

STEEL

PRODUCTION • PROCESSING • DISTRIBUTION • USE

For forty-eight years—IRON TRADE REVIEW

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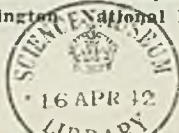
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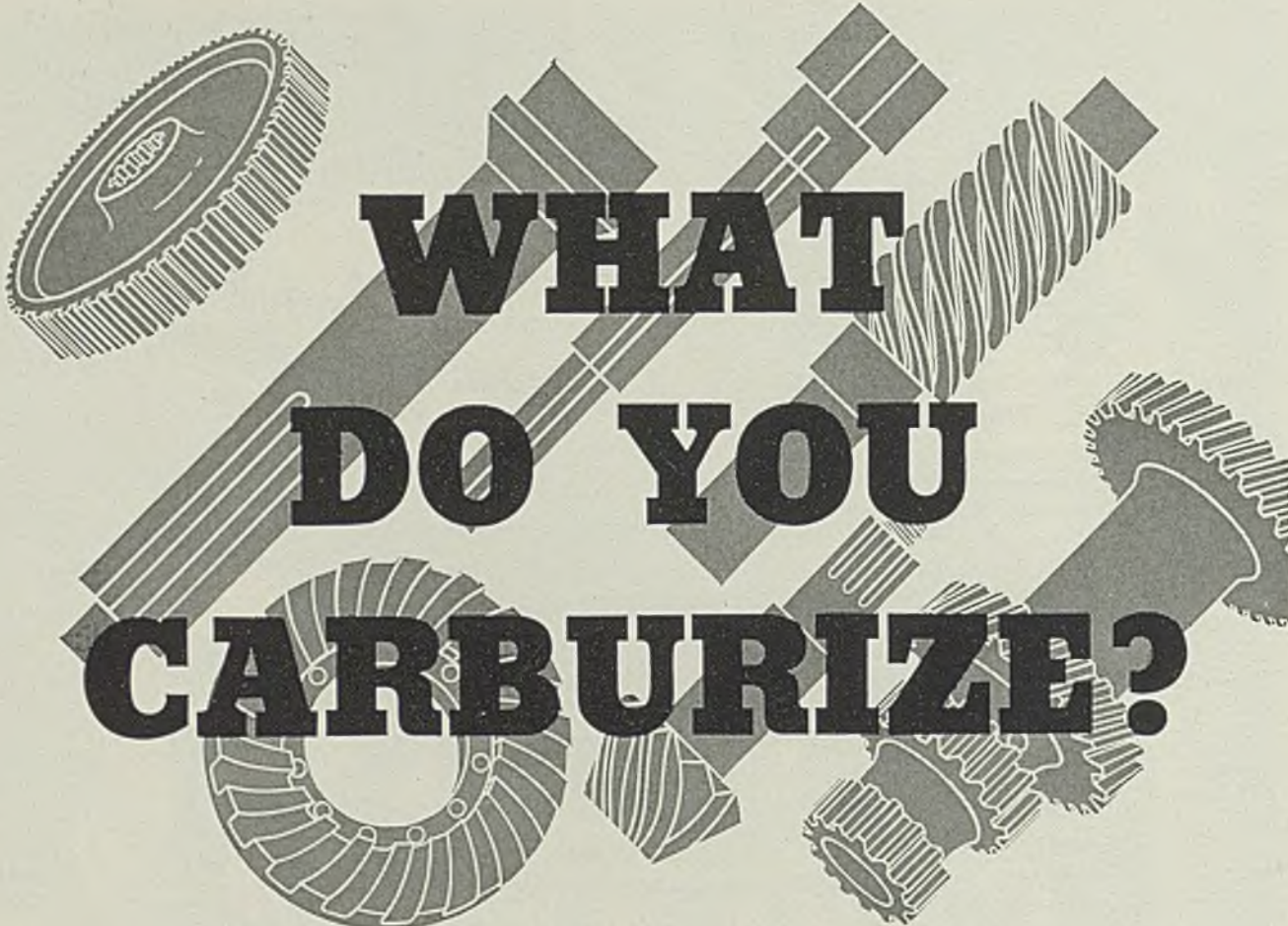
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As the Editor Views the News

SOMETIMES a person with imagination can find dramatic qualities in developments which seem commonplace to others. In this issue a sales manager not only demonstrates that there is drama in the steel industry, but also proves that he can portray it vividly for everyone identified with steel. "Cinderella of the Steel Mills" (p. 48) is a fascinating story of the spectacular rise of the lowly soaking pit to a position of importance and dignity. His word picture is not overdrawn. The soaking pit, which STEEL's editors last January characterized as the "bottleneck" of the steel industry, really is coming into its own.

• • •

Belatedly the senate has authorized a census of unemployment (p. 44) to be completed by April 1, 1938. This long neglected job may prove to be an important entering wedge in the drive for economy. Relief is a bottomless rathole in the drain on government finance. For five years billions have been handed out on a blank check basis. How many actually need relief, how much they need and whether they are capable of earning their own way, etc., are unknown quantities. Knowing the facts about unemployment will help tremendously in reshaping the governments' financial policy (p. 45) and in providing real aid for unfortunates.

Counting the Unemployed

• • •

According to the National Industrial Conference board, employment as of June 30, 1937, is estimated at 46,910,000, of which 16,879,000 were in industry, 11,610,000 in agriculture, 7,542,000 in trade distribution and finance and 9,252,000 in the service occupations. Industry—so frequently maligned by politicians for its alleged failure to provide its share of jobs—shows up remarkably well in this tabulation. But that is only part of the picture. Many industrial employers are doing more than ever before to educate and train their employes for better jobs and for higher stand-

More Emphasis On Training

ards of living. One large company, with scores of widely scattered plants (p. 29), has developed a comprehensive program involving five organized plans of training. The qualifications of individuals is an important factor in employment. Advocates of the redistribution of wealth could attain their objective more readily if they could "redistribute" skill and ability.

• • •

Bright nickel plating is gaining wider acceptance in the metalworking industries (p. 68), particularly as a base for chromium plating. At present, bright nickel is being applied directly to steel, brass and copper and over a base deposit of copper, on zinc base die castings. The fact that the bright nickel plating does not need to be buffed for the subsequent application of chromium is a factor in the growing popularity of the process . . . Automatic control of the roof temperatures of open-hearth furnaces has proved so satisfactory that a leading steel producer (p. 60) has equipped most of its units with this device. Longer life of refractories, lower repair costs and lesser hazard of accidental overheating and roof failure are the major advantages.

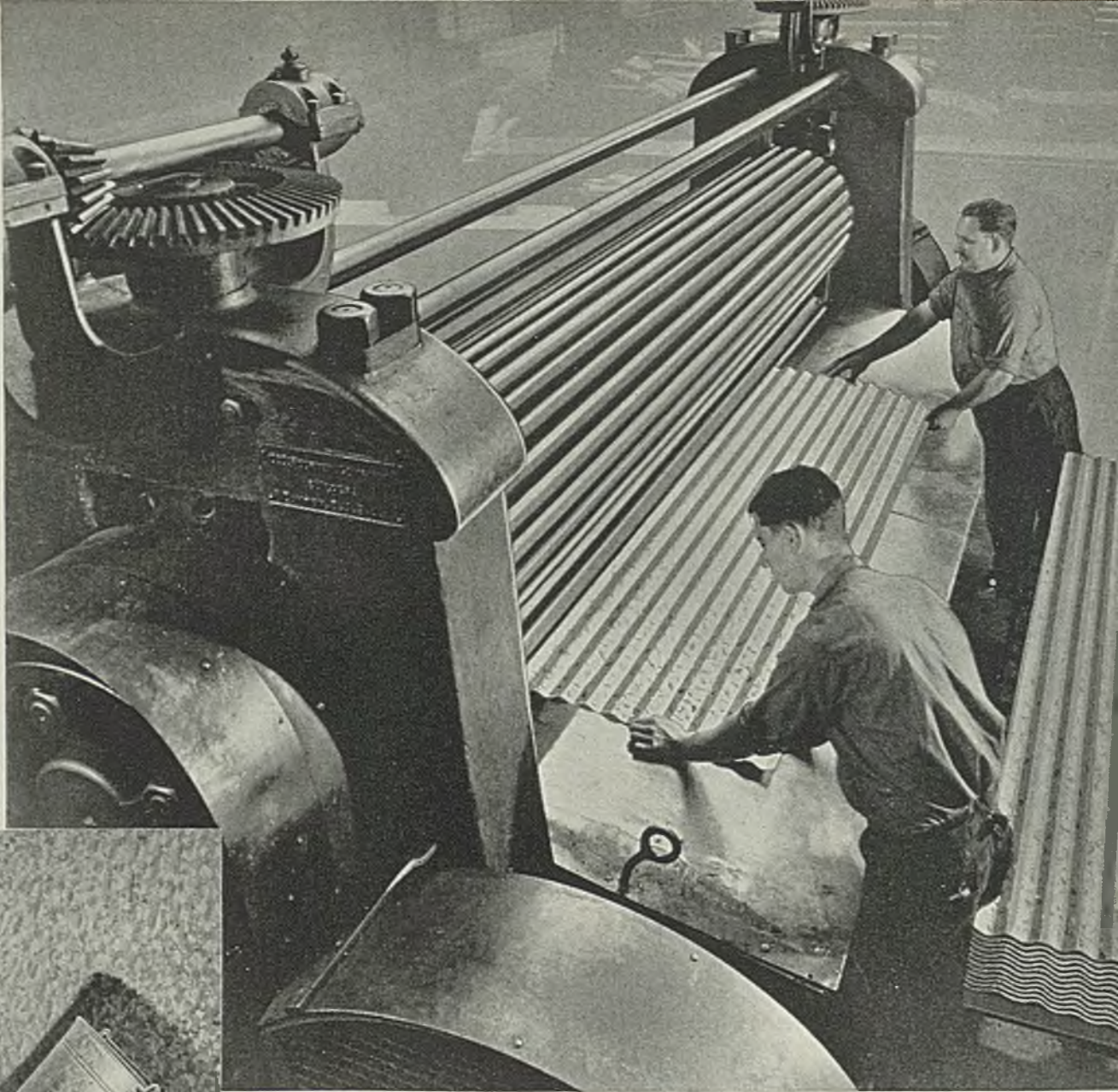
Bright Nickel For Plating

• • •

A large manufacturer of electrical equipment announces a "New Products" division. It will serve as a "pilot" plant for new developments (p. 35)—sponsoring them and directing their progress until they reach a stage of commercial development that will permit them to be taken over by other divisions of the company. This novel and seemingly logical method of launching new products will interest many executives who have struggled with the same problem . . . Acquisition of substantial holdings in the Alan Wood Steel Co. and the merger of the National Supply Co. and Spang, Chalfant & Co. (p. 32) have focused renewed attention upon the expanding influence of the Hillman interests. In Pittsburgh Steel, Sharon, Alan Wood, National Supply and other holdings, they have the elements of a major industrial empire.

Launching New Products

A handwritten signature in cursive script that reads "E. L. Shaner".



Inland Galvanized Sheets Are Setting New Standards

New standards for service life and uniform workability are resulting from Inland's improved methods of producing galvanized sheets. First, the most modern methods and equipment are used in producing the base metal sheets; second, Inland's new equipment and improved method of galvanizing assures a secure bond between steel sheet and coating.

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INLAND STEEL CO

Training Workers, To Meet a Changed Labor Situation in Steel

By J. Edward Johnson and Harry P. Wood

MR. JOHNSON is director of education and training in the Pittsburgh district, and Mr. Wood, in the Chicago district, for Carnegie-Illinois Steel Corp.

This article they have written for STEEL, outlining the corporation's experience with a greatly enlarged training program, should be read with certain significant facts in mind. Mechanization has not reduced employment in the steel industry, for this year employment exceeded the record of 1929. It has made it possible to reduce working hours to 42.6 per week, as in April, and has provided weekly earnings second in the list of "skilled" industries.

Skill is an ever-increasing factor in steel man-

ufacture. Speaking at the ground-breaking ceremony for the Carnegie-Illinois strip-sheet mill near Clairton, Pa., May 22, William A. Irvin, president, United States Steel Corp., said that only 10 per cent of the labor force at this plant will be unskilled.

A check by STEEL with some other important producers develops information that only 10 to 15 per cent of their labor forces are in the class receiving common labor wages; the others semi-skilled, skilled and supervisory. It is apparent that mechanization has elevated the status of steel labor, and opened a great field for specialized training, with which this article deals.—
The Editors.

THE tendency toward a shorter work week in all industries gives employes more opportunity for study, for leisure, and thinking.

Some men wish an opportunity to broaden their understanding and develop culture; others wish training to develop more skill in their occupations; others need a stimulus toward the development of a healthy and sound attitude toward the complex social and economic problems with which they are faced.

At no time in the history of the nation has more emphasis been placed on training. Management of industry has always been desirous to help a workman attain some of the ideals toward which men strive, and educational and training programs are the best means to attain this end.

Any system of training men recognizes the differences in men, in their aptitudes, their knowledge, and their desires. These differences cover the whole range of human experiences, and the training program must be broad and progressive.

The Carnegie-Illinois Steel Corp. recognizes this and is continually enlarging and broadening the scope of its training activities to meet changed situations.

The corporation is composed of

three districts, Pittsburgh, Chicago and Lorain. Each district is composed of one or more plants, each under separate immediate management, reporting, however, to the

manager of the respective district in which the plant is located.

Uniformity of training is considered of primary importance to permit ready transfer from one



DAVE OLSON, foreman of the electric repair shop, Carnegie-Illinois Steel Corp., South works, explains to Carl Begonia and John Jcleti, third-year apprentices, how Art Gleason, fourth-year apprentice, is winding an armature for a 50-horsepower motor

plant or district to another. Facilities available and procedure may vary between the districts, but the ultimate results are as nearly uniform as possible.

The corporation is now proceeding along five organized plans of training under the direction of the district managers of industrial relations. These plans are:

1. Trade apprenticeship.
2. Conferences for supervisory forces.
3. Job training for direct workers.
4. Training for technically educated personnel.
5. Training in safety.

Trade Apprenticeship

Contrary to the general idea, only

proved vocational school. They must be physically, morally and mentally sound. These carefully selected men, with this background of education, and personal characteristics, represent a group with ability to learn and to do.

The corporation is not experimenting with training plans. Proven methods and the advice of specialists have been followed.

In preparation for this program in the Chicago district, a conference was called in July, 1936, to analyze the operations necessary to do each job involved and to organize the related technical instructions. Superintendents, foremen and skilled workers met with representatives of the state departments of public

separately and collectively, resulting in a plan which fits the need of the corporation.

The broad picture of the corporation's needs and requirements has been uppermost in the minds of both districts. Training, to be of utmost value, must include, in addition to shop experience gained through actual work, related technical instruction to know the reasons "why" as well as "how."

This involves mathematics, drawing, science and theory. Two methods are followed in connection with this part of the program: (1) in conjunction with the local public schools, and (2) correspondence school service.

The additional information or related technical instruction in the Chicago district is given in the public schools for one day each week. The instructor is a mill employe, teaching for one day and working in the mills at his trade the remainder of the week. The apprentices thus have instructors who know the work of the industry and can closely tie the related technical instruction to the operations to be performed.

Instructors Carefully Chosen

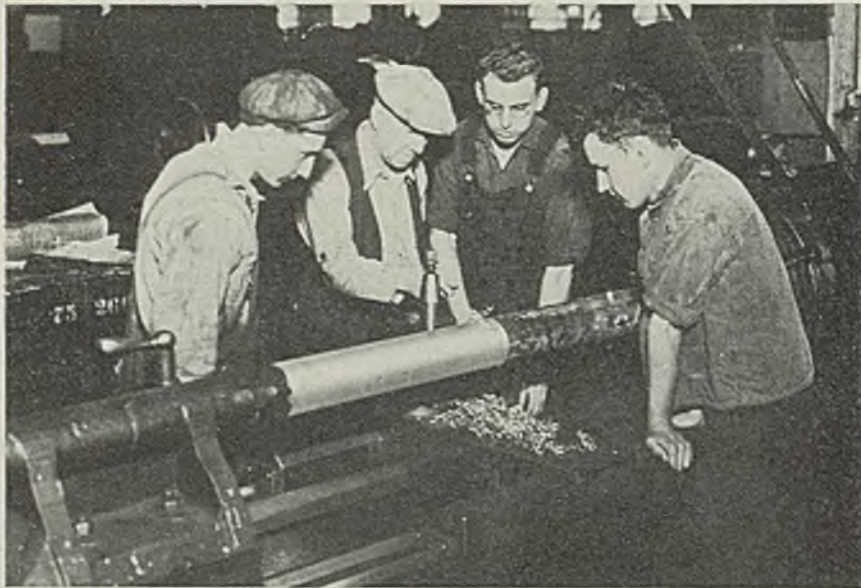
Each instructor, after selection from the mills, must be approved and appointed by the local school board, and for this work in the schoolroom, he is reimbursed under the regulations of the Smith-Hughes act. (The Smith-Hughes act was passed by congress in 1917, and provides for the promotion of vocational education and preparation of teachers of vocational subjects in co-operation with the states.)

Generally, 50 per cent of the cost is appropriated by the federal government, 35 per cent by the state, and 15 per cent by the community, although this varies in the different states.

In the Pittsburgh district with its widely separated plants, related technical instruction is given through correspondence school service. Twice each week, for a period of two hours, at each plant, the apprentices are assembled for supervised study, preparation of lessons and to receive assistance when difficulty is encountered.

Instruction is individual with the apprentice proceeding as rapidly as he is capable of doing. When he works on a particular machine or at a certain type of work, he studies this machine or type of work. Before an apprentice can be advanced to the next period of his apprenticeship, he must have met all requirements in both shop experience and related study. Shop talks and periodic inspection trips are also a feature of the plan.

For the purpose of giving related instruction, series of job sheets, information sheets, and instruction



TRADe apprentices Frank Gelato, Arthur Novak and Michael Savich learn from Harry Miller, night foreman of the machine shop at South works, the correct procedure in using the 24-inch lathe to turn a roller shaft

a relatively small proportion of steel mill workers are engaged in the spectacular phases of steel production. Thousands of employes, however, are in the more prosaic but vitally important work of maintaining the increasingly complicated equipment. Machinists, masons, molders, carpenters, electricians, roll turners, and welders are needed by the thousands.

Likewise, auxiliary services such as pumping stations, power plants, air compressors, plant transportation and communication systems require an army of skilled men. The company's trade apprentice system has been expanded, therefore, to see that a supply of skilled artisans balances with the demand.

Trade apprentices are carefully selected to meet certain rigid qualifications. In line with the corporation's policy, first consideration is given to employes and sons of employes. Applicants should be graduates of a four-year high or an ap-

proportion of Illinois and Indiana, with representatives of the federal government, and with representatives of the public schools of Chicago and Gary.

The supervisors and skilled men from the plants, representing all of the trades to be taught, were divided into trade groups, with a conference leader assigned to each group. The experiences of the members were thus pooled. A report for each unit of work of that trade what the man should be able to do and what additional information should be given him to make him a more intelligent worker.

In the Pittsburgh district, plans and outlines were developed through the co-operative efforts of all of the plants in the district. Here again, educators, superintendents, foremen and skilled workers met in conference and pooled their ideas. These plans have been reviewed

sheets have been prepared in loose-leaf form. These are issued to the apprentice as he starts a new job, and, in addition to containing instruction as to how to do this job, these sheets contain such information as is not readily found in text books, shortcuts and trade kinks. While this entails much preparatory work for both districts, the resulting efficiency of instruction is justification for the extra effort.

For Supervisory Forces

Another training activity is covered by conferences of the supervisory forces. Each supervisor is assigned to a group of 20 with a leader experienced in conference training.

The plan involves discussion of the corporation's policies and regulations in these conferences and the better understanding of them by the supervisory forces.

Agreements on the proper procedure in managing personnel are reached in the conferences before conflicting interpretations or orders are issued. Supervisory forces are expected to be leaders in fact and not merely in theory. They are the true trainers of the employes and are in close touch with the reactions of the men.

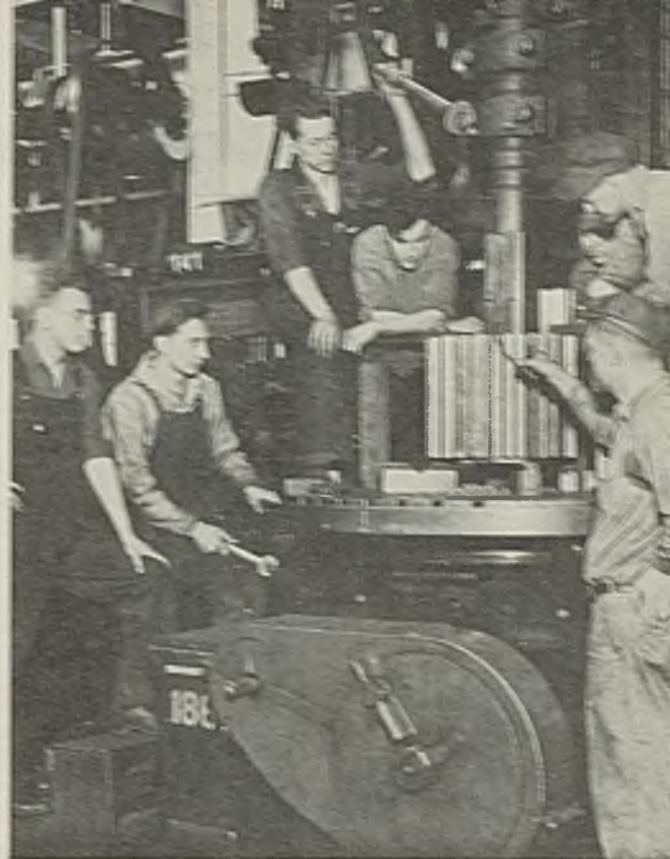
The supervisors in conference have the opportunity to discuss proposed methods of operation or new processes before they are installed instead of afterward. Someone has called this co-operative collaboration, collective co-operation or consultative supervision.

State agencies are assisting in

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JOE ULASKAS, assistant general foreman, explains to trade apprentices how a key-way is cut in a 20-inch gear on the vertical shaft at the machine shop, South works, Carnegie-Mellon's Steel Corp. The apprentices observing this operation, from left to right, are Arthur Noyak, Frank Galati, Al Buchanan, Mike Szuch, Jack Reiner and Melton Warner

◆



the preparation and training of conference leaders by assigning a skilled instructor in this art. This instructor meets with a group of men who are in training for leadership and prepares them to take charge of conferences either of the supervisory forces or of employee groups.

Generally the supervisory forces have been divided into groups for the first year, each group being

composed of only one or two supervisors from each department.

At first the discussions center largely on problems concerning personnel management, safety training, and current topics. After six months or a year of such conferences, the supervisors are re-grouped, and those of similar interests are put into one group.

From then on, the conference discussions center on production and operating problems such as the maintenance of equipment, improvement of quality, or reduction of costs. From these conferences evolve many improvements in operation, supervision of employes, and thinking through of problems by supervisors.

For the Direct Worker

Job training for the new employe and retraining for the established employe are the most important functions of the training division. The foreman is assisted in every way possible to train his men, and management looks to the foreman as the real trainer of the working force. Job training is carried on by the following methods:

1. The training of individuals for special operations.
 2. Vestibule courses of training, in which groups of new employes are instructed for a few weeks by a special foreman or skilled man before they are advanced to regular production jobs.
 3. Conference methods, in which groups of men of similar duties assemble with the foreman for the interchange of ideas and experiences and for the formulation of methods.
 4. Evening classes in the public
- (Please turn to Page 75)



TOM JONES, welding shop foreman at the South works, shows trade apprentices how to prepare a thermit weld on a beam mill manipulator bar. Art Algrim is making the wax pattern, Lyle Burge is waiting to trim it with the knife, while Arnie Jensen will use the cutting torch to fit a flask around the pattern. Bob Price will later pack it with sand with the air hammer

Hillman Interests Extended With Purchase in Alan Wood

FURTHER spread of the Hillman interests of Pittsburgh into the steel industry, through the acquisition of 45 per cent of the common stock in Alan Wood Steel Co., aroused renewed interest last week in possibilities of integration of various Hillman facilities, but authoritative sources stated that the latest venture is an independent move, and that a closer connection between Alan Wood and the other Hillman steel and coke properties is unlikely in the near future.

This latest development brings the Hillman interests into proximity with the Koppers Co. at Pittsburgh, since Koppers owns 55 per cent of the common stock of the Alan Wood company. Thus, most of the ownership of the common stock rests in the Pittsburgh district.

W. J. Rainey Inc., New York, it was announced last week has sold its entire holdings of 90,000 of the 200,000 outstanding common shares of Alan Wood company. Thirty thousand of the 90,000 were sold to Neville Coke & Chemical Co., in which Rainey owns approximately 48 per cent of the stock and Hillman Coal & Coke Co., 52 per cent. The remaining 30,000 shares were sold to J. H. Hillman Jr. and associates of Pittsburgh. Up to 12,000 shares of the latter total will be offered to the public by Philadelphia investment bankers at \$18 per share.

Control Purchased in 1929

At the time of the organization of the Alan Wood company in 1929, 55 per cent, or 110,000 of the common shares, were purchased by Koppers Construction Co., and since then were transferred to the Koppers Co., the parent company. The remaining 90,000 shares were issued to W. J. Rainey Inc., for 19,750 shares of the Rainey-Wood Coke Co., a wholly-owned Alan Wood subsidiary.

Control of the company now is in the hands of the preferred stockholders by reason of accrued unpaid dividends on the preferred stock which now amount to \$39.25, although as of Sept. 1 a total of \$3.25 will have been paid on arrears. Preferred stock of which there are 71,824 shares of \$100 par value outstanding, is owned principally by the Wood and Heckscher families of Philadelphia, which hold the majority position on the board of directors.

Hillman interests already dominant in Pittsburgh Steel Co., and Sharon Steel Corp., are expected to

take a more active part in management of Alan Wood. Hillman interests also are represented in Hillman Coal & Coke, Pittsburgh Coke & Iron Co., National Supply Co., and subsidiaries of these concerns.

Various reports that Henry A. Roemer, head of both Pittsburgh Steel and Sharon Steel will assume active charge of Alan Wood were declared unfounded by authoritative sources in Pittsburgh. "Mr. Roemer has his hands full at present," it was said.

Talk of merger of some of these companies and their subsidiaries, or at least a close integration of operating facilities has arisen from time to time, despite the fact such reports have not been encouraged.

Capacities Are Tabulated

Pittsburgh Steel's annual ingot capacity is 720,000 tons; Sharon Steel, 450,000 tons, and Empire Sheet & Tin Plate Co., of which Mr. Roemer is chairman, 325,000 tons.

Alan Wood has annual capacity for 660,000 tons of ingots, 130,000 tons of sheared plates, and 108,000 tons of hot-rolled sheets. It has two blast furnaces with annual capacity of 406,000 tons at Swedeland, Pa. Its rolling mills are at Ivy Rock, Pa., and Conshohocken, Pa. Iron ore properties are at Oxford, N. J., with a capacity of 110,000 tons, and at Wharton, N. J., with a capacity of 240,000 tons annually.

Products of the company include basic and foundry pig iron, carbon and alloy steel ingots, blooms, billets and slabs, sheared plates, rolled steel floor plates and hot-rolled sheets. Reports have been current recently that the company may engage in the manufacture of a number of small specialties, including galvanized sheet products, to enlarge the scope of its business.

The company's sales last year at \$13,541,214 were the largest since 1929, and resulted in a net profit of \$378,516, the first shown since 1930. It now has 3360 employes, working under CIO contract expiring Feb. 28, 1938.

SPANG, CHALFANT AND NATIONAL SUPPLY MERGER

Directors of the National Supply Co. of Delaware, oil well equipment manufacturer, and of Spang, Chalfant & Co., pipe producer, last week approved a plan to merge the companies into a new Pennsylvania corporation to be known as the Na-

tional Supply Co. Stock will be issued to stockholders of the parent company and its affiliate, Spang Chalfant. Holders will be asked to approve the plan Oct. 11 and 13.

One share of National preferred will receive one share of 5½ per cent prior preferred and one share of \$2 10-year preferred stock of the new company. One share of National common will receive one common share of the new company.

One share of Spang, Chalfant preferred will receive one share of 5½ per cent prior preferred of the new company. One share of Spang, Chalfant common not owned by National will receive 1½ shares of common.

The 5½ per cent series prior preferred of the new company will be convertible for ten years into the common stock on the basis of 2½ shares for the first two years, 2¼ shares for the next four years, and two shares for the last four years.

The new \$2 10-year preferred stock of \$40 par value will rank after the prior preferred and will be convertible share-for-share into common stock. It automatically becomes common stock on Oct. 1, 1947.

National reported consolidated net profit—including Spang, Chalfant—for the first half of \$4,768,139 after all charges, compared with \$1,834,531 last year. The company declared a dividend of \$1.75 on preferred stock payable Oct. 1 to record Sept. 20.

Spang, Chalfant's second quarter net profit was \$1,018,262, equal to \$1.10 a share of common, against \$590,991, or 53 cents a share on the common, in the period last year. The company declared a dividend of \$1.50 on its preferred stock, payable Oct. 1 to record of Sept. 20.

Financial

BETHLEHEM TO ISSUE \$48,000,000 DEBENTURES

Bethlehem Steel Corp. will issue \$48,000,000 in convertible debentures about Sept. 1. Holders of common shares may subscribe at the rate of \$15 face amount of debentures for each common share. Interest rate, prices and terms of conversion have not been announced for the projected financing which will be used for plant expansion and redemption of obligations.

DOMINION STEEL CO. ADDS 80,000 COMMON SHARES

Stockholders of Dominion Steel & Coal Corp. Ltd., Montreal, Que., last week voted to add 80,000 shares to Class B common stock outstanding, to complete purchase of four

Canadian subsidiaries of United States Steel Corp. (See STEEL, Aug. 2, page 25.)

Complete details of the purchase have not been revealed, but it is reported around \$2,000,000 in bonds have been transferred to United States Steel as partial payment. The American company has the option of exchanging bonds for common shares during the next four years.

**NEW McKEESPORT CORP.
EARNS \$773,373 IN HALF-YEAR**

McKeesport Tin Plate Corp. reports first-half earnings of \$773,373 after payment of federal income taxes and charges against depreciation. The statement is the first since the merger March 17 of National Can Co. and McKeesport Tin Plate Co., and reflects earnings from Jan. 1 to July 3 for National Can and from Jan. 1 to March 17 for the former McKeesport company.

♦ ♦ ♦

Eastern Rolling Mill Co., Baltimore, reports net income of \$82,475.63 for the second quarter, after payment of federal income taxes and allowance for depreciation. For the 12 months ending June 30 net profit was \$221,516.98.

**Steel Corp. Shipments
81,798 Tons Below June**

Shipments of finished steel products by the United States Steel Corp. in July were 1,186,752 tons, a decline of 81,798 tons from June. This is 235,901 tons larger than in July, 1936, and the highest July total since 1929 when the movement was 1,338,944 tons.

For seven months this year shipments aggregated 8,801,026 tons, compared with 5,982,201 tons in the same period of 1936 and with 9,669,682 tons in seven months of 1929.

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

	(Tons)			
	1937	1936	1935	1934
Jan.	1,149,918	721,414	534,055	331,777
Feb.	1,133,724	676,315	583,137	385,500
Mar.	1,414,399	783,552	668,056	588,209
April	1,343,644	979,907	591,728	643,009
May	1,304,039	984,097	598,915	745,063
June	1,268,550	886,065	578,108	985,337
July	1,186,752	950,851	547,794	369,938
Aug.	.....	923,703	624,497	378,023
Sept.	.....	961,803	614,933	370,306
Oct.	.....	1,007,417	686,741	343,962
Nov.	.....	882,643	681,820	366,119
Dec.	.....	1,067,365	661,515	418,630
Y'rly adj	.....	†40,859	†23,750	†19,907
Total	.....	10,784,273	7,347,549	5,905,966

†Deduction.

District Steel Rates

Percentage of Open-Hearth Ingot Capacity Engaged in Leading Districts

	Week ended Aug. 14	Change	1936	Same week 1935
Pittsburgh ..	83	none	68	42
Chicago	86	none	71	57
Eastern Pa...	69	-2	50	32½
Youngstown.	78	-2	79	57
Wheeling	94	+1	95	84
Cleveland ...	85	none	82	59
Buffalo	86	none	81	34
Birmingham..	96	none	67	35½
New England	65	none	70	56
Detroit	100	+10	93	94
Cincinnati ...	89	none	72	†
St. Louis	77	none	†	†
Average ..	84	-½	70½	51

†Not reported.

Production

STEELWORKS operations last week dropped ½-point to 84 per cent. Eastern Pennsylvania and Youngstown, O., each receded 2 points, while Wheeling gained 1, and Detroit 10. Little change is expected.

Pittsburgh—Unchanged at 83 per cent. Forty-seven blast furnaces are active, Jones & Laughlin Steel Corp. having shut down No. 4 furnace at Aliquippa for rebuilding. National Tube Co. Monongahela open hearths will be down next week for repairs, but the three blast furnaces will continue operating.

Wheeling—Up 1 point to 94 per

cent. A reduction in the open hearths of one company in this district was balanced by additional capacity put on by another producer last week.

Central eastern seaboard—Down 2 points to 69 per cent, a large plate-maker having taken off one furnace and another steelmaker working a short week.

Youngstown, O.—Down 2 points to 78 per cent, with 69 open hearths and 21 blast furnaces active.

Cleveland—Unchanged at 85 per cent with schedule calling for the same rate this week.

St. Louis—Unchanged at 77 per cent, with 25 of 32 open hearths active.

Birmingham, Ala.—Unchanged at 96 per cent of capacity, 19 open hearths and 18 blast furnaces being active.

Detroit—Rebounded 10 points to 100 per cent, with all 21 open hearths in service all week.

New England—Unchanged at 65 per cent. Completion of repairs on several open hearths is expected to bring the rate to 80 per cent for this week.

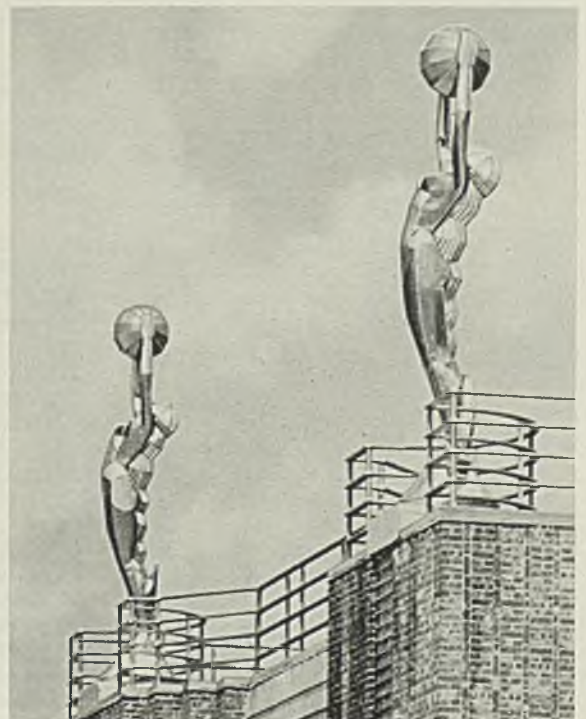
Chicago—Practically unchanged at a shade above the 86 per cent attained a week ago. Active blast furnaces number 31 of the 39 in the district.

Cincinnati—Steady at 89 per cent of capacity, with three open hearths idle. The same rate is scheduled for this week.

Buffalo—Unchanged at 86 per cent with prospect of the rate being maintained for several weeks.

Stainless Steel Statues Adorn Beach Approach

◆
STAINLESS steel statues 16 feet tall, weighing more than 500 pounds each, adorn the municipal bathing beach entrance at Astoria, L. I. Each is fabricated of 125 pieces of 18-8 chromium-nickel steel, soldered with a 65 per cent silver alloy containing nickel and copper. The steel was supplied by Crucible Steel Co. of America, New York. Photo courtesy International Nickel Co. Inc.



Steel Imports In Steady Volume

IMPORTS of steel and iron products, exclusive of scrap, in June totaled 39,699 tons, valued at \$2,212,086, compared with 39,877 tons, valued at \$2,278,192 in May, and 40,325 tons valued at \$1,657,194 tons in June, 1936, according to the metals and minerals division, department of commerce.

Pig iron was the leading item amounting to 7514 tons, mainly from British India. Belgium furnished most of the steel imports, 11,703 tons, chiefly structural shapes. Germany

FOREIGN TRADE OF UNITED STATES IN IRON AND STEEL

	Gross Tons			
	1937		1936	
	Imports	Exports	Imports	Exports
Jan.	43,063	201,692	50,489	241,564
Feb.	41,628	290,987	43,358	213,802
March.	51,805	570,584	56,720	264,337
April.	68,197	683,674	49,277	301,987
May	49,050	969,222	59,391	314,950
June.	44,771	\$26,534	59,910	294,951
6 mos.	298,514	3,542,693	319,145	1,626,665
July		47,490	296,738	
Aug.		60,697	295,341	
Sept.		59,993	235,571	
Oct.		64,509	261,882	
Nov.		61,970	203,297	
Dec.		52,584	244,156	
Total.		666,838	3,162,694	

was second in steel products with 6082 tons, principally pipe.

For six months imports aggregated 265,757 tons, excluding scrap, compared with 253,046 in the corresponding period of 1936. Pig iron, 59,865 tons, structural shapes 50,379 tons, and bars, 28,559 tons, were the leading items.

Scrap imports in June were 5072

ORIGIN OF JUNE IMPORTS

	Gross Tons			
	Iron ore	Pig iron	Manganese ore	Ferromanganese
Norway	25,559	100		2,181
Sweden	14,578	200		
Unit. Kingdom	31	50		
Canada	98	381		1,082
Cuba	23,000		6,517	
Chile	122,100		94	
Australia	3,001			
Mexico	768			
Newfoundland	9,000			
British India		6,810	763	
Soviet Russia			13,425	
Brazil			3,679	
Gold Coast			8,657	
France				21
Japan				134
Total	198,135	7,541	33,135	3,418
	Sheets	Struc-	Steel	Hoops
	skelp and	tural	bars	and
	sawplate	steel	bands	
Belgium	497	6,053	2,616	1,868
France	173	1,297	423	668
Sweden			422	1
Unit. Kingdom	13		64	22
Germany		10	70	114
Canada			13	1
Austria			8	
Czechoslovakia			19	
Total	684	7,360	3,635	2,674

tons, compared with 9173 tons in May and 19,587 tons in June, 1936. For six months scrap imports totaled 32,757 tons, against 66,099 tons

UNITED STATES IMPORTS FOR CONSUMPTION OF IRON AND STEEL PRODUCTS

	Gross Tons		May Jan. thru	
	June	1937	1937	June '37
Articles	1937			
Pig iron	7,541	6,361	59,865	
Sponge iron	371	302	2,128	
Ferromanganese (1)	3,418	2,427	17,252	
Spiegelisen	2,375	787	9,012	
Ferrochrome (2)	15	42	216	
Ferrosilicon (3)	586	232	1,285	
Other ferroalloys (4)			52	
Steel, ingots, blooms			124	
Billets	215	198	1,089	
Concrete rein. bars	40	771	3,450	
Hollow bar, drill steel	230	273	1,375	
Bars, solid or hollow	3,635	4,036	28,559	
Iron slabs			1	
Iron bars	233	94	1,159	
Wire rods	1,044	1,293	8,319	
Boiler, other plate	23		199	
Sheets, skelp, saw pl.	684	1,536	7,835	
Die Blocks or blanks	18	2	73	
Tin plate, taggers' tin and terne plate	47	34	152	
Structural shapes	7,370	8,962	50,379	
Sashes, frames (5)				
Sheet piling	694	214	1,762	
Ralls, fastenings	1,664	438	5,371	
Cast-iron pipe, ftgs.	399	178	1,505	
Mall. iron pipe ftgs	37	45	242	
Welded pipe	855	943	5,659	
Other pipe	2,008	4,076	14,546	
Cotton ties			349	
Other hoops, bands	2,674	2,393	15,627	
Barbed wire	580	962	7,090	
Iron and steel wire	308	484	2,746	
Teleg. and tele. wire	2		10	
Flat wire and strips	350	366	1,855	
Wire rope and strand	397	306	1,857	
Other wire	734	428	2,381	
Nails, tacks, staples	810	1,159	9,521	
Bolts, nuts, rivets	18	16	264	
Horse, mule shoes	23	47	157	
Cast'gs and forgings	301	472	2,271	
Total, gross tons	39,699	39,877	265,757	
Iron and steel scrap	5,072	9,173	32,757	
GRAND TOTAL	44,771	49,050	298,514	

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

in first half of 1936. Canada supplied the greater part of the scrap in both years.

June Machinery Exports 66 Per Cent Over 1936

Industrial machinery exports in June were valued at \$21,128,496, a gain of 66 per cent over those of June, 1936, valued at \$12,675,659, according to the machinery division, department of commerce.

The upward trend has continued steadily, the first six months' shipments abroad aggregating \$117,247,041, an increase of 39 per cent over the \$84,279,326 worth in the corresponding period last year.

Exports of power-generating machinery, except electric and automotive, in June were valued at \$1,067,787, a gain of 63 per cent over June, 1936, shipments valued at \$654,773. The outstanding increases were in sales of locomotives and parts, steam boilers, and diesel engines.

Exports of conveying and construction machinery led the advance,

increasing to \$2,151,078, approximately double the June, 1936, shipments valued at \$1,076,668. Gains were registered especially in excavators and parts, valued at \$587,781, compared with \$207,997 a year ago.

June exports of power-driven metal-working machinery amounted to \$4,731,173, a gain of 95 per cent over the June, 1936, exports valued at \$2,431,944. Greatest advances were shown in sales of vertical boring mills valued at \$319,097 against \$92,364; thread-cutting machines at \$354,322 against \$110,518; knee and column type milling machines \$226,220 against \$68,220; gear cutting machines \$287,123 against \$49,170; and rolling mill machinery at \$766,682 against \$283,418 a year ago.

July Machine Tool Orders Lowest Since February

July machine tool orders continued a downward trend to the lowest level in four months, according to the National Machine Tool Builders' association, Cleveland. The association's index for July was 171.1, against 191.8 in June, 208.5 in May, and 282.5 in April, the peak month of past eight years.

While July was the second lowest month in the past eight—February's index was 165.2—it still was higher than any month from November, 1929, to November, 1936, inclusive.

Recession was in domestic orders, the index here dropping from 137.6 to 115.4. Foreign orders increased slightly from 54.2 to 55.7.

Steel Corp. Begins Making Industrial Film In Color

Crane men, mill hands, miners, and seamen became screen actors Aug. 14 when United States Steel Corp. began production of an industrial feature film in color. Illustrating operations in 20 subsidiary steel plants, the film is being made by Technicolor Inc. at a cost of more than \$200,000.

An eight weeks' itinerary has been planned, starting at Hibbing, Minn., and ending at Pittsburgh. The film will constitute the first commercial feature in color, and it is believed this medium will reach a new high in realism.

Acquires Coal Properties

Pittsburgh Steel Co. last week acquired coal properties of Hecla Coal & Coke Co. in Washington county, Pa. Sale price was reported as \$838,000, including 14,629 shares of Pittsburgh Steel common stock, valued at \$512,000.

Organizes New Products Division

RESPONSIBILITY for developing lines of activity which either are new in the art or which have not been previously undertaken by the company has been centralized by the Westinghouse Electric & Mfg. Co., with the formation of a New Products division. Functioning the same as the other operating units of the company, this division will include separate engineering, manufacturing and sales departments.

As the field for each new product has been determined and it has passed through the "pilot plant" stage, it will be absorbed by one of the regular company divisions. The new division will train a staff for further promotion of the product.

H. M. Wilcox has been appointed manager, with H. W. Tenney engineering manager, and George F. Begoon sales manager. Mr. Wilcox formerly was vice president of Electrical Research Products Inc., a subsidiary of the Western Electric Co., which developed patents of the American Telephone & Telegraph Corp. outside the telephone field.

Managers Are Experienced

Mr. Tenney joined the Westinghouse company in 1920 and entered the materials and process engineering department the following year. He held positions as section engineer and division engineer in charge of high voltage laboratory, engineering laboratory, high power laboratory, chemistry laboratory, and central engineering laboratory building. In November, 1936, he was appointed manager of the central engineering laboratory department.

Mr. Begoon was first employed by Westinghouse in 1913. The following year he became associated with Westinghouse Electric International

Co., in which he served until 1925 except for the period of the World war when he served as captain CAC, AEF. He returned to the International company in 1919. From 1922 to 1925 he was Westinghouse manager for Brazil. He then became associated with National Aniline & Chemical Co. and from 1929 to 1937 with the Electrical Research Products Inc. In April this year he rejoined Westinghouse in the industrial division, New York.

Labor

WEIRTON REPLIES TO LABOR BOARD COMPLAINT

WEIRTON STEEL CO, in its formal answer last week to the complaint issued by the national labor relations board denied charges that the company dominated the government, administration of justice, or business and social relationships of the Weirton, W. Va., district, and engaged in unfair labor practices.

In asking dismissal of the case Weirton declared the complaint was not made in good faith, but was the result of an arrangement between SWOC and representatives of the labor board "acting in concert."

The answer further asserted that this arrangement was made to assist SWOC in its efforts to force Weirton employes against their wishes to join and pay dues to the union which SWOC has attempted to form, and to subject the company and its employes "to untrue and unfair propaganda and publicity and to unnecessary expense, annoyance and loss of business and wages."

The answer was signed by F. A. Hanlin, Weirton vice president, and was filed by company attorneys.

Hearing on the complaint is scheduled to begin in New Cumberland,

W. Va. The company challenges the right of the labor board to assume jurisdiction in the case, citing a ruling made three years ago in a United States district court of Delaware, to the effect that the company is not engaged in interstate commerce.

The company also denies that SWOC is a labor organization within the meaning of the labor relations act, or that it is the representative of the Amalgamated Association of Iron, Steel and Tin Workers in matters relating to the iron and steel industry.

"SWOC is a group of individuals who for their personal gain have used threats, violence, etc., to force employes to join unions," said the company.

Cites Court Ruling

Weirton denied maintaining a so-called "hatchet gang," and denied dominating or interfering with formation or administration of its employe representation plan, and cited a ruling of the district court to the effect that the plan is a lawful and effective means of collective bargaining.

This ruling was made in the Weirton case in which the government brought suit against the Weirton company in 1934. The government lost the case and never appealed.

STOVE STRIKE SETTLED

A six-weeks' strike at the plants of the Roberts & Mander Stove Co., Philadelphia, and its subsidiary, Hatboro Foundry Co., Hatboro, Pa., was settled last week. Involving 1000 men, the agreement specifies no closed or preferential shop, and no checkoff. The strike had been called by the Amalgamated Association of Iron, Steel and Tin Workers, which is the sole collective bargaining agency.

556,000 Employed in Steel Industry in June

Employment and payrolls of the steel industry during June decreased sharply from the May level because of strikes in plants of four major companies, according to the American Iron and Steel institute. It is estimated employes in companies affected by strikes lost more than \$9,000,000 in wages.

The number of employes in June averaged 556,000, against 595,000 in May, and June payrolls totaled \$87,520,000, compared with \$92,931,000 in May. Despite the drop, the June figures were well ahead of June, 1936, when employment averaged 498,000 and payrolls aggregated \$62,991,000. Wages in June averaged 87.7 cents per hour, and the average work-week was 39.2 hours.



H. M. Wilcox



H. W. Tenney



G. F. Begoon

Men of Industry

ARTHUR H. YOUNG, since February, 1934, vice president in charge of industrial relations, United States Steel Corp., New York, will retire Oct. 1 to take up permanent residence in Carpinteria, Calif., where he acquired a fruit ranch in 1936. Mr. Young has been active about 30 years in the field of industrial relations. Previous connections included manager of industrial relations for International Harvester Co. from 1918 to 1924; industrial relations counsel to Industrial Relations Counselors Inc. from 1924 to 1934.

He will be succeeded by William Beye, of Chicago, a member of the law firm of Knapp, Beye, Allen & Cushing, division counsel of the Steel corporation in Chicago for the past 35 years.

Clarence G. Fox has been made purchasing agent, Marvel-Schebler Carburetor division, Borg-Warner Corp., Rockford, Ill.

T. M. Girdler, chairman of the board, Republic Steel Corp., Cleveland, has been elected a director of the reorganized board of Cord Corp., New York.

Arthur Roeder, president, Colorado Fuel & Iron Corp., Denver, will move to New York this fall, and executive business of the corporation will be carried on there.

Joseph B. Montgomery Jr., who became associated with Empire Sheet & Tin Plate Co., Mansfield, O., Aug. 1, has been elected vice president



Joseph B. Montgomery Jr.



Arthur H. Young

in charge of sales. He previously was employed in the sales organization of Bethlehem Steel Co., in the sheet and strip sales department. Mr. Montgomery has had years of experience in the steel industry, having started with the Richmond Structural Steel Co. of Virginia in 1914, and since that time, with the exception of 18 months in the army, he has been actively associated in sales and executive positions with various steel producing and manufacturing companies, including Carnegie Steel Co., Berger Mfg. Co., and Youngstown Pressed Steel Co.

Ernest C. Bartell, Tarentum, Pa., has been appointed personnel director, West Leechburg division of Allegheny Steel Co. Mr. Bartell attended Princeton university, graduated in 1927 and took two years post-graduate work.

L. C. Ritterbush has been appointed assistant district manager for Union Switch & Signal Co., Swissvale, Pa., with headquarters in New York. He joined the company Jan. 1, 1924.

C. M. Wheeler, sales representative, with headquarters at Swissvale, has been made assistant district manager of that territory. Mr. Wheeler resigned as supervisor of telegraph and signals for the eastern and Pittsburgh divisions of the Pennsylvania railroad in 1927, to become sales engineer for Union Switch & Signal.

William Kerkhoff Jr., has been named manager of the New Orleans sub-office, Tennessee Coal, Iron & Railroad Co. He succeeds John P. Pannill, who retired July 1 under the United States Steel Corp. pension plan. Mr. Kerkhoff has been associated with the corporation and its subsidiaries 28 years.

Charles H. Jennings, engineer in charge of welding research for

Westinghouse Electric & Mfg. Co., has sailed for England to act as a consulting welding engineer during the next three months for the English Electric Co. He will resume his duties with Westinghouse about Dec. 1 where, in addition to his research work, he supervises all electric welding in the Westinghouse factories.

E. S. Crosby, since 1929 vice president and general manager, Johns-Manville International Corp., a subsidiary of Johns-Manville Corp., has been named president. Mr. Crosby joined Johns-Manville in 1928 when it absorbed the Celite Co., of which he was vice president and a director. His first position with Johns-Manville was as general manager of the engineering department.

H. L. Pierson, president, Detroit Harvester Co. and a member of the board of directors of Eaton Mfg. Co., has been elected chairman of the board of Eaton-Erb Foundry Co., Detroit. Joseph L. Dostal, formerly vice president in charge of engineering and research of Eaton-Erb Foundry, has been advanced to the position of president. Edward C. Hoenicke, previously sales manager, has been elected vice president and a director.

W. H. Scherer has been appointed manager of Worthington Pump & Machinery Corp.'s plant at Holyoke, Mass. He goes to Worthington after 30 years of service with Westinghouse Electric & Mfg. Co. He was general superintendent of Westinghouse's East Springfield works for the past 18 years. At Holyoke, Mr. Scherer will be in charge of the manufacture of equipment recently transferred from the corporation's plants at Harrison, N. J., and Buffalo.

Otto W. Winter has been appointed factory manager, Columbus McKinnon Chain Corp., Tonawanda,



Otto W. Winter

N. Y., manufacturer of chain and hoist equipment. Mr. Winter's previous connections include the Kent-Owens Machine Co., Toledo, O., as industrial engineer; Whitman & Barnes, Detroit, as general manager of the cutter division; Cincinnati Milling Machine and Cincinnati Grinders Inc., Cincinnati, as sales engineer, and a period in U. S. S. R. as a consultant to the Soviet Machine Tool and Cutting Tool Trusts. He is a member, American Society of Mechanical Engineers; American Society for Metals and a director and member, American Society of Tool Engineers.

Died:

CHARLES H. HODGES, 77, chairman of the board, Detroit Lubricator Co., Detroit, and one of the organizers of American Radiator Co., in Boston, Aug. 8. In 1892, when the Detroit Radiator Co. merged with other companies to form American Radiator, Mr. Hodges became treasurer and member of the executive committee of the new organization, and in 1906 was named vice president. A year later he became president of Detroit Lubricator Co., and since 1926 was chairman.

Leigh B. Morris, 64, formerly Pacific coast representative of Bethlehem Steel Co., in Los Angeles, July 26.

Nicholas B. Neilson, 81, a retired vice president, United States Steel Corp., in charge of transfer operations, July 30 in Morristown, N. J.

Adelbert G. Clark, for 27 years purchasing agent for Shepard Niles Crane & Hoist Corp., Montour Falls, N. Y., in that city, Aug. 6.

Edward A. ReKate, superintendent, Federated Products Co., Depew, N. Y., in that city, recently. He formerly was superintendent of Braeburn Steel Co., and was well known in metallurgical circles, having been manager of the American plant of United States Nickel Co.

Stanley B. Slater, 61, sales manager, vault department, Chicago Bridge & Iron Works, Birmingham, Ala., in Birmingham, Aug. 5. Before joining Chicago Bridge & Iron six years ago, he served as purchasing agent and credit manager for the Republic Iron & Steel Co. at Birmingham, 21 years.

Charles H. Hirsching, 47, for 25 years purchasing agent for American Ship Building Co., Cleveland,

at his home in Lakewood, O., Aug. 5.

James V. Watson, 70, former president, United Supply & Mfg. Co., Chicago, railway supply company, in that city, Aug. 5. He retired in 1934 after holding the presidency since 1902. Mr. Watson had been treasurer, Chicago Car Wheel Co., Griffin Wheel Co. and Ajax Forge Co., all of Chicago.

Meetings

A.S.M.E. OIL-GAS MEETING AT PENN STATE

OIL and gas power division of the American Society of Mechanical Engineers will return to Pennsylvania State college, State College, Pa., Aug. 18-21, for its annual national meeting. Headquarters will be at the Nittany Lion inn.

Five technical sessions will deal with diesel engines, gas engines, gas and fuel oil under the headings of general, fuels-lubrication, transportation, operating and research. More than a dozen manufacturers of diesel engine parts and accessories will be represented in an exhibit in connection with the meeting.

SELECT SOUTHERN CITY FOR ACETYLENE CONVENTION

International Acetylene association announces its thirty-eighth annual convention to be held in Birmingham, Ala., Nov. 10-12. Headquarters will be at the Tutwiler hotel. H. F. Reinhard, 30 East Forty-second street, New York, is secretary.

GEARMAKERS ANNOUNCE DATE OF FALL MEETING

Twentieth semiannual meeting of the American Gear Manufacturers association is to be held at the Spink-Wawasee hotel, Lake Wawasee, Ind., Sept. 20-22. J. C. McQuiston, Penn Lincoln hotel, Wilkinsburg, Pa., is manager-secretary of the association.

BRITISH INSTITUTE WILL MEET IN MIDDLESBROUGH

Autumn meeting of the British Iron and Steel institute will be held in Middlesbrough, Yorkshire, England, Sept. 14-17. The program will include technical meetings and plant visits. It is announced that Leon Guillet, member of the French Academy of Science, director of Ecole Centrale des Arts et Manufactures, and professor at the Conservatoire des Arts et Metiers, Paris, has been nominated an honorary vice president of the institute, and Dr. C. A. Edwards, principal, University college, Swansea, Wales, has been named a member of the council.

Activities of Steel Users and Makers

CECO STEEL PRODUCTS CORP. has started work on a new plant on a 20-acre site at West Twenty-sixth street and Fifty-eighth avenue, Cicero, Ill. The Ceco company formerly was the Concrete Engineering Co., its name recently having been changed to reflect the diversified line of building products it sells. First unit of the new plant, now being built, was necessitated by inadequate facilities at the company's present location, 1926 South Fifty-second avenue, Cicero. The contract division will remain for the time being at the latter location. A sales office also is maintained at 176 West Adams St., Chicago. The new unit will cost about \$200,000.

Enameled Metals Co., Pittsburgh, has been awarded a patent on the zinc coating of the threads on hot galvanized, rigid, steel conduit after cutting of threads.

Worthington Pump & Machinery Corp., Harrison, N. J., has been awarded contract by the United States navy department for complete boiler feed and condenser pumping equipment for seven 1500-ton torpedo boat destroyers, totaling \$511,000.

Cutler-Hammer Inc., Milwaukee, is working on an order for ten large lifting magnets for Carnegie-Illinois Steel Corp., for use in its works at Gary, Ind. Each magnet, 65 inches in diameter and weighing about 4 tons, is capable of lifting 2 tons of scrap or pig iron.

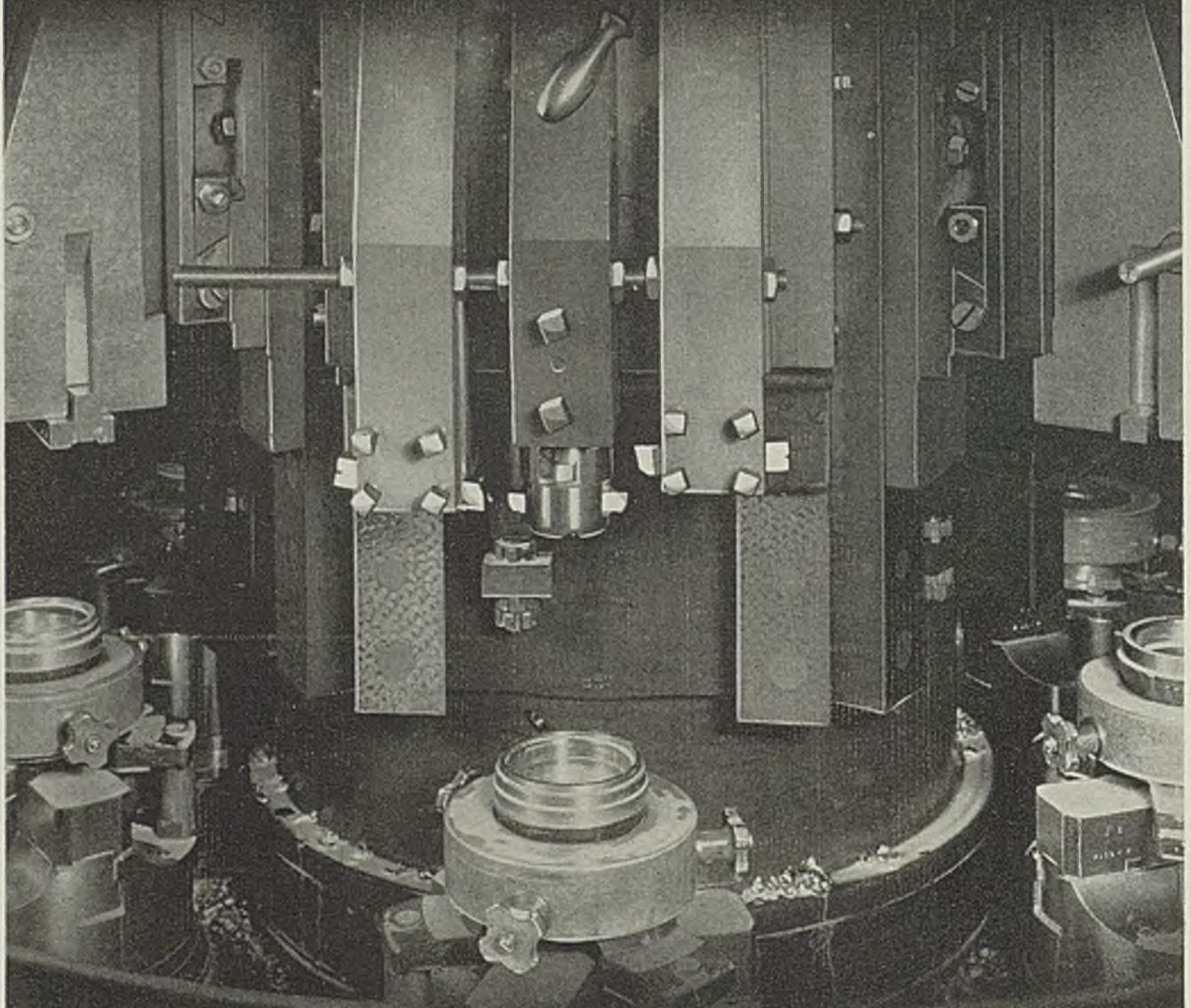
Amsler-Morton Co., Pittsburgh, has booked contracts for six Amco pit furnaces for the Tennessee Coal, Iron & Railroad Co., Birmingham, Ala., and one large soaking pit furnace for the Timken Roller Bearing Co., Canton, O. All pits will be of the center-fired recuperator type, will have the seal lift type cover and will be completely equipped with automatic temperature, pressure and combustion control.

African Metals Corp., New York, has announced the organization of Industrial Sales Corp. to take over its steel, chemical and cement business. The new corporation will have general offices in the Lincoln building, 60 East Forty-second street, New York. Victor Mikolajczak, a director of African Metals, has been elected chairman of the new company, and M. L. Blanc, former treasurer of African Metals, is president and treasurer. Joseph L. Wilmotte is in charge of steel sales.

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PRODUCTION WITH BULLARD
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MIRRORS OF MOTORDOM

DETROIT

SINCE the American Bantam Car Co. announced award of material contracts leading up to resumption of production in the old Austin plant at Butler, Pa., increasing speculation has arisen concerning the future of small cars in general. Success which Willys has had is looked upon as some sort of favorable indication of the public's reaction to a small, inexpensive automobile of the so-called "pure transportation" type. Willys, in the first seven months this year, has turned out 56,600 jobs and by the end of the model run will approximate 70,000.

So successful has been the reception of this design of the late Amos Northrup, Willys is now entering into production of coupe and commercial models. Appearance on Detroit streets recently of a specially built Willys with every appearance of a rear-engine job has started whispers this maker may be going to engine-in-the-rear for next year. However, best opinion is that this is unlikely.

Lack of Room Chief Criticism

Some years ago, it will be recalled, General Motors was reported considering introduction of its small foreign-built Opal car into the American market, and the corporation even went so far as to have a few Opals built in this country for experimental purposes. But the flurry died down subsequently.

About this time, a certain high executive in the GM organization was asked by President Alfred P. Sloan, so the story goes, to give his definition of the small car as applied to American markets. The executive replied to the effect that what was needed was a car with 10 per cent more power than the comparable small car in Europe, same wheelbase as the European make, and with a rubber body capable of accommodating five adults if necessary, but which would shrink back into pleasing lines when said adults disembarked.

In a nutshell, this sums up the

BY A. H. ALLEN
Detroit Editor, STEEL

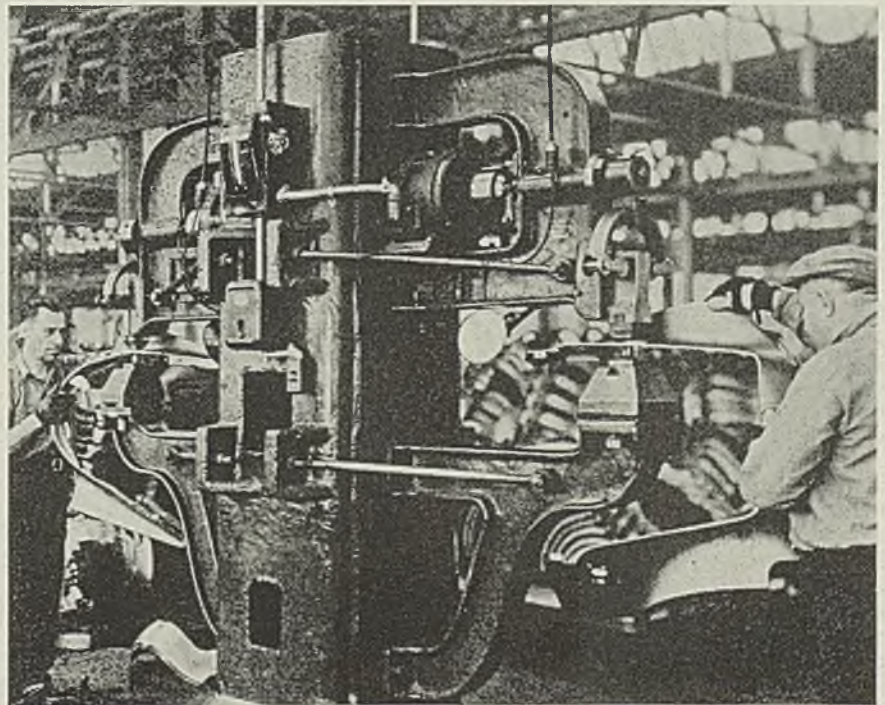
criticism of the small car in American markets—lack of room and poor appearance. Every effort of body builders in recent years has been toward correcting deficiencies in bodies to provide more room for passengers without any sacrifice in smartness of line. Widening of bodies, moving of emergency brake to one side and now gradual elimination of gearshift lever, the steel top with its increased headroom, all are

concessions to passenger comfort. For example, the 1938 Packard line is understood to have bodies 57 inches wide through the rear seat.

Many engineers will tell you today that the small car, despite its economy of 40 to 50 miles on the gallon of gasoline, is a liability to drive because it is so low and difficult of ingress and egress. But these engineers would be the first to admit they may be wrong. It is no simple task to chart accurately the reactions of a fickle public to automotive design. Walter Chrysler found that out with his first airflow models.

Rumors of new small cars have

Ironing Out Wrinkles in Radiator Shells



SHEET metal experts manipulating these dual deep-throated power hammers smooth out wrinkles in steel radiator shells for DeSoto cars before the shells are transferred to the paint spray division in the assembly building. Electrically powered and controlled through treadles, the hammers take out small imperfections which would be invisible to the untrained eye



MIRRORS OF MOTORDOM

been perennial favorites and at one time or another nearly every producer has been "just about ready" to come out with a new Lilliputian. Ford particularly has been the subject of such reports, one reason being that the motor for the present model 60 Ford was seen by many several years in advance of introduction of the car itself, and naturally was supposed to be the powerplant of a newly conceived "puddle jumper."

Another hardy perennial for the last four or five years has been the new and smaller Plymouth which just never seemed to get around to being born. Now, however, in view of certain shifts being made in Chrysler Corp. plants and other behind-the-scenes developments, it is a fairly safe prediction Chrysler will have a new small edition ready for announcement by about Feb. 1, and probably to be called the Keller after K. T. Keller, president of the corporation. Present thinking is said to center around a car of a normal wheelbase, but sharply trimmed down and lightened to bring it into the \$500 price class or in competition with the Willys.

AS FAR as innovations in front-end appearance are concerned, Lincoln-Zephyr probably will steal the show next year. With its chassisless frame and ultrastreamlines this year, the Zephyr has been a good seller and production on the model will total approximately 48,000. Lines are being drawn to boost this figure by about 25 per cent for next year which will call for considerable revamping and enlargement of production facilities in the Lincoln plant on West Warren avenue. Already changes have been announced covering additional body conveyor bridges and new compressor substations. More will follow. Lincoln assembly lines are down, although some departments continue on service parts. Portions of the working force will return Sept. 1 and Sept. 7.

Concerning the 1938 model, those who have seen what is in store say the car will be practically identical with this year's model from the doorposts back, but the front end has come in for complete redesign and is nothing short of startling. To some extent, the motif shown in this

Automobile Production

Passenger Cars and Trucks—United States and Canada By Department of Commerce			
	1935	1936	1937
Jan.....	300,335	377,244	399,634
Feb.....	350,346	300,810	383,698
March ...	447,894	438,943	519,177
April.....	477,059	527,625	553,415
May	381,809	480,518	540,357
June	372,085	469,368	521,139
6 mos....	2,329,528	2,594,508	2,917,420
July	345,297	451,206	†452,309
Aug.....	245,075	275,934	.....
Sept.....	92,728	139,820	.....
Oct.....	280,316	230,049	.....
Nov.....	408,550	405,799	.....
Dec.....	418,317	519,121	.....
Year	4,119,811	4,616,437	.....

Estimated by Ward's Automolive Reports

Week ended:			
July 17		115,380	
July 24		88,056	
July 31		86,448	
Aug. 7		79,736	
Aug. 14		103,250	
Week ending			
		Aug. 14	Aug. 7
General Motors	41,865	48,925	
Ford	26,000	650	
Chrysler	26,900	21,900	
All others	8,485	8,261	

†Estimated.

year's Cord has been followed, in that the nose, or what formerly was the radiator shell, is solid steel; but the shape is not the coffin contour of the Cord. The front has been sloped and streamlined, but shows no grille or louvers as they are known today. Instead the grille will be much smaller and located near the lower extremity of the front, to act as a sort of wind scoop.

It is understood some approximation of what Zephyr engineers have accomplished can be gained from a look at the Gilmore Special racing car with which Wilbur Shaw won the 500-mile Indianapolis Memorial day classic. Shaw, incidentally, achieved an economy of 3 miles per gallon better than that shown by other cars of the same size and same horsepower in the race. Naturally, a number of modifications of this design are required in applying it to a passenger car, but the resemblance is more than happenstance.

Originally it was intended to have the Lincoln Zephyr powerplant in the rear, and Briggs developed and displayed widely a special body to

accommodate this design. However, at the last minute it was decided the time was not yet ripe for rear engines, so the design was altered. The new bodies are reported to be trending toward this earlier Briggs design, but the engine will be retained in front.

MANUFACTURERS apparently are not worried over the effect of the recent price increases on current retail sales. It is the feeling most dealers will be able to absorb the increase by notching up the allowance on old cars, so in the end the public will pay no more for 1937 models. Naturally the picture will change when the new models appear this fall.

Chevrolet fell in line with the balance of the General Motors line and announced general price increase of \$30. This week Hudson announced increases ranging from \$35 above present list on Terraplanes to \$45 on Hudsons, all effective Aug. 23. Packard prices have been moved up \$65 to \$200, effective Aug. 16, and Nash \$35 to \$85, Aug. 14.

Up to Thursday last week, no word had come from Chrysler on increased prices. Officials there had been so busy negotiating settlement of labor trouble at the Plymouth plant, idle 2½ days, that apparently they had not found time to deliberate the matter of prices. News of all these price increases has come from automobile company publicity offices, and there does not appear to have been any formal announcement of them in car advertising.

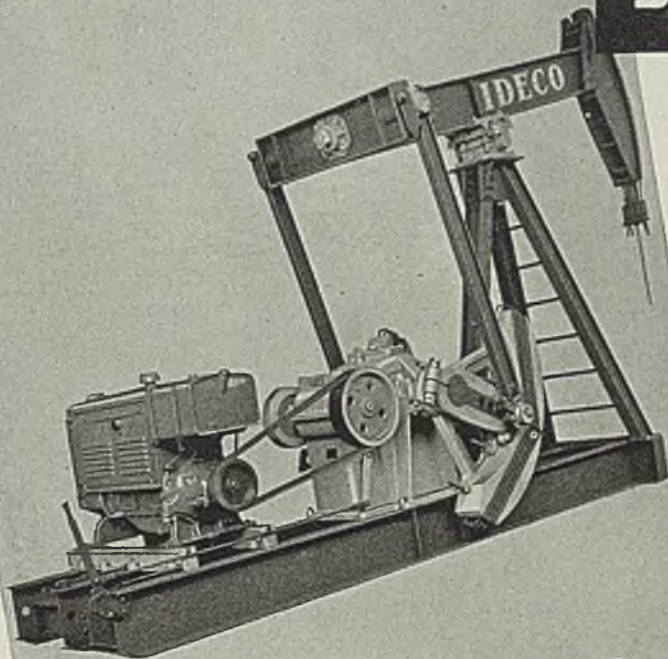
ABOUT 70 per cent of the Buick frame business for 1938 has been awarded to Midland Steel Products Co., supplanting A. O. Smith Corp. as supplier. The latter has more than made up for the loss by contracts for all frame requirements of Chrysler's Evansville, Ind., and California plants, as well as a substantial portion of Dodge frame business. Murray Corp. of America has received appreciably larger contracts for 1938 from Dodge truck divisions and also from Ford.

Nash and Oldsmobile have wound up 1937 assemblies and are now down for the changeover. Olds likely will be back in production within two weeks, making one of the shortest shutdowns in its history. The new Olds is said to have relatively few exterior changes. Local die interests are expecting some substantial business on the new Nash.

Ford assemblies resumed last Monday and tentative plans call for production of about 125,000 more on the 1937 line before the changeover to new models, bringing the latter date to about Sept. 7 or Sept. 13.

"PERFECT" OIL SEALS

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DUST STORMS



Resisting the fine sand and grit carried at bullet-like speed by the famous gales of the dust bowl is a supreme test for any structure. Thousands of bearings have thus been ruined in a few hours . . . but not those of the IDECO pumping units. • The International Derrick and Equipment Company, which manufactures this pumping unit, equips both upper and lower Pitman Bearings with "Perfect" Oil Seals. They are thus fully protected against entrance of sand, grit and moisture . . . also against loss of lubricant. As a result IDECO bearings have a much longer useful life and give much better service consistently.

PERFECT
Oil Retainer
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Ask Chicago Rawhide engineers for their suggestions on lengthening the life of your bearings.

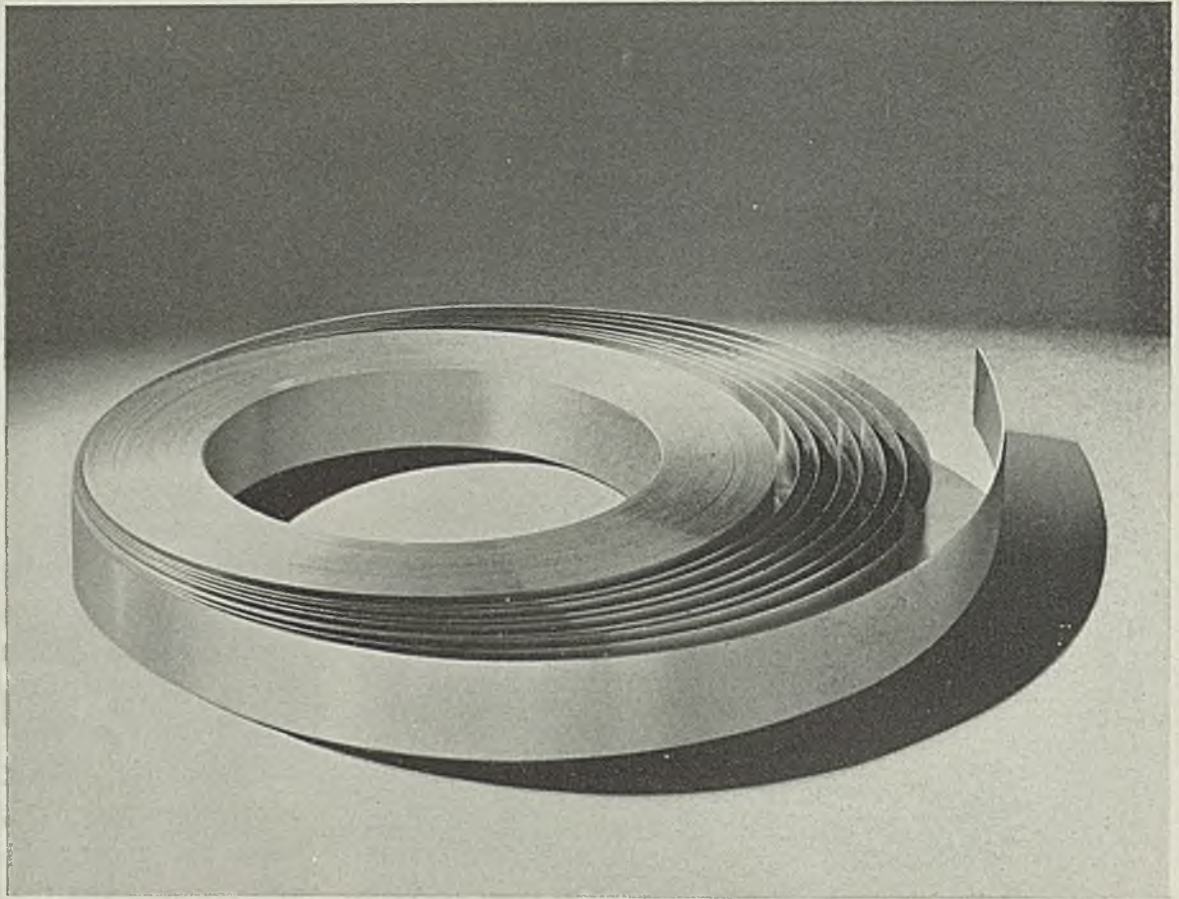
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59 Years Manufacturing Quality Mechanical Leather Goods Exclusively

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The values of high quality are further elevated, when *service* is on the same level. *Service* is the unseen quality which is not easily described, but quickly recognized when received.

Here at Washburn you will find a medium size organization which is at all times in close touch with mill schedules and operations. This executive attention to orders places service on a par with Washburn's high standards of quality.

Washburn Flat Strip is obtainable in cold-rolled high or low carbon steel, in widths from one-sixteenth inch to six inches, in several finishes including: Bright, Galvanized, Tinned and Cadmium.

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WASHBURN

CLEAN, UNIFORM BILLETS - STRIP - RECTANGULAR, ROUND, FLAT RODS
TEMPERED AND UNTEMPERED FLAT AND ROUND HIGH CARBON WIRES



WINDOWS OF WASHINGTON

WASHINGTON

THE house labor committee reported out the hours and wages bill last week. Instead of insisting on its own bill, the house accepted the bill as it passed the senate "in principle." However, the house committee adopted a number of amendments, among them, those suggested and urged by William Green, president, American Federation of Labor.

The house committee said that "the bill is intended to aid and not supplant the efforts of American workers to improve their own position by self-organization and collective bargaining."

The committee also said: "The high type American business man whose ideas on wages and hours are in line with the thought of the President on this social principle need not fear that the government is trying to interfere with his business."

One of the changes made by the house committee eliminated an exemption for local retailers, contained in the bill as it passed the senate. Local retailers would be as much liable to the law as anyone else. The bill reported to the house would require the appointment of the five-man labor standards board based on geographical residence, with specific representation for employers and labor and would provide for appointment of regional directors in each state and make imports subject to the same regulations as domestic goods.

In the house bill also the new board was urged to apply the 40-hour work week as early as possible without upsetting industry.

The committee said in its report that the legislation would not supersede state wage-hour laws, where the standards prescribed are higher than those imposed under the proposed federal statute.

CODE EXEMPTION ASKED FOR STEEL CORP. MINES

Brief hearings were held last week before the national bitumin-

BY L. M. LAMM
Washington Editor, STEEL

ous coal commission on applications of seven subsidiaries of the United States Steel Corp. for exemption from the bituminous coal code as captive mines. The hearings were adjourned to Aug. 31.

James W. Hamilton, secretary of Carnegie-Illinois Steel Corp., made a statement in which he described the relationship between his company and other subsidiaries of the corporation. The commission adjourned the meeting so that Mr. Hamilton could obtain additional information requested by it.

It developed that attorneys for the Steel corporation and its subsidiaries were not prepared at the time to submit the detailed proof which the commission required.

Chairman Hosford made plain that while not attempting to dictate the manner in which the applications should be presented, the commission considered that the burden of proof rested upon the applicant, and that the commission would require the fullest possible information.

W. A. Brown, New York, represented the applicants for the exemption, which included besides Carnegie-Illinois Steel, the H. C. Frick Coke Co., Hostetter-Connellsville Coke Co., National Mining Co., Sharon Coal & Limestone Co., United States Coal & Coke Co., and the United States Fuel Co.

PEACETIME EMBARGO ON MUNITIONS IS URGED

There is increasing uneasiness on Capitol Hill these days in connection with the Sino-Japanese situation, especially as some members of congress are rather insistent one way or the other about the neutrality law.

Representative Robert G. Allen, Pennsylvania, a member of the foreign affairs committee of the house, in an address last week advocated

the application of the neutrality law.

Mr. Allen admitted that the absence of a formal declaration of war in the Far East "makes it practically impossible for the President to declare a state of belligerency without causing serious diplomatic consequences.

"Certainly we know that a state of war exists between Japan and China today, regardless of formal declarations. It seems to me that our neutrality law should be invoked against China and Japan, but because of this formality it is not."

A permanent peacetime embargo on exports of arms and ammunition, according to Allen, is the only answer to the difficulty of coping with the outbreak of hostilities where there is no formal declaration of war. Pointing to the 100 per cent rise this year in American exports of munitions, he said; "We are actually supplying the munitions of war which may one day be used against us. Our arms exports today are accelerating the world armament race. An absolute embargo of arms at this time would show the world that the United States refuses to encourage war and preparations for war."

RUSSIAN TRADE AGREEMENT INCREASES BUYING HERE

Manganese ore will be imported into the United States from Russia at a duty of 1/2-cent per pound, manganese content, as it has been for the past few years, in accordance with a special trade agreement entered into last week between the United States and Russia. Under this agreement Russia is accorded most favored nation treatment.

For several years this country has made a special agreement with Russia for a year at a time. The current one expired the middle of July and has just been renewed under somewhat different conditions.

Up to this time the Russian government has agreed to purchase not less than \$30,000,000 worth of

commodities in the United States during the year, and under the agreement negotiated last week this is raised to \$40,000,000. A large part of this has gone into machinery. It is understood on good authority that Russia is steadily increasing her purchases of American machinery.

It is explained that Russia is manufacturing automobiles and motor trucks on a constantly increasing scale, using American high speed machinery. Since Russia's production of oil is increasing, it is asserted the United States is certain to sell more petroleum drilling and refinery tools and machinery during the coming year.

As to the manganese situation, it will be recalled that in our trade agreement with Brazil the United States allows manganese ore to come into this country at ½-cent per pound, manganese content, and therefore Russia, under the new agreement, is entitled to that same rate. Many protests have been made to the state department by American manganese producers both against the Brazilian and Russian agreements because of the low rate of import duty, but to this time the protests have been ineffective. It is reported the state department, however, is now making a survey and a report will be submitted soon.

Buying Is on Increase

Government figures show that for three years, 1932-1934, preceding the special commercial agreements, Russia spent only \$12,000,000 in the United States. Previous to the recent agreement, the Russian government promised to spend \$30,000,000 in this country, but it is said that this has actually been \$36,000,000 to \$37,000,000.

For its part in the agreement, the United States undertakes to accord Russian commerce unconditional most favored nation treatment, except for coal, this reservation being due to provisions of the 1932 revenue act for a tax of 10 cents per 100 pounds on coal from countries to which exports of coal from the United States did not exceed, in the previous year, imports of coal from such countries, "unless treaty provisions of the United States otherwise provide."

In making its announcement last week the state department says that the agreement "is evidence of the intention of the Soviet government in trade with the United States to continue to pursue policies and take actions in harmony with the purpose of the trade agreement act."

Says the department further; "The present agreement with the Soviet Union, like the previous agreement . . . does not involve any new concessions with respect to

tariff rates and is not a trade agreement of the kind negotiated with 16 other countries under the authority of the trade agreement act."

STANDARDS BUREAU WILL TEST BUILDING STEEL

Further details have been worked out by the bureau of standards in connection with the survey being made of building materials and structures as the result of an appropriation of \$200,000 made recently by congress.

The study is being made to determine qualities of material which can be used in low cost housing projects.

The general objective of the work, it is explained by government officials, is to furnish to government agencies, the building industry, and the public, technical information from every available source on the engineering properties of building materials as incorporated in the structural elements and equipment of a house, with particular reference to low cost housing and including new materials, equipment and methods of construction as well as those already in use. It is expected that this work, as it progresses, will be of considerable interest to the steel industry, because many of its products will be tested by government experts. It has been stated also, that there is a chance that prefabricated steel housing will be taken up before the investigation is completed.

In connection with some of the special problems that will be taken up will be the corrosion of steel in wall panels, and the preparation of steel for painting.

UNEMPLOYMENT CENSUS BILL PASSES SENATE

The senate has passed a bill providing for a census of unemployment before April 1, 1938, at a cost of \$5,000,000. The house has not yet taken action.

There has been a great deal of controversy on this point. First the President was for such a survey, then he was against it, and now congress is taking a hand. It was estimated at one time that such a census would cost about \$15,000,000.

The senate bill, which was introduced by Senator Black, Alabama, calls for gathering information on the numbers, classes and geographical distribution of the unemployed and partially employed, and their occupations, incomes and dependents, to "aid in the formulation of a program for re-employment, social security and unemployment relief."

YEARBOOK FIGHT CONTINUES

The fight was on again last week between Bertrand Snell, minority leader of the house, and Attorney

General Cummings with reference to an investigation the latter said his department is making of the sale of the 1936 yearbook by the democratic national committee.

Answering Mr. Cumming's letter Snell said: "It is inane in every respect. It doesn't mean anything."

Snell proposed an investigation by the House through a resolution he introduced some time ago. He stated at the time that he had conclusive evidence that the sale of the book was just another way of evading the corrupt practices act.

In his letter to Snell the attorney general called attention to the fact that he could give legal advice only to the President, but said: "However, you are informed that the department is making an inquiry with respect to this matter."

"If you have evidence in your possession which you deem indicates a violation of the Federal corrupt practices act, may I suggest that you transmit it to this department for our consideration."

BIDS ASKED ON SHIPS

The United States maritime commission has offered for sale, under competitive bidding limited to American citizens, nine steel cargo vessels for conversion into colliers for operation exclusively in the domestic trade. The ships will be on an "as is, where is," basis. Four are located at Staten Island, N. Y.; four at Norfolk, Va.; and one at New Orleans, La. Bids will be opened Sept. 14.

Battelle Institute Adds New Facilities

Battelle Memorial institute, Columbus, O., has increased its industrial research facilities with a new four-story building, recently opened. The ground floor is occupied by a complete experimental foundry, two stories high. Ore concentration and coal preparation laboratories occupy the third floor, while offices and private laboratories are located on the fourth floor.

The new foundry is equipped for production of ingots and full-size castings in steel, special alloys, cast or malleable iron and nonferrous metals. The melting equipment includes direct arc furnaces, high frequency induction furnaces, a low frequency induction furnace, a cupola and several fuel-fired crucible furnaces. Switchboards and control panels have been provided to make the furnace transformers available for special melting and refining furnaces. Equipment also includes an experimental rolling mill, forge hammers, wire block, swaging machine and heat treating furnaces to enable detailed study of wrought and cast materials.

All Factions Should Unite To Solve Debt Problem

WHILE the mode of the day seems to be for each individual to disagree with his neighbor on every conceivable subject, it should be possible for the responsible citizens of this nation to agree on at least one point—namely, that the finances of the government be brought under control.

This objective is so obviously sound and imperative that no thinking person, whether he be radical, liberal or conservative in politics—new dealer or tory in social outlook—or A. F. of L., CIO, I.W.W. or anti-union in labor policy—should hesitate to throw his support on the side of a sensible federal program of finance.

He should do this if for no better reason than that of selfish personal interest. The objectives of the most visionary social-minded demagogue can be realized only as long as the federal credit holds out. The demands by unionists for continued favors can be granted only by a government in favorable financial condition. Agriculturalists who think they are entitled to public bounty can feed at the trough only as long as the public financial situation will permit it. The pet schemes—good or bad—of every interest all rest on continued sound federal credit.

No Place for Deficit Financing in Recovery Era; Budget Balance Necessary Under Inflation Threat

Therefore it would be wise for all of us—whether motivated by greedy, altruistic, co-operative or patriotic impulse—to get together on a joint movement to prevent our servants in government from killing the goose that lays the golden eggs.

The need of immediate action is emphasized in the report on "The National Debt and Government Credit" recently made to the Twentieth Century Fund by its committee on government credit. The report is unbiased and deserves careful consideration. It stresses four important points:

"1. The resources of the country undoubtedly are great enough to support the present debts.

"2. A continuance of deficit financing, although necessary in the depths of a depression, would be dangerous and unnecessary if carried into a period of recovery.

"3. Government budgets must be balanced, not by a precise equalization of expenditures and revenues in any single year, but by paying off the

debts contracted during depression with surpluses available during prosperity.

"4. That an inflationary boom may be the culmination of the present recovery now under way is becoming widely recognized. This situation makes it imperative to place the government finances on a sound basis as rapidly as possible."

Most industrialists will agree with the foregoing, although many will declare that the report is mild in comparison to what might be said legitimately in criticism of the present policy of government spending.

Debt Reduction by Billion a Year Should Be Aim Even at Cost of Heavy Additional Tax Burden

The committee's proposed "program of action" may be summarized as follows:

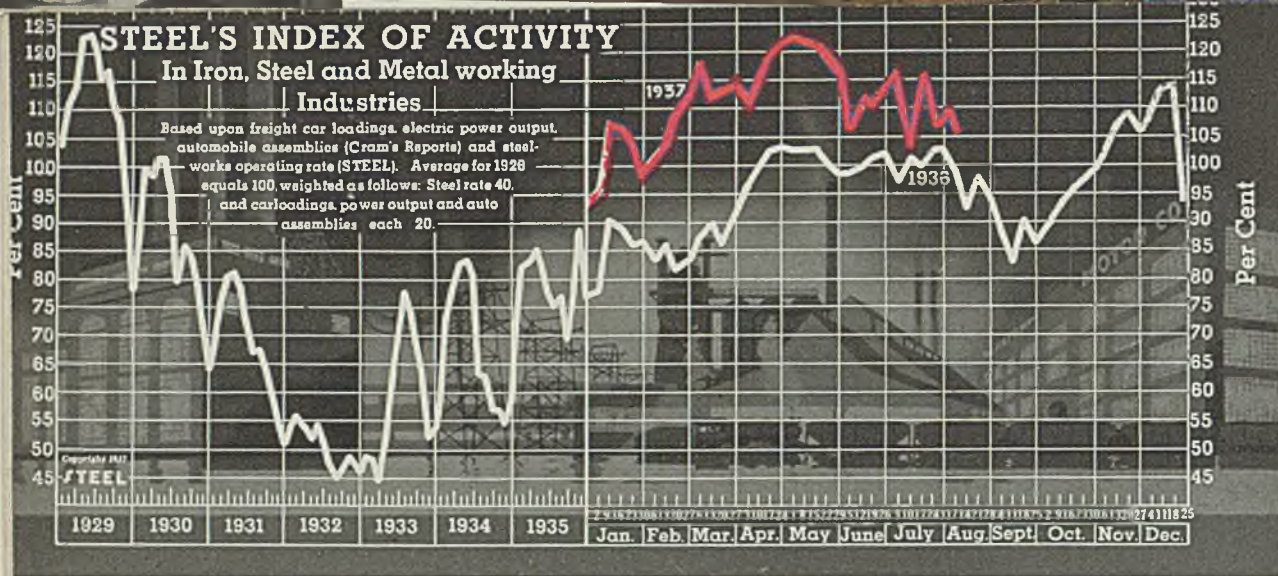
"The general goal of government fiscal policy during the next decade should be the reduction of the debt by an average amount of at least one billion dollars a year, taking good times and bad together. . . . If the total of ordinary taxes, social security taxes and other levies falls short of meeting our needs, additional revenues consistent with a sound public policy and of sufficient size to bring the budget into balance should be provided. . . . Any further increase in revenues arising out of returning prosperity should not be regarded as a justification for new spending, but should be applied toward debt retirement."

To individuals and to owners and officers of corporations who believe that taxes already are exorbitant, if not actually confiscatory, the prospect of additional levies is disheartening. This will be especially true as long as Washington continues to evidence small interest in reducing the cost of government.

Fortunately there are a few signs that the administrative and legislative branches of the government are beginning to think about economy. The senate last week moved to take a census of the unemployed. This should lead to a sharp reduction in the cost of relief. Recently the President tried to save several hundred millions but was overruled by congress. The seed of economy is being sown, but the harvest will be late—discouragingly late.

In a short time senators and representatives will go home to repair their political fences. Every person identified with industry should take advantage of that occasion by seeking interviews with his senators and representative and going to bat with them on the subject of debt and reduction of government expense.

Public opinion blocked the court packing scheme; it can likewise curb the frightful waste of billions of dollars of the public's money!



STEEL'S index of activity declined 1.5 points to 107.6 in the week ending August 7:

Week ending	1937	1936	1935	1934	1933	1932	1931	1930
May 29	115.6	98.6	71.9	75.7	65.3	54.2	75.7	94.9
June 5	105.1	98.8	79.3	82.3	69.9	51.0	73.5	97.9
June 12	111.4	99.4	80.0	83.6	72.1	51.1	73.2	96.2
June 19	110.3	101.0	77.3	81.8	73.9	51.8	70.9	95.0
June 26	112.8	101.9	78.4	79.4	77.0	51.6	70.6	94.0
July 3	115.3	97.5	64.1	52.3	71.4	49.2	64.1	75.0
July 10	103.8	100.9	76.5	67.8	79.1	41.7	69.4	86.9
July 17	115.7	99.9	79.8	68.1	79.4	46.9	70.0	79.1
July 24	108.0	102.1	80.8	66.4	78.8	51.5	69.7	78.7
July 31	109.1†	102.5	78.4	64.6	75.9	46.1	68.9	79.2
Aug. 7	107.6*	98.7	73.4	64.6	74.7	45.1	67.0	85.6

*Preliminary. †Revised.

Higher Steel Rate Offsets Lower Automobile Activity

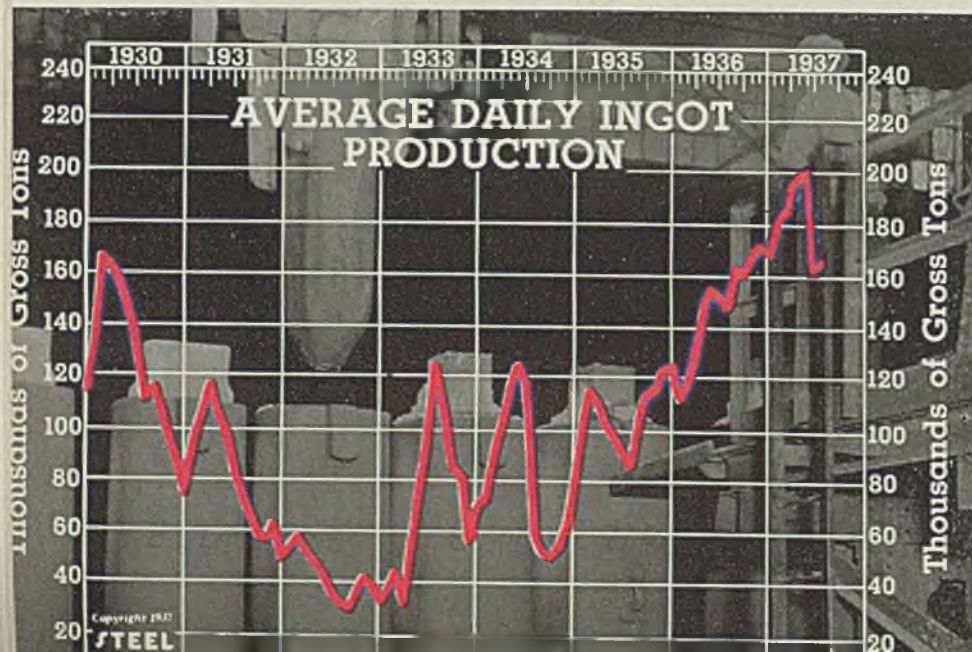
INDUSTRIAL activity now is stabilized at a level almost identical with that of June. The difference is that in June, steelworks activity was reduced to 74 per cent by strikes and automobile production was running at about 118,000 cars weekly. In August the situation is reversed. Steel, freed of strike trouble, is operating at just under 85 per cent of capacity, and automobile output is down to below 80,000 units, due to vacations.

STEEL'S index for the week ending Aug. 7 stands

at 107.6, a slight recession from the previous week. The change is accounted for by a rather sharp decline in revenue car loadings and a moderate further recession in automobile assemblies. These losses more than offset a slight gain in the rate of steelworks operations and a minute advance in electric power output. Automobile output was reduced even below expected seasonal levels by the labor disturbance in Plymouth plants.

The outlook for September and the remainder of August is encouraging. Improved farm income is an important factor. Railroad buying is in greater volume and exports are increasing. New automobile demand is in the offing.

Commodity prices are fluctuating more actively, with the major trend upward.



	Gross Tons		
	1937	1936	1935
Jan.	182,181	112,813	106,302
Feb.	184,361	118,577	115,595
March	193,209	128,576	110,204
April	195,072	151,625	101,562
May	198,213	155,625	97,543
June	160,914	153,263	90,347
July	168,763	150,874	87,224
Aug. ....	.....	161,351	107,997
Sept. ....	.....	160,043	113,000
Oct. ....	.....	168,333	116,398
Nov. ....	.....	173,496	121,170
Dec. ....	.....	170,448	122,936

BUSINESS'S TREND

Industrial Production Index Down 3 Points to 115 Per Cent

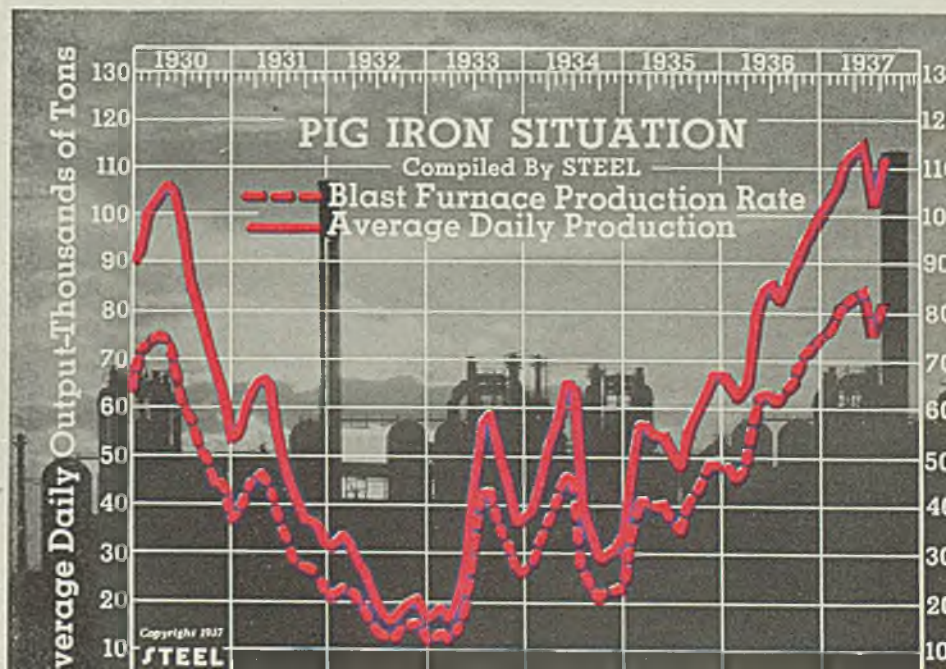
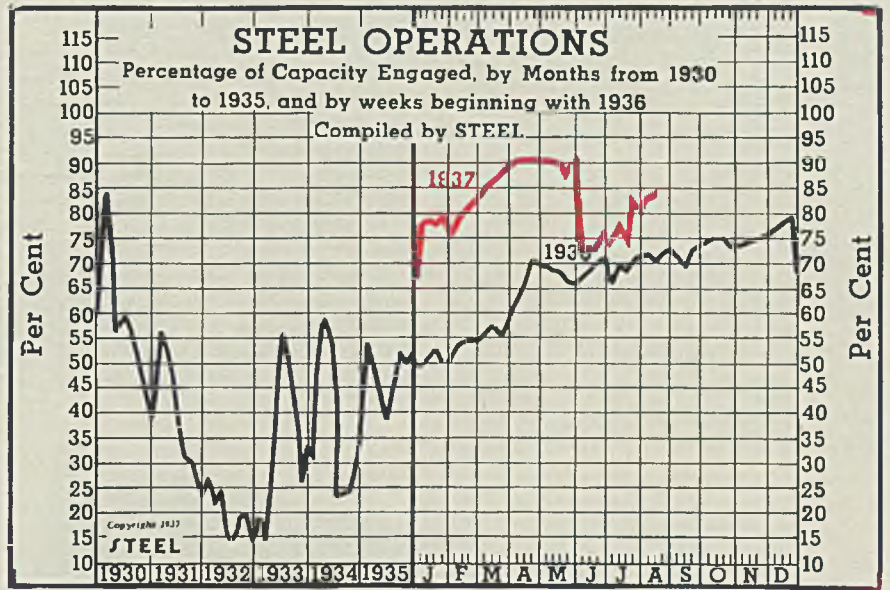
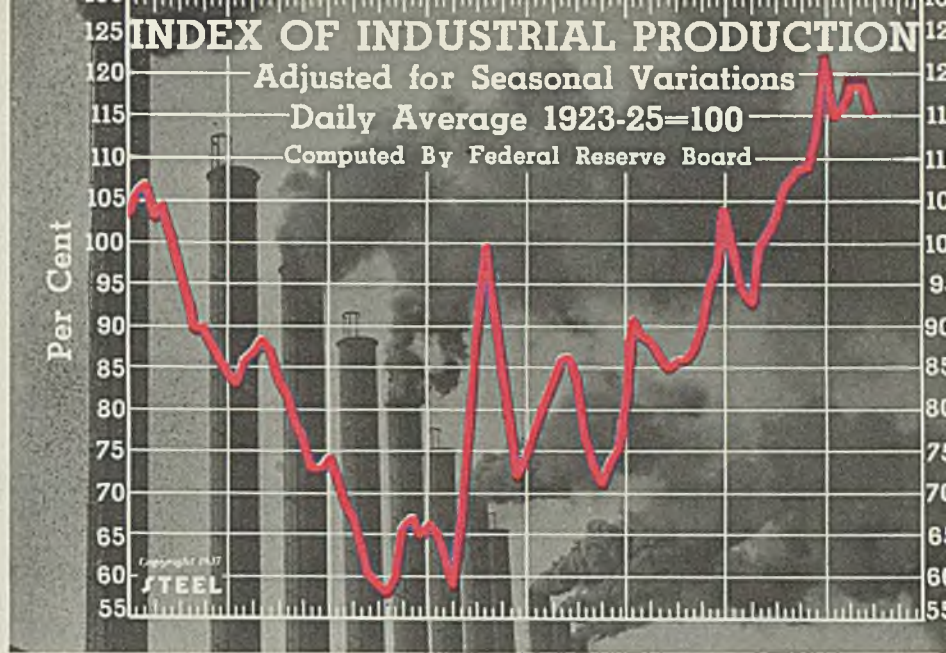
January	115	98	91	78
February	116	94	89	81
March	118	93	88	84
April	118	98	91	78
May	118	101	85	86
June	115	103	91	78
July	107	86	75	
August	108	87	73	
September	109	89	71	
October	109	95	73	
November	114	98	74	
December	121	104	86	

Steelworks Operations Up 0.5 Point to 84.5 Per Cent

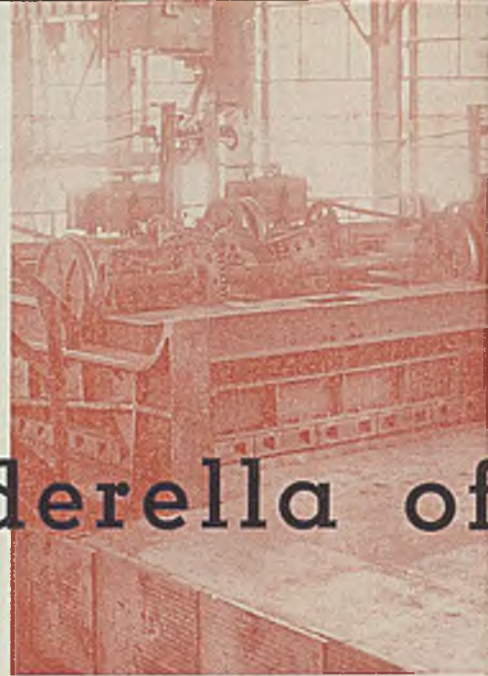
	Per Cent		
	1937	1936	1935
Aug. 7	84.5	71.5	48
July 31	84	71.5	47
July 24	81	70.5	45
July 17	82	68.5	43
July 10	74	69.5	38
July 3	77.5	66	31
June 26	74	71.5	37
June 19	75.5	70.5	35.5
June 12	74	68	39
June 5	75	67	41
May 29	75	66	42.5
May 22	91.5	66.5	44

Daily Output of Pig Iron Up 8.8 Per Cent in July

	Daily Average, Tons		Blast Furnace Rate, Per Cent	
	1937	1936	1937	1936
Jan.	103,863	65,461	76.6	48.2
Feb.	107,857	63,411	79.5	46.6
March	111,951	66,004	82.5	48.5
April	113,354	80,316	83.7	59.1
May	114,360	85,795	84.3	63.1
June	103,843	86,551	76.6	63.6
July	112,947	83,735	82.9	61.5
Aug.	87,475	.....	.....	64.3
Sept.	90,942	.....	.....	66.9
Oct.	96,509	.....	.....	71.0
Nov.	98,331	.....	.....	72.3
Dec.	100,813	.....	.....	74.2



Cinderella of



BY E. W. WAGENSEIL,
General Sales Manager,
Hagan Corp., Pittsburgh

BORN of low estate—a mere hole in the ground—serving through years of drudgery, cursed for its shortcomings by heaters, bottom makers, maintenance men, and mill operators; neglected through all the years of its life, the lowly soaking pit, like the famed Cinderella, has at last blossomed forth in splendor and is the belle of the ball.

While open hearth furnaces, heating furnaces, annealing furnaces, and heat treating furnaces have had, like Cinderella's sisters, the lavish attention of engineers, metallurgists and operators, the poor soaking pit has plodded on in its

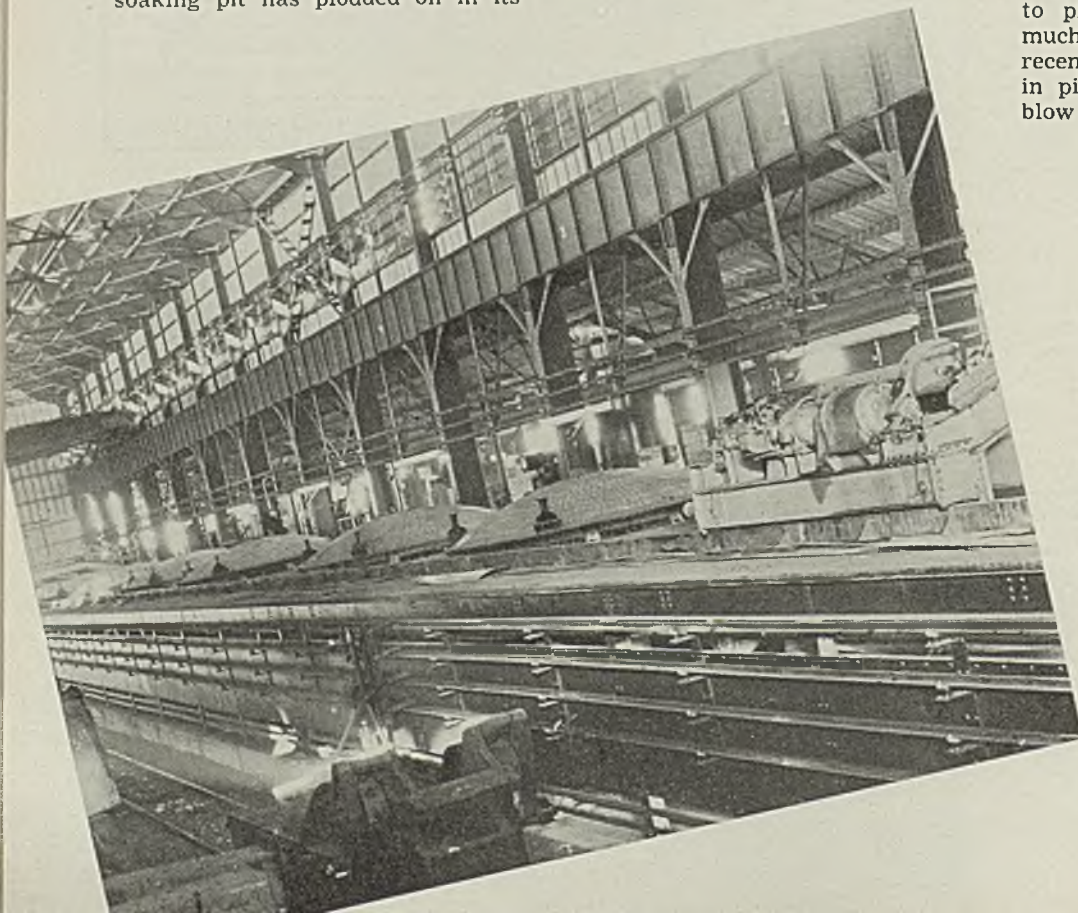
dirty smoke laden quarters wearing the same old "rags" for the past 35 years or more. Now all this is changed almost over night and "Cinderella" is stepping out with not *one* but *several* new gowns. with all the gadgets that any vain girl could desire and with a host of admirers showering attention upon her!

Surely there must be a real story behind this—and there is.

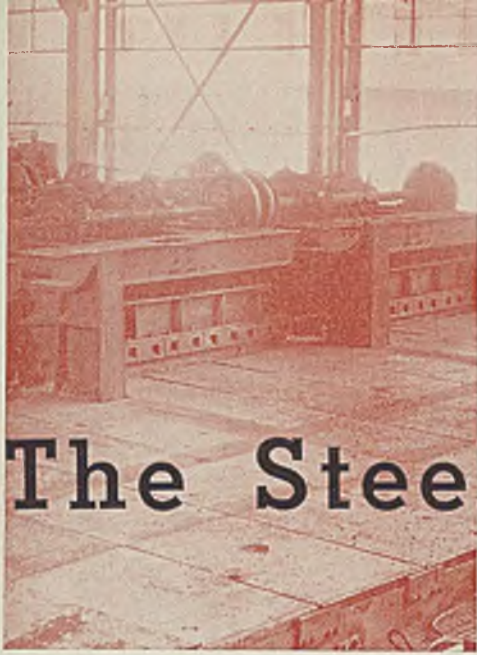
Originally a soaking pit was just what its name implies—a hole in the ground with a cover over it into which ingots, solid outside but still molten inside, were placed and al-

lowed to "soak" until they were of uniform temperature throughout.

Later as mill operations increased and it was not always possible to get the ingots into the soaking pits quickly, fuel was applied and, borrowing the methods from the open hearth, the pit was equipped with regenerators and fired on a reversal cycle. Almost universally, producer gas was the fuel used. The heating operation was extremely crude, the only "control" attempted being the use of an extremely rich mixture of fuel and air to insure a so-called "reducing atmosphere" in an effort to prevent the formation of too much scale. In some cases, in more recent years, small holes were made in pit covers to allow a flame to blow out to indicate that there was



NINE Salem circular soaking pits in a steel mill in the Chicago district



The Steel Mills

pressure in the pit to prevent air infiltration.

With the advent of by-product coke ovens in many of the larger plants coke oven gas largely replaced producer gas as fuel. This fuel, with its higher flame temperature, at first gave the heaters many a headache. More careful attention and greater skill on the part of the heater was required to avoid washing and to produce properly heated ingots.

The use of mixed coke oven and blast furnace gas in a number of plants in recent years has provided a much better soaking pit fuel, lower in B.t.u.'s and flame temperature—less likely to wash ingots. In a few plants, for economic reasons, natural gas or oil has had to be

used. Both of these fuels, because of high flame temperature, have made the heater's job a difficult one where applied to pits designed for other fuels.

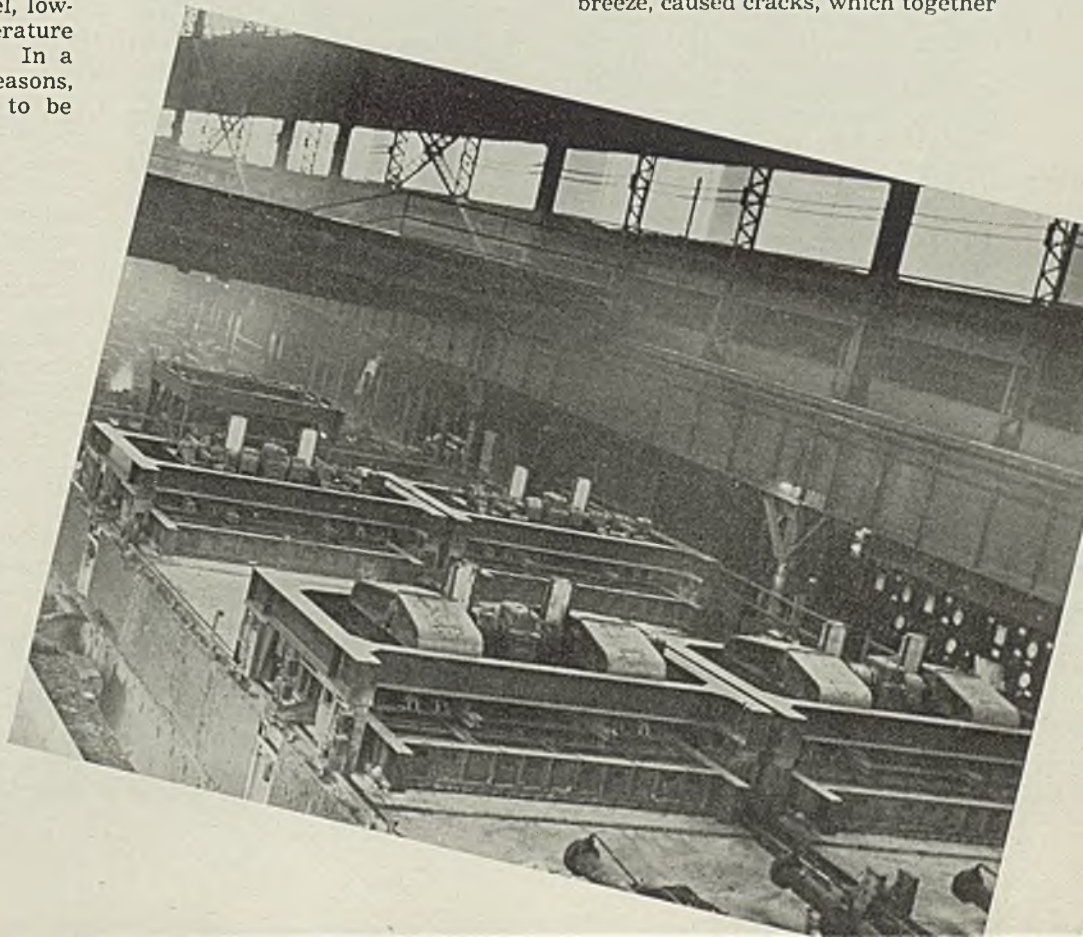
In a few mills having more modern pits with deep checkers and very high air preheat it has been found possible to burn straight blast furnace gas. As would be expected, this has proved to be an ideal fuel from the standpoint of quality heating—its only disadvantage being its comparative slowness in heating time. In some cases, coke oven gas has been added, espe-

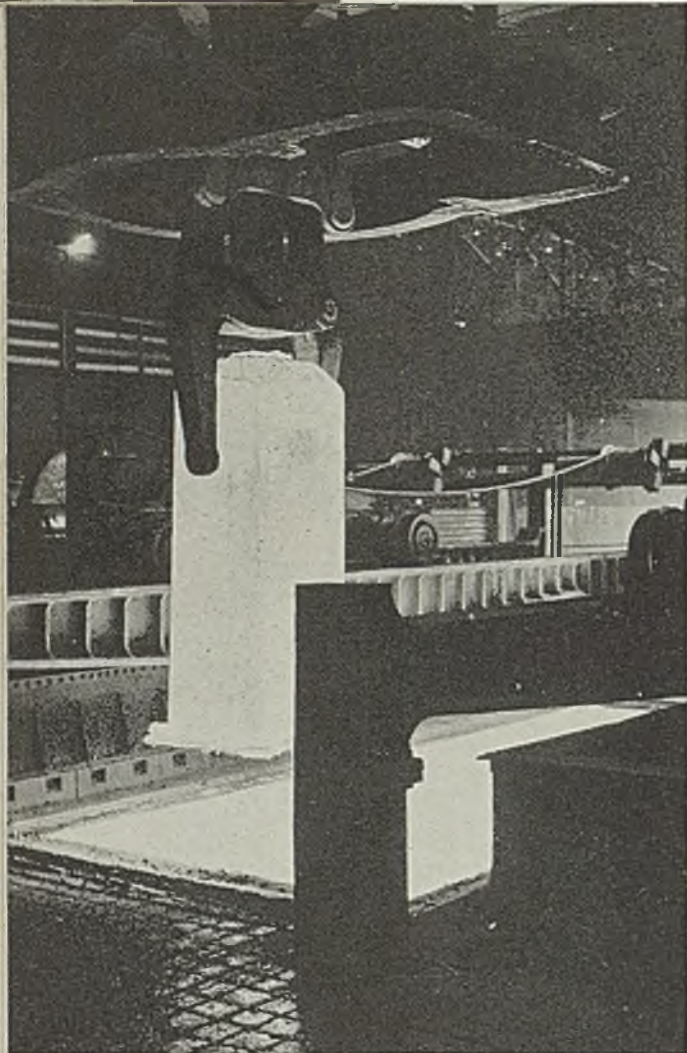
cially when cold ingots are charged, to speed up the pits when necessary to get out tonnage.

No matter what fuel was used, the entire operation of the pit was left to the judgment of the heater. Considering the crudeness of the equipment and almost complete lack of instruments or control of any kind, it must be admitted that on the whole he did a creditable job. It is not to be wondered at, under the circumstances, that unevenly heated and washed ingots were frequent occurrences. Cinder collecting in the pit bottoms necessitated frequent bottom-making—a dirty, hot and laborious job causing loss of heating time and tonnage and adding to heating costs.

Cold butts, resulting largely from the frequent charges of fresh coke breeze, caused cracks, which together

FOUR Amco soaking pits in a steel mill near Pittsburgh. Automatic control panel is shown in background at right





DRAWING ingot from one of 15 Surface Combustion Corp. soaking pits in a large Pittsburgh mill

with the rolled-in scale, had to be chipped or scarfed out of the blooms or slabs at great expense before the steel was ready for further processing.

Heavy scale losses, high chipping costs, fuel practice of upwards of 1,000,000 to 1,500,000 B.t.u.'s per ton, and in some cases much more, laborious, frequent time consuming bottom-making—all these have in the past been accepted in most cases as matters of course—unavoidable.

This has been and still is a true picture of the majority of soaking pits in use today.

But thanks to Cinderella's "Fairy Godmother," it is a picture that is rapidly being changed. The Fairy Godmother?—*modern, sensitive, stable and reliable automatic combustion control*. Only the improved types of combustion control and temperature control developed in the past few years have made Cinderella's transformation possible.

New types of pits—some of radically different design and all utilizing instruments and automatic control—have suddenly and completely changed soaking pit practice. The use of fuels such as coke oven gas, blast furnace gas, mixed gas, oil, etc., the flow of which can be accurately measured, has made accurate air-fuel proportioning possible. No

longer is the atmosphere surrounding the ingot left to the unguided judgment or whim of the operator. Calibrated instruments tell him exactly what is going on in his pit—the temperature that is being maintained, the exact ratio of air to fuel burned, the "atmosphere" surrounding the ingots, the pressure of gas or oil at the burners, the rate at which the fuel is being burned—the pressure in the pit itself. And furthermore, *automatic control is on the job every second to maintain automatically* those temperatures, pressures, flows, etc., which have been determined as producing exactly the conditions in the pit which will, day in and day out, reproduce correctly heated ingots of uniform, proper rolling temperature, ingots that are free from washing and with just the right thickness and character of scale that will largely rattle off as the ingot bumps along the roll table and that will be completely removed in the first couple of passes in the mill.

One of the outstanding results of this control of scale condition and consequent elimination of washing has been, as would be expected, a marked lengthening of the periods between bottom-making. As against making bottom on the old style pits without automatic control, once a day and in some mills once a turn,

some of the new types with automatic control require new bottoms only once a week and in some cases once in two weeks. The formation of cinder is practically nonexistent in these new installations. In some cases, bottom-making is being done with a tool attached to the ingot crane, virtually eliminating manual labor. An important increase in heating tonnage and a considerable labor saving has naturally resulted from this improvement.

Uniformity of heating and absence of rolled-in scale have been reflected in lowered chipping costs and higher mill practice or yield. The higher quality of the blooms or slabs is noticeable all the way through the mills to the finished product. The improvement in the quality of heating has reduced roll breakage and mill delays and, of course, has resulted in easier regulation of the drafts in the blooming mill.

Accurate control of fuel-air ratios and of temperature makes it possible in these new pits to hold ingots, when necessary because of mill delays, for hours without any bad effects on the steel and with only a slight increase in the thickness of the scale.

An interesting fact, developed as a result of the accurate ratioing of air to gas, is that, instead of having to maintain the traditional "reducing atmosphere," better heating and better scale conditions are actually obtained with some excess air. In some cases excess air as high as 10 to 20 per cent is being used with excellent quality heating and with scale of the type and thickness desired.

Fuel Costs Reduced

Another important advantage of these new types of pits, with complete automatic control, is the marked reduction in fuel cost per ton of ingots. As against an average of, say, 1,000,000 to 1,500,000 B.t.u.'s per ton with old style reversing pits heating ingots three hours to four hours out of the open hearth, some of the new designs of pits are showing as low as 400,000 to 500,000 B.t.u.'s per ton. This is close to 100,000 B.t.u.'s per ton per hour of heating time. One new pit on hot bessemer ingots has a monthly average of less than 200,000 B.t.u.'s per ton.

This fuel economy is, of course, secondary as compared to the great improvement of heating, but it is nevertheless of real importance in production costs.

On the ordinary old style regenerative pit, the cover was an extremely crude affair, poorly fitted and operated by a mechanism which jolted and jarred the cover to such an extent that maintenance was ter-

rific. With the necessary pressure maintained in the pits the flames blew out around the cover, burning the supporting frame work and adding to the maintenance cost.

One feature common to all of the new pits is a well designed cover operated by motors which lower it gently into a sand seal, eliminating entirely the blowing out of the flame around the base of the cover. When the covers are lifted, they are raised vertically after which the cover is traversed laterally. It is readily understood that maintenance on covers of this type is reduced to a fraction of that with the old type covers. Accurate pressure control, which has come to be recognized as indispensable in closely controlled pit operation, is not possible with old style loosely fitting pit covers.

All of the new pits are steel encased and provided with adequate insulation, thus eliminating air infiltration and cutting radiation losses to a minimum.

And now, what are the "several new gowns" that Cinderella is sporting these days? There are four different types of new pits which are making history in the steel industry because of the excellent performance of installations placed in operation in various plants during the past year or so. These are:

- 1.—The so-called "One-way Fired Recuperative Pit" built by Surface Combustion Corp.
- 2.—The Circular Pit built by Salem Engineering Co.
- 3.—The Bottom-fired "Amco Pit Furnace" built by the Amsler-Morton Co.
- 4.—The new type Regenerative Pit built by Rust Furnace Co.

A brief description of each of these pits follows:

Surface Combustion One-Way Fired Recuperative Pits

The SC pit was the first pit to depart from the conventional reversing type which has been used for the past 40 or 50 years. This was the first pit successfully to use a recuperator for preheating the combustion air. It was novel in its method and application of fuel with respect to the steel to be heated.

This pit was fired from a port or ports located in one end wall at a level above the tops of the ingots. The rather deep space between the tops of the ingots and the cover provides a combustion chamber in which the gases burn. The gases follow a horseshoe curve to the far end of the pit, thence downward and back past the base of the ingots and out at a port in the end wall below the burner port. A collecting flue across the back of the pits leads the gases to a single tile recuperator and then to the stack. Preheated

air is drawn through the recuperator by a fan and distributed under low pressure to the burners.

Since the initial installation, several installations have been made in a number of steel mills during the past 10 years. On a few of these, automatic draft control was provided, but the real capabilities of these pits did not appear until an installation of 15 SC pits, equipped with automatic temperature and combustion control, was placed in operation within the past year in a large steel mill in the Pittsburgh area. In this installation the pits are arranged in batteries of five with a single recuperator for each battery. Modern suspended covers of the lift and transfer type, with sand seals, are provided.

At this plant, coke oven gas is the fuel used. Fuel flow to each pit is automatically controlled from temperature. A potentiometer controller actuates a control valve in the gas line to bring the pit up to a predetermined temperature and hold it there by cutting back on the gas. The fuel is manually shut off and turned on again when the covers are removed and replaced.

An air-gas ratio regulator maintains exactly the ratio of air to gas desired in each pit. Draft is main-

CONTROL panel, air-gas ratio regulator and stack damper on Amco soaking pit heating bessemer ingots in a mill near Pittsburgh

tained constant in the waste gas flue back of the pits by a regulator which operates a large slide damper between the recuperator and the stack. All controls are located on the central control panel shown in an accompanying illustration.

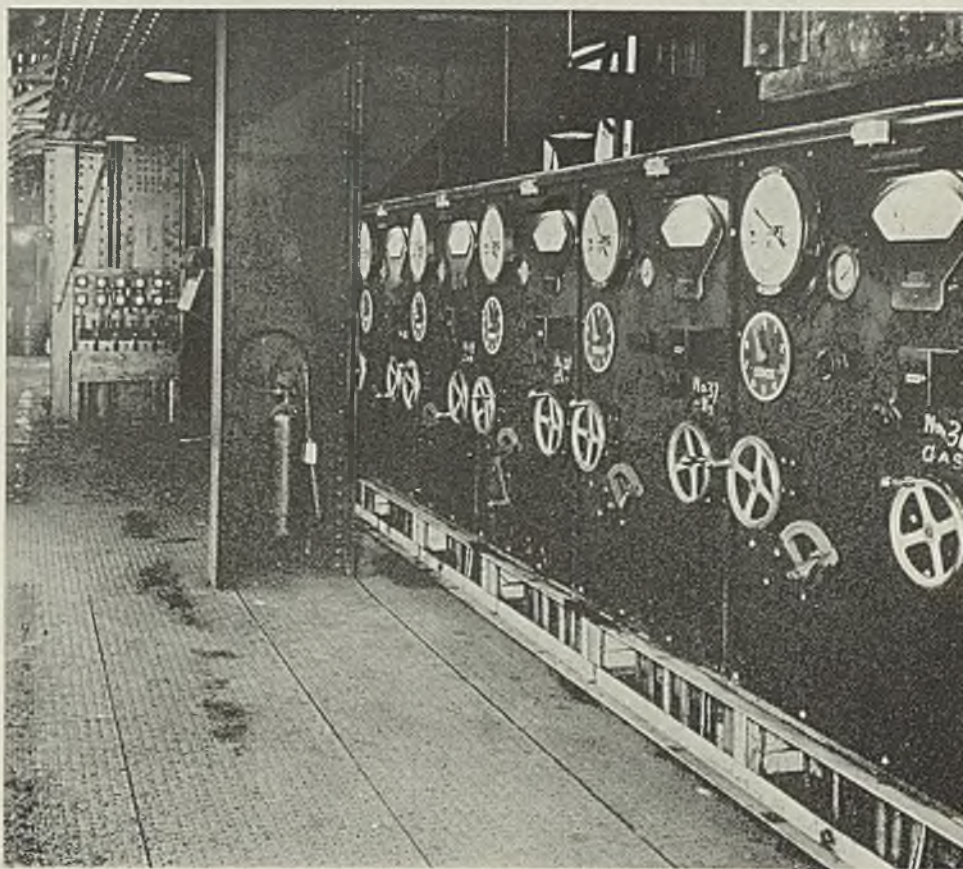
The quality of heating in these pits has been satisfactory and fuel per ton of ingots has been reduced very materially as compared with the old regenerative pits in the same plant.

Installations of Surface Combustion pits with complete control have recently been completed in other steel mills and still others are under construction at the present time.

Salem Circular Pit or "Ingot Heating Furnace"

The Salem circular ingot heating furnace differs radically in construction and in operation from the conventional soaking pit. It consists of a circular, steel enclosed furnace, fired tangentially at a number of ports located opposite the base of the ingots in the outside wall of the circular combustion chamber which is formed by sloping the walls behind the ingots. The gases circulate around the bases of the ingots, filling the pit, and finally pass downward and out through a central port in the bottom.

Air is automatically ratioed to gas. Automatic control of fuel in-



put from temperature and automatic control of pressure in the pit are also provided. Tight fitting covers are lifted and replaced by a crane type of lifting mechanism which handles several pits in a battery, as shown in an accompanying illustration.

A unique feature of several installations of circular pits is the use of only a stub stack extending a few feet above the top of the pit.

Salem circular pits installed in a number of steel mills during the past two years have given satisfactory, high quality heating. Thus far no recuperators have been provided, but it is understood that plans have been completed to supply recuperators where desired on future installations.

Amsler-Morton Co. "Amco" Bottom-Fired Pit

The Amco pit is another of the new types which is of novel and distinctive design. The pit itself is of rectangular shape more approaching the square than the conventional regenerative pit. This pit is fired through a rectangular port in the center of the bottom. The ingots are placed around this port and the flame passes upward, surrounded by the ingots, to the cover and then "mushrooms" and passes downward around the back of the ingots to four exit ports near the bottom. Two of these ports are located near the corners of each end wall. From the exit ports the gases pass through four recuperators, two at each end of the pit, and thence to a common stack which is equipped with a butterfly damper for draft control. A motor driven fan blows the air at low pressure through the

recuperators and thence to the firing pot.

Suspended covers are fitted with a mechanism which lifts them vertically from the sand seal and then moves them laterally to uncover the pit. When the cover lifting motor is energized, the fuel to the pit is automatically shut off and the air fan is stopped. The reverse occurs when the cover is again lowered into place.

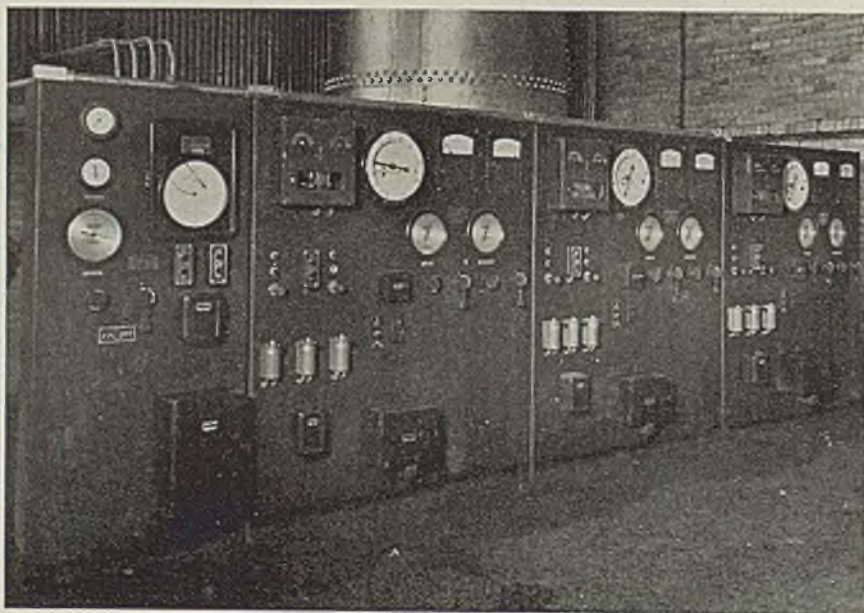
When the cover is lifted the furnace pressure regulator automatically closes the stack damper and opens it again when the cover is replaced and the fuel turned on.

Fuel flow to the pit is automatically controlled from temperature by a potentiometer controller which regulates either the gas or the air. The air is automatically ratioed to the gas, or the gas to the air as the case may be.

The first Amco pit was installed in a plant in the Pittsburgh area where bessemer ingots only are charged. This, we believe, was the first soaking pit to be equipped with complete automatic temperature and combustion control with automatic fuel shutoff when the pit cover is lifted. Operation for 16 months has been eminently satisfactory. In this installation natural gas is the fuel used. Fuel rates per ton of ingots are reported to be less than 50 per cent of the rate on the old regenerative pits in the same plant. Elimination of washing of ingots in this pit has made bottom-making unnecessary oftener than once a week.

It is interesting to note that this

CONTROL panel of one of three 5-hole batteries of Surface Combustion Corp. soaking pits shown in an accompanying illustration



pit was completely submerged by the St. Patrick's Day flood in 1936, after being fired for the first time to heating temperature, and that the recuperators have been submerged by three subsequent floods, all without apparent damage to the pit itself or to the recuperators.

The combustion control panel, upon which the regulators and gages are mounted, the stack damper power cylinder, and the air-gas ratio power cylinder for this pit, are shown in accompanying photograph.

Four Amco pits were recently placed in operation in another Pittsburgh mill and equally satisfactory results have been obtained. In this case, open hearth as well as bessemer ingots are charged and the fuel is coke oven gas mixed with a small amount of natural gas. Fuel rates per ton of ingots are greatly reduced and quality of heating much improved as compared with old regenerative pits in the same plant.

Additional Amco pits, all of course with complete automatic control, are on order for two other mills in this country and one in Canada. In the latter plant, arrangements are being made to burn straight blast furnace gas. One of the other installations on order for a mill in the Pittsburgh area will burn mixed coke oven and natural gas and the third, located in the South, will use coke oven gas or a mixture of blast furnace gas, nat-

New Rust Regenerative Soaking Pit

Rust Furnace Co., convinced that the regenerative pit would heat ingots perfectly if properly designed and equipped with complete automatic control, several months ago completed the installation of three new regenerative pits in a large mill near Pittsburgh.

These pits are equipped with deep checkers to give very high preheat for use with blast furnace gas if desired. At present, a mixture of blast furnace gas and coke oven gas of about 140 B.t.u.'s is being used.

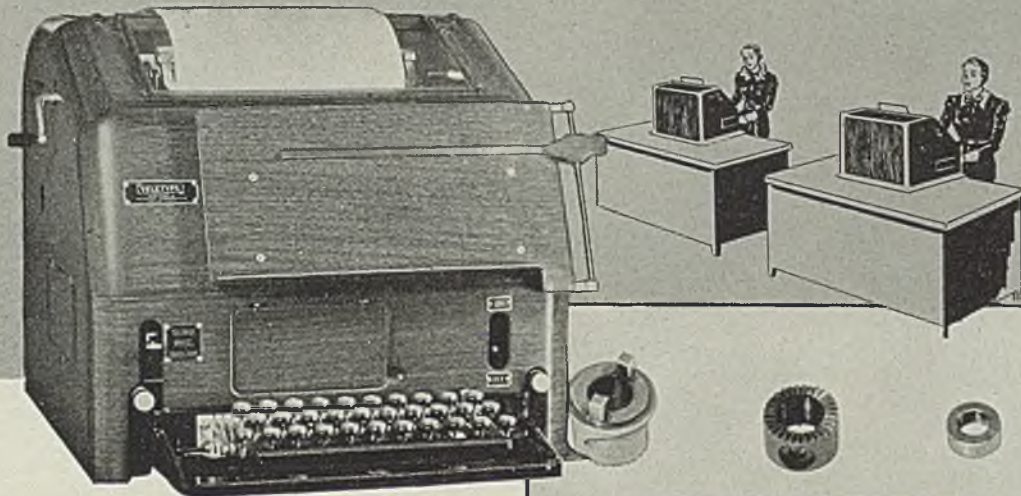
Covers are of the lift and traverse type with sand seals. The fuel is automatically shut off when the cover lifting mechanism is energized and again turned on when the cover is lowered into place.

Fuel flow is controlled from temperature by a potentiometer controller operating through a radiation type thermocouple located in the cover of the pit. Automatic combustion control accurately proportions air to gas to maintain the desired atmosphere in the pit.

Automatic pressure control, equipped with two oil operated pow-

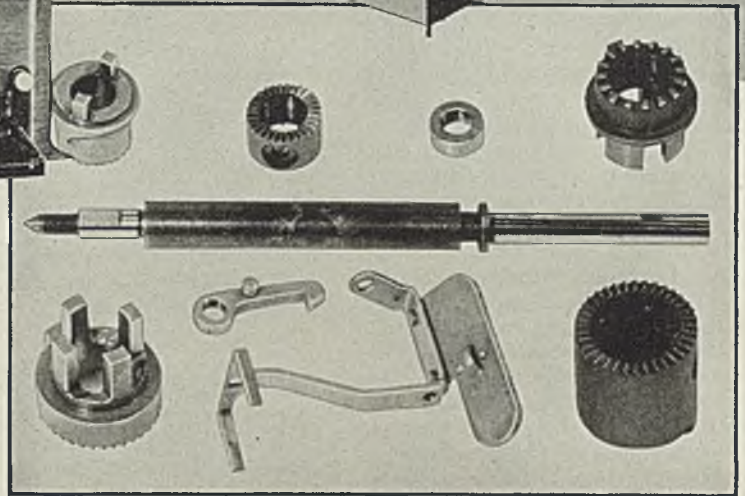
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er cylinders—one connected to each water cooled stack damper—holds a constant pressure in the pit. Automatic time cycle reversal, operating through solenoid valves, first shuts off the gas and air, then reverses the stack dampers by sending the oil pressure direct to the power cylinder which is connected to the open damper to close it, and at the same time connects the power cylinder operating the other stack damper to the furnace pressure regulator causing the damper to open. Automatic interlocks prevent the gas being turned on again during reversal until one stack damper is closed and the other opened a safe amount. All controls are mounted on a central panel board as shown in an accompanying illustration.

Heating in these pits is of satisfactory quality and fuel per ton of ingots is far below the figures for the old regenerative pits. Absence of washing of ingots makes bottom-making necessary only once in two weeks.

Three additional Rust pits of similar design, but using natural gas, were recently placed in operation at another plant and a large installation is under construction in a plant in the Chicago district. In the latter case provision is being made to burn natural gas, mixed natural gas and blast furnace gas, straight blast furnace gas, or producer gas. When producer gas is used, no attempt will be made automatically to ratio air to gas.

In addition to nearly 100 new pits of the four types mentioned above, a few steel mills have installed a limited amount of automatic control on existing regenerative pits. These installations have shown considerable improvement in quality of

heating and reduction of fuel per ton of ingots.

Conclusion

What are the conclusions to be drawn from the foregoing facts?

1.—The application of automatic combustion control to soaking pits has made possible a most remarkable improvement in quality of heating, in tonnage, in higher yield or practice, in lowered chipping costs and reduced fuel cost.

2.—There are now in operation in various steel mills four distinct types of new pits, including the regenerative type, all utilizing automatic control and all showing results decidedly superior to anything obtained prior to the last year or so.

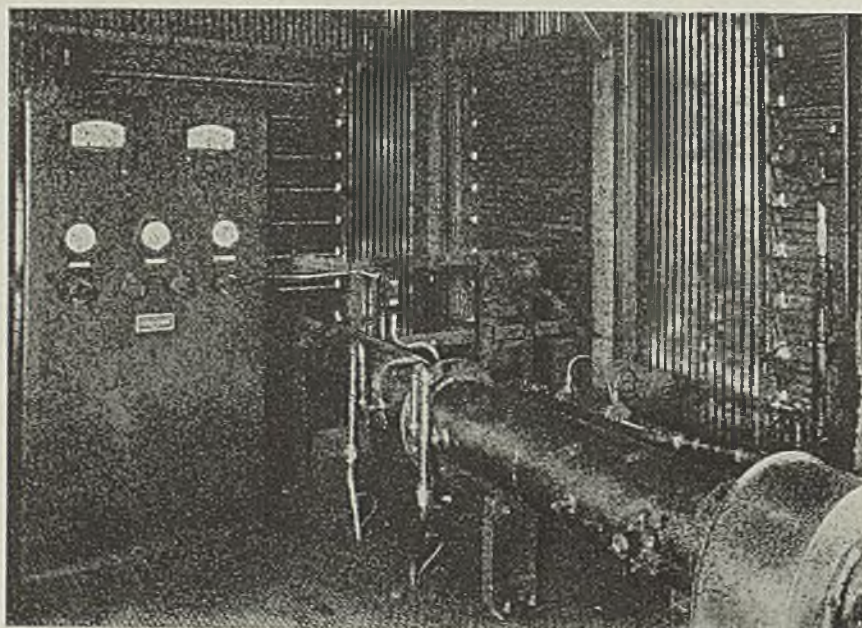
3.—The improvement in steel quality and reduction in costs shown by these new pits is so outstanding that steel plants cannot long afford to continue to operate their present old style pits.

Either the old pits will have to be rebuilt completely with modern tight sealing covers and equipped with full automatic control or they will have to be replaced with pits of the new types which have already proven their ability to produce perfectly heated ingots with remarkably low heating costs.

Ferromagnetism Studied As Guide to Later Use

Introduction to Ferromagnetism, by Francis Bitter; cloth, 314 pages, 6 x 9 inches; published by McGraw-

CONTROL panel for three Rust Furnace Co. regenerative pits shown in an accompanying illustration



Hill Book Co. Inc., New York; supplied by STEEL, Cleveland, for \$4; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London.

This is one of the series of the international series in physics and is a technical work on the phenomena of ferromagnetism. The aim is to provide the reader with an account of those aspects of ferromagnetism which give promise of being of outstanding interest during the next few years. Deeming it yet too soon to tell how practical applications may be made the author has attempted in only a few instances to indicate such applications specifically.

Rather, the aim has been to emphasize a manner of analyzing the problem with sufficient rigor to bring out the kernel of the phenomena involved and yet simple enough to be capable of generalization to the more complex systems which are bound to become of increasing interest as our understanding of ferromagnetism becomes more complete.

The work abounds in formulas, diagrams and illustrations of proposed models of molecules, in the effort to clarify the text. An index is provided.

Publish Results of Tin Alloy Investigation

Systematic investigation of the alloys of tin with germanium and with beryllium has been carried out by Prof. Dr. W. Guertler and M. Pirani for the International Tin Research and Development council and published in a booklet entitled "The Systems Tin-Germanium and Tin-Beryllium." Technique for the preparation of tin-germanium and tin-beryllium alloys is described. The influence of small additions of antimony, bismuth, lead, electrolytic and refined zinc and arsenic respectively, on the hardness, ductility and bending strength of tin has been determined and compared with that of germanium and beryllium. Copies of the booklet may be obtained by addressing the council at 149 Broadway, New York city.

Innovations in Vise Line

Columbian Vise & Mfg. Co., Cleveland, has announced additions to and improvements in its line of vises made of malleable iron castings. Especially noted is a combination pipe vise which will hold its standard size of pipe, yet is designed so pipe jaws do not protrude beyond jaw faces of the vise. As a result it is not necessary to take pipe jaws out when using vise for ordinary work.

MATERIALS HANDLING



Wheel and Roller Conveyors and Ball Transfers Installed in Steel Plant

INTERESTING applications of mechanical equipment for materials handling operations are found in the new plant of the Granite City Steel Co., Granite City, Ill. One of these is a combination of a wheel conveyor chute and roller conveyors for use in serving operations around a guillotine type "doubler," while another is an installation of ball transfers for handling plates from runout tables to shears.

In the guillotine installation, sheets are brought from the normalizing furnace on conveyors to the receiving or front end of the doubler, and are fed into the latter on a bed of ball bearing rollers. As sheets are doubled, they descend to a wheel conveyor chute which delivers them to a waiting buggy. The conveyors are located in a pit which is 16 feet below the floor level. These are

used for handling empty and filled buggies to and from the loading station, which is located at the discharge end of the wheel conveyor chute.

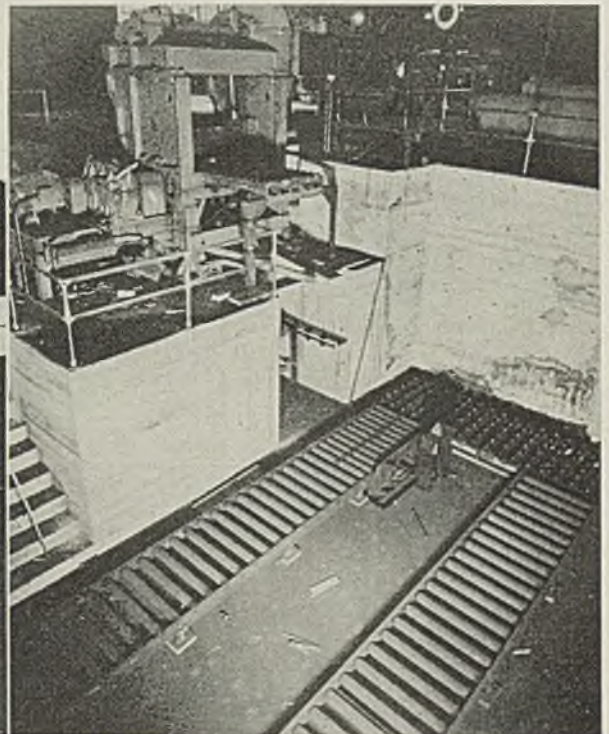
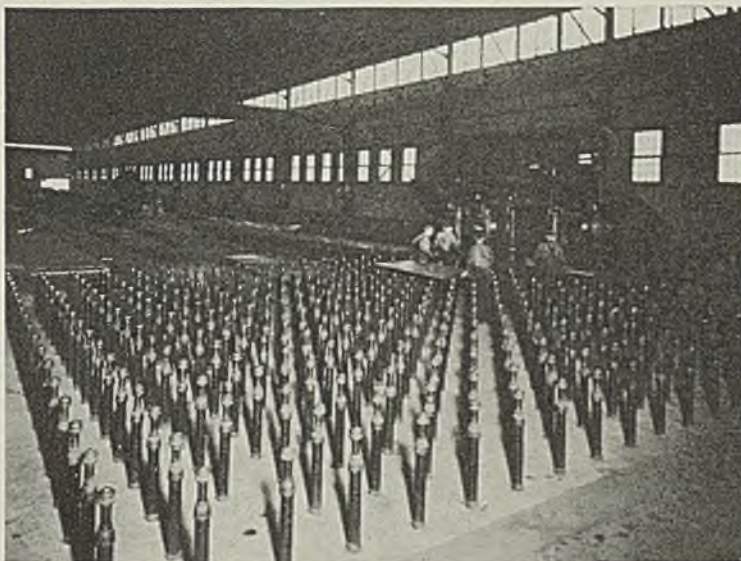
Details of Operation

Empty buggies are moved forward on a level line of roller conveyor and are transferred to the tilting type loading station over ball transfers, two right angle turns being made in this manual operation. A 3-rail conveyor section, which

RIGHT view shows roller conveyors at discharge end of the wheel conveyor chute which handle empty and filled buggies. Below is shown a plate being moved over ball transfers to the shear

forms the loading station at the end of the chute is arranged to tilt approximately 20 degrees. This allows doubled sheets to discharge from the chute directly into a three-sided buggy, located on the loading station. As each buggy is filled, the station lowers to a level position and the buggy is shifted manually ahead on the conveyor. Another buggy is then placed in the loading station and tilted to receiving position. Filled buggies are removed from the pit by crane.

In handling plates from the runout table to shears, the former are discharged onto the mobile surface of the ball transfers, over which they are shunted easily to the desired position. These transfers are designed to provide easy movement of plates and sheets in any direction on a horizontal plane. They consist of a large diameter hardened steel ball, which rotates on a bed of



MATERIALS HANDLING



smaller balls held in a hardened steel self-cleaning cup-shaped base. The base is of drop-forged hardened steel and is threaded to receive a 2-inch standard pipe support.

• • •

Coil Transfer Table Is Self Leveling

MANY new problems of materials handling were introduced into the steel industry with the rapid development of continuous strip mills and solutions offered by equipment manufacturers have kept pace with the demand. As a result, numerous innovations in conveying equipment have made their appearance during the past two years, and today several of these are in common use.

One such device, which has won wide favor among mill operators is

FIG. 1—New side-tilting table for removing coils of strip steel from a trough roller conveyor. The unit is automatic, the table leveling itself before the drop leaf is lowered and the coil rolled off.

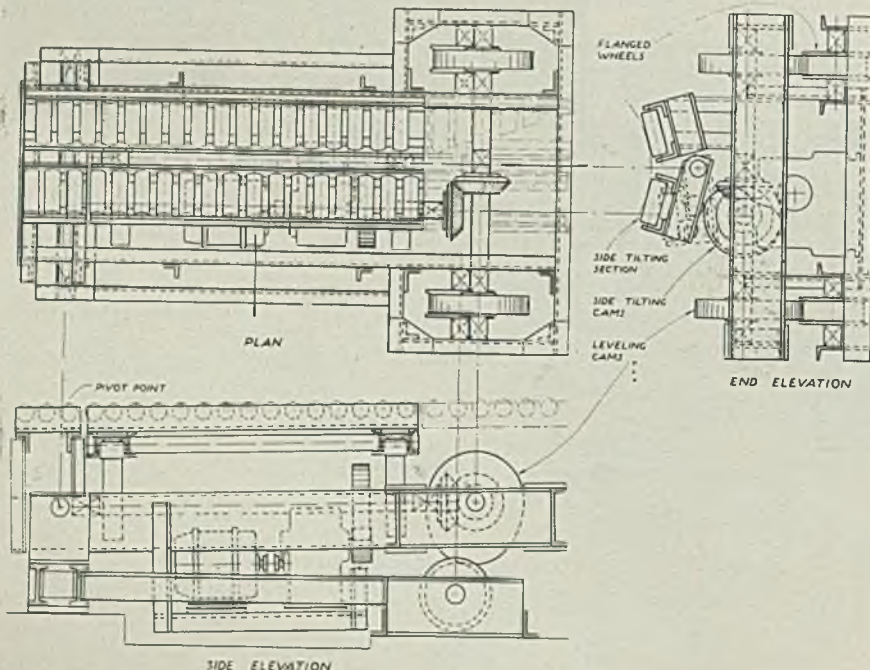
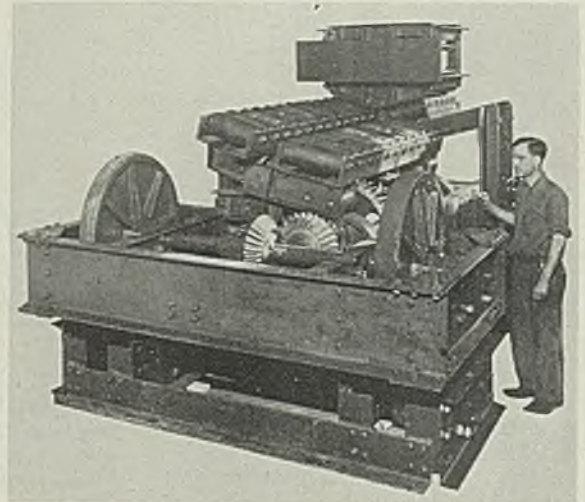


FIG. 2—A view of the side-tilting leveling device with leaf dropped to discharge position. Coils are stopped on the table by the spring-mounted bumper plate.



a coil tilter, now a familiar item of equipment in many plants. Coils of strip steel are moved along on trough conveyors and at various points means must be provided for transferring them to picklers, uncoilers or to storage. A simple transfer is effected through use of a tilting section in the conveyor which discharges the coils off one side.

Changes in design of tilting devices have been made from time to

time by individual manufacturers. The most recent development is a side tilter of a self-leveling type, for which patent application has been made by the Logan Co., Louisville, Ky. The leveling device, which lowers the roller bed to a horizontal position before the side-tilting action begins, is automatic.

As shown in Figs. 1 and 2, the tilting unit is pivoted on a transverse

shaft at the low end, and is positively supported at the high end on two leveling cams operating on flanged wheels. The side-tilting action also is cam controlled. The drive, consisting of motor and reduction unit, is carried in a cradle rigidly suspended from the main movable framework.

In operation, the coils of strip are held in check by an escapement-type, air-operated brake in the trough line just ahead of the tilting section, the escapement principle being used so that coils may be released one at a time. A coil, after being released, moves onto the tilting section, and is stopped in proper position by another brake, or by an adjustable bumper plate with heavy coil spring mounting to absorb the shock. The bumper plate is shown only in Fig. 2. An adjustable feature provides for centering various size coils with spur line machinery.

Cycle Is Automatic

With a coil placed in position, an operator pushes a button to start the motor and the roller bed is leveled to horizontal position; no side tilting occurs during this period. Next, the drop leaf is lowered, and the coil rolls off the table. When the drop leaf is fully lowered, it engages a limit switch which stops the driving motor. The operator restarts the machine by push button for quick return of the drop leaf and high end of the table to their original position. (Please turn to Page 90)

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PROGRESS IN STEELMAKING

Automatic Control Eliminates Danger Of Burning Out Open Hearth Roofs

AUTOMATIC roof temperature control was first introduced at Bethlehem Steel Co., in the latter part of 1933. The results obtained have been so satisfactory that by this time the major part of the open hearth furnaces at all of the company's plants have been equipped with this control. Maintenance of an even roof temperature results in longer life of refractories, repair costs are cut down and chances of accidental over-

BY A. V. LEUN
Refractories Engineer, Bethlehem
Steel Co., Bethlehem, Pa.

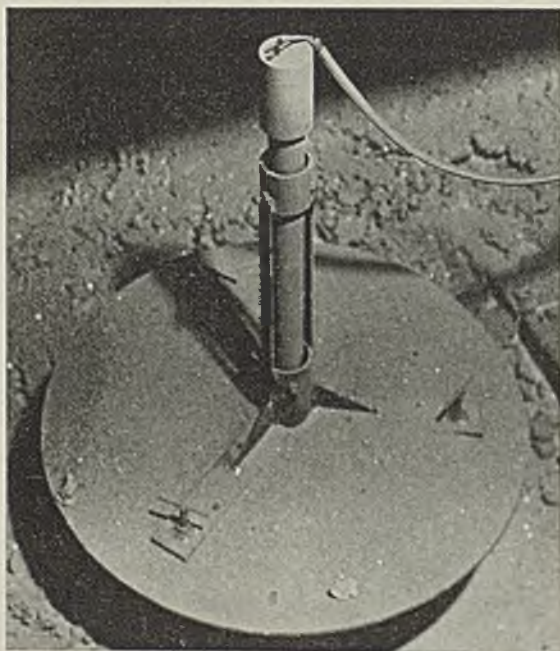
heating and loss of a roof are greatly minimized.

Another factor which greatly increases the importance of roof temperature control is the now generally adopted practice of insulating

open hearth furnaces. Fuel consumption for an open hearth furnace operating on liquid fuel has been reduced about 10 to 25 per cent, by proper insulation, and the average life of a roof has increased 70 to 100 per cent, depending upon the efficiency of the former installation. Naturally, the danger of burning out a roof is greater where insulation is used, particularly if the furnace crew has not had time to become fully adjusted to the change in condition resulting from the insulation. The loss is also greater, due to the higher cost of an insulated roof.

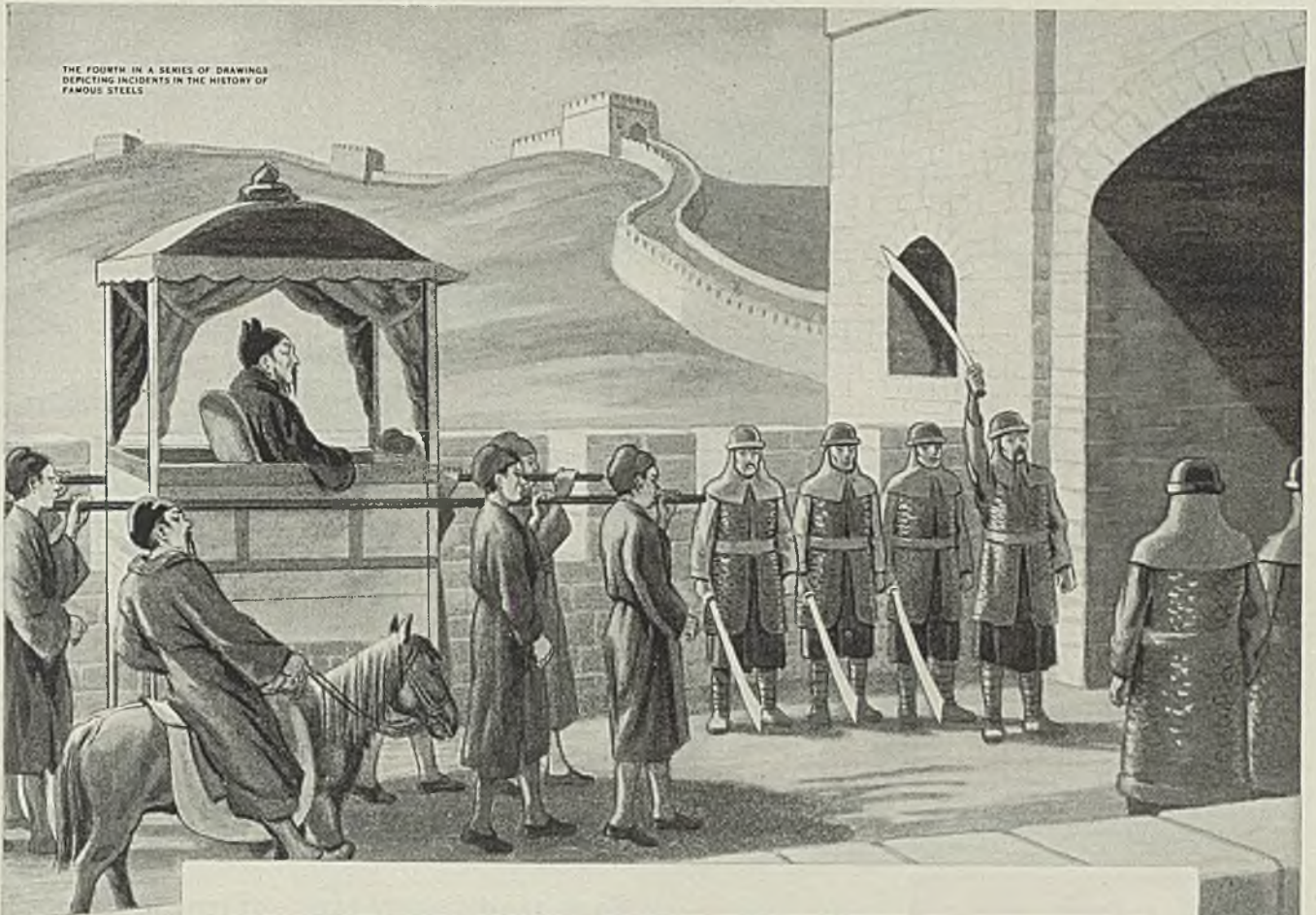
Description will be limited to two types of pyrometers commonly used in roof temperature control, a radiation pyrometer and a regular platinum thermocouple. It has been found sufficient to take the measurements at one point only, located as near as possible to the center of the roof. Here a carborundum block is inserted in the brick work. An H-brick, supported on a 3-inch shoulder resting on the brick work is used with the radiation pyrometer. The brick has a circular well, slightly tapered, extending from both ends toward a ½-inch plate approximately at the center. This plate serves as the target at which the radiation pyrometer is sighted.

Due to the comparatively high thermal conductivity of carborundum the top of the target has nearly the same temperature as the lower side and any fluctuation in the temperature of the latter is quickly



THIS radiation pyrometer, inserted in the roof of an open hearth furnace, cuts off the fuel supply at the upper limit of safety, permitting furnace to be operated as near the upper limit as possible without burning out the roof

THE FOURTH IN A SERIES OF DRAWINGS
DEPICTING INCIDENTS IN THE HISTORY OF
FAMOUS STEELS



SERICAN AND HARRISBURG STEELS

For Leaders "On Guard" Against Unseen Sappers

He forged an empire and then, to protect it, built the Great Wall, colossus of the world's masonry. Above, Shi Huang Ti, the builder, is shown reviewing troops on guard along the 1500-mile wall against sappers sent by the barbarian hordes. The arms of these sentinels of China's great "first emperor" are of the famous

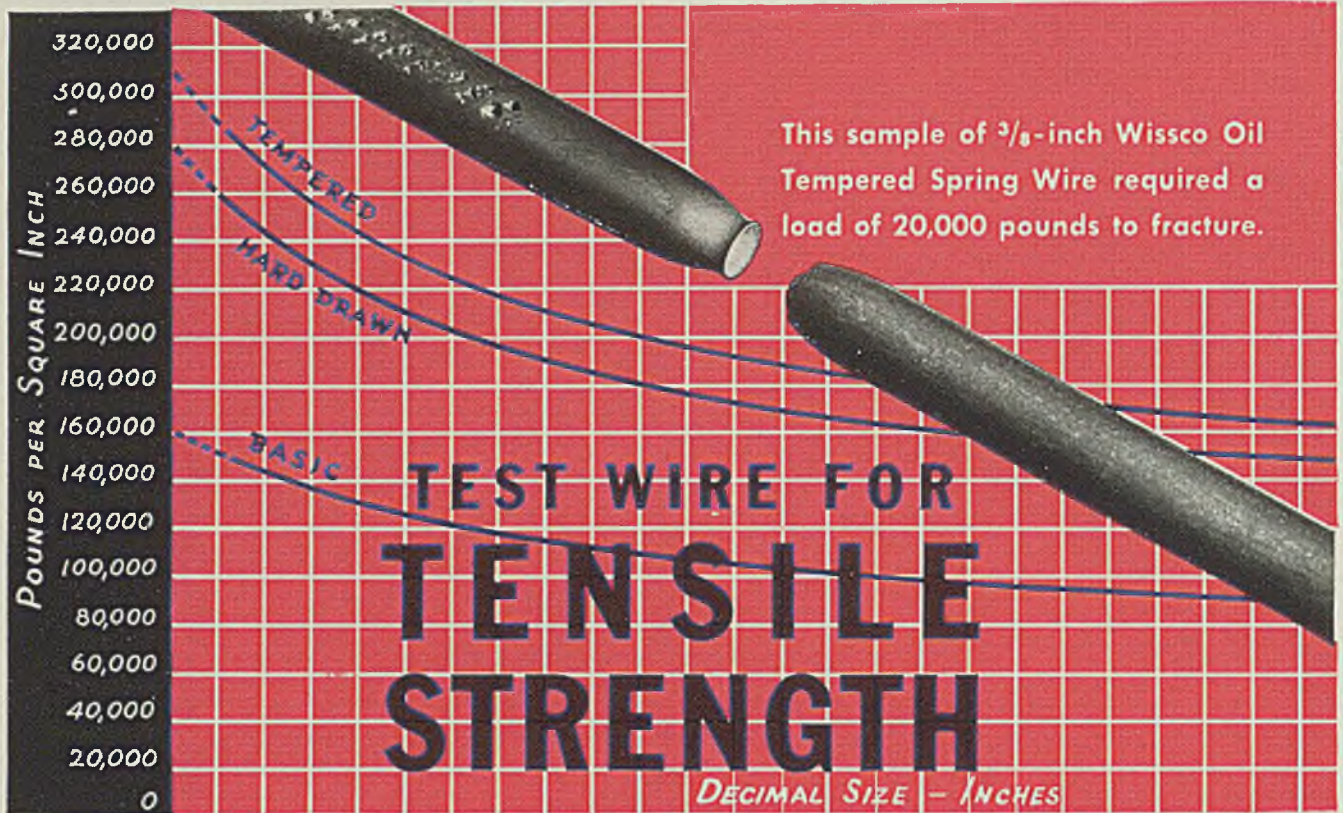
Serican steel, marvel of Roman and Greek historians. . . . Products of Harrisburg steel are likewise the choice in industries that must be on guard against improper metal specifications that would sap the strength of the units. For by close collaboration between the metallurgical and engineering departments Harrisburg makes steel, in its relatively small furnaces, to suit the peculiar metal requirements of each product. Thus

Harrisburg Steel Corporation avoids metal deficiencies that, unseen, often reduce the life or effectiveness of otherwise well made units. Harrisburg products: seamless steel pipe couplings, bull plugs, pump liners, plate-made gas cylinders; drop forged pipe flanges; coils and bends; drop and hollow forgings; carbon and alloy steels.



HARRISBURG STEEL

Harrisburg CORPORATION Pennsylvania



0 .020 .040 .060 .080 .100 .120 .140 .160 .180 .200 .220 .240 .260 .280 .300 .320 .340 .360 .380 .400 .420 .440 .460 .480



These curves indicate the relative decrease in tensile strength accompanying a decrease in wire diameter and the relation in strength between three common commercial wires.

IT'S a safe general rule, except in the case of soft annealed wire, that the higher the tensile strength the higher the price of wire per pound. Strength is built up by costly operations of cold drawing and heat treatment. For instance, the three wires charted above are treated as follows. Manufacturers' BASIC Wire is finished by cold drawing either from hot rolled rods or annealed wire. HARD drawn spring steel is drawn from patented (heat treated) rods or wire. TEMPERED SPRING WIRE is cold drawn and oil tempered as a final heat treating operation.

Wickwire Spencer manufactures High and Low Carbon Wires—in various tempers, grades and finishes—for your specific purpose. Hard-Drawn, soft or annealed Basic or Bessemer Wires—Hard-Drawn annealed, or oil-tempered Spring Wire, Chrome Vanadium Spring Wire—Valve Spring—Music—Clip—Pin—Hairpin—Hook and Eye—Broom—Stapling—Bookbinding—Dent Spacer Wire—Reed Wire—Clock—Pinion—Needle-Bar—Screw Stock—Armature Binding—Brush—Card—Florist—Mattress—Shaped—Rope—Welding. Flat Wire and Strip Steel, High or Low Carbon—Hard, annealed or tempered—Clock Spring Steel—Corrosion and Heat Resisting Wires. Consult the Wissco technical man on your wire problems, however large or small.

Each has different range of tensile strength and other physical characteristics.

Often it is far more economical to purchase a high tensile wire, not only for saving in weight and space, but to gain other desirable properties that accompany a high tensile wire.

Wickwire Spencer Research Laboratories would be only too glad to make a study of your use of wire and recommend a wire with the proper tensile for your purpose. Send for a more complete copy of the above chart and other valuable data included in a booklet.

WICKWIRE SPENCER STEEL COMPANY

New York City, Buffalo, Chicago, Detroit, Worcester. Pacific Coast Headquarters: San Francisco. Warehouses: Los Angeles, Seattle, Portland. Export Sales Dept.: New York



registered at the top. Originally the lower side was made flush with the face of the brick, but it was soon found advisable to move it up, out of the direct path of the flames, to protect it from the slagging action of the dust in the furnace gases. In the upper position the temperature of the target is, of course, not as high as that of the face but, as will be seen, the temperature measurements are all relative.

The radiation pyrometer is placed directly above the block. It consists of a long cylindrical tube, 1½ inches in diameter, which is sighted directly against the target. The tube is made of aluminum and is dyed a dull black on the inside, to prevent any radiation. At the top of the tube is a head in which is placed a thermopile consisting of eight small chromel-alumel thermocouples, connected in series and arranged in a rosette-shaped pattern, with the hot joints toward the center where the rays from the target are concentrated. The leads from the thermopile are connected with a large indicating recorder placed conveniently at a point where it is visible to the furnace crew. The dial of the recorder is so large that it can be read at a distance of at least 100 feet. Furthermore, a large triangular marker is clamped on the dial to denote the maximum safe temperature; the furnace operators are thus able to see with a glance, without actually reading the temperature, if the proper margin of safety is maintained.

Calibrating the Pyrometer

As will be noted, the temperature read is not the actual temperature of the furnace roof at the point of observation, but considerably lower. To correct for this the installation is calibrated with a standard optical pyrometer by reading the actual temperature of the bricks adjacent to the carborundum block; this reading is taken through the furnace door, with the fuel momentarily cut off to prevent heat emission from the gases of combustion. The dial is then set according to this reading. A check reading is also taken daily to adjust for the slight changes which occur from day to day. Some of the factors affecting the reading of the radiation pyrometer are: Variations in the thickness of the target plate, which gradually wears down; accumulations of dust in the well, on the upper target surface, which act as an insulator; changes in the position of the pyrometer tube due to shocks and vibrations caused by heavy machinery and track-mounted equipment and the degree of glazing on the hot face of carborundum plate. If a target block wears through a new block can be inserted in the well.

When the recording indicator

reaches the point fixed as the upper limit of safety a switch automatically cuts off the fuel supply to prevent any further rise in the temperature. At a drop of about 20 degrees the switch will again operate and turn on the fuel. The duty of the furnace operator is to regulate the fuel feed in such a manner that the furnace is kept as near the upper limit as possible, without having the switch kick off too frequently. It is possible to make the installation completely automatic, so that the amount of fuel feed is increased or lowered without manual regulation, but this introduces a very elaborate instrumentation. Furthermore, conditions within the furnace are governed by so many factors that any attempt to completely eliminate manual control may defeat its purpose. Properly utilized, roof temperature control is an excellent means of guarding against the destruction of a roof, but it will not entirely obviate the necessity of close supervision by the furnace crew.

The radiation pyrometer is suspended above the furnace in such a manner that it may immediately be swung away and thus saved from destruction in case of a roof failure.

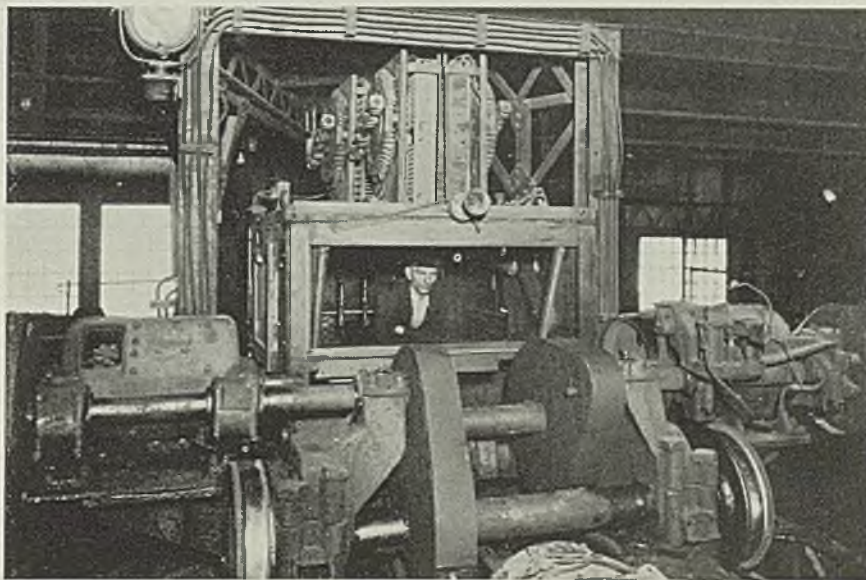
Except for the type of pyrometer used the method of control employing a platinum thermocouple is

identical to that described. A carborundum block of somewhat different shape is used in this case. This block has a slightly tapered well, about 2 inches in diameter, which is closed at the lower end with a plate 1-inch thick. The platinum, platinum-rhodium couple is held in a porcelain protection tube inserted in the block and resting against the target plate. In this installation the target plate is actually flush with the face of the brick; it therefore wears down rather quickly and has to be replaced occasionally. Checks are made daily with the optical pyrometer as described.

Standardizes Carbometer

Carbometers for determining the carbon content of open-hearth heats now are used in many open-hearth shops. At an Ohio plant the carbometer has been standardized and curves plotted for steel with 0.5, 3.00 and 5.00 per cent nickel. Practice discloses that 0.25 per cent nickel has about the same effect as 0.02 per cent carbon on the dial. Copper has no effect on readings nor does manganese unless the steel contains less than approximately 0.40 per cent carbon.

Safety Glass Protects Charging Car Operator

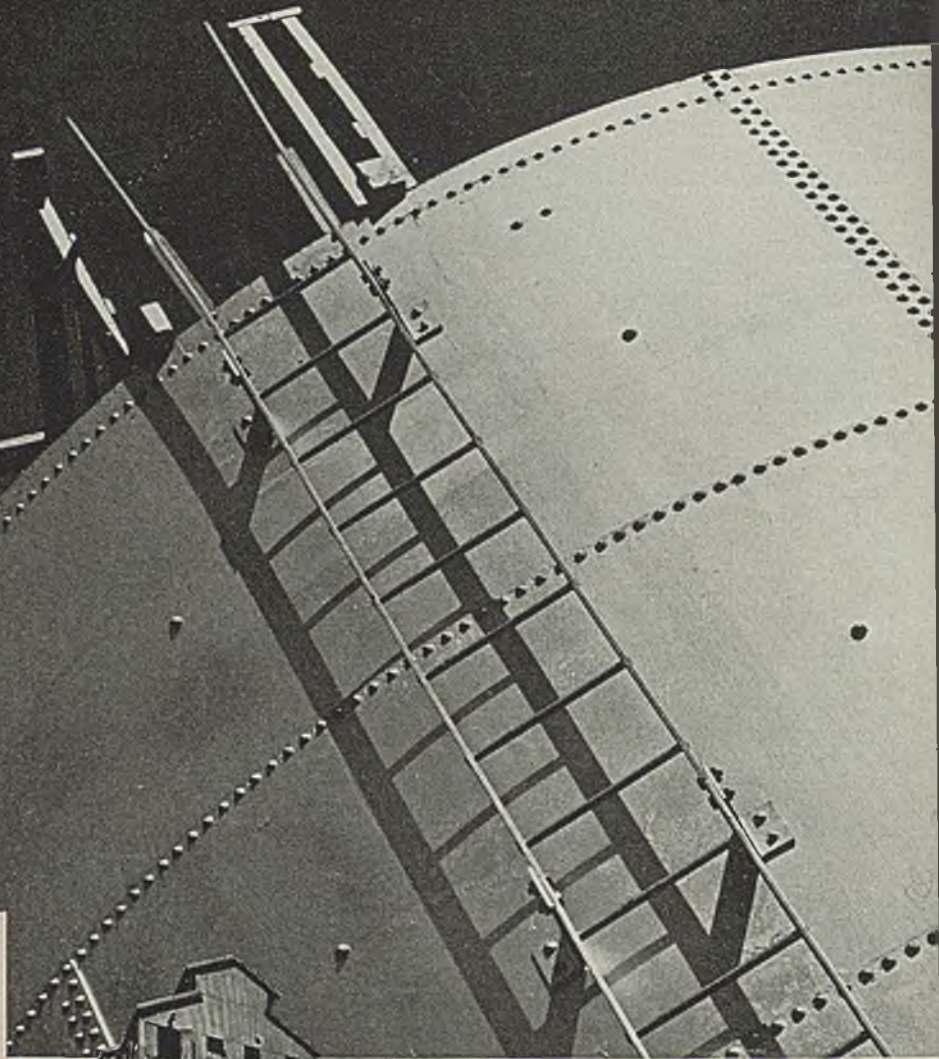


DAMP scale, damp ore, or what's often worse, a small amount of water sealed up or impounded in some piece of scrap, can kick up a lot of trouble when charged into an open hearth fired up to melting heat. The operating cage of this charging machine employed at the Bethlehem plant of the Bethlehem Steel Co., Bethlehem, Pa., has been redesigned to protect the operator if a flareback results. The broad panel of 1¼-inch safety glass protects the operator from the flying hot metal that may splash out. Rearrangement of the cab and operating controls also afford the operator an unrestricted view of the charging floor as well as of the interior of the furnace. Master controls that function through operating relays have been substituted for more cumbersome direct controls and a safety switch replaces the open-knife switch formerly employed. Net result, the operating cage is roomier, more convenient, and makes the operator's work less hazardous

Pennies are

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Air Conditioning Equipment
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Caskets
Construction Equipment
Gutters
Hoods & Housings
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Marine equipment
Roofing & Siding
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Ranges
Signs
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Tanks and containers exposed to alternate wet and dry conditions will save many times the slight extra cost of U·S·S Copper Steel through longer life and less maintenance.

Two roofs for the price of one. Roofing and Siding constantly exposed to corrosive industrial atmosphere last more than twice as long when made from U·S·S Copper Steel.



225 tons of U·S·S Copper Steel Galvanized Sheets went into this ventilating system. For all types of air conditioning equipment that must stand humidity, copper steel is the most durable material to use.

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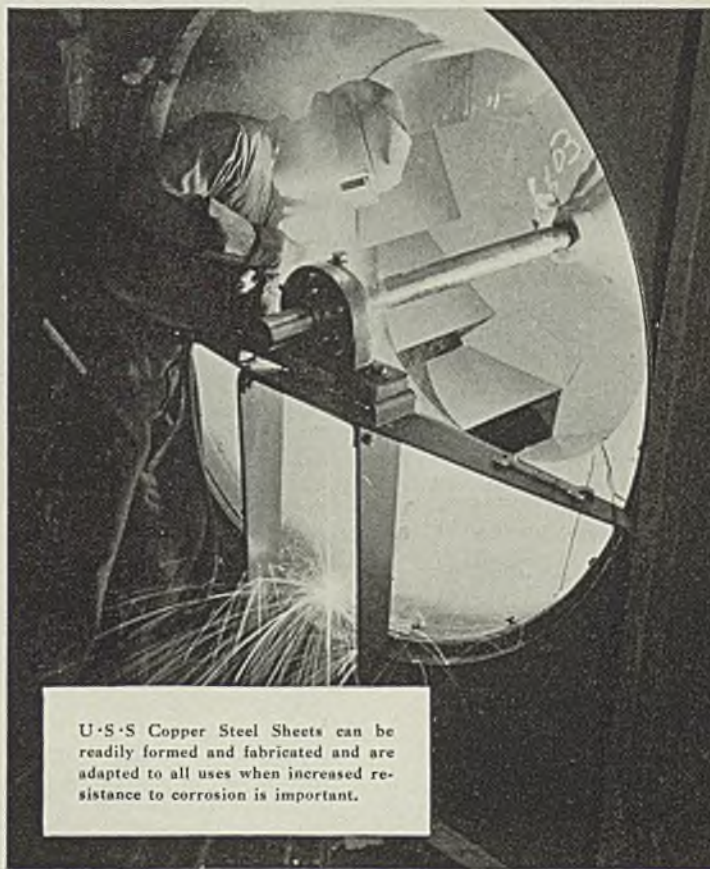
when spent for Copper Steel Sheets

**A LITTLE COPPER ADDED TO STEEL
MORE THAN DOUBLES ITS RESIST-
ANCE TO CORROSION**

WHEREVER steel sheets are exposed to atmospheric corrosion, the slightly increased cost of U·S·S Copper Steel is worth many dollars in terms of longer life. Countless service installations and laboratory tests during the past 22 years definitely prove the superior rust resistance of copper steel. A well-known chemical engineer says, "I do not know of a single instance in which copper bearing steel has not outlasted every other type of commercial iron or steel available."

U·S·S Copper Steel Sheets are unsurpassed for use in roofing, siding, culverts, air conditioning equipment, tanks, barrels, drums, tubs and a host of other products. Outside or inside, where conditions are alternately wet and dry, the endurance and money-saving advantages of U·S·S Black and Galvanized Sheets are too important to be overlooked.

United States Steel Engineers originally developed copper steel. As other improvements were demanded, they met the requirements with better sheet steels. Today our mills are equipped with the most modern machinery to produce any type of steel required.



U·S·S Copper Steel Sheets can be readily formed and fabricated and are adapted to all uses when increased resistance to corrosion is important.

U·S·S COPPER STEEL SHEETS

CARNEGIE-ILLINOIS STEEL CORPORATION • *Pittsburgh and Chicago*

COLUMBIA STEEL COMPANY • *San Francisco*

TENNESSEE COAL, IRON & RAILROAD COMPANY • *Birmingham*

United States Steel Products Company, New York, Export Distributors



UNITED STATES STEEL



WELDING, ETC.

BY ROBERT E. KINKEAD

Voltage Oscillations in Direct Current Arcs

DIRECT-current welding arcs are more popular than alternating-current arcs for welding purposes.

Many of the manufacturers of arc welding machinery offer both types so that sales controversy has largely disappeared.

The alternating-current type finds its greatest application where heavy currents are used and the welding is all in the downward position. But in spite of the fact that direct-current metallic arcs have been used commercially for 25 years, a great deal remains to be learned about what happens in the welding arc.

Recent exploration of coated electrode arcs with the cathode ray oscilloscope disclosed some interesting information. The open circuit voltage displays both radio and audio frequencies as components of the voltage time curve. Commutator ripple is of a frequency which depends on number of commutator bars and speed of the armature.

The dead bar voltage fluctuation is readily observable. Radio frequency appears as a result of slight arcing at the brushes, even at open circuit and with the machine separately excited. The resultant open

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.

circuit voltage as shown by the oscilloscope is far different than is indicated by the voltmeter.

Under welding conditions, the instrument shows practically complete cessation of oscillation as the globules of metal momentarily short circuit the arc. In manual operation of the arc, short circuits are of widely variable duration.

Assuming that the arc length is within bounds of practical operation, current density in the rod has a pronounced effect on how the metal goes across the arc. Thus, with a small rod and high current, the metal comes off in a spray and the short circuits do not appear. Without changing the current, substituting a larger size rod brings about their re-appearance. Rods made to be used on the negative side of the arc show larger globules than those which work on the positive side.

All rods tested operated with

globule short circuits occurring at a rate of 30 to 60 times per second at the preferred current density in the electrode as stated by the manufacturer.

Peening Is Subject Of Welding Paper

A PAPER recently published by the Welding Research Committee of The American Welding Society on Peening and its Effects on Arc Welds will interest most steel fabricators who deal with structures of any considerable size.

This paper was prepared by E. M. MacCutcheon and D. M. Kingsley Jr. of Webb Institute of Naval Architecture. The investigators show that cold peening is effective in reducing residual stresses in welded members. They also believe that hot peening is effective to slightly lower degree and requires less work.

From the practical point of view many shop men may criticize the so-called hot peening. By the time the slag can be removed from a layer of hot weld metal and the operator can get ready with an air gun to peen, the weld metal has dropped to a temperature of possibly 500 to 600 degrees Fahr. It is not likely to be higher in temperature and may be much lower.

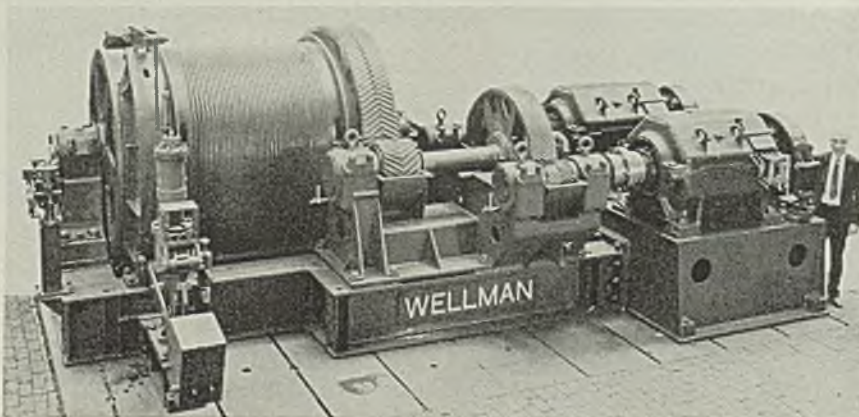
Peening on metal in this range does not constitute what is ordinarily called hot working metal. Neglecting possible work in the blue brittle range, which would be detrimental, the mechanical work would not effect grain size to a greater extent than cold peening.

Such so-called hot peening will produce plastic flow of the metal and consequent reduction in residual stresses at the finishing temperature.

However, if the finishing temperature is of the order of 250 degrees Fahr. and the parts are completely inhibited from motion, as the peened weld cools it will again build up residual stresses of the order of 200 pounds per square inch per degree of cooling per inch of length. Thus the net result of this hot peening, provided the yield point is not exceeded, may be residual stresses quite as high as were present before the weld was peened hot.

It would be valuable as well as interesting for the Welding Research Committee to continue the work showing the effect of not peening the weld metal at all but of peening the parent metal near the weld but beyond the area of thermal disturbance. This practice is one of the oldest methods of reducing residual stresses and one of the most effective.

Welds Large Skip Hoist



WELDING is used throughout in construction of this double drive blast furnace skip hoist. Shown here with the upper halves of gear cases removed, the machine is one of two now under construction by the Wellman Engineering Co., Cleveland. The entire bed as well as gear reduction case, brake beams, levers, safety devices and other detailed parts are welded



Whitey Sez:

*"After all, it's the way you
show up at the show down
that really counts."*

* To the first 25 persons identifying the technical error in the above scene, I will present a remembrance for their close observation.

M A U R A T H, I N C C L E V E L A N D
B U I L D E R O F B E T T E R W E L D I N G E L E C T R O D E S I N A L L A N A L Y S E S

August 16, 1937

67



SURFACE TREATMENT AND FINISHING OF METALS

Use of Bright Nickel Process Greatly Reduces Cost of Chromium Plating

WHEN bright nickel plating under existing processes began to be offered to the metalworking industry in the past couple of years it met with a cold reception. Companies with previous experience in nickel plating, were inclined to be suspicious. This introductory stage has been concluded and in one particular process more license arrangements have been made since the beginning of this year than in the entire previous existence of the present process. It is estimated that well over

100 companies now are plating with bright nickel.

In the great majority of cases the bright nickel plate serves as a base for chromium plating. In very few cases is bright nickel the final finish. This is because no way yet has been found to prevent bright nickel from tarnishing. At present bright nickel is being applied directly to steel, brass and copper and, after a base deposit of copper plate, on zinc base die castings. Much research work continues to be devoted to bright nickel plating and it is hoped

that results will hasten the further solution of existing plating problems.

An impressive feature of some of the bright nickel plating now being done is the outstanding absence of stress in the plate, this being true even with deposits as thick as 0.01-inch. Fatigue bending tests of this work revealed that the base metal failed entirely before the nickel coating showed any failure. Another feature, due to the solutions being used, is absence of pitting in the work being plated.

No Buffing is Required

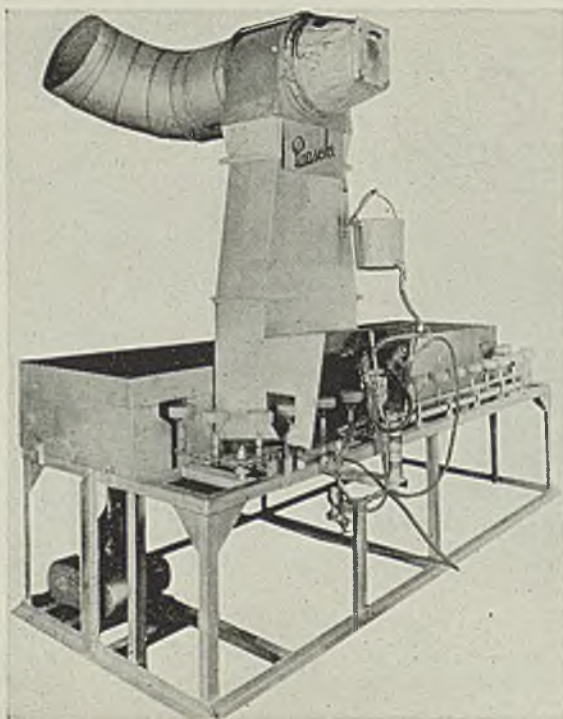
The great advantage of bright nickel plate is that it does not need to be buffed for the subsequent chromium plating operation, thus eliminating work which frequently costs 10 times the actual plating cost. Too, all the nickel placed on the base metal stays on; none of it is removed by buffing. Thus less nickel is necessary to obtain an adequate coating. Bright nickel also is friendly to the subsequent chromium plating operation for the reason that the nickel coating is not rendered passive by buffing.

Current practice in bright nickel plating includes deposits ranging all the way from 0.000002-inch to 0.01-inch. For good protection on steel a coating of 0.001-inch or more is required. Some leading automotive platers specify bright nickel thickness at 0.0013 to 0.0014-inch with 0.001-inch as minimum. This specification results in a coating that resists a 150-hour salt spray test on significant surfaces:

Film Process Finish Survives Rigorous Tests

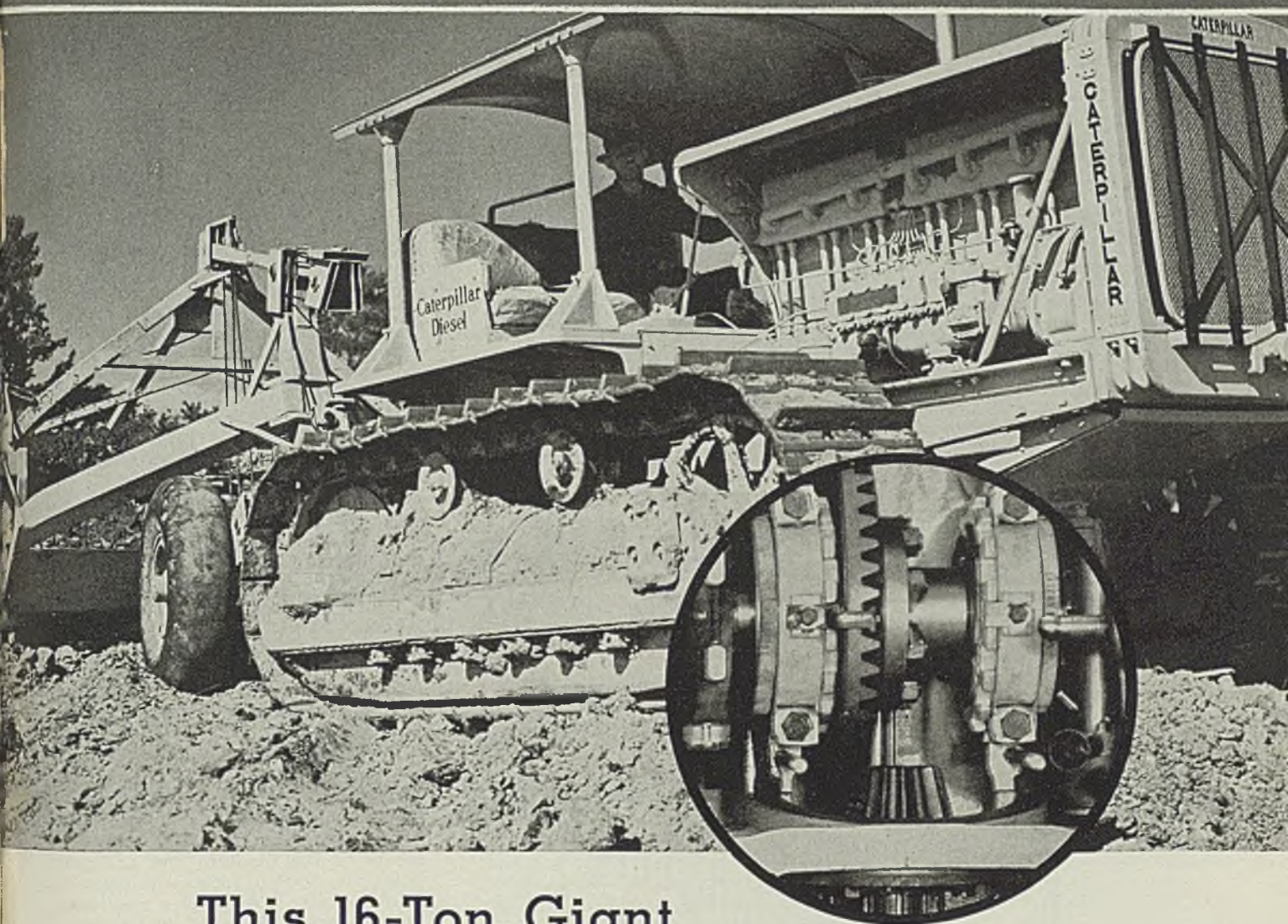
Recently introduced is a new type of finish produced by a photo-lithographic, or decalcomania, film process which is claimed to have survived rigorous tests to determine toughness, durability and adherence. With this process it is possible to

Automatic Spray Gun Speeds Clock Production



POUND cases and rectangular bases for alarm clocks are sprayed with lacquer and dried automatically on this unit designed and built by Paasche Airbrush Co., Chicago. Spray gun turns on and off automatically as parts enter and leave finishing station. Finishing with this unit is 250 per cent faster than manual spraying with the added advantage of more uniform coatings. Oven temperatures up to 180 degrees Fahr. are maintained by thermostatic control. Similar units have been built to finish golf balls, flat metal sheets and 55-gallon drums

YOUNGSTOWN



This 16-Ton Giant Has vital parts of Youngstown Alloy Steel

CATERPILLAR TRACTOR'S requirements are among the most severe in the industry, not excluding the finest automobiles.

Of all the parts in their big 16-ton Diesel, the one carrying the greatest responsibility and hardest punishment is the pinion gear on which the entire drive depends.

Because of its uniformly high quality, Youngstown Alloy Steel is used for this gear and other highly stressed parts.

Youngstown's Metallurgical Engineers are always ready to assist in solving your steel problems.

THE YOUNGSTOWN SHEET AND TUBE COMPANY
Manufacturers of Carbon and Alloy Steels

General Offices: Youngstown, Ohio • Alloy Steel Offices: Chicago, Illinois
Sheets • Plates • Tubular Products • Conduit • Tin Plate
Bars • Rods • Wire • Nails • Unions • Tie Plates and Spikes



produce attractive finishes to simulate grained wood, marble and other surfaces which would not be possible with ordinary finishes.

A noteworthy application of this finish is on a popular make of peanut vending machine which is an assembly of zinc alloy die castings. Procedure for applying this finish to this metal is fairly simple. Castings, after being degreased, are given a phosphate type pretreatment which creates a chemical film to form a permanent anchorage for any type of organic film. A subsequent spray application of a special synthetic baking enamel provides the proper background for the photo-lithographic film and may also serve as the color coat for the trim. After baking the enamel coating, the film, which is composed of lacquer materials about 0.003-inch thick, is applied by the use of a mutual solvent cement forming an inseparable bond with the synthetic coating. The finish is then baked and given a final clear top coat of a satin finish, a high gloss synthetic or a buffing lacquer. If the latter type of coating is used it may be buffed to an exceptionally high luster.

The machines on which this new type of finish is being applied have been given service tests in humid

and salt air atmospheres and it is recorded that the film remained intact. The abrasive and shock resistance qualities have also been reported as exceptionally favorable.

Black Finish Applied to Steel at Low Temperatures

Attractive black finishes can now be applied to steel parts and tools at temperatures as low as 310 degrees Fahr. at the plant of Lindberg Steel Treating Co., Chicago, by means of a coloring bath known as Pentrate Black. This process is controlled by Heat-Bath Corp., Springfield, Mass. The blackening process is applicable to practically all steels with the exception of the high chromium stainless types.

Previous methods of blackening or bluing have involved heating the work to temperatures of 700-750 degrees Fahr., which limited the coloring to work which did not require high hardness. With Pentrate Black, hardened tools such as drills, taps and reamers can be given a black finish without loss of hardness.

The finish is a lustrous black which has considerable resistance to atmospheric corrosion, according to the manufacturer, which makes pos-

sible the storage of treated parts without additional protection against rusting. Parts which have been case-hardened in cyanide baths can be given a black finish without loss of surface hardness. This type of finish has been found satisfactory for die casting dies for zinc or aluminum base alloys to prevent sticking or soldering when placing a new die in service.

Colored Stapling Wire Dresses Up Cartons

Stapling wire of almost every imaginable color is now being made to order by Acme Steel Co., Chicago, one of the country's largest producers of wire for stapling purposes. The new product called "Colorstitch" affords an easy means of dressing up corrugated or fibre board shipping containers. It is available in colors that will blend or contrast with plain or printed cartons. It is made in all standard stapling wire sizes and in lots of 500 pounds and more.

Porcelain Enamel Selling Points Booklet is Published

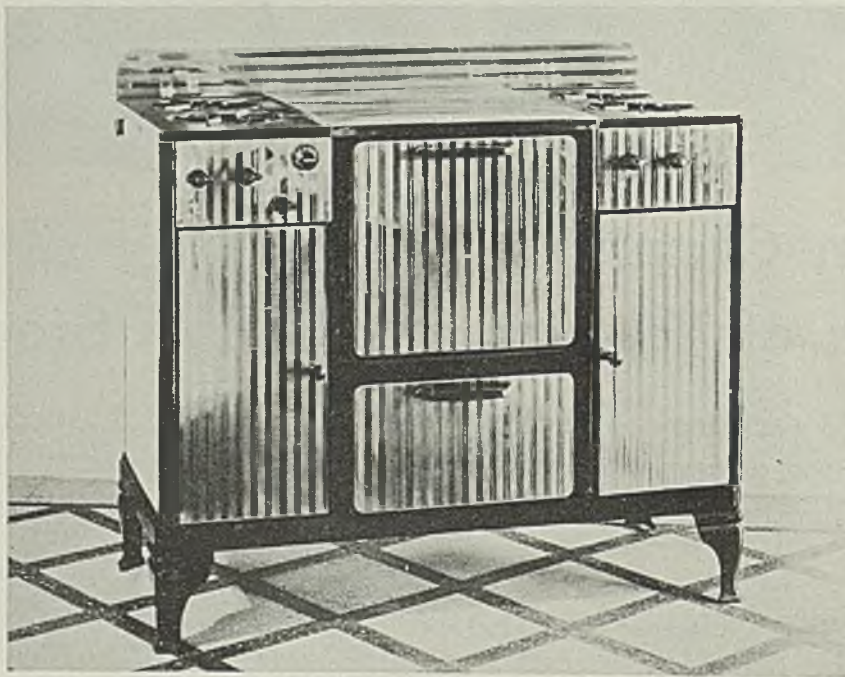
"Selling Points for Household Appliances," a 24-page booklet containing aids for selling porcelain enameled products, has just been published by the Porcelain Enamel Institute.

A feature of the booklet is the center spread which carries the caption, "This Matter of 'Chipping'." Other pages of the booklet are devoted to reproductions of advertisements of the institute and selling points on various porcelain enameled products. Free copies may be obtained from the Porcelain Enamel Institute, 612 N. Michigan ave. Chicago.

Design Has Material Effect On Final Finishing Costs

Designers of metal products can do a lot to help or hinder the finishing department. Recently while visiting a metalworking plant, a representative of STEEL overheard a complaint by the foreman of the finishing department. He showed a metal part which, he said, ought to require only one coat of lacquer. Because it had sharp instead of round edges, he said, he had been forced to use two coats of lacquer, thus multiplying the finishing cost by two. The company executive to whom the complaint was made gave instructions that no more of the parts should be made until the sharp edges had been rounded.

South American Stove Manufacturer Achieves Novel Design



SOUTH AMERICAN manufacturers too are turning to stainless steel and enameling iron to give retailers "new things under the sun." This electric range is a product of Ennis and Williamson Co., Buenos Aires, Argentina. The surface metal is Armco 18-8 stainless steel, manufactured by American Rolling Mill Co., Middletown, O., and distributed by Armco International Corp. The novel striped effect is achieved with polishing and buffing equipment in the manufacturer's plant. Panels of 23 gage stainless, No. 2B finish, are stamped to produce uniform ridges in the metal. The protruding parts are polished to a lustrous No. 7 finish, while the indentions retain their original dull finish. The simple operation provides a marked contrast. All trim is in jet black enamel. A red plastic material is used for the switch buttons

Training Apprentices To Meet Today's Need

(Concluded from Page 31)

schools and universities, plant classes and lectures and technical society meetings.

The training of crews for special operations, such as roll changing where speed and co-ordination of effort on the part of each individual are demanded.

6. The use of models, charts, lantern slides, and films to give the individual a clear understanding of his equipment.

7. The training of groups of young men in the operation of new types of mills that there may be trained employes available for transfer to new mills as they are erected.

For Technically Educated Personnel

A limited number of technical graduates are employed each year for the purpose of learning the plant practices, and qualifying for technical duties when openings develop. These men recruited from a large list of universities and colleges are afforded an opportunity, through lectures and informal talks, actual work, and observation, to gain a general knowledge of the work and scope of the plant, and to fit, eventually, in the right place.

During his period of training, varying from one to two years, the individual is routed within and between departments—his stay in one section varying from a week to three or four months. In this way, he gets a comprehensive view of the whole plant and its inter-relationships, and during this period he is definitely determining, with the aid of his supervisors and the plant director of training, in which phase of the business he will best serve himself and the enterprise for which he is working.

Candidates for sales positions are afforded equivalent opportunity supplemented, after completion of a mill course, by intimate experience in the various sales service departments at the general offices of the company.

Safety Training

By far, the most popular training is that for making the mills the safest place in the world in which to work. This is an educational campaign in which the entire force enlists. At least once a month, under the leadership of the foreman or safety inspector, each employe meets with a group of fellow employes to present safety ideas and suggestions. Full discussion is entered into, accidents studied and remedies suggested by interested employes.

In conclusion, it should be pointed out that, in addition to the training



APPRENTICES enrolled in the training course are given a comprehensive view of the entire plant through work in many different departments. Here is a group working in the electrical construction division learning methods of building up motor windings

program briefly described in this article, the recreational side of life has not been overlooked. General superintendents of the plants are actively sponsoring extensive programs, including baseball, soft ball, tennis, orchestras, bands, dramatic clubs, golf and boxing. The "all work and no play" adage seems to be understood by the management, and as a result, steel mills in the Chicago and Pittsburgh districts offer much that adds to the attractiveness of the job and the efficiency of the worker.

Training and retraining of the working force will always be a vital activity. Requirements of changing production, maintenance of efficiency and, last but not least, the outlets for human expression will combine to keep it so.

Welding in Shipbuilding Needs Further Research

Two papers dealing with welding in ship construction, presented before the recent spring meeting of the Society of Naval Architects and Marine Engineers in Chester, Pa., indicated that although the welding method of fabrication is looked upon most favorably, need for further research and experimentation exists before complete acceptance can be gained.

Describing recent practice in welding, handling and erecting the units of large oil tankers, J. W. Hudson, and T. M. Jackson, naval architect and chief electrical and welding engineer, respectively, Sun Shipbuilding & Dry Dock Co., Chester, Pa.,

expressed the opinion that operating results, including lower maintenance costs and other savings, would more than justify the extra expense, if any, in building welded vessels of this type.

The ship, on which the authors' paper was based, is over 18,000 tons deadweight and 521 feet long. The entire tank space of over 350 feet in length was 100 per cent welded and this was considered not to be the ultimate which may be accomplished by electric welding. Butt welds were used for all strength members and lap welds only for brackets and vertical panel plates, on the longitudinal bulkheads.

Some of the effects observed in shipyard practice and methods by utilization of welding were summarized in the second paper which was prepared by James B. Hunter, head of the hull technical division, Bethlehem Shipbuilding Corp. Ltd., Fore River plant, Quincy, Mass. One important conclusion was that if welding is to be used in the major portions of ship structures, definite modifications of shipyard practices appear inevitable.

In the case of small vessels, Mr. Hunter stated that the trend definitely is toward welding the tank spaces completely; and in the larger merchant vessels, welding is receiving general acceptance for bulkheads both transverse and longitudinal, major parts of the framing, and small docks and flats.

The 300 engineers who attended the meeting were given the opportunity to inspect a large tanker being constructed by the Sun Shipbuilding & Dry Dock Co. for the Atlantic Refining Co.

Complete Wrecking Bars Turned Out By New Automatic Forging Equipment

WRECKING bars are manufactured rapidly, economically and automatically by a new set-up of furnace and press in the plant of the Warren Tool Corporation, Warren, O.

Fed with octagon bar stock the new arrangement produces every three seconds a wrecking bar, completely formed by six press operations and ready for painting. An interesting fact concerning this mechanism is that it may be installed on a conventional forging machine or press and, with a few minor changes, can efficiently produce various types of forged articles from elongated bar stock.

The company buys $\frac{1}{2}$ to $\frac{3}{4}$ -inch octagon bar stock cut to a length of 16 to 28 inches. This stock is manually loaded onto a conveyor that carries the bars through a furnace in which a temperature of approximately 1700 degrees Fahr. is maintained.

The furnace is slot box type consisting of two welded steel boxes mounted parallel to each other on rails and rollers for crosswise adjustments. Each box is lined on sides, end and bottom with refractories and has three 2-inch, low pressure, Hauck oil burners mounted on the outside walls. Supporting framework is of fabricated angle steel mounted on rollers and rails at right angles to the press. Furnace mechanisms and conveyors are operated by a gear arrangement synchronized with gears and cam shaft on the press.

In passing through the furnace, bars are held so each end extends a predetermined distance into a furnace box. The furnace is 11 feet long and it takes $3\frac{1}{4}$ minutes for a bar to pass through, ninety-three bars being in the furnace at one time.

Upon emerging from the furnace,

transfer fingers lift the bars one at a time to the press. Each bar is placed on a holder where it is centered for the first operation, which consists of partial deformation of both ends. Second operation semi-forms both ends and the third finish-forms the ends. Next is a coining operation for chisel end and a partial bend in the claw end of the bar. Fifth operation is semibending of the chisel and claw ends and final operation consists of finish by a complete bend, forming a gooseneck on claw end and full offset on chisel end, which is properly beveled and requires no grinding.

After the last operation, the completed bar is lifted onto a slide and goes into a tote box, ready for the painting department.

The press runs at a constant speed of 80 revolutions per minute and comes down on every fourth revolution, properly timed four-to-one reduction gears being used, with pinion on drive shaft to a cam shaft on the side of the press. The cam shaft is equipped with a cam for actuating the press clutch dog and a cam for release and compression of the brake band on the brake drum.

The manually-operated clutch controls striking of the press and the movement of the bar holder. Shearing of the safety pin would automatically stop all motion. The gear assembly and cam shaft are

AFTER the final operations are performed in the press, at right, the finished bar slides down into a tote pan. Lower view shows the transfer fingers lifting a bar from the furnace, and placing it in the press

also part of the motivation for the automatic furnaces.

There is always a full load of six bars in the press and each of the six sets of dies is of two parts, one part at each end being placed to perform a forming operation at the ends of the bars. Articles conforming to the general specifications of elongated bar stock, requiring forming operations at the ends and wanted in large quantities of uniform pieces, are adaptable to production.

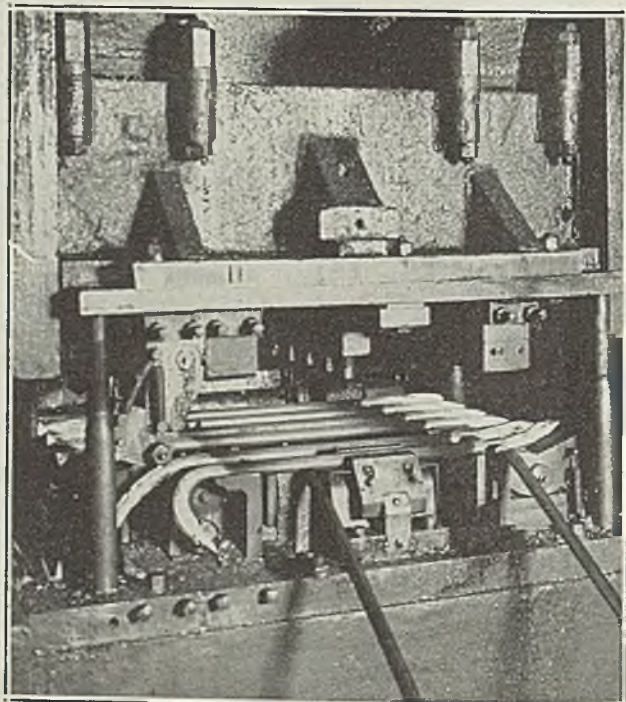
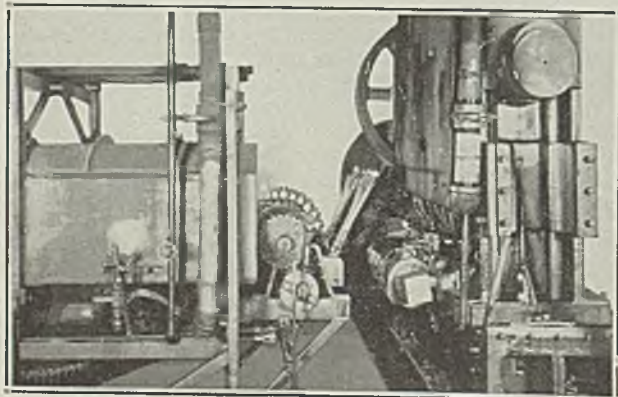
The company holds patents on the process and plans to increase the volume and variety of products that can be made, either by licensing arrangements with other companies or by fabricating on order.

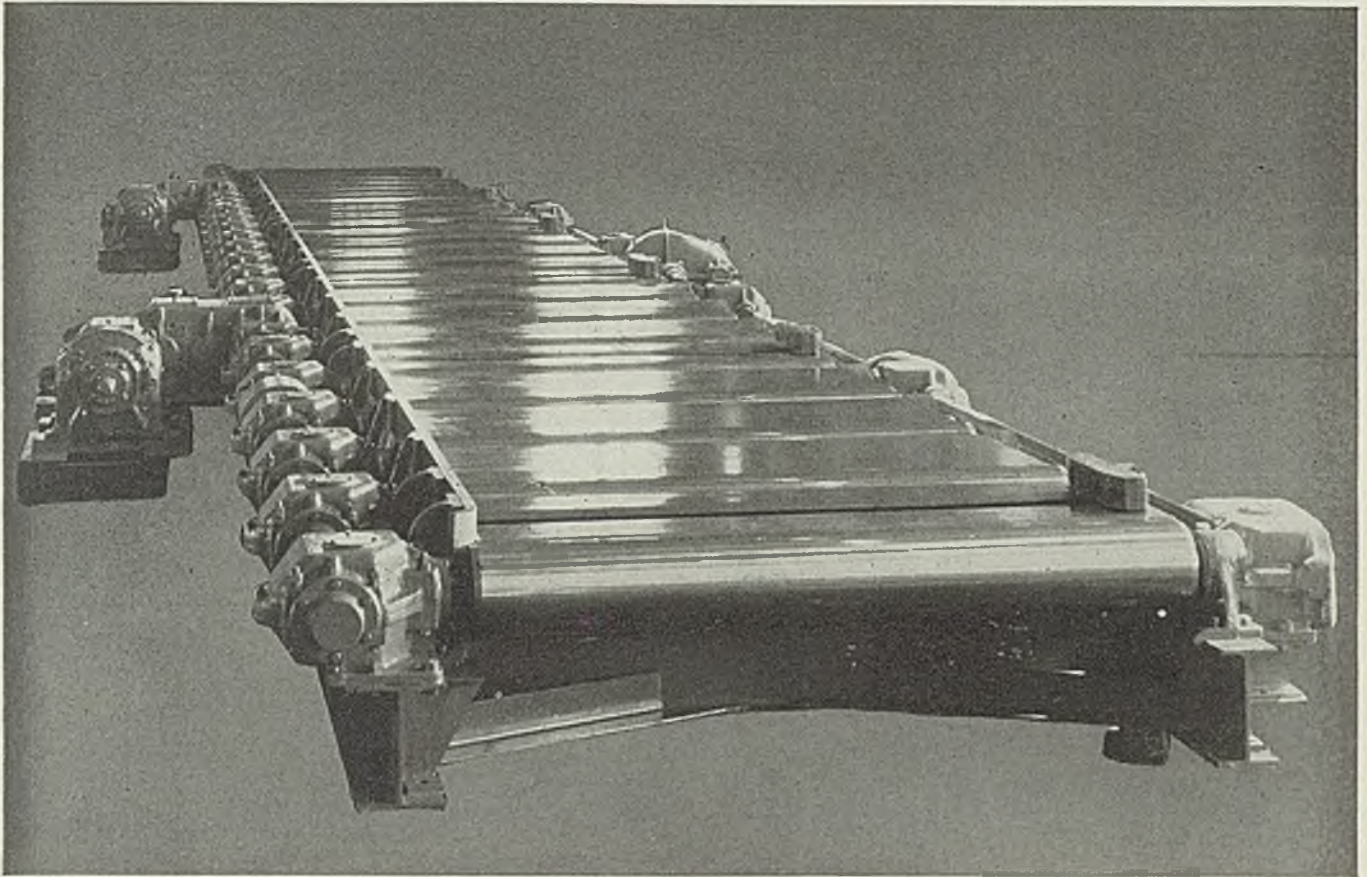
Insulation as Adjunct To Air Conditioning

Air Conditioning Insulation, by Ralph Dalzell and James McKinney; 301 pages, $5\frac{1}{2}$ x $8\frac{1}{4}$, cloth; published by American Technical Society, Chicago; supplied by STEEL, Cleveland, for \$2.50; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London.

A contribution to the relatively new air conditioning industry, this volume treats of the principles and applications of insulation as used to retard heat losses and gains and to guard against fire, sound, vibration, condensation and termites in buildings.

The purpose is to show how insulation can be applied to conserve heat in winter and to prevent its admission in summer, without which safeguard the cost of an adequate air conditioning installation would be prohibitive.





Roller Tables...

ALSO COMPLETE EQUIPMENT FOR

THE FINISHING END OF
STRIP MILLS
TIN MILLS AND SHEET MILLS
ROLLING MILL MACHINERY
ROLL LATHES
STRAIGHTENING MACHINES
STRETCHER LEVELLERS
SPIKE MACHINES
TUBE MILL EQUIPMENT
SPECIAL MACHINERY
SHEARS

Youngstown roller tables eliminate scratching hot plates because of their highly ground and polished rolls and aprons . . . Enclosed bevel pinion drives through anti-friction bearings eliminate friction and power losses, as well as assuring smooth operation, thorough lubrication, and a minimum of maintenance costs . . . Welded frames provide maximum rigidity.

Our large iron foundry, capable and experienced in turning out castings up to 100,000 pounds maximum per unit, is well equipped to handle your next job. We specialize in Alloy Irons, some of which were developed in our own plant and are known as Paralloy. We are in a particularly advantageous position to handle your requirements for Nickel, Chrome and Molybdenum Alloys.

Let us figure on your next job—No obligation.

**THE YOUNGSTOWN
FOUNDRY & MACHINE CO.**

Youngstown, Ohio

OVER FIFTY YEARS OF SERVICE TO THE STEEL INDUSTRY

POWER DRIVES



Installation of Capacitors Results in Substantial Cut of Power Costs

ONE industrial concern, faced with an increased power bill, cut that bill instead.

A substantial increase in demand on the power distribution lines of the municipal central station in western Massachusetts resulted in demand penalty clauses in its industrial contracts, which affected an important metal fabricator.

With an already low power factor, this industrial concern foresaw a

BY K. C. COUSINS
Industrial Division
Westinghouse Electric & Mfg. Co.,
Springfield, Mass.

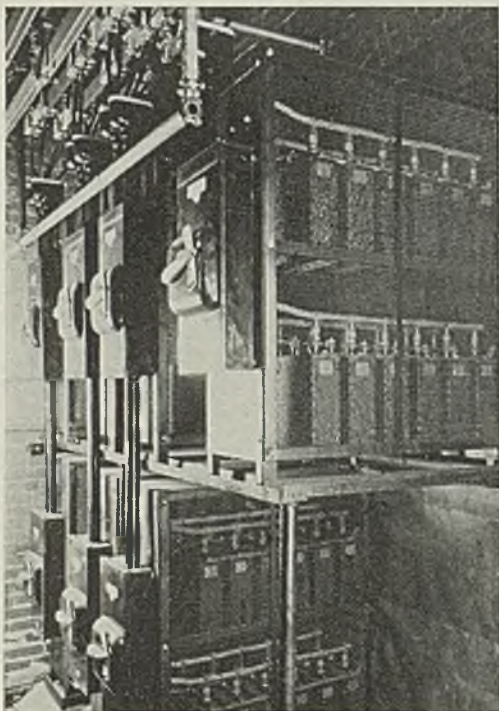
tremendous jump in its power bill, so steps were taken to improve its power factor. The result was an average saving of \$860 per month.

The greater portion of this plant's load consisted of squirrel-cage induction motors whose application and operation effected a load variation of 400 to 1000 kilowatts within the period of a single hour. In addition to this hourly fluctuation in load, a further variation was caused by the working hours usually tapering from a 16-hour day for the first 3 days to an 8-hour day on Thursday and 4 hours on Friday. The Saturday load was practically negligible, while on Sunday the entire plant was shut down and the power disconnected at the main circuit breaker.

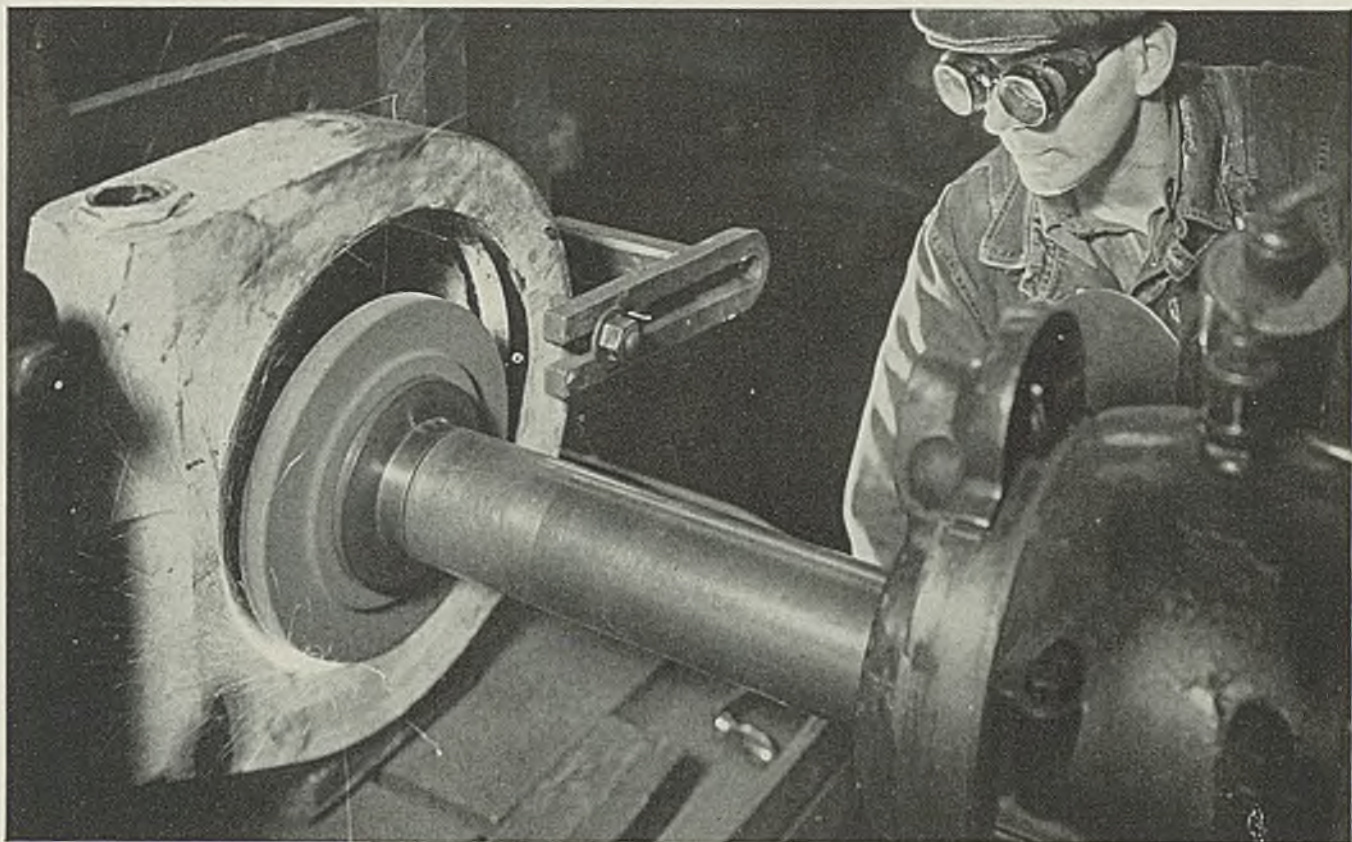
Available records in the form of demand-meter charts for the preceding 12 months period revealed an average 1248 kilovolt-ampere maximum demand at 55 per cent power factor. This represented a 690-kilowatt maximum load, while the monthly power requirements averaged 250,000 kilowatt hours. To effect as great a saving as could be justified, it was decided to install 810 kilovolt-amperes of power factor corrective apparatus to increase the power factor to 95 per cent. This 40 per cent increase in power factor represented a 518 kilovolt-ampere reduction in maximum demand from 1248 kilovolt-amperes.

Power was delivered and metered on the 13,200 volt side of two banks of transformers, each consisting of three 300-kilovolt-ampere units, and transformed to 3-phase, 3-wire, 60-cycle, 460-volt current for distribution throughout the plant.

The demand charge was based



INSSTALLATION of these capacitors resulted in a substantially decreased power bill for their purchaser



They're Both Internal Grinding . . .

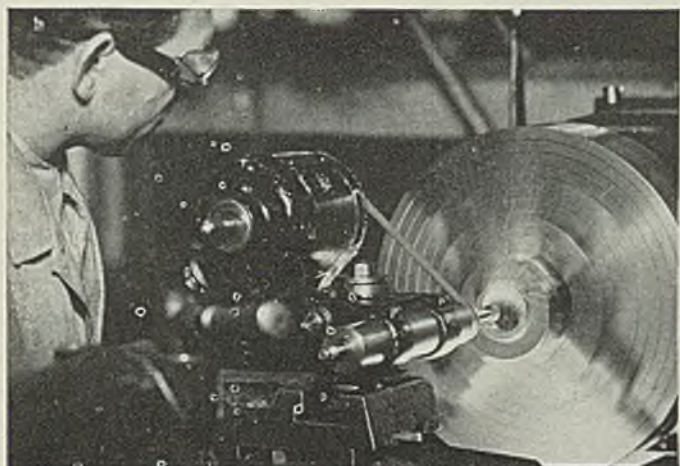
And There's a Norton Wheel for Each!

YOUR internal grinding job may not be as big as the railroad shop operation above nor as small as the tool room job below—but, large or small, you can be sure that there's a Norton Wheel to do it *right*.

Norton Company, Worcester, Mass.

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W-607



NORTON ABRASIVES

on \$2 per kilovolt-ampere for the first 100 kilovolt-amperes, \$1.75 per kilovolt-ampere for the next 100 kilovolt-amperes, and \$1.25 for all additional kilovolt-amperes, with the maximum kilovolt-ampere demand figured as an average of the highest hourly demands per month over the preceding four months period.

The equipment installed comprised seven indoor racks, each with a capacity of 120 kilovolt-amperes, thus making allowance for the future addition of 30 kilovolt-amperes if necessary. Each rack was equipped with its individual auto-

matic circuit-breaker for protection and to disconnect the bank whenever necessary or desirable.

The capacitor units are fireproof and filled with Inerteen, hermetically sealed with solder seal bushings. Each of the 10-kilovolt-ampere, 3-phase 460-volt units was provided with two self-indicating boric acid type fuses, designed to clear a fault within 1/2 to 2 cycles, to confine the fault to a single unit.

With the capacitor installation reducing the demand to 730 kilovolt-amperes, this plant has effected a saving of about \$650 monthly on

the demand charge, while on the energy charge of \$0.009 per kilowatt hour up to 200 times maximum demand and \$0.007 per kilowatt hour for all additional power, there is a further saving of approximately \$210 per month.

Based on an average monthly saving of \$860, this installation will have paid for itself within the comparatively short period of nine months.

♦ ♦ ♦

Flushing Speed Reducers

SPEED reducers which are subjected to extremely severe or shock loads, heat or moisture, either singly or in combination, frequently develop sediment or contain particles of metal worn from the teeth. If these are allowed to settle before draining much of this material will adhere to the walls and bottom of the case.

Under any operating conditions it is generally advisable to drain the case immediately after the reducer is shut down while the material is agitated and before it has time to settle. Also the oil is warm and drains better and more quickly.

Where conditions are severe and the oil is seriously contaminated some sediment may adhere to the walls or bottom of the case. To remove this flushing is desirable. The most satisfactory flushing oil is obtained by using an engine or machine oil of 300 to 400 Saybolt viscosity, operating the reducer for 15 to 20 minutes without load and then allowing to drain for at least 1 hour before refilling.

Under no circumstances should kerosene or light oil be used and the reducer operated. Kerosene is a poor flushing oil as it adheres to the surfaces and contaminates the new oil.

♦ ♦ ♦

Manufacturers of machines with the cheapest type or poorly planned built-in drives may learn that the drive has failed about the time they are trying to sell another machine.

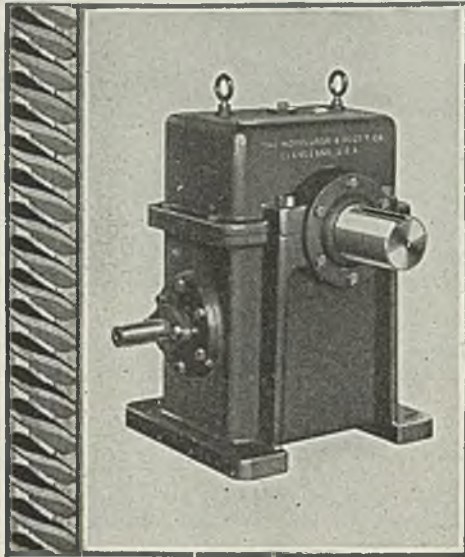
♦ ♦ ♦

Power transmission engineers should consider the production problems as the requirements for the drive. This includes not only the individual machine but other machines with interlocking production programs. One poorly planned drive in a continuous production line may disrupt the schedule.

♦ ♦ ♦

The introduction of an indicating tachometer to show operating speeds in connection with a variable-speed transmission removes all uncertainty and leaves no excuse for production at any but the best speed.

SIMPLE * COMPACT * RUGGED



WORM GEAR DRIVES

in ratios up to 100 to 1 in

Single Reductions

*

10,000 to 1 in

Double Reductions

★ It's next door to direct drive... with just two moving parts... the worm... the gear. That's all there is to the Horsburgh & Scott Worm Gear Speed Reducer. The efficiency is remarkably high, due to such features as hardened and accurately ground worm, carefully chosen gear bronze, accurate alignment and self-lubrication. It is an extremely simple, compact and rugged right-angle drive... representing correct design and the highest type of precision manufacture.

Send for this valuable 448 page catalog that illustrates and describes a complete line of all types of Speed Reducers and Gears.

THE HORSBURGH & SCOTT CO.

GEARS AND SPEED REDUCERS

5112 HAMILTON AVENUE, CLEVELAND, OHIO, U. S. A.



Glimpse Behind Curtain Of Socialist Germany

Economic Development of Germany under National Socialism, cloth, 141 pages, 6 x 9 inches; published by National Industrial Conference board, New York; supplied by STEEL, Cleveland, for \$3.50; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London.

This study is claimed to be the only current source of information available in the United States on the economic development of Germany during the regime of national socialism. It explains the organization of labor and industry, the position of business management and the regulation of industrial relations.

The standard of living of the working population and the profitability of industry are discussed and special chapters are devoted to the German balance of payments and to the possibility of Germany becoming economically self-sufficient.

Other subjects include public finances, cost of public works and rearmament and the problem of short-term public debts and their consolidation.

Electrodes Are Improved

Cold forming and plating have been announced by Electroloy Co., 50 Church street, New York, as two major improvements spot welding electrodes. Cold formed electrodes are said to have a finer, more uniform grain structure with an additional ten to twelve per cent increase in hardness, resulting in a minimum of mushrooming and a greater number of welds per tip. Plating of the electrodes with a thin, electrically conductive coating of a special alloy highly resistant to oxidation causes less heating, less softening and deformation, as well as a longer service life.

Temperature Is Constant

Recently completed at the Mansfield, O., works of Westinghouse Electric & Mfg. Co., is a laboratory believed to have the most constantly maintained temperature of any similar testing room yet constructed.

Built to test and check the insulation efficiency of electric refrigerators, the laboratory has a room temperature automatically maintained at 80 degrees Fahr., within a tolerance of one-half degree, plus or minus. This constant temperature is maintained by highly efficient wall, ceiling and floor insulation, and by the elimination of unnecessary interruptions while

tests are being performed. In order to prevent fluctuations in the room temperature, the air is heated and cooled almost simultaneously and is kept in constant circulation through the use of exhaust and ventilating ducts.

Improves Boiler Tubes

Through use of the high tensile steel, Cor-Ten, metallurgists of National Tube Co., United States Steel Corp. subsidiary, Pittsburgh, believe cinder cutting in locomotive boiler tubes will be minimized. Approxi-

mately 37 per cent more resistant to cinder abrasion than carbon steel, this high tensile steel is seen by the technologists as the answer to a problem that has confronted superintendents of motive power for a number of years. The producers claim extension of the life of tube beads at the firebox end of the tubes and reduction of the occurrence of fire cracking and thermal stresses. A number of locomotives now under construction will have partial or complete installations of Cor-Ten boiler tubes with a view of studying performances under actual operation conditions.

WHEN
Unseen Strength
means
SAFETY

There's no substitute for forgings...

For more than 35 years, Erie engineers have kept constantly improving the design and construction of Erie Steam and Board Drop Hammers... Improving because today's forgings must be tougher... stronger... to merit their universal use where safety is the first consideration... No matter how difficult your forgings may be, you can depend upon Erie to design and build the type of hammers that assure the strength and texture your forgings must have for safety's sake... 500 Forge Shop Managers will find useful, Erie's booklet of Forge Shop Safety Rules. A large supply is available.

ERIE
ERIE, PENNSYLVANIA, U. S. A.

DETROIT 335 Curtis Bldg.	CHICAGO 549 Washington Blvd.	INDIANAPOLIS 335 Postal Station Bldg.
FRANCE Fenwick, S. A.	CANADA John Bertram & Sons Co. Ltd.	ENGLAND Burton, Griffiths & Co. Ltd.

The steering knuckle on the modern high-speed car must stand the gaff... Of course, it's a forging... it's even likely to have been forged on an Erie hammer.

Tests Molybdenum Steel Wheels in Train Service

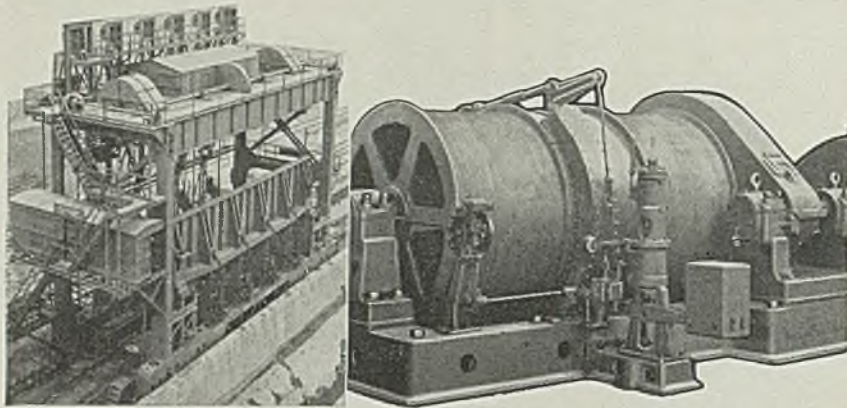
Experiments with a new analysis of steel, containing 0.40 per cent molybdenum, for car wheels are being made by the New York Central railroad on its Cleveland-Detroit Mercury train, one car of which has been equipped with this type of wheel.

It has been found by the road's engineers that present wheels are subject to a considerable amount of thermal cracking and surface hardening by a combination of the cold rolling action of wheels passing over

track at high speeds and the necessary frequent application of brakes. Since such cracks might be starting points of wheel failure it is necessary to remove badly cracked wheels, turn off about 1/6-inch from the diameter in a lathe, and then match up wheels on the same axle before remounting them. Accurate matching and close concentricity are required to avoid setting up vibrations in the train which reaches speeds upward of 90 miles an hour on some stretches.

Wheels are of forged steel, mounted in roller bearings. Addition of molybdenum to the metal analysis was made with the idea of prolong-

ing life of the wheels between turnings. As yet the new wheels have not been in service long enough to provide a comparison with the former type, but their performance is being watched closely.



MATERIAL HANDLING EQUIPMENT

THE LARGEST STEEL PLANTS USE WELLMAN EQUIPMENT

They know that when Wellman creates a machine for a certain job, it functions perfectly and economically.

Whenever *you* have a material handling problem, consult Wellman.

- Mine Hoists.
- Ship Unloaders.
- Coal and Ore Handling Bridges.
- Special Cranes.
- Clam Shell Buckets.
- Car Dumpers, all types.
- Blast Furnace Skip Hoists.
- Gas Producers, Flues and Fuel Feeds.
- Wellman-Galusha Clean Gas Generators.
- Gas Reversing Valves.
- Furnace Charging Equipment.
- Open Hearth Furnaces.
- Steel Works Equipment.
- Safety Stops for Traveling Structures.
- Welded Steel Construction.

Adds New Products To Line of Hose Couplings

Eclipse Machine Co., Elmira, N. Y., subsidiary of Bendix Aviation Corp., has recently added to its line of products the Bendix Red-Cap hose coupling for home use as well as in factories, breweries and other places where standard garden hose is used. Coupling consists of two units, one for faucet and one for hose, is of snap-on type, water-tight, and can be used for joining sections of hose, hose to sprinkler or hose to hose nozzle. Also a new product of the company is the Bendix Mowerake, a lawn mower attachment of cowcatcher type designed to comb grass in advance of mower and protect mower blades.

Device Prevents Excess Heat in Warm Air Furnace

Announced by Mercoid Corp., 4201 Belmont avenue, Chicago, is a twin automatic control for warm air furnaces. Designated as type M-80, the new Mercoid unit acts as a control both to prevent overheating and as a fan shutoff when temperature is lower than desired. A sealed mercury switch is the operating medium and makes or breaks the circuit when the mercury tube is tilted. Acting as a temperature indicator the control can also be set as desired, although on the average installation it is set to operate the fan when the furnace is 150 degrees Fahr. or higher and stop the fan when temperature is 120 degrees Fahr.

Tin Used in Refrigerating

Recently released by the International Tin Research and Development Council is a booklet entitled "The Use of Tin in Refrigerating Equipment," by E. J. Daniels and D. J. Macnaughtan, and dealing with all the applications of tin in this field. Reprinted from the proceedings of the British Association of Refrigeration, 1936-37, the publication deals with tin coatings, pipes, and applications in connection with the cooling of milk, chilling of beer and soda water, and domestic refrigeration. Tin solders are also dealt with, while tin disintegration known as "tin pest" is described.

THE WELLMAN ENGINEERING CO.
ENGINEERS CONSTRUCTORS MANUFACTURERS
CLEVELAND, OHIO
BIRMINGHAM NEW YORK MEXICO CITY



Air-Gas Regulator—

Hagan Corp., Pittsburgh, makes a new oil-operated, air-gas regulator known as the type 2-DO, a highly sensitive and accurate unit especially applicable to problems requiring control of the ratio between pressures or differentials. Blast furnace gas burner control, air fuel ratio control, gas mixing control and boiler combustion control are examples. In this unit the pressure or differential actuating regulator is connected to a loading diaphragm, positive pressure being connected above and negative pressure below. If differential is measured, the higher pressure is connected above the diaphragm. Pressure or differential to be controlled is connected to

pilot valve discharges oil from the bellows chamber, decreased oil pressure forcing bellows downward, passing high pressure oil to the upper end of the power cylinder and thus increasing the controlled pres-

sure or differential. Movement of a relay valve stem is transmitted through a compensating spring to the controlling diaphragm, to balance the loading diaphragm. Speed of response is adjustable by means of a needle valve in the relay valve supply line, while the ratio of controlled to loading pressure or differential is adjustable by means of a hand wheel.

Electrodes—

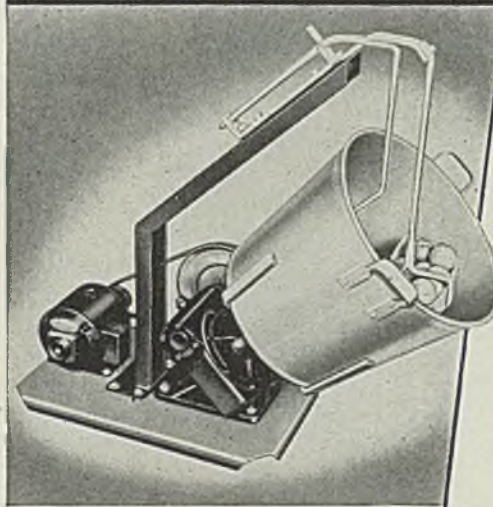
Lincoln Electric Co., Cleveland, has announced the new Fleetweld 9, an arc welding electrode de-



Hagan oil-operated regulator controls ratio between pressures or differentials

the controlling diaphragm, following rules given for loading diaphragm. The ratio of controlled to loading pressures or differentials is determined by position of a movable fulcrum. An increased loading pressure or differential forces the loading diaphragm downward and controlling diaphragm upward. A

UDYLITE HANDIPLATER



The Handiplater may be used with any plating solution common to barrel plating operations. It may also be used for acid tumbling, sawdust drying, etc.

The Ideal
Inexpensive
Unit
for Plating
Small
Loads

For the occasional handful or for actual production plating of very small parts, the Handiplater is the ideal unit. The capacity of the steel, rubber-lined, plating cylinder ranges from a handful up to ½ peck of work. The Handiplater operates with a few gallons of plating solution dipped from the regular still or barrel plating tank.

Plating cylinder and anode-cathode assembly are readily detachable, making loading and unloading a simple operation. The detachable cylinder also makes possible the use of a variety of plating solutions with one machine.

The Handiplater is portable, takes up little space. It operates efficiently and is a most sturdy outfit from the fabricated steel base to the steel, rubber-lined, plating cylinder.

Write for descriptive bulletin.

THE UDYLITE COMPANY

1651 E. Grand Blvd., Detroit, Mich.

New York
30 E. 42nd Street

Chicago
1943 Walnut Street

Cleveland
3756 Carnegie Ave.

San Francisco
114 Sansome Street

veloped especially for flat welding of deep-groove joints in mild steel and claimed to provide welds of new high quality in this type work. Intended for industrial concerns engaged in the manufacture of products utilizing heavy plate construction and requiring production of highest quality, economical, butt welds, the electrode provides weld deposits possessing high physical properties. Proper procedure with the electrode is said to overcome certain conditions frequently encountered in deep-groove welding which tend to cause the formation of surface holes in the metal. At

the same time, the electrode has operating characteristics that assure uniformly economical performance. It is made in 3/16, 1/4 and 5/16-inch sizes.

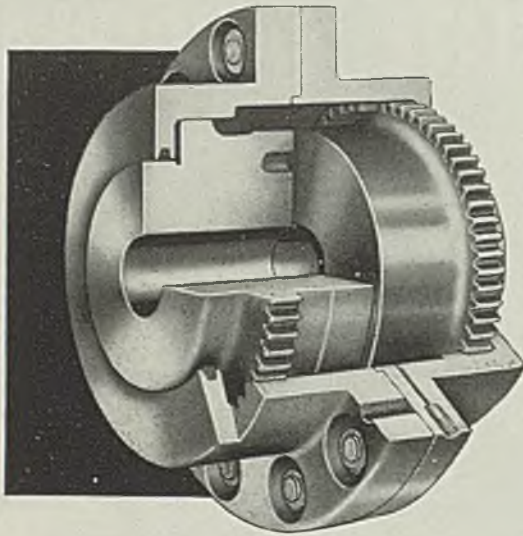
♦ ♦ ♦

Group Locker—

All-Steel-Equip Co., Aurora, Ill., has a new product called the A-S-E Unit-Robe, a group locker to accommodate the clothing of sixteen persons and taking up approximately one-half square foot of floor space per person. Locker units are arranged in two vertical groups of

six each, connected across the top by a horizontal section of four units. Directly under this is a coat hanger rod to accommodate the outer garments of sixteen or more persons, there being adequate room to hang the garments full length. Each unit is 12 inches wide, 12 inches high and 18 inches deep. The frame of the group is strongly constructed of steel channels and 1/8-inch steel angles, riveted together to make the complete section an integral unit, twist and weave-proof. Unit-Robes can be set up in single rows or back to back in double rows, while sections, although complete in themselves, may be bolted to-

FARREL "GEARFLEX" COUPLINGS



for Economy and Dependability

1. Give permanent, low cost protection against misalignment, with no attention except maintenance of the oil at the proper level.
2. Provide complete flexibility, compensating for parallel and angular misalignment, as well as a combination of the two.
3. Permit free lateral or end float of the connected shafts where such movement is necessary.
4. Load carried by strong, accurately generated gear teeth, oil-cushioned for silent operation, trouble-free service and long life. No bushings, pins, springs or grids to wear out.
5. Complete engineering data, ratings, dimensions, weights, list prices, etc., given in our Bulletin No. 437. *Send for your copy.*

FARREL - BIRMINGHAM
Company, Inc.

322 Vulcan St., Buffalo, N.Y.



Unit-Robe group locker has room for the clothing of sixteen persons

gether in groups of any number. Doors have four ventilating louvers, although grilled steel doors are optional equipment.

♦ ♦ ♦

Steel Desks—

Yawman & Erbe Mfg. Co., 1099 Jay street, Rochester, N. Y., has augmented its steel desk line with a new series known as the No. 7900 Suspension Line. The new desks feature four leg construction which makes for greater working comfort due to additional knee space and foot freedom. Other features include rounded corners on the top, legs and bottom of end panels; streamlined, full hand grip door pulls; bronze leg cups, and bronze binding to hold and protect the special linoleum tops. Pedestals have a spot welded, center reinforcing frame that gives strength and rigidity. Channel flanging of the

cross-rails at the ends, which are spot welded to the pedestal, assures resistance to the stress of opening and closing drawers. Reinforcing of the case strips enables the drawers to withstand, when fully extended, the distributed load of 200 pounds per drawer. Further rigidity and strength are insured by a special seven-point reinforcement consisting of three channel bars and one bar running the full length of the top. These bars are securely spot welded to a 16-gage top plate. The new line includes executive and typewriter secretarial and stenographic models as well as calculating, billing, sales-



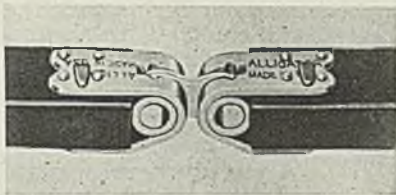
Yawman & Erbe steel desks feature four leg construction

man and corporation type desks. Units are stocked in olive green but special finishes are available on order.

♦ ♦ ♦

V-Belt Fasteners—

Flexible Steel Lacing Co., Chicago, has announced the Alligator fastener for joining C section V-belts of fabric core, cross weave construction. The fastener makes practicable the installation, shortening



Alligator fastener is for C section V-belts of fabric core, cross weave construction

or replacement of V-belts on the job without delays or the necessity for tearing down expensive installations. Features of the fastener include the double rocker pin supported in bronze bushings and the method of holding the end plate to the belt end without materially weakening the belt or bulging its sides. Rocker pin is of special alloy steel hardened to give long service. No metal touches the pulleys. Application of the fasteners is rapid and

easily made through use of illustrated directions and tools supplied by the manufacturer.

♦ ♦ ♦

Flexible Pipe Joints—

Pittsburgh Brass Mfg. Co., Penn avenue at Thirty-second street, Pittsburgh, is manufacturing the Roto-Flex ball pipe joint, a non-leaking flexible pipe joint for which steel plants find many applications, particularly on cinder car connections, open hearth doors, steam or hydraulic mud guns, gas producers,

and water, oil and steam lines. The Roto-Flex joint consists of a ball flexibly supported in a free socket and held in positive contact with a hard, non-metallic gasket contained within the nut. With fluid pressure in the joint, sealing action is increased proportionately, due to the interior design of the ball acting as a piston and thereby urging the ball against the gasket. The follower, containing the spring, telescopes within the ball and rides with it on a concentric radius formed in the body. This design is said to eliminate any necessity

Marine Steel Plates

Current and proposed ship building activities with their modernized welded and riveted construction places dependability in steel plates at a new high. The ever important hull and deck plates rolled of CENTRAL quality steel imparts a sea-worthy character to any vessel.

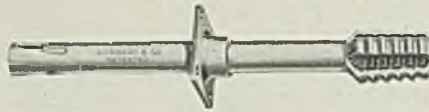
CENTRAL IRON AND STEEL COMPANY
HARRISBURG. EST. 1853 PENNA.

for adjustments to compensate for wear, and prevents leakage under all conditions of service. Many different types of joints are being manufactured, both in the restricted flex and full flex models.

• • •
Steel Insulator Pin—

Hubbard & Co., Pittsburgh, has developed a steel insulator pin designed for normal loading of 800 pounds and suitable for telephone, signal and low voltage lines of all types. Pin has a threaded end which is expanded from a steel tube. One or two light taps, on an installing

rod furnished, spread the wedge clip into the sides of the pin hole, locking the pin solidly in the arm. Pin body is of high strength, rust



Steel insulator pin has a threaded and expanding end

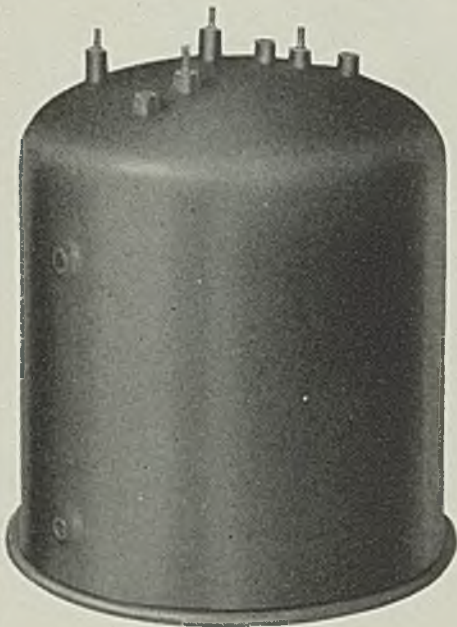
resisting, alloy steel and base is square, measuring 2 3/16-inches across the diagonal, a feature said

to materially increase strength. Pin may be salvaged many times without impairing the locking mechanism.

• • •
Grinders—

Hammond Machinery Builders, Inc., Kalamazoo, Mich., is now equipping all its grinders of 3 horsepower or more with totally-enclosed, fan-cooled motors, claiming these new drives withstand greater overload with a lower temperature rise. Rotor and stator on these units are in an enclosed chamber, sealed against the entrance of foreign matter. Two fans force cooling air around the outside of this chamber, serving to

DEEP DRAWN



BY THE HACKNEY METHOD

Send the details of your requirements for special shapes and shells to Hackney. More than 30 years of experience in solving the shaping, drawing, welding and galvanizing problems of numerous manufacturers enable Hackney to offer efficient and practical methods of construction for special needs.

The tank illustrated is one of the numerous examples of Hackney deep drawing—seamless shell with integral head construction—bottom welded in place—bosses welded to head.

Hackney's development service is at your disposal. Write for details.

PRESSED STEEL TANK COMPANY

208 S. La Salle St. Bldg., Room 1211, Chicago
 1461 S. 88th St. Milwaukee, Wis.

1387 Vanderbilt Concourse Bldg., New York
 688 Roosevelt Bldg., Los Angeles, Calif.



DEEP DRAWN SHELLS AND SHAPES



All Hammond grinders now have fan-cooled motors

extract heat from the motor. The grinders are equipped with automatic starters with thermal overload protection, oversize ball bearings, adjustable eye shields of shatterless glass, and push-button remote control.

• • •
Pipe Jack—

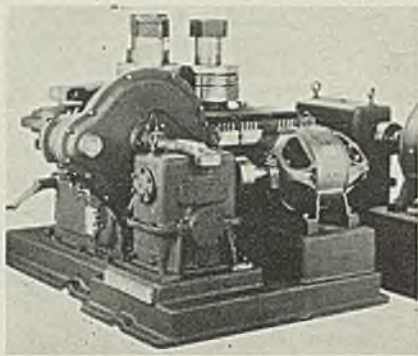
Duff-Norton Mfg. Co., Pittsburgh, is offering an improved pipe pulling and pushing jack, designed for pulling or pushing without changing the position of the jack, which is braced in the pit after having been lined up in the direction pipe or rod is to be pulled or pushed. Of the geared rack type, the jack has a capacity of 25 tons. Gearing is enclosed in a grease-packed case and all gears and rack are steel with machine cut teeth. After the jack is set up, 36-inch sections of pipe or rods are connected to the end of the rack and pushed through the ground to the

receiving end or pit. Depending on ground conditions, a 2-inch pipe can usually be used as a starter and the larger sizes pulled back through. Jack is provided with couplings for rack connection and pilots for end of pipe.

♦ ♦ ♦

Bending Roll—

Kane & Roach Inc., Syracuse, N. Y., has announced the new No. 23 horizontal angle bending roll which, in addition to angles, is suitable for bending I-beams, rails, channels, flats, squares, tees, octagons, hexagons, Z-bars, rounds, pipe, tubing, and special and other shapes. Capacity is 5 x 5 x ½-inch angles, leg out, and 4½ x 4½ x ½-inch angles, leg in, and proportionate shapes. Front roll can be adjusted in and out for pressure adjustment to vary diameter of the circles. A quick release is provided on the latch lock and the roll shaft can be swung open quickly to remove bent sections from the roll passes. When bending leg angles in, the machine puts an edge bearing on the vertical



Kane & Roach bending roll is suitable for bending many shapes other than angles

leg of the angle, thereby relieving the excessive strain on the horizontal leg and distributing the bending stress between the vertical and horizontal legs of the angle. The edge bearing taper plates are tapered so legs of the angles remain square at 90 degrees and horizontal leg remains parallel to a straight-edge laid across the face of the circle. Plates of this type are available for all size angles but are only required when bending angles, leg in, to small diameters. The unit is provided with a one-shot lubrication system.

♦ ♦ ♦

Dewatering Tank—

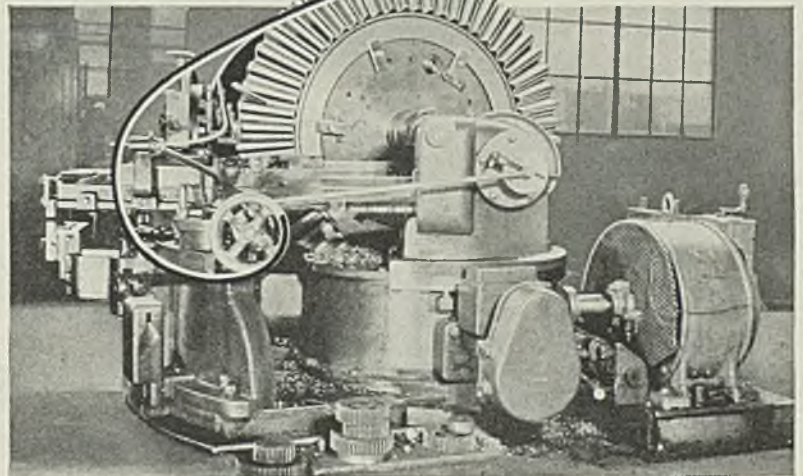
Claude B. Schneible Co., 3951 Lawrence avenue, Chicago, has announced the new Schneible rectangular tank, multi-louver dewaterer for use in smaller dust collective systems where the quantity of

water and sludge produced does not justify the use of larger capacity tanks. As sludge and water flow into the tank, precipitation of solids takes place immediately, it is claimed, a skimmer wall holding back floating material as the clear water flows over the weir from where it is pumped back for re-use for dust collection. Low velocity of water in the tank allows for complete precipitation of the solids in the area around the vanes. When one of the tanks is filled with precipitated material, the inflow water is switched to the other by means of the inlet distributor trough allowing for an additional precipita-

tion period. After complete settling, the valve on the line leading to interior of the loaded tank is opened and the head of the water in the tank is allowed to recede slowly. The water flows out of the precipitated material, not carrying material with it due to the angle of repose of the silica sludge against the multi-louver vanes. Final draining period reduces the moisture contained in the sludge down to 20 per cent or less. When the sludge in the dewatered tank is completely drained, the discharge gates are opened and the sludge pushed out into a convenient receptacle for disposal.



by
THE TON



Perhaps an odd expression—"hair splitting by the ton"—but in Phillie Gear's Shops it's actually an everyday occurrence. Big Gears containing hundreds of teeth—and each tooth exactly like every other tooth within thousandths of an inch. The metal throughout is so perfectly distributed and machined, that the gear (when placed on knife edges) will readily

revolve by the slightest push of the hand. Yes, we repeat, "hair splitting by the ton". We've been doing it for years, and we can only do it because of our modern and versatile machinery, plus gear makers who are true craftsmen.

Gears and Speed Reducers: Our business for nearly half a century.

PHILADELPHIA



Gears

Philadelphia Gear Works
Industrial Gears and Speed Reducers
Erie Avenue and "G" Street
PHILADELPHIA

RECENT PUBLICATIONS OF MANUFACTURERS

Copies of any of the literature listed below may be obtained by writing directly to the companies involved, or by addressing STEEL, in care of Readers' Service Department, 1213 West Third Street, Cleveland

Motors—Louis Allis Co., Milwaukee, has issued a book of sixty pages describing the construction, features, advantages and applications of practically every commercial type electric motor, and also

containing engineering data on various types of special motor applications and construction.

Pipe Unions—E. M. Dart Mfg. Co., Providence, R. I., has issued a new catalog dealing with types,

sizes and prices of Dart bronze-seated unions.

Iron, Cast — Cooper-Bessemer Corp., 25 West Forty-third street, New York City, has published an illustrated catalog dealing with its Meehanite Metal for engine casting.

Carbide Tool Furnace—Firth-Sterling Steel Co., McKeesport, Pa., has issued a booklet dealing with the new Braze-Rite furnace for brazing sintered carbide tools.

Steel Plate Construction—Wm. B. Pollock Co., Youngstown, O., has a folder discussing and illustrating its steel plate construction for blast furnaces, steel plants and allied industries.

Iron, Alloyed Cast—International Nickel Co., 67 Wall street, New York City, has published No. 6, section 1, of Nickel Cast Iron Data, this time dealing with alloyed cast irons in petroleum refining equipment.

Copper and Brass—Revere Copper & Brass Inc., 230 Park avenue, New York City, offers a booklet entitled "The House You Live In," discussing and illustrating the uses of copper and brass.

Abrasives—Abrasive Co., Tacony and Fraley streets, Philadelphia, offers a bulletin on nut-inserted disks for disk and surface grinding and a bulletin on general purpose grinding wheels.

Safety Device—Wheelco Instruments Co., 1933 South Halstead street, Chicago, has issued an 8-page bulletin on the new model 1101 Flame-otrol, a gas burner safety device designed to prevent explosion.

Mixers and Agitators—Blaw-Knox Co., Pittsburgh, Pa., has issued its catalog No. 1582 covering Blaw-Knox Trukmixers and agitators and the service of the company to the ready-mixed concrete industry.

Gas Cleaning—Peabody Engineering Corp., 580 Fifth avenue, New York City, has announced bulletin H-101, describing new principles and new method of gas cleaning by means of the Peabody Gas Scrubber.

Blade Cutters—Ingersoll Milling Machine Co., Rockford, Ill., offers a circular describing Ingersoll Ray Blade Cutters, data, prices and information as to assembly and grinding.

Arc Welding—Hobart Bros., Troy O., are distributing a new Hobart arc welder bulletin entitled "More For Your Money," discussing Hobart's new Selective Motor Horsepower Control and its advantages.

Instruments — C. J. Tagliabue

Service!

1906  1937

QUALITY · DEPENDABILITY

DAMASCUS MANGANESE CASTINGS

Manganese and Alloy Steel Castings One Half to One Thousand Pounds Produced in our modernly equipped foundry from electric furnace steel and heat-treated in automatically controlled gas-fired furnaces.

The **DAMASCUS STEEL CASTING CO.**
New Brighton, Pa.

(Pittsburgh District)

DAMASCUS STEEL CASTINGS
(Manganese and Alloy)

Mfg. Co., Park and Nostrand avenues, Brooklyn, N. Y., has issued catalog No. 1060 C which contains 56 pages dealing with Tag indicating and recording temperature and pressure instruments.

Instruments—Leeds & Northrup Co., 4904 Stenton avenue, Philadelphia, has released a broadside covering Micromax recorders and controllers and four pyrometer types as well as other measuring equipment.

Diesel Tractors—Caterpillar Tractor Co., Peoria, Ill. Booklet form 4189, showing work done by Caterpillar diesel tractors with trail builders, bulldozers, brush cutters, winches, scrapers, tamping welders and rippers.

Fire Extinguishers—Walter Kidde & Co., 140 Cedar street, New York City, has issued a pamphlet entitled "Instant Death to any Fire" that describes portable equipment for extinguishing fires with Lux—CO₂—snow and gas.

Culverts—United States Steel Corp., Subsidiaries, 434 Fifth avenue, Pittsburgh, has published a booklet of 24 pages entitled "How To Buy Culverts" and containing pictures, diagrams, tables and constructive information on metal culverts.

Flanges—Kropp Forge Co., 5301 West Roosevelt Road, Chicago, is offering a bulletin covering its line of forged steel stock flanges, including boiler, tank, welding, marine, companion, offset, horseshoe, high hub, double hub, spud, blind and reducing flanges.

Railroad Maintenance—Federal Machine & Welder Co., Warren, O., has announced bulletins 701, 702 and 703, which cover different types of flue welders for safe-ending tubes and flues. Bulletin 901 covers a tire heater for heating and expanding tires for freight and locomotive drivers.

Pickling Steel—E. F. Houghton & Co., 240 West Somerset street, Philadelphia, has compiled a booklet of 32 pages discussing variations in metals as they affect pickling, the common practices and the established theories underlying them as well as engineering data and information on Acitrol, a new pickling inhibitor.

Chain Drives—Morse Chain Co., Ithaca, N. Y., has published the Morse 1937 Silent Chain Engineering Data Book of 20 pages dealing with plans and specifications for silent chain drives, types and applications of Morse chains, layouts, sprocket data and other detailed information including graphs, drawings, and photographs.

Refractories—M. W. Kellogg Co., 225 Broadway, New York City, offers an attractive binding of Kellogg

literature dealing with various forms of refractories and with its interesting chimney repair service, illustrated.

Electrical Equipment—General Electric Co., Schenectady, N. Y., has published five new bulletins dealing with unit heaters, an automatic cable-reel transfer switch, an outdoor group-operated switch, outdoor switch houses, and modern fingers and segments.

Steel, Corrugated Sheet—American Steel Band Co., Pittsburgh, mails a folder discussing and showing applications of Felt-Cote, corrugated steel sheets covered with asphalt, as-

bestos felt asphalt impregnated, and weather proofing for use on roofs and sides.

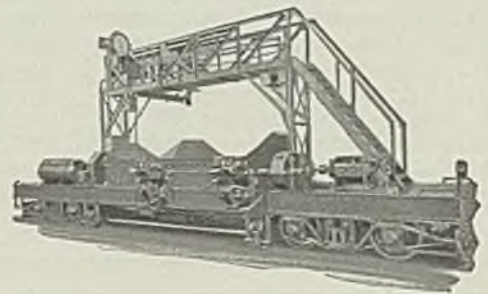
Hard-Facing—Haynes Stellite Co., Kokomo, Ind., a unit of Union Carbon & Carbide Corp., is issuing a new and more complete edition of the booklet "Hard-Facing with Haynes Stellite Products" that describes over 500 money-saving applications of the hard-facing process. New sections present information on special Haynes Stellite J-Metal cutting tools and an improved welding technique for fabrication of equipment employing the corrosion-resistant Hastelloy alloys.

ATLAS SCALE CARS



20 Ton—Double Compartment Scale Car. Journals provided with self aligning anti-friction bearings. Equipped with Atlas Indicator and Recorder.

20 Ton Two Compartment Scale Car with Orr Bin Gate Operating Mechanism. Anti-friction bearings. Equipped with Atlas Indicating and Recording Mechanism.



Other Atlas Products

Gas-Electric and Diesel-Electric Locomotives—Car Pushers—Storage Battery Locomotives—Electrically Operated Industrial Cars—Scale Cars and Weighing Cars of all kinds—Ore Transfer Cars and Blast Furnace Charging Cars.

Coke Oven Equipment

Pushers and Levellers—Coal Charging Cars—Door Handling Machines—Coke Quenching Cars.

Also Atlas Patented Indicating and Recording Mechanism for Weighing Scales.

THE ATLAS CAR & MFG. CO.

Engineers . . . Manufacturers

CLEVELAND, OHIO

MATERIALS HANDLING



New Coil Transfer Table Is Made Self Leveling

(Concluded from Page 58)

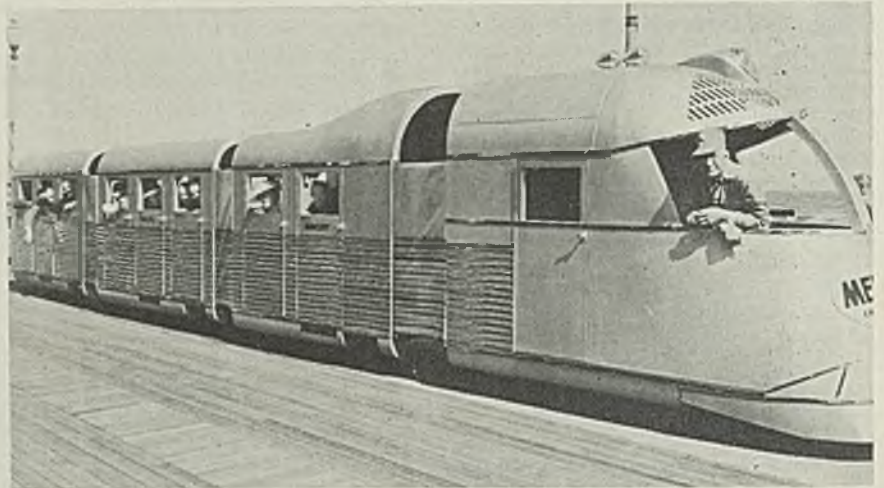
tions in the trough line, where movement is stopped by another limit switch.

During this cycle of operation, the power unit is called upon to lift the section through a comparatively small arc and only under the load of the conveyor itself—the coil is always lowered.

Use Industrial Trailers For Carrying Passengers

TRACTOR-TRAILER methods of handling materials in and around industrial plants, warehouses and railroad and steamship terminals long have been recognized as efficient and economical for many mass transportation operations. The idea of coupling up one powered unit with a string of load-carrying trucks was simply an adaptation of the time-tested railroad freight train.

At the recent Atlantic City convention of the Railway Supply Man-



ufacturers' association and the Association of American Railroads, delegates and other visitors at the seaside resort were given an opportunity of witnessing the initial appearance of another adaptation of mass movement — a streamlined variation of industrial tractor and trailers for transportation of passengers.

Rules which have been in effect

STREAMLINED trackless train starting up the Atlantic City boardwalk with full complement of delegates and guests at railroad convention

type storage batteries. The 3½-mile trip between the municipal auditorium and Hackney's required 25 minutes and consumed only 45 ampere-hours of electricity.

Accommodating 15 passengers, the train is 46 feet long, 5 feet high and 8 feet wide. It has three coaches and a tractor locomotive. So far as is known, Atlantic City is the first community in which a trackless streamlined passenger train has appeared.

Imported Talking Picture Shows Use of Carbide Tools

Being shown before private groups in New York and Philadelphia by American Cutting Alloys Inc. is a new talking picture entitled "Manufacture and Use of Cemented Titanium-Tungsten Carbide Tips and Tools in High Speed Cutting of Steel and Cast Iron." The film was developed abroad by Dr. Ing. Paul Schwarzkopf of Reutte, Austria, inventor of titanium carbide and president of American Cutting Alloys Inc., who worked in co-operation with the Deutsche Edelstahlwerke A. G., Krefeld, Germany. Graphically shown in the picture is the making of the carbide powders, tips and tools as well as numerous uses of the tools in cutting.

"HERCULES" RED-STRAND WIRE ROPE

REG. U.S. PAT. OFF.

Furnished in Flattened Strand, Round Strand, Preformed, Steel Clad and Non-Rotating constructions.

A GIANT
in Strength and
Endurance



MADE ONLY BY

A. Leschen & Sons Rope Co.

ESTABLISHED 1857

5909 KENNERLY AVENUE
ST. LOUIS, MO.

NEW YORK
CHICAGO
DENVER
SAN FRANCISCO
PORTLAND
SEATTLE

Production of Steel Holds at High Mark

Scrap Rise Halts;

Auto Output Gains;

Imports Are Steady

OPINION gains that the low point of the summer is here or has passed, as far as the steel market is concerned. Yet production continues at a high rate and there are few signs of it being reduced before fall business comes to buttress mill books.

Various factors lend support to the practically universal sentiment among steel producers that the fall will bring renewed buying from various sources. While assurance of unchanged price tends to lessen forward buying consumer goods are moving well and stocks of steel for their production are not believed to be large.

Heavy grain crops supporting farm purchasing power are being reflected in the implement and tractor trade, as well as in other consumer goods. Railroads are preparing to buy more equipment and rails, though this probably will come late in the year. Shipbuilding offers some substantial tonnage prospects and the oil industry is more active than for some time.

Producers of tin plate, sheets and plates have considerable business on books and buying is at a fair rate. Bars, strip and some other lines are less promising, current buying being less than deliveries.

Export demand shows signs of bringing considerable tonnage, both for steel and for manufactured products. Steelworks operations underwent little change last week, the national rate moving down half a point to 84 per cent. The Youngstown district lost 2 points to 78 per cent and eastern Pennsylvania 2 points to 69 per cent. As partial offsets to this, Detroit regained 10 points to 100 per cent and Wheeling moved up 1 to 94. Other centers remained at the rates of the previous week, Pittsburgh 83, Chicago 86, Cleveland 85, Buffalo 86, Birmingham 96, New England 65, Cincinnati 89 and St. Louis 77.

With no announcement on prices of pig iron for fourth quarter that market is awaiting developments and little buying is noted. The scrap situation is believed to be one of the important factors. It develops that merchant pig iron sellers in the East favor an increase of \$1. Some announcement is expected to be made about Sept. 1.

Resumption of production by Ford Motor Co. brought automobile output last week to 103,250, compared with 79,736 the preceding week. Ford assembled 26,000 cars, General Motors 41,865 and Chrysler 26,900,

MARKET IN TABLOID

DEMAND Light
in most lines.

PRICES Steady

PRODUCTION . . Operations
down $\frac{1}{2}$ point to 84 per cent of
capacity.

SHIPMENTS . . Continue
at high rate as consumers need
supplies.

while all others produced 8485. General Motors last week was slightly under the previous week's output.

Steel imports in June remained practically at the level of May and also close to the total in June of last year. Scrap imports were less than in May and in June, 1936, demand for this product by other countries taking tonnage ordinarily coming here. For first half, imports were slightly higher than in the corresponding period of 1936.

Shipments of finished steel by the United States Steel Corp. in July were the highest for any July since 1929; seven months cumulative shipments were 8,801,026 tons, compared with 5,982,201 tons in the corresponding period of 1936. July shipments were 1,186,752 tons, compared with 950,851 in July of last year.

Buying of foreign iron ore is getting under way, with prices considerably higher than those hitherto prevailing. North African low phosphorus for 1938 delivery has been increased from 17 to 20 cents with provision for the buyer to pay freight in excess of present rates. High grade manganese ore prices have been rising steeply and buyers are slow to close for their requirements. Shortage of ocean bottoms is the principal cause of the rise in price.

Although no weakness has developed in scrap the upward rush of prices has stopped and steelmaking grades were practically unchanged last week. Despite the higher level now prevailing little has been tempted from holders and supplies are said to be scarce. While some tonnage transactions have taken place recently most heavy consumers are out of the market.

With steelmaking grades of scrap holding at unchanged prices in the principal markets the scrap composite remained at \$20.33, the same as the preceding week. The iron and steel composite and the finished steel composite were also unchanged at \$40.32 and \$61.70, respectively.

COMPOSITE MARKET AVERAGES

	Aug. 14	Aug. 7	July 31	One Month Ago July, 1937	Three Months Ago May, 1937	One Year Ago Aug., 1936	Five Years Ago Aug., 1932
Iron and Steel	\$40.32	\$40.32	\$40.27	\$40.03	\$40.06	\$33.88	\$28.77
Finished Steel	61.70	61.70	61.70	61.70	61.70	53.40	47.46
Steelworks Scrap ..	20.33	20.33	20.00	18.51	18.49	14.66	6.25

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

A COMPARISON OF PRICES

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

Finished Material

	Aug. 14 1937	June 1937	April 1937	July 1936
Steel bars, Pittsburgh	2.45c	2.45c	2.45c	1.95c
Steel bars, Chicago	2.50	2.50	2.50	2.00
Steel bars, Philadelphia	2.74	2.74	2.74	2.26
Iron bars, Terre Haute, Ind	2.35	2.35	2.35	1.85
Shapes, Pittsburgh	2.25	2.25	2.25	1.90
Shapes, Philadelphia	2.45 1/2	2.45 1/2	2.45 1/2	2.11 1/2
Shapes, Chicago	2.30	2.30	2.30	1.95
Tank plates, Pittsburgh	2.25	2.25	2.25	1.90
Tank plates, Philadelphia	2.43 1/2	2.43 1/2	2.43 1/2	2.09
Tank plates, Chicago	2.30	2.30	2.30	1.95
Sheets, No. 10, hot rolled, Pitts.	2.40	2.40	2.40	1.95
Sheets, No. 24, hot ann., Pitts.	3.15	3.15	3.15	2.50
Sheets, No. 24, galv., Pitts.	3.80	3.80	3.80	3.20
Sheets, No. 10, hot rolled, Gary.	2.50	2.50	2.50	2.05
Sheets, No. 24, hot anneal., Gary	3.25	3.25	3.25	2.60
Sheets, No. 24, galvan., Gary.	3.90	3.90	3.90	3.30
Plain wire, Pittsburgh	2.90	2.90	2.90	2.40
Tin plate, per base box, Pitts.	\$5.35	5.35	5.35	5.25
Wire nails, Pittsburgh	2.75	2.75	2.75	2.10

Semifinished Material

	Aug. 14	June	April	July
Sheet bars, open-hearth, Youngs.	\$37.00	\$37.00	\$37.00	\$30.00
Sheet bars, open-hearth, Pitts.	37.00	37.00	37.00	30.00
Billets, open-hearth, Pittsburgh.	37.00	37.00	37.00	30.00
Wire rods, No. 5 to 3/4-inch, Pitts.	47.00	47.00	47.00	38.00

Pig Iron

	Aug. 14, 1937	June 1937	April 1937	July 1936
Bessemer, del. Pittsburgh	\$25.26	\$25.26	\$25.26	\$20.81
Basic, Valley	23.50	23.50	23.50	19.00
Basic, eastern del. East Pa.	25.26	25.26	25.26	20.81
No. 2 fdy., del. Pittsburgh	25.21	25.21	25.21	20.31
No. 2 fdy., Chicago	24.00	24.00	24.00	19.50
Southern No. 2, Birmingham.	20.38	20.38	20.38	15.50
Southern No. 2, del. Cincinnati.	23.69	23.69	23.69	19.44
No. 2X eastern, del. Phila.	26.135	26.135	26.135	21.68
Malleable, Valley	24.00	24.00	24.00	19.50
Malleable, Chicago	24.00	24.00	24.00	19.50
Lake Sup., Charcoal, del. Chicago.	30.04	30.04	30.04	25.2528
Gray forge, del. Pittsburgh	24.17	24.17	24.17	19.67
Ferromanganese, del. Pittsburgh.	107.29	107.29	107.29	80.13

Scrap

Heavy melting steel, Pittsburgh.	\$21.75	\$19.40	\$19.55	\$16.00
Heavy melt. steel, No. 2, East Pa.	18.00	16.55	16.85	12.80
Heavy melting steel, Chicago.	19.75	17.75	17.55	15.45
Rail for rolling, Chicago.	21.75	20.30	21.45	16.40
Railroad, steel specialties, Chicago.	22.25	20.20	21.35	16.65

Coke

Connellsville, furnace ovens	\$4.50	\$4.50	\$4.85	\$3.45
Connellsville, foundry, ovens.	5.30	5.30	5.30	4.25
Chicago, by-product foundry, del.	11.00	11.00	11.00	9.75

Steel, Iron, Raw Material, Fuel and Metals Prices

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

Sheet Steel

Prices Subject to Quantity Extras and Deductions (Except Galvanized)

Hot Rolled No. 10, 24-48 in.

Pittsburgh	2.40c
Gary	2.50c
Chicago, delivered	2.53c
Detroit, del.	2.60c
New York, del.	2.73c
Philadelphia, del.	2.69c
Birmingham	2.55c
St. Louis, del.	2.63c
Granite City, Ill.	2.60c
Pacific ports, f.o.b. dock	2.95c

Hot Rolled Annealed No. 24

Pittsburgh	3.15c
Gary	3.25c
Chicago, delivered	3.28c
Detroit, delivered	3.35c
New York, del.	3.48c
Philadelphia, del.	3.44c
Birmingham	3.30c
St. Louis, del.	3.38c
Granite City, Ill.	3.35c
Pacific ports, f.o.b. dock	3.80c

Galvanized No. 24

Pittsburgh	3.80c
Gary	3.90c
Chicago, delivered	3.93c
Philadelphia, del.	4.09c
New York, delivered	4.13c
Birmingham	3.95c
St. Louis, del.	4.03c
Granite City, Ill.	4.00c
Pacific ports, f.o.b. dock	4.40c

Tin Mill Black No. 28

Pittsburgh	3.30c
Gary	3.40c
St. Louis, delivered	3.53c
Granite City, Ill.	3.50c

Cold Rolled No. 10

Pittsburgh	3.10c
Gary	3.20c
Detroit, delivered	3.30c
Philadelphia, del.	3.39c
New York, del.	3.43c
St. Louis, del.	3.33c
Granite City, Ill.	3.30c
Pacific ports, f.o.b. dock	3.70c

Cold Rolled No. 20

Pittsburgh	3.55c
Gary	3.65c
Detroit, delivered	3.75c
Philadelphia, del.	3.84c
New York, del.	3.88c
St. Louis	3.78c
Granite City, Ill.	3.75c

Enameling Sheets

Pittsburgh, No. 10	2.90c
Pittsburgh, No. 20	3.50c
Gary, No. 10	3.00c
Gary, No. 20	3.60c
St. Louis, No. 10	3.13c
St. Louis, No. 20	3.73c

Tin and Terne Plate

Gary base, 10 cents higher.

Tin plate, coke, (base box), Pittsburgh	\$5.35
Waste-waste, 2 7/8c; strip	2.50c
Long ternes, No. 24, unassorted, Pitts.	4.10c

Corrosion and Heat-Resistant Alloys

Pittsburgh base, cents per lb. Chrome-Nickel

	No. 302	No. 304
Bars	24.00	25.00
Plates	27.60	29.00
Sheets	34.00	36.00
Hot strip	21.50	23.50
Cold strip	28.00	30.00

Straight Chromes

	No. 410	No. 430	No. 442	No. 446
Bars	18.50	19.00	22.50	27.50
Plates	21.50	22.00	25.50	30.50
Sheets	26.50	29.00	32.50	36.50
Hot strip	17.00	17.50	23.00	28.00
Cold stp.	22.00	22.50	28.50	36.50

Steel Plate

Pittsburgh	2.25c
New York, del.	2.53c
Philadelphia, del.	2.43 1/2 c
Boston, delivered	2.65c
Buffalo, delivered	2.50c
Chicago or Gary	2.30c
Cleveland, del.	2.44 1/2 c
Birmingham	2.40c
Coatesville, base	2.35c
Sparrrows Pt., base	2.35c
Pacific ports, f.o.b. cars, dock	2.80c
St. Louis, delivered	2.52c

Structural Shapes

Pittsburgh	2.25c
Philadelphia, del.	2.45 1/2 c
New York, del.	2.50 1/2 c
Boston, delivered	2.63 1/2 c
Bethlehem	2.35c
Chicago	2.30c
Cleveland, del.	2.45c
Buffalo	2.35c
Gulf Ports	2.65c
Birmingham	2.40c
Pacific ports, f.o.b. cars, dock	2.80c
St. Louis, del.	2.52c

Bars

Soft Steel
(Base, 3 to 25 tons)

Pittsburgh	2.45c
Chicago or Gary	2.50c
Duluth	2.60c
Birmingham	2.60c
Cleveland	2.50c
Buffalo	2.55c
Detroit, delivered	2.60c
Pacific ports, f.o.b. cars, dock	3.00c
Philadelphia, del.	2.74c
Boston, delivered	2.85c
New York, del.	2.78c
Pitts., forg. qual.	2.80c

Rail Steel

To Manufacturing Trade

Pittsburgh	2.30c
Chicago or Gary	2.35c
Moline, Ill.	2.35c
Cleveland	2.35c
Buffalo	2.40c
Birmingham	2.45c

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

Reinforcing	
New billet, straight lengths, quoted by distributors	
Pittsburgh	2.55c
Chicago, Gary, Buffalo, Cleve., Birm., Young...	2.60c
Gulf ports	2.65c
Pacific coast ports, f.o.b. car docks	
Philadelphia, del.	2.95c
Philadelp.	2.84c
Rail steel, straight lengths, quoted by distributors	
Pittsburgh	2.40c
Chicago, Buffalo, Cleve-land, Birm., Young....	2.45c
Gulf ports	2.80c

Wire Products

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

Base Pitts.-Cleve. 100 lb. keg.	\$2.75
Standard wire nails....	\$2.75
Cement coated nails	\$2.75

(Per pound)	
Polished staples	3.45c
Galv. fence staples	3.70c
Barbed wire, galv.	3.40c
Annealed fence wire.....	3.20c
Galv. fence wire	3.60c
Woven wire fencing (base column, c. 1.)... \$74.00	
Single loop bale ties, (base column, c. 1.)... 63.00	

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

Cold-Finished Carbon Bars and Shafting

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

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

Alloy Steel Bars (Hot)

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

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

Piling

Pittsburgh	2.60c
Chicago, Buffalo	2.70c

Strip and Hoops

(Base, hot rolled, 25-1ton)	
(Base, cold-rolled, 25-3 tons)	
Hot strip to 23 $\frac{1}{2}$ -in.	
Pittsburgh	2.40c
Chicago or Gary	2.50c
Birmingham base	2.55c
Detroit, del.	2.60c
Philadelphia, del.	2.69c
New York, del.	2.73c
Cooperage hoop.	
Pittsburgh	2.50c
Chicago	2.60c
Cold strip, 0.25 carbon and under, Pittsburgh,	
Cleveland	3.20c
Detroit, del.	3.40c
Worcester, Mass.	3.40c
Cleve. Worces-ter.	
Pitts. ter, Mass.	
0.26—0.50... ..	3.20c 3.40c
0.51—0.75... ..	4.45c 4.65c
0.76—1.00... ..	6.30c 6.50c
Over 1.00... ..	8.50c 8.70c

Rails, Track Material

(Gross Tons)	
Standard rails, mill	\$42.50
Relay rails, Pittsburgh, 20—100 lbs.	\$32.50-35.50
Light rails, billet qual.,	
Pittsburgh, Chicago.	\$43.00
Do., rerolling quality.	42.00
Angle bars, billet, Gary,	
Pittsburgh, So. Chicago	2.80c
Do., axle steel	3.35c
Spikes, R. R. base	3.15c
Track bolts, base	4.35c
Tie plates, base	\$46.00
Base, light rails 25 to 60 lbs.;	
20 lbs. up \$2; 16 lbs. up \$4; 12 lbs. up \$8; 8 lbs. up \$10. Base railroad spikes 200 kegs or more; base tie plates 20 tons.	

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chicago. Discounts to legitimate trade as per Dec. 1, 1932, lists:	
Carriage and Machine	
$\frac{1}{2}$ x 6 and smaller....	65-5 off
Do. larger, to 1-in.	60-10 off
Do. 1 $\frac{1}{2}$ and 1 $\frac{1}{4}$ -in.	60-5 off
Tire bolts	50 off
Plow Bolts	
All sizes	65-5 off
Stove Bolts	
In packages with nuts attached 72 $\frac{1}{2}$ off; in packages with nuts separate 72 $\frac{1}{2}$ -5 off; in bulk 80 off on 15,000 of 3-inch and shorter, or 5000 over 3-inch.	
Step bolts	60 off
Elevator bolts	50-10-5 off

Nuts	
S. A. E. semifinished hex.:	
$\frac{1}{2}$ to $\frac{1}{4}$ -inch	60-10 off
Do., 9/16 to 1-inch.	60-5 off
Do., over 1-inch	60 off
Hexagon Cap Screws	
Milled	50-10 off
Upset, 1-in., smaller.	60 off
Square Head Set Screws	
Upset, 1-in., smaller.	75 off
Headless set screws	75 off

Cut Nails

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

Welded Iron, Steel Pipe

Base discounts on steel pipe, Pitts., Lorain, O., to consumers in carloads. Gary, Ind., 2 points less. Chicago, del. 2 $\frac{1}{2}$ less. Wrought pipe, Pittsburgh.

Butt Weld Steel			
In.	Blk.	Galv.	
$\frac{1}{2}$	59 $\frac{1}{2}$	49	
$\frac{3}{4}$	62 $\frac{1}{2}$	53	
1—3.....	64 $\frac{1}{2}$	55 $\frac{1}{2}$	
Iron			
$\frac{1}{2}$	26	8	
1—1 $\frac{1}{2}$	30	14	
1 $\frac{1}{2}$	34	16 $\frac{1}{2}$	
2	33 $\frac{1}{2}$	16	

Lap Weld Steel			
2	57	47 $\frac{1}{2}$	
2 $\frac{1}{2}$ —3.....	60	50 $\frac{1}{2}$	
3 $\frac{1}{2}$ —6.....	62	52 $\frac{1}{2}$	
7 and 8	61	50 $\frac{1}{2}$	
9 and 10	60 $\frac{1}{2}$	50	

Iron			
2	26 $\frac{1}{2}$	10	
2 $\frac{1}{2}$ —3 $\frac{1}{2}$	27 $\frac{1}{2}$	12 $\frac{1}{2}$	
4	29 $\frac{1}{2}$	16	
4 $\frac{1}{2}$ —8.....	28 $\frac{1}{2}$	15	
9—12.....	24 $\frac{1}{2}$	10	

Line Pipe Steel			
1 to 3, butt weld	63 $\frac{1}{2}$		
2, lap weld	56		
2 $\frac{1}{2}$ to 3, lap weld.	59		
3 $\frac{1}{2}$ to 6, lap weld.	61		
7 and 8, lap weld.	60		
10-inch, lap weld.	59 $\frac{1}{2}$		
12-inch, lap weld.	58 $\frac{1}{2}$		

Butt Weld Iron			
%	Blk.	Galv.	
1 and 1 $\frac{1}{4}$	25	7	
1 $\frac{1}{2}$	29	13	
2	33	15 $\frac{1}{2}$	
2	32 $\frac{1}{2}$	15	

Lap Weld			
1 $\frac{1}{2}$	23 $\frac{1}{2}$	7	
2	25 $\frac{1}{2}$	9	
2 $\frac{1}{2}$ to 3 $\frac{1}{2}$	26 $\frac{1}{2}$	11 $\frac{1}{2}$	
4	28 $\frac{1}{2}$	15	
4 $\frac{1}{2}$ to 8.....	27 $\frac{1}{2}$	14	
9 to 12.....	23 $\frac{1}{2}$	9	

Boiler Tubes

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

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

Seamless			
	Hot Rolled	Cold Drawn	
1 $\frac{1}{2}$ " OD x 13 Ga.	\$ 8.41	\$ 9.46	
1 $\frac{1}{2}$ " OD x 13 Ga.	9.96	11.21	
1 $\frac{1}{2}$ " OD x 13 Ga.	11.00	12.38	
1 $\frac{1}{2}$ " OD x 13 Ga.	12.51	14.09	
2" OD x 13 Ga.	14.02	15.78	
2 $\frac{1}{2}$ " OD x 13 Ga.	15.63	17.60	

2 $\frac{1}{2}$ " OD x 12 Ga.	17.21	19.37
2 $\frac{1}{2}$ " OD x 12 Ga.	18.85	21.22
2 $\frac{1}{2}$ " OD x 12 Ga.	19.98	22.49
3" OD x 12 Ga.	20.97	23.60
4 $\frac{1}{2}$ " OD x 10 Ga.	40.15	45.19
3 $\frac{1}{2}$ " OD x 11 Ga.	26.47	29.79
4" OD x 10 Ga.	32.83	36.94
5" OD x 9 Ga.	50.88	56.71
6" OD x 7 Ga.	77.35	87.07

Cast Iron Water Pipe

Class B Pipe—Per Net Ton	
6-in. & over, Birm.	\$46.00-47.00
4-in., Birmingham.	49.00-50.00
4-in., Chicago	57.00-58.00
6 to 24-in., Chicago.	54.00-55.00
6-in. & over, east fdy.	50.00
Do., 4-in.	53.00
Class A Pipe \$3 over Class B	
Stand. fltgs., Birm., base. \$100.00	

Semifinished Steel

Billets and Blooms	
4 x 4-inch base: gross ton	
Pitts., Chi., Cleve., Buf- falo, Young., Bham.	\$37.00
Philadelphia	42.30
Duluth	39.00

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

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

Slabs	
Pitts., Chicago, Cleve-land, Youngstown	37.00

Wire Rods	
Pitts., Cleve., No. 5 to $\frac{3}{8}$ -inch incl.	
Do., over $\frac{3}{8}$ to $\frac{1}{2}$ -inch incl.	47.00
Chicago up \$1; Worcester up \$2.	
Skelp	
Pitts., Chi., Young., Buff., Coatesville, Sparrows Pt.	2.10c

Coke

Price Per Net Ton	
Beehive Ovens	
Connellsville, fur.	\$4.40- 4.60
Connellsville, fdry.	5.25- 5.50
Connell, prem. fdry.	6.00- 6.50
New River fdry.	6.50- 6.75
Wise county fdry.	5.75- 6.00
Wise county fur.	4.75- 5.00

By-Product Foundry	
Newark, N. J., del.	10.85-11.30
Chi., ov., outside del.	10.25
Chicago, del.	11.00
Milwaukee, ovens.	11.00
New England, del.	12.50
St. Louis, del.	11.00-11.50
Birmingham, ovens.	7.25
Indianapolis, del.	10.50
Cincinnati, del.	10.50
Cleveland, del.	11.00
Buffalo, del.	10.50
Detroit, del.	11.10
Philadelphia, del.	10.60

Coke By-Products

Spot, gal. Producers' Plants	
Pure and 90% benzol.	16.00c
Toluol	30.00c
Solvent naphtha	30.00c
Industrial xylol	30.00c
Per lb. f.o.b. Frankford and St. Louis	
Phenol (200 lb. drums) ..	14.75c
do. (450 lbs.)	14.00c
Eastern Plants, per lb.	
Naphthalene flakes and balls, in bbls. to jobbers	7.25c
Per ton, bulk, f.o.b. oven or port	
Sulphate of ammonia.	\$28.50

Pig Iron

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

Basing Points:

	No. 2 Fdry.	Malle- able	Basic	Besse- mer
Bethlehem, Pa.	\$25.00	\$25.50	\$23.50	\$26.00
Birdsboro, Pa.	25.00	25.50	24.50	26.00
Birmingham, Ala.	20.38	24.50	19.38	25.00
Buffalo	24.00	24.50	23.00	25.00
Chicago	24.00	24.00	23.50	24.50
Cleveland	24.00	24.00	23.50	24.50
Detroit	24.00	24.00	23.50	24.50
Duluth	24.50	24.50	24.50	25.00
Erie, Pa.	24.00	24.00	23.50	25.00
Everett, Mass.	25.75	26.25	25.25	26.75
Hamilton, O.	24.00	24.00	23.50	24.50
Neville Island, Pa.	24.00	24.00	23.50	24.50
Provo, Utah	22.00	24.00	23.50	24.50
Sharpville, Pa.	24.00	24.00	23.50	24.50
Sparrows Point, Md.	25.00	24.00	24.50	26.00
Swedeland, Pa.	25.00	25.50	24.50	26.00
Toledo, O.	24.00	24.00	23.50	24.50
Youngstown, O.	24.00	24.00	23.50	24.50

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

Delivered from Basing Points:

Akron, O., from Cleveland	25.26	25.26	24.76	25.76
Baltimore from Birmingham	25.58	24.46	25.58	25.58
Boston from Birmingham	26.37	25.75	26.37	26.37
Boston from Everett, Mass.	26.25	26.75	25.75	27.25
Boston from Buffalo	26.25	26.75	25.75	27.25
Brooklyn, N. Y., from Bethlehem	27.27	27.77	26.77	28.27
Brooklyn, N. Y., from Bmghm.	27.05	27.55	26.55	27.55
Canton, O., from Cleveland	25.26	25.26	24.76	25.76
Chicago from Birmingham	24.22	24.22	23.72	24.72
Cincinnati from Hamilton, O.	24.07	25.01	24.51	25.51
Cincinnati from Birmingham	23.69	24.63	24.13	25.13
Cleveland from Birmingham	24.12	24.12	23.62	24.62
Mansfield, O., from Toledo, O.	25.76	25.76	25.26	26.26
Milwaukee from Chicago	25.00	25.00	24.50	25.50
Muskegon, Mich., from Chicago	26.90	26.90	26.40	27.40
Toledo or Detroit	26.01	26.01	25.51	26.51
Newark, N. J., from Birmingham	26.39	26.39	25.89	26.89
Newark, N. J., from Bethlehem	26.39	26.39	25.89	26.89
Philadelphia from Birmingham	25.38	25.38	24.88	25.88
Philadelphia from Swedeland, Pa.	25.76	25.76	25.26	26.26
Pittsburgh district from Neville Island	26.25	26.25	25.75	26.75
Saginaw, Mich., from Detroit	24.50	24.50	24.00	25.00
St. Louis, northern	24.50	24.50	24.00	25.00

	No. 2 Malle- Fdry.	able	Basic	Besse- mer
St. Louis from Birmingham	\$24.12	23.82	23.82	26.44
St. Paul from Duluth	25.94	25.94	25.94	26.44

†Over 0.70 phos.

Low Phos.

Basing Points: Birdsboro and Steelton, Pa., and Standish, N. Y., \$28.50, Phila. base, standard and copper bearing, \$29.63.

	Gray Forge	Charcoal
Valley furnace	\$23.50	Lake Superior fur. \$27.00
Pitts. dist. fur.	23.50	do., del. Chicago 30.04
		Lyles, Tenn. 26.50

Silvery†

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

Bessemer Ferrosilicon†

Jackson county, O., base: Prices are the same as for silveries, plus \$1 a ton.
†The lower all-rail delivered price from Jackson, O., or Buffalo is quoted with freight allowed.

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

Refractories

Per 1000 f.o.b. Works, Net Prices

Fire Clay Brick	Super Quality	Price
Pa., Mo., Ky.		\$64.60
First Quality		
Pa., Ill., Md., Mo., Ky.		51.30
Alabama, Georgia		51.30
New Jersey		56.00
Second Quality		
Pa., Ill., Ky., Md., Mo.		46.55
Georgia, Alabama		41.80
New Jersey		51.00
Ohio		
First quality		43.70
Intermediate		39.90
Second quality		35.15

Malleable Bung Brick

All bases \$59.85

Silica Brick	Price
Pennsylvania	\$51.30
Joliet, E. Chicago	59.85
Birmingham, Ala.	51.30

Ladle Brick	(Pa., O., W. Va., Mo.)	Price
Dry press		\$30.00
Wire cut		\$28.00

Magnesite

Imported dead-burned grains, net ton f.o.b. Chester, Pa., and Baltimore bases (bags)	\$45.00
Domestic dead-burned grains, net ton f.o.b. Chester, Pa., and Baltimore bases (bags)	43.00

Base Brick

Net ton, f.o.b. Baltimore, Plymouth Meeting, Chester, Pa.	
Chrome brick	\$49.00
Chem. bonded chrome	49.00
Magnesite brick	69.00
Chem. bonded magnesite	59.00

Fluorspar, 85-5

Washed gravel, duty paid, tide, net ton	\$24.00
Washed gravel, f.o.b. Ill., Ky., net ton, carloads, all rail	\$20.00
Do., for barge	\$21.50

Ferroalloys

Dollars, except Ferrochrome	
Ferromanganese, 78-82%, tidewater, duty pd.	\$102.50
Do., Baltimore, base	102.50
Do., del. Pittsburgh	107.29
Spiegelisen, 19-21% dom. Palmerton, Pa., spot	33.00
Do., New Orleans	33.00
Do., 26-28%, Palmerton	39.00

Ferrosilicon, 50% freight allowed, c.l.	69.50
Do., less carload	77.00
Do., 75 per cent	126-130.00
Spot, \$5 a ton higher.	
Silicomang., 2 1/2 carbon	106.50
2% carbon 111.50; 1%, 121.50	

Ferrochrome, 66-70 chromium, 4-6 carbon, cts.	
lb. del.	10.50
Ferrotungsten, stand., lb. con. del. cars	1.80-1.85
Ferrovanadium, 35 to 40% lb., cont.	2.70-2.90
Ferrotitanium, c. l., prod. plant, frt. all., net ton	142.50
Spot, carlots	145.00
Spot, ton lots	150.00
Ferrophosphorus, per ton, c. l., 17-19% Rockdale, Tenn., basis, 18%, \$3 unitage	63.50
Ferrophosphorus, electrolytic, per ton c. l., 23-26% f.o.b. Anniston, Ala., 24% \$3 unitage	80.00
Ferromolybdenum, stand. 55-65%, lb.	0.95
Molybdate, lb. cont.	0.80
†Carloads. Quan. diff. apply	

Nonferrous

METAL PRICES OF THE WEEK

Spot unless otherwise specified. Cents per pound

Copper				Straits Tin	Lead	Lead	Zinc	Alumi- num	Antimony	Nickel	
Electro, del.	Lake, del.	Casting, refinery	Conn. Midwest	Spot	Futures	N. Y.	East St. L.	St. L.	99%	American Spot, N. Y.	Cath- odes
Aug. 9	14.00	14.12 1/2	13.75	60.37 1/2	60.00	6.50	6.35	7.25	20.00	15.37 1/2	35.00
Aug. 10	14.00	14.12 1/2	13.75	60.00	59.50	6.50	6.35	7.25	20.00	15.37 1/2	35.00
Aug. 11	14.00	14.12 1/2	13.75	59.62 1/2	59.12 1/2	6.50	6.35	7.25	20.00	15.25	35.00
Aug. 12	14.00	14.12 1/2	13.75	60.00	59.50	6.50	6.35	7.25	20.00	15.25	35.00
Aug. 13	14.00	14.12 1/2	13.75	60.00	59.50	6.50	6.35	7.25	20.00	15.25	35.00

MILL PRODUCTS

F.o.b. mill base, cents per lb. except as specified. Copper brass products based on 14.00c Conn. copper

Sheets	
Yellow brass (high)	19.75
Copper, hot rolled	21.87 1/2
Lead, cut to jobbers	10.00
Zinc, 100-lb. base	12.00-13.00

Tubes	
High yellow brass	22.50
Seamless copper	22.62 1/2

Rods	
High yellow brass	16.25
Copper, hot rolled	18.62 1/2

Anodes	
Copper, untrimmed	19.12 1/2

Wire	
Yellow brass (high)	20.00

OLD METALS

Nom. Deal, buying prices

No. 1 Composition Red Brass	
New York	9.00-9.25
Cleveland	9.25-9.50
Chicago	9.75-10.00
St. Louis	8.75-9.00

Heavy Copper and Wire	
New York, No. 1	11.50-11.75
Cleveland, No. 1	11.25-11.75
*Chicago, No. 1	11.50-11.75
St. Louis, No. 1	10.75-11.00

Composition Brass Borings	
New York	8.50-8.75

Light Copper	
New York	9.50-9.75
Cleveland	9.25-9.50
*Chicago	9.75-10.00
*St. Louis	9.00-9.50

Light Brass	
Cleveland	5.50-5.75
*Chicago	6.50-6.75
*St. Louis	5.25-5.75

Lead	
New York	5.75
Cleveland	5.00-5.50
Chicago	5.50-5.62 1/2
St. Louis	4.50-4.75

Zinc	
New York	3.50-3.75
Cleveland	3.50-3.75
*St. Louis	3.25-3.50

Aluminum	
Borings, Cleveland	9.75-10.00
Mixed cast, Cleve.	12.75-13.00
Clips, soft, Cleve.	14.75-15.00
*Mixed cast, St. L.	12.25-12.75

SECONDARY METALS

Brass, ingot 85-5-5-5, lcl.	14.75
Stand. No. 12 alum.	18.50

Warehouse Iron and Steel Prices

Cents per pound for delivery within metropolitan districts of cities specified

STEEL BARS	
Baltimore	4.00c
Boston††	4.05c
Buffalo	3.10c
Chattanooga	4.21c
Chicago (j)	3.85c
Cincinnati	4.05c
Cleveland	3.75c
Detroit	3.93½c
Houston	3.10c
Los Angeles	4.30c
Milwaukee	3.96c-4.11c
New Orleans	4.20c
New York† (d)	4.12c
Pitts. (h)	3.80c
Philadelphia	4.00c
Portland	4.50c
San Francisco	4.20c
Seattle	4.45c
St. Louis	4.09c
St. Paul	4.10c-4.25c
Tulsa	3.35c
IRON BARS	
Portland	3.50c
Chattanooga	4.21c
Baltimore*	3.25c
Cincinnati	4.05c
New York† (d)	3.65c
Philadelphia	4.00c
St. Louis	4.09c
Tulsa	3.35c
REINFORCING BARS	
Buffalo	2.60c
Chattanooga	4.21c
Cleveland (c)	2.55c
Cincinnati	3.75c
Houston	3.25c
Los Angeles, c.l.	2.975c
New Orleans*	3.24c
Pitts., plain (h)	2.55c
Pitts., twisted squares (h)	3.95c
San Francisco	2.97½c
Seattle	2.975c
St. Louis	3.99c
Tulsa	3.25c
Young	2.30c-2.60c
SHAPES	
Baltimore	3.90c
Boston††	3.92c
Buffalo	3.35c
Chattanooga	4.11c
Chicago	3.75c
Cincinnati	3.95c
Cleveland	3.86c
Detroit	3.95c
Houston	3.10c
Los Angeles	4.30c
Milwaukee	3.86c
New Orleans	4.10c
New York† (d)	3.97c
Philadelphia	3.90c
Pittsburgh (h)	3.70c
Portland (i)	4.25c
San Francisco	4.05c
Seattle (l)	4.25c
St. Louis	3.99c
St. Paul	4.00c
Tulsa	3.60c
PLATES	
Baltimore	3.90c
Boston††	3.93c
Buffalo	3.47c
Chattanooga	4.11c
Chicago	3.75c
Cincinnati	3.95c
Cleveland, ½-in. and over	3.86c
Detroit	3.95c
Detroit, ½-in.	4.15c
Houston	3.10c
Los Angeles	4.30c
Milwaukee	3.86c
New Orleans	4.10c
New York† (d)	4.00c
Philadelphia	3.90c

Phila. floor	5.25c
Pittsburgh (h)	3.70c
Portland	4.25c
San Francisco	4.05c
Seattle	4.25c
St. Louis	3.99c
St. Paul	4.00c
Tulsa	3.60c
NO. 10 BLUE	
Baltimore	3.95c
Boston (g)	4.00c
Buffalo	3.72c
Chattanooga	4.16c
Chicago	3.85c
Cincinnati	4.00c
Cleveland	3.91c
Det. 8-10 ga.	3.93½c
Houston	3.45c
Los Angeles	4.50c
Milwaukee	3.96c
New Orleans	4.35c
New York† (d)	4.07c
Portland	4.25c
Philadelphia	4.00c
Pittsburgh (h)	3.75c
San Francisco	4.30c
Seattle	4.50c
St. Louis	4.39c
St. Paul	4.10c
Tulsa	3.80c
NO. 24 BLACK	
Baltimore*†	4.50c
Boston (g)	4.75c
Buffalo	3.35c
Chattanooga*	4.06c
Chicago	4.45c-5.10c
Cincinnati	4.75c
Cleveland	4.66c
Detroit	4.68½c
Los Angeles	5.05c
Milwaukee	4.56c-5.21c
New York† (d)	4.82c
Philadelphia	4.65c
Pitts.** (h)	4.75c
Portland	5.15c
Seattle	5.35c
San Francisco	5.15c
St. Louis	4.84c
St. Paul	4.75c
Tulsa	4.85c
NO. 24 GALV. SHEETS	
Baltimore*†	4.70c
Buffalo	4.10c
Boston (g)	5.30c
Chattanooga*	4.76c
Chicago (h) 5.10c-5.75c	
Cincinnati	5.40c
Cleveland	5.31c
Detroit	5.40c
Houston	4.50c
Los Angeles	5.75c
Milwaukee	5.21c-5.86c
New Orleans*	5.75c
New York† (d)	5.47c
Philadelphia	5.30c
Pitts.** (h)	5.40c
Portland	5.90c
San Francisco	5.85c
Seattle	5.90c
St. Louis	5.49c
St. Paul	5.40c
Tulsa	5.20c
BANDS	
Baltimore	4.20c
Boston††	4.25c
Buffalo	3.52c
Chattanooga	4.41c
Cincinnati	4.25c
Cleveland	4.16c
Detroit	4.10c
Chicago, ½-in. and lighter	4.185c
Houston	3.35c
Los Angeles	4.80c
Milwaukee	4.21c
New Orleans	4.75c
New York† (d)	4.32c

Philadelphia	4.10c
Pittsburgh (h)	4.00c
Portland	5.00c
San Francisco	4.80c
Seattle	4.95c
St. Louis	4.34c
St. Paul	4.35c
Tulsa	3.55c
HOOPS	
Baltimore	4.45c
Boston††	5.25c
Buffalo	3.52c
Chicago	4.10c
Cincinnati	4.25c
Detroit, No. 14 and lighter	4.185c
Los Angeles	6.55c
Milwaukee	4.21c
New York† (d)	4.32c
Philadelphia	4.35c
Pittsburgh (h)	4.50c
Portland	6.50c
San Francisco	6.50c
Seattle	6.30c
St. Louis	4.34c
St. Paul	4.35c
COLD FIN. STEEL	
Baltimore (c)	4.50c
Boston*	4.65c
Buffalo (h)	3.70c
Chattanooga*	4.86c
Chicago (h)	4.30c
Cincinnati	4.50c
Cleveland (h)	4.30c
Detroit	4.30c
Los Ang. (f) (d)	6.85c
Milwaukee	4.41c
New Orleans	5.10c

New York† (d)	4.57c
Philadelphia	4.53c
Pittsburgh	4.15c
Portland (f) (d)	7.10c
San Fran. (f) (d)	6.80c
Seattle (f) (d)	7.10c
St. Louis	4.54c
St. Paul	4.77c
Tulsa	4.80c
COLD ROLLED STRIP	
Boston	3.845c
Buffalo	3.39c
Chicago	3.87c
Cincinnati	3.82c
Cleveland (b)	3.60c
Detroit	3.43c
New York† (d)	3.92c
St. Louis	4.54c
TOOL STEELS	
(Applying on or east of Mississippi river; west of Mississippi up.)	
Base	
High speed	69c
High carbon, Cr.	45c
Oil hardening	26c
Special tool	24c
Extra tool	20c
Regular tool	16c
Water hardening 12½c	
Uniform extras apply.	
BOLTS AND NUTS	
(100 pounds or over)	
Discount	
Chicago (a)	55 to 60
Cleveland	60-5-5
Detroit	70-10
Milwaukee	60 to 65

New Orleans... 65
Pittsburgh... 65-5

(a) Under 100 lbs., 50 off.
(b) Plus straightening, cutting and quantity differentials; (c) Plus mill, size and quantity extras; (d) Quantity base; (e) New mill classif. (f) Rounds only; (g) 50 bundles or over; (h) Outside delivery, 10c less; (i) Under 3 in.; (j) Shapes other than rounds, flats, fllet angles, 0.15c higher.

On plates, shapes, bars, hot strip and blue annealed quantity extras and discounts as follows: Under 100 lbs., add \$1.50; 100 to 399 lbs., add 50c; 400 to 999 lbs., base; 4000 to 9999 lbs., deduct 10c; over 10,000 lbs., deduct 15c. At Cleveland, under 400 lbs., add 50c, with \$1 minimum invoice.

† Domestic steel;
* Plus quantity extras;
** One to 9 bundles;
†† 50 or more bundles;
‡ New extras apply;
‡‡ Base 10,000 lbs., extras on less.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, Aug. 12

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

	British gross tons U. K. ports		Continental Channel or North Sea ports, metric tons	
	£	s d	Quoted in dollars at current value	**Quoted in gold pounds sterling £ s d
PIG IRON				
Foundry, 2.50-3.00 Silicon	\$29.88	6 0 0	\$27.64	3 9 0
Basic bessemer	19.55	3 18 6*	28.84	3 12 0
Hematite, Phos. .03-.05	36.10	7 5 0		
SEMIFINISHED STEEL				
Billets	\$39.22	7 17 6	\$27.04	3 7 6
Wire rods, No. 5 gage	53.91	10 16 6	56.08	7 0 0
FINISHED STEEL				
Standard rails	\$50.42	10 2 6	\$48.07	6 0 0
Merchant bars	2.44c	11 0 0	2.17c to 2.25c	6 0 0 to 6 5 0
Structural shapes	2.36c	10 12 6	1.94c	5 7 6
Plates, ¼ in. or 5 mm.	2.57c	11 11 3	2.58c	7 2 6
Sheets, black, 24 gage or 0.5 mm.	3.33c	15 0 0	3.16c	8 15 0
Sheets, gal., 24 gage, corr.	4.16c	18 15 0	4.16c	11 10 0
Bands and strips	3.05c	13 15 0	2.33c	6 10 0
Plain wire, base	3.22c	14 10 0	2.53c	7 0 0
Galvanized wire, base	3.77c	17 0 0	3.17c	8 15 0
Wire nails, base	3.10c	14 0 0	2.90c	8 0 0
Tin plate, box 108 lbs.	\$ 6.22	1 5 0		

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

Domestic Prices at Works or Furnace—Last Reported

	£	s	d	French Francs	Belgian Francs	Reich Marks	
Fdy. pig iron, Si. 2.5	\$25.15	5	1 0 (a)	\$17.32	462	\$25.38	63
Basic bessemer pig iron	24.90	5	0 0 (a)	10.31	275	27.99 (b)	69.50
Furnace coke	8.72	1	15 0	5.92	158	6.23	185
Billets	39.22	7	17 6	24.96	655	960	38.87
Standard rails	2.25c	10	2 6	1.66c	975	1.80c	1,200
Merchant bars	2.54c	11	9 0	1.50c	885	1.65c	1,100
Structural shapes	2.45c	11	0 6	1.46c	860	1.65c	1,100
Plates, ¼ in. or 5 mm.	2.60c	11	14 3	1.88c	1,105	2.06c	1,375
Sheets, black	3.50c	15	10 5	2.47c	1,450†	2.36c	1,575†
Sheets, galv., corr., 24 ga. or 0.5 mm.	4.33c	19	10 0	3.66c	2,150	2.85c	1,900
Plain wire	3.22c	14	10 0	2.31c	1,360	2.48c	1,650
Bands and strips	2.71c	12	4 0	1.70c	1,000	2.33c	1,550

*Basic. †British ship-plates. Continental bridge plates, ¼24 ga. 21 to 5 mm. basic price. British quotations are for basic open-hearth steel. Continent usually for basic-bessemer steel a del. Middlesborough. b hematite. ††Close annealed.
**Gold pound sterling carries a premium of 64.50 per cent over paper sterling.

Iron and Steel Scrap Prices

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

HEAVY MELTING STEEL

Birmingham†, No. 1	16.00-17.00
Birmingham†, No. 2	15.00-16.00
Bos. dock No. 1, exp.	17.50-18.00
N. Eng. del. No. 1.	17.00
Buffalo, No. 1	21.00-21.50
Buffalo No. 2	18.50-19.00
Chicago, No. 1	19.50-20.00
Cleveland, No. 1	19.50-20.00
Cleveland, No. 2	18.00-18.50
Detroit, No. 1	17.00-17.50
Eastern Pa., No. 1	19.50-20.00
Eastern Pa., No. 2	18.00
Federal, Ill.	15.50-16.00
Granite City, R. R.	17.50-18.00
Granite City, No. 2	15.50-16.00
New York, No. 1.	†16.50-17.00
N. Y. dock No. 1 exp.	17.00
Pitts., No. 1 (dir.)	23.50-24.00
Pitts., No. 1 (dir.)	21.50-22.00
Pittsburgh, No. 2	19.00-19.50
St. Louis, R. R.	17.50-18.00
St. Louis, No. 2	15.50-16.00
Toronto, Mrs. No. 1	11.00-12.00
Toronto, No. 2	10.00-11.00
Valleys, No. 1	21.00-22.00

COMPRESSED SHEETS

Buffalo, dealers	18.50-19.00
Chicago, factory	19.00-19.50
Chicago, dealer	18.00-18.50
Cleveland	19.00-19.50
Detroit	18.00-18.50
E. Pa., new mat.	19.50-20.00
E. Pa., old mat.	15.50-16.00
Pittsburgh	21.50-22.00
St. Louis	15.00-15.50
Valleys	20.50-21.00

BUNDLED SHEETS

Buffalo	13.50-14.00
Cincinnati, del	15.00-15.50
Cleveland	14.00-14.50
Pittsburgh	19.00-19.50
St. Louis	14.00-14.50
Toronto, dealers	8.00

SHEET CLIPPINGS, LOOSE

Chicago	13.75-14.25
Cincinnati	14.00-14.50
Detroit	13.25-13.75
St. Louis	12.50-13.00

STEEL RAILS, SHORT

Birmingham	17.00-18.00
Buffalo	23.50-24.50
Chicago (3 ft.)	21.50-22.00
Chicago (2 ft.)	23.00-23.50
Cincinnati, del.	23.00-23.50
Detroit	22.50-23.00
Pitts., 3 ft. and less	26.50-27.00
St. Louis, 2 ft. & less	20.00-20.50

STEEL RAILS, SCRAP

Boston district	†15.00-15.50
Buffalo	21.00-21.50
Chicago	19.50-20.00
Cleveland	21.00-21.50
Pittsburgh	23.00-23.50
St. Louis	21.00-21.50

STOVE PLATE

Birmingham	10.00-10.50
Boston district	†11.50-12.00
Buffalo	15.00-16.00
Chicago	11.00-11.50
Cincinnati, dealers	12.50-13.00
Detroit, net	12.25-12.75
Eastern Pa.	16.50-17.00
New York fdry.	†12.50-13.00
St. Louis	12.50-13.00
Toronto, deal'rs, net	9.50-10.00

SPRINGS

Buffalo	22.50-23.00
Chicago, coil	24.50-25.00
Chicago, leaf	22.50-23.00
Eastern Pa.	24.00-24.50
Pittsburgh	26.50-27.00
St. Louis	22.00-22.50

ANGLE BARS—STEEL

Chicago	21.50-22.00
St. Louis	20.00-20.50

RAILROAD SPECIALTIES

Chicago	22.00-22.50
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LOW PHOSPHORUS

Buffalo, billet and bloom crops	23.00-23.50
Cleveland, billet and bloom crops	24.50-25.00
Eastern Pa., crops	24.00-24.50
Pittsburgh, billet and bloom crops	26.50-27.00
Pittsburgh, sheet bar crops	25.00-25.50

FROGS, SWITCHES

Chicago	19.50-20.00
St. Louis, cut	19.50-20.00

SHOVELING STEEL

Federal, Ill.	15.50-16.00
Granite City, Ill.	15.50-16.00
Toronto, dealers	9.00-9.50

RAILROAD WROUGHT

Birmingham	13.50-14.00
Boston district	†10.00-10.25
Buffalo, No. 1	17.50-18.00
Buffalo, No. 2	21.00-21.50
Chicago, No. 1 net	16.00-16.50
Cincinnati, No. 2	18.00-18.50
Eastern Pa., No. 1.	19.50-20.00
St. Louis, No. 1	15.50-16.00
St. Louis, No. 2	17.50-18.00
Toronto, No. 1 dir.	15.00

SPECIFICATION PIPE

Eastern Pa.	16.50-17.00
New York	†12.50-13.00

BUSHELING

Buffalo, No. 1	17.50-18.00
Chicago, No. 1	17.50-18.00
Cincin., No. 1, deal.	15.50-16.00
Cincinnati, No. 2	10.00-10.50
Cleveland, No. 2.	13.50-14.00
Detroit, No. 1 new	16.50-17.00
Valleys, new, No. 1	19.50-20.00
Toronto, dealers	9.00

MACHINE TURNINGS

Birmingham	6.00-7.00
Buffalo	12.00-12.50
Chicago	10.50-11.00
Cincinnati, dealers	12.00-12.50
Cleveland	13.00-13.50
Detroit	13.00-13.50
Eastern Pa.	14.00-14.50
New York	†10.00-10.50
Pittsburgh	15.00-15.50
St. Louis	10.00-10.50
Toronto, dealers	8.00-8.50
Valleys	15.50-16.00

BORINGS AND TURNINGS

For Blast Furnace Use

Boston district	†9.25-9.50
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BORINGS & TURNINGS

Buffalo	13.00-13.50
Cincinnati, dealers	11.50-12.00
Cleveland	14.00-14.50
Detroit	13.50-14.00
Eastern Pa.	13.00-13.50
New York	†10.00-10.50
Pittsburgh	15.00-15.50
Toronto, dealers	8.00-8.50

CAST IRON BORINGS

Birmingham	8.00-8.50
Boston dist. chem.	†10.00-10.25
Bos. dist. for mills	†9.75-10.00
Buffalo	13.00-13.50
Chicago	12.50-13.00
Cincinnati, dealers	11.50-12.00
Cleveland	13.50-14.00
Detroit	13.50-14.00
E. Pa., chemical	14.50-15.00
New York	†10.00-10.50
St. Louis	9.50-10.00
Toronto, dealers	9.00

PIPE AND FLUES

Cincinnati, dealers	13.00-13.50
Chicago, net	13.50-14.00

RAILROAD GRATE BARS

Buffalo	14.00-14.50
Chicago, net	12.50-13.00
Cincinnati	12.50-13.00
Eastern Pa.	16.50-17.00
New York	†12.00-12.50
St. Louis	12.50-13.00

FORGE FLASHINGS

Boston district	†12.25-12.75
Buffalo	17.50-18.00
Cleveland	17.50-18.00
Detroit	15.50-16.00
Pittsburgh	18.25-18.75

FORGE SCRAP

Boston district	†9.50-10.00
Chicago, heavy	21.50-22.00

ARCH BARS, TRANSOMS

St. Louis	20.00-20.50
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AXLE TURNINGS

Boston district	†11.00-11.50
Buffalo	16.00-16.50
Chicago, elec. fur.	17.50-18.00
Eastern Pa.	17.00-17.50
St. Louis	14.00-14.50
Toronto	9.50

STEEL CAR AXLES

Birmingham	19.00-20.00
Buffalo	22.50-23.00
Boston district	†22.50-23.00
Chicago, net	25.50-26.00
Eastern Pa.	25.00-26.00
St. Louis	24.00-24.50

SHAFTING

Boston district	†19.00-19.25
New York	†19.50-20.00
Eastern Pa.	24.50
St. Louis	19.50-20.00

CAR WHEELS

Birmingham	18.00-19.00
Boston dist., iron	†15.00-15.25
Buffalo, iron	19.00-19.50
Buffalo, steel	23.00-23.50
Chicago, iron	20.50-21.00
Chicago, rolled steel	22.00-22.50

Cincinnati, iron	19.50-20.00
Eastern Pa., iron	20.50-21.00
Eastern Pa., steel	24.50-25.00
Pittsburgh, iron	22.00-22.50
Pittsburgh steel	26.50-27.00
St. Louis, iron	20.00-20.50
St. Louis, steel	21.50-22.00

NO. 1 CAST SCRAP

Birmingham	15.50-16.00
Boston, No. 1 mach.	†15.00-15.50
N. Eng. del. No. 2	17.00
N. Eng. del. textile	18.50
Buffalo, cupola	18.00-18.50
Buffalo, mach.	19.00-20.00
Chicago, agrl. net.	14.00-14.50
Chicago, auto	15.00-15.50
Chicago, mach. net.	16.50-17.00
Chicago, rail'd net	15.00-15.50
Cincin., mach. cup.	17.50-18.00
Cleveland, mach.	19.50-20.50
Eastern Pa., cupola	21.00-21.50
E. Pa., mixed yard.	18.00
Pittsburgh, cupola	20.25-20.75
San Francisco, del.	13.50-14.00
Seattle	12.00-13.00
St. Louis, No. 1	14.50-15.00
St. L., No. 1, mach.	15.00-15.50
Toronto, No. 1, mach., net	16.00-17.00

HEAVY CAST

Boston dist. break.	†14.75-15.00
N. Eng. del.	15.00-15.25
Buffalo, break.	16.00-16.50
Cleveland, break.	17.00-18.00
Detroit, break.	14.50-15.00
Detroit, auto net.	16.00-16.50
Eastern Pa.	20.00-20.50
New York, break.	†15.75-16.25
Pittsburgh	17.50-18.00

MALLEABLE

Birmingham, R. R.	12.50-13.50
New England, del.	20.00
Buffalo	20.00-21.00
Chicago, R. R.	21.50-22.00
Cincin., agrl. del.	18.00-18.50
Cleveland, rail.	21.50-22.00
Detroit, auto	17.00-17.50
Eastern Pa., R. R.	19.00-20.00
Pittsburgh, rail	21.50-22.00
St. Louis, R. R.	20.00-20.50

RAILS FOR ROLLING

5 feet and over

Birmingham	19.00-20.00
Boston	†17.50-18.00
Buffalo	21.50-22.50
Chicago	21.50-22.00
Eastern Pa., R. R.	21.00-21.50
New York	†18.50-19.00
St. Louis	21.00-21.50

LOCOMOTIVE TIRES

Chicago (cut)	22.50-23.00
St. Louis, No. 1	19.50-20.00

LOW PHOS. PUNCHINGS

Buffalo	22.50-23.50
Chicago	22.00-22.50
Eastern Pa.	24.00-24.50
Pittsburgh (heavy)	24.00-24.50
Pittsburgh (light)	23.50-24.00

Iron Ore

Lake Superior Ore	
Gross ton, 51½%	
Lower Lake Ports	
Old range bessemer	5.25
Mesabi nonbess.	4.95
High phosphorus	4.85
Mesabi bessemer	5.10
Old range nonbess.	5.10

Eastern Local Ore

Cents, unit, del. E. Pa.	
Foundry and basic	
56.63% con.	9.00-10.00
Cop.-free low phos.	
58-60%	nominal

Foreign Ore

Cents per unit, f.a.s. Atlantic	
Foreign manganiferous ore, 45.55% iron, 6-10% man.	*17.00

No. Afr. low phos.

Swedish low phos.	nominal
Spanish No. Africa basic. 50 to 60%	*16.00
Tungsten, Nov.-Dec. sh. ton, unit, duty pd \$23.00 to \$25.00; spot non.	
N. F., fdy., 55%	7.00
Chrome ore, 48% gross ton. c.i.f.	\$25.50-26.50
*Nominal asking price for spot.	

Manganese Ore

(Nominal)

Prices not including duty, cents per unit cargo lots.

Caucasian, 50-52%	non. 52.00 to 53.00
So. African, 50-52%	non. 52.00 to 53.00
Indian, 50-52%	Nominal

Sheets

Sheet Prices, Page 94

Pittsburgh—A growth in volume of new business has been noticed in this district recently by sheet producers, due to some extent to better automotive specifications. However, the reflection in mill schedules has hardly been perceptible yet, cold-reduced promises continuing to range around five to six weeks. Hot-rolled backlogs are estimated at eight to nine weeks, light hot-rolled and galvanized 14 to 15 weeks, and earlier in the case of some producers.

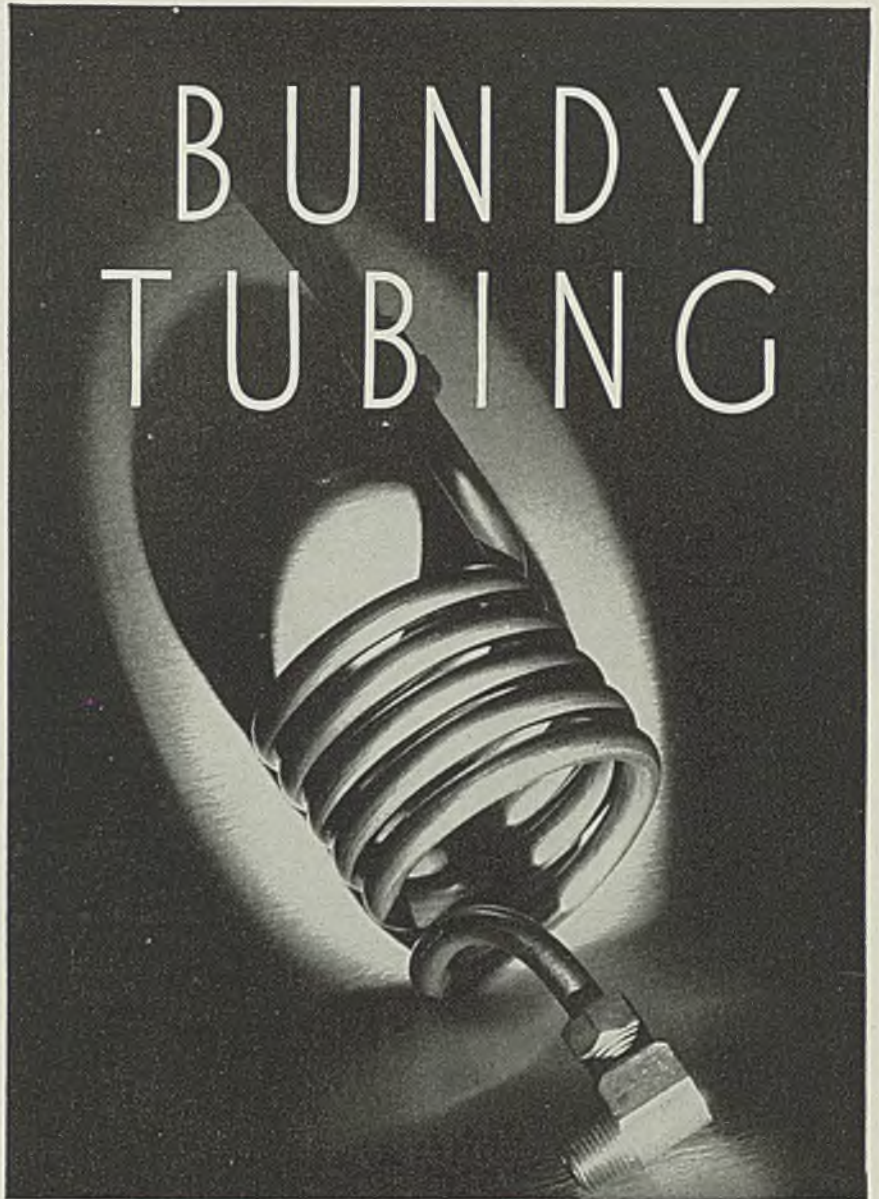
Cleveland—Automotive manufacturers continue to buy for 1938 models in small quantities although producers expect start of large-order buying within a few days or weeks. Miscellaneous demand continues unexpectedly strong for the season. Most producers still have good sized backlogs although these have been shrinking during the past several weeks. Deliveries have improved somewhat although promises still vary widely.

Chicago — Sheet deliveries vary widely. Shipment of hot-rolled material generally requires about 60 days but in view of lessened pressure, earlier delivery can be effected if necessary. Cold-rolled sheets are available within 30 days. Some automotive business has been placed but since such tonnages are small, producers continue to reduce backlogs.

Boston — Improved deliveries on most finishes of sheets have resulted in adequate stocks for current operations on the part of most consumers, with new buying and specifications light. Stocks, however, with most users, are not heavy and additional forward interest is being shown by some buyers, notably jobbers, through whom a good part of the sheet tonnage is distributed in this district. Shipments and inquiry for corrugated galvanized sheet metal piping continue active.

New York — New sheet business continues sluggish. Deliveries show some improvement particularly in heavier gages of hot sheets and in lighter gages of cold sheets; however, on the light gages of hot sheets most sellers are booked well into fourth quarter and also to some extent on the heavy cold-reduced sizes. On light gage cold sheets some deliveries can be made early in September.

Philadelphia — Several thousand tons of both cold and hot-rolled sheets have been placed by a local automotive interest for 1938 models. Otherwise demand for sheets is generally slow. One bright spot is buy-



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DETROIT

ing of hot-rolled sheets for domestic oil storage tanks. Strike at a large stove plant has been settled and this is expected to result in a considerable increase in sheet consumption. Deliveries are available in most grades in two to six weeks.

Cincinnati—Sheet mills took new orders in slightly better volume last week, possibly presaging an upturn from the seasonal low. Some business on galvanized was traced to removal, for fourth quarter, of a \$2 jobber allowance.

St. Louis—Pressure for deliveries

has eased further, and backlogs of manufacturers have been noticeably reduced. Inquiry for fall and early winter delivery of enameling stock is reported in substantial volume. Extension of the price on galvanized sheets through fourth quarter has had no appreciable effect in the situation of that material.

Birmingham—Drum stocks sheets saw another gain in demand to bring current sales somewhat ahead of production and leave backlogs practically intact. Drum manufacturers are asking prompt delivery.

Strip

Strip Prices, Page 95

Pittsburgh—Demand for hot and cold-rolled strip steel is quiet, some mills reporting incoming business equal to 50 to 60 per cent of shipments. Miscellaneous buyers, with the possible exception of the electrical fixture business, are unhurried.

Cleveland—Strip demand continues relatively slow. Automotive manufacturers so far are buying only limited quantities for first-run cars, but producers believe a strong upsurge from this source is imminent. Producers are optimistic over prospects for business this fall. Backlogs are believed adequate to bridge the gap until heavier buying starts. Deliveries continue to improve.

Chicago—Strip sales are steady but signs of sustained demand have not yet appeared. Lack of more active automotive demand is a factor in restricting new business though there is a fair call from miscellaneous users. Mill backlogs are light compared with heavy tonnages on books earlier in the year and fairly prompt delivery now is available.

Boston—Moderate improvement in buying of narrow cold strip, notably for specialties, has developed during the last few days. While most demand is for immediate delivery, a spotty gain in orders for early fourth quarter delivery is noted from some consumers connected with the automotive industry.

New York—Several sellers of narrow cold strip report a slight upturn in demand; others have met no improvement. Most new business is for early delivery. Buying in the Detroit area appears to account for much of the irregular improvement. On some specifications, most mills still have fair backlogs.

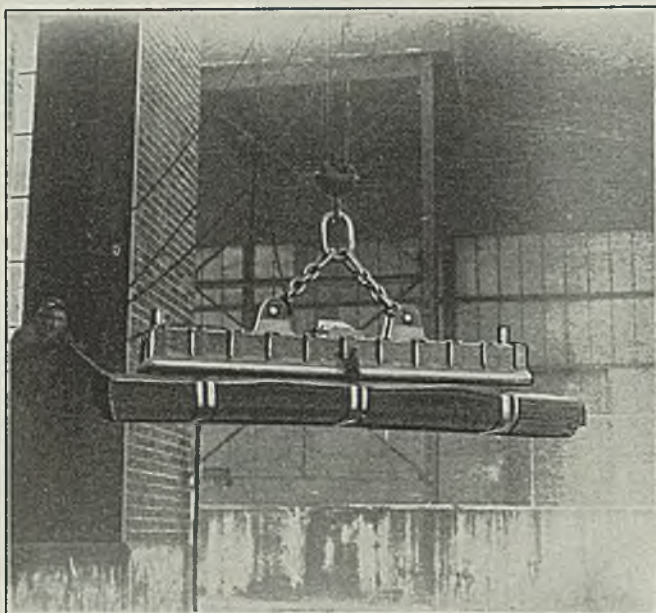
Philadelphia—Some buying of strip is being done by miscellaneous consumers but little increase is expected this month. One stamping plant is operating at a relatively high rate. Deliveries generally are normal.

Cold-Finished

Cold Finished Prices, Page 95

Pittsburgh—Cold-finished producers have been running on backlogs through most of this month, although the automotive picture is decidedly better. One of the bright spots recently has been export inquiry, with Great Britain and Holland prominent. The outlook for the fall is promising.

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Plates

Plate Prices, Page #4

Pittsburgh—Plate deliveries range up to six weeks. Incoming business is less than shipments, however. Following action of Chicago producers, floor plates are down \$6 a ton here, being quoted 3.50c, Pittsburgh; 3.60c, Coatesville, Pa.; 3.90c, Gulf ports; and 4.05c, Pacific coast ports. While railroad equipment manufacturers are taking good shipments activity is likely to be quiet until late fall. While barge work here has been inactive for a long time, it is estimated that eastern jobs have required around 12,000 tons of plates since the middle of February.

Cleveland—Plate requirements generally are for small projects. Mills are active working against old orders, believed sufficient to prevent any recession in operations.

Chicago—Plate backlogs are declining, but demand is better than that for shapes. Deliveries of 60 days are common but unless railroad buying increases, mills will be able to effect considerably earlier shipment within another two months. Only a small tonnage is pending for freight cars but shipments against orders continue heavy.

Boston—Plate buying is light, miscellaneous demand predominating. Specifications from larger users are less active with deliveries on most widths and gages improved. Plate fabricators as a rule have smaller backlogs.

New York—While current plate buying is irregular platemakers see substantial plate demand pending for this fall. Oil company construction is being outlined with tentative bids being submitted. Shipbuilding tonnage is also promising.

Philadelphia—The navy department has awarded two destroyers to Bethlehem, two to Bath Iron Works and four will be allocated to navy yards, part to the Philadelphia yard since it is less congested than others. Each destroyer will require 550 tons of plates and 125 tons of shapes. Plate buying shows further slackness and deliveries are available in several directions within two weeks, although some mills are still six to seven weeks behind. South African Railroads & Harbors is asking bids on material for 45 locomotives which may be built in its own shops.

Birmingham—Slight recession has appeared in demand for plates, but mills have a heavy backlog upon which they are anxious to make some inroads. Numerous miscellaneous orders, however, continue

to keep the demand at or about capacity.

San Francisco—Awards recently have been by no means large, most business being confined to lots of less than 100 tons. Largest letting went to Steel Tank & Pipe Co. and called for 300 tons for a 30-in. welded steel pipe line for Oakland, Calif. Interest now centers around the opening of bids Sept. 1 for approximately 12,000 tons for pipe lines for the Palos Verdes feeder system of the Colorado river aqueduct for Los Angeles. It is reported that the

General Petroleum Corp. will shortly erect two 134,000-barrel and three 80,000-barrel tanks at its refinery at Torrance, Calif., involving close to 1000 tons.

Seattle—Fabricators have a fair volume of small jobs, mostly tank and boiler work. Seattle Boiler Works, Seattle, is building several oil storage tanks for the Union Oil Co.'s terminal improvements at Juneau and Sitka, Alaska.

Plate Contracts Placed

2500 tons, oil tanks, St. Louis, Shell Pe-



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troleum Corp, to Graver Tank & Mfg. Co., East Chicago, Ind.
 1000 tons, oil tanks, East Chicago, Ind., Socony-Vacuum Oil Co., to Graver Tank & Mfg. Co., East Chicago, Ind.
 500 tons, hopper barge for Klekhefer Container Co., Delair, N. J., to Dravo Corp., Neville Island, Pa.
 300 tons, 30-inch welded steel pipe, East Bay municipal utility district, Oakland, Calif., to Steel Tank & Pipe Co., Berkeley, Calif.
 100 tons, approximate, navy department, Norfolk, Va., navy yard delivery, to Alan Wood Steel Co., Conshohocken, Pa., schedule 996, lots 155 and 156, latter floor plates.

Plate Contracts Pending

11,600 tons, welded steel pipe, Palos Verdes feeder line for Metropolitan water district, Los Angeles, specification 225; bids Sept. 1.
 1955 tons, Portsmouth, N. H., navy yard bids Sept. 10, bureau of supplies and accounts, navy department, Washington, schedule 1428; also 70 tons sheets, same schedule.
 825 tons, 48-inch steel pipe, metropolitan district commission, Boston, for installation Everett-Medford, Mass.
 100 tons, steel gas buoys from nine feet diameter by 38 feet long to seven feet diameter by 18 feet long, lighthouse

bureau, Staten Island, New York; bids in.

Bars

Bar Prices, Page 94

Pittsburgh—While little improvement has been shown this month in hot-rolled bar specifications, the rate of decline has lessened, indicating the current situation probably is the bottom. It is difficult to point to consumers with requirements better than average. Bar mills here have backlogs of about three weeks, with earlier delivery available in certain sizes.

Cleveland—Miscellaneous demand for bars is well maintained despite quiet in the automotive situation. A variety of smaller consumers have been taking fair tonnages. Backlogs are light and prompt deliveries are offered on most bars.

Chicago—Bar orders show no improvement and some producers continue to reduce backlogs. Automotive buying still is limited but this is offset partly by continued heavy requirements of farm equipment manufacturers, who still are under pressure for delivery. Bar deliveries very according to mills, averaging around 30 days.

Boston—Joseph T. Ryerson & Son Inc. has been awarded 100 tons of hot-rolled acid manganese bars 1 3/4 inches in diameter in 12-foot lengths for forging, for delivery at the Springfield, Mass., armory, at 4.5 cents per pound. The material is for rifle barrels. About 50 tons of hot-rolled forging bars also has been awarded, most going to Carnegie-Illinois Steel Corp., Pittsburgh, at 4.945 cents per pound, bids July 26.

New York—Commercial bar deliveries, where specifications are not too diversified, are available here within 10 days to two weeks. In the main, bar specifications have been running particularly light for the past three or four weeks, with jobbers releasing little tonnage and with slowing up in specifications from both the bolt and nut manufacturers and the railroads, notwithstanding in the latter case fairly substantial repairs now being made to rolling stock.

Philadelphia—Demand continues dull and deliveries are general at about two weeks, depending on specifications. Even warehouses are little interested in bars.

Birmingham—Some slackening in demand for bars is reported, but is considered temporary and may give opportunity to catch up on backlogs which have been built up largely because of demand from plow manufacturers.



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Pipe

Pipe Prices, Page 95

Pittsburgh—Continued strong demand for seamless oil country goods has made it difficult to keep stocks at adequate levels. There has been little easing in oil country requirements since first quarter. Backlogs in seamless of six to seven weeks are common in this district. Merchant boiler tubes are moving well for repair work and standard pipe has shown a slight improvement over July. Two Pittsburgh producers are among the firms sharing the 9000-ton order for Standard Pipe Line Co.'s 140-mile line from the Louisiana coastal fields to Baton Rouge, La. Demand is good for material for small lines of 5 to 15 miles in length.

Cleveland—Demand for cast pipe continues limited to scattered small projects. No large awards of new inquiries were noted last week. A fair amount of steel pipe is being sold here from jobbers' stocks.

Chicago—With the season for best activity in cast pipe installations now well advanced, sellers see little prospect of marked gain during coming months. Orders have been fairly numerous the past 60 days but absence of larger tonnages has restricted the total.

Boston—Cast pipe inquiry is light and shipments against contracts are also less active. Steel pipe buying through resellers includes small tonnages, although orders are fairly brisk.

New York—Tentative contracts have been placed for New York city involving 3800 tons for yard stocks included in the last two recent openings. Three foundries will share the tonnage. New buying and inquiry are light, small miscellaneous orders making up the bulk of the volume going into consumption.

Birmingham — Cast iron pipe shows signs of some revival with operations at about 60 per cent, although there is no definite indication that demand will be sustained for any length of time on this basis.

San Francisco—Movement of cast iron pipe has been light and only 522 tons were booked this week, bringing the aggregate for the year to 18,857 tons, compared with 29,766 tons for the corresponding period in 1936.

Seattle—Cast iron pipe business is dull with inquiries infrequent and for small tonnages. Parker & Hill, Seattle engineers, are preparing plans for Alderwood involving 22,000 feet of 3 and 4 inch steel pipe and for Lowell, Wash., involving two

wells, concrete reservoir, elevated steel tank, accessories and 30,000 feet of 6 and 8-inch steel or cast iron pipe. Renton and Angle Lake, Wash., plan improvements, the former to cost \$50,000 and involving 3, 4 and 6-inch pipe. Tenino, Wash. will hold an election to approve proposed \$96,000 project.

Steel Pipe Placed

9000 tons, 6 and 8-inch line pipe, for Standard Pipe Line Co.'s 141-mile line from the Louisiana coastal fields to Baton Rouge; order split between three producers.

Cast Pipe Placed

182 tons, 6 and 8-inch, Santa Monica, Calif., to National Cast Iron Pipe Co., Birmingham, Ala.
120 tons, 6-inch, extension to water system, Upper Arlington, O., to James B. Clow & Son Co., Cleveland.

Cast Pipe Pending

1785 tons, 2 to 18-inch, Redding, Calif.; bids soon.
1050 tons, 4 to 20-inch, East Bay municipal utility district, Oakland, Calif.; United States Pipe & Foundry Co., Burlington, N. J., low on 900 tons and American Cast Iron Pipe Co., Birmingham, Ala., low on 150 tons.

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Transportation

Track Material Prices, Page 95

Railroad equipment builders see signs of buying this fall following the pattern of a year ago when heavy fall purchases were made for spring requirements. Several buying programs involving small lots have been worked out but are delayed in placing. Interstate commerce commission has ruled that roads may sell equipment certificates to finance car

repairs and this may limit buying of new cars.

The Pennsylvania is inquiring from shippers as to types of cars preferred, regarded as preliminary to an additional carbuilding program. The same road is said to be considering electrification of the Harrisburg to Pittsburgh line as well as the Williamsport division.

Pittsburgh & Lake Erie will close bids Aug. 16 on fabricated car repair parts for 55 and 70-ton hopper cars.

The Wabash has distributed 6500 tons of rails and the Western Mary-

land 2000 tons. New York Board of Transportation will open bids Aug. 17 for 500 tons of rails.

Rail Orders Placed

Wabash, 6500 tons of 112-pound rail, of which 3700 tons went to Carnegie-Illinois Steel Corp., Pittsburgh; 1500 tons to Bethlehem Steel Co., Bethlehem, Pa.; and 1300 tons to Inland Steel Co., Chicago.

Western Maryland, 2000 tons of 90-pound rail, to Carnegie-Illinois Steel Corp., Pittsburgh.

Car Orders Placed

Sun Oil Co., 25 tank cars, to General American Transportation Co. Chicago.

Car Orders Pending

Missouri-Illinois railroad, 50 box and 25 gondolas, all 50 tons.

Navy department, two steel railway cars, Washington navy yard; Haffner-Thrall Car Co., Chicago, low, bids Aug. 3.

South African Railways & Harbors, 300 four-wheel cattle cars.

Union Pacific, fifty 50-ton box cars.

Locomotives Placed

Bethlehem Steel Co., 11 diesel locomotives to American Locomotive Co., New York.

Elgin, Joliet & Eastern, seven diesel locomotives, five to General Electric Co., Schenectady, N. Y., two American Locomotive Co., New York.

Wire

Wire Prices, Page 95

Pittsburgh — Automotive buying is irregular in wire products and other consumers confine buying to replacing current withdrawals. In many instances stocks have been allowed to fall slightly farther than usual. Inquiries for barbed wire for export have been numerous, but one 8000-ton inquiry for France is understood to have been taken by Czechoslovakia at a lower price than domestic producers were willing to quote.

Cleveland—Wire and wire products specifications continue seasonally light. Sellers are suffering from lack of any considerable tonnage from automotive sources and although farm requirements and miscellaneous consumers are taking a good volume for this period.

Chicago — Wire bookings show a small gain since a month ago but quiet in automotive demand still is restricting business. Producers have only moderate backlogs and can make shipment within a few weeks on most products. Manufacturers' wire demand is believed to have passed the low point of the summer and better activity is looked for in merchant wire products, due to continued favorable situation in farm crops and prices.

Boston—Wire buying is not ma-

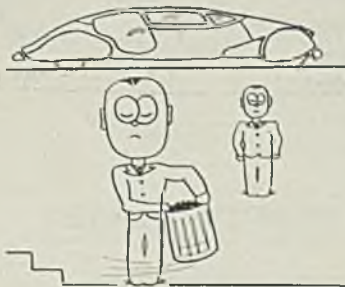
Behind the Scenes with STEEL

Knowzall

LONG have we hooted and howled about how our suave and imperturbable Readers' Service department knows all the answers. One of our gentile readers recently took us at our word or better, and wrote in to ask if we could tell him where to buy or otherwise obtain a warm and shiny peanut and coffee roaster. Promptly was the request referred to our vice-president in charge of roasting, toasting and heat waves. That honorable gentleman took time off from roasting us to find an elegant appearing machine complete with whistle, bells and robust Italian accent. All things, he says condescendingly, are possible for the glory of the Department. We accordingly asked him to find us words to rhyme with orange and Hamtramck. Nothing has been heard from him since.

Such Truck

HOT flash lightning the information that the Minneapolis garbage collection department has gone gaga over a new fleet of



streamline garbage trucks with all accoutrements for the comfort and convenience of the slingers. All-steel rolltop covers, leather upholstery, a shaking arrangement to bounce garbage up to one end, balloon tires, etc., making the collectors' life sans smell, sans flies, sans rough riding and sans splashing.

Lawnicurist

VICE President in charge of English developments tells us his henchmen have uncovered a new

thing over there. Seems that since power lawnmowers have become common in carving the lawns of the palaces, in Hyde Park and under the eaves of the old baronial homestead at Tillinghast-on-the-Thames, the M.P.'s. have recognized the danger imminent in the way of scaring horses and children. One might even go on a rampage and clip the cobblestones of Piccadilly Circus. So the legal fathers and state heads are now considering a bill to license all such devices. In the event it is successfully accomplished, according to our v.p.i.c.o.e.d., nothing less will serve than proclaiming George VI, with appropriate ceremony, public Lawncurist No. 1 and presenting him with the first license.

Paint

ABSURDITY of union activities is always good for a chuckle or two. Strangely quiet is the labor situation in iron and steel, so this week's activity along that line comes from the painters. In Cleveland recently the head of the local painters' union, an A. F. L. affiliate, made the announcement that hereafter no permits will be issued for a Cleveland-er to paint his own house. It had been the practice of the union to issue permits to householders to enable them to paint their own houses without fear of the union smearing them with tar or black paint. Now, according to the painters, recovery has progressed far enough so that the people can afford to hire painters.

New Faces Dept.

ILLUMINATING STEEL'S masthead now is the name of B. C. Snell, newly appointed space shagger in the eastern section out of New York. Our Inquisitive Cameraman tried to candidize his handsome pan for introduction on this page but with true modesty he hid behind a blank advertising contract and all our I. C. found on his negative was a bunch of wavy black hair and a dotted line. Being a surrealist at heart, he moaned aloud when we turned thumbs down on printing it here.

—SHIRDLU

terially changed, holding to about the tonnage of recent weeks. Demand is well spread as to miscellaneous products, usually for prompt delivery. Little fourth quarter business has been placed.

New York — While slight and somewhat spotty, wire demand has improved. Manufacturers' wire specifications are well sustained and some specialties are reviving. No gains of note have been made by spring wire and cable and rope are moving rather slowly. While a few mills have improved their position on rod deliveries, this situation is not general, others being pressed to furnish some specifications.

Birmingham — Following a week of increased buying in wire, mills report a slackening during the past week. Fall demand, however, is expected to exert its influence by the end of the month, by which time most backlogs probably will be off the books.

Shapes

Structural Shape Prices, Page 94

New York—New bridge tonnage, 3800 tons for the upper deck, Henry Hudson span, and southerly section, Flushing river structure, New York, has been bid, and will be placed shortly. Piling inquiry is much heavier with 4600 tons for the Beach Channel drive project, Queens, N. Y., outstanding. German piling was offered the contractor at \$7 a ton under the domestic price, but political pressure is expected to operate against placing such a large tonnage with foreign mills, it being a public works project.

Boston—Structural steel contracts for bridges are heavier, approximately 1000 tons, including piling, having been placed, mostly Vermont and Connecticut state structures. Plans are being drawn for the Calvin Coolidge Memorial bridge, Northampton, Mass., taking several thousand tons. With more fabricating shops in the Boston district operating, additional small tonnages have

Shape Awards Compared

	Tons
Week ended Aug. 14	23,454
Week ended Aug. 7	13,213
Week ended July 31	12,412
This week, 1936	22,628
Weekly average, 1936	16,332
Weekly average, 1937	25,869
Weekly average, July	23,384
Total to date, 1936	775,896
Total to date, 1937	853,701

been released, such work having been delayed by labor troubles.

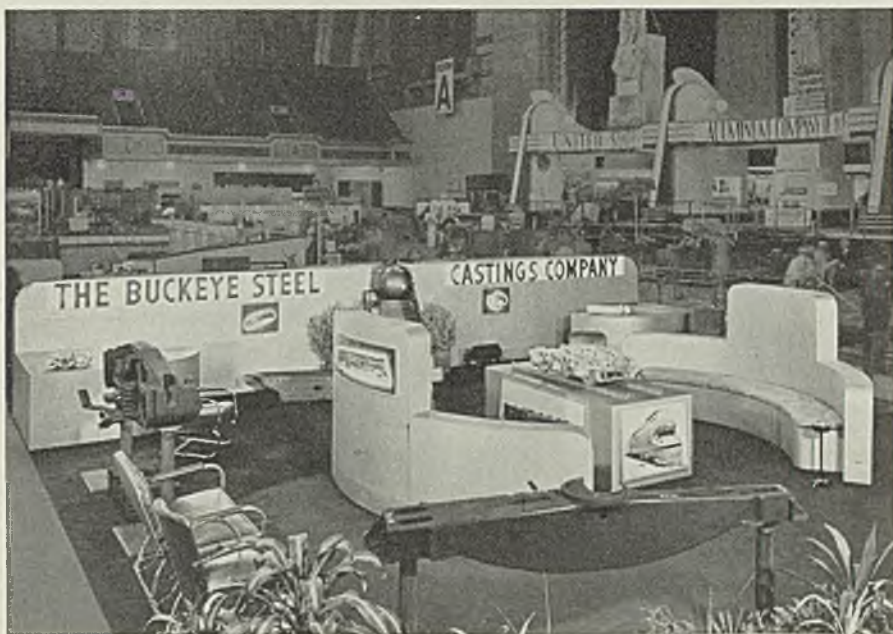
Pittsburgh—Inquiry is headlined by 1200 tons for open hearths for International Harvester Co., South Chicago, and 1200 tons for buildings for Borg-Warner Corp., Rockford, Ill. Large awards continue scarce, although the volume of jobs under 1000 tons has been well maintained. Public bridge work is quiet.

Philadelphia—Bethlehem Steel Co. was awarded 1690 tons structurals for new Bendix Aviation Corp. build-

ings at Teterboro, N. J. Bids are in for 5000 tons, Ternstedt plant of General Motors Corp., at Trenton, N. J., award expected soon. Total tonnage before the trade is relatively small and fabricated shapes may be had within four weeks in most instances. Considerable state work is ahead but still is slow in coming out.

Cleveland—Structural shape buying is sluggish with no large awards or inquiries. Most new projects involve small lots. These projects are fairly numerous but are insuf-

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CLEVELAND OHIO

ficant to bolster total tonnage. Mill backlogs are being reduced and deliveries improved.

Chicago — Structural demand is slow and inquiries are principally in small lots. Mills are able to give fairly prompt shipment on plain material and backlogs of fabricators also have been reduced the past few weeks.

Baltimore—Considerable small work is active. Only sizable job scheduled to come up soon involves 400 tons for construction at the municipal airport. Following adjustment of labor difficulties, which for past several weeks have restricted operations to around 30 per cent, fabricating shops are more active. While adjustments in compensation were made open shop is generally observed.

San Francisco—A slight improvement is noted in demand for structural shapes and pending business exceeds 11,000 tons. Largest pending project, bids on which have just been opened, calls for from 1500 to 8000 tons of shapes and sheet piling for a drydock at Mare Island, the tonnage depending upon the specifications upon which the contract is awarded.

Seattle—Bids were opened Aug. 6

and 13 respectively for trash racks, gates, stoplogs and other equipment for the Bonneville dam involving 385 and 600 tons respectively. Awards are pending, as are 400 tons in Seattle's Ruby dam. Bids have been called at Bonneville Sept. 2 for two gantry cranes, lifting beams and three loading skips.

Shape Contracts Placed

8875 tons, annex building 3, government printing office, Washington, to American Bridge Co., Pittsburgh; Great Lakes Construction Co., Chicago, general contractor; bids July 16.

1690 tons, manufacturing buildings, Bendix Aviation Corp., Teterboro, N. J., to Bethlehem Steel Co., Bethlehem, Pa., through Turner Construction Co., New York.

860 tons, Gansevoort meat market for Cudahy Packing Co., New York, through George F. Discoll Co., contractor, 550 Union street, Brooklyn, N. Y., to Post & McCord, New York.

740 tons, addition, Douglas Aircraft Co., Santa Monica, Calif., to Western Pipe & Steel Co., Los Angeles.

700 tons, buildings, Creedmoor hospital, Long Island, N. Y., to Bethlehem Steel Co., Bethlehem, Pa., through Turner Construction Co., New York.

610 tons, addition, boiler house, Evansville, Ind., to Milwaukee Bridge Co., Milwaukee.

590 tons, including 319 tons steel bearing piles, grade crossing over New York, New Haven & Hartford railroad,

Newington Junction, Conn., to American Bridge Co., Pittsburgh; Arute Bros. Inc., New Britain, Conn., general contractor, bids Aug. 2, J. A. Macdonald, highway commissioner, Hartford, Conn., \$206,190.44.

560 tons, dormitory, Pennsylvania State college, State College, Pa., to Anthracite Bridge Co., Scranton, Pa.

540 tons, material for open hearth furnaces, Rouge plant, Dearborn, Mich., for Ford Motor Co., to Pennsylvania Engineering Co., New Castle, Pa.

475 tons, addition, public school 140, New York, to Lehigh Structural Steel Co., Allentown, Pa.; bids Aug. 6 on steel work direct, fabricating and erecting.

471 tons, Lake Britton bridge, Shasta county, California, to Moore Drydock Co., Oakland, Calif.

450 tons, highway bridges Nos. 1 and 2, RC-3896, Port Chester, N. Y., to Ingalls Iron Works, Birmingham, Ala.

450 tons, Parkside housing project H-1205, Detroit, to Joseph T. Ryerson & Son Inc., Chicago.

450 tons, warehouse, for Bosworth Building Corp., Chicago, to Wendnagel & Co., Chicago.

435 tons, bridge, Blue river, Beatrice, Neb., to American Bridge Co., Pittsburgh.

340 tons, garage at Tulsa, Okla., to Paterson Steel & Iron Co., Tulsa, Okla.

325 tons, state bridge, Shetucket river, Norwich, Conn., to Harris Structural Steel Co., New York; M. A. Gammino Construction Co., Providence, R. I., general contractor, bids July 6, J. A. Macdonald, state highway commissioner, Hartford.

325 tons, roundhouse, Pennsylvania railroad, Harrisburg, Pa., to Fort Pitt Bridge Works, Pittsburgh.

315 tons, sheet piling, sewer project, Buffalo, N. Y., to Bethlehem Steel Co., Bethlehem, Pa.

300 tons or more, state span, Yamhill county, Oreg., to unnamed interest; Mountain States Construction Co., Portland, general contractor.

300 tons, highway bridge in Mercer county, Mo. to St. Joseph Structural Steel Co., St. Joseph, Mo.

300 tons, telephone building, North Hollywood, Calif., to Pacific Iron & Steel Co., Los Angeles.

280 tons, building 9, Hoover Co., North Canton, O., to Burger Iron Co., Akron, O.

275 tons, addition, public school 222, Brooklyn, N. Y., to Harris Structural Steel Co., New York; bids Aug. 6 on steel work direct, fabricating and erecting.

265 tons, bridge, East Avenue, Erie, Pa., to Fort Pitt Bridge Works, Pittsburgh.

255 tons, highway bridge, Deans, N. J., to Phoenix Bridge Co.

235 tons, bridge 59-FA-714-A, Buchanan county, Missouri, to St. Joseph Structural Steel Co., St. Joseph, Mo.

175 tons, buckstays, Ford Motor Co., Detroit, to Babcock & Wilcox Co., Barberton, O.

170 tons, state highway bridge and paving, Stockbridge, Vt., to Bethlehem Steel Co., Bethlehem, Pa.; E. H. Lewis, Andover, Mass., general contractor, \$178,894.20; bids July 16; Albany Steel & Iron Co., Albany, N. Y., awarded 45 tons reinforcing steel.

168 tons, 153-foot span deck truss bridge with two I-beam approach spans, 69 feet each, Dummerston-Newfane, Vt., to American Bridge Co., Pittsburgh; M. J. Burrington Jr., Bennington, Vt., general contractor; Joseph T. Ryerson & Son Inc., Boston, awarded bars.

165 tons, highway project FA 158, Sec. 1-C, Pike county, Illinois, to A. C. Woods & Co., Rockford, Ill.

160 tons, four transmission towers, Chicamaugua dam, Tennessee valley authority, Knoxville, Tenn., to Nashville Bridge Co., Nashville, Tenn.

150 tons, building, Providence hospital,

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WELDIT MODEL W
Automatic WELDING TORCH

Thumb lever in handle controls welding flame. Release of thumb reduces flame to pilot size. No re-lighting or re-adjusting of flame necessary between welds. Saves 25% to 50% gas alone. Weight 13 oz. Length 14½ inches. Tip sizes 3 thru 8.



WELDIT MODEL A-20
Automatic WELDING TORCH

Has automatic shut-off (gas saving) feature for intermittent welding work or instantly adaptable to continuous welding job by simply sliding thumb lever into retaining or locking slot. Weight 1 lb. 10 oz. Length 18 inches. Tip sizes 2 thru 12.



WELDIT MODEL "E"
GASAVER

Hanging torch on Gasaver hook, between welds, automatically shuts off intake lines, saves gas. Lifting torch off hook and passing across pilot light instantly produces full welding flame, no re-adjusting necessary.

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PLANT

—The Market Week—

Columbia, S. C., to Southern Engineering Co., Charlotte, N. C.; South-eastern Construction Co., Charlotte, general contractor, Easterby & Mumaw Co., Charlotte, awarded 70 tons reinforcing bars.

140 tons, highway bridge in Tulsa county, Okla., Virginia Bridge & Iron Co., Roanoke, Va.

130 tons, bridge over Delaware, Lackawanna & Western railroad, Scranton, Pa., to Pine Iron Works Co., Pine Forge, Pa.

130 tons, addition, service building, Detroit, to R. C. Mahon Co., Detroit.

125 tons, cotton mill building, Walpole, Mass., plant, Kendall Mills Co., to Providence Steel & Iron Co., Providence R. I.; O. D. Purington Co. Inc., Providence, general contractor.

125 tons, county court house, Belmont, N. Y., to F. L. Heughes & Co. Inc., Rochester, N. Y.

105 tons, garage and service station, Tulsa, Okla., to Patterson Steel Co., Tulsa, Okla.

100 tons, state bridge, Machias, Me., to American Bridge Co., Pittsborough; H. L. Goodrich, Palmyra, Me., general contractor; reinforcing to Bancroft & Martin Rolling Mills Co., Portland, Me.

100 tons, paint and wash shop, General Motors Corp., South Gate, Calif., to Truscon Steel Co., Los Angeles.

100 tons, sub-station No. 6, subway, Philadelphia, to Belmont Iron Works, Eddystone, Pa.

Unstated tonnage, fabricated steel, U. S. engineer, Vicksburg, Miss., to Treadwell Construction Co., Midland, Pa., \$17,995 delivered; bids July 2, cir. 317.

Shape Contracts Pending

4350 tons, steel bearing piles, for municipal airport No. 2, Long Island City, N. Y.

2500 tons, upper deck, Henry Hudson bridge, Manhattan, N. Y., National Excavation Corp., New York, low; bids Aug. 12, Henry Hudson Parkway authority, New York, \$743,272.56.

1350 tons, superstructure, south unit, Flushing river bridge, New York; National Excavation Corp., New York, low, \$418,221.10; bids Aug. 10, department of plants and structures, New York.

1200 tons, material for open hearth furnaces, for International Harvester Co., South Chicago, Ill.

1200 tons, buildings, for Borg-Warner Corp., Rockford, Ill.

1050 tons, including 406 tons, structural steel; 555 tons, steel bearing piles, and 99 tons, steel piling, grade crossing, Hartford-Williamantic Turnpike-Route U. S. 6-A, Windham, Conn.; M. A. Gammno Construction Co., Providence, R. I. general contractor; bids Aug. 2, J. A. Macdonald, state highway commissioner, Hartford, \$248,527.31.

600 tons, gates stoplogs, etc., for Bonneville dam; bids in.

600 tons, building for Caterpillar Tractor Co., Peoria, Ill.

550 tons, Third National bank building, Nashville, Tenn.

520 tons, building, for Knaust Bros., Cox-sackie, N. Y.

450 tons, spillway gates, Polson, Mont., for Rocky Mountain Power Co.

420 tons, bridge over Bladenburg road, Washington, for District of Columbia.

400 tons, Ruby dam project, Seattle; General Construction Co., Seattle, general contractor.

390 tons, bridge, Alexander avenue, East 134th and 135th streets, Bronx, New York; bids Aug. 17.

385 tons, trash racks, etc., Bonneville dam; bids in.

350 tons, state highway bridge RC-3898, Washington county, New York.

335 tons for Missouri highway works; 220 tons Harris county; 115 tons Gentry county.

330 tons, reconstruction, Slades Ferry bridge, as single deck structure with bascule lift span, Fall River-Somerset, Mass.; Coleman Bros. Corp., Boston, low, bids Aug. 11, state department public works, Boston, G. H. Delano, chief engineer.

300 tons, shapes and bars, post office and court house, Paducah, Ky.; Algernon Blair, Montgomery, Ala., low, bids Aug. 10.

300 tons, Will Rogers high school, Tulsa, Okla.

275 tons, post office at Muskogee, Okla.

250 tons, post office, West New York, N. J.; bids Sept. 1.

250 tons, bridge, Flint, Mich., for Genesee county, Michigan.

250 tons, state highway bridge AW-4009-A, Eads, Colo.

245 tons, I-beams, channels, tees and

angles, Portsmouth, N. H., navy yard; bids Sept. 10, bureau of supplies and accounts, navy department, Washington, schedule 1429.

240 tons, state highway bridge, Superior, Nebr.

229 tons, including 77 tons of piling, bridge in Kiowa county, Colorado; project 4009-A; bids opened.

220 tons, factory building, for Tropic Aire Inc., Chicago.

200 tons, state highway bridge PWA-54-C, Buena Vista, Colo.

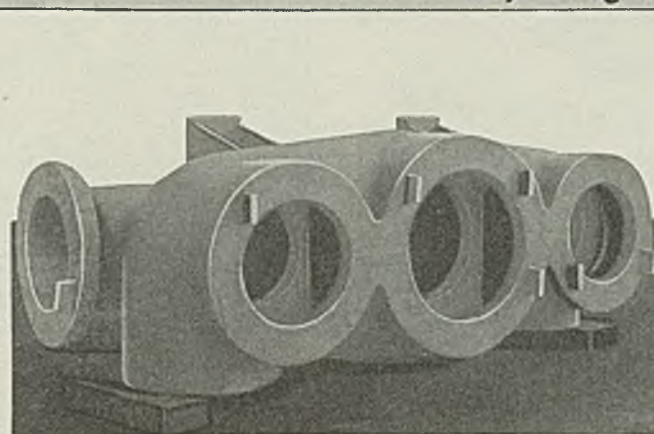
200 tons, bridge, Elizabeth, N. J., for Central railroad; bids Aug. 20.

188 tons, bridge in Fremont county, Colorado; bids opened.

185 tons, alteration to Union avenue bridge, Portland, Oreg.; bids opened.

175 tons, I-beam bridge, Perry and Center townships, Berks county, Pennsyl-

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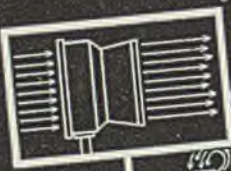


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vania; bids to state highway department, Harrisburg, Pa., Aug. 20. Also 6210 square feet steel beam bridge flooring.
170 tons, bridge in Chafee county, Colorado, project 54-C; bids opened.
130 tons, Washington state road projects; bids in.
127 tons, bridges in King and Whitman county, Washington; bids opened.
113 tons, two bridges, Royalton and Richmond, Vt.; bids Aug. 20, H. E. Sargent, commissioner of highways, Montpelier, Vt.
110 tons, state bridge, North Manchester, Ind.
100 tons, state bridge, New Canton, Ill. Unstated, gantry cranes, loading skips, etc.; bids at Bonneville dam, Sept. 2.

Reinforcing

Reinforcing Bar Prices, Page 95

Pittsburgh—Inquiries include two large Detroit jobs, aggregating 5700 tons for the Baby creek sewer and sedimentation tanks, and a good volume of private industrial work. Export inquiry for plain round reinforcing bars is good, due to the differential in price with merchant bars alongside ship. Domestic prices are demoralized in certain sections of the country.

Cleveland — Requirements continue small and business spotty, with no major awards or inquiries during the past week. Mill stocks are ample and immediate deliveries are offered.

Chicago—New business is principally in small individual lots. Such projects are more numerous and bulk fairly large in the aggregate. Pending business is rather moderate and includes only small lots for road and bridge building. Prices still are subject to occasional concessions on attractive jobs.

Boston—With small lot buying active, reinforcing steel contracts involve several hundred tons exclusive of nearly 1000 tons of highway steel for Connecticut. Strong pressure for concessions was applied for the latter tonnage, part of which closes this week.

New York—Reinforcing tonnage placed is lower. Bulk of the larger projects have been awarded and new

inquiry is coming out slowly. About 1500 tons pends for New York city sewers. For highways approximately 650 tons of mesh has been bought, but road contracts now being figured take less mesh. Contractor buyers frequently shop for prices, offering tonnage at a low figure.

Philadelphia—New reinforcing bar business is limited to small repair and alteration jobs involving only a small tonnage. Some improvement is expected next month. Meanwhile fabricating plants are not too well occupied.

San Francisco—Demand for reinforcing bars is holding up fairly well despite the fact mills have caught up on backlogs. Some large lots have been booked lately. To date this year 57,520 tons have been booked, compared with 158,964 tons for the same period last year.

Seattle—Local mills have sharply curtailed operating schedules in line with decline in orders. Construction projects are being postponed because of greatly increased costs and public works are fewer. No new jobs of importance have developed but some tonnages are pending, including 750 tons for Washington state projects, bids in. Tenders were opened this week for 558 tons for the Heart Mountain project, Wyo. Unstated interests have taken 220 tons for the Roza, Wash., reclamation project, and unstated tonnages for two state crossings in Oregon.

Reinforcing Steel Awards

3000 tons, experimental model basin, bureau of yards and docks, navy department, Carderock, Md., to Bethlehem Steel Co., Bethlehem, Pa., through Turner Construction Co., New York.
1780 tons, Sunset reservoir, San Francisco, to Ceco Steel Products Co., San Francisco.
1000 tons, roundhouse for Pennsylvania railroad at Harrisburg, Pa., divided among American Steel Engineering Co., Philadelphia; Concrete Steel Co., New York; Taylor Davis Inc., Philadelphia; and Bethlehem Steel Co., Bethlehem, Pa.
1000 tons, Hiram Walker distillery, Peoria, Ill., to Bethlehem Steel Co., Bethlehem, Pa.
800 tons, Will Rogers high school, Tulsa, Okla., to Sheffield Steel Corp., Kansas City, Mo.
700 tons, specification R-972, Long Beach, Calif., to Truscon Steel Co., Los Angeles. Judson Steel Corp., Emeryville, Calif., will furnish the bars.
667 tons, bureau of reclamation, Invt. 42,717-A, Phoenix, Ariz., to Colorado Fuel & Iron Co., Pueblo, Colo.
650 tons, plant, American Smelting & Refining Co., Whiting, Ind., to Joseph T. Ryerson & Son Inc., Chicago.
550 tons, building, school of architecture, Massachusetts Institute of Technology, Cambridge, Mass., to Concrete Steel Co., New York; Stone & Webster Inc., Boston, general contractor.
500 tons, mess hall, galley and barracks, naval operating base, San Diego, Calif., to Soule Steel Co., Los Angeles.
475 tons, bureau of reclamation, Invt. A-42,256-A, Calexico, Calif., to Columbia Steel Co., San Francisco.
375 tons, underpass, Erie, Pa., to Truscon

Concrete Awards Compared

	Tons
Week Ended Aug. 14	14,116
Week ended Aug. 7	7,310
Week ended July 31	7,409
This week, 1936	8,316
Weekly average, 1936	6,005
Weekly average, 1937	6,115
Weekly average, July	6,919
Total to date, 1936	235,173
Total to date, 1937	201,799

Steel Co., Youngstown, O.
 250 tons, bridge and approaches, Thomas county, Georgia, to Virginia Steel Co., Birmingham, Ala.; W. F. Scott & Co., Thomasville, Ga., general contractor.
 250 tons, hospital, Mt. Pleasant, Iowa, to Sheffield Steel Corp., Kansas City, Mo.
 250 tons, viaduct, E. 103rd street, Chicago, to Inland Steel Co., Chicago, through O. J. Dean Co.
 220 tons, Roza reclamation project, Washington, to unstated interests.
 200 tons, mesh, highway, RC 3899, Erie county, New York, to Bethlehem Steel Co., Bethlehem, Pa.; Emil Corullo, Depew, N. Y., general contractor, bids Aug. 3.
 195 tons, Huntington avenue underpass, Boston, to Concrete Steel Co., New York.
 160 tons, overhead, Randolph avenue, Elkins, W. Va., to Bethlehem Steel Co., Bethlehem, Pa.
 155 tons, bridge, Brook avenue, East-134th and 135th street, New York, to Carroll-McCreary & Co., Brooklyn.
 114 tons, state highway bridge, Annadale, N. J., to Bethlehem Steel Co., Bethlehem, Pa., through Taylor-Davis Inc.
 110 tons, bridge, Shetucket river, Norwich, Conn., to Concrete Steel Co., New York; M. A. Gammno Construction Co., Providence, R. I., general contractor.
 108 tons, Nichols canyon debris basin, Los Angeles, to Truscon Steel Co., Los Angeles.
 107 tons, bureau of reclamation, Invit. A-22,048-A, Parco, Wyo., to Colorado Fuel & Iron Co., Pueblo, Colo.
 100 tons or more, Union avenue state bridge, Portland, Oreg., to unnamed interest; Gilpin Construction Co., Portland, general contractor.
 100 tons or more, state crossing Washington county, Oregon, to unnamed interest; Harold Blake, Portland, general contractor.
 100 tons or more, bureau of roads bridge, Idaho Falls, Idaho, to unnamed interest; W. C. Burns, general contractor.
 100 tons, trash rack, San Gabriel dam No. 1, Los Angeles, to Truscon Steel Co., Los Angeles.
 100 tons, post office, Provo, Utah, to Truscon Steel Co., Denver.

Reinforcing Steel Pending

6576 tons, drainage structures, United States engineer's office, Los Angeles; Soule Steel Co., Los Angeles, apparently low bidder.
 3200 tons, section No. 3, Baby creek sewer, Detroit.
 1650 tons, viaduct, San Francisco terminal, San Francisco-Oakland bridge; bids Aug. 18.
 800 tons, bridge at Soledad, Monterey county, California; bids Aug. 25.
 486 tons, 441 tons highway mesh, and 45 tons, bars; 19, 01.2.12-foot section, Merritt parkway, Greenwich, Conn.; A. I. Savin Construction Co., East Hartford, Conn., general contractor; bids Aug. 2, J. A. Macdonald, highway commissioner, Hartford, Conn., \$309,326.13.
 430 tons, grade elimination, Russell, Ky., jointly by Chesapeake & Ohio railroad and Kentucky state highway commission; bids opened Aug. 13 by highway commission.
 400 tons, Seattle's Ruby dam project; General Construction Co., Seattle, J. F. Shea and Columbia Construction Co., general contractors.
 400 tons, dock, Pennsylvania railroad, Sandusky, O.
 400 tons, building, Frigidalre division, General Motors Corp., Moraine City, O.
 330 tons, highway project, Merritt parkway, near Greenwich, Conn.; bids probably Aug. 16.
 283 tons, wire mesh, warming up ap-

ron, Hickman Field, T. H.; bids Aug. 25.
 225 tons, building, National Cash Register Co., Cincinnati, O.
 150 tons, Veterans hospital, Reno, Nev.; bids Aug. 31.
 133 tons, bars and mesh, bridge and roadway, Alexander avenue, East 134th and 135th streets, Bronx, New York; bids Aug. 17.
 100 tons, breakwater gates and sewage regulation chambers, Baby creek sewer, Detroit.

Most casting shops have low inventories and are asking prompt deliveries, much being shipped immediately. Some foundries have started production of 1938 model automotive castings. The rising scrap market also is giving impetus to pig iron demand, announcement of fourth quarter prices before the first of the month is improbable.

Chicago—While most pig iron users previously had covered third quarter needs, new business has been stimulated by possibility of a fourth quarter advance. Producers defer announcement of this but the feeling is growing that unchanged prices will be named Sept. 1. Shipments are slightly ahead of the July rate and consumption is gaining gradually.

Boston—At mid-quarter, small lot buying of pig iron for prompt delivery improves slowly, some buyers rounding out stocks for current quarter needs. Considerable iron is reported moving through Beacon, N. Y., for this district. Foundry melt continues higher than expected.

New York—Pig iron buying continues listless, both domestic and foreign. Speculation continues as to probable prices for fourth quarter. Preponderance of trade opinion is that there will be no advance at the

Pig Iron

Pig Iron Prices, Page 96

Pittsburgh—Outside of the question of fourth-quarter prices, the pig iron market lacks highlights. Shipments are well maintained. Spot domestic demand is light and export inquiries are lacking. Some foreign nibbles are understood to have been made recently in the East, but other districts are in a much better position to capture this business at present. So far, the rise in scrap prices has resulted in only a slight trend toward increased use of pig iron, little covering against a possible price increase has been noted.

Cleveland—Pig iron buying became more active last week as foundries increased operating schedules.

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time books are opened, but that there may be an increase a little later.

Books generally are opened about a month before a new quarter begins, in this case around Sept. 1. Those who do not look for change believe current demand would still be rather sluggish and that sufficient opportunity would not have been provided to accurately gage prospects for the remainder of the year, particularly as they apply to pig iron. Under such circumstances, producers might hesitate in announcing an advance.

Philadelphia—New business is confined mostly to lots of two to three cars although some consumers are covering on part of fourth quarter requirements. Eastern blast furnace operators favor at least \$1 advance for fourth quarter but it is understood steelmaking interests may hold back. The foundry melt is still holding up well.

Buffalo—A merchant furnace which has been down for relining is expected to be restored this week. Shipments are improving and it is felt the July slump has been largely overcome. Considerable iron is moving by barge canal after a quiet period.

Cincinnati—Melters appear well covered for third quarter, creating a dull market for spot shipments. So far there has been only slight speculative buying as protection against a possible fourth quarter advance.

St. Louis—Increasing talk of an advance in pig iron prices for fourth quarter delivery has been reflected by a noticeable expansion in in-

quiries and actual buying. Blast furnace interests, despite recent heavy production, possess small available supplies, and are not urgently seeking business. For the most part users are well covered for third quarter requirements, and some have iron to last well into the final quarter. However, with the outlook for fall business very promising in this area, it may be found that needs have been underestimated.

Birmingham—Pig iron continues strong, with production at the highest mark since 1929, and the year likely to set a new record. Some iron is being sold on contract, and spot buying is quite active.

Toronto, Ont.—Demand for merchant pig iron showed some improvement during the past week with awards totaling approximately 1200 tons. Melters are interested in spot needs and the increased demand was caused by low stocks of melters. Foundry iron is the most active but there also is a fair demand for malleable in lots of 50 to 100 tons. Scarcity of scrap continues stimulate pig iron sales.

lieved the market has now reached its August peak and is unlikely to show any startling change during the rest of this month. Heavy breakable cast is up and iron car wheels have advanced \$1 a ton.

Cleveland—Buying of scrap is improving in small lots of one or a few carloads. Large consumers have shown little interest. Shipments or orders are moving freely and some tonnage is going to other centers where prices are higher. Prices are stronger.

Chicago—Scrap is quiet in consumer buying but prices are fairly steady, with No. 1 heavy melting steel nominally unchanged at \$19.50 to \$20. Prices bid by dealers and brokers for this grade are off 50 cents or more from figures two weeks ago. Scrap is coming out in heavier volume but so far has been insufficient to be reflected markedly in prices.

Boston—While strong, there have been fewer advances in scrap prices. Several cast grades are higher, also bundled skeleton and No. 1 heavy melting steel for Worcester, Mass., delivery, the consumer in that district having recently purchased more heavily. Some grades are coming out less freely despite strong bids.

New York—Leading export grades for dock delivery are up 50 cents to \$1, brokers paying \$17 for No. 1 heavy melting steel. Stove plate and No. 2 cast are \$1 higher. Advances for domestic shipment are also numerous, including borings and turnings, machinery cast and stove plate.

Philadelphia—Additional anticipated mill buying has failed to develop, apparently a reflection of current quiet in steel demand and quotations as a result hold at approximately the level of last week. The market shows no signs of weakness as operations are expected to hold up fairly well until the fall increase develops. Equipments are moving to consumers without interruption. However, the Swedeland, Pa., interest has shut down shipments on blast furnace material. Cast scrap continues strong with small sales of foundry cast noted at \$22, somewhat above the going market.

Buffalo—Prices on most scrap grades are firmer. Recent closing of the New York Central list by direct sale of No. 1 heavy melting steel to a consumer at \$22.50 has set a new mark. This grade is quoted now at \$21 to \$21.50. Sales are mostly in small lots.

Detroit—A breathing spell in the active scrap market has provided opportunity to clear the situation although the outlook is for still further movement upward in prices, which are holding firmly.

Youngstown, O.—An important

Scrap

Scrap Prices, Page 98

Pittsburgh—Advances in railroad heavy melting, specialties and scrap rails were the features of the market in this district last week. No. 1 heavy melting held steady at \$21.50 to \$22. In many quarters it is be-



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steelmaker here is reported to have divided orders this week for 30,000 to 35,000 tons of light and heavy scrap.

Cincinnati—Scrap is stronger on buying for mill interests, dealers advancing offers 50 cents on all grades. Higher prices have brought out considerable material, which is absorbed without difficulty.

St. Louis—Prices of iron and steel scrap continue to rise, the upturn affecting practically all grades, from 50 cents to \$2 per ton, with the most sensational advances on railroad specialties, all of which reached new highs on the present upward movement.

Birmingham — Continued demand for scrap is noticed with one large consumer reporting a scarcity in several wanted specifications. An advance of \$1 a ton heavy melting steel was reported during the week. All other prices remained unchanged. Continued heavy export movement is in evidence.

Toronto, Ont.—New business is steady in iron and steel scrap. Steel mills are taking delivery of heavy melting steel and turnings and demand for these grades is active. Automobile scrap, however, is increasing in supply despite fairly large shipments to the United States recently. Foundry interests are in the market for machinery cast and demand is in excess of supply in the Toronto area.

Warehouse

Warehouse Prices, Page 97

Pittsburgh—The \$6 per ton reduction in floor plate prices, put into effect by mills recently, has been reflected in a corresponding decrease in warehouse prices. Concerning galvanized sheets for fourth quarter, warehouses here have taken no action yet. Meanwhile, warehouse business is described as "fairly satisfactory", but lighter than in the spring.

Cleveland—Demand for steel from warehouse is dull, unchanged during the past several weeks. More prompt deliveries by mills as backlogs are reduced influences jobbers' business. Operators are looking forward to normal or better upturn next month.

Chicago—Sales from local warehouses have not definitely reversed gradual downward trend in effect so far this quarter. Business holds well above the level of the corresponding period of recent years.

Boston—Reduction in floor plate prices in line with the recent \$6 drop in mill prices is expected shortly. Otherwise prices are firm and un-

changed. Buying is at about the July rate.

Philadelphia—Sales of steel from warehouse are tapering further as a seasonal effect and as a result of widespread strikes. Some interests find August the poorest month of the year.

Detroit—Demand for warehouse iron and steel products is steady showing no appreciable change from the last two months.

In line with mill reductions, floor plate has been reduced 30 cents per

hundred pounds, effective Aug. 9, making the new quotation 5.55c per pound. Otherwise prices are unchanged.

St. Louis—Warehouse sales show effects of hot weather and other seasonal influences, the volume showing a decline under the comparable period in July. But the total continues to exceed that during the same time a year ago.

Seattle—Business improved slightly this week, with a fair turnover. Sheets are probably in best demand.

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Steel In Europe

Foreign Steel Prices, Page 97

London—(By Radio)—Pig iron production in Great Britain in July was 729,300 tons, the largest monthly total since September, 1920, a gain of 30,000 tons over the June production. Active stacks numbered 126 in each month. Steel ingot production in July was 1,059,200 tons, a decline of 47,200 tons from the June output.

Steelworks in all districts have resumed after the vacation period. All producers of heavy steel are fully booked until the end of the year. New business is rather quiet and contracts are accepted only at prices ruling at time of delivery. Scottish trade is rather dull, as are exports of galvanized sheets. Domestic trade is active and the tin plate outlook is satisfactory.

The Continent reports export markets fairly active, Japan buying freely. French producers have been authorized to enforce an allround price increase.

London—(By Mail)—It is a well-known fact that a contributory cause of Germany's economic difficulties is insufficient raw materials, and it is obliged to rely on importations or manufacture of substitutes. As regards importations, Germany is strictly limited, owing to necessity

of securing foreign currencies to pay for those imports, and conditions are such that there is a shortage of such currencies in Germany.

Germany's requirements of iron ore have been increasing rapidly in the past two or three years. Steel output in 1933 was 7,690,000 tons and in 1934, 11,725,000 tons, without the Saar. In 1935 output increased to 16,184,000 tons, and further to 18,851,000 tons in 1936, including the Saar. From 1933 to 1936 iron ores from German mines increased from 2,592,000 tons to 6,384,000 tons, but imports increased during the same period from 4,571,000 tons to 18,469,000 tons. This last figure shows to what extent Germany has been drawing from foreign sources, particularly from Sweden and France.

It is for that reason that all supplies are now controlled by a company styled the Hermann Goering Reich Works for exploitation of ores and smelting, this company being controlled by the government.

This concern will supervise exploitation of all workable iron ore deposits in Germany. This will enable even the poorer mines to be worked under a disguised subsidy from the state, many such mines being uneconomic for exploitation by private enterprise. Imports will continue to be controlled also. Recently an arrangement has been made with France, on the occasion of the signing of a new commercial agreement, which provides for exchange of French iron ore against German coke. Arrangements also are reported to have been made with the

Franco administration in Spain.

All German iron and steel concerns must now obtain iron ore requirements exclusively from the new government-controlled organization.

Metallurgical Coke

Coke Prices, Page 95

Spot demand for coke continues light. In the Connellsville, Pa., beehive district about 3000 ovens are still operating, some pulling coke two or three days a week and few working the entire week. Blast furnace requirements in the Pittsburgh and Wheeling districts have been fairly steady.

GE Revises Cable Prices

General Electric Co., Schenectady, last week announced a general readjustment in its list prices on varnished cambric, rubber parkway, and shipboard cables. The new prices will go into effect at district offices on Aug. 30.

Nonferrous Metals

Nonferrous Metal Prices, Page 96

New York — Speculation abroad sent the nonferrous metal markets off on a strong bull movement last week, but it failed of support by domestic sellers and collapsed completely before the close of the week.

Copper — Foreign speculation drove export copper to above the 15-cent mark early in the week. Producers here, in the face of severe pressure for a rise, held fast to the 14.00c, Connecticut, price and the flurry died a'borning. Export metal was quoted at 14.20c at week's end.

Lead — Following the two \$5 rises of two weeks ago lead last week held firm and unchanged at 6.35c, East St. Louis, and 6.50c, New York.

Zinc — The \$5 a ton boost in prime western zinc instigated just before the opening of the week prevailed over the opposition of a single seller and the market moved to the 7.25c, East St. Louis level. Near the end of the week two leading sellers of zinc products raised prices on sheets, ribbon and boiler plate 25 cents per 100 pounds.

Tin — Persistent reports of drought in Malaya had the effect of strengthening Straits tin prices in the face of an otherwise easy metal market.

Tin Plate

Tin Plate Prices, Page 94



New York—Larger consumers of tin plate, while using a heavy quan-

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tity, apparently have enough on order at contract prices to run them into next year in some cases. Faced with a \$10 increase Oct. 1, when their present contracts expire, they have been buying in excess of current needs.

Iron Ore

Iron Ore Prices, Page 98

New York—Contracting of ore for next year, noted recently in chrome, has not as yet got under a full swing with respect to foreign iron and manganese ores, although there has been some buying. On manganese ore such buying as has appeared for next year has been confined principally to lower grade ores running around 45 per cent, it is said.

On high grade manganese ores, prices have been rising so swiftly that buyers have been holding back in anticipation of a possible reaction. Continued strong demand abroad and higher ocean freight rates do not lend much encouragement to this view; nevertheless, the larger consumers are well protected on contracts for the present. In fact, some have many months supply either on hand or under definite contract, so that if necessary they could hold off for some time.

A leading seller of North African low phosphorus iron ore opened books Aug. 13 for 1938 delivery at 20 cents f.a.s. seaboard, with buyers to pay in excess of a stated ocean rate should transportation be higher at time of delivery. No North African low phosphorus is available in any quarter for shipment over the remainder of this year, so far as can be learned. The market recently has been holding nominally at 17½ cents.

Cleveland—The Great Lakes bulk freighter known in shipping circles as HARVEY D. GOULDER last week was renamed the J. CLARE MILLER in honor of the vice president of the American Rolling Mill Co., Middletown, O. The carrier is operated by the Columbia Transportation Co., subsidiary of Oglebay, Norton & Co. Mr. Miller is in charge of raw materials for American Rolling Mill Co.

Equipment

Pittsburgh—Tennessee Valley authority has awarded to Carnegie-Illinois Steel Corp. a contract for equipment for two dams. Rails and accessory parts for spillway gates, and a gantry crane runway, will be supplied for the Gunterville dam at a cost of about \$43,300. Rails and

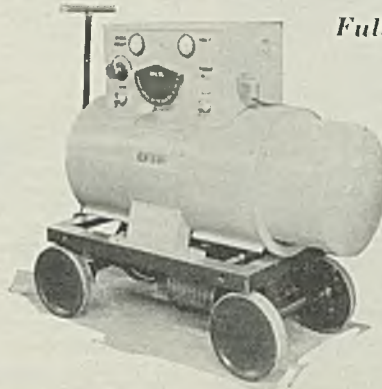
accessory parts for spillway gate guides, valued at about \$35,900, will be furnished for Chickamauga dam. The Johnstown plant will furnish the equipment.

Chicago—While seasonal influences still are reflected in demand for machine tools and some types of plant equipment, business is substantially ahead of recent years. Demand is well diversified and makes up in number of sales what is lacking in large individual lists.

Machine tool inquiries are fairly steady. Tool manufacturers are making inroads into backlogs and deliveries generally have been shortened.

Cleveland—Machine tool and equipment dealers are experiencing a fair and steady flow of business. Most orders are for one or two items. Action on larger jobs is delayed in some cases until vacation season closes. Steel mills are buying in fair quantity.

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Construction and Enterprise

Ohio

BEREA, O.—City is taking bids due noon Aug. 21 for improvements to municipal light and water plant. John Baesel is mayor, Frank Dorland is plant superintendent and William C. Kammerer & Associates, 710 Smythe building, Cleveland, are engineers.

BROOKVILLE, O.—Village is taking bids due 7 p. m., Aug. 20, for sewage disposal plant materials. E. P. Landis is mayor and Arthur E. Bauer, Mutual Home building, Dayton, is engineer.

BLOOMVILLE, O.—Village plans to construct waterworks system, to include pumphouse and elevated steel tank. Total cost is estimated at \$50,000. Engineer is Champe, Finkbelner & Associates, 1025 Nicholas building, Toledo.

COLUMBIANA, O.—Village council has authorized expenditure of \$12,000 for installation of iron removal or filtration plant at waterworks. S. Richard Orr is clerk.

COLUMBUS GROVE, O.—Village plans to expand its light and water plant if legislation is passed providing for issuance of revenue bonds. New equipment would be installed and cost would be about \$50,000. Roy N. McCullough is mayor and Earl Anderson is light plant superintendent. Engineer is Burns & McDonnell Engineering Co., 307 East Fourth street, Cincinnati.

DAYTON, O.—Hoban Brass Foundry Co. has started excavation for construction of a new plant on Patterson boulevard. John Hoban is manager.

FINDLAY, O.—City plans for extensions to sewage disposal plant have been approved by WPA and work will start in November. Estimated cost is \$143,036. Sherman Frost is city service director, and H. P. Jones & Co., Second National Bank building, Toledo, is engineer.

KENTON, O.—City plans to build a

water softening plant and to make other improvements to waterworks, and probably will ask bids soon. Cost is estimated at \$150,000. Willis C. Bopp is mayor. Carl J. Simon, Van Wert, O., is engineer.

MAGNOLIA, O.—United States engineer's office, J. D. Arthur Jr., lieutenant-colonel, Zanesville, probably will ask bids this week for furnishing and installing a motor-driven pumping unit, 5000-gallons-per-minute capacity, with motor, piping and accessories; and for two gasoline engine-driven pumping units, 11,000-gallons-per-minute capacity, with engine, drive gear, piping and accessories. Installation will be at Magnolia levee.

OXFORD, O.—State is considering installation of new equipment in power plant of Miami university, to include boiler and accessories. Total cost will be around \$46,000. State architect is J. P. Schooley, 705 State office building, Columbus, and engineer is Fosdick & Hilmer, Union Trust building, Cincinnati.

STEUBENVILLE, O.—City has retained H. P. Jones & Co., engineer, Second National Bank building, Toledo, to make sewerage survey and determine best location for proposed new sewage treatment plant. Eugene Boyd is service director.

TOLEDO, O.—Swift Tool & Stamping Co. has acquired building No. 38 of the Willys-Overland plant on Maple street. Swift's manufacturing capacity will be doubled.

UTICA, O.—Village plans to build sewage disposal plant and distribution system, to cost \$173,000. W. F. Babb is mayor and Jennings-Lawrence Co., 12 North Third street, Columbus, is engineer. Voters will pass on \$36,000 bond issue Aug. 31.

WEST JEFFERSON, O.—Village plans to build a water softening and iron removal plant costing \$25,000, with PWA

aid. H. G. Putnam is mayor, and Hoover & Montgomery, 8 East Long street, Columbus, are engineers.

WOOSTER, O.—Bond issue may be submitted to voters at November election, for financing construction of sewage treatment plant at Killbuck valley pumping station. Total cost will be \$165,000, city's share to be \$40,000. Engineer is H. P. Jones Co., Second National Bank building, Toledo.

Michigan

DETROIT—Lawrence Engineering & Mfg. Co., 1863 Union Guardian building, has been incorporated to manufacture automobile products. R. B. Lawrence is president.

DETROIT—Department of public works, city hall, is taking bids due Aug. 24 for two steam boilers, combined fuel oil and gas burners, and other equipment for installation at new Detroit sewage disposal plant.

FLINT, MICH.—Gulf Refining Co. will build a storage plant, for which general contract has been given to Karl B. Foster, Flint.

PONTIAC, MICH.—City is considering construction either of an addition to its present sewage disposal plant, or of an entirely new plant. Engineer is H. P. Jones Engineering Co., Second National Bank building, Toledo, O. W. P. Edmundson is city manager.

PONTIAC, MICH.—American Forging & Socket Co. manufacturer of automobile hardware, has started construction of plant additions, with Harlan S. Smith, Pontiac, as general contractor. W. S. Saunders is president. Total cost of expansion is estimated at \$150,000.

Illinois

ELGIN, ILL.—Elgin Softener Co., Chester McGill, president, manufacturer of water softening and purifying plants, plans to build a 1- and 2-story plant addition and to make improvements to present plant. George E. Morris, Sherwin building, is architect.

ROCKFORD, ILL.—Barber-Colman Co., Loomis street, manufacturer of milling cutters and various machinery and tools, will build a 4-story, 28 x 50-foot factory addition, and has given general contract to Security Building Co., Rockford.

Indiana

EVANSVILLE, IND.—Sunbeam Electrical Mfg Co., W. V. Stippler, manager, 225 West Morgan street, will take bids soon for construction of a 3-story, 54 x 165 and 115 x 145-foot factory to cost around \$250,000. E. C. Berendes, 121 Fourth street Northwest, is architect.

MUNCIE, IND.—Owens-Illinois Glass Co., Ohio building, Toledo, O., plans to improve and expand its plant at a cost of over \$40,000. A bond issue is probable.

Connecticut

DANBURY, CONN.—Danbury Industrial association, 161 Main street, plans to build an electrical manufacturing plant on Triangle street, to cost \$40,000 or more.

Pennsylvania

HARRISBURG, PA.—Pennsylvania railroad plans to spend approximately \$675,000 for various construction, including a pumping room and machine shop. McCloskey & Co., 1620 West Thompson street, Philadelphia, is general contractor.

PITTSBURGH—Tungstalloys Co. has been granted charter by state depart-

Oliver RIVETS

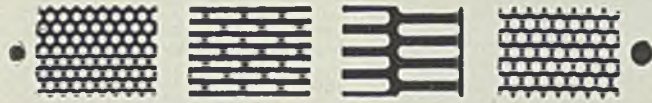
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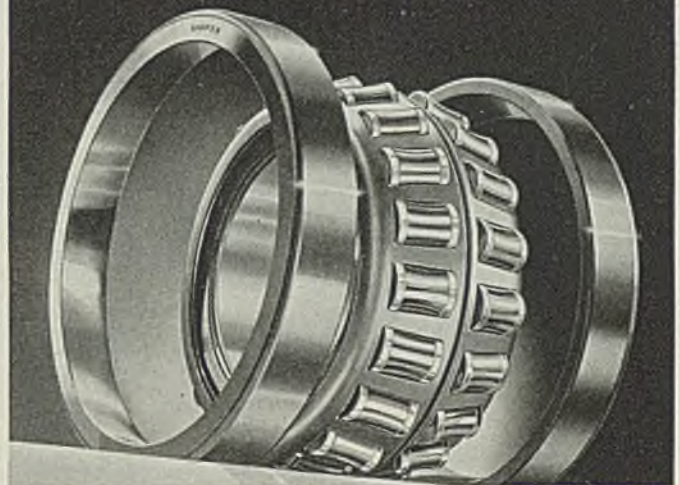
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ment, Harrisburg. Incorporators are Ellen K. Frey, Samuel Goldberg, and George F. Koehler.

PHILADELPHIA — Delta Equipment Co., dealer, 148 North Third street, is in the market for two boilers, 200 to 250 horsepower, and 300 to 350 horsepower.

TITUSVILLE, PA.—City plans to build incinerator plant, and will submit bond issue of \$26,000 to voters Nov. 2. J. E. Fulton is mayor.

New York

HORNELL, N. Y.—National Cylinder Gas Co. plans to make plant improvements costing around \$40,000.

NIAGARA FALLS, N. Y.—Hooker Electrochemical Co., Buffalo avenue, plans

construction of a plant addition. W. A. Cannon, 2637 Main street, is architect. Cost is estimated at \$40,000. Bids probably will be asked soon.

Alabama

BIRMINGHAM, ALA. — Birmingham Paper Co., Fifth street South and Twenty-fifth street, plans to build a 3-story addition to its plant at a cost of \$150,000. C. H. McCauley, Jackson building, is architect.

Maryland

CHESAPEAKE CITY, MD.—City plans to build a sewage disposal plant and distribution system costing \$47,000, and has received approval from PWA. J. B. McCrary Co. Inc., 705 Rosenberg building, Roanoke, Va., is engineer.

TOWSON, MD.—County commissioners of Baltimore county, Samuel A. Green, chief engineer, will receive bids until Aug. 23 for two 300,000-gallon steel elevated tanks for installation at Pleasant Hill and Reisterstown.

WESTPORT, MD.—Carr-Lowrey Glass Co. is receiving bids for a factory.

Georgia

ATLANTA, GA. — William E. Dunn Jr., dealer, 240 Peachtree arcade, is in the market for a 400-kilovolt-ampere generator for connection with a diesel engine, and for a steel storage tank, 100,000 to 150,000-gallon capacity.

North Carolina

CREEDMOOR, N. C.—Town plans to construct a waterworks plant and a sewage disposal plant and to erect a 100,000-gallon steel storage tank, at a total cost of around \$60,000. J. E. Harris is mayor and J. B. McCrary Co. Inc., 705 Rosenberg building, Roanoke, Va., is engineer.

ROCKY MOUNT, N. C.—City has voted \$480,000 bonds for improvements to electric light system.

West Virginia

WHEELING, W. VA. — City is considering construction of electric power plant with yearly capacity of 7,000,000 kilowatt-hours. Carl J. Simon, engineer, Van Wert, O., has been retained to make survey of feasibility. Harry Humphrey is city manager.

Louisiana

ABBEVILLE, LA.—City will ask bids

soon for construction of power unit of 1000 horsepower, to cost \$50,000. A. J. Frank is superintendent of water and light plant.

SHREVEPORT, LA. — Great National Oil Corp., post office box 992, plans to build an addition unit to its gasoline absorption plant, and a skimming plant to operate in conjunction with the absorption unit.

Tennessee

MEMPHIS, TENN. — F. S. Electric & Machine Works Inc., 239 Court avenue, is in the market for a 150- to 250-kilowatt generator, steam driven, to operate on 2300 volts, 3-phase, 60-cycle.

MEMPHIS, TENN.—United States engineer's office is taking bids until 11 a. m. Aug. 27 for a 5 x 20 x 65-foot steel anchor barge, and until 11 a. m. Aug. 31 for 15 welded steel dredge pontoons, to be 18 x 48 feet, and 2 feet 10 inches deep.

Arkansas

LITTLE ROCK, ARK.—Crow-Burlingame Co., Fourth and Spring streets, has acquired a building at the corner of Capitol avenue and Arch street and will remodel it for use as an automotive machine shop.

Wisconsin

BRILLION, WIS.—Brillion Iron Works Inc., maker of foundry equipment, has started work on a foundry addition, 60 x 135 feet, to house a core room. A. F. Paustian is president.

FOND DU LAC, WIS.—Tobin Tool & Die Co., sheet metal stampings, will build a 1-story factory addition, 50 x 80 feet, and has given general contract to Immel-Mable Co., Fond du Lac.

FRIDAY HARBOR, WASH.—Orcas Light & Power Co. will ask bids soon for construction of a 150-kilowatt diesel generating plant and for erection of 50 miles of transmission lines. Total cost will be \$50,000. T. C. Smith, Seattle, is engineer.

Minnesota

ADRIAN, MINN.—City voters approved a \$30,000 bond issue recently at a special election. City plans to install a new diesel power unit in municipal light and power plant. Druar & Millnowski, Globe building, St. Paul, are engineers.

MINNEAPOLIS—Chenille Rug Co., Harry Glickman, president, plans con-



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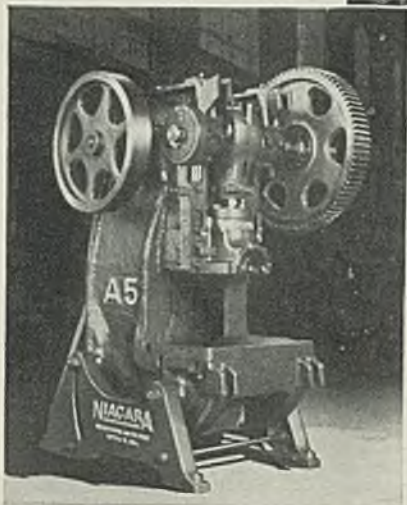
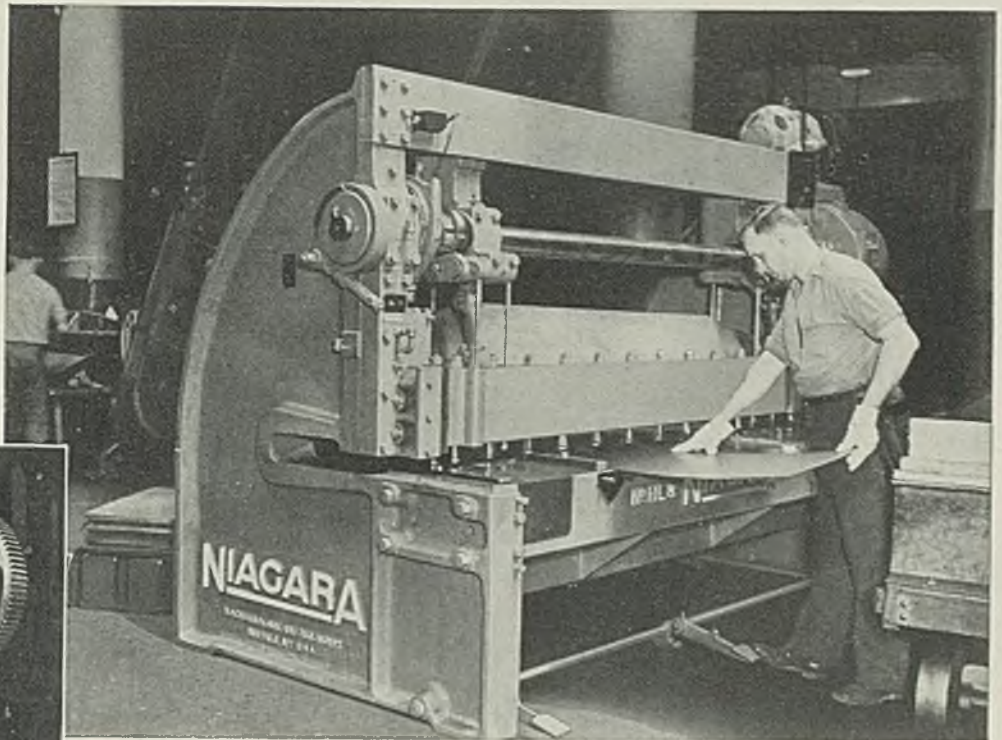
New Chain Belt Plant Houses Offices, Machine Shop



CHAIN BELT CO., Milwaukee, has just completed this new 152 x 292-foot building at its West Milwaukee works, to house the machine shop and offices. Almost all machine operations are being moved there. More space is now available for manufacturing conveyor and drive chains and sprockets, according to the company. Exterior of the building is finished in red brick with double tier steel casement windows and a saw tooth roof almost entirely glass

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—Construction and Enterprise—

struction of a 2-story, 85 x 88-foot factory addition, and has awarded general contract to Carl Radmacher.

THIEF RIVER FALLS, MINN.—Minnesota Electric Welding Co. has been incorporated to conduct a welding and machine shop business. Irving Quist is correspondent.

Texas

BEAUMONT, TEX.—C. A. Stockholm Co. Inc., P. D. Renfro, president, has increased its capital \$65,000, to provide for additional plant facilities for manufacturing inventions.

CLEVELAND, TEX.—City will take bids Aug 25 for construction of a water-works plant and sewer system. Garrett

Engineering Co., post office box 1726, Houston, is engineer.

WICHITA FALLS, TEX.—Wichita Traller Corp. plans to build a trailer factory costing \$125,000 or more. J. Tress is president.

Kansas

GOODLAND, KANS.—City is taking bids until 3 p. m. Aug. 25 for construction of a complete new light and power plant and distribution system at a cost of \$200,000. E. T. Archer & Co., 609 New England building, Kansas City, Mo., is engineer.

GREAT BEND, KANS.—Farley Machine Works has purchased a 3-acre tract and will build a branch plant, 36 x 110 feet.

PRETTY PRAIRIE, KANS.—City is completing plans for construction of a new municipal light and power plant, and will hold a bond election soon.

Iowa

CEDAR FALLS, IOWA—Viking Pump Co., George Wyth, president, plans to build a 1-story, 32 x 96-foot pattern shop addition, and has awarded contract to George Peplin, Cedar Falls.

DES MOINES, IOWA—Plans have been sent to WPA for approval of construction of two sewage disposal plants at Ckoji lakes, estimated to cost \$275,000.

GREENFIELD, IOWA—City is taking bids until 7:30 p. m., Sept. 3, for a 400 to 450-horsepower, 4-cycle diesel engine. C. L. Downing is city clerk.

HAMPTON, IOWA—Franklin County Rural Electric Co-operative has received an additional allotment from REA of \$260,000. A generating plant will be built and rural transmission lines erected in nine counties, at a total cost of \$418,000.

INDIANOLA, IOWA—City will take bids until Aug. 23 for a diesel engine generating unit with auxiliary equipment, for installation at municipal power plant. Estimated cost is \$50,000. Carl F. Brown is city clerk and H. S. Nixon, 5023 Burt street, Omaha, Nebr., is engineer.

WATERLOO, IOWA—City has set aside \$1,000,000 in its budget for the coming year to finance construction of a sewage disposal plant. Ralph Slippy is mayor.

Nebraska

ALLIANCE, NEBR.—City plans to issue bonds to finance construction of a municipal power plant. Clarence Hoper is city manager.

COLUMBUS, NEBR.—Loup River Public Power district has received a loan of \$931,000 from REA for financing erection of 354 miles of rural transmission lines. (Noted STEEL, July 5 and 19.)

WAYNE, NEBR.—A. G. Sydow is chairman of a project for erecting 255 miles of rural transmission lines in Wayne county. Plans probably will be submitted to REA soon.

Nevada

FALLON, NEV.—Dodge Construction Inc. machine shop was recently damaged by fire and will be rebuilt. Plans are now being prepared.

Idaho

BOISE, IDAHO—Twin Falls Electric Co., Ray J. Lyman, chief engineer, has asked permission to build a storage dam and hydroelectric plant. Estimated cost is \$12,000,000.

BOISE, IDAHO—State plans to construct a hydroelectric plant on the Snake river. Capacity will be 100,000

horsepower, and total cost is estimated at \$2,500,000.

District of Columbia

WASHINGTON—Bureau of supplies and accounts, navy department, is taking bids due Aug. 24 for 3480 pounds of nickel-copper alloy, schedule 1401, for delivery Portsmouth, N. H., and Mare Island, Calif.

WASHINGTON—Veterans administration, Arlington building, is taking bids until Aug. 24 for a condensate pump and receiver set, for operation on 115-volt, 60-cycle, single phase, alternating current.

Pacific Coast

GLENDALE, CALIF.—Don Baxter Inc. has acquired a site at 1031 Grandview avenue, and will build a 100 x 200-foot factory building costing \$60,000. E. S. Beardsley is president.

GLENDALE, CALIF.—General Controls Co. plans to build a factory, 168 x 200 feet, at Allen and Flower streets. Estimated cost is \$50,000. John T. Bibb, 118 North Brand boulevard, has general contract. Paul F. Hartman, 433 North Oxford avenue, Los Angeles, is architect.

LOS ANGELES—Peerless Paint & Varnish Mfg. Co. plans to build a 50 x 70-foot plant at 1601 Downey road.

LOS ANGELES—Linde Air Products Co. will build a 61 x 91-foot addition to its Purox division plant at 2315 East Fifty-second street.

LOS ANGELES—Charles R. Hadley Co. plans to build a 3-story, 55 x 120-foot factory at 312 North Los Angeles street. Albert C. Martin is architect, 233 Higgins building.

LOS ANGELES—United States Electrical Motors Inc., plans to build a 1-story factory addition to its plant at 200 East Slauson avenue. Grant & Bruner, 607 Ferguson building, is architect. Estimated cost is \$50,000.

OAKLAND, CALIF.—Hazel Atlas Glass Co., Eighty-seventh avenue and G. street, has purchased property at Santa Ana street and Salt Lake avenue, South Gate, Calif., and plans construction of a new factory.

OLEUM, CALIF.—Union Oil Co. is completing construction of a \$500,000 crude oil refining unit, as the first step in its planned \$2,500,000 expansion program. A \$2,000,000 cracking unit will be built next.

SEATTLE—City light department has awarded contract at \$3,967,785 jointly to General Construction Co., Seattle, J. F. Shea, Portland, Oreg., and Columbia Construction Co., Bonneville, Oreg., for construction of Ruby dam, a unit of the Skagit river hydroelectric project.

SPOKANE, WASH.—Consolidated Mines & Smelting Co. Ltd. plans to build a 200-ton mill, connection with development of 700 acres of molybdenite property.

Canada

WINNIPEG, MAN.—Swift Canadian plans to build a \$2,000,000 packing plant at St. Boniface, Man.

MERRITON, ONT.—Hayes Steel Products Co. has broken ground for a \$60,000 addition to its plant.

ST. CATHERINES, ONT.—McKinnon Industries, maker of metal products for Canadian General Motors Co., has awarded contract for construction of a large plant addition to Smith Brothers Co., St. Catherines.



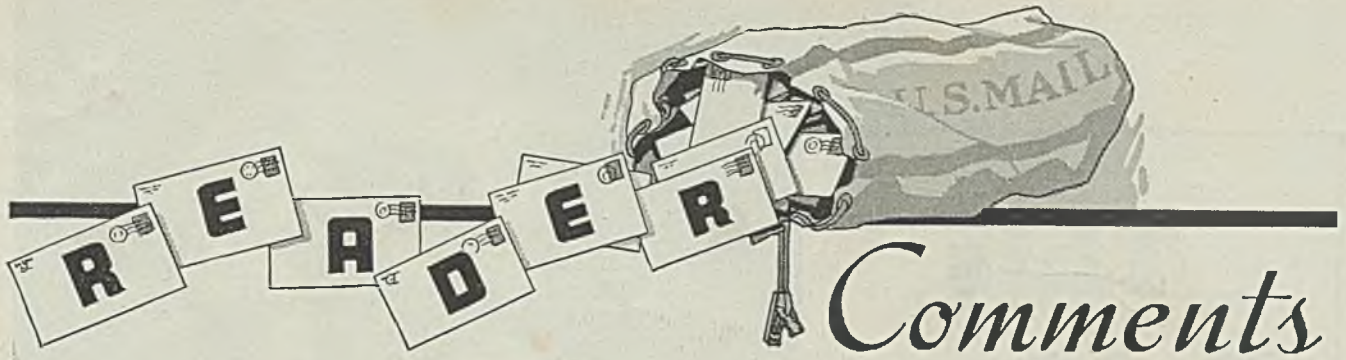
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Comments

Readers are invited to comment upon articles, editorials, reports, prices or other editorial material appearing in STEEL. The editors cannot publish unsigned communications, but at their discretion may permit a writer to use a pseudonym when a bona fide reason exists for withholding his identity. Letters should be brief—preferably not exceeding 250 words.



Hydropower a Menace

To the Editor:

What is there left for the coal industry if government decides to subsidize the water power? What is there left for the coal mine employe except to seek fields of new endeavor and become a problem for the government's social program? A few graphic figures should remain outstanding:

Every 100,000 tons of coal displaced will eliminate 2000 carloads of coal, 40 trains of 50 cars each and the elimination of the employes required to operate them. A loss in freight revenue in excess of \$100,000, and 50 cents of each dollar of railroad revenue goes to labor. A loss of more than \$100,000 in the pay envelopes of the mine employes (approximately 60 per cent of the cost of producing coal is labor). A loss of employment and pay to many others indirectly engaged in the production, transportation and merchandising of coal. An elimination in the aggregate of 100,000 work days, for each ton of coal lost is estimated to represent a loss of one day's work directly or indirectly to those employed in the production and distribution of coal. An ultimate permanent closing down of mines upon which whole communities are dependent for support.

H. J. WEEKS

*Durham Land Co.,
Chattanooga, Tenn.*

Farmer Sitting on Top

To the Editor:

The bureau of agricultural economics estimates total cash farm income for 1937 at \$9,500,000,000. This is considered conservative and a rise

in wheat price will make it larger.

Total capitalization of the steel industry is stated to be \$3,840,460,829. Farmers could buy the entire steel industry almost three times with the income this year is bringing them. Earnings of the steel industry in 1936, before dividends and bond interest were about \$180,000,000, which looks pretty small compared with the farm income.

Farmers have bought 3 to 5 per cent of the steel made in this country in farm implements and for other agricultural uses. With such enormous buying power from this year's crops they should buy even more steel, especially after the hard years that have preceded. This is a factor in estimating the near future of the steel market which should bulk larger than usual. If you print this sign it,

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Keeps Salesman on Toes

To the Editor:

In connection with Mr. Stilwell's article in the Aug. 2 issue of STEEL, we have been encouraging our own salesmen to relay back to us suggestions and criticisms, not only on the product itself, but on every other angle in which they feel headquarters will be interested.

As a matter of fact, we constantly call this to the attention of our men in the field, and in many instances our various headquarters' managers check with these men before making changes in policy, production matters, etc.

This point is extremely important in connection with the matter of establishing standard delivery dates, and, of course, you can see in that way the knowledge of our men in the field regarding the matter of

suitable delivery dates is of vital importance to our plant organization in providing material based on these needs.

In fact, in our own company our outside selling organization is kept in particularly intimate contact with all phases of our business and I feel that we do this perhaps to quite an unusual degree. It certainly pays excellent dividends and I know in our case it has reduced our complaint transactions with customers to what we feel is an appreciable low consistent with the volume of business transacted.

My own personal opinion is that this factor of salesman relationship with the company is quite an important phase and sadly enough in many instances only too little is done about it. We feel it pays big dividends.

L. P. NIESSEN

*Advertising Manager,
Cutler-Hammer Inc.,
Milwaukee, Wis.*

College Man Has Edge

To the Editor:

I am moved to suggest a brief comment on the new policy of industrial concerns to fill vacancies as they occur among the older executives by men having a college education. (This refers to an article in STEEL, July 12, on Bethlehem Steel Co. taking in a large class of college men for training, and June 21, on a similar action by the United States Steel Corp.)

I do not feel that this trend is so much a change in policy as it is a new order of things. We have seen in this century a rapid raising of the general level in education. The trend of the laws of the land is to require boys to go to school until

(Please turn to Page 46)

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