"... I like particularly the manner in which your book is divided into sections, each representing a specific department. . . ."—for this clarification of editorial matter that would under any other circumstances be difficult to read, an orchid to the foresighted Yearbook editor!

"... Being an advertising man, my attention was naturally attracted to the advertising pages of this issue, and I can sincerely say that your Yearbook surpasses anything that I have ever seen in a magazine publication. . . ."—An orchid to those surpassed, for setting a good pace.

AND to our more than sixty-two thousand readers, a whole bunch of orchids for recognizing quality and being constant boosters for STEEL, throughout its yearly span of fifty-two issues.

IF YOU are interested in figures—and who isn't?—here are a few for you to chew on. The regular mailing of the Yearbook required our truck to make many trips to the Post Office, with as high as sixty-four full bags per trip, totaling 498 bags, with a total weight of more than 35,000 pounds—over seventeen tons! No wonder our driver was glad to see the Yearbook mailing completed.

HERE are just a very few of the many nice things written to us about the Yearbook (we include these excerpts so that you won't have to write, if you felt the same way when you read your Yearbook.)

"... Not only are the editorial and advertising pages most interesting, but the printing and color work is strikingly beautiful, and emphasizes the development that has taken place in the art of printing. . . ."—An orchid to the Penton Press!

"I have just finished going

Car Orders Placed

Chesapeake & Ohio, 25 seventy-ton dry bulk cars to American Car & Foundry Co., New York.
 Dominion Steel & Coal Corp. Ltd., 100 hopper cars, to Eastern Car Co. Ltd., New Glasgow, N. S.
 Godfrey L. Cabot Inc., ten 35-ton hopper cars, to Pressed Steel Car Co., Pittsburgh.
 St. Louis-San Francisco, 600 box cars, 250 hopper cars, 100 coal cars and 20 cabooses to own shops.
 Virginia Smelting Co., one 40-ton tank car to General American Transportation Corp., Chicago.

Car Orders Pending

Anaconda Copper Mining Co., 200 50-ton ore cars, pending.
 Chicago & Illinois Midland, 100 seventy-ton gondolas, pending; in addition to 100 fifty-ton hopper cars, noted as effective in last week's issue.
 Clinchfield noted in last week's issue as inquiring for 1250 freight cars, will purchase 800 hopper cars, 200 gondola cars and 250 box cars.
 Michigan Limestone & Chemical Co., 30 30-cubic yard air dump cars, bids asked.

Locomotives Placed

Chicago & Illinois Midland, two locomotives, to the Lima Locomotive Works, Lima, O.
 New Orleans Belt railway, three 900-horsepower diesel locomotives, to Baldwin Locomotive Co., Eddystone, Pa.

Buses Booked

American Car & Foundry Motor Co., 45 motor coaches, powered with Hall-Scott horizontal engines, from Eastern Massachusetts Street Railway Co. Boston; this is the nineteenth repeat order from this company, bringing the total number of coaches up to 285.

Cold Finished

Cold Finished Prices, Page 67

Pittsburgh—Cold finished bar specifications have been coming in

steadily at the new prices and most appears to be for immediate use. In general, demand from miscellaneous consumers has been better than producers anticipated. Suspension orders from the automotive industry have been extensive, but because of the heavy backlogs with which the mills entered January, operations are not yet materially affected.

Shapes

Structural Shape Prices, Page 66

Pittsburgh—Shape awards include 1650 tons for an interstate bridge over Red river between Fannin county, Texas, and Bryan county, Oklahoma, placed with Illinois Steel Bridge Co., Jacksonville, Ill. Pending work includes 4000 tons for the Gunpowder Falls-Montibello tunnel, Baltimore; 2350 tons for a new boiler house extension for the Philadelphia Electric Co., Philadelphia. Structural activity is expected to pick up in February, although operations at present are good.

Cleveland—Awards last week were light, the only one involving over 100 tons going to Ohio Structural Steel Co., Newton Falls, O. This was a slab yard crane runway for Republic Steel Corp., Warren, O., requiring 120 tons. Fabricating mills are well booked, some being unable to make promises on deliveries before Feb. 15, unless the material can be obtained out of stock.

Chicago—Structural awards are heavier and a further increase is anticipated before the expiration of price protection Jan. 31. Inquiries for small lots are more numerous, with a fair tonnage involved in projects taking less than 100 tons. Bridges still predominate in new inquiries.

Boston—Structural awards in New England approximated 2000 tons, with a substantial volume of tonnage on which figures are in. Bridges account for a good part of

the contracts. Plain material is steady at 2.43½c, Boston.

New York—Inquiries are heavier than awards, with 15,000 tons of new work up for bids, including 7500 tons for Midtown-Hudson tunnel, New York, bids due Feb. 2. Bridges account for several thousand tons with a steady increase in private work. District fabricating shops are well filled with orders for miscellaneous requirements.

Philadelphia—While some sizable work is expected to be announced

momentarily, including approximately 4000 tons of electrification work for the Paoli-Harrisburg division of the Pennsylvania, structural awards so far this year have been light. Shapes are firm at the new level of 2.15c, Bethlehem, Pa., or 2.25½c, Philadelphia.

Birmingham, Ala.—Numerous small orders were recently received by fabricating shops. Virginia Bridge & Iron Co. has received order for 1000 tons of steel for addition to stadium at Orange Bowl,

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Mills at Ambridge, Pa. and Chicago, Ill.
Manufacturers of Carbon and Alloy Steels
Turned and Polished Shafting Turned and Ground Shafting
Wide Flats up to 12" x 2"

Shape Awards Compared

| | Tons |
|---------------------------|--------|
| Week ended Jan. 16..... | 29,346 |
| Week ended Jan. 9..... | 16,544 |
| Week ended Jan. 2..... | 33,736 |
| This week, 1936..... | 26,841 |
| Weekly average, 1936..... | 21,764 |
| Weekly average, 1937..... | 26,542 |
| Weekly average, December | 21,351 |
| Total to date, 1936..... | 71,132 |
| Total to date, 1937..... | 79,626 |

Miami, Fla., besides several smaller tonnage orders for bridges and other work. Fabricating shops are getting better delivery on small tonnages from steel producers.

San Francisco—Awards for the first week total 8826 tons, compared with only 2336 tons for the same period a year ago.

Seattle—Until intercoastal water traffic is resumed, fabricators are basing figures on all new business on the rail rate, about \$10 a ton higher than by water. Meanwhile local stocks are much depleted and some operations have been slowed as a result.

Shape Contracts Placed

- 5476 tons, Mississippi river dam No. 13, Clinton, Iowa; 3276 tons of fabricated steel to Worden-Allen Co., Milwaukee, including 2200 tons of piling to Inland Steel Co., Chicago.
- 2850 tons pulp and paper mill, St. Joe, Fla., to Virginia Bridge & Iron Co., Roanoke, Va.
- 1650 tons, interstate bridge over Red river, Fannin county, Texas and Bryan county, Oklahoma, to Illinois Steel Bridge Co., Jacksonville, Ill.
- 1080 tons, bridge, ERP 5 & 302-C, Travis county, Texas, to Vincennes Steel Co., Vincennes, Ind.
- 900 tons, court house substructure, Boston, for Suffolk county, Massachusetts, to New England Structural Co., Everett, Mass.

- 900 tons, bridge, Oxford, N. H., to American Bridge Co., Pittsburgh.
- 780 tons, bridge, route FE-98, over Chicago Junction railroad, Chicago, for state of Illinois, to Mississippi Valley Structural Steel Co., Decatur, Ill., and Duffin Iron Co., Chicago.
- 685 tons, grandstand, Delaware steeplechase Racecourse Inc., Newark, Del., to Belmont Iron Works, Eddystone, Pa.
- 670 tons, building, Iowa Packing Co., Des Moines, Iowa, to Gage Structural Steel Co., Chicago.
- 615 tons, bridge requirements, Missouri Pacific railroad, to Stupp Bros. Bridge & Iron Co., St. Louis.
- 600 tons, warehouse, National Can Co., Maspeth, Queens, N. Y., to Joseph T. Ryerson & Sons Inc., New York.
- 580 tons, state highway bridge, Leechburg, Pa., to Fort Pitt Bridge Works, Pittsburgh.
- 540 tons, two buildings, General Steel Castings Co., Eddystone, Pa., to Belmont Iron Works, Eddystone, Pa.
- 500 tons, bleacher stands, Yankee stadium, New York, to Ingalls Iron Works, Birmingham, Ala., through Leopold-Neckerman Inc., New York.
- 490 tons, state highway bridge over route 142, section 2-B, Paoli, Pa., to Bethlehem Steel Corp., Bethlehem, Pa.
- 460 tons, six turntables, Chicago, for Chicago, Milwaukee, St. Paul & Pacific railroad, to Bethlehem Steel Corp., Bethlehem, Pa.
- 450 tons, Chicago & North Western railroad bridge 1012½, Milwaukee, for state of Wisconsin, to Fort Pitt Bridge Works, Pittsburgh.
- 450 tons, Laurel homes project, Cincinnati, for United States department of Interior, to American Bridge Co., Pittsburgh.
- 450 tons, two buildings, for Norge Corp.,

- Muskegon Heights, Mich., to Palmer-Bee Co., Detroit.
- 400 tons, highway bridge over Water-shops pond, Springfield pond, Springfield, Mass., to Phoenix Bridge Co., Philadelphia.
- 400 tons, bridge, 543 SF, Du Page county, Illinois, to American Bridge Co., Pittsburgh.
- 400 tons, platforms, Sinclair Refining Co., East Chicago, Ind., to Gage Structural Steel Co., Chicago.
- 370 tons, addition to high school, Ambridge, Pa., for board of education, to American Bridge Co., Pittsburgh.
- 350 tons, asphalt plant No. 1, Queens, N. Y., for city of New York, to Lehigh Structural Steel Co., Allentown, Pa.
- 350 tons, bridge, Springfield, Mass., to Phoenix Bridge Co., Phoenixville, Pa., Coleman Bros. Corp., Boston, general contractor.
- 350 tons, plant addition, Willson Products Co., Reading, Pa., to Reading Steel Products Co., Reading, Pa.
- 350 tons, bridges, various locations, for Missouri Pacific railroad, to Bethlehem Steel Corp., Bethlehem, Pa.
- 330 tons, grade crossing elimination bridge, Yonkers, N. Y., for New York Central railroad, to Bethlehem Steel Corp., Bethlehem, Pa.
- 330 tons, Ninth street bridge, Chattanooga, Tenn., to Virginia Bridge & Iron Co., Roanoke, Va.
- 300 tons, bridge, Androscoggin river, Turner Center, Me., to Pittsburgh-Des Moines Steel Co., Pittsburgh; Simpson Bros. Corp., Boston, general contractor.
- 290 tons, bridge, Parker, Ariz., for states of California and Arizona, to Pittsburgh-Des Moines Steel Co., Pittsburgh.
- 270 tons, bridge, Nashua river, Pepperell, Mass., to Bethlehem Steel Co., Bethlehem, Pa.; Coleman Bros. Corp., Boston, general contractor.
- 270 tons, enclosed loading platform, for Atlantic Refining Co., Philadelphia, to Belmont Iron Works, Philadelphia.
- 265 tons, superstructure, interceptor sewer, section 8, Detroit, to American Bridge Co., Pittsburgh.
- 265 tons, building, George Paper Co., Bridgeport, O., to Riverside Steel & Machinery Co., Green Bay, Wis.
- 260 tons, building for United States Gypsum Co., South Gate, Calif., to Worden-Allen Co., Milwaukee.
- 260 tons, extension to motor coach garage, Lynn, Mass., for Eastern Massachusetts Street railway, to New England Structural Co., Everett, Mass.
- 260 tons, betting ring and field stand, for Saratoga race track, Saratoga, N. Y., to Bethlehem Steel Corp., Bethlehem, Pa.
- 250 tons, truss bridge, R18015, Clinton county, Pennsylvania, to Pittsburgh-Des Moines Steel Co., Pittsburgh.
- 245 tons, plate shop, Worthington Pump & Machinery Corp., Harrison, N. J., to Lehigh Structural Steel Co., Allentown, Pa.
- 240 tons, grade crossing elimination bridge, North Weedsport, N. Y., for New York Central railroad, to American Bridge Co., Pittsburgh.
- 230 tons, state highway bridge, route 142, section 2A., Knickerbocker, Pa., to Bethlehem Steel Corp., Bethlehem, Pa.
- 225 tons, strip mill, Revere Copper & Brass Co., New Bedford, Mass., to New England Structural Co., Everett, Mass.
- 220 tons, bridges 92.51 and 83.42 Secor and Eureka, Ill., for Toledo, Peoria & Western railroad, to Bethlehem Steel Corp., Bethlehem, Pa.
- 195 tons, tainter gates structural steel, Clark Falls, Milton, Vt., to S. Morgan Smith Co., York, Pa.
- 175 tons, bridge, Somerset-Cambria counties, Pennsylvania, to American Bridge Co., Pittsburgh.
- 150 tons, switch rack, water and power

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department, Los Angeles, specification 2156 to Western Pipe & Steel Co., Los Angeles.

145 tons, store and office building, 524 Madison avenue, New York, to Fassler Iron Works, New York.

140 tons, bridge, route 18001, Clinton county, Pennsylvania, Belmont Iron Works, Eddystone, Pa.

140 tons, building, tractor works, International Harvester Co., Chicago, to Gage Structural Steel Co., Chicago.

125 tons, ferry slip and wharf, Seattle, to Isaacson Iron Works, Seattle.

120 tons, slab-yard crane runway, Warren, O., for Republic Steel Corp., Cleveland, to Ohio Structural Steel Co., Newton Falls, O.

120 tons, state bridge, Sangamon county, Illinois, to Gage Structural Steel Co., Chicago.

115 tons, engineering building addition, Standard Oil Co. of New Jersey, Linden, N. J., to Elizabeth Iron Works Inc., Elizabeth, N. J.

115 tons, building, National City Bank, 9 West Fifty-first street, New York, to Egleston Bros. & Co., Long Island City, N. Y.

100 tons, addition to Northwest Lead Co. plant, Seattle, to Pacific Car & Foundry Co., Seattle.

100 tons, transmission towers for Seattle, to Bethlehem Steel Co., Seattle.

Shape Contracts Pending

4000 tons, Gunpowder Falls-Montebello tunnel, Baltimore.

2500 tons, express highway viaduct, city structure No. 6, New York Central railroad, New York.

2350 tons, new boiler house extension, for Philadelphia Electric Co., Philadelphia.

2000 tons, Schlitz brewery remodeling, Milwaukee.

1200 tons, bridge, Simmesport, La.

1100 tons, mill buildings, for National Carbon Co., Columbia, Tenn.

1000 tons, bus terminal, San Francisco, for Atchison, Topeka & Santa Fe railway.

1000 tons, Insurance Co. of North America building, San Francisco; bids in.

950 tons, bridges, Russ, Calif.

760 tons, three buildings, Los Angeles, for Aluminum Co. of America.

700 tons, extension bridge over Chesapeake and Delaware canal, Delaware, for Pennsylvania railroad.

700 tons, building, Plymouth, N. C.

700 tons, mill building, Los Angeles.

700 tons, bridge, Sioux City, Iowa.

660 tons, bridge, Gonzales, Tex.

600 tons, 8-span Knk bridge for Alaska Railroad; bids at Seattle, Jan. 18.

600 tons, warehouse building, Benwood W. Va., for Wheeling Steel Corp.

500 tons, stadium extension, for American League Baseball club, New York.

460 tons, furnace building, Clarksburg, W. Va., for National Carbon Co.

402 tons, through steel truss bridge, Cambria county, Pennsylvania; Porterfield-Blinger Construction Co., Youngstown, O., low at \$104,989.32 on bids to state highway department, Harrisburg, Pa., Jan. 8.

400 tons, highway bridges over All American canal, specification No. 718, Knop, Calif., for United States bureau of reclamation.

400 tons, bridges, various locations, for Denver & Rio Grande Western railroad.

350 tons, state highway grade crossing elimination, Allegheny county, New Jersey.

350 tons, garage and tunnel, parcel post building, Worcester, Mass.

300 tons, school buildings, Geneseo, N. Y.

223 tons, rebuilding Kennewick bridge, Wash.; bids in at Olympia.

220 tons, steel truss bridge, Huntingdon county, Pennsylvania; Capitol Con-

struction Co., Hollidaysburg, Pa., low at \$76,736.50 on bids to state highway department, Harrisburg, Pa., Jan. 8.

210 tons, bridge over Route 4 of Chicago & Illinois Midland railway, Springfield, Ill., for state of Illinois.

200 tons, state highway bridge Ludlow, Mass.

168 tons, pony truss bridge, Bedford county, Pennsylvania; W. M. E. Powers, Washington, low at \$54,592.61 on bids to state highway department, Harrisburg, Pa., Jan. 8.

145 tons, state highway bridge, Columbia, Windham, Conn.

130 tons, state highway bridge, Montague, Mass.

100 tons, steel pony truss bridge, Jeffer-

son county, Pennsylvania; Minns Bros., DuBois, Pa., low at \$35,472.75 on bids to state highway department, Harrisburg, Pa., Jan. 8.

Reinforcing

Reinforcing Bar Prices, Page 67

Pittsburgh—Pennsylvania department of highways, Harrisburg, Pa., will receive bids until 10 a.m., Jan. 22, on a number of road projects



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involving tonnages of less than 100 tons each in Bedford, Blair and Lebanon counties. Bids closed Jan. 8 on a number of similar projects involving small tonnages for Cambria, Clinton, and Bedford counties.

Cleveland—Awards of over 100 tons have been noticeably absent for some time. However, jobs requiring small tonnages have aggregated considerable tonnage, compelling mills to operate at a relatively high rate. Prices remain firm at the advanced figures.

Chicago—Concrete bar shipments continue fairly active and the outlook for new business is favorable. Several thousand tons of bars are involved in various public projects, including river dams and sewage disposal system work. Prices are slightly stronger, but stocks of low priced material still deter the establishment of firmer quotations.

Boston—Reinforcing bar buying at 2.25c, Pittsburgh, is light. Awards against specified projects account for most business. Inquiry is small, but several attractive jobs are about to come out for bids.

New York—New inquiry is heavier than current awards. Approximately 700 tons for preliminary work in

connection with the world's fair is being readvertised this week. Close to 400 tons of mesh was placed for New York state highway work. Prices are firm on new business at 2.68c, del., New York metropolitan area.

Philadelphia—School work features local demand, with 100 tons for a high school gymnasium having been placed and with 800 tons for two elementary schools scheduled to be awarded soon. McCloskey Contracting Co., this city, is low on the general contract for the latter two schools, the steel for

which should represent a fair test for the new prices.

San Francisco—Awards of reinforcing bars the first week of the year were 502 tons. During the first week of 1936, 3169 tons were placed.

Seattle—Mills report satisfactory totals of small jobs of 20 to 50 tons each. Jobbers have lately been replenishing stocks and public works projects continue to augment turnover. While winter weather has allowed construction, reinforcing is firm under the new price of 2.65c and market indications are favorable.

Concrete Awards Compared

| | Tons |
|---------------------------|--------|
| Week ended Jan. 16..... | 4,316 |
| Week ended Jan. 9..... | 6,215 |
| Week ended Jan. 2..... | 465 |
| This week, 1936..... | 13,543 |
| Weekly average, 1936..... | 6,005 |
| Weekly average, 1937..... | 3,665 |
| Weekly average, December | 3,560 |
| Total to date, 1936..... | 23,335 |
| Total to date, 1937..... | 10,996 |

Reinforcing Steel Awards

- 1513 tons, Roza division, Yakima project, Wash.; general contract to J. A. Tertilg & Sons, Boise, Ida.; materials to be purchased by bureau of reclamation.
- 613 tons, Mississippi river dam No. 13, Clinton, Iowa, to Inland Steel Co., Chicago.
- 275 tons, viaduct, Westside elevated highway, New York Central railroad, to Truscon Steel Co., Youngstown, O.; Crimmins Contracting Co., New York, general contractor.
- 265 tons, building, Southern New England Telephone Co., New Haven, Conn., to Concrete Steel Co., New York; Dwight Building Corp., New Haven, general contractor.
- 250 tons, Farmers Automobile Insurance exchange building, Los Angeles, to unnamed interest.
- 240 tons, high school, Stevens Point, Wis., to Joseph T. Ryerson & Son Co. Inc., Chicago.
- 230 tons, addition, Suffolk county, court house, Boston, to Concrete Steel Co., New York.
- 175 tons, supports for transmission towers, Seattle, to Northwest Steel Rolling Mills, Seattle.
- 125 tons, D. S. & D. garage, Baltimore, to Maryland Steel Products Co., Baltimore.
- 120 tons, state highway bridge, Westport—Dartmouth, Mass., to Morrison-Stevens Co., Boston.
- 110 tons, state highway bridge, Concord, N. H., Concrete Steel Co., New York.
- 100 tons, field office, Port of New York authority, Weehawken, N. J., to Joseph T. Ryerson & Son Inc., Chicago, through George Siegler Co. Inc., Jersey City, N. J.
- 100 tons, Ogontz high school gymnasium, Philadelphia, to American Steel Engineering Co., Philadelphia.
- 100 tons, hotel addition, Pismo Beach, Calif., to unnamed interest.
- 100 tons, buildings for Washington junior high school, Long Beach, Calif., to unnamed interest.

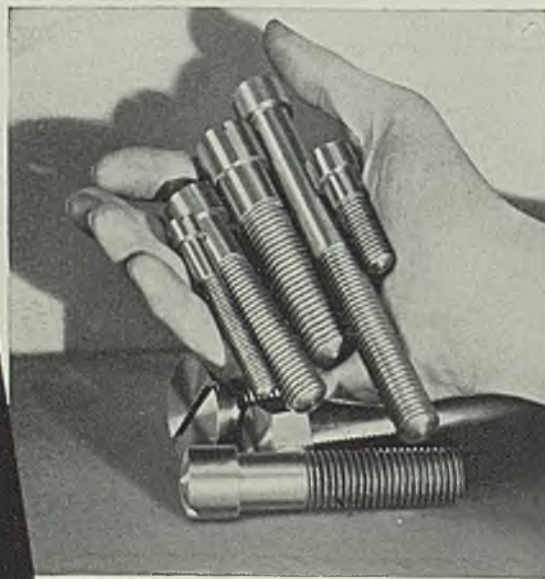
Reinforcing Steel Pending

- 1500 tons, addition to store building, Cincinnati, Messer & Sons, Cincinnati, general contractors.
- 800 tons, two public schools, Philadelphia, McCloskey contracting company, Philadelphia low on general contract.
- 470 tons, bridge, Shepardsville, W. Va., Merritt, Chapman & McLean, Baltimore, low on general contract, with a bid of \$371,200.

Bolts, Nuts, Rivets

Bolt, Nut, Rivet Prices, Page 67

Specifications continue fairly active for bolts and nuts, with rail-



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roads and car builders taking relatively heavy shipments. Demand from railroads is substantially heavier than a year ago and is an important factor. Requirements of farm implement and tractor manufacturers also show gains over a year ago and consumption by miscellaneous users is steady or heavier. Some decrease has appeared in automotive needs, though this is confirmed principally to General Motors units and parts suppliers.

Pig Iron

Pig Iron Prices, Page 68

Buffalo — Buffalo merchant furnaces report liberal releases on first quarter contracts, with consumers' demands taxing production and shipping facilities on some grades. With additional open-hearth capacity being brought into play at Lackawanna the possibility of steelworks entering the merchant iron field on a large scale are believed even more remote than heretofore.

Cleveland—Pig iron producers report heavy shipments so far this month, in some cases exceeding that for the similar period during December. Exceptionally few stop orders have been received from foundries serving the auto trade here, most taking advantage of the breathing spell by accumulating a small stock. Most larger consumers have specified well in advance at the old prices, but some smaller concerns have been forced to re-enter the market at the advanced figures.

Pittsburgh—Shipments of pig iron are heavy, but orders at the recently advanced price are light. Stocks of producers are low.

Chicago — Pig iron producers steadily are reducing heavy backlogs. Foundry schedules are steady or higher, except among those plants identified with strike-troubled automotive companies. New business is almost entirely lacking.

Boston—Pig iron consumers are buying moderately for first quarter delivery at unchanged prices. Stocks are not large with most foundries, and some are likely to purchase heavier, at present operations, before March. Prices are firm.

Philadelphia—Pig iron buying has shown perceptible let-up this month. While some spot orders continue to come out, the majority of consumers are well covered for the quarter. Sellers expect to have their carryover tonnage at prices of \$1.50 under the current market worked off by Jan. 31.

Cincinnati—Almost no new ordering of pig iron is being done at the 50-cent advance, but shipments

are only a shade under November and December levels. Furnace interests look for only minor purchasing before second quarter needs arise. Melters find no reaction so far from conditions in General Motors plants.

St. Louis—As far as new orders are concerned, the market for pig iron is virtually at a standstill. Shipments, however, are approximately at the same high rate as in December. Backlogs of producers and distributors are substantial and with the present melt there is every reason to look for the largest first quarter total in recent years.

Birmingham, Ala.—Shipments of pig iron continue steady. Pipe and stove shops are operating at a fairly good rate. Fifteen blast furnaces are active, and in operation, three more furnaces are available, one scheduled to be started this month.

Scrap

Scrap Prices, Page 70

Pittsburgh—Scrap is stronger. On the basis of a reported purchase of 35,000 to 40,000 tons by the district's

largest consumer, No. 1 heavy melting steel has advanced to \$19.50 to \$20, a new high post-depression level.

The large purchase of No. 1 heavy melting steel, reported to involve only a few dealers, is believed to have been made at \$20, while No. 1 railroad steel, it is reported, was obtained for \$20.50.

The Pennsylvania railroad list closed last week is reported to have brought \$21 for rails, \$20.30 for heavy melting steel, around \$24 for specialties, \$18.50 for No. 1 cast, and around \$19 for cast iron car wheels.

The large deal ended a period of inactivity which was credited to the perplexing automotive situation.

Cleveland—New business is confined to small lots but shipments continue satisfactory. Supplies of heavy material still are restricted. Although the market here appears firm, no change has been noted in the quotations.

Chicago—The scrap market is reversing itself after a brief period of easiness, and strength again predominates. Heavy melting steel is up 50 cents on a sale at \$18.50, while several other grades are higher. Supplies of practically all items



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are none too plentiful, despite fairly open weather. Malleable and low phosphorus scrap are at a new high for the recent movement.

New York—Heavy melting steel scrap for domestic shipment is higher with \$14 paid by brokers. For export, dealers are paying \$13.50, dock New York for No. 1 and \$12.50 for No. 2. The market is strong with most active grades, especially cast, up 50 cents to \$1 per ton.

Philadelphia—Scrap prices continue to advance, with increases in

both No. 1 and No. 2 steel, railroad specialties and certain other grades. No. 1 steel for export has been advanced 50 cents to \$17, f.a.s. Port Richmond, and within the past week dealers have begun accumulating No. 2 steel for export, offering \$16, f.a.s. The scrap now being accumulated is principally for Italy and Japan.

Bids were opened Jan. 14, on the dismantling of five navy vessels, built between 1893 and 1919; doubt is expressed in some quarters as to whether these vessels will yield more than 5000 tons of ferrous scrap.

Buffalo—There is a strong dealer demand for scrap and the belief is growing that some new purchases have been made. One report is that No. 2 heavy melting steel has been sold at \$16.50 or \$16.75 and that dealers are now in the market for tonnage to ship on this order. Also reported is an impending deal in No. 1 steel which may already have been started. Dealers who had been asking \$18 for the latter material are non-committal on reports they have taken small orders and have been offered additional contracts.

Detroit—While shrinkage in scrap supplies from automobile plants has tended to reverse the position of sellers from the long to the short side, scrap continues strong, with steel mills showing no let-up in demand. Outlook for the next few weeks is distinctly bullish, with little immediate concern expressed over the effect of the unsettled automotive situation. Prices are unchanged.

St. Louis—Despite embargo on shipments by an important east side mill and the automotive strike, iron and steel scrap has resumed its former strength, a number of grades having been marked up. Leading the advance are steel specialties. Cast grades are also firm, and country mixed was advanced 50 cents per ton to a range of \$11.50 to \$12.00, the highest quotation recorded in more than a decade.

efficient time has not elapsed to offer a fair test of the new price differential basis. However, no weakness has yet been noted. Distributors are well stocked.

Chicago—Warehouse sales are satisfactory. Some decrease is shown from December, as anticipatory buying last month advanced some January tonnage into that period. Prices are steady.

Philadelphia—The effects of inventory season and the heavy buying before the price advance Jan. 1 are reflected in a decided let-down in warehouse demand so far this month. Distributors for the most part have discounted this development in advance; hence, there is little concern over the present trend.

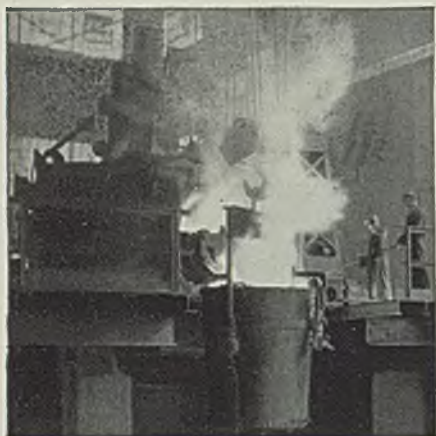
Detroit—While hold-ups in automotive business continue, warehouse trade in general is strong. Quotations on wrought washers have been changed from \$5 off to \$4.50 off. Carriage and machine bolts, all sizes, are selling at 65 off for case lots, 60 off for less case lots.

Cincinnati—Absence of a post-holiday letdown in warehouse trade reveals the insignificant tonnage bought last month on speculation against higher prices. Sheet mill deliveries have not eased to a point where the unusually good demand from warehouses is affected. Prices are firm.

Baltimore—Iron and steel distributors are now quoting on generally higher levels and are applying the new differentials for quantity. These differentials affect bands, hot-rolled sheets, plates, hoops, steel bars, structural shapes, sheared plates, floor plates, black annealed sheets, galvanized, bars, small shapes and galvanized bands.



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Warehouse

Warehouse Prices, Page 69

Pittsburgh—Sales of warehouse products are reported holding up well, with no extensive slackening since the first of this year. Requirements are diversified, with sheets and bars in good demand. Prices are firm at the advanced figures.

Cleveland—Warehouse distributors report a slight decline in daily average sales, which some believe is directly due to curtailed operating schedules of partsmakers closely associated with the auto trade. Suf-

Steel in Europe

Foreign Steel Prices, Page 69

London—(By Cable)—For the fourth consecutive month steelmakers in Great Britain kept production above the 1,000,000-ton mark in December with 1,019,200 tons, at a daily rate of 39,200 tons, compared with 1,001,300 tons in November, at a daily rate of 40,052 tons. Total steel output for 1936 was 11,698,200 tons, compared with 9,842,400 tons in 1935.

Pig iron production in December was 671,400 tons, a daily rate of 21,657 tons, from 110 stacks, compared with 643,100 tons, daily average 21,437 tons, from 114 stacks, in November. Total pig iron production for 1936 was 7,685,700 tons, compared with 6,426,400 tons in 1935.

Pig iron supplies are slightly easier but no contracts are being accepted for delivery beyond the end of June. Basic pig iron has been advanced 7s 6d per ton. A shipment of 1500 tons of pig iron has been made available for shipment to Denmark.

All steelworks are operating at full capacity and deliveries in many cases are much in arrears. Tin plate manufacturers are operating at 70 per cent of capacity.

The Continent reports active trade, especially to South America and the United States. Export prices have been increased an average of 5 shillings, gold.

International drawn wire cartel has been extended without change to Dec. 31, 1941. This cartel covers practically all producing countries of Europe. A meeting is to be held this month by the International iron tube cartel with the object of extending the life of the agreement.

Nonferrous Metals

Nonferrous Metal Prices, Page 68

New York—Copper advanced \$20 per ton while zinc rose \$8 last week in active and strong markets. Lead held firm while antimony advanced ¼-cent.

Copper—Undertone of the foreign market was easier Friday, following an advance in domestic prices to 13.00c, Connecticut, on Thursday and the release of the December statistical report showing an increase in world stocks due to a decline in foreign consumption and an increase in world production. All restrictions on foreign production were lifted in an attempt to halt the rapid upward trend in prices. Some observers anticipate a sharp reaction abroad.

Tin — Consumer demand pickup markedly toward the end of the week as supplies tightened. Straits spot closed strong at around 51.55c.

Lead—Moderate demand supported the market unchanged at 5.85c, East St. Louis. The outlook for the market was for steady prices over the immediate future.

Antimony — Prices advanced ¼-cent to 14.25c, duty paid New York, for Chines spot, and 14.25c, New York, for American spot.

Mirrors of Motordom

(Concluded from Page 30)

operations into the Detroit area. The Highland Park Ford plant is named as a possible new home for Nash, although there are several industries, including Briggs, Standard Tube and others, now occupying portions of this area. . . . Although

the Auburn plant at Auburn, Ind., has been closed down and operations transferred to Connersville, there is talk of Auburn resuming shortly. . . . Crudely lettered cardboard sign hanging from a window of the immense Fleetwood plant on Fort street, now occupied by less than 100 sit-downers, reads:

INFORMATION

Knock on window

Graham boasts 41 men in positions ranging from factory manager to assembly line worker who

have been with the company 20 or more years. Graham, by the way, took first and second place in the recent Yosemite AAA economy run . . . Studebaker sales in 1936 topped by a wide margin all years since 1929. Paul G. Hoffman, president of Studebaker, has been selected as one of the country's "outstanding young men" of 1936. . . . Pontiac is going collegiate with a new radio show called the Pontiac Varsity Show, featuring local talent from campuses of some of the country's leading universities.



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Ohio

ASHTABULA, O. — Cleveland Electric Illuminating Co., 75 Public Square, plans to expand the electric generating plant at Ashtabula, and will install a 50,000-kilowatt turbogenerator with auxiliary equipment. Cost will be around \$1,500,000.

BEACH CITY, O. — Village plans construction of sewage disposal plant and distribution system, to cost \$90,000. Aid will be sought from WPA.

BUCYRUS, O. — City will select engineer this week for construction of proposed sewage disposal plant, approved by voters at the November election. Probable engineer is Paul M. Uhlmann, 2083 Dayton avenue, Columbus. Maturity of plans is dependent on PWA approval. City plans to pay \$75,000 out of total estimated cost of \$140,000.

CINCINNATI — Hudepohl Brewing Co., 40 East McMicken avenue, will enlarge its plant. John O. Hesselbrock is general manager.

CIRCLEVILLE, O. — City will be ready for bids about Feb. 1 for construction of sewage disposal plant estimated to cost \$136,363, of which the city will pay \$75,000 and PWA the remainder. William J. Graham is mayor and Floyd Browne, Marion, O., is engineer.

CLEVELAND — Forest City Brewing Co. will spend \$120,000 for expanding and improving its plant at 6900 Union avenue. New machinery will be installed.

CLEVELAND — Cleveland Twist Drill Co. is constructing a 5-story plant at 1250 East Forty-ninth street. The George S. Rider Co., Marshall building, is architect.

CLEVELAND — Martin Bros. Electric Co., 1850 East Fortieth street, plans construction of a two-story plant at Perkins and East Thirty-sixth streets. Estimated cost is \$40,000.

CLYDE, O. — Village is taking bids due Jan. 28 for various light plant equipment, including a 750-kilovolt-ampere steam turbogenerator, with cooling tower and condenser. Cost will be about \$55,000.

DOVER, O. — Reeves Mfg. Co. will modernize immediately its hot mill department. A. J. Krantz is general manager.

FINDLAY, O. — City plans extensions to sewage disposal plant, at a cost of about \$126,000, although work will probably not start for six months. Homer O. Dorsey is mayor, and consulting engineer is H. P. Jones & Co., Second National Bank building, Toledo, O.

GALION, O. — Perfection Steel Body Co. plant was destroyed recently by fire. A new plant will be built.

GALION, O. — Perfection Burlal Vault Co. plans installation of motors and controls, conveyors, electric hoists and other equipment in new metallic casket manufacturing plant to replace one recently destroyed by fire. Cost will be over \$450,000.

HAMILTON, O. — City plans building electric light plant addition at a cost of \$50,000. Bids will probably be asked around Jan. 18. Russell P. Price is city manager, City Hall, and Froelich & Emery Engineering Co., Second National

Bank building, Toledo, is engineer.

HURON, O. — Village plans alterations to water filtration plant, to include installation of new filter structure and equipment, new pumping station, and a new high service pump. W. E. Scott is mayor, George B. Gascolgne, Leader building, Cleveland, is engineer.

MASSILLON, O. — Enterprise Aluminum Co. plant was badly damaged by fire recently.

NELSONVILLE, O. — City needs new light plant and waterworks improvements, and in conformity with PWA regulations bids received Nov. 9, 1936, will be rejected and new ones asked. An emergency resolution of city council authorized service director Paul Allen to retube three of the present boilers at the light plant, at a cost of \$1500. Needed equipment includes a new engine and generator unit of 400 kilowatts, three 375-horsepower boilers, stoker-equipped, filtering and water softening devices, and new fireproof boiler house. Cost will be \$80,000. Engineer is B. M. Coakley, Nelsonville.

RIO GRANDE, O. — Village plans construction of waterworks and sewage disposal plant costing \$40,000. Aid from WPA has been secured. Engineers are Burgess & Niple, 568 East Broad street, Columbus.

SOUTH CHARLESTON, O. — Village will ask bids soon for construction of \$80,000 municipal light plant. C. O. Juvenal is mayor, and Collins Wight, Union Trust building, Dayton, is engineer.

SYLVANIA, O. — City is considering construction of electric power plant and distribution system which would cost about \$158,000, money to be raised through mortgage revenue bonds. Machinery needed would include three 200-kilowatt generators and a building approximately 40 x 70 feet.

UHRICHSVILLE, O. — City council has ordered a survey made of the feasibility and costs of construction of a municipal light plant.

WARREN, O. — City plans construction of water softening plant costing about \$50,000. City engineer is W. S. Harvey, City Hall.

WARREN, O. — Hilton Steel Co. plans rebuilding its plant on Larchmont street. The company manufactures plate fabricated and electric arc-welded products.

YOUNGSTOWN, O. — Universal Concrete Pipe Co., 2975 South High street, Columbus, plans a plant at a cost of \$50,000.

Connecticut

MERIDEN, CONN. — Champlon Laboratories Inc. is being organized by L. I. Hance, recently resigned as advertising and sales manager of the Cuno Engineering Corp. The new company will manufacture automobile accessories.

WEST HAVEN, CONN. — Armstrong Rubber Co. plans construction of 3-story, 80 x 180-foot addition to automobile tire and tube manufacturing plant, to cost about \$100,000. Electric power equipment will be installed. Fletcher-Thompson Inc., 1336 Fairfield av-

enue, Bridgeport, Conn., are architects and engineers.

Massachusetts

CAMBRIDGE, MASS. — Boston Blacking & Chemical Co., Kendall Square, plans to build a \$150,000 plant addition, and will install motors and controls, conveyors and other equipment. Architects are Coolidge, Shepley, Bulfinch & Abbott, 1 Court street, Boston.

New York

BROOKLYN, N. Y. — L. Coniglio, 349 Snyder street, will take bids after March 1 for construction of a plant addition to cost \$40,000 with equipment. C. P. Cannella, 1163 Herkimer street, is architect.

BUFFALO, N. Y. — International Harvester Co., 606 South Michigan avenue, Chicago, has leased a building at Jewett and Halbert streets, Buffalo, for expansion of its motor truck division.

BUFFALO, N. Y. — Erie Electric Motor Repair Co., 124 Church street, dealer, is in the market for a slipring motor, 150-horsepower, 250 revolutions per minute, 25-cycle, 3-phase, 2200-volt, and for a generator, 700-kilowatt, 230 volts, direct driven by diesel engine.

DRESDEN, N. Y. — New York Central Electric Corp., 61 Broadway, New York, is considering construction of a new steam-operated electric generating station on Lake Seneca, with an initial capacity of 20,000 kilowatts, to be increased later to 40,000 kilowatts. Cost will be over \$3,000,000.

NEW YORK — Consolidated Products Co., 15 Park Row, is in the market for oil expellers and other oil mill equipment.

NEW YORK — Race Tool & Metal Stamping Co. Inc. has been organized to manufacture machinery. Isidore Friedenthal, 299 Broadway, is correspondent.

NORFOLK, N. Y. — City will take bids Jan. 23 for construction of a waterworks plant and sewage treatment works, at a total estimated cost of \$158,199. W. E. Brown is supervisor of town board, and William T. Fields Engineering Co. Inc., Watertown, is engineer.

POUGHKEEPSIE, N. Y. — Frederick Hart & Co. Inc., machine manufacturer, plans to spend \$100,000 for enlargement of its plant on Main street. Frederick M. H. Hart is president.

ROCHESTER, N. Y. — Rochester Gas & Electric Corp. plans an expansion program during 1937 at its hydroelectric plant, to include installation of a turbogenerator unit with auxiliaries and erection of rural electrification transmission lines in various areas. The estimated total cost is \$2,000,000.

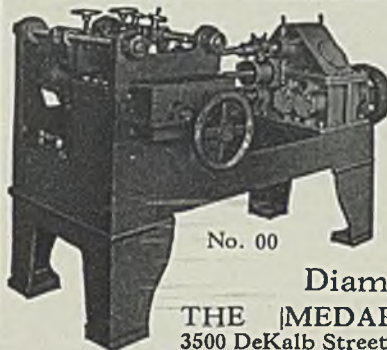
STATEN ISLAND, N. Y. — Staten Island Stove & Appliances Corp. has been organized to manufacture stoves and furnaces. Correspondent is Henry Klauber, St. George, Staten Island.

UTICA, N. Y. — J. A. Firsching Inc., textile machinery manufacturer, will install new equipment in new plant at 421 Broad street.

WELLSVILLE, N. Y. — Worthington Pump & Machinery Corp., Harrison, N. J., has purchased a substantial interest in the Moore Steam Turbine Corp., Wellsville. A \$150,000 expansion program is planned for the Moore Corp. plant. Maynard D. Church is president.

New Jersey

NEWARK, N. J. — Swift & Co., 24
(Please turn to Page 56)




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(Concluded from Page 84)

Faneuil Hall Square, Boston, plans construction of new plant at Port Newark, N. J., to cost \$100,000.

Pennsylvania

CARLISLE, PA. — Carlisle Shoe Co. will build an addition to its shoe manufacturing plant on North Bedford street, at a cost of \$40,000.

NEW CASTLE, PA.—Board of directors of the Pennsylvania Power Co. has authorized construction of a steam power plant estimated to cost over \$2,800,000. The site has not been selected.

PHILADELPHIA — Bell Telephone Co. of Pennsylvania, Telephone building, plans improvements to its properties in various parts of the state during 1937. Total estimated cost is \$7,700,000.

PITTSBURGH — Kelly Foundry Co., 51 South Seventeenth street, was damaged by fire recently.

Michigan

GRAND RAPIDS, MICH.—Production Steel Co., Detroit, has leased a building from the Pennsylvania railroad on Weston street, and will handle sheet and strip steel products. Louis Hamburger is president.

JACKSON, MICH.—Pioneer Foundry Co. plant at 606 Water street was destroyed by fire recently.

Illinois

CHICAGO—Quality Die Co. has been incorporated. Correspondent is Ashcraft & Ashcraft, 134 South La Salle street.

CHICAGO—Commonwealth Edison Co. will build a 64 x 90-foot power substation costing about \$170,000 at 1121 West Cermak road. Architects in charge are Graham, Anderson, Probst & White, 80 East Jackson boulevard.

CHICAGO — Johnson & Johnson, 4949 West Sixty-fifth street, plans construction of a 100 x 280-foot plant addition and will install motors and controls, conveyors and other equipment. Cost is estimated at \$100,000.

PEKIN, ILL.—Corn Products Refining Co. plans installation of motors and controls, machine drives, conveyors, electric hoists and other equipment in addition to local plant, to be used mainly as a sugar mill. Cost will be over \$1,500,000. Company headquarters are at 17 Battery Place, New York.

Indiana

AUBURN, IND.—City council has passed a resolution to seek PWA financial aid for a municipal power plant. The city is now served by a private corporation.

INDIANAPOLIS—Manufacturers' Supply Co., 19 West South street, is retiring from business. Its supply of 1000 electric motors, 2000 items of electrical equipment, 20,000 small tools, 100 machine tools and other miscellaneous equipment will be sold at auction on Jan. 26, 27, and 28. Samuel T. Freeman & Co., 1808 Chestnut street, Philadelphia, will be auctioneer in charge.

Florida

PORT ST. JOE, FLA.—James Stewart & Co. 230 Park avenue, New York, has been awarded the general contract for

building the \$6,800,000 plant for the St. Joe Paper Co. of Florida.

Georgia

MACON, GA. — Atlantic Refractories Co., W. P. Stevens, president, has purchased the plant of H. Stevens Sons Co., pipe manufacturer, and will remodel it for manufacturing fire brick.

Missouri

KANSAS CITY, MO.—Brown-Strauss Corp., 1446 Guinotte avenue, will spend \$50,000 for fabrication plant and transformer station.

KANSAS CITY, MO.—Board of public utilities, C. A. Lowder, secretary, City Hall, will take bids until Jan. 27 for construction of an addition to municipal power plant, 84 x 98 x 130 feet. Estimated cost is \$350,000.

WEBB CITY, MO.—E. C. and Robert Crow, 311 Edgewood drive, St. Louis, plan building a chain of reclamation ore mills in zinc and lead mining districts.

Texas

BRENNHAM, TEX. — Voters have approved bonds for \$190,000, to defray most of cost of proposed electric light and power plant construction. Four 250-kilowatt diesel engine generating units with auxiliary equipment will be installed. Reese Lockett is mayor. (Noted in STEEL, Jan. 11.)

HOUSTON, TEX.—Gulf Portland Cement Co., Trinity Life building, Fort Worth, will construct a 300 x 500-foot plant costing \$400,000, with a 1000-barrel daily capacity. Tom B. Douglas, 6404 Baltimore street, Kansas City, Mo., will be manager.

Minnesota

MINNEAPOLIS—Hawthorne Fuel Co., Fred W. Bronson, president and manager, plans rebuilding 3000-ton coal hopper and installing new machinery and equipment in plant which was destroyed by fire recently.

ST. JAMES, MINN.—South Central Co-operative Electric Association, E. M. Meier, president, plans erection of transmission lines in parts of Cottonwood, Blue Earth, Martin, Watonwan and Jackson counties, with substation and service facilities. Bids will be asked soon. Federal aid of \$210,000 has been obtained.

ST. PAUL, MINN.—Gopher Stamp & Die Co., 78 Chicago avenue, plans rebuilding its factory, which was destroyed by fire recently.

Kansas

LEROY, KANS.—City takes bids Jan. 21 for construction of sewage disposal plant. Engineer is E. T. Archer & Co., New England building, Kansas City, Mo.

Iowa

ALLISON, IOWA — Wright County Rural Electric Co-operative has been allotted \$105,000 in REA funds for construction of 235 miles of rural transmission lines.

BRADFORD, IOWA—City plans construction of a \$225,000 power plant, for which REA has allotted funds.

FOREST CITY, IOWA—City is taking bids, due Feb. 3, for construction of a municipal light and power plant, to include installation of three diesel engines with generators and accessories, and

complete distribution system. Cost will be around \$165,000.

PALMER, IOWA—City will construct a power plant costing \$185,000, with REA funds.

POCAHONTAS, IOWA — Pocahontas County Rural Electric Co-operative has received an REA allotment of \$95,000 for erection of 220 miles of rural transmission lines.

Nebraska

AURORA, NEBR.—City will receive bids in February for construction of extensions to municipal waterworks system at an estimated cost of \$11,000. Scott & Scott, Bankers Life building, Lincoln, Nebr., are engineers.

FAIRBURY, NEBR. — Norris Rural Power district, R. N. Cord, president, has been granted \$350,000 from REA for construction of rural transmission lines in Jefferson and Saline counties. H. A. Davis, Crete, Nebr., is engineer.

HASTINGS, NEBR.—Exeter Foundry & Machine Shop, S. A. Spitz, manager, Exeter, Nebr., plans to move to Hastings and construct a foundry and shop building there, to be 55 x 73 feet.

OMAHA — Paxton & Vierling Iron Works has purchased ground on South Seventh street where a plant will be built.

Pacific Coast

CEDARVILLE, CALIF.—Surprise Valley Electrification Co-operative, Allan Sickler, chief engineer, plans erection of rural electrification lines in parts of Modoc and Lassen counties, totaling about 284 miles. Projects will include a hydroelectric generating station on Ash Creek, near Adin, with an initial capacity of 900 kilowatt-hours, a substation at Lake City, to operate at 33,000 volts, and substations at Canby and Davis Creek. Total cost will be over \$600,000, and work will begin in spring. Federal aid is being arranged in financing.

LOS ANGELES — Automotive Axle Shaft Co. has been incorporated at 2700 South Hill street. Incorporators are Leo H. and Marvin L. Slipson.

SACRAMENTO, CALIF.—Construction division, office of the quartermaster general, Washington, will erect a number of buildings at the Sacramento Army Air Corps Supply Depot. Total cost will be \$7,000,000.

PLAZA, WASH. — Spokane County Rural Electric Co-operative Inc. plans erection of rural transmission lines in parts of Spokane and Whitman counties, with an electric generating station. Cost will be about \$290,000. Federal aid has been secured in financing.

Canada

VANCOUVER, B. C.—Ford Motor Co. of Canada Ltd. will build a \$400,000 assembly plant at Vancouver.

VANCOUVER, B. C.—Canadian Sumner Iron Works Ltd. is expanding its plant and will manufacture coal stoker furnaces and complete heating systems, including air-conditioning units.

ST. CATHERINES, ONT. — McKinnin Industries, Ontario street, W. A. Wecker, manager, plans constructing and equipping a foundry at a cost of \$50,000. A. E. Nicholson, 46 Queen street, is architect.

TORONTO — National Sewer Pipe Co. Ltd., 44 Victoria street, plans to spend \$200,000 to repair old equipment in plants at Swansea, Hamilton and Aldershot.