

# STEEL

PRODUCTION • PROCESSING • DISTRIBUTION • USE

For forty-eight years—IRON TRADE REVIEW



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## As the Editor

## Views the News

**T**HE thermometer of sentiment in the iron, steel and metalworking industries rose a few degrees as a result of favorable developments during the past week. Buyers of iron and steel products were heartened by the announcement by principal producers of a new open-price policy (p. 29), which may put an end to pure discrimination. The new schedules (p. 66) clear the way for second-quarter purchases. Already demand is expanding, due in part to another marked step-up (p. 22) in automobile production. The accelerated pace of industry is reflected in the rate of steelworks operations, which is higher (p. 18) than at any time since June, 1934.

• • •

In Washington, early testimony on the Wheeler anti-basing point bill (p. 14) has repeatedly brought this question to the attention

### Cure Worse Than Malady?

of the senate committee: "Isn't it possible that the bill will cause more trouble than the evil it is trying to remedy?" Strangely enough, the man who has made the most of this point is none other than Donald Richberg, former NRA administrator and administrative member of the steel code. Even now, sufficient doubt as to the efficacy of the Wheeler bill has been aroused to practically kill any chance of its being enacted into law at this session of congress.

• • •

Those who read Mr. Richberg's testimony will readily agree that he acquired extensive and valuable experience during his brief excursion into government service.

### Solution Will Take Time

His statement that "government should not set up some kind of an arbitrary system", and his declaration that "it is hard for the government to get into these industrial problems without getting in too deep" indicate that he recognizes, by virtue of his knowledge of difficulties under NRA, the impracticability of curing certain economic ills by

means of punitive legislation. Whatever the shortcomings of the basic point system may be, there is nothing to be gained by plunging headlong into another plan that will force chaotic adjustment. The better way is to move gradually toward improvement. Passage of an inflexible law at this time would serve no useful purpose, and probably would retard progress toward a real solution.

• • •

Ford Motor Co., which has been a consistent violator of industrial traditions and precedents, now is pioneering in the mixing and distribu-

### Ford in New Pioneer Role

tion of gas for manufacturing operations. Its new system (p. 44), which will provide for handling blast furnace, coke oven and propane gas for the various departments at the Rouge plant, embraces several features which should interest every industrial consumer of gas. Few manufacturers employ gas as extensively as Ford, yet many will find useful ideas in the methods of proportioning different gases for the desired B.t.u. value, in the electrically-operated control and dispatching system, in the timing of accumulations of stored gas reserves, etc. The operation of this novel system will be worth watching.

• • •

Do American industrialists realize what a boon they have in the great volume demand for manufactured products? Here we are able

### Volume Helps Us Specialize

to make parts in lots of many thousands; in some foreign countries similar parts are turned out in lots of a few hundred, or even less. In the United States scores of partsmakers collaborate to manufacture an automobile, an airplane engine or a refrigerator. In Europe the entire job may be done under one roof. This marked contrast in manufacturing procedure made a deep impression upon an American engineer who recently visited (p. 17) numerous automotive plants in England and on the continent. One cannot read his interesting observations without unconsciously weighing the "pros" and "cons" of specialization, as we know it in the United States.

*E. L. Shaner*



# Hearing Loosens Senatorial Wrath Against Basing Points

**H**EARING on the Wheeler-Utterback anti-basing point bill got under way before the senate committee on interstate commerce last week in an atmosphere decidedly hostile to the steel industry, against which the bill is aimed primarily.

"Despotism tempered with assassination" was the epithet hurled by Dr. Frank Fetter, of the University of Illinois and formerly with NRA, who was the first witness.

"Graft" was the slur cast by Sen. Homer T. Bone, of Washington.

"Building up private socialism" was the characterization of Sen. Burton K. Wheeler, of Montana, chairman of the committee conducting the hearing and co-author of the

bill. Both senators are Democrats.

When the hearing was formally opened last Monday Dr. Fetter was the sole witness. On resuming on Thursday, witnesses included W. W. Sebald, a vice president of the American Rolling Mill Co., Middletown, O.; D. A. Williams, president, Continental Steel Corp., Kokomo, Ind.; and Charles F Stone, president, Atlantic Steel Co., Atlanta, Ga.

On Friday Donald R. Richberg, one-time chief counsel and later administrator of NRA and an administration member of the steel code testified. Mr. Williams concluded his testimony. C. V. McKaig, vice president, Carnegie-Illinois Steel Corp; T. R. Akin, president, Laclede Steel Co., St. Louis; and F. A. Moeschl, vice president, Newport Rolling Mill Co., Newport, Ky., also were heard.

Mr. Richberg's testimony was patently helpful to the steel industry and opposed to the bill. While he said that he agreed with the fundamental principles of the bill he stated repeatedly during his testimony that

it is possible the bill may cause more trouble than the evil it would remedy.

"There is an evil here," he stated, referring to the basing point system, "which merits attention, but if the government takes any drastic action such as proposed by the bill it will be a sad mistake in government policy."

He said that those within and without the industry know of evils in the basing point system, but the government should not set up some kind of an arbitrary system. It is hard, he stated, for the government to get into these industrial problems without getting in too deep.

During the course of his testimony Mr. Richberg got into arguments with several members of the committee on government policy and business competition and said that in his opinion private business would welcome a real definition by the government of just what competition really is.

Mr. Richberg explained price posting under the steel code and gave a history of its writing. He stated that steel prices were not fixed during the code period and he knew of no price agreements.

## Mills Absorb More Charges

He said that NRA never approved the entire basing point system. It would be good business practice, he declared, to have basing points in all producing area.

Answering committee questions, Mr. Richberg observed that more freight charges are absorbed by mills than over-charges are made. Some companies continue to get extra freight charges while others continue to lose them, under the present system.

He went into some detail relative to extras under the code. He stated that these extras become means of cutting prices. Labor provisions of the steel code, he pointed out, were exceptionally well carried out. The code put 75,000 men to work and increased payrolls by \$6,000,000 a month. Increased wages under the code were more than enough to take care of the increased cost living at that time.

Any industry, Mr. Richberg said, going into the business of selling freight charges is making a mistake. He insisted that the bill would have drastic effects on the industry and that eventually larger companies would put smaller ones out of business. He stated he did not see how the basing point system could be solved through legislative action. There is much changing of location of plants in various industries from time to time, but it is bad for the government to attempt to force this, he warned.

Mr. Sebald told the committee that his mills have a capacity of 2,000,-

## Steel Executive Defends Basing Point System



W. W. Sebald, a vice president of the American Rolling Mill Co., Middletown, O., is shown testifying before the senate committee on interstate commerce against the Wheeler-Utterback anti-basing point bill. Photo by Underwood & Underwood



000 tons of ingots a year, approximately 3 per cent of the productive capacity of the country. His mills turn out, he stated, 1,000,000 tons of sheets and strip, and in his testimony he referred especially to these two products.

The elimination of the basing point system, Mr. Sebald testified, would be a most serious matter to his company and to the steel industry in general.

Passage of the Wheeler bill, the witness stated, would cause a very general relocation of the steel industry of the United States, causing all kinds of financial troubles not only for the steel executives but also for employes because many mills would either have to move or shut down their plants.

Mr. Sebald said that if the basing point system were done away with it would naturally mean that steel producers would be thrown into large consuming areas and he pointed out specifically how this would apply to such places as Detroit.

He stated that steel mills there would have to be enlarged to take care of the additional tonnage and outside mills, which would not be able to compete, would either go out of business entirely or be forced to move to some large consuming area.

There is more competition under the present system, Mr. Sebald testified, than there would be under the proposed bill which would eliminate competition. He said that the steel industry is more decentralized now than it was 15 years ago.

Referring to billing prices of his own mills Mr. Sebald stated that the net ton price in 1914 was \$57.54, in 1920 it was \$135.54; 1925, \$83.34; 1929, \$73.87; 1930, \$68.74; 1931, \$58.89; 1932, \$51.83; 1933, \$45.98; 1934, \$53.69; and 1935, \$55.34.

#### Would Bring Higher Prices

Mr. Sebald maintained that if the Wheeler bill is made law the public will pay more than under the present arrangement. He insisted that sheet prices should be from \$10 to \$15 per ton more than at present.

Questioned on competition in the steel industry, Mr. Sebald suggested that the committee take the amount of money invested in entire steel industry and see just what dividends the stockholders have got to prove the degree of competition in the industry. There is no business, he said, in which competition is more severe.

Mr. Stone told the committee that his company has to compete with foreign imports which are being sold at less than his company's costs.

He testified that he does not object to the present basing point system and denied that he had ever personally objected to the change from the Pittsburgh to the multiple basing point system.

The basing point system, he stated, is an integral part of the growth

and development of the steel industry. Prices in the industry, he contended, are not arbitrary, and he denied specifically that prices are set by the American Iron and Steel institute or by producers in collusion with each other.

Mr. Stone testified that products have to be sold at competitive prices, and if the Wheeler bill passed it would in all probability put his plant out of business.

He stated that change in trade practices are always upsetting to any industry and he considered that elimination of the basing system would create a chaotic situation in the steel industry. It would be impossible, he testified, to estimate the damage of the proposed change and said in his opinion there is nothing harmful in the basing point system. He denied that his firm submitted its prices to anyone.

#### Prices Developed Independently

Mr. Williams, who started on Thursday and concluded his testimony on Friday, explained that the capacity of his mills—chiefly for sheets and wire products—is far in excess of local requirements.

His prices, Mr. Williams testified, are based on the nearest basing point. He stated that he reads the business papers of the industry and works up his prices from the prices quoted there. He testified that the papers

are not uniformly correct in their market quotations.

At this point Senator Wheeler tried to make Mr. Williams state that the business papers of the industry are controlled either by the American Iron and Steel institute or the United States Steel Corp. Mr. Williams denied this and said all he knew was that he paid the regular subscription prices for his papers.

In connection with similar bids for public works, he stated that he thinks they are identical because the mills do not want everyone to know what their prices are. As a small steel manufacturer he said that he was not afraid of the "big fellow."

#### Harmful to Small Producers

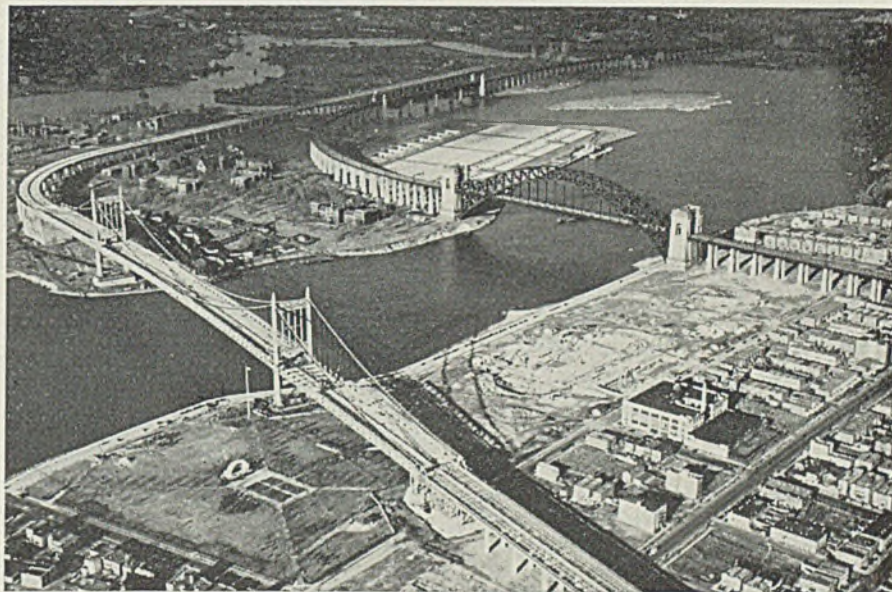
Questioned in regard to a fine assessed his firm under the code, Mr. Williams testified that it was less than \$500, and suggested that it was because his firm bid under code prices. He denied that the code has been maintained since NRA went out.

The bill, he said, will not benefit steel consumers but will have a tendency to give big corporations a monopoly; it will restrain trade and destroy small producers.

Senator Wheeler admitted during his testimony that the bill might mean that some plants would have to move.

Dr. Fetter, the only witness on

## An All-American (Steel) Bridge



View of Triborough bridge, which figured in the news several months ago when the steel industry succeeded in forestalling the placement of piling for it from a German mill, looking down on it from Queens towards Manhattan and the Bronx. Hell Gate railway bridge is to the right. In the foreground is the principal suspension span leading into the Grand Central parkway and serving all of Long Island. The Bronx span, which will be a fixed span, convertible to a lift span, if necessary, can be seen in the upper part of the photograph, to the right. Just this side of this span is the "traffic circle" with the Manhattan span leading off at right angles to 125th street. This last span of the lift type, can just be made out at the south side of the island. Photo by McLaughlin Aerial Surveys



Monday, was economic adviser to the federal trade commission 1924 when it handed down its decision in the Pittsburgh-plus case.

He testified that for many years he has made a study of monopolies and delivered prices, and while claiming to be nothing but a theorist, said that if he lived another 70 years he did not think he would know it all. He declared that he was not a factual witness on the subject.

Dr. Fetter stated, however, that he had no axe to grind. He traced in considerable detail the development of the basing point plan for the past 40 years. During the course of his testimony he insisted that the steel industry got the jump on NRA because it raised its prices fully two months before the steel code went into effect, on Aug. 12, 1933.

He pointed out that NRA "legalized the monopolistic practices of the steel industry," which he said, up to that time, had been carrying them on without any legal right.

Under questions from Senator Wheeler, Dr. Fetter claimed that many consumers of steel have been put out of business because of the steel basing point system. He referred to the basing point as an artificial pricing system and in answer to further committee questions stated that the industry is 100 per cent in back of the basing point plan and that independent manufacturers have adopted the same scheme.

#### Proposed by Carnegie

Dr. Fetter stated that in his opinion the general impression of the public on increased basing points under the NRA is not correct. Not all products, he stated, use the same basing points. Also, he contended that in making its steel purchases the government is paying imaginary freight charges.

The witness, further answering questions of the committee stated that the steel industry has been experimenting with the basing point idea for the past 40 years and that it was the original idea of the "canny" Andrew Carnegie. He expressed the belief that it is the only practical way to maintain prices.

Dr. Fetter said that in his opinion competition is an essential feature of private business. He testified that the government "muffed the ball" in 1912 in its dissolution suit against the United States Steel Corp. by not employing an economic adviser. He pointed out that if the Corporation employed an economic adviser and if the government had to, it would have gone much further.

In the opinion of Dr. Fetter, Pittsburgh is now very much overbuilt insofar as the steel industry is concerned. Without referring to the steel industry he stated that in his

opinion the consuming public is losing \$1,000,000,000 a year by cross hauls. The basing point system, he said, is a very shortsighted affair.

Mr. McKaig went on record as not being opposed to modification of the present basing point system, conceding that the broadening suggested by NRA has considerable merit. He denied that there was price fixing under NRA and maintained that the multiple basing point system is working out better than the old Pittsburgh-plus.

At the conclusion of Friday's hearing Senator Wheeler indicated that even with a session Saturday he expected steel executive to be held over until the coming week.

Questions by members of the committee indicate they expect to report the bill back favorably at this session but probably not to press for its passage until next session.

Many letters, pro and con, have been received by senators, representatives, and business papers on the basing point issue. Typical is the following from C. E. Holt, secretary, Leetonia Tool Co., Leetonia, O., to STEEL:

We note your comments on the Wheeler bill. Too often established customs prevent changes which are necessary to meet changed conditions. Too often the objections to such changes

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### A Giant in Its Day



*THIS is a recent view of the ruins of the old Mt. Savage furnace near Denton, Ky. In operation from 1841 to 1882, this charcoal furnace made about 25 tons of iron in two 9-hour shifts, the iron bringing \$80 a ton at Catelettsburg. Nearby land owners donated timber for charring in return for the clearing of their land. Furnace employes drew on the commissary, and a settlement was made once a year. Photo by Thelma Juergensmeyer, Fullerton, Ky.*

are made by large companies who are located in places which enjoy favorable concessions. The smaller manufacturers may be situated equally as well to obtain such concessions but who cannot

(Please turn to Page 64)

## Japanese Interested in New Rolling Mill in India

National Iron & Steel Co. Ltd., at Belur, near Calcutta, the first rolling mill in Bengal, India, started operations recently.

Manned by Japanese engineers and equipped with up to date Japanese machinery, the company has a daily capacity of 50 tons of rounds and flats, or approximately 10,000 tons annually.

When fully completed, including open-hearth and electric steel furnaces, to be ready in 1937, the capacity of the mill will be about 60,000 tons annually, chiefly structural steel and railway material.

The company is using scrap, much of which formerly was shipped to Japan. Japanese capital has a 30 per cent interest in the company, the remainder being subscribed by Indians and Englishmen.

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## North American Acquires Womelsdorf Brick Plant

North American Refractories Co., Cleveland, announces the acquisition of the silica brick plant and property of the Lavino Refractories Co. (formerly owned by E. J. Lavino & Co.) located at Womelsdorf, Pa. No other property of E. J. Lavino & Co. is included in this transaction.

The addition of the Womelsdorf plant to its Mt. Union, Pa., plant gives the North American company two modern and efficient plants for the exclusive manufacture of high grade silica brick, which, with fire clay brick plants in Pennsylvania, Kentucky, Missouri, Ohio, and Maryland, makes 15 plants now operated by the North American company.

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## Merge Advertising Staffs

Advertising activities of the Carnegie-Illinois Steel Corp. and the American Sheet & Tin Plate Co., both subsidiaries of the United States Steel Corp., were consolidated as of March 1, with headquarters in the Carnegie building, Pittsburgh. The consolidated department is in charge of C. R. Moffatt, with G. R. Schreiner and H. V. Jamison as his assistants.

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## KEOKUK CASTING REOPENS

Keokuk Steel Casting Co., Keokuk, Iowa, has reopened its plant after being closed for five years.



**O**BSERVATIONS gained on a recent 9-week tour of a number of aircraft and general manufacturing plants in England and France boil down to one significant point, and that is the great contrast in manufacturing methods between this country and abroad.

In automotive work the quantities vary greatly. In a foreign plant an order for 10,000 pieces of a certain part might be heavy production for a month, whereas we are geared to produce the same quantity at comparable quality in perhaps two days. The foreign automotive manufacturer realizes this and regrets that his volume is so much below ours, feeling that with comparable production he would do as well as we.

Aircraft work varies greatly from ours. Quality parts manufacturers are few, and this means that when a new motor is being designed, practically every part is designed and made within the walls of the one plant—designing, specifications, producing, finishing, assembling—nearly all steps except perhaps actual production of the steel and material used. Practically all pattern work, casting and forging is done in the one plant.

#### Suppliers Collaborate Here

In America, a company designing a new aircraft motor will call upon fifty to one hundred parts suppliers to collaborate on design and materials, manufacture the necessary samples, and follow the test work. In this case the engine builder has available excellent talent in the parts industry, and the work proceeds much faster with specialists on each part co-operating.

Most foreign engine builders would be glad to turn to such specialists if they were available, but they are not, and the builder must design and manufacture his own parts. Low volume accounts greatly for this condition. The work done by foreign engine builders on these parts is excellent. There are some parts made in America by specialists in some one particular line, which are perhaps superior due to advanced technique and equipment.

Consumer demand for automobiles in England and France is restricted, and this limits mass production. Ownership and operation costs are high. Fuel is highly taxed, ranging from about 35 cents per gallon to 75 cents per gallon. Motors are taxed per horsepower—in England a pound, or about \$5. This shapes the design trend to small engined, light cars. The Ford "8" in England means eight horsepower, which this year is being advertised at 100 pounds (\$500). In France, the V-8 sells for about \$2000. It is necessary to give the operator economical operation.

A few months ago there was a state of suspense, plainly noticeable

# Industry Abroad in Marked Contrast to American Scene

BY A. T. COLWELL

Director of Engineering, Thompson Products Inc.,  
Cleveland



A. T. Colwell

in Europe, which in the past few days has again flared up. For a time the question was as to whether or not war could be prevented, rather than would there be a war. This has focussed the attention of the various nations on aircraft, as unquestionably aircraft will be a more important factor in any future war. Appropriations have been made for this branch in most European countries, with a distinct speeding up of engine manufacturing, which was quite noticeable.

Many aircraft and automotive developments originate in Europe. These are often used in America, as American plants can afford large investments for equipment because of the larger volume. Redesign for mass production usually occurs—it is this mass production which allows us to place these inventions on a commercial basis, whereas abroad their use may be quite limited.

It has been the custom abroad to designate alloy steels by a trade name. We prefer to use the analysis, and particularly for aircraft work, analyses must be rigidly held. Our Society of Automotive Engineers deserve much credit for this standardization, as well as for disseminating

general information throughout the industry. Our S. A. E. has been of prime importance in the growth of our aircraft and automotive industry.

Great progress has been made in Europe in the adaptation of the nitriding process for steel and iron. Aubert & Duval, of Paris, are actively extending this process by license in many countries. The nitrided cylinder liner for heavy-duty motors is spreading rapidly abroad, and the writer's company is making considerable progress with these liners here in America. They are made from iron centrifugally cast, and are showing remarkable performance. Sheepbridge Stokes in England are making high quality liners from this material.

#### American Planes Respected

American aircraft builders are held in high regard in Europe. The Melbourne race demonstrated the remarkable performance of our stock commercial planes against specially built racing planes, and our designs are being studied. Europeans think it remarkable—and Americans, too, for that matter—that one can leave New York in late afternoon and have breakfast in Los Angeles. One English gentleman remarked, "Why, that is about the distance to Egypt." The London-Paris service on Handley-Paige planes is very good, but these planes are large and slow compared to our present equipment.

The American in Europe misses many conveniences to which he is accustomed. Central heating, or heat in each room, and bath, are uncommon. They are accustomed to lower house temperatures than we. Air conditioning and electric refrigeration are in their infancy. During the fall and winter, green vegetables are not plentiful as we know them. Brussels sprouts and mutton are very common dishes in England.

The writer remarked to one English gentleman that we at home seemed to move so much faster and seemed so much busier. He replied, "What's the difference? You folks do bustle more, but we get there just the same. We are a happy people. And we don't have carloads of



gangsters running around our cities with machine guns, protected by crooked politicians and police."

To the last statement there is no answer—they do have law enforcement. Probably our pictures and press, glorifying the modern criminal, have much to do with this impression of American gangsters, which is quite commonly held.

My reception was most cordial in the various countries visited. This was particularly true in England and France. Many instances of courtesy and politeness were extended, which I am afraid we sometimes forget at home in our busy rush. But even a short business visit creates a better understanding of the problems with which each nation has to contend.

## Production

STEEL production rose 2 points last week to 57½ per cent, crossing the peak of 57 per cent reached

## Steelmaking Operations

Percentage of Open-Hearth Ingot Capacity Engaged in Leading Districts

	Week ended		Same week	
	Mar. 14	Change	1935	1934
Pittsburgh .....	43	+ 5	38	35
Chicago .....	62	None	51	48½
Eastern Pa. ....	39	None	28	32½
Youngstown....	71	+ 3	58	56
Wheeling .....	78	None	92	70
Cleveland .....	75	+11	72	82
Buffalo .....	42	None	38	52
Birmingham...	69	+ 3	55½	52
New England ..	51	-17	53	63
Detroit .....	94	None	88	93
Cincinnati .....	76	None	†	†
Average.....	57½	+ 2	48	50

†Not reported.

in the first week of December, 1935, and establishing a new high since the third week of June, 1934, when the rate was 59 per cent. Heavier operating schedules at Youngstown, Cleveland, Pittsburgh and Birmingham, which reported gains of 3, 11, 5 and 3 points, respectively, served to boost the rate. Other districts were steady, with the exception of a decline at New England. Further details follow:

**Youngstown**—Gained 3 points last week to 71 per cent, with a slight decline to 70 per cent expected at this week's opening. Republic Steel Corp. has added a blast furnace and is melting in all four stacks at Lansingville, O. It is also repairing its No. 4 blast furnace, which has been idle for six years.

**Pittsburgh**—Up 5 points last week to 43 per cent, highest level for 1936. The leading producer operat-

## Stainless Fabricators Smash Records with New Work

PRODUCTION of two supposedly record-size stainless steel plates was noted in last week's issue of STEEL, p. 17, with the suggestion that as further entrants in this "plate derby" appeared, STEEL be so informed.

Word comes from Peter Vanderwolf, sales manager, Dover Boiler Works, Dover, N. J., that his company has just placed an order with the Crucible Steel Co. of America, Pittsburgh, for a plate of 18-8 stainless steel, Rezistal KA2S analysis, measuring 79½ by 219 inches in size, 5/8-inch thick, and estimated to weigh 2105 pounds. In this connection the company also ordered one flanged and dished head, 70¼ inches outside diameter by 5/8-inch thick, of 18-8 steel, weighing 900 pounds, and another head of same diameter and ¾-thick, weighing 1100 pounds, the latter of 25-20 chrome-nickel stainless. The material will be used in the fabrication of a still.

Speaking of stainless steel, Alloy Products Corp., Waukesha, Wis., announces construction of what it claims is one of the largest horizontal milk storage tanks ever built of this material. The tank has a capacity of 8500 gallons, measures 120 inches inside diameter by 17¼ inches long, required approximately 4200 pounds of stainless steel sheet, 10-gage, and polished on one side. Material was supplied by Allegheny Steel Co., Brackenridge, Pa. Other parts, such as the inlet, outlet, manhole cover and propeller blades, also were of stainless.

Any more entrants?

ed at 42 per cent for its immediate Pittsburgh district plants, and better than 46 per cent including Mahoning valley divisions. A leading independent is producing steel ingots at about 55 per cent and the rates of other producers are around 50 per cent. Twenty-seven of 60 steelworks blast furnaces are still in blast.

**Wheeling**—Unchanged at 78 per cent, as 29 out of 37 open-hearth furnaces continue on active producing schedule.

**Detroit**—Steady at 94 per cent last week. Sixteen out of 17 open-hearth furnaces are active.

**Cincinnati**—Remained unaltered at 76 per cent last week, and bookings for the rest of this quarter will hold the 18 of 24 open hearths in operation. Any change, so far unannounced, would be upward.

**New England**—Down 17 points to 51 per cent, with indications that the

51 per cent rate will be maintained this week.

**Birmingham**—Up 3 points to 69 per cent last week, with 15 open-hearth furnaces in operation, 8 of the 9 larger ones in the section producing ingots. With favorable weather, much outdoor work is now underway, and specifications against contracts will be picking up immediately.

**Buffalo**—Held at 42 per cent last week, with an increase to 45 per cent at this week's opening, due to the lighting of an additional open hearth. Further gains are expected before the end of the month.

**Cleveland-Lorain**—Up 11 points to 75 per cent. Republic Steel Corp. lighted the thirteenth of its 14 open hearths March 12; Otis Steel Co. went up 2 to 6, and National Tube Co., Lorain, added 1 to operate 11. Republic also lighted the fourth blast furnace at its Corrigan-McKin-

## U. S. STEEL CORP. SHIPMENTS

(Inter-company shipments not included)

	(Tons)			
	1936	1935	1934	1933
Jan. ....	721,414	534,055	331,777	285,138
Feb. ....	676,315	583,137	385,500	275,929
2 mo. ....	1,397,729	1,117,192	717,277	561,067
March .....	668,056	588,209	256,793	
April .....	591,728	643,009	335,321	
May .....	598,915	745,063	455,302	
June .....	578,108	985,337	603,937	
July .....	547,794	369,938	701,322	
Aug. ....	624,497	378,023	668,155	
Sept. ....	614,933	370,306	575,161	
Oct. ....	686,741	343,962	572,897	
Nov. ....	681,820	366,119	430,358	
Dec. ....	661,515	418,630	600,639	
Yearly adj. ....		19,907	44,283	
Total .....	7,371,299	5,905,966	5,805,235	

ney plant. Otis has both of its stacks in blast; National Tube, three of its five.

**Central eastern seaboard**—Steel production is unchanged at 39 per cent, with reduction in output at two points offset by increases at others. The trend, however, is upward.

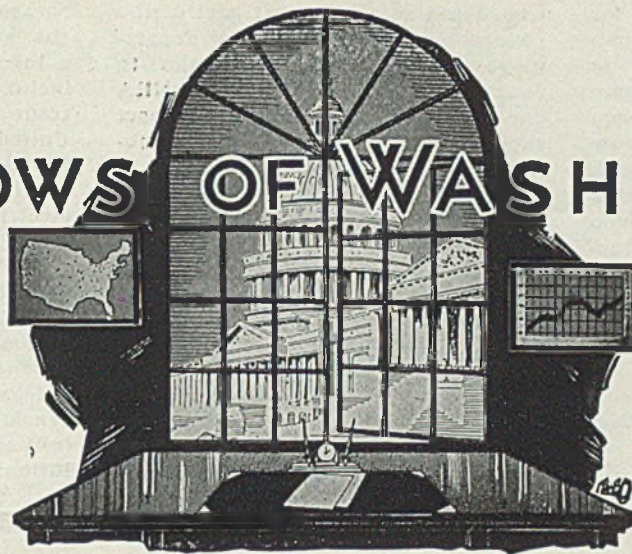
**Chicago**—Unchanged at 62 per cent for the third consecutive week. Mills anticipate steady production through the remainder of March. Blast furnace schedules are unchanged, 20 of 41 stacks continuing active.

## CORPORATION SHIPMENTS LESS

Shipments of finished steel in February by the United States Steel Corp. totaled 676,315 tons, compared with 721,414 tons in January, a decline of 45,099 tons. In spite of this shrinkage February shipments were the largest, except for October and November, 1935, since June, 1934. February shipments were 93,178 tons larger than in February, 1935.



# WINDOWS OF WASHINGTON



WASHINGTON  
**A** NEW definition of the steel basing point system was evolved last week before the senate committee on interstate commerce, by the testimony of Dr. Frank Fetter, of the University of Illinois, when he said that it is "despotism tempered with assassination."

There were some interesting sidelights at the hearings, including the questions asked by various members of the committee—almost all of which showed that the members did not have the slightest idea what the basing point system is. The lone exception was Sen. James J. Davis, former secretary of labor, and one-time puddler.

## Ignorance Is Amusing

Other members of the committee who sat in at the hearings including Senator Wheeler, of Montana, were Senators Neely of West Virginia, Dietrich of Illinois, Lonergan of Connecticut, Donahey of Ohio, Truman of Missouri, Couzens of Michigan, and Shipstead of Minnesota.

Up to this time most of the questioning has been done by Senators Wheeler, Neely, Couzens and Shipstead.

Representatives of the steel industry who attended the hearings got quite a kick out of some of the elemental questions which were asked as the hearings progressed.

In a number of instances, particularly in the case of Dr. Fetter, Senator Wheeler asked leading questions which had the effect of inducing the doctor to make statements which he would otherwise not have been made.

However, Senator Wheeler and others tried to tie Dr. Fetter down to a statement as to how much the basing point system, in percentage, was costing consumers. One member of the committee suggested possibly 5 or 10 per cent. At this point Senator Wheeler said that when the witnesses came on he felt sure it would

develop that in some industries it is costing the consumers 1000 per cent more than it would without the basing point system. The first senator then suggested that perhaps he had been rather conservative. However, Dr. Fetter refused to guess on this point.

The idea also seemed to be prevalent at the hearing among members of the committee that only the larger companies use the basing point, and that the smaller or "independent" companies do not. This has been corrected.

During the course of the hearings, Senator Davis, who, of course knows the operating side of the steel business, asked the very pertinent question as to whether or not breaking up the basing point system would dislodge the whole steel industry of the country, necessitate moves from one place to another, thus causing inconvenience and property loss to employes as well as employers—in other words, would not the bill destroy more than it gained. (See also page 14)

## WALSH BILL BECOMES HEALEY BILL; STILL OBJECTIONABLE

Hearings will begin on Monday, March 16, before the house judiciary committee on the Healey bill, which has been substituted for the Walsh bill controlling hours and wages for government contracts, over which there has been so much controversy.

Representative Healey was the chairman of the house subcommittee of the judiciary to which the Walsh bill was referred, but this subcommittee was unable to reach an agreement on the Walsh bill and so rewrote the bill which has now been introduced by Mr. Healey.

The Walsh bill, it may be recalled, provides for rigid federal control over the hours and wages of employes of private firms working on government contracts.

The Healey or rewritten Walsh

bill maintains many of the principal features of the latter as it passed the senate, to which industry generally has objected.

In substance, the rewritten bill, provides that with respect to all contracts entered into by any federal agency for construction, for purchase of any article, or for any unprofessional service except railroad transportation, if the cost is in excess of \$2000 there must be conformity by the principal contractor, any subcontractor, and any supplier with federal specifications relating to minimum wages, maximum hours, overtime rates, child labor and convict labor.

Specific schedules for minimum wages and maximum hours would be embodied in each proposal or contract, these schedules to be determined by the secretary of labor. It is expected that business generally will continue to register opposition to this measure.

## TWO PET BILLS OF LABOR REMAIN IN STORAGE

The chairman of the house committee on labor has officially announced that his committee will not insist on any action at this session of congress on the 30-hour week bill. This seems to be the final word unless something should develop which is not foreseen at this time.

It will be recalled that this 30-hour week bill, which has been hanging over the heads of industry for the past two sessions of congress, provided for a maximum of 30 hours per week for all industry doing an interstate business and had the strong backing of the A. F. of L. It seems apparent that some kind of a trade must have been made with the labor union, because up to this time there has been no comeback on the chairman's announcement.

Right in line with this 30-hour week bill is the O'Mahoney bill, in which industry has also been much



interested, providing for a license for everyone doing an interstate business. This bill also had the strong backing of the unions. To the time of this writing no action has been taken on this bill, which is now pending before the senate committee on interstate commerce, of which Senator Wheeler is chairman, who is already harassing the steel industry with his anti-basing point bill.

The O'Mahoney bill also imposes hour and wage provisions as a condition on which licenses would be issued.

#### **PRESIDENT TAKES UP CUDGELS FOR DOMESTIC MANGANESE**

There was some interesting comment on the manganese situation at the recent luncheon the President tendered to members of the Roper business advisory council, according to backstair gossip.

Following the meal there was discussion of the unemployment situation, which is very close to the President's heart these days. He said that the country should take steps to bring into production everything possible to help the unemployment situation and leaning over to Edward R. Stettinius, chairman of the finance committee of the United States Steel Corp., who was pinch hitting for Myron C. Taylor, he said if American steel plants would use domestic manganese ore, it would probably put some 10,000 additional men to work.

It is reported that Mr. Stettinius called the President's attention to the manganese situation, that domestic ore is higher priced and not so suitable for steel production as most foreign ore, and this would inevitably increase the price of domestic steel. The President's answer—the deponent saith not.

#### **REPORT APPROVING STEEL HOURS, WAGES READY APRIL 1**

Secretary of Commerce Roper has announced that President Roosevelt has returned the so-called Roberts report to him. This is the report, not yet made public, showing compliance or noncompliance with wage and labor provisions and trade practices since the demise of the NRA. It is understood in this report that the steel industry shows about 100 per cent compliance on hours and wages.

The Robert committee was originally set up pursuant to a letter from the President to James L. O'Neill when he was NRA administrator, suggesting that information be obtained on alleged deviations from or adherence to the code standards following abolition of the codes.

Secretary Roper states that publication of the report has been delayed because he feels that the report "should be embodied in and

considered as an integral part of the general reports which the department of commerce will make to congress after the expiration of NRA on April 1. The general report should, therefore, be ready for publication shortly after April 1."

#### **ROAD BUILDERS STILL HAVE GRIP ON \$125,000,000**

Following through on the statement made in these columns last week that the road builders of the country have so far scored a beat on the President insofar as the house agricultural committee is concerned—there was a sequel last week.

The house passed the agricultural appropriation bill with no repeal of the road building program provided for at the last session of congress.

All of which means that, insofar as the bill has now progressed, half way to become law, the road builders are holding the whip hand and the country will go ahead and spend another \$125,000,000 during the coming fiscal year, beginning July 1, on roads. This, of course, means considerable to some branches of the steel industry.

#### **HULL GETS SCRAP AUTHORITY**

In connection with the law prohibiting the exportation of tin plate scrap except under license, the President has issued an executive order to "delegate to the secretary of state as chairman of the national munitions control board the power to grant licenses for the exportation of tin plate scrap upon such conditions and under such regulations as he may find necessary to assure in the public interest fair and equitable consideration to all producers of this commodity, and as he may prescribe by and with the advice and consent of the board."

#### **KICK ON SUBSIDIZED IMPORTS**

Secretary of Commerce Roper's attention has been called, it is understood, to scattered protests being received by the department from eastern seaboard steel manufacturers regarding imports of finished steel from countries whose steel industry is working under government subsidy.

The burden of the protests is that the American steel industry is not able to get any relief either from the customs service of the treasury department on dumping or from the tariff commission on rate changes.

There is little that the department of commerce can do in the matter other than calling this situation to the attention of the government bureaus named with any recommendation that might be made.

#### **TRADE PACT AIDS MACHINERY**

The trade agreement signed last week between the United States and

Nicaragua binds against increasing the present duty-free treatment of a long list of industrial machinery, included in four tariff items. This trade was worth \$374,571 to the United States in 1929, and \$70,732 in 1934. Similar protection is also obtained by the treaty on important electrical equipment.

#### **BERRY COUNCIL ASKS REPRIEVE**

Maj. George L. Berry's industrial council, to which the iron and steel, automobile, and other leading mass production industries refused to send delegates at the initial conference in Washington, Dec. 9-10, at a meeting in Washington Friday adopted a resolution asking for its formal continuance by the government.

Addressing the council, Major Berry said that it had completed the first phase of its endeavors and "with endorsement from official sources will be ready to proceed with long term studies with a view to working out actual solutions of vital questions confronting industry."

### **Scrap Institute Names Finance Committee**

Appointment of the finance committee of the Institute of Scrap Iron and Steel, one of the standing committees of the Institute, is announced by Herman D. Moskowitz, of Schiavone-Bonomo Corp., New York, chairman of the committee. In addition to Mr. Moskowitz, the finance committee will consist of the following:

Simon Edinburg, of Edinburg Metal Co., Worcester, Mass.; Ben Kaplan, of M. S. Kaplan Co., Chicago; M. D. Friedman, of the M. D. Friedman Co., Ashland, Ky.; I. Guy Shapiro, of Columbia Iron & Metal Co., Cleveland; Sloan Hurwitz, of Hurwitz Bros. Iron & Metal Co., Buffalo; Maurice Schlafer, of Schlafer Iron & Metal Co., Detroit; Richard V. Bonomo, of L. Schiavone & Bonomo Bros., Jersey City, N. J.; P. W. Bowers, of P. W. Bowers & Co., New York; John Hunt, of M. J. Hunt's Sons, Philadelphia; Morris Davidson, of M. Davidson Co., Stockton, Calif.; I. W. Solomon, of I. W. Solomon Co., Pittsburgh; D. H. Cohen, of D. H. Cohen Inc., St. Louis; Julius Glant, of Pacific Iron & Metal Co., Seattle; and Abe Cohen, of Lynchburg Iron & Metal Co., Lynchburg, Va.

#### **18 BARGES IN CARNEGIE TOW**

Carnegie-Illinois Steel Corp. dispatched the towboat MONONGAHELA from Mingo, O., for New Orleans on March 11 with one of the largest steel tows in recent months. Delivery will extend to points down the river as far as New Orleans. The tow consisted of 18 barges.



# Steel Corp. Taxes \$5.23 Per Ton, with More To Come

**I**NCREASED production, enabling the United States Steel Corp. to spread its tax burden more thinly over a greater tonnage, lowered this burden in 1935 to the most favorable position since 1931.

But this improvement apparently will be short-lived, as the incidence of special security levies and the proposed tax on undistributed earnings threaten to lift both the aggregate and the per-ton effect of taxation of all kinds.

As disclosed by the accompanying table, which compares statistics from the just-issued pamphlet report for 1935 with reports of preceding years, taxes, including local, state and federal, averaged \$5.23 for every ton of rolled and finished steel shipped last year to domestic and export customers of the Corporation. These taxes were 5.67 per cent of gross sales.

## Social Levies Heavy Burden

Over 1934, 1933 and 1932—the latter year making the worst showing—this was some improvement, but Corporation officials estimate that on the basis of 1935 volume and employment the social security levies will impose an added burden of \$3,500,000. This would be almost 50 cents additional on every ton of finished steel shipped.

To what extent the proposed tax on undistributed surplus would hit the Corporation in a reasonably good year is only conjecture inasmuch as the bill has not yet been drafted. The latest word is that corporations will be permitted to retain 30 to 40 per cent of their net earnings for reserves, and that the tax on the remainder will be on an ascending scale to perhaps 55 per cent.

However, in 1935 the Corporation reported net earnings of \$60,536,811, an increase of \$25,318,452 over 1934. After charges, its net income was only \$1,146,708, contrasted with a deficit of \$21,667,779 in 1934. The payment of 2 per cent on the preferred left a deficit of \$6,058,913 for the year, which was a

marked improvement over the deficit of \$28,873,401 one year ago. As of Dec. 31, the arrearage on the preferred totaled \$58,545,678.

Undivided surplus of the Corporation and its subsidiaries as of Dec. 31 was \$252,516,714, a slight loss from the \$258,575,627 of Dec. 31, 1934.

## 32 Millions for Plants

A token of recovery is evident in a comparison of the net expenditures on property investment account. In 1934 this was \$7,313,792, which may be said to represent approximately the Corporation's expenditure for improvements, and at the close of 1934 the unexpended balances for improvements to plants and facilities totaled \$20,500,000.

But in 1935 the outlay for additions and betterments was \$31,705,235, over four times the 1934 figure, while the unexpended balances last Dec. 31 aggregated \$83,000,000, also a four-fold gain.

Notwithstanding these large expenditures, the capacity of subsidiaries of the Corporation declined fractionally last year. As of Dec. 31, 1935, the capacity of its blast furnaces for making pig iron, ferromanganese, etc., was 20,505,400 tons, for steel ingots and castings 26,657,000 tons, and for finished steel products for sale 18,612,800 tons. The comparable statistics for Dec. 31, 1934, were, respectively, 21,108,900, 27,341,900, and 19,261,900 tons.

Actual number of employes working in 1935 was 194,820, an increase of 4935 over 1934. Total payroll was \$251,576,808 in 1935, up \$41,073,275. Average of hours worked per week per employe was 33.9, compared with 30.1 in 1934, while the average earning per hour improved 3 cents to 73.

Practically no change occurred in 1935 in regard to inventories by subsidiaries of the Corporation. At the close of last year these stood at \$258,804,996, against \$257,359,655 one year preceding. There was a de-

cline of \$10,000,000 in iron, manganese and zinc ores, to \$72,557,656, and an increase of \$3,000,000 in semifinished steel, to \$18,333,661.

Of the 231,901 holders of stock in the Corporation, 90,645 or 39 per cent are women.

## Safety

**D**URING the 20 years of organized industrial safety work, the lives of about 250,000 workers have been saved, according to an estimate by the National Safety council. In 1935 fatal accidents in industry totaled 16,500, less than half the number of deaths in occupational accidents 25 years ago. By contrast there were 31,500 accidental deaths in the home in 1935, and the 99,000 deaths from all types of accidents were the third highest in history.

## Simplified Practice on Scrap Is Revised

Standing committee in charge of simplified practice recommendation R58-28, classification of iron and steel scrap, has submitted a revision of the recommendation, and the division of simplified practice of the national bureau of standards has mailed copies to all interests for consideration and approval. The original recommendation was approved at a general conference of the industry in 1926. The first revision, which became effective Jan. 1, 1928, has since been in effect.

The recommendation specifies classes of scrap for blast, basic open-hearth, acid open-hearth, and electric furnaces, for gray iron foundry practice, bessemer converters, and for miscellaneous scrap. A contract form for purchase of scrap is also included.

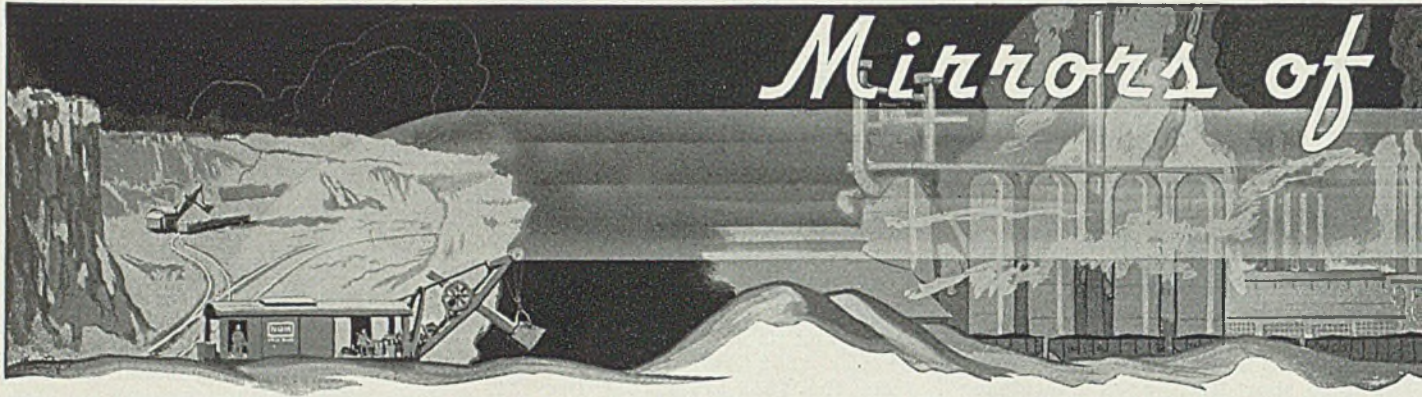
The current revision covers certain additions and eliminations to meet current needs. The revised schedule, when adopted by those at interest, will remain in effect until it is again revised by the standing committee of the industry.

Copies of the proposed revision, in mimeographed form, may be obtained from the division of simplified practice, national bureau of standards, Washington.

## How Tax Burden Bore Down on Steel Corporation During the Depression Period

	1935	1934	1933	1932	1931	1930
Accruals for all taxes, local, state, and federal.....	\$38,400,793	\$35,780,384	\$32,558,544	\$32,304,621	\$33,242,704	\$48,051,926
Shipments of rolled and finished steel products, both domestic and export, tons	7,347,549	5,905,966	5,805,235	3,974,062	7,676,744	11,624,294
Tax burden per ton shipped.....	\$5.23	\$6.06	\$5.61	\$8.14	\$4.33	\$4.14
Total gross sales .....	\$676,729,536	\$527,236,951	\$467,249,268	\$320,819,535	\$650,855,237	\$1,052,912,124
Percentage taxes to sales.....	5.67	6.78	6.97	10.6	5.11	4.78





# Mirrors of

## DETROIT

**L**AST week General Motors broke out with an elaborate spring show that had the lobby of the General Motors building looking like a cross section of a flower conservatory, an automobile exhibit and the month of May.

Banked amid hundreds of hyacinths, a number of light-colored motor cars graced the lobby of Detroit's largest building. As they passed to work last Monday morning, hundreds of the city's business men got an envying eyeful and knew that the industry was firing the first gun of its big spring offensive.

With a shiny automobile ensconced in a bed of flowers, you just can't be human if you don't feel a tug at your pocketbook. And the emotion carried all of its precalculated appeal. It may be rushing the season a little, but that General Motors show gives you an idea what the ices of April will bring.

Translated into colder facts, the assembly lines took things into their own hands more resolutely last week. Against the week preceding not one of the more important car makers failed to show a gain in production.

### Return to 5-Day Schedule

Emphatically, the 5-day week is now in vogue here. Ford, Chevrolet and Plymouth have returned to it. Detroit exudes the confidence of last November and December—and that's something, a mighty reversal of form from the depression of February. There has been a lusty revival of talking up 5,000,000 assemblies in 1936.

The production and planning departments of the leading car makers here cannot be accused of any temerity. So assuring are all signs that last week saw many setting up schedules not only for April, but even for May.

Chevrolet—sharing with industry the certainty that February was the low point of the first half year—has set up better than 110,000 assemblies

for both of those coming two months. In turn, it will make better than 100,000 models in March, aided at present by a brisk call for proportionately more standard and commercial models. That's as good as last December.

For the story at Ford you can make practically a carbon of the foregoing paragraph. The 5-day week went into effect at Rouge last week, 24,000 jobs were run off and the coming two months bulk imposing enough for over 100,000 V-8's each.

At Plymouth, the lid also sprang off, and over 10,000 jobs came off the lines last week. Though still with a man-sized job cut out for it, Plymouth is not talking down the goal it set for 1936 of 500,000 jobs.

### Four Tie for Fifth Place

Dodge was firmly entrenched in fourth place, and at 6000 was 1000-odd better than two weeks ago. To Buick, Olds, Pontiac, and Hudson goes an unscrambled fifth-place tie—each showed a gain, and each accounted for some 3000 models.

Following, and innoculated with the same growing pains, were Packard at 1300 assemblies against 1100 the week before; Studebaker at 2000 against 1600-odd; Chrysler and DeSoto at 1900 as compared with 1750; Nash and its Lafayette with 1050 nicely setting off 700 jobs two weeks back, and Cadillac and Lincoln at 700 apiece—both gains.

Unlike the stock market, there were all plus signs in this game through last week. All in all, March won't beat 400,000 production, but the last two weeks of this month will do their proportionate share—that's the way the wind blows strong.

The automobile parts' industry has, of course, had its sailing orders. For the time being the car manufacturers are clearly bent on balancing stocks, but on parts with some processing required the go-ahead is out for April.

Ford is now hewing to the line of a policy of keeping inventory on hand

for 20 days, plus another 10 to 20 days' supply in the hands of suppliers, so that to all intents better than a month's supplies are readily available. Just a short time ago, it was the rare parts item at Rouge that was in less than 27 days' volume, but then less stock was kept in the hands of outside shops. In other words, the Ford policy, in the aggregate, is more long-term.

Chevrolet, with a surprising bulge in orders at hand for its standard line, is operating its parts divisions at varying gaits. This calls for more leaf springs, fewer knee action parts. Consequently, while Flint finished assemblies were at five days last week, some Chevrolet tributary divisions were on full blast, others three days.

In raw materials—chief of which to the motor industry is steel—there has arisen a peculiar condition. Admitting that April and May assemblies are going to be tops, no motor car maker will speculate in steel on the basis of the revised second-quarter steel prices.

### Refuse To Buy Ahead

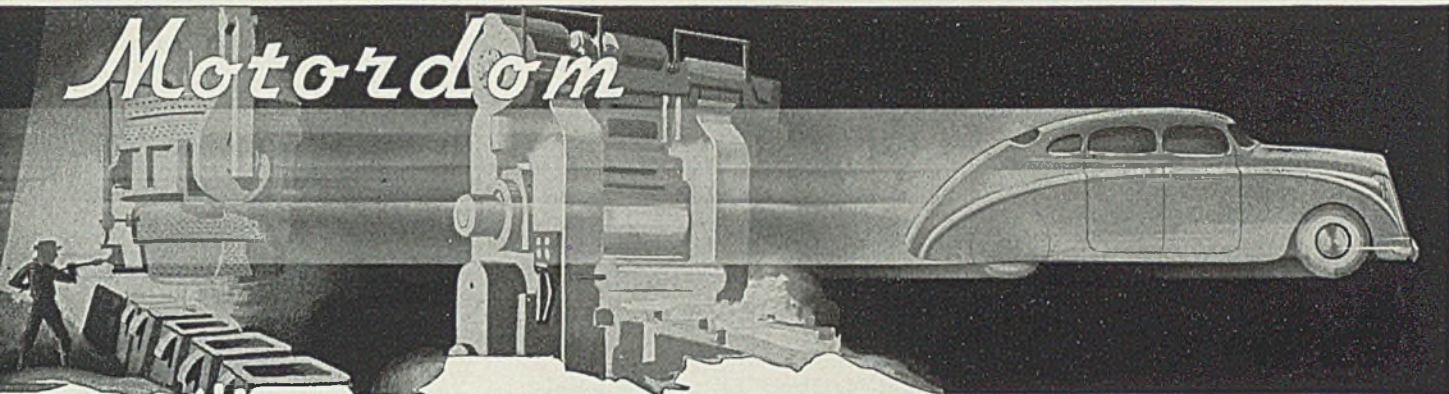
Some of these new prices, effective April 1, are going to mean an increase from the concessions granted the motor people in the first quarter. Yet none is taking moves to lay in a stock of necessity items as sheets, bars and strip.

Chrysler Corp., for one, can't be tempted on its steel requirements beyond late April. But a short year and a half ago, this same Chrysler speculated in the steel market so heavily it even had to use army tents in vacant lots in Detroit to cover its steel investment. That was the time when more than 100,000 tons of steel were laid down out here against a rising market, and by just this one user.

Spoilage ate up more than the paper profits on that steel; apparently a lesson was learned.

Every time two streets come together in Detroit it seems there is





a tool shop. Many of them small—and of course restricted on the business they can handle—nevertheless in aggregate they're an industry that is now on the verge of a flood of business.

Last week the word was around that the real important tool and die work for 1937 motor cars would be delayed another ten days, possibly until April 1. Nonetheless, inquiries in the hands of the tool makers show there's really something worth waiting for.

In no year in the last three will there be so much attention given to embellishments as there will in 1937 cars. Most changes will be in hub-caps, hood grilles, running boards, dash trim, coach work, interior trim and radiator shells. Brighter metal parts—more of them stainless—will be in order; so will flowing lines.

#### Undecided on New Frames

As for panel work, the trend is toward more streamlining, and in most cases it will hit the hood and rear quarter panels the most sweepingly. Frames will set closer to the roadway, so will motors. In fact, look at Chrysler's Airflow or Lincoln's Zephyr and you'll get a rough idea of what will be copied to be on the streets a year from now.

Whether the bridge-deck frame of these two will be widespread adopted is not yet settled. As of last week even the brass hats in motordom's high command were not settled on that point, for it presents an upheaval in assembly technique. As against better riding qualities, there is the serious offset that this frame absolutely limits the number of models that can be made to a line. Nothing but sedans or coupes can be produced.

Because another three weeks should surely see the 1937 tool and die programs under way, the industry is allowing itself plenty of time to adequately make its changes and be set on time for the November shows. Generally speaking, the au-

tomobile industry from a preparatory angle at this writing is a full 60 days ahead of schedule.

This present timetable may, in the minds of some qualified observers, permit the 1937 entries to get away from the post in August of this year. If they do, the industry will soon completely lap itself by this inching—it takes no long memory to hark that January was once time-tried as inviolate for the month of new cars.

This industry may some day find itself in the position of a railroad train that, scheduled to run just once a day in one of our New England states, found the going so rough this winter that as it got later and later on arrival at destination each night, it finally caught up with itself and just skipped a day.

At all events, from the way things shape up here, there won't be any vacation in the tool and die busi-

ness this summer, and therein lies a story.

To date in the major expenditures only the Flint program of Chevrolet—mainly for the new motor—has been let. Chrysler and Briggs are closely guarding their plans, but have not let any contracts. Murray, a good indicator of Ford, is another like Fisher Body—neither have placed their contracts covering 1937 changes.

Incidentally, it came to light definitely last week that Ford had emphatically turned thumbs down on hydraulic brakes for next year, but it's an odds-on bet the V-8 will have a steel top. The steel top would add 25,000 tons to Ford's sheet requirements, based on production in 1934.

Murray has completed its new die division and had just closed on some important business. It took the new Packard 120 convertible job, renewed its Studebaker frame contract, also the frames for Dodge trucks. The Murray die shop enlargement meant writing out a check for \$200,000.

#### Small Packard Taking Form

In company with other outside stamping shops, Murray is waiting any day now for a decision from Packard of who gets the small six work. The frame, a 115-inch design, may not be let out of Packard's own plant, but the fenders and coach work will in large part, and it promises an attractive contract.

Packard only has four hand-made small sixes made and last week was still negotiating on subcontracts, all of a preliminary nature, so it is as sure as this is March that the small six won't be out for another five months.

Even though the small Packard six will be a 120 counterpart on a small scale, there are a lot of headaches in store before it can be set on the assembly line. The Packard sheet metal division, like many another, is not geared up now to handle parts

## Automobile Production

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

	1934	1935	1936
Jan. ....	155,666	292,785	367,252
Feb. ....	230,256	335,667	*275,000
Mar. ....	338,434	429,793	.....
Apr. ....	352,975	477,691	.....
May ....	330,455	364,662	.....
June ....	306,477	361,248	.....
July ....	264,933	336,985	.....
Aug. ....	234,811	239,994	.....
Sept. ....	170,007	89,804	.....
Oct. ....	131,991	275,024	.....
Nov. ....	83,482	398,039	.....
Dec. ....	153,624	407,804	.....

Year .....2,753,111 4,009,496 .....

\*Estimated.

Estimated by Cram's Reports

Week ended:	
March 7 .....	84,705
March 14 .....	90,660



for two quantity production models at the same time.

Even as flexible an organization as Ford has found that costs go haywire if they attempt to run two different series on the same lines—always the sheet metal division is the stumbling block. Fisher Body can testify as to the intricacies of this problem.

## Died:

**E**DWIN E. ELLIS, 53, vice president, United States Steel Corp., New York, in Short Hills, N. J., March 10. Mr. Ellis had been associated with the Corporation for the past 30 years. His first connection with the Corporation was as an assistant geologist for Oliver Iron Mining Co., Duluth, in 1906. In 1908 he was transferred to the Tennessee Coal, Iron & Railroad Co., Birmingham, Ala., where he remained for 17 years, eventually becoming manager of the company's land department.

In 1925 Mr. Ellis was attached to the staff of the Corporation in charge of special mineralogical research, and subsequently was made president of the Universal Exploration Co., a subsidiary. In 1932 he was made a vice president of the Steel corporation, with direct jurisdiction over its iron ore, limestone and coke properties, succeeding D. G. Kerr, who had retired.

Mr. Ellis was a member of the American Iron and Steel institute, American Institute of Mining and Metallurgical Engineers, Mining and Metallurgical Society of America, Society of Economic Geologists, and Canadian Institute of Mining and Metallurgy.

D. D. Cotsifas, chief clerk for American Bridge Co., Pittsburgh, at Pittsburgh, March 6.

John McBane, 48, hot mill superintendent for Republic Steel Corp. at its Warren, O., plant, in Warren, March 2.

Nelson A. Gladding, 72, vice president of E. C. Atkins & Co., Indianapolis, saw manufacturer, in Portland, Oreg., March 8.

Arthur E. Robinson, 77, founder and president of the Regal Gasoline Marine Engine Co., Coldwater, Mich., in that city March 5.

Alfred O. Dunk, 63, former president of the Detroit Electric Car Co., Detroit, and pioneer in the automobile parts industry, in Los Angeles, March 5, while on a business trip.

William S. Macomber, 66, former sales manager of the Bishop & Bab-

cock Sales Co., Cleveland, in that city, March 11. Mr. Macomber was born in Little Compton, R. I., and went to Cleveland 30 years ago. He was employed by the Standard Tool Co., and later became sales manager of the Bishop & Babcock company. He retired four years ago.

Alexander I. Aitchison, 52, employment manager of Dominion Foundries & Steel Ltd., Hamilton, Ont., in that city, recently. He had been a major executive of the company for the past 25 years.

Grant Morrison, 71, president and treasurer, Bay City Iron Works, Bay City, Mich., in Bay City, March 9. Born in Oswego county, New York, Mr. Morrison went to Bay City when a youth. He first became associated with the iron works in 1903 as bookkeeper, later becoming an executive of the firm.

William L. Deming, 84, president, Deming Co., pump manufacturer, Salem, O., in Salem, March 8. In 1882 he became affiliated with the Silver & Deming Mfg. Co., and when the Deming Co. was organized in 1890 to take over the pump manufacturing business of the former company, Mr. Deming was made secretary. In 1895 he was elected vice president and secretary, and in 1921 became president. He was active in the civic affairs of Salem.

W. J. Hitchcock, 72, prominent industrialist and son of one of the pioneers in the Youngstown iron and steel business, in New York, March 3. Leaving school he became identified with the Andrews & Hitchcock Iron Co., Youngstown, O., of which his father was president. Mr. Hitchcock was operating manager for the company which was sold to the Youngstown Sheet & Tube Co. in 1916. He was a director of the G. M. McKelvey Co., and a contributor to many social and welfare enterprises.

## Convention Calendar

March 16-18—National Association of Waste Material Dealers Inc. Annual convention at Hotel Astor, New York. Charles M. Haskins, 1109 Times building, New York, is secretary.

March 29-April 4—American Ceramic society. Annual convention and exhibit at Deshler-Wallick hotel and Neil House, Columbus, O. Ross C. Purdy, 2525 North High street, Columbus, O., is secretary.

April 13-17—American Chemical Society. Semiannual convention in Kansas City, Mo. Dr. Charles L. Parsons, 728 Mills building, Washington, is secretary.

April 14-18—Oil Burner Institute Inc. Twelfth national convention at Statler hotel, and show at Convention Hall, Detroit. G. Harvey Porter, 30 Rockefeller Plaza, New York, is managing director.

April 16—National Council of American Shipbuilders. Annual convention at Whitehall club, New York. C. C. Knerr, 11 Broadway, New York, is secretary.

April 16-17—American Institute of Mining and Metallurgical Engineers. Meeting of open-hearth committee in Detroit. L. F. Reinartz, works manager, American Rolling Mill Co., Middletown, O., is chairman.

April 18—Spring Manufacturers association. Annual convention at Hotel Commodore, New York. L. A. Wheeler, 4 School street, Bristol, Conn., is secretary.

April 20-21—American Gear Manufacturers association. Twentieth annual convention at Adelphia hotel, Philadelphia. J. C. McQuiston, Penn Lincoln hotel, Wilkinsburg, Pa., is manager-secretary.

April 20-21—American Zinc institute. Eighteenth annual meeting at Hotel Statler, St. Louis. Ernest V. Gent, 60 East Forty-second street, New York, is secretary.

April 20-23—American Hardware Manufacturers association. Convention at Hotel Peabody, Memphis, Tenn. Charles F. Rockwell, 342 Madison avenue, New York, is secretary.

April 20-24—Midwest Power Engineering conference and Midwest Engineering and Power exposition. Conference at Palmer House, exposition at International Amphitheatre, Chicago. G. E. Pfisterer, 308 West Washington street, Chicago, is secretary.

April 22-23—Association of Iron and Steel Electrical Engineers. Spring engineering conference at Ohio hotel, Youngstown, O., under auspices of combustion engineering division. Brent Wiley, 1010 Empire building, Pittsburgh, is managing director.

April 22-23—National Metal Trades association. Thirty-eighth annual convention at Waldorf-Astoria hotel, New York. Harry S. Flynn, 122 South Michigan avenue, Chicago, is secretary.

April 27-30—Chamber of Commerce of the United States. Annual meeting in Washington. D. A. Skinner, 1615 H street, N. W., is secretary.

May 4-9—American Foundrymen's association. Fortieth annual convention and exposition at Convention Hall, Detroit. C. E. Hoyt, 222 West Adams street, Chicago, is executive secretary.

May 25-28—National Association of Purchasing Agents. Twenty-first annual convention and exhibition at Roosevelt hotel, New Orleans. George A. Renard, 11 Park Place, New York, is secretary.

May 28—American Iron and Steel institute. Forty-fifth general meeting at Waldorf-Astoria hotel, New York. Walter S. Tower, 350 Fifth avenue, New York, is executive secretary.

June 1-4—American Electro-Platers' society. Annual meeting and exhibition in Cleveland. E. Steen Thompson, 905 West Tenth street, Erie, Pa., is secretary.

June 29-July 3—American Society for Testing Materials. Thirty-ninth annual meeting at Chalfonte-Haddon Hall, Atlantic City, N. J. C. L. Warwick, 260 Broad street, Philadelphia, Pa., is secretary.



## Meetings

**F**OUNDRY conference and exhibit presented by the shop division of the mechanical engineering department, University of Washington, Seattle, March 5, drew attendance from as far south as Los Angeles and as far north as Vancouver, B. C.

The program was arranged and supervised by Gilbert S. Schaller, associate professor, mechanical engineering, University of Washington, with C. L. Sullivan, an instructor, in charge of the exhibit.

Technical sessions included presentation of papers on nickel alloyed cast iron, gates and risers for castings, physical testing of metals, and new developments in the foundry industry.

E. O. Eastwood, professor of mechanical engineering, presided at the afternoon session, and Frank W. McKenzie, Webster-Brinley Co., Seattle, at the evening session. Speakers included Pat Dwyer, engineering editor, *The Foundry*, Cleveland, A. G. Zima, research and development engineer, International Nickel Co., Los Angeles; and B. T. McMinn, associate professor of mechanical engineering.

Mr. Schaller presided as toastmaster at the banquet, at which addresses were delivered by Dr. Lee Paul Sieg, president of the university, and E. A. Loew, dean of the College of Engineering.

### STEEL EXPO TO SET RECORD

Already 113 manufacturers of steel mill equipment have reserved 90 per cent of the original space laid out for the iron and steel exposition to be held in conjunction with the convention of the Association of Iron and Steel Electrical engineers in Detroit, Sept. 22-25. This insures the exposition and convention being the largest in history.

## Labor

**J**ONES & LAUGHLIN STEEL CORP.'S Vesta Coal Co. subsidiary mine No. 4 at California, Pa., was subjected to a strike March 6 when approximately 1400 coal miners went out. Three days later, however, they were ordered back to work by District United Mine Workers' President P. T. Fagan, also by the urging via telegram from John L. Lewis, international president, that the men stay on the job. Under the terms of the contract between the union and the captive mines, the men's complaints cannot be adjusted while they remain idle. Consequently, the miners have returned to work while negotiations were being carried on last

week. Complaints of the miners center on the alleged violation of seniority rights.

### RESTORES PAID VACATIONS

Westinghouse Air Brake Co., Wilmerding, Pa., officials have announced the reinstatement of vacation with pay for veteran employes. Men with 10 years' service will get one week's vacation with pay and those with 21 years will get two weeks.

### PENSION PAYMENTS A RECORD

Bethlehem Steel Corp. paid \$840,225 in 1935 to its pension employes, a record sum, and nearly 1 per cent of its payroll. Since establishment of the pension fund on Jan. 1, 1923, payments have totaled \$7,594,796. Payments are made entirely by Bethlehem without any contribution by employes, who may retire after 25 years of service after passing 65. Pensions also are granted for disability after 15 years of service.

# Men of Industry

**W**W. SCHOFIELD has been made plant superintendent at Lowellville, O., for Sharon Steel Corp., Sharon, Pa. Mr. Schofield has been connected with the Lowellville plant for 20 years, working his way up from second helper in the open-hearth plant.

P. M. Connor has been appointed assistant plant superintendent. Prior to his connection with Sharon, he was chemist and metallurgist for American Rolling Mill Co., Middletown, O., from 1918 to 1925. He then was with Newton Steel Co. as chief metallurgist, and in 1934 was made works manager of its Monroe, Mich., plant. He joined Sharon last year.

John Bidnar has been named open-hearth superintendent. He formerly was connected with the Carnegie Steel Co. at the Ohio works from 1911 to 1914, with the Brier Hill Steel Co. from 1914 to 1917, becoming melter at the Sharon plant at Lowellville in 1917.

These promotions follow the transfer of officials from Lowellville to the Pittsburgh Steel Co., Pittsburgh, as reported in STEEL for March 9, page 26.

Francis Hodgkinson, consulting mechanical engineer, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has retired, after 42 years of service. Born in London, England, and educated in the Royal Naval school, New Cross, England, Mr.

## Transportation

**J**ONES & LAUGHLIN STEEL CORP. Friday night sent out from Pittsburgh its tow boat VESTA with 14 barges carrying 12,000 tons of finished steel for deliveries at southern ports.

### SEES IRON, STEEL TRAFFIC UP

A 14 per cent increase in iron and steel carloadings in the western Pennsylvania district is forecast for the second quarter over the second quarter of 1935 by the Allegheny regional advisory board.

### PLANS SURCHARGE HEARING

The interstate commerce commission last week denied a motion by certain shippers to dismiss the application of the railroads for an indefinite extension of the freight rate surcharges which expire July 1. The commission indicated it will hold hearings within several weeks.



Francis Hodgkinson

Westinghouse negotiated a license agreement with Sir Charles Parsons, Mr. Hodgkinson at the latter's recommendation came to the Westinghouse Machine Co., in charge of steam turbine construction. In 1916 he was made chief engineer, and in 1926 was made consulting mechan-



ical engineer, which position he held until his retirement.

He is a member of the Engineers' Society of Western Pennsylvania, American Society of Mechanical Engineers, American Institute of Electrical Engineers, and Institute of Mechanical Engineers of Great Britain.

M. G. Dumas has been elected president, and D. C. Lott, secretary-treasurer, of Steel & Engineering Inc., Pittsburgh.

Edward R. Walsh Jr. has been made general sales manager of the air conditioning and automatic heating division of the Herman-Nelson Corp., Moline, Ill. He formerly had been retail sales manager of Gilbert & Barker Mfg. Co.

George Gordon Crawford, former president of the Tennessee Coal, Iron & Railroad Co., Birmingham, Ala., and of the Jones & Laughlin Steel Corp., Pittsburgh, is in the TCI hospital, Fairfield, Ala., in a serious condition. He had been ill for several weeks at his home in Birmingham.

John W. Blackford has joined the sales organization of L. C. Bigelow & Co. Inc., New York, where he will have charge of the bearing department. He formerly had been associated with the ball bearing division of the Torrington Co., Torrington, Conn., as factory salesman and Detroit district manager.

Philip G. Johnson has severed his active executive connection with the Boeing Airplane Co., Seattle, and has obtained an interest in the Kenworth Motor Truck Corp., Seattle, of which he has been elected vice president in charge of manufacture. The company builds custom-made gas and diesel trucks.

Charles A. Moore, chairman of Manning, Maxwell & Moore Inc., New York, has been elected chairman of the Electric Hoist Manufacturers' association, succeeding C. O. Hedner, Yale & Towne Mfg. Co., Philadelphia. Shaw-Box Crane & Hoist Co., a member of the association, is a subsidiary of Manning, Maxwell & Moore Inc.

A. S. Watson, vice president, Detroit Hoist & Machine Co., Detroit, has been elected vice chairman of the association. The association has its headquarters at 165 Broadway, New York, with E. Donald Tolles as secretary-treasurer.

Harry A. Winne and John C. Miller have been appointed as managers of sales for two sections of the industrial department of the General Electric Co., Schenectady, N. Y.

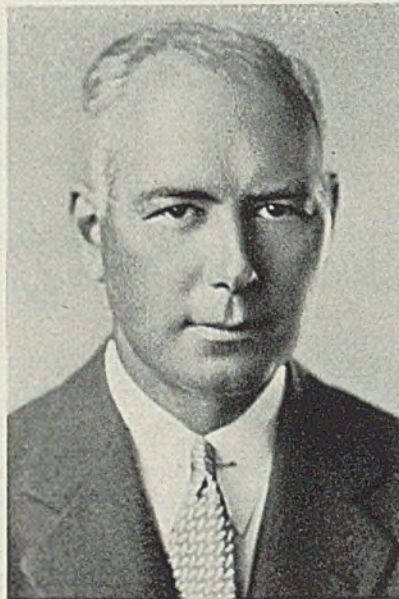
Mr. Winne, formerly in charge of the steel mill section of the industrial engineering department, has been

made manager of the mining and steel mill section, succeeding K. H. Runkle, who has been made an assistant manager of the industrial department.

Mr. Miller, who has been in charge of the department's aeronautical section for some time, has been appointed manager of sales for that section.

Charles O. Chestnut, treasurer, McCord Radiator Co., Detroit, has been named vice president and a director. Percy L. Barter, vice president, has been also named a director.

H. L. Geiger, 333 North Michigan avenue, Chicago, and A. G. Zima, 705 Petroleum Securities building, Los Angeles, have been appointed field rep-



P. B. Burtis

Who has been made assistant manager of sales in the Philadelphia district for Bethlehem Steel Corp., as reported in STEEL for March 9

representatives for the International Nickel Co. Inc., New York, to offer counsel on problems in connection with the production and utilization of nickel alloys.

J. E. Donally, 6108 Oakland avenue, St. Louis, has been appointed sales representative in St. Louis and surrounding area for the LaSalle Steel Co., Chicago.

Wallace G. Imhoff, president, Wallace G. Imhoff Co., Vineland, N. J., consultant in zinc coating, has been appointed technical director of research for the American Hot-Dip Galvanizers association, Pittsburgh. He will handle all problems of the association relative to zinc coatings.

A. R. Glancy Sr., former vice president of General Motors Corp., De-

troit, has been elected chairman of the National Tool Co., Cleveland. A. G. Simmons has been re-elected president, and L. T. Jones, Detroit lawyer, has been named secretary-treasurer. Directors include Messrs. Glancy, Simmons, Jones, A. R. Glancy Jr., A. J. Hudson, patent attorney, and John S. Fleck, partner of Hayden, Miller & Co.

H. J. Carmichael, who has been general manager of McKinnon Industries Ltd., St. Catharines, Ont., subsidiary of General Motors Corp., Detroit, has been advanced to vice president and general manager of the latter firm's main plant in Oshawa, Ont. Mr. Carmichael is succeeded at St. Catharines by W. A. Wecker, formerly president and general manager of the Hayes Wheel Co. of Canada.

H. T. Moore has been elected president of the Tuthill Spring Co., Chicago, succeeding the late Frank H. Tuthill. Mr. Moore has been with the Tuthill company for nearly 20 years, being vice president for the past five years.

W. S. Van Bergen has been made vice president, and remains in charge of production.

J. H. Schmidt has been elected secretary, and O. C. Nuss remains as treasurer.

L. M. Funderburg has been appointed superintendent of the Leeds, Ala., plant of the Universal Atlas Cement Co., a subsidiary of the United States Steel Corp. He succeeds B. E. Merrell, who died March 4.

Mr. Funderburg has been with the company over 12 years, and since May, 1930, has been assistant plant superintendent at Leeds. Prior to his cement connection he was plant engineer for the Alabama By-Products Corp.

A. H. Renshaw has been elected chairman of the board of the General Railway Signal Co., New York. Paul Renshaw, formerly vice president, has been elected president, and Sidney G. Johnson, formerly assistant to the president, has been elected vice president.

This corrects the notice in STEEL for March 2, page 36.

Dr. John F. Thompson, for the past five years sole vice president of the International Nickel Co. of Canada Ltd., Toronto, Ont., has been elected to the newly-created post of executive vice president.

Dr. Paul D. Merica, formerly assistant to the president; Donald Mac-Askill, general manager in charge of



Askill, general manager in charge of Canadian operations; and D. Owen Evans, delegate director of Mond Nickel Co. Ltd., have been elected vice presidents of the company.

♦ ♦ ♦  
Heber G. Stout, export manager of the Chain Belt Co., Milwaukee, is about to leave for a trip to Mexico to study business conditions, following reports to him that the Mexican business situation is favorable and that there is widespread activity in the construction field.

♦ ♦ ♦  
Leslie G. Korte has become connected with the Atlas Foundry Co., Detroit. Starting at the Riley Stoker Corp. plant, Detroit, he progressed through the organization, holding such positions as toolroom foreman, machine shop superintendent, chief inspector, and general superintendent. He held the latter position for ten years, resigning on Feb. 1 to become associated with the Atlas company. Mr. Korte is vice chairman of the Detroit chapter of the American Foundrymen's association.

♦ ♦ ♦  
Cyril Grindrod, for the past ten years general foreman in charge of the automatic screw machine, gear cutting and sheet metal departments of Dalton-Powers division, Remington Rand Corp., Norwood, O., and previously with Brown-McClaren Co., Detroit, has joined the staff of Union Drawn Steel Co., Massillon, O., in the capacity of sales engineer and consultant to the trade on automatic screw machine operations.

Since entering business in 1913 in the screw machine department of Potter & Johnston Machine Co., Pawtucket, R. I., Mr. Grindrod has been constantly associated with automatic screw machine operations.

♦ ♦ ♦  
Leon B. Thomas, formerly assistant technical superintendent, Chio Brass Co., Mansfield, O., has been made chief chemist and metallurgist of Campbell, Wyant & Cannon Foundry Co., Muskegon, Mich.

Following graduation from Carnegie Institute of Technology in 1914, he undertook a two years' apprentice course with the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., and then entered the research laboratories, where he was connected with the manufacture of ammunition during the World war.

Four years after the close of the war, he became chief chemist and metallurgist of the Fairbanks, Morse & Co., Three Rivers, Mich., and later was made foundry superintendent, being connected with that firm for six years. He then was appointed assistant technical superintendent of the Ohio company.

# Bethlehem Net Income Rises Eightfold; Financial News

**N**ET income of Bethlehem Steel Corp. in 1935 was \$4,291,253, compared with \$550,571 in 1934, according to the annual report issued last week.

The general condition of the Corporation in numerous particulars is indicated to be better than the previous year. Total income after deducting all charges except depletion and depreciation (other than depreciation provided through charge to operating expense), was \$18,873,152, compared with \$14,330,210 for the preceding year.

Net billed value of products shipped and of other classes of business was \$192,836,148, against \$168,207,394 in 1934. Estimated net amount of business booked during the year was \$210,033,718, compared with \$157,340,326 in 1934. Unfilled orders at the end of the year amounted to \$74,015,251, contrasted with \$56,817,681 at the end of 1934.

## Tax Burden Mounts

An increase of nearly \$1,400,000 in the tax burden of the Corporation is shown in the comparative figures of 1935 and 1934. The aggregate provision for taxes for the past year of the Corporation and its subsidiaries, including its share of the taxes of certain corporations partially owned by it, is \$7,511,254, as compared with \$6,123,410 for 1934. The amount of such aggregate provision for 1935 is equivalent to \$8.04 per preferred share outstanding. Total dividends of \$3.50 per share were paid on the preferred stock in 1935.

The cash position of the Corporation at the end of 1935 was \$31,819,219, corresponding to \$50,874,981 in 1934. Cash expenditures for additions and improvements to properties during the year amounted to \$24,104,024, and the net reduction in the funded debt during the year was \$14,941,495.

The figure of \$31,819,219, representing demand deposits in banks and marketable securities valued at the lower cost of market, includes \$232,455 for matured interest coupons and dividend drafts not presented for payment by the end of 1935, but does not include \$40,940,000 of monies reserved for the retirement of funded debt maturing in 1936.

No payments were made for 1935 to officers of Bethlehem and heads of departments having general con-

trol of matters affecting it and its subsidiary companies as a whole under the modified bonus system.

## GENERAL ELECTRIC REPORT LISTS GAINS IN 1935

General Electric Co., Schenectady, N. Y., increasing its dividend 5 cents to 25 cents, payable April 25 to record of March 13, reports following statistics for 1935:

Sales billed, \$208,733,000, increase of 27 per cent; net profit on the common stock, \$27,843,000, against \$17,151,000 in 1934; current assets, \$166,965,000; current liabilities, \$26,266,000; additions to plant, \$5,644,000 leaving net value of plant at the end of 1935, \$35,836,000; number of stockholders, 185,744; average number of employes, 55,706, against 49,642 in 1934; earnings of employes, \$88,746,000.

## OTIS 1935 PROFIT, BEST SINCE 1929, IS \$1.69 A SHARE

Net earnings of \$2,228,664 are shown in the report for 1935 by the Otis Steel Co., Cleveland. This is the best showing since 1929, and is equivalent to \$1.69 per share on the common stock.

This 1935 net profit is after deduction of federal taxes estimated at \$395,000 and depreciation of \$865,316, and compares with \$560,891 for 1934.

A marked improvement in the company's financial position is indicated by the increase in working capital of \$4,505,520.87. During the year the company reduced its bank obligations by \$1,175,000, leaving only a balance at the close of 1935 of \$1,300,000.

## APPROVES WICKWIRE PLAN

Federal Judge John Knight on March 6 at Buffalo entered an order approving reorganization of the Wickwire Spencer Steel Co. as Spencer Steel Products Inc. An appeal has been indicated by a minority group. Through the purchase of notes, Republic Steel Corp. will have a 9 to 10 per cent interest. (STEEL, March 2, page 28; March 9, page 14.)

## WESTINGHOUSE PROFIT JUMPS

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., reports net income of \$11,983,380 for 1935, compared with profit of \$189,562 in



1934. Sales billed in 1935 totaled \$122,588,555, compared with \$92,158,893 in 1934; orders received amounted to \$123,629,333, against \$106,473,226 in 1934; current assets were \$103,375,383, including \$39,588,947 cash, against \$9,511,619 current liabilities.

#### IS OPTIMISTIC FOR UNITED

United Engineering & Foundry Co., Pittsburgh, shows net profit of \$1,631,156 in 1935, compared with \$718,395 in 1934. George T. Ladd, president, says the company's plants operated in 1935 at a better level than any year since 1930.

"This condition has continued into 1936 since the company carried over upward of \$10,000,000 of unfilled orders", he said. "Prospects of new business are excellent, and we are looking with confidence for a continuation of this improvement throughout the year".

#### CLIFFS PROFITS MOUNT

Cleveland Cliffs Iron Co., Cleveland, reports in 1935 net of \$2,440,547, compared with \$775,489 in 1934; current assets of \$12,944,800, including \$3,971,862 in cash, contrasted with current liabilities of \$2,741,553.

The Cliffs Corp., which owns all of the common stock of the Cleveland Cliffs Iron Co., earned \$222,791 in 1935, compared with a net of \$37,390 before a loss of \$514,070 in securities and transactions in 1934.

#### PROFIT UP, SPANG TO PAY \$1.50 DIVIDEND

Spang, Chalfant & Co. Inc., Pittsburgh, reports net income of \$988,194, equal to \$7.60 a preferred share in 1935. This compares with a net of \$820,812, or \$6.31 a preferred share in 1934.

The company has declared a \$1.50 preferred dividend on the 6 per cent stock, payable April 1 to March 17 record. Three months ago the company paid \$1.50 and \$2.50 on account of accumulations. Unpaid preferred dividends now amount to \$14.50 a share.

#### FORGINGS DOUBLE PROFIT

Pittsburgh Forgings Co., Pittsburgh, reports net profit of \$57,864, or 27 cents a share for 1935, compared with net of \$31,040, or 14 cents a share in 1934. Net loss for Greenville Steel Car Co., Greenville, Pa., a subsidiary which is not consolidated, was \$69,920 in 1935, against net profit of \$164,330 in 1934.

#### DIVIDENDS DECLARED:

Eastern Malleable Iron Co., Nauvatonk, Conn., 50 cents on the new \$25 par stock, March 20 to record

of March 10, increased from 5 cents on old \$5 par stock.

Interlake Steamship Co., Cleveland, regular 25 cents April 1 to record of March 14.

Ludlum Steel Co., Watervliet, N. Y., \$1.62½ on the preferred, April 1 to record of March 20. This is the final dividend prior to calling this issue.

Acme Steel Co., Chicago, extra of 25 cents and regular of 62½ cents, April 1 to record of March 16.

Midland Steel Products Co., Cleveland, quarterly of 25 cents on the common, 50 cents on the \$2 non-cumulative preferred, and \$2 on the 8 per cent preferred, all April 1 to record of March 21.

Yale & Towne Mfg. Co., New York, regular quarterly of 15 cents, April 1 to record of March 20.

Republic Steel Corp., Cleveland, regular quarterly of \$1.50 on the 6 per cent prior preferred, April 1 to record of March 12.

## Steel Imports Show Further Shrinkage

IRON and steel imports have shown a downward curve since November, 1935, the trend continuing in January, when 50,489 gross tons were imported, a decline of 5.9 per cent from December, but a gain of 123 per cent over January, 1935. Figures are by the metals and minerals division of the department of commerce, Washington.

Pig iron continued its lead with 15,033 tons, the Netherlands sending 4511 tons; Soviet Russia, 3720 tons; British India, 3631 tons; Germany, 1608 tons; United Kingdom, 932 tons. Scrap was second largest, 6711 tons of the total of 7714 tons coming

	Gross Tons		
	Pig iron	Manganese ore	Ferromanganese
Belgium.....	529	.....	.....
Germany.....	1,608	.....	.....
Netherlands.....	4,511	.....	.....
Norway.....	102	.....	1,996
Soviet Russia in Europe.....	3,702	25,990	.....
United Kingdom.....	932	.....	.....
British India.....	3,631	22	.....
France.....	.....	231	252
Cuba.....	.....	1,614	.....
Brazil.....	.....	14,063	.....
Chile.....	.....	1,681	.....
Gold Coast.....	.....	11,451	.....
Total.....	15,015	55,052	2,248

	Sheets, skelp and sawplate	Structural steel	Steel bars	Hoops and bands
United Kingdom.....	17	.....	96	.....
Belgium.....	799	2,748	1,555	1,155
France.....	85	1,081	769	483
Germany.....	1,185	850	282	259
Sweden.....	10	.....	331	2
Canada.....	.....	.....	3	.....
Austria.....	.....	.....	16	.....
Czechoslovakia.....	.....	.....	3	.....
Total.....	2,096	4,679	3,055	1,899

from Canada. Structural shapes came principally from Belgium, 2748 tons; France, 1081 tons; Germany, 850 tons. In steel bars Belgium sent 1555 tons, France, 769 tons, Sweden, 331 tons and Germany, 282 tons.

Sheets, skelp and saw plate made a gain of 1044 tons over December, wire rods 687 tons, bars 469 tons and structural shapes, 265 tons. Scrap

#### FOREIGN TRADE OF UNITED STATES IN IRON AND STEEL

	1936		1935	
	Imports	Exports	Imports	Exports
Jan. ....	50,489	241,564	22,784	262,740
Feb. ....	.....	.....	28,905	228,537
Mar. ....	.....	.....	21,409	323,035
April ....	.....	.....	28,866	205,336
May ....	.....	.....	47,719	286,598
June ....	.....	.....	33,208	239,687
July ....	.....	.....	31,894	296,802
Aug. ....	.....	.....	31,312	247,312
Sept. ....	.....	.....	53,158	244,419
Oct. ....	.....	.....	59,569	238,358
Nov. ....	.....	.....	56,637	205,243
Dec. ....	.....	.....	53,678	239,263
Total .....	.....	.....	469,954	3,067,336

imports declined 3256 tons from January, pig iron 1256 tons, sheet piling 471 tons, rails and track material 441 tons, and iron bars 471 tons.

Export statistics were given in STEEL, March 9, page 22.

#### UNITED STATES IMPORTS OF IRON AND STEEL ARTICLES

Articles	Gross Tons		
	Jan. 1936	Dec. 1935	Jan. 1935
Pig iron .....	15,033	16,289	2,033
Sponge iron .....	308	176	257
Ferromanganese (1).....	2,248	4,186	2,630
Spiegeleisen .....	2,040	.....	.....
Ferrocrome (2) .....	.....	21	.....
Ferrosilicon (3) .....	96	98	124
Other ferroalloys (4)....	.....	.....	1
Scrap .....	7,714	10,970	2,415
Steel ingots, blooms.....	.....	40	99
Billets, solid or hollow(5)	68	.....	.....
Concrete bars .....	131	362	109
Hollow bar, drill steel	205	83	50
Bars, solid or hollow....	3,055	2,586	2,210
Iron slabs .....	.....	.....	.....
Iron bars .....	147	480	58
Wire rods .....	1,974	1,287	775
Boiler and other plate	50	140	10
Sheets, skelp, saw plate	2,096	1,052	321
Die blocks, blanks (4)..	4	.....	.....
Tin plate, taggers' tin, terne plate .....	4	6	4
Structural shapes .....	4,679	4,414	3,569
Sheet piling .....	507	978	.....
Rails and fastenings.....	262	703	211
Cast iron pipe, fittings	.....	.....	.....
Malleable iron pipe fits.	4	.....	27
Welded pipe .....	362	511	21
Other pipe .....	2,096	1,712	1,669
Hoops, bands for baling	.....	.....	80
Other hoops, bands.....	1,899	2,140	2,207
Barbed wire .....	2,237	2,192	1,684
Round iron, steel wire	447	337	415
Telegraph, telephone wire .....	.....	.....	.....
Flat wire, steel strips	232	192	112
Wire rope, strand .....	185	278	193
Other wire .....	109	145	146
Nails, tacks, staples....	2,177	2,114	993
Bolts, nuts, rivets.....	18	22	36
Horse and mule shoes..	14	38	82
Castings and forgings	88	126	144
Total Gross Tons.....	50,489	53,678	22,695

(1) Manganese content.  
 (2) Chrome content.  
 (3) Silicon content.  
 (4) Alloy content.  
 (5) New class. No comparable figures for previous month or year.



## Open Price Plan Is Timely Bid for Market Harmony

**T**HE desire to drive a hard bargain is a common trait in human nature. In industry today there are scores of buyers who would like nothing better than to match wits with shrewd sellers, confident of their ability to get the better of their adversaries in most cases.

But for every modern David Harum of this type, there are hundreds—perhaps thousands—of purchasers who prefer to do business on a more dignified, scientific, and equitable basis. They favor a trading system that provides for fair prices, the schedules and terms of which are known to all prospective buyers. Above all, they want to know for a certainty that all customers are treated alike—that no secret favors or concessions of any kind are being granted to “insiders.” In short, they want a system that prevents discrimination.

### Secret Transactions Breed Suspicion, Cause Misunderstanding Between Buyer and Seller

For many years it has been the contention of many students of iron and steel market conditions that the simplest and most effective method of discouraging unfair price practices is to turn the spotlight of publicity upon every transaction. This publication has favored this view, because the experience of its editors in reporting market prices has proved conclusively that secret sales at prices below the quoted market are the cause of about 90 per cent of all misunderstandings between buyers and sellers. Invariably a rumor that a certain customer has received a price concession becomes exaggerated in its circulation from mouth to mouth. The secrecy attending the transaction arouses distrust in the minds of many buyers. Not knowing the facts, they are suspicious that their competitors may be receiving concessions which are denied to themselves.

Believing as we do that this distrust is the chief obstacle to market harmony, we applaud the action of certain steel producers in announcing an open-price policy. If this move is followed generally by other units of the industry and if all give it a fair trial, it should go a long way toward discouraging unfair practices which at times have proved costly and annoying to buyers and sellers alike.

The plan is simplicity itself. Each company

publishes a schedule of prices and pledges itself to issue supplementary or revised schedules “if and when any change is made in the price as announced.” This means that every customer, whether he buys 10 tons or 10,000 tons, should be able to determine exactly what any other customer is paying for his steel. As long as this policy is pursued consistently by all sellers, there should be little opportunity for anyone to raise the cry of “discrimination.”

Probably the most important feature in the new schedules is the provision for quantity differentials. The question of whether or not the big tonnage buyer should pay a lower price than the customer who buys in small lots has been debated for many years. Since the steel code was abandoned the problem has been intensified by the pressure imposed by large automobile companies and parts makers for concessions below the general market.

### Fixed, Open Differential Is Preferable to Hidden, Fluctuating Price Concessions

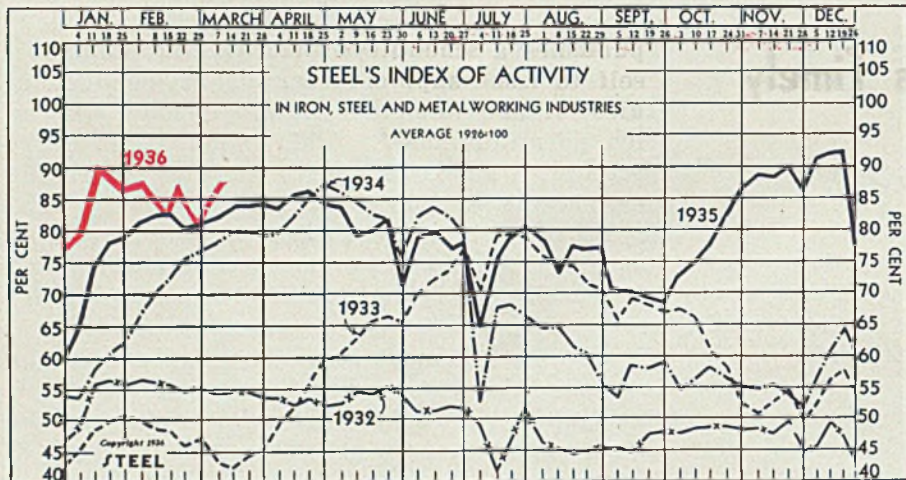
There is abundant historical precedent for their claims. In the past large buyers of plain steel, notably railroad car builders and agricultural implement makers, enjoyed price differentials. But there was one essential difference between the two situations. The car builders and implement manufacturers were given a stated, fixed differential. It was not a secret. Every buyer knew about it. However, the recent concessions to motor car and parts manufacturers were neither fixed nor uniform. Most buyers knew concessions were being granted, but they did not know whether they were \$3, or \$5, or some other figure. The secrecy surrounding these transactions stimulated distrust and all but wrecked the market.

Some commentators will say that the granting of differentials to large buyers, thus meeting the demands of the automobile companies, is the most significant part of the new policy announced by steel producers. We prefer to place the emphasis upon the fact that the quantity differentials are fixed differentials, and that they are to be posted publicly so that every buyer will know what they are.

The move to place all price transactions out in the open has great possibilities. With cooperation all around, it will work successfully. But no one in this day and age is sufficiently Pollyannish to believe that the plan alone will produce results. Buyers and sellers must get behind it with enthusiasm. Otherwise it will deteriorate into just another “noble experiment.”



# THE BUSINESS TREND



STEEL'S index of activity in the iron, steel and metalworking industries gained 4.5 points to 78.9 in the week ending March 7:

Week ending	1936	1935	1934	1933
Jan. 4	78.2	65.4	53.6	45.3
Jan. 11	90.2	73.8	58.1	48.6
Jan. 18	89.3	78.1	60.9	49.8
Jan. 25	86.0	79.5	62.3	50.8
Feb. 1	86.5	81.8	66.9	49.9
Feb. 8	83.8	82.7	70.7	48.7
Feb. 15	85.9	82.8	72.4	48.3
Feb. 22	81.8	80.5	75.5	46.0
Feb. 29	83.4†	81.1	76.8	47.4
Mar. 7	87.9*	82.0	78.6	43.4

†Revised. \*Preliminary.

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

## Gains in Industrial Activity Are More Positive

THE expected upturn in industrial activity, signs of which have been apparent for several weeks, is taking definite form. STEEL'S index for the first week of March stands at 87.9, an increase of 4.5 from the previous week. This is the most positive gain registered in any week since that ending Jan. 11, at which time a sharp rebound from the year-end low point occurred.

Contributing to the marked improvement in the index were gains in automobile assemblies and in the steelworks operating rate. In advancing from 64,956 units in the last week of February to 84,705 in the first week of March, automobile production has recovered almost all of the ground it lost during the month of Febru-

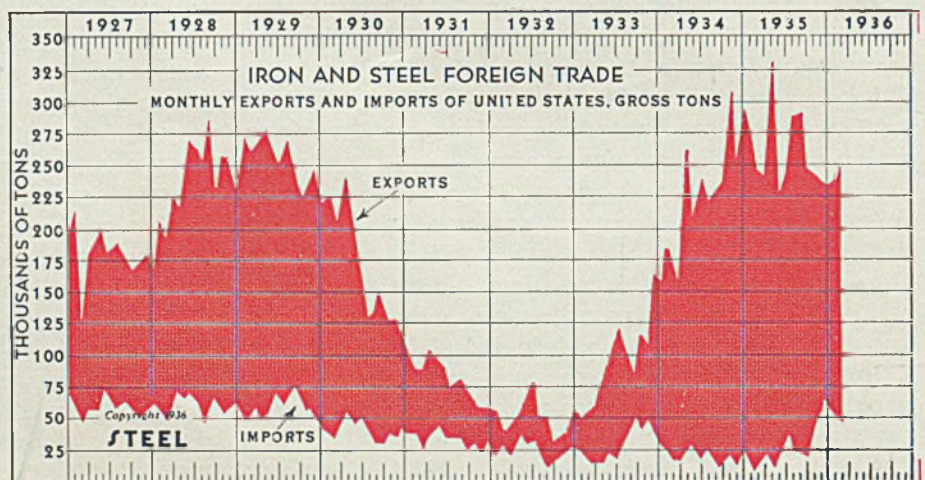
ary. With operations at 55.5 per cent of capacity, steel producers entered March with a rate which has not been exceeded since the first week of December. At the moment, the trends in automobile and steel output are definitely upward.

Electric power output continues to ease off moderately, which is the normal seasonal movement for this time of the year. Revenue freight car loadings were down in the first week of March, but still remained above the 625,000 mark.

Looking back over the fluctuations in activity during the past month, it is evident that the extended period of extremely cold weather exerted a greater influence upon industrial operations than was realized at the time. Had normal weather prevailed, it is quite likely that the improvement now underway would have appeared at least several weeks earlier.

One result of this postponement probably will be a steady upward trend in activity throughout the present month.

	1936		1935	
	Imports	Exports	Imports	Exports
Jan. ....	50,489	241,564	22,784	262,740
Feb. ....	28,905	228,537	21,409	323,035
March .....	21,409	323,035	28,866	205,336
April .....	28,866	205,336	47,719	286,598
May .....	47,719	286,598	33,208	289,687
June .....	33,208	289,687	31,894	296,802
July .....	31,894	296,802	31,312	247,312
Aug. ....	31,312	247,312	53,158	244,419
Sept. ....	53,158	244,419	59,569	238,358
Oct. ....	59,569	238,358	56,637	205,242
Nov. ....	56,637	205,242	53,678	239,268
Dec. ....	53,678	239,268		





## Pig Iron Output and Rate Off Slightly in February

	Daily Average, Tons		Blast Furnace Rate, Per Cent	
	1936	1935	1936	1935
Jan. ....	65,461	47,692	46.9	34.2
Feb. ....	63,411	57,675	45.5	41.1
Mar. ....		57,120		41.0
Apr. ....		55,719		40.0
May ....		55,986		40.2
June ....		51,949		37.2
July ....		49,043		35.2
Aug. ....		56,767		40.7
Sept. ....		59,009		42.5
Oct. ....		63,818		45.8
Nov. ....		68,876		49.5
Dec. ....		68,242		49.0

## February Ingot Output Makes Moderate Gain

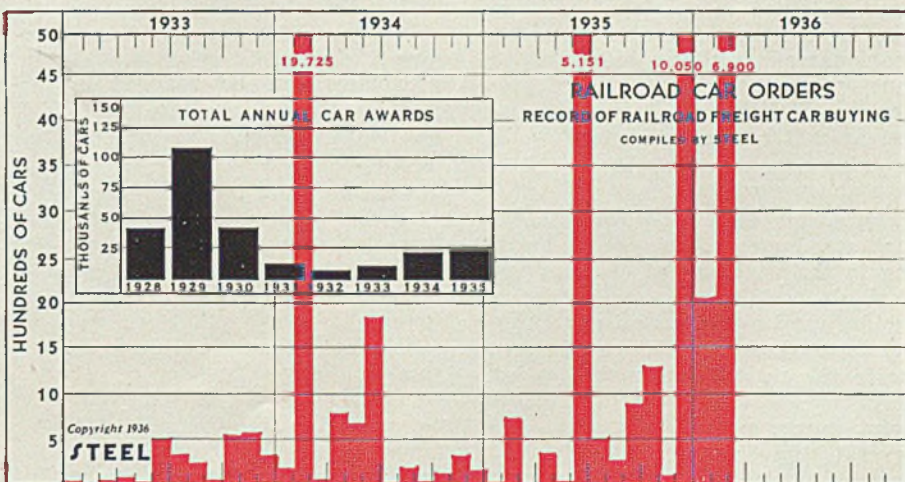
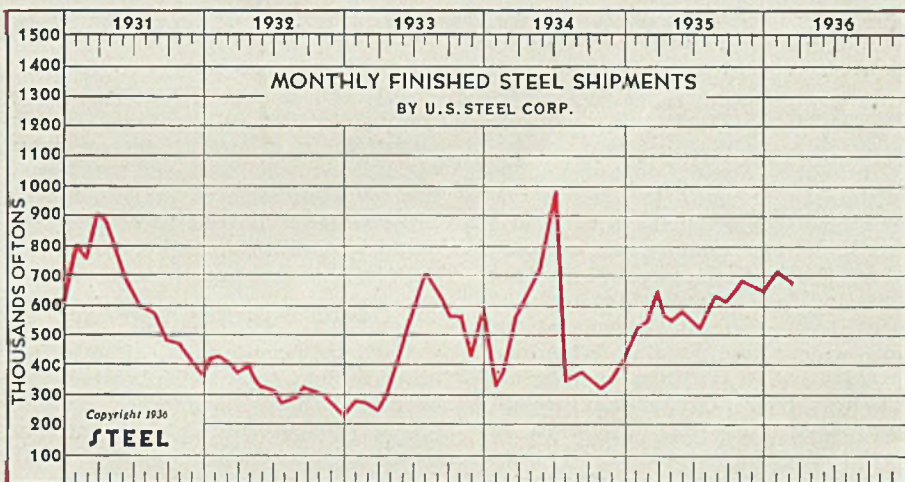
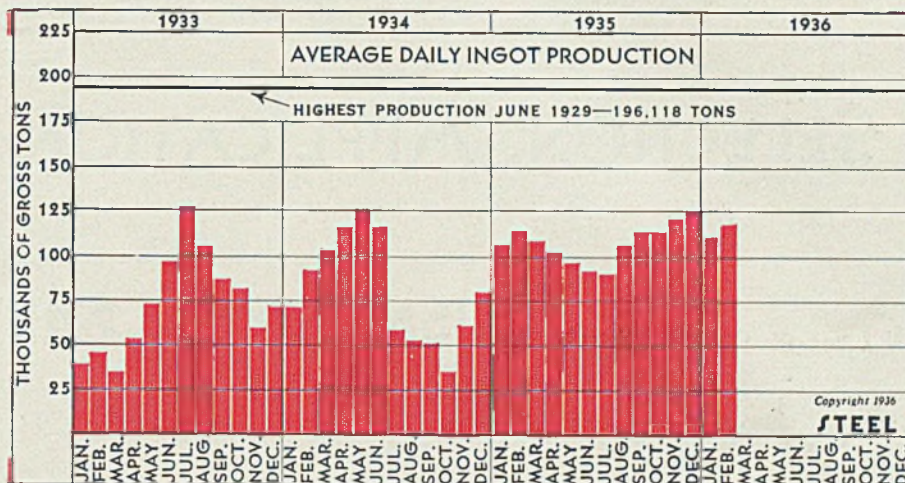
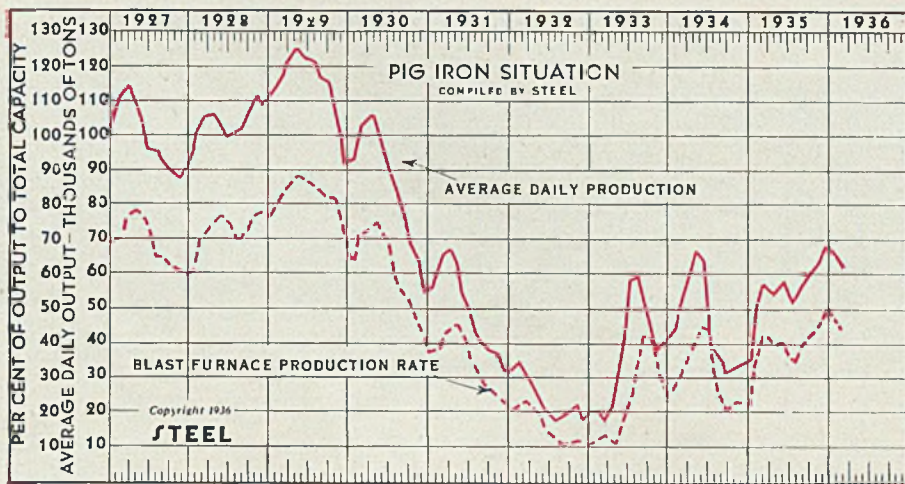
	Gross Tons		
	1936	1935	1934
Jan. ....	112,942	106,353	73,968
Feb. ....	118,712	155,740	92,164
March ....		110,313	103,646
April ....		101,558	117,443
May ....		97,624	125,907
June ....		89,236	117,672
July ....		87,316	59,578
Aug. ....		108,123	51,161
Sept. ....		113,193	50,759
Oct. ....		116,545	54,885
Nov. ....		121,279	61,947
Dec. ....		123,272	78,570

## Finished Steel Shipments Decline in February

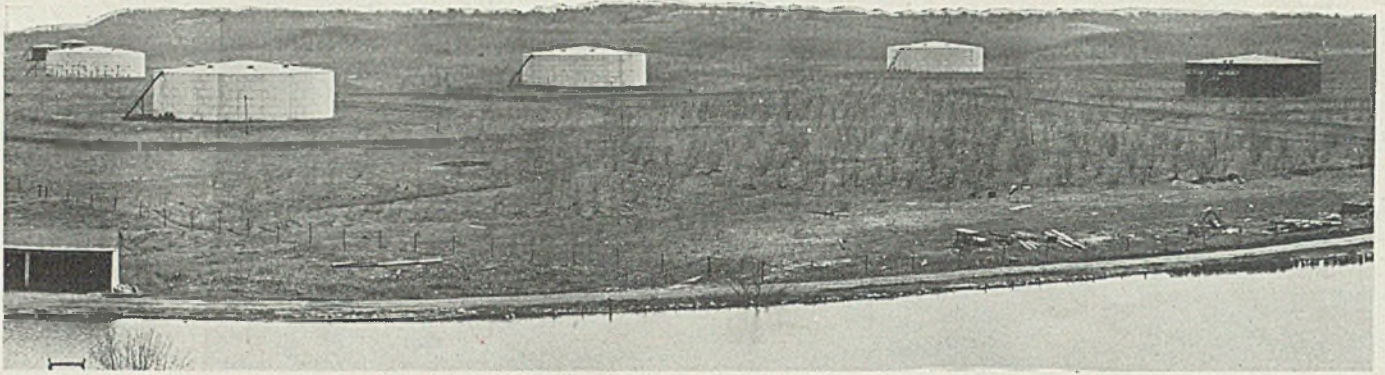
	Gross Tons		
	1936	1935	1934
Jan. ....	721,414	534,055	331,777
Feb. ....	676,315	583,137	385,500
March ....		668,056	588,209
April ....		591,728	643,009
May ....		598,915	745,063
June ....		578,108	985,337
July ....		547,794	369,938
Aug. ....		624,497	378,023
Sept. ....		614,933	370,306
Oct. ....		686,741	343,962
Nov. ....		681,820	366,119
Dec. ....		661,515	418,630

## February Freight Car Buying Shows Sharp Advance

	1936	1935	1934	1933
	Jan. ....	2,050	24	152
Feb. ....	6,900	806	19,725	9
March ....		0	30	5
April ....		350	800	50
May ....		2	717	8
June ....		5,151	1,835	500
July ....		500	19	306
Aug. ....		200	105	202
Sept. ....		875	7	23
Oct. ....		1,250	75	514
Nov. ....		100	254	533
Dec. ....		10,050	110	316







*A CHANGE from dark to light colors for the outside of oil storage tanks saved thousands of dollars per year by reducing evaporation losses due to heat absorption*

# SELECTION, APPLICATION AND USE OF FINISHES FOR METAL

## I—Factors Involved in Selection

**P**RACTICALLY all metallic products are finished in some way before they are put into use. The finish may be used for decoration, for corrosion resistance, to withstand handling, to resist wear and for other special purposes. In other words, various thin coatings are used to overcome inherent defects of the more widely used metals. When one considers that coatings ranging in thickness from 0.00003-inch to not more than 0.005-inch are used in most cases, the amount of corrosion protection and stability of appearance obtained is remarkable. Since one is dealing with almost microscopic amounts of materials which must perform tasks all out of proportion to their size, it is easily apparent that careful attention should be given to the selection, application and use of finishes.

Improvements in manufacturing methods during recent years, resulting in the wide use of die castings, multiple welding processes, plastic molding and numerous other cost reducing methods, have changed materially the ratio between fabricating costs and finishing costs, even to the point in some cases where it costs several times as much to finish a part as it costs to produce it up to

the application of the finish. This situation is a potent reason why executives and engineers are hunting for economies in present finishing processes as well as continually searching for other finishes of satisfactory performance.

### Careful Selection Necessary

For new products, the time to begin thinking about finish is when the product is first considered. In far too many cases, the finish is entirely an afterthought, the problem of what finish to use and the method of application being decided after the machine or equipment has been completely designed. Often appreciable economies can be realized by insignificant design modifications which pay large dividends in lowered cost of finishing.

Consider, for instance, the series of specialty products designed by a large brass company. These articles which include cocktail sets, cigarette containers, flower holders and such items, show clearly that finishes were considered at an early stage of design in that the articles are shaped to reduce finishing costs as well as to appeal to the public. The finishes were selected carefully with respect to durability under service

conditions as well as appearance and the net result is an attractive product, of excellent durability, which sells at such a low price for goods of comparable quality that it was satisfactorily introduced to the public during the depression.

The finishing field is most active. New materials and methods are being made commercially available at a rapid rate, undoubtedly because of the increasing importance placed on finishes and the constant demand for better finishes at lower cost. The economic advantages of better sales appeal, improved durability and lower finishing costs are inducing producers to consider their finishing problems rather more carefully than in the past so as to take full advantage of both the new materials and processes and the technical information available on the results obtainable with the materials and methods available to them.

The most logical method of approach to the problem of selection of finish is first to define the purpose of the finish, second to select from the available finishes or processes those which accomplish the desired ends, and third to determine from cost analysis which of the suitable finishes is most economical. Finally a comparison of the cost with the economic advantages resulting from the finish will show whether the finish selected is a paying proposition.

Rather than follow past practice



in finishing a new or modified product, it is often possible to realize a definite sales advantage over similar products by considering what additional advantages can be afforded to the new product by the adoption of a new finish. Examples of this are typewriters finished in colors other than black and in the successive changes from figured bronze to wood grain reproductions and finally to modernistic black and chromium combinations on cash registers (see accompanying illustration) and similar equipment.

Another example of the advisability of reconsidering the selection of finish periodically lies in the possible advantages to be gained by using new materials or processes which were not available when the original selection was made. An illustration is the cost advantage afforded by the use of low baking synthetic enamels instead of air drying lacquers in automobile body finishing. In this case finishing costs have been reduced in some instances by 60 per cent. Most of the savings in this case resulted from a reduction in labor of sanding and polishing made possible by the secondary flow occurring in final baking. This flow evens out small irregularities which would otherwise have to be removed by polishing operations.

#### Appearance and Use of Color

In defining the purpose of a finish, perhaps the first feature which should be considered is appearance, as this is a major factor in the impression made by the material or equipment on the customer. The overall appearance desired will, of course, depend on the item to be finished. Questions as to color schemes, the relative desirability of metallic plated coatings versus paints, lacquers or enamels should be decided at this point if possible, although it is possible that later changes in appearance may be made due to cost factors or the lack of suitable finishing systems to accomplish the desired results.

Too much emphasis cannot be placed on the importance of color.

**T**HIS is the first installment of a short primer on metal finishing which is intended to present an overall picture of the various factors involved in the selection and use of finishes, as seen by the designer and manufacturer of products requiring finishing treatment. The context will outline the basic principles to be followed and will present brief summaries of various finishes available, and of their important properties from the user's standpoint. Information is based on thoroughgoing practical and laboratory work, and represents a new and simplified arrangement and co-ordination of pertinent facts. The first part of the discussion takes the place of STEEL'S weekly Surface Treatment and Finishing department which will be resumed next week and in which succeeding installments of this series will appear.

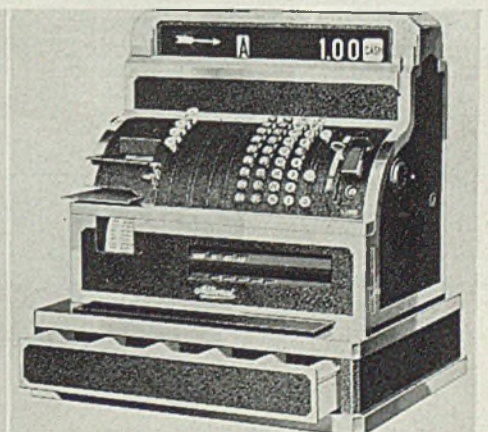
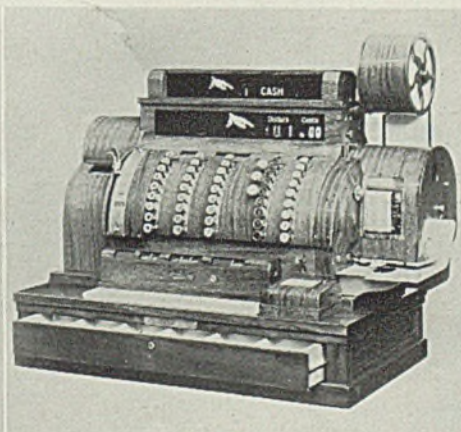
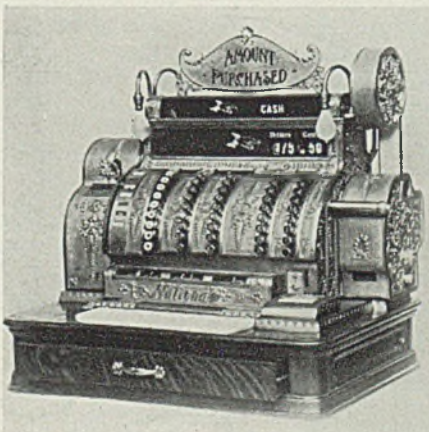
From coal to razor blades, color is playing its part in identifying products and in increasing sales appeal. Blue coal is already a well-established commodity although relatively new. Such a use of color has definite advertising advantages and in addition provides a useful method for identification of a product. Other examples of such use can be found in store fronts, trademarks, emblems, and even railroad trains. No matter how prosaic the product, whether carpet tacks, screw machines or structural steel, the use of color should always be considered particularly since the cost of attractive colors is low in most cases in proportion to the results obtained. In connection with the use of color, where individual opinions differ widely, the services of industrial stylists should be considered as they are in a much better position to give recommendations on color problems based on appeal to the customer

rather than on personal preference.

In addition to stimulating sales, the possibilities of color to promote or retard heat transfer, to improve visibility, to promote cleanliness and better maintenance or for other purposes should not be overlooked. A change from black and red to white and aluminum paints for outdoor oil storage tanks saved thousands of dollars per year per tank by reflecting a large proportion of the sun's rays which were previously absorbed into the tank structure and thus accelerated the evaporation of its contents.

The use of color to promote cleanliness and to facilitate maintenance is nicely illustrated by the change from black to light colored finishes on telephone exchange apparatus several years ago. Such a change produces the common psychological effect of increasing pride and respect for finely finished delicate apparatus which cruder and less attractive ap-

*Keeping sales appeal up-to-date is shown by the successive finish changes in cash registers—from left to right, cast bronze scroll effect, wood grain reproduction, and chromium with black crinkle lacquer. Courtesy National Cash Register Co.*





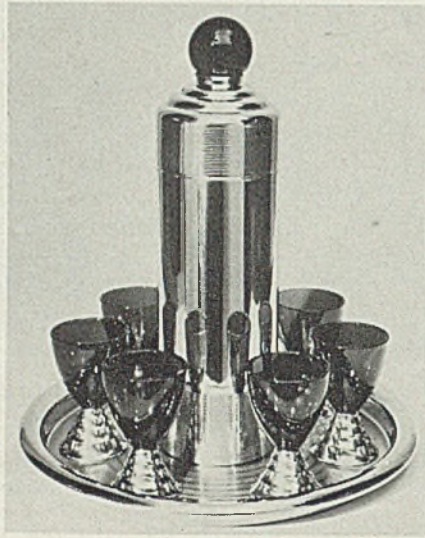
pearance will not induce. An improvement in attitude of operating and maintenance personnel toward the apparatus under their care often results in better maintenance at no increase in cost.

#### Durability Another Factor

After the appearance decisions have been made the next factor which should be considered in durability. The durability question falls naturally into two divisions—corrosion resistance and ability to resist the wear and tear of normal or abnormal use. It is best to consider the two features separately.

The corrosion resistance which should be provided will depend, of course, on the environment in which the apparatus or material is to be used. In the case of machinery or other completely fabricated products the environment of their use may be conveniently classified as indoor, semioutdoor, outdoor, marine or underground. However, in the case of prefabricated material later to be fabricated into a wide variety of objects the classification is somewhat more difficult.

In addition to the environment, the desired life of the finished product should be determined in that the cost of the finishing system ultimately selected will largely depend on the life desired. For instance it would not be sound finish engineering to spend the money for a 10-year finish on hardware for automobiles in the lower price classes. On the other hand, the extra expense involved in the application of an additional 0.001-inch of zinc to steel fence posts would be well warranted and would be more than returned to the manufacturer over a period of years by



*Novelty cocktail set of chromium plated brass. By considering finish during the early stages of design, the finish coats are kept low. Courtesy Chase Brass & Copper Co.*

goodwill resulting from the longer life of the posts.

In connection with corrosion resistance, it is always wise, of course, to consider corrosion resistant materials as well as corrosion resistant finishes. In fact, base materials and finishes always are intimately related. In selecting a finish for steel drums, for instance, the exposure conditions, in conjunction with the desired life, may indicate the use of steel clad with such heavy coatings of copper, nickel or stainless steel that the desired result could be more economically obtained by using the new composite materials rather than

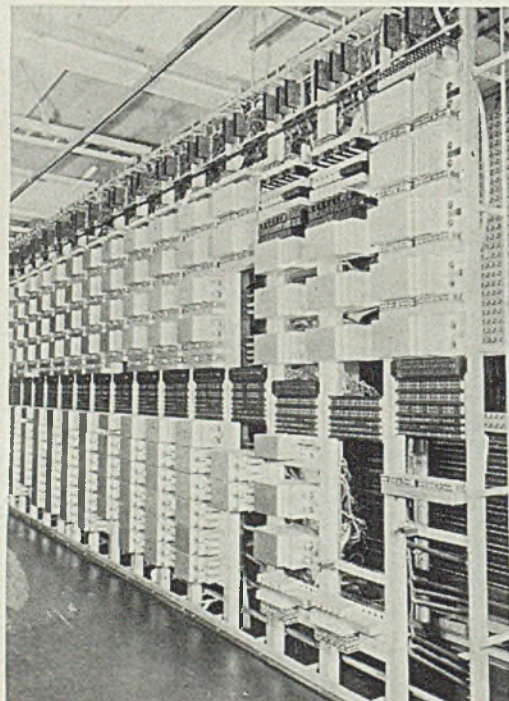
by finishing the drums before or after assembly.

Selection of a durable finish will first involve a clear and complete definition of the conditions it is to withstand, and second, an intelligent choice of the materials and processes which will accomplish the desired results. Consideration should be given to the use of the object being finished. Will acids, alkalis, alcohol or other strong solvents come in contact with it? If so, inertness to such items must be given consideration and determined before final selection. If a part is continually submerged in oil or constantly subject to the action of cutting compounds, it should be ascertained before use that the finish will withstand such action satisfactorily rather than afterward when complaints arrive.

#### Finish Improves Design

Full advantage should be taken of the properties of finishes which will assist in the design of equipment. Such properties as light reflection, control of heat by increasing or decreasing radiation losses, sound insulation, resistance to perspiration, resistance to wear and electrical breakdown all can be obtained to a greater or lesser extent by proper selection of finishing system. Here again the cost and properties of finishes will often have to be balanced against the costs and corresponding properties of materials.

A finish system, in general, whether metallic, organic, vitreous enamel or chemical treatment, consists of two parts: The preparation of the surface, and the process used or material applied after the surface is prepared. Too often the importance of surface preparation is not realized



*THESE two illustrations of telephone central office equipment show the striking effect obtained by a change to light colors. The light colors have facilitated maintenance greatly.*



or is neglected. Perhaps the high cost of proper surface preparation is the reason so many finishes are applied over poorly prepared surfaces. It is often necessary to spend more money in cleaning and otherwise preparing surfaces than in the finishing itself, and where high quality of finish is desired the additional cost of proper preparation is well warranted.

Having considered appearance, durability and special properties desired, the problem of final selection still remains. There are usually several ways of obtaining the desired results but the ultimate selection of lacquer enamel versus baked synthetic enamel, chromium plate versus stainless steel, red lead paint or zinc dust paint will be influenced greatly by the relative cost and relative durability of the finishes being considered for the particular product involved.

From the foregoing discussion, it is clearly evident that a finish selection problem is individual and specific and that there are no definite rules to be followed but that certain basic considerations should not be overlooked. A thorough consideration of the finish problem appears warranted in view of the many possible advantages from a sales standpoint which might otherwise be neglected. It is always well to keep in mind that a well designed product which is pleasing to the eye of the customer and retains its original appearance during its normal life, not only generates a pride of accomplishment in those who participated in its design and production but also is a matter of interest to the sales department and board of directors.

*(To be continued)*

## Second Frameless Steel Industrial Building Planned

Prefabricated frameless steel buildings of one and two stories, heretofore confined to residential structures, have made their entrance into the industrial field. About a year ago, the Insulated Steel Construction Co., Middletown, O., erected such a combination office and storage building at the plant of the Hamilton Coke & Iron Co., Hamilton, O.

The building, part of which is two stories high, is 40 by 90 feet. All walls and partitions are formed of Armco steel. In addition to office accommodations, it has locker and shower facilities for workers, and a modern, up-to-date hospital room for first aid treatment. Exterior of the building is painted white, as shown in the accompanying illustration.

The Hamilton company has now awarded a contract to Insulated Steel Construction for erection of another



*Prefabricated frameless steel office and storage building, 40 by 90 feet, erected at Hamilton, O.*

building, this one 41 by 32 feet, to be used exclusively for the storage of oil.

As in the construction of frameless steel houses, a granular type of insulation is poured between the inner and outer steel walls to retain the heat in winter and resist it in summer.

## Pittsburgh Business Data In New Directors Register

*Directors Register of Pittsburgh, 1935, cloth; 1521 pages, 5 x 7½ inches; first annual edition; published by Official Railway Guide Publishing Co., Pittsburgh; supplied by STEEL, Cleveland, for \$25, postpaid; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London.*

The register contains listings of directors, officers, executives, banks, corporations, firms and institutions, a professional classified section, geographical index and a buyers' commodity guide, the latter including a list of United States foreign commercial attaches.

Practically any question relating to industrial organizations and personnel can be answered by reference to its pages, either from the starting point of the company or the individual.

Because of the great volume of business and the importance of organizations located in the Pittsburgh district definite information as to the details of organizations are of importance and they have been gathered in this volume in a way to make them available with a minimum of effort. It is planned to make this an annual publication, to keep pace with changes.

## Introduces Materials for Precision Grinding Use

Two new products for precision and mirror finish grinding have been announced recently by E. F. Houghton & Co., 240 West Somerset street, Philadelphia. These are "Houghton's Grinding Paste" and "Houghton's Soluble Grinding Oil."

Advantages which the manufactur-

er claims for these products include the prevention of rust, freedom from gumming or sludging, uniformity and stability, sterility and the ability to wet-out rapidly and penetrate to the point where work is being done. Chips are washed away quickly and will settle out immediately. These products are readily soluble in water.

The company has prepared a folder, "Houghton's Grinding Concentrate," which presents full details of the new products.

## Undertake Study of Air Contamination in Industry

Air Hygiene Foundation of America Inc., Pittsburgh, has been formed by a group of various industries to conduct investigations of and to stimulate research on problems in the field of air hygiene, and to gather and disseminate factual information relating thereto, according to circular No. 1 issued by the organization.

A comprehensive investigation has been started at Mellon Institute of Industrial Research, Pittsburgh, under support of the foundation, in which the hygienic, technologic and economic aspects of air contamination, especially by dust in industrial operations, will be studied.

Additional information concerning the organization and its purposes may be obtained from H. B. Meller, managing director, Thackeray avenue and O'Hara street, Pittsburgh.

## "Clinics" To Demonstrate Nonferrous Welding

A series of welding "clinics" to demonstrate the best methods for welding various nonferrous metals and clad materials will be held in four West Coast cities during April. Included will be practical problems involving the latest methods of both electric and oxyacetylene welding and brazing on Monel metal, aluminum, nickel, copper, brass, bronze, Inconel, and nickel-clad steel.

The "clinics" will be conducted by



welding engineers of the International Nickel Co. Inc., the Aluminum Co. of America and the Revere Copper & Brass Co. They will be held as follows: April 3 and 4 at Wilkinson Co. Ltd., Vancouver, B. C.; April 10 and 11 at Eagle Metals Co., Seattle; April 17 and 18 at Pacific Metals Co. Ltd., San Francisco, and April 24 and 25 at Pacific Metals Co. Ltd., Los Angeles.

## Electrical Specifications Simplified by Handbook

American Standards association announces the publication of a new handbook entitled the *American Standards for Rotating Electrical Machinery*.

In addition to new material added by the American Standards association's committee, this publication combines revisions of the material for-

merly published by the American Institute of Electrical Engineers in five separate pamphlets (A.I.E.E. 5, 7, 8, 9, 10) and those motor and generator standards of the National Electrical Manufacturers association which are of general interest. Standard requirements and specifications for electrical machinery, from the large central station generators and industrial and steel-mill motors to the small motors used on household appliances, such as vacuum cleaners and electric fans, are included in the new publication.

By referring to these specifications a buyer can be assured that he is obtaining a machine of approximately the same characteristics to do a specific job from any reputable manufacturer. This is made possible by the fact that the standards of both the A.I.E.E. and N.E.M.A. have been combined to form one complete "common language" for rotating machinery.

## Welding Engineers Hear Metallurgy and Applications of Low-Alloy Steels

**M**ETALLURGY and applications of low-alloy steels were discussed at a meeting of the New York section of the American Welding society held March 10 at the Engineering Societies building, New York.

A. B. Kinzel, chief metallurgist, Union Carbide & Carbon Research Laboratories, Long Island City, N. Y., discussed the matter of identifying these steels as "high-tensile" or "high yield strength" materials, and pointed out that while the latter is suitable terminology, properties other than yield strength are of importance. Depending on the applications, the ultimate strength, fatigue limit and ductility are of importance. There is such a thing as having a yield point which is too high. If it is desired that plastic deformation occur prior to failure so as to give warning, the yield point must not be too high. Therefore it is unwise to attempt to classify these steels in accordance with a single characteristic value.

Discussing the metallurgy of these steels, and the analyses which give them their properties, Mr. Kinzel said they fall roughly into three groups—the chromium, manganese and nickel groups. He discussed the effects of varying percentages of these elements, as well as of molybdenum, silicon, aluminum, copper, phosphorus and sulphur. He concluded that the physical properties of these steels, irrespective of their analyses, differ only slightly. But he pointed out that most of them are

available in two carbon ranges, and it is essential that the proper carbon selection be made.

This is particularly true when the steel must be welded. When the carbon content is above 0.14 per cent, the moderate hardness which results from welding is not so objectionable as the internal stresses which are set up. Of course, said Mr. Kinzel, these stresses can be relieved, but there are advantages in using the lower carbon steels which do not need stress relieving. He pointed out, for instance, that a higher carbon steel may be welded and then stress relieved, or the completed fabricated article may be heat treated, with resultant increase in the strength. However, any structure which is so treated immediately undergoes a deterioration in its properties when it is subjected to repairs involving the application of heat by welding or otherwise. From a strictly metallurgical standpoint, Mr. Kinzel concluded, it does not much matter which of the modern low-alloy steels the consumer uses, provided that he bears in mind this matter of carbon.

### Designers Are Cautioned

Fabrication of the new steels was discussed by H. M. Priest, engineer, Railroad Research bureau, subsidiary manufacturing companies of the United States Steel Corp., Pittsburgh. Because the new steels are higher priced than the customary mild steel, the designer must give close attention to exact stress analyses in order that he may get

the benefit of the properties of the new steels. He discussed such properties as tensile strength, yield point, elongation, fatigue resistance and resistance to impact. In a tension member, as an illustration, the cross section, if 3 square inches with a 33,000-pound yield point steel, would be 1.8 square inches with a steel having yield point of 55,000 pounds. There is not so much saving, however, in compression members. Mr. Priest also cautioned against using steel of too high a yield point when it is essential that plastic deformation give warning of approaching failure.

The new low-alloy steels, said Mr. Priest, have revealed the need for a complete revamping of ideas underlying design of all types of mechanical structures and assemblies. They also have made necessary many changes in fabricating methods and in the design and construction of fabricating equipment. As an instance, high yield strength steel springs back further toward its original shape after deformation than is the case with mild steel. For this reason, deforming dies must be redesigned. He illustrated by means of lantern slides, a number of redesigned dies. Mr. Priest showed illustrations of railroad equipment, clamshell buckets, diesel engine frames and other structures and parts made of the new high yield strength steels and predicted a continually widening application of these steels. Steel consumers and designers, he said, will profit from getting well acquainted with the properties of these new materials.

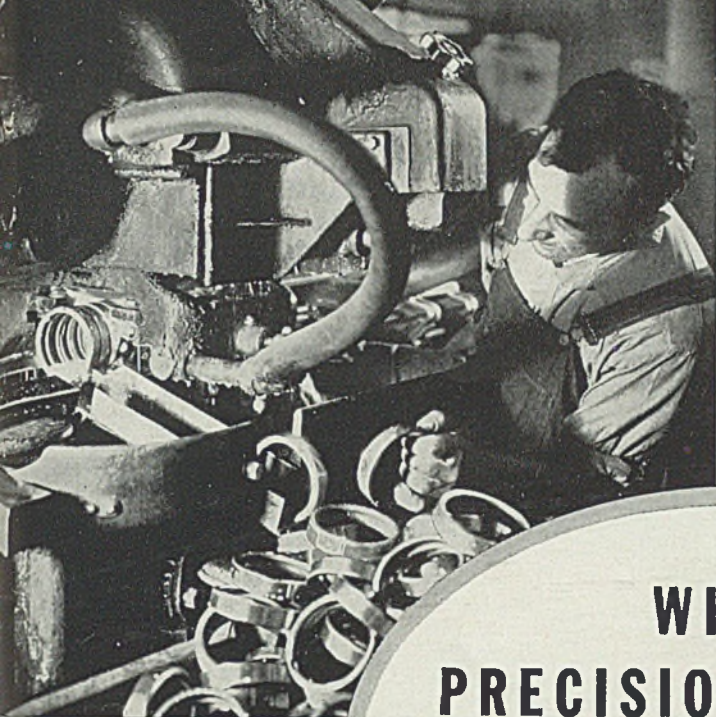
## Electrodeposited Coatings Now Standardized

A timely pamphlet entitled *Tentative Specifications for Electrodeposited Coatings of Zinc, Cadmium, Nickel and Chromium on Steel* has been published under joint co-operation of the American Society for Testing Materials, the national bureau of standards, and the American Electro-Platers' society, and should fill a long-felt need for the standardization of electroplating specifications.

In this pamphlet the thickness of coatings for general service and mild service are specified, together with some tests for quality of the plate. These specifications are tentative and under the usual procedure are subject to annual revision by the co-operating societies until they are issued in their final form.

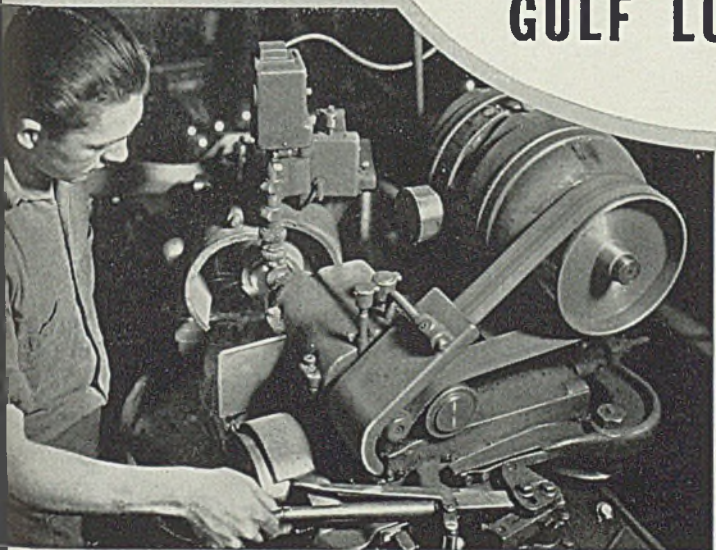
Copies of this pamphlet can be obtained from the A.E.S., 90 Maynard street, Springfield, Mass., or A.S.T.M., 260 Broad street, Philadelphia, at 25 cents per copy; in lots of 10 to 24 copies, 20 cents per copy, and with increasing quantities further price reductions are made.





The grinder above is finishing the outside diameter of hardened bearing rings. Gulf supplies a special lubricant for the grinding spindles.

The grinder below forms the ball race in the hardened ring. The race groove must be ground accurately to insure smooth rolling of the balls.



Above is one of the many inspections which insure the perfection of the finished bearings. The greatest care is taken to see that no bearings are shipped with flaws. To protect bearings against corrosion they are coated with Gulf slushing oil before shipment.

**WHERE  
PRECISION IS VITAL  
AS IN MAKING BEARINGS  
LEADING PLANTS USE  
GULF LUBRICANTS**

*Twenty Bearings Plants in U. S. Rely on Gulf Quality Lubricants  
to Maintain Costly Equipment at Peak Efficiency.....*

That is a real tribute to the quality of Gulf oils and greases! In bearings plants—where precision work is vital—lubricants must provide sure protection against friction and wear to keep adjustments right and to assure proper alignment.

Metal working plants of all types are standardizing on Gulf products as a safety measure.

Gulf's complete line of more than 400 oils and greases permits the selection of exactly the right type of lubricant for each machine and moving part—the oil or grease which reduces friction to a minimum. If you are not using Gulf lubricants, give them a trial. You will be pleased with the economies which accompany their use.

**GULF REFINING COMPANY, Pittsburgh, Pa.**

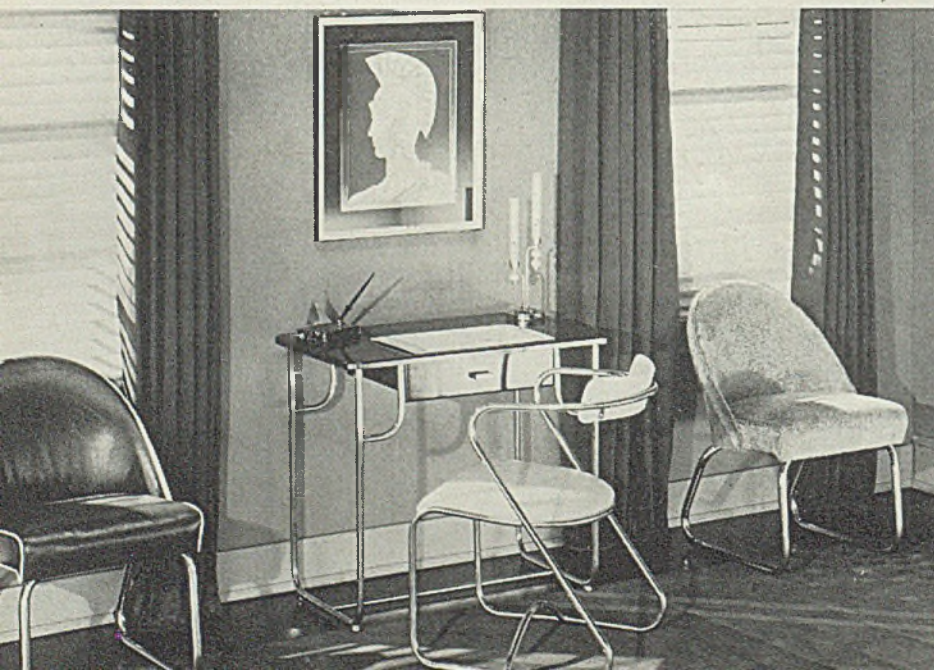
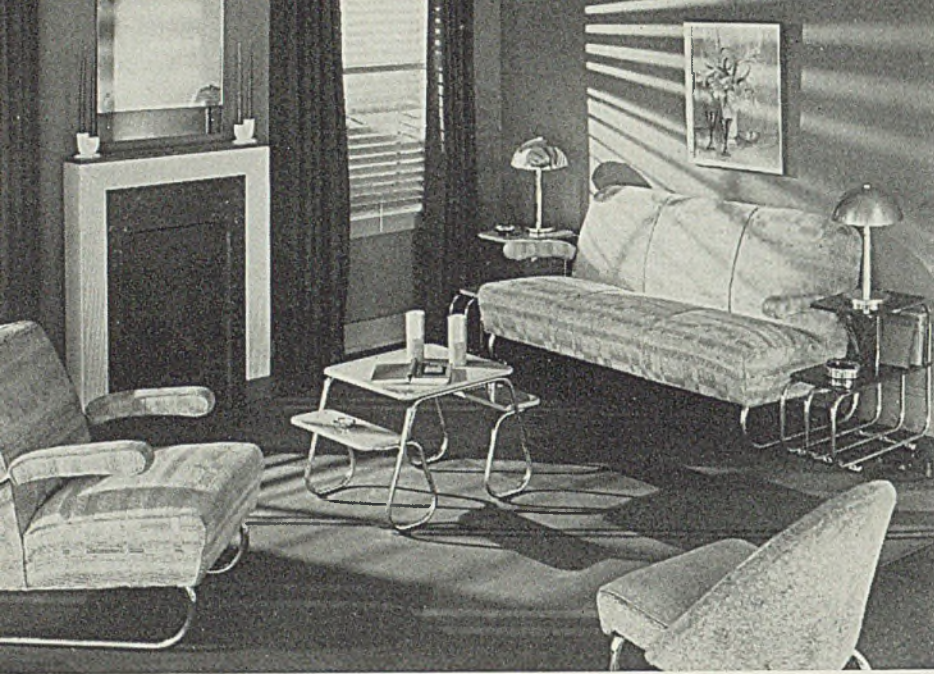
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MAKERS OF THAT GOOD GULF GASOLINE AND GULFLUBE MOTOR OIL





# Steel in the Modern Home



*T*UBULAR steel furniture is the accepted motif in cocktail lounges and hotel restrooms, but its adoption in modern homes has been limited, possibly because of a popular belief that steel is a cold, lifeless material, unsuited to the warmth and comfort of homes. However, industrial designers have taken a hand, with results such as shown on this page. Upper illustration shows living room furniture with chromium plated steel tubing framework; center illustration shows a modern dining room; and at the left is a writing desk with occasional chairs in similar style. Designs were worked out by Alfons Bach, New York; the furniture was built by the Lloyd Mfg. Co., Menominee, Mich.



# Weirton's WE are in Weirton



WEIRTON Steel's practice of concentrating all administrative, sales and operating heads *at the mill* is not a new procedure. It's an old one which has been retained despite tremendous growth in production capacity and product diversity. There can be no lack of understanding, no delay in arriving at decisions when men stand face-to-face. This is one important reason why customer negotiations with Weirton are so satisfactory, so profitable. You get the right answers fast because Weirton men are so close together they can act like one man.

WEIRTON STEEL COMPANY, WEIRTON, W. VA.  
*Division of National Steel Corporation*

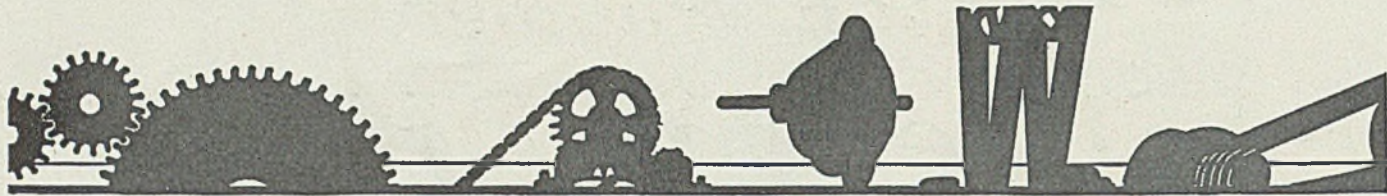
*Weirton for Action*



# WEIRTON STEEL



# Power Drives



## Dustproof Grease Cups

FILLING grease cups in dusty locations always involves the possibility of some abrasive dust entering the cups. This may be prevented by using cups with pressure fittings in the top cap. To fill, the cap is screwed up but not off and the cup filled with the pressure gun without exposing the grease to dust and dirt in the air.

Such cups have another advantage in that pressure may be applied to the cup fitting while still screwed down, sufficient to loosen grease which may have hardened in the neck of the fitting. This, of course, necessitates close fitting threads between the cap and cup.

Still another advantage of one type of such grease cup is its hexagonal top which permits screwing down with a wrench and so forcing lubricant into the bearing between fillings.

In locations where dust is a serious hazard to bearings, opening the cup for refilling is a needless risk compared with the slight additional cost of such protection for filling while closed.

♦ ♦ ♦

## Grouping in "Little Shops"

ONE plant engaged in a wide variety of manufacturing to special order in varying quantities solved its drive problem in a rather unusual manner. Ordinarily transmission engineers have advocated individual drive under such conditions to obtain the desired flexibility under fluctuating manufacturing conditions. The manager of this plant considered that the extra cost of individualizing the drives would add too much to his overhead expenses, especially as much of the shop might be idle for a considerable part of the time.

His solution was to consider his plant as a group of small machine shops, each containing a few lathes, millers, drill presses and other standard tools required on almost any job. Each of these "little shops" is group driven from a lineshaft. Special tools, such as boring mills, large

lathes and radial drills, which may be required in connection with any group, are separated from all groups and are individually driven. Most of the individually driven machines are larger units than those group driven.

With this arrangement the plant manager may operate any or all of his "little shops" independently of each other. In times of slack production the machine setups on one or more groups for special orders which repeat at intervals are left standing and other groups used for the orders coming in. This saves setup time on these orders.

This machine and drive arrangement gives him the lowest overhead and power cost with greatest flexibility of arrangement.

♦ ♦ ♦

## Useful Power Counts

INDUSTRIAL executives buy new equipment because they are convinced it will be profitable. However, when installed, it may not realize the expected dividends. This loss may result from an inefficient operator (usually new equipment is entrusted only to experienced, reliable men, however), ineffective planning and scheduling of the work and machine, or a poorly planned drive or power source.

The drive includes not only the connecting mechanism between the machine pulley and the motor, including the latter and its control, but extends clear back through the wiring, switchboard, and even to the source of power. Low voltage, interruptions anywhere in the line, speed losses which may result from any of a number of incorrectly designed, installed, or serviced elements in this whole arrangement, perhaps even an increase in power cost, reduce production and decrease the anticipated dividends from the installation.

These power sources require occasional checking, not only at the switchboard but also at the machine, because it is only the power that is available and used at the machine that counts. Any losses on the way or between the motor and machine

simply go into the power bill as a hidden increase in cost.

It is unnecessary to go into lengthy detail here as to how these losses may be detected and prevented. Any competent electrical engineer can ferret them out and apply the necessary corrective measures. To do so requires some testing equipment which should be on hand in a plant of any size. Smaller plants can get such equipment temporarily or have the investigations made by competent engineers. Even if everything is found to be O. K. the knowledge that such is true is worth something at least.

♦ ♦ ♦

## Shifting Belts

ALTHOUGH belt shifting devices are a recognized necessity as a safeguard wherever tight and loose or cone pulleys are used, nevertheless poorly designed shifters are often responsible for shortened belt life. One fault which is especially common with shop-made belt shifters is the lack of locking devices. This permits the fork to ride on the edge of the belt as the shifter handle tends to work back into a vertical position and especially from the "off" to the "on" position. Properly designed shifters prevent this accident hazard which endangers the machine and work as well as the operator.

When the forks are out of line so as to shift the belt too far or not far enough, excessive and needless damage to the belt results. The correction is obvious. Roller forks are an advantage by reducing the wear from properly adjusted forks but do not wholly overcome misalignment.

Even though shipper poles are provided for shifting belts on cone pulleys it is not safe to use metallic fasteners on belts which are within reach because in spite of all rules and regulations operators will shift by hand.

Shifter forks are so common and ordinary that the damage they do when improperly set is often taken as a matter of course. Nevertheless, neglect of the simple precaution of alignment is often responsible for doubling maintenance and decreased belt life.

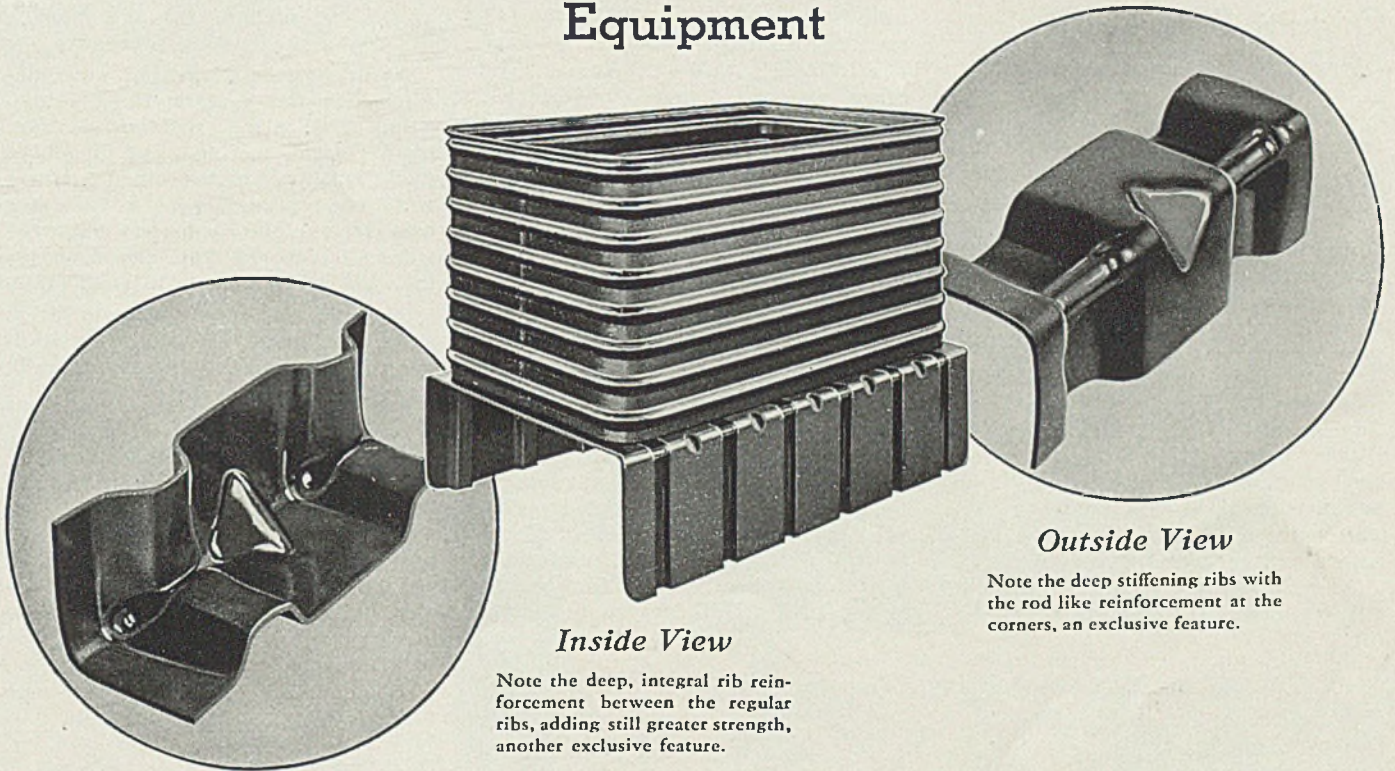


# TRUSCON ANNOUNCES

## *Still Another*

# NEW DEVELOPMENT

in Materials Handling  
Equipment



*Inside View*

Note the deep, integral rib reinforcement between the regular ribs, adding still greater strength, another exclusive feature.

*Outside View*

Note the deep stiffening ribs with the rod like reinforcement at the corners, an exclusive feature.



Always striving to make good products better . . . Truscon's latest achievement adds still greater strength and longer life to Truscon Skid Platforms. A new and exclusive method of forming the integral rib reinforcement gives super-strength to

these heavy duty platforms (see illustration). Gruelling tests prove conclusively that Truscon Skid Platforms will resist the most severe working conditions. Investigate this new Truscon development. Your request for information on the form below will bring prompt action.

## TRUSCON STEEL COMPANY

PRESSED STEEL DIVISION  
6100 Truscon Avenue  
CLEVELAND, OHIO

TRUSCON STEEL CO.  
6100 Truscon Avenue  
CLEVELAND, OHIO

Please send complete information about the new development in Truscon Skid Platforms.

MY NAME \_\_\_\_\_

FIRM NAME \_\_\_\_\_

STREET \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_

# TRUSCON



# Methods and Materials



## Monel Tubes Withstand Corrosive Black Liquor

After 101 months of service a butt welded monel metal evaporator tube operating on black liquor in a pulp and paper mill was removed from service recently for testing purposes. Another was removed at the same time from this plant after 47 months of service. Both had suffered so little from exposure to this corrosive material that they were judged to be good for an even longer period of future service.

Black liquor is a caustic solution recovered by evaporation of the liquors used in the manufacture of paper pulp. The weak solution washed from the cooked wood chips is concentrated to about 35 per cent sodium hydroxide in vacuum evaporators and reclaimed for future use.

In making the test, sections were cut from each of the tubes, which

originally were 12 feet long and 13/16 inch outside diameter. The tube that had been in service for 101 months originally was of 18-gage (0.048-inch) wall thickness. The other was of 16-gage (0.065-inch). Each was given approximately 30 micrometer readings. The result indicated a complete absence of measurable corrosion.

\$ \$ \$

## Studies Effect of Cutting Method on Plate Edges

To determine the effects of several of the more widely used methods of cutting structural steel on the properties of the metal adjacent to the cut surface was the purpose of an investigation conducted recently at Massachusetts Institute of Technology, Cambridge, Mass., under the direction of Prof. J. H. Zimmerman. It has been believed by some that in

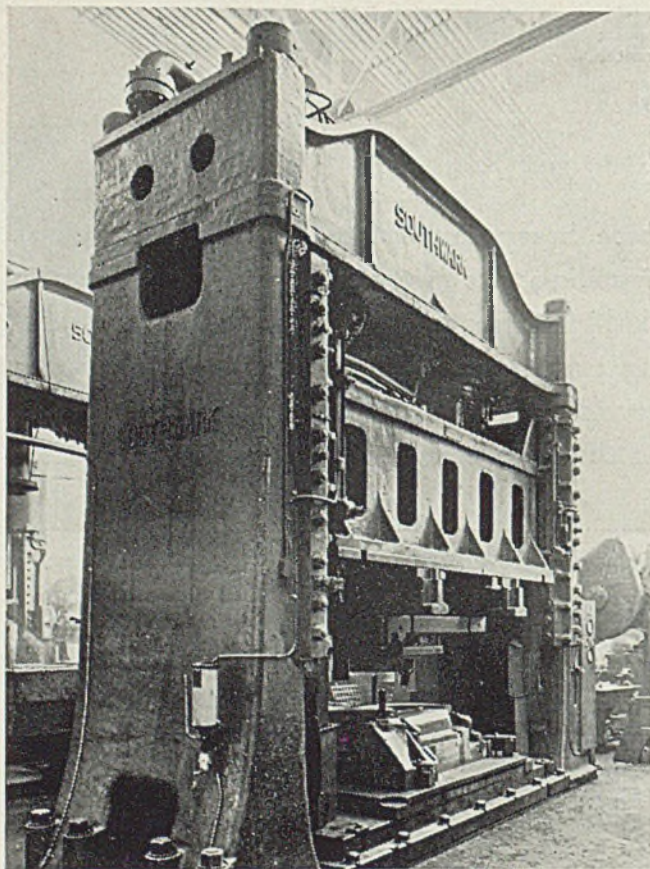
certain instances the failure of structural members may have originated at the cut surfaces through damage caused by the cutting procedure.

Five methods of cutting were employed in the investigation — machining, shearing, friction sawing, hand torch cutting, and machine flame cutting. The machined surfaces were used primarily as a basis for comparison. The specimens employed were all removed from the same 1/2-inch hot-rolled structural steel plate.

No attempt was made to draw rigid conclusions from the preliminary study, but in general the tests have shown:

1. The disturbance of the hardness and structure of the plate is less severe in flame cutting than in either shearing or friction sawing.

2. Machine flame cutting does not appreciably affect the toughness of the metal adjacent to the cut surface, hand torch cutting definitely



## 830-Ton Press for Australia

*DIRECT-ACTING hydraulic cylinders are utilized in this 175-ton triple action press, which has a clear distance of 132 inches between guides and maximum "day-light" of 72 inches. Four screw stops on the outer slide of the press allow a varying amount of clamping pressure to be applied at each of the four corners. It has four cylinders each with 26-inch stroke and yielding 230 tons. Horn-type guide on the inner slide permits eccentric loading. The guide for the inner slide has an equivalent length of 144 inches. This gives a guide length more than equal to the slide width. Full bearing of bronze gibs is assured by mounting the adjustable gibs on a rocking backing piece. The two draw cylinders in this inner slide produce a pressure totaling 600 tons. Controls are centrally located. All load carrying members are either cast or forged steel, the upper and lower cross-members being cast steel, and the tension rods of forged steel. Cast iron side housings and rams are used. The press, nearly four stories high, was built by the Baldwin-Southward Corp., Philadelphia, for the Ford Motor Co. plant at Geelong, Australia*





# NITRALLOY

# at Boulder Dam

## PLAYING ITS PART IN PROGRESS

• The importance of the project, the clear-sighted wisdom shown in its planning, and the discriminating choice of material is reflected in the selection of **NITRALLOY** to play a hidden, but none the less vital part in the operation of this, the world's tallest dam.

This application of **NITRALLOY** is in the form of rings (forged and nitrided by the Camden Forge Co.) and furnished as the main seats in the bodies of pressure regulator valves (built by the S. Morgan Smith Co.).

The rings have an outside diameter of 5 feet 11½ inches, an inside diameter of 5 feet 5½ inches, and a depth of 67/16 inches. They were less than .005 inches out of round after nitriding and tested 1033 Vickers Brinell.

**NITRALLOY** was specified because of its unique properties of extreme hardness and long wearing qualities—attained with the absolute minimum of distortion in the finished part by nitriding.

This is just one of many new uses found for **NITRALLOY**. Its use is increasing. Your inquiries imply no obligation.

*NITRALLOY is manufactured by the following companies:*

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| BETHLEHEM STEEL CO. . . . . Bethlehem, Pa.             | LUDLUM STEEL CO. . . . . Watervliet, N.Y.         |
| CRUCIBLE STEEL CO. OF AMERICA . . . . . New York, N.Y. | REPUBLIC STEEL CORP. . . . . Youngstown, Ohio     |
| FIRTH-STERLING STEEL CO. . . . . McKeesport, Pa.       | VANADIUM-ALLOYS STEEL CO. . . . . Pittsburgh, Pa. |

*The resistance of the NITRIDED surface to abrasive wear has been proved to be markedly superior to the best carbon or alloy case hardened steels.*

The nitriding process and **NITRALLOY** are protected under patents controlled by

# THE NITRALLOY CORPORATION

230 PARK AVE . NEW YORK N Y



improves the toughness of this metal, and shearing or friction sawing decreases the toughness slightly.

3. Ductility of the plate, as determined by the cold bend test, is less seriously affected by hand torch cutting than by either shearing or friction sawing. Machine flame cutting may even be beneficial in this respect.

\$ \$ \$

## Screens Make Life Tough For Flies and Mosquitos

Screen doors now are available which will not warp, rust or discolor and which, because of the strength and permanency of the mesh, are just about as holeproof as it is possible to obtain. Frames and kickplates are of 22-gage and 10-gage stainless steel, respectively, wood-filled. The

mesh is of high-strength stainless steel wire cloth. This construction assures durability and permanent beauty. It does away with such bothersome tasks as the usual winter coat of paint.

\$ \$ \$

## Chromium Plating Metal Patterns Increases Life

For long production jobs, many manufacturers are finding it advantageous to apply a plating of chromium 0.005-inch thick to their iron patterns and coreboxes. The process is rather expensive, for example, it is stated that the expense of chromium plating an automobile cylinder pattern is approximately \$200, but that is a negligible item on a pattern used for the production of 250,000 castings.

# Gas Holder, Mixing Stations, New Pipelines for Expansion at Ford Plant

**P**LANS for handling greatly increased quantities of fuel gas for departments of the Rouge plant of the Ford Motor Co., embracing construction of a new 10,000,000-cubic foot gas holder, installation of a propane gas mixing station and improvement and enlargement of gas

pipelines were announced recently.

Coupled with the gas system improvement is a \$4,000,000 coke oven expansion program which will increase by 8,000,000 cubic feet a day the output of gas for general plant use.

An electrically-operated supervi-

sory control system will provide automatic and remote control of all gas consumption points in the Rouge plant by a single dispatcher. This is believed to be the first application of such a control unit to an industrial gas system.

The plant's gas compressor capacity will be increased from 36,000,000 cubic feet a day to 56,000,000 cubic feet a day by the installation of a new 20,000,000-cubic foot compressor.

The 10,000,000-cubic foot holder will serve as a temporary storage center, storing gas produced during periods of lighter plant consumption and releasing it during periods of heavier plant activity. It will be filled to capacity over the week-end when production is suspended. Plant operations will require 6,600,000 cubic feet of gas a day from the holder, and the supply will be replenished with 4,600,000 cubic feet of gas during the midnight shift, throughout which the coke ovens steadily produce gas which is not immediately needed for production. This results in a net daily drain of 2,000,000 cubic feet, or a total drain of 10,000,000 cubic feet during the work week. Thus, the holder will be emptied by each Friday night and replenished by each Monday morning.

### Liquid Propane Used

The propane mixing station already completed, will be called upon to meet peak loads and will serve as a standby supply. The station is able to provide about 30,000,000 cubic feet of mixed propane and blast furnace gas, when occasion demands. Six propane tanks, with a capacity of 20,000 gallons each, have been installed. The propane (liquefied hydrocarbon) is kept under pressure. When required, it is forced into vaporizers, yielding 900,000 cubic feet of propane gas per tank, or a total of 5,400,000 cubic feet from the six tanks.

This gas, having a heat value of 2500 B.t.u. per cubic foot, is mixed with blast furnace gas with a heat value of 100 B.t.u. per cubic foot at a one to five ratio, resulting in a gas with a heat value of about 500 B.t.u. per cubic foot. The propane mixing station houses eight vaporizers which change the liquefied hydrocarbon to the gaseous form, a machine for mixing propane gas and blast furnace gas or for mixing propane gas and air, when blast furnace gas is not available.

Gas will be conveyed from the blast furnace department by a new 5-foot main about 600 feet long. Its pressure will be raised at a booster station which also will house the supervisory control system. The dispatcher operating the supervisory control board will be able, by manipulating switches and buttons, to

## Trailer Train of Unusual Size



**T**HIS trailer train, hauling 9600 gallons and said to be the largest in the world, recently was placed in service by the D. & R. Transportation Co., Lansing, Mich., to transport crude oil from the Michigan production fields to a refinery 75 miles away. It is powered by a diesel-burning tractor of the cab-over-engine type, one of the first of its kind built. The outfit is 50 feet long, the maximum allowable in Michigan, and approaches the highway limitations also in width, height and weight. Fully loaded, it weighs approximately 48½ tons. Improved design gave the operator 2000 extra gallons of profit load over a unit previously used without increase in operating cost. Columbian Steel Tank Co., Kansas City, Mo., fabricated the steel tanks



maintain a balanced load condition throughout the plant.

Thousands of feet of new pipe will be required to carry coke oven gas to various plant departments. One branch alone, that to the steel mills, will be nearly a mile long.

Two comparatively small mixing stations of steel construction, about 20 feet square, will be erected at separated points at which blast furnace and coke oven gas will be mixed to desired B.t.u. standards. The structure for the blast furnace gas booster pumps and supervisory control board will be of brick and steel construction, 30 by 25 feet.

The gas holder and the new 20,000,000-cubic foot compressor will be built at a point near the south end of the Rouge open-hearth furnace department. Gas will be conveyed to the compressor and holder from the coke ovens, on the east side of the Rouge river slip which juts northward into the plant grounds, through a 13-foot tunnel several hundred feet long, which will be located beneath the slip.

At present, there is 33,600,000 cubic feet of gas from coke ovens available for plant use. This will be increased to nearly 42,000,000 with the completion of new coke ovens next year, despite the razing of two older batteries of ovens. This supply, together with the potential source of 30,000,000 cubic feet from the propane station, will give the Rouge plant a maximum potential supply of 72,000,000 cubic feet of fuel gas.

## Tentative Standards of A.S.T.M. in New Edition

*A.S.T.M. Tentative Standards, 1935*; 1500 pages, published by the American Society for Testing Materials, 260 South Broad street, Philadelphia; supplied by STEEL, Cleveland, for \$8, plus 15 cents postage, for cloth binding and \$7, plus 15 cents postage, for paper binding.

This annual publication of the A.S.T.M. is the only volume containing all of the society's tentative specifications, methods of testing and definitions of terms, engineering materials and the allied testing field. These tentative standards, embodying the latest thoughts and practices, are used widely throughout the industry.

The 1935 edition contains 290 tentative standards. Of these 75 are included for the first time and some 65 were revised in 1935 and are given in their latest form. The specifications include 48 for ferrous metals, 32 for nonferrous metals, and 22 for miscellaneous materials.

New tentative specifications published for the first time cover the following: Ferrous and nonferrous materials; seamless steel still tubes for refinery service; heat treated carbon

steel and alloy steel track bolts; seamless steel heat exchanger and condenser tubes; steel pipe flanges for general service; carbon steel and alloy steel castings for railroads; steel castings for miscellaneous uses; uncoated and zinc-coated wrought iron sheets; electrodeposited coatings on steel; sev-

eral types of chromium and chromium-nickel steel castings and sheets; lead coated sheet copper; lead and tin-base alloy die castings and phosphor-bronze plates for bridges and structures. Three new methods of spectrochemical analysis of various nonferrous metals also are given.

## Spot Weld Size and Spacing Affect Strength, Quality and Costs

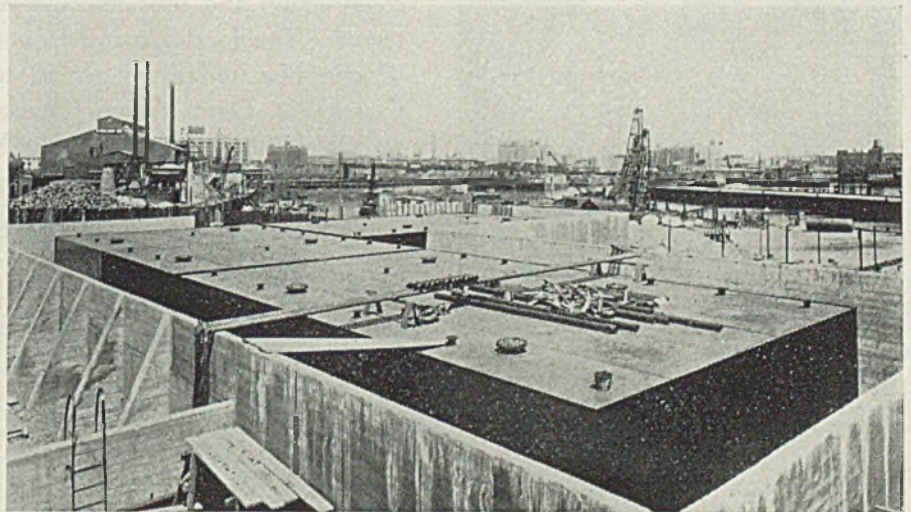
**T**WO important variables must be given careful attention if spot welding equipment is to produce welds which are satisfactory from a mechanical as well as cost point of view. They are the size of the spots and the spacing or number of spots in a line or area.

According to an article appearing in *Flashes* published by the Thomson-Gibb Electric Welding Co., Lynn, Mass., the ideal arrangement would be a series of spot welds so spaced and of such size that they would have adequate strength, yet could be made at low cost on relatively inexpensive equipment without excessive die point wear and without detracting from the appearance of the product.

Theoretically, the larger the point, the longer it will hold its shape. It would seem that the way to eliminate frequent die point dressing and replacement is to make the point as large as possible. But, increasing the size of the die point requires such heavy mechanical pressures and such large transformer capacities that any economy in longer die point life is more than offset by the higher original and operating cost of the equipment. There is also the problem of bringing the entire surface of the die point into contact with the stock.

At the other extreme, a die point of very small diameter might require comparatively low mechanical and electrical capacities, but the lack of

### Erected in Seven Weeks



**A** MONTH ahead of schedule, the last of three 200,000-gallon rectangular bulk storage tanks in Brooklyn, N. Y., was tested and accepted exactly seven weeks after the first shipment of steel plate arrived on the building site. These tanks were built by the J. K. Welding Co., New York, for the Colonial Beacon Oil Co. Inc. with shielded arc equipment supplied by the Lincoln Electric Co., Cleveland. Each of the tanks is 60 feet long by 38 feet wide by 12 feet deep, and has two compartments containing steel braces spaced on 2-foot centers each way. A total of 180 tons of 3/8-inch steel plate, 60 tons of angles and 1 ton of fittings were required. Interior trusses were welded in sections in a jig to insure accurate spacing, alignment and squareness, and positioned on the bottoms of the tanks. The entire assembly was then tied together by angles welded at the intersection of verticals and horizontals



# "Mr. Executive-

There is at least ONE PART of your product that can be made BETTER, at LOWER COST by

**'Shield-Arc' Welding.**

**DO YOU KNOW WHAT IT IS?"**

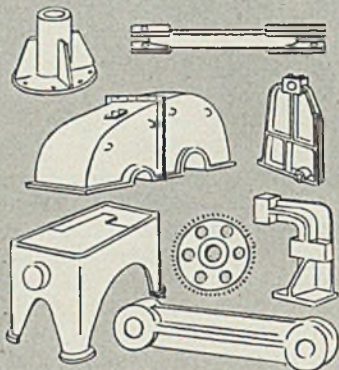
*J. F. Lincoln*  
President, The Lincoln Electric Company

YOUR machine may seem complicated, but it is simply an assembly of PARTS. Base, frame, brackets, container, wheels, cover, levers, etc. All of these parts can be made lighter, more serviceable, or at lower cost by "Shield-Arc" welding.

A Lincoln man nearby can show you which PART is the easiest starting point. He can tell you how to save money, time and weight by making the part "Shield-Arc" welded. Because of his practical welding knowledge, he can show you how the part can be made in the most economical way.

You can start now. Change ONE PART AT A TIME to welded construction and thus improve your product and cut its cost of manufacture. The local Lincoln man is at your service without obligation. 'Phone him today, or get in touch with THE LINCOLN ELECTRIC COMPANY, Dept. Y-242, Cleveland, Ohio. Largest Manufacturers of Arc Welding Equipment in the World.

**YOUR PRODUCT  
IS MADE OF  
PARTS**



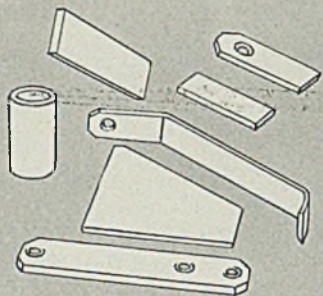
... Perhaps it includes a **BRACKET**



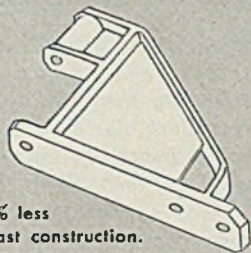
**MAKE IT MORE RIGID  
MAKE IT STRONGER  
MAKE IT LIGHTER  
PRODUCE IT QUICKER**

**WELD IT!  
It's Simple!**

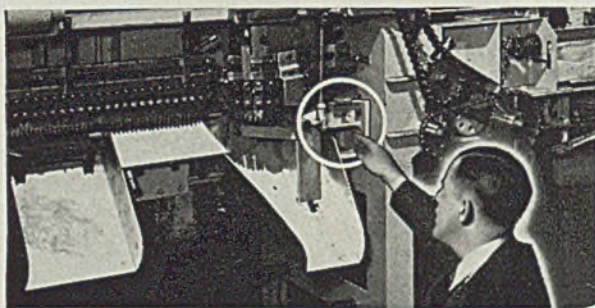
... Take standard mill shapes and cut them to proper sizes—



... Then assemble them together in their proper places, fusing them into a single unit with a "Shield-Arc" Welder.



Cost—20% less than cast construction.  
Weight—25% less than cast construction.  
Quality—now an unbreakable part!



# LINCOLN

**"SHIELD-ARC"**



**WELDING**



strength in the welds, the short life of the electrodes and the tendency to mar or indent the stock would make it equally impractical. The most practical die point can be arrived at only after the thickness and properties of the stock, the ability of the welding equipment and the appearance of the finished welds have been considered.

Die point life can be prolonged in three ways. One way is to reduce the welding pressure. This method not only increases the life of the dies but allows the use of lower electrical capacities, yet it is not always a practical solution. There are times when high pressure must be used to overcome "dishing" or uneven surface conditions in the stock.

The second way is to use die points of larger diameter, but this method involves heavier equipment and produces unnecessarily large spots. The third method is to increase the toughness of the die points by using materials of greater compressive strength. This sometimes leads to difficulties due to heating of the die points, but these difficulties can be largely overcome by more efficient die point design. It is interesting to compare the compressive strength of some of the standard materials: Hard drawn copper, 58,000; Electroloy, 80,000; Elkaloy, 80,000; and Elkonite, 208,000 pounds per square inch.

#### Formulas Are Developed

Engineers of the Thomson-Gibb company have made a thorough study of the relationship between spot size and electrical capacity requirements, die point life and weld strength and have worked out formulas and plotted curves which help determine the best spot size when all three are considered.

When the load which a row of spot welds must carry is known, the number of spots required can be calculated by analyzing the strength of a single spot. It should be noted, however, that while spot welding differs from riveting in that the welds can be placed quite close together, welds which are not appreciably separated will not be uniform in characteristics. In the case of two welds made close together with the same adjustment of the welder for each weld, the first weld will be measurably stronger. By using more energy in making the second and subsequent welds, the difference can be eliminated.

When small diameter spots are used in welding thin stock, there is a real advantage in using two rows of spots, the second row of welds materially reduces the effect known as "tipping" which occurs when spot welds are under a load and therefore increases the effective strength of each weld.

# Welding, etc. . . .



by Robert E. Kinkead

## Mental Reactions

**T**HERE are two types of mental reaction to the impact of ideas born of welding experience on an organization which finds it necessary to deal with the subject. The first type of reaction is one of sufferance in which the organization will go as far as it is compelled to by external forces, but no further. The second type accepts the situation as an inevitable change and proceeds to make the most of the new ideas. We do not know anyone displaying the first type of mental reaction who has had profitable experience with welding.

Welding as a means of "fixing" something broken or worn is an elementary conception which is entirely correct as far as it goes. Welding as a means of connecting metal parts previously fastened together by some other method is a legitimate second step. A third, and now well authenticated, step is the conception of new designs of metal assemblies to be welded which have never been made in any other way.

Now comes the latest conception in which a basic principle of design is advanced to the effect that the ideal is always a continuous metal structure in which the physical properties of the metal at any point are precisely what is required by the service at that point. Thus a metal part is continuous so far as metal is concerned, but the chemical and physical properties of the metal vary to meet service requirements. Hard surfacing is a primary concept along these lines. But the great field lies ahead for progressing designers.

## Weldability of Metals

**W**ELDABILITY of various alloys is the subject of many technical discussions. Resources of metallurgists have not been fully used, or there would be considerably less discussion of the subject. Given a sample of a certain metal, welded by a known process, any good metallurgist can predict the welding quali-

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*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.*

---

ties of the metal and its properties after welding with a high degree of accuracy. Furthermore, if the result is not successful, the metallurgist can tell what is necessary, and in most cases, whether or not it can be done.

The tendency to treat welding as something wholly new and unrelated to any other subject leads to expensive blunders. What will happen with a welding heat cycle of 1 second or one 0.05 second in the case of a new alloy may be unpredictable, but if the metallurgist is given a sample of the weld, all the pertinent facts are ascertainable and future predictions may be made with safety. None of the facts is new. It is as sensible to deal with welding without metallurgical advice as it is to try to travel without a timetable.

## Sparks and Flashes

In casting design, the thickness of section at a given point is a function of the total stress at that point. Thus, the unit stress is kept down to safe limits by increasing the thickness. In welded design the same result may be obtained by welding in an insert of the same thickness but of greater strength so that, while the unit stress is higher, the material is capable of carrying higher stresses at that point.

\* \* \*

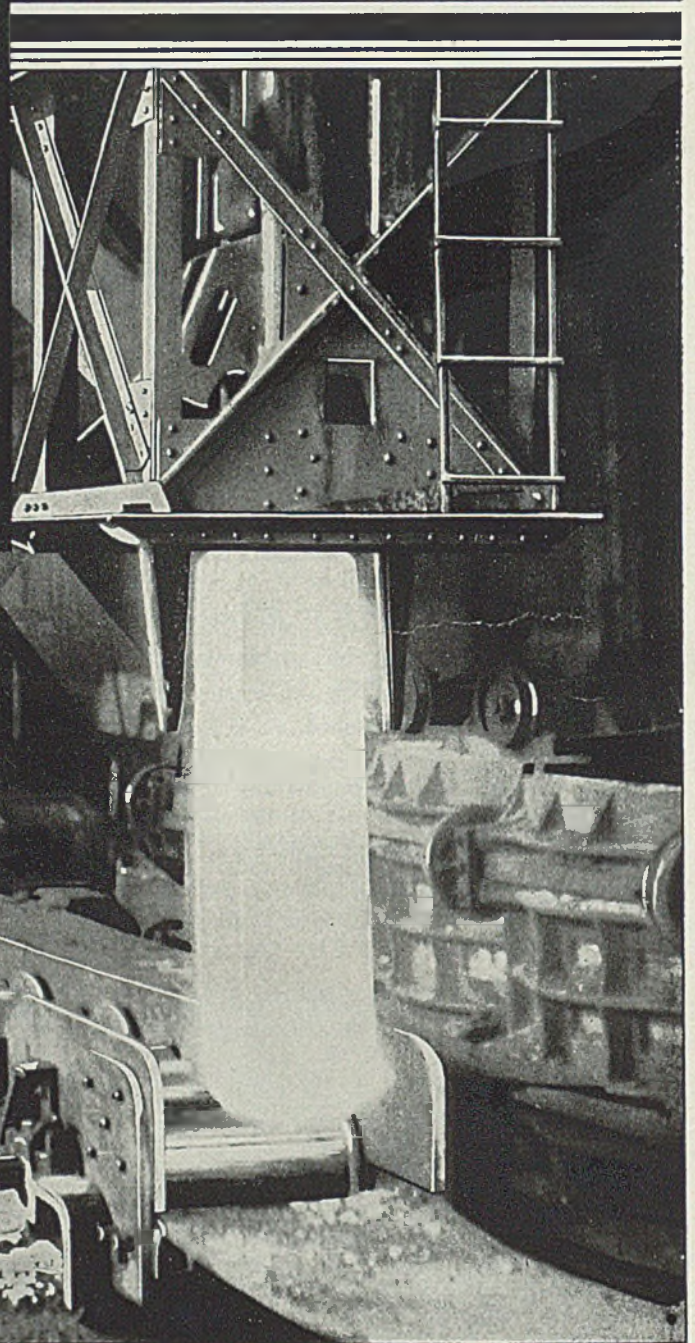
Rip stops are put on welded steel structures at points at which failure by ripping or tearing would normally start. Often, as little as 0.5 per cent of the total weld metal applied to a job, when properly fused at these ripping points, will double or even treble the service life of the structure. Service failures of welded structures always occur by ripping or tearing. Rip stops delay or prevent service failures.



# STABILITY

**N**OWHERE in industry is **STABILITY** a greater asset than in the production of forging steel. There must be stability of organization, of personnel, of methods, of quality, for the production of flawless steel is a highly specialized process; men cannot be trained to it in a day.

Back of every **ASCO** Special High Grade Forging Billet is the stability that results from nearly a half century's devotion to the perfection of forging steel; technicians and artisans trained and working together to the same end—to produce the finest forging steel . . . worthy of the name "**ASCO**." There is an **ASCO** steel to meet every specific requirement.



## FORGING BILLETS

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Carbon, Chrome, Chrome Molybdenum, Chrome Nickel, Chrome Vanadium, Molybdenum, Nickel, Nickel Molybdenum, Vanadium Billets and Slabs.



# A.S.T.M. Committees Evolve New Standards and Tests

**M**ANY new standard specifications and methods of test are to be recommended to the American Society for Testing Materials as the result of the large number of meetings of the society's standing committees held in Pittsburgh, March 2-4. About 150 meetings, including main standing committees, their sections and subcommittees, were conducted.

Total registered attendance for the group meetings was about 625, exceeding that of any previous year. Several of the committees are planning to sponsor technical programs at the society's annual meeting in June in Atlantic City, including the committees on water for industrial uses and metallography.

In connection with the spring group meeting of committees, the society held its regional meeting on March 4, the program for this being a symposium on high-strength constructional metals. This symposium was reported in the March 9 issue of STEEL.

Among the committees holding meetings were a number dealing with iron and steel and nonferrous metals; the work which they accomplished is summarized as follows:

## Committee A-1 on Steel

Subcommittee on steel rails and accessories has developed two specifications covering high-carbon steel joint bars and quenched carbon-steel joint bars. These are essentially revisions of existing A.S.T.M. standards and when approved as tentative will supersede the standards. They were developed in co-operation with a committee of the American Railway Engineering association. Certain changes were recommended in the specifications first published last year covering heat-treated carbon-steel and alloy-steel track bolts and it is intended that these specifications, when revised, will supersede the two existing A.S.T.M. standards covering quenched carbon-steel and quenched alloy-steel track bolts. Existing revisions in the specifications for open-hearth carbon-steel rails (A 1-30) were recommended for adoption as standard.

Extensive revisions of the present standard specifications for structural nickel steel (A 8-29) were approved in the form of a new proposed tentative specification. When the latter is approved, the existing standard will be withdrawn. The new requirements for tensile strength in the specifications have been raised to a range of 90,000 to 115,000 pounds per square inch with a minimum yield point of 55,000 pounds. The chemical requirements on ladle analysis provide for a maximum permissible carbon of 0.43; maximum manganese, 0.80; with nickel range of 3 to 4 per cent.

Subcommittee in charge of specifications for structural steel for

bridges, buildings and structural silicon steel also recommended adoption as standard of the changes in the finish clause first published last year which provide for the conditioning of non-injurious surface imperfections by grinding or welding. The clause reading "the chipping and welding shall be performed under constant control by the manufacturer" is to be changed to read as follows: "An experienced mill inspector shall inspect the work after the chipping operation to see that the defects have been completely removed and that the limitation specified above has not been exceeded. The inspector representing the purchaser shall be given full opportunity to make this same inspection."

Subcommittee on steel reinforcement presented for approval new specification requirements covering welded wire fabric and also bar or rod mats for concrete reinforcement. Further study will be made of the requirements for expanded metal reinforcement. The joint committee on standard specifications for concrete and reinforced concrete which requested that certain specifications covering fabricating reinforcement material be developed included in its list woven wire fabric. Because it does not seem practicable to the subcommittee to include requirements for this material in the welded wire fabric specifications, a separate standard is to be developed. The committee recommended adoption as standard of the tentative specifications for axle steel concrete reinforcement bars first published last year.

Special subgroups are to continue consideration of the requirements for alloy-steel forgings and carbon-steel forgings. An attempt will be made to combine certain of the existing specifications, but the committee plans to keep in mind that utility of the specifications and proper grades are of primary importance.

## Improve Freight Car Wheels

To meet the demand for specification requirements for light-weight wheels used on freight cars, the committee on wheels has developed new specifications for one and two-wear solid wrought carbon-steel wheels.

Subcommittee on steel castings voted to recommend certain modifications and a change in the serial designation of the tentative specifications for carbon-steel castings for miscellaneous industrial uses, which was issued last year and numbered A 180-35 T. It is to be renumbered A 27-36 T. With this change, the former standard A 27-24 will be withdrawn. Two of the important specifications in the charge of the subcommittee were recommended for adoption as standard. These cover alloy steel castings for structural purposes (A 148-33 T), in which minor changes are to be made, and carbon steel and alloy steel castings for railroads (A 87-35 T).

A number of important recommendations were offered by subcommittee IX on steel tubing and pipe. Existing tentative specifications are to be voted upon for adoption as standard covering the following: Black

and hot-dipped zinc-coated (galvanized) welded and seamless steel pipe for ordinary uses (A 120-34 T), electric-fusion-welded steel pipe (sizes 30-inch and over) (A 134-32 T), and electric-fusion-welded steel pipe (sizes 8 inch to but not including 30 inches) (A 139-34T). Two new specifications covering 4 to 6 per cent chromium alloy steel for steel tubes and heat-exchanger and condenser tubes are to be proposed. Comments on the necessity for additional testing of heavy wall, long length boiler tubes resulted in the decision to develop a new specification rather than incorporate additional requirements in the existing standard specifications for lap-welded and seamless steel and lap-welded iron boiler tubes (A 83-34).

Three tentative specifications in the charge of subcommittee XI on boiler steel were recommended for adoption as standard. They cover carbon steel plates for boilers and other pressure vessels for stationary service (A 70-35 T), high-tensile strength carbon steel plates for pressure vessels (plates 2 inches and under in thickness) (A 149-35 T), and high tensile strength carbon-steel plates for fusion-welded pressure vessels (plates over 2 inches up to and including 4 inches in thickness) (A 150-35 T). Certain editorial changes clarifying titles and scope of these specifications were approved.

## Bar Designations Simplified

Important changes were made last year in the specification requirements covering commercial quality hot-rolled and cold-rolled bar steels, A107 and A108, respectively, particularly in the grades and chemical compositions. To simplify the grade designations and include grades which are in widespread use, additional changes were recommended and are intended to be incorporated in the standards this year. Grades numbered from 1 to 27 are provided for in the specifications for hot-rolled bars, while 17 are provided for in the cold-rolled bar requirements. Two grades of resulfurized nut stock (bessemer and open-hearth) are provided for in the former specification.

Subcommittee on steel for welding, which has been co-operating with representatives of the American Welding society in the development of specifications for filler metal, plans to give further consideration to the specification draft as presented at its meeting.

It is planned to refer to letter ballot for approval the proposal that the specifications for alloy steel castings for valves, flanges and fittings (A 157-35 T), seamless alloy steel pipe (A 158-35 T), and forged or rolled alloy steel pipe flanges, forged fittings, and valves and parts (A 182-35 T), all three covering materials for service from 750 to 1100 degrees Fahr., be adopted as A.S.T.M. standard specifications. Similar action is proposed in connection with the requirements covering electric-fusion-welded steel pipe (A 155-34 T) and lap-weld and seamless steel pipe (A 106-34 T).

## Committee A-2 on Wrought Iron

A letter ballot will be taken on proposals to adopt as standard the existing specifications for uncoated wrought iron sheets (A 162-35 T) and for zinc-coated (galvanized) wrought iron sheets (A 136-35 T). The former cover sheets for use in roofing, siding and corrugating and other moderate forming requirements; the later cover sheets for use in culverts, roofing, siding, etc., with four grades of zinc coatings applied by the hot-dip



process. They were first issued in 1935.

The committee plans to recommend the adoption as standard of a number of existing revisions in several specifications including those covering the following: Common iron bars; refined wrought-iron bars; hollow-rolled staybolt iron; and blooms and forgings for locomotives and cars. Through the activities of subcommittees II on merchant bar iron and III on staybolt and engine-bolt iron, the committee expects to report new specifications covering high-grade single refined wrought-iron bars and double-refined bars.

It was decided to retain as tentative for another year the specifications for wrought iron plates (A 42-35 T) because the specifications represent quite a departure from the usual wrought iron specifications and retaining them as tentative will enable additional comments to be received concerning their suitability.

#### Committee A-5 on Corrosion of Iron and Steel

Latest inspections of atmospheric corrosion tests on the copper-bearing and non-copper-bearing iron and steel sheet specimens exposed at Annapolis, Md., since October, 1915, were reported. This progress report covered failures noted since the latest published report in 1935.

Committee received a progress report of inspections of galvanized sheet specimens exposed at five test locations for nine years. Test locations are Brunot Island (Pittsburgh), Pa., Altoona, Pa., Sandy Hook, N. J., State College, Pa., and Key West, Fla.

Committee also received a progress report on the comprehensive series of exposure tests on eight types of metallic coatings applied to hardware, structural shapes, tubular goods, etc., which have now been under way at five test locations for almost seven years. Plans are being made for the expansion of the present program to provide tests on equal thickness of sherardized and galvanized zinc coatings on hardware, structural shapes, and similar items. The resulting information should assist materially in the interpretation of the broad range of data which have been accumulated.

As a result of a further study of specifications for galvanized wire, revisions were completed in the three specifications for the purpose of bringing them in line with present manufacturing practices.

The committee's program for outdoor testing of zinc-coated wire and products is rapidly nearing completion and it is expected that the erection of test samples on the racks will be completed by Oct. 1. In these tests, farm-field fencing, chain-link fencing and strand will be exposed at 12 locations throughout the United States from the east coast to west and from northern New York to Texas. Also included in these tests are plain wires and fence made from stainless steel, copper-clad and lead-coated steel wires.

#### Committee A-7 on Malleable Iron Castings

Through its subcommittees on galvanizing embrittlement and specifications for malleable castings for flanges, pipe fittings, and valve parts, this committee has continued its study of galvanizing embrittlement as related to malleable iron. The committee is continuing actively in the

development of specification requirements for cupola malleable iron.

#### Committee B-6 on Die-Cast Metals and Alloys

The committee recommends continuation as tentative for another year of specifications for aluminum-base alloy die castings (B 85-33 T). Certain changes are to be incorporated in the specifications with the dropping of alloy No. VI, modification of the composition of alloy XII and certain modifications in the tables of properties.

Accelerated corrosion tests on alloys IV, V and Va have been completed and physical tests made. The data, which will appear in the committee's annual report, cover a year's exposure to salt-spray tests.

As a result of discussion of the advisability of including physical test data in the tentative specifications for lead and tin-base alloy die castings (B 102-35 T), the subcommittee in charge will be asked to conduct tests to determine the strength, hardness and aging properties of the alloys, the tests to extend over a period of three years.

The committee is planning to undertake exposure tests on magnesium-base alloys similar to the original atmospheric tests of aluminum and zinc-base die-cast alloys. A number of proposals have been made to the committee covering new alloys and new types of corrosion testing of die castings, such as corrosion of washing machine parts.

The committee plans to include with its 1936 report a report on finishes of die castings, to comprise a paper by the chairman of the subcommittee, J. C. Fox, covering details of methods for finishing zinc and aluminum-base alloy die castings. Two types of electroplating of zinc die castings will be described and the preparation of casting surfaces and methods for application of lacquers, enamels, japans, etc., with data for other miscellaneous finishes applied to zinc die castings are to be included. Discussion in connection with aluminum-base alloy will cover the finishing methods involving polishing, electroplating, enameling and anodic oxidation. The paper will also detail methods of control and inspection and testing of various finishes.

#### Committee B-7 on Light Metals and Alloys

Committee has completed preparation of a new specification for magnesium-base alloy bars, rods and shapes, which it is planned to submit at the annual meeting in June for approval as tentative standard. A thorough study and review of all the tentative specifications under its jurisdiction has resulted in the preparation of changes in several specifications. In the magnesium-base alloy specifications the changes involve a tightening of the allowable contents on impurities. The revisions will also provide for the introduction in the specifications for magnesium-base alloy sand castings of properties for Alloy No. 4 in the heat-treated condition. It appears that this alloy will be the most widely used composition of this type. It is reported to have excellent corrosion-resisting properties.

#### Research Committee on Fatigue of Metals

Reviewed various comments which had resulted from the committee's 1935 report in which there was presented a set of notes on the rotating-beam test for fatigue strength,

covering tests on machines either of the centrally loaded or the cantilever types.

A progress report was presented covering co-operative studies of committee E-4 on metallography and the fatigue committee involving X-ray diffraction studies and their relation to fatigue test results. While no clear correlation has as yet been shown, the study is progressing. It was indicated that long-time tests are necessary to permit definite conclusions.

Progress made in the study of effects of occasional high overstress on subsequent resistance to repeated working stresses was discussed and reports of work in this study were submitted from several laboratories.

New types of testing machines for fatigue tests were discussed, these machines including high-speed machines (10,000 cycles of stress per minute); machines for repeated loading of large specimens of full size structural and machine parts; and machines for testing wire under reversed stresses. Tests of the effect of sharp notches in small specimens and in large specimens were reported.

Methods of detecting fatigue cracks when they are still very small were discussed, including tests using magnetized iron dust, etching and direct microscopic examination. Differences in reporting results of fatigue tests by English laboratories and by American laboratories were indicated. Minor matters noted were fatigue cracks under repeated compression, and metals showing unusually high ratio between fatigue strength and tensile strength.

#### Joint Conference on Electroplating

This conference, sponsored jointly by American Electro-Platers' society, national bureau of standards and A.S.T.M., considered a number of comments that had been received on the three specifications covering electrodeposited coatings of zinc, cadmium, nickel and chromium on steel, which were published last year. Discussion at the meeting indicated that the salt spray test is not especially useful for testing zinc and cadmium coatings but that a test to distinguish between good and poor coatings of the same thickness would be desirable. Purity of the coatings might also be specified. It was the sense of the meeting that while the present symbols in the specifications are satisfactory, consideration could be given also to a designation based on the specified thickness, for example, "zinc 50" would refer to a zinc coating with a minimum thickness of 0.00050-inch.

While thicker coatings than those specified in the requirements are occasionally required, the meeting felt that at present there was not sufficient demand for thicker coatings to justify action. Consideration of the present requirements calling for an average of 0.00002-inch of chromium is not excessive for the automotive industry.

Specifications at present require a minimum of 0.00015-inch zinc which is usually equivalent to an average of about 0.0002-inch and the committee indicated that this is probably adequate for mild exposures. Based on consideration of the comments received, the committee took action to recommend that the specifications be continued as tentative standards for another year without change.

There was detailed discussion of the program of exposure tests of plating on nonferrous metals. The status of the program and the preparation of specimens to be included in the series of tests was reviewed. The principles of the chord

(Please turn to Page 66)



# THE ANSWERS TO YOUR QUESTIONS



Do you remember the days when you owned an arithmetic book which, on a few pages tucked away near the back cover, disclosed the answers to the brain-teasing problems up front?

What would you think of a book which contained answers to problems that are not yet formulated?

Right now, in the confidential monthly report of Youngstown's research activities, are being written answers to a long list of complex steel-questions which Industry hasn't yet asked.

As Industry asks questions Youngstown has the answers--in alloy and special steels--each proved up by exhaustive experiment and test. What steel question is puzzling you today?



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# Progress in Steelmaking



## Eliminates Foreign Matter

Frequent annoyance and serious difficulty attributed to foreign matter in oil burning systems or pipe lines can be eliminated by a newly devised strainer. The duplex unit consists of two straining chambers in one body which can be purged and the baskets blown free of obstructions without interrupting the normal liquid flow. Tarry and sticky matter is removed from clogged baskets without burning, or washing with kerosine.

## Develops Automatic Shear

Cutting strip and sections produced by cold roll forming methods now is accomplished accurately by a recently developed cutoff of the flying shear type. Cut lengths will not vary more than plus or minus 0.005-inch. Operation is automatic. Pieces 3 inches and longer can be cut, the minimum length depending upon the

speed of the metal. The machine eliminates the need for a long run-out table on the delivery end of the cold roll forming mill, saves space and reduces direct labor.

## New Insulation Is Marketed

Efficient insulation up to 2000 degrees Fahr. is claimed for a new plastic insulating cement which may be applied by hand, trowel, or cement spraying equipment. The material is said to adhere firmly to any clean surface, to be reclaimable and tough and to withstand hard usage and shrinkage.

## Uses Full Head of Water

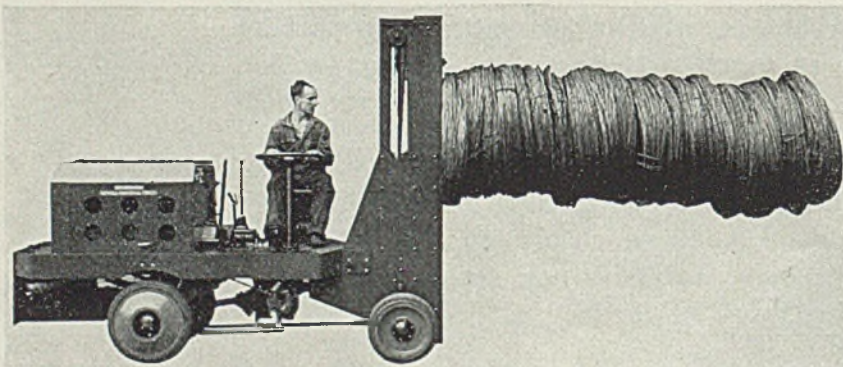
Siphoning spent acid from pickling tanks requires a sufficient head and volume of water to maintain a suitable pressure when the valve is wide

open, according to a builder of pickling vats. Use of water rather than steam is recommended for siphon operation because of its cooling effect and its ability to dilute the waste acid thereby curtailing the wear and tear on the sewerage system. At some plants the full head of water is left running during the entire drainage period to facilitate diluting and cooling the discharged solution.

## Involves Higher Acidity

Pickling practice in the wire industry indicates a trend toward the use of higher acidity and a lower temperature. The customary practice in many cleaning houses is to add a pitcher of acid to every pin of rods treated. Under the new arrangement the acidity is about 7 per cent and the temperature about 150 degrees Fahr. The time cycle is adjusted by controlling the temperature; the consumption of acid is unchanged. At the end of the run the temperature of the bath can be increased as the acidity decreases. By this arrangement the acid in the early part of the run is comparatively clean and a better finish is obtained throughout.

## Rods Transferred to Storage by Motor Truck

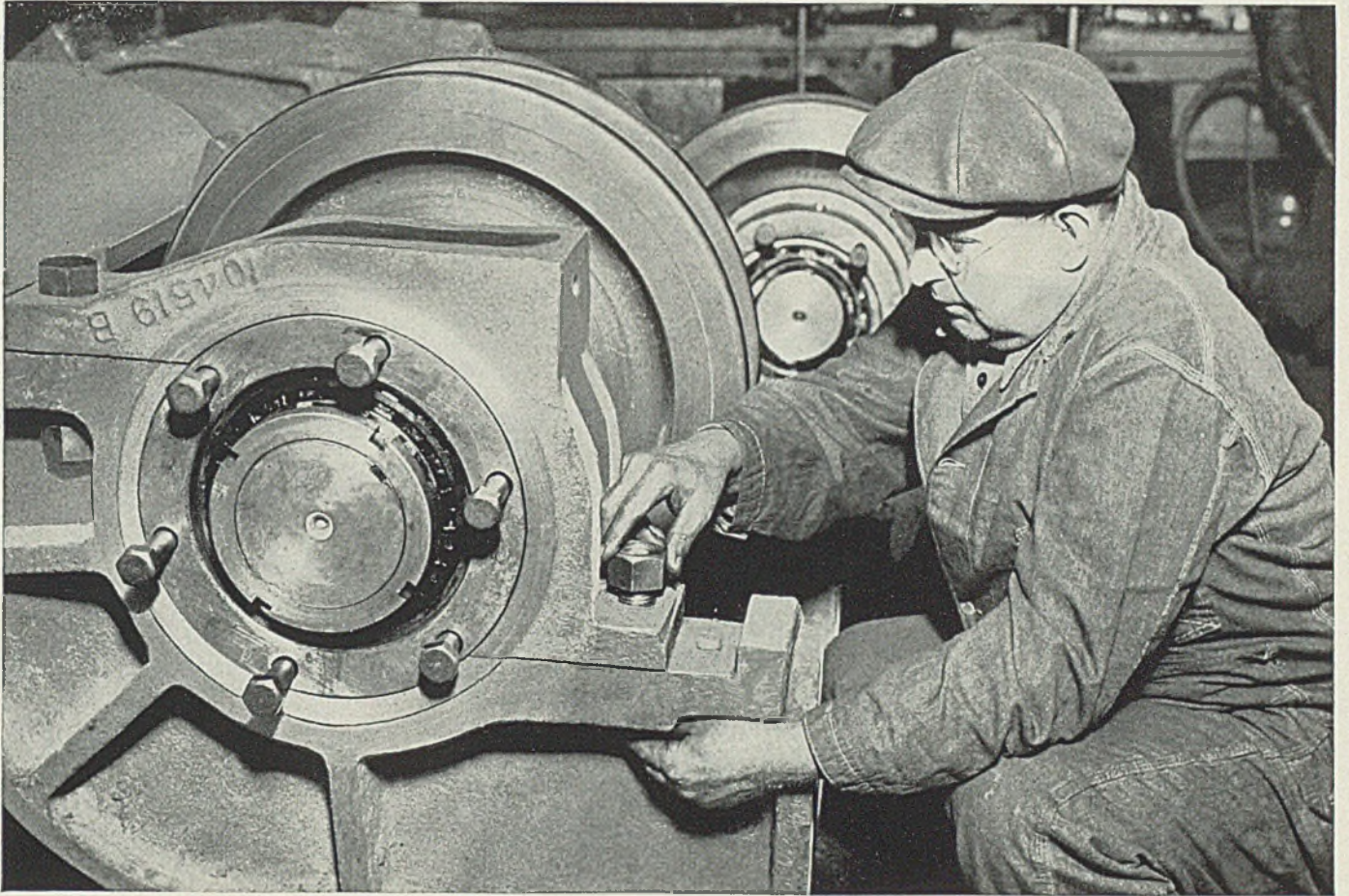


Handling 600 tons of rods per 24 hours by a gasoline-driven ram-type truck is being accomplished by a wiremaker at a large saving over former methods. The ram is 12 feet long and has a carrying capacity of 4000 pounds of rods. The truck in making one round trip from the conveyor to the storage yard covers a distance of about 1000 feet. Gasoline consumption averages 5 gallons or less per 8-hour turn. The truck can travel at slow speed although it is designed to travel 15 miles per hour loaded or 25 miles per hour empty. Equal speeds are afforded in either direction. The operator's seat is situated to provide clear visibility of both the loading and unloading operation. The load is hoisted by a hydraulic cylinder and pump which is connected to the 6-cylinder motor. The unit was built by the Howell Industrial Truck Co., Cleveland

## Marks Hot or Cold Steel

Paint in stick form now is available for marking hot and cold steel. That for cold marking can be used on all metals including structural and galvanized sheets up to 350 degrees Fahr.; that for hot marking can be used on shapes, forgings, pipe and billets up to 1200 degrees Fahr. In either case the paint dries and remains permanent; it will not dry out in stick form and hardens only after application. Markings made with either grade are weatherproof and remain clear and eligible after six month's exposure to weather conditions. Due to the fact that a non-flammable binder is used, the paint will not flame up even when the steel is marked in red hot condition.





*Just try to tell him  
that all bolts are the same!*

**T**HERE'S no one better qualified to speak on the subject of the fit of the threads on nuts and bolts than the man who is constantly putting them together in assembling machinery. Here an imperfect thread or a slight burr on either part means lost time—lots of it. There's a big difference between running a nut down easily by hand and forcing it down laboriously with a wrench on the nut and one on the bolt-head.

Bethlehem Bolts and Nuts are produced with meticulous care and attention to the details of manufacture that make them real time- and money-savers on assembly work. The close supervision of men who know bolt manufacture as only men can who have spent their lives in the work results in bolts and nuts that almost fall

together—though fitting with the precision demanded by the most exacting specifications.

And this is only one of the reasons why users of bolts and nuts find Bethlehem such a satisfactory source of supply.

Bethlehem's Lebanon, Pa., Plant is geared to make quick shipment, with a warehouse stock of over 3500 standard items and many more "specials."

If special physical properties are required, Lebanon Plant can call on all the knowledge, skill and experience of a great steel-making organization for the requisite materials.

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**BETHLEHEM STEEL COMPANY**

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# ELECTRUNITE BOILER TUBES

REG. U. S. PAT. OFF.

*have received wide acceptance*



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PLATE FABRICATOR

During 1935, Lloyd's Register of Shipping made an investigation of the product and approved it for use in vessels classed with that bureau. The amended Rules Nos. 1 and 2 of the General Rules and Regulations of the Bureau of Navigation and Steamboat Inspection Service issued as of January 1, 1935, have mentioned electric resistance welded tubing, stating under Rule No. 2, Section 13, Page 83,—"Seamless or electric resistance butt welded tubes shall be used in all construction where the tubes are subject to internal pressure." The bureau also approved the use of Toncan Iron electric welded tubing during the current year.

The A. S. T. M. has had under consideration for several years the adoption of a specification on electric resistance welded tubing and a tentative specification has been adopted by that Society this year. The tentative specification is an entirely separate specification from the existing specification A-83-34 written for seamless and lap welded tubing.

The Navy Department, Bureau of Yards and Docks, has just issued Specification 44-T-11A, which is a revision of 44-T-11. The new specification is patterned after Specification WW-T-731a which includes

electric resistance welded tubing. It is interesting to note that the physical tests in both of these revised specifications require that the electric resistance welded tubes be subjected to the same tests as the seamless tubing.

Since the introduction of Electrunite Tubing by Steel and Tubes, Inc., Cleveland, millions of feet of this tubing have been installed in all types of water-tube and fire-tube boilers, locomotives, stationary and marine, both for replacement and new boiler work. Some of the recent larger installations of new boilers in which Electrunite Tubes are used are the 450 pound pressure sectional header boilers and water walls installed at the Evansville Plant of the Southern Indiana Gas and Electric Company; Chevrolet Motor Company Assembly Plant at Baltimore, Md.; the International Harvester Company, McCormick Works in Chicago; the Crystal Tissue Company Plant at North Excello, O.; the Gardner Richardson Company Plant at Middletown, O.; waste heat boilers at the Ford Motor Company plant in Detroit and many others.

For replacement work large stocks of Electrunite Boiler Tubes are carried in most principal cities.



## Steel and Tubes Inc.

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# Foundry Pig Iron Made in Smaller Size

BY G. A. T. LONG and W. M. RAMSEY  
Pickands, Mather & Co., Cleveland

**D**URING the latter part of 1935, Pickands, Mather & Co. introduced a new type of pig iron merchandised under the name Meltrite. This new type of pig iron, while of customary length, is of much smaller cross-sectional area and weighs but about 40 pounds per pig. This change in pig size constitutes a remarkable development in the trade in recent years, and, naturally, many foundrymen have asked why and for what purpose the change was made. The answer lies in the name of the new pig iron—Meltrite. The new pigs were designed primarily to give improved melting qualities in foundry practice.

Not so many years ago, foundrymen were melting pig iron cast in sand, normally about 26 inches long and ranging in weight from 75 to 150 pounds. In fact, sows of 200 pounds were not uncommon.

## Machine Cast Pig Iron

Experiments were conducted in the late '80's in the casting of iron in chilled molds, but it was not until the early part of the twentieth century that machine cast iron became a generally accepted product. As the use of machine cast pig iron increased, a reduction on foundry losses was noted. Recent investigations have indicated that the primary reason for this was the greater uniformity in size of pigs made possible by mechanical casting. That this was a definite forward step is now an accepted fact, but the importance to the melter of uniformity and size of the pig was not realized fully at that time.

With the turn of the century, the pig iron and foundry industries, along with the steel industry as a whole, underwent a radical change in the attitude toward their products. In the first place, the great pioneering period of the country had come more or less to a close; railroad building had reached the Pacific coast and turned back; the development of new lands had passed its climax; the uncritical demand for materials and still more materials dwindled. Consumers began to ask for the specific product which would suit their needs and requirements best.

The iron and steel industry as a whole awoke to the fact that vast new problems of production and marketing were in the making. Research

came to the front. The science of metallurgy assumed its proper position in the industry. There began a phase of intelligent and selective production and anticipation of consumers' needs, which has been accelerating constantly in the foundry indus-



*The pig has a smaller cross sectional area and weighs 40 pounds*

try, and which during the recent years, has reached proportions never before known.

At first, emphasis was placed upon chemical rather than physical characteristics. The spread in analysis was reduced to narrow limitations to meet the more exacting requirements, but the physical characteristics of the iron remained practically unchanged.

Research as to the importance of certain physical properties in metals was delayed largely because the significance of the properties was not realized. It is only within the last few years that the tremendous significance of grain structure has come to the fore. The study of grain structure and the realization of the important bearing which grain structure has upon workability, strength, and other characteristics of the finished iron product led to a study of the reducing practice in the blast fur-

nace and an investigation of the cooling conditions encountered in the preparation of pig iron on a pig casting machine, as well as the melting practice in the foundry. It was the careful study of blast furnace and foundry practice that led to the development of the new pig.

The modern foundry is expected to produce castings of uniform excellence—castings which will meet the exacting specifications of the buyer. However, absolute uniformity is difficult to obtain since there are too many variables.

If the respective constituents of a charge were alike as to size and analyses, it is conceivable that the charge could be melted and mixed and the metal delivered at the spout with an approximately perfect degree of uniformity. But variations in analysis are often extreme and weight and dimensional variations range from ounces to over 100 pounds.

## More Uniformity Obtained

While all variables cannot be controlled, pig iron is one of the constituents which can be changed. Heretofore the pig has been extremely heavy. By bringing the weight of the pig closer to the weight average of sprue, scrap and other constituents, it is believed there is a much better probability of a larger degree of uniformity in melting.

Constancy of composition in the stream of hot metal as it comes from the cupola always has been the ideal. What foundryman has not figured ways and means—a larger basin below the tuyeres, a better mixing ladle, a smaller charge, and what not—to reach a degree of uniformity where, ideally, a "catch-in" with a hand-shank is just as good as any other way. Of course, lighter pigs alone will not necessarily produce this ideal condition—but insofar as excessively large pigs magnify the trouble of irregular composition, it seems obvious that smaller pigs will minimize it.

Another difficulty which foundrymen experience at times is one which is closely connected with cupola oxidation—a prolific producer of troubles—and of losses. For many years, melters have found that certain castings show pin holes, cavities and other troubles not easily explainable, and seemingly not connected with the usual causes for such troubles. In



many instances, foundrymen attributed that condition to inferior pig iron,—oxidized pig iron was the term used. How misleading this phrase is, is understood when one realizes that a blast furnace is not an oxidizing agency. Blast furnaces take oxygen away from iron ore, reducing it to pig iron. It is true that under certain conditions oxidation of iron will occur to a limited extent within the blast furnace, but probably never to the extent that oxidation within the blast furnace can be blamed for foundry difficulties. Authorities agree that the excessive oxidation long complained of by foundrymen occurs in the melting agency itself, that is, the cupola or air furnace, and that it occurs when and if free oxygen meets incandescent iron.

Let us examine one way in which this oxidation within a cupola can occur. Air is blown into the cupola so that oxygen may combine with carbon (coke) and thereby release heat for melting. More air than is necessary from a chemical standpoint is supplied. Otherwise, melting would be slowed down considerably. Many metallurgists and foundrymen believe that if a number of heavy pieces of metal of large cross-sectional area are in the charge these melt more slowly than the average and tend to drop below the melting zone. While this may not occur if the coke bed is kept high, in actual practice the coke bed is not always kept high. In this case large pigs may meet with free oxygen contained in the blast at the tuyere zone while still in an incandescent state. When this occurs the incandescent iron will burn like a white pine match. Drops of burnt iron (magnetic oxide of iron  $Fe_3O_4$ ) reach the bath of molten iron and contaminate the bath with *oxide-in-solution*.

#### Cause Defective Castings

The molten iron then is poured into a mold and some sections freeze at once. Large sections may have plastic boundaries with fluid interiors, and a chemical reaction occurs between the newly formed graphite and *oxide-in-solution* with the quick resultant of a bubble of CO gas. This bubble breaks away, and like any other bubble in liquid, rises to the highest possible point, which is generally just beneath the upper surface of the cope. All foundrymen know that excessive *oxide-in-solution* means losses.

Not all pin holes caused by oxides—whether they are in solution, or in any other of the much disputed forms—are due to excessively heavy pigs. On the other hand, it seems probable that some of the trouble with oxides at least is caused by heavy pigs—and it is believed that unduly heavy pigs tend to lessen uniformity of the metal because they increase variations in weight of the constituent parts of the charge.

Starting with this theory as a

basis, the metallurgists who developed the new type of pig set out to determine the relative dimensions of pigs which would be conducive to the best and most uniform melting in foundry practice. Careful experimentation led to the conclusion that the size of pig which should help to overcome foundry difficulties was one with the same length as the old style pig, but much less in depth and width.

First of all, uniformity of size itself tends to produce uniformity in melting. However there is also an element of uniformity in addition to that supplied by size alone. Relative dimensions of the pigs are most important. In the new pig the trapezoid shaped cross-sectional height approximates the mean transverse sectional width of the pig. This means that heat will reach the interior of the pig at approximately the same time from all directions.

#### Minimize the Cause

These two characteristics, uniformity of size and uniformity of proportions, it is believed should increase the uniformity of melting in the cupola or air furnace, and should tend to minimize one of the common causes of the oxidation of iron.

The experience of various foundries which have tried the new pigs indicates a number of other advantages to be gained. One of the most important is increased melting speed brought about through more surface being exposed per unit of weight. The new type pig has nearly  $1\frac{1}{2}$  times as much surface per pound of metal exposed as in the case of standard iron. It has been found this results in a substantial reduction in melting time.

As previously stated one of the

most important research developments of recent years has been the discovery that physical characteristics of iron and steel raw materials as well as chemical content, have a marked effect upon the desirability and utility of the final product.

In the final processes used in the manufacture of the new type of pig iron, there has been developed a higher degree of grain control and with this a more refined grain structure than was formerly possible.

#### Improved Grain Structure

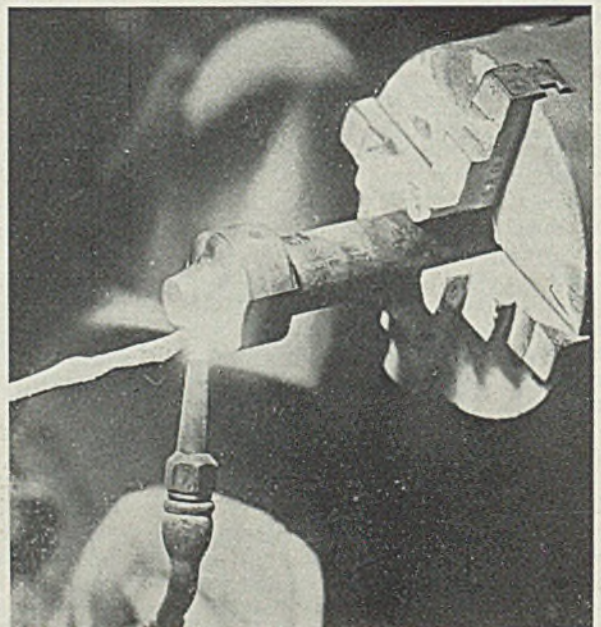
There appears to be considerable evidence that this improved grain structure, even after passing through a melting agency, is retained in the resulting casting. If this is true, the result will be stronger castings without loss of machinability, and should be a factor in enabling the production of castings to meet more adequately the requirements of the modern shop.

With the use of the smaller pig, foundry managers have found it advisable in case first iron is poured into chills or sand pigs, to regulate the size of their pigged-iron to conform with the smaller size. Also, if it proves necessary to charge heavy pig iron or heavy scrap in addition to the new type of pig, foundrymen have discovered that the heavy sections should be charged first. This is due to the fact that the smaller pig will melt more rapidly and, therefore, the heavier sections must be favored.

In addition to the economies in the use of the new pig already mentioned, such as the reduction in foundry losses and in melting time, there should be some saving in fuel. The new design of pig also has advantages to other melting processes in addition to the cupola.

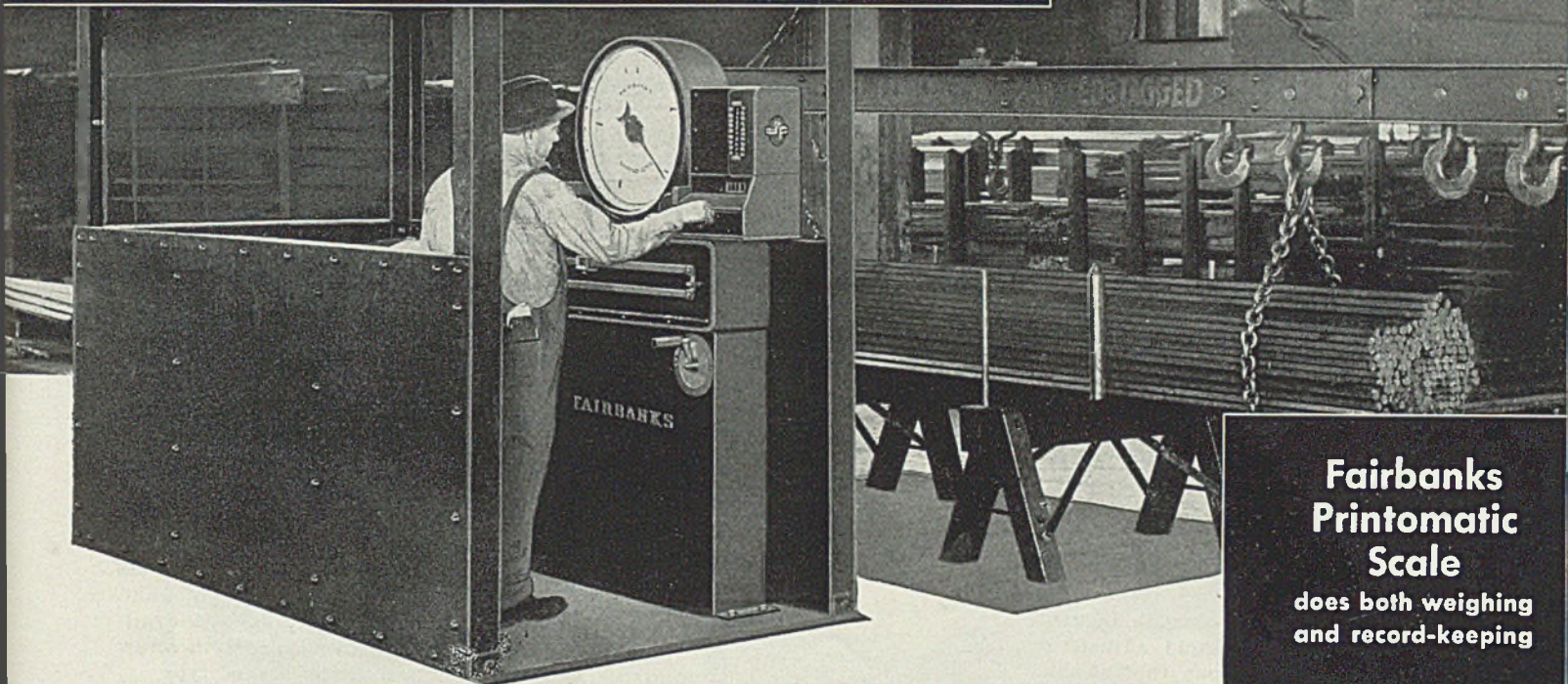
#### Hard Facing in Production Lines

**H**ARD surfacing now is a regular operation in some production lines. One welding operator in a New York shop hard faces eight to ten  $\frac{3}{4}$ -inch steam valves per hour, with less than 4 per cent rejections. Hard facing, cobalt-chromium-tungsten alloy is deposited on the seating surfaces of the valve disks by means of the oxyacetylene torch and then are ground to a smooth surface. Photo courtesy Haynes Stellite Co.





# ACCURATE, PRINTED WEIGHT RECORDS *at the touch of a button*



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does both weighing  
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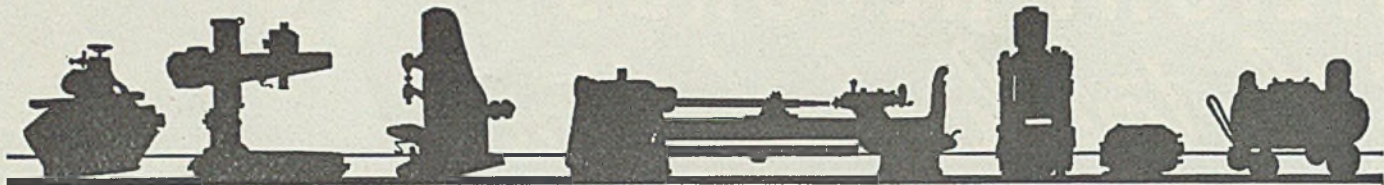
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**FAIRBANKS**  *Scales*

P R E F E R R E D   T H E   W O R L D   O V E R

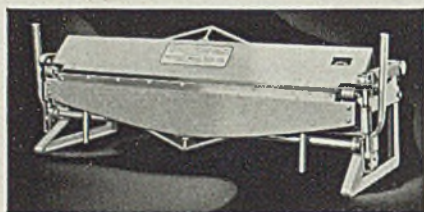


# New Equipment



## Bending Brake—

Whitney Metal Tool Co., Rockford, Ill., has announced a bending brake that is light in weight and has a capacity for handling 20 gage commercial iron such as used in air conditioning work. Floor and bench types are available, the latter being

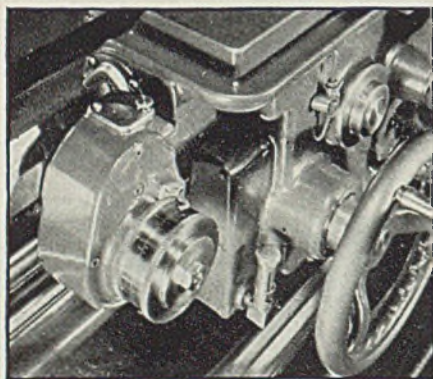


*Whitney small bench type bending brake weighs only 265 pounds*

shown herewith. Turn buckle adjustments are used for rapid adjusting to accommodate various thicknesses of material. A graduated scale at the hinge lugs is provided for duplicating work. Upper jaw is box type welded construction, while the lower jaw has welded reinforcements with 1-inch projections for offset work of structural shape.

## Direct Reading Dials—

Monarch Machine Tool Co., Sidney, O., is announcing direct reading length dials which can be applied to all sizes of its lathes. The unit, shown herewith, embodies a small oil-tight gear housing which attaches

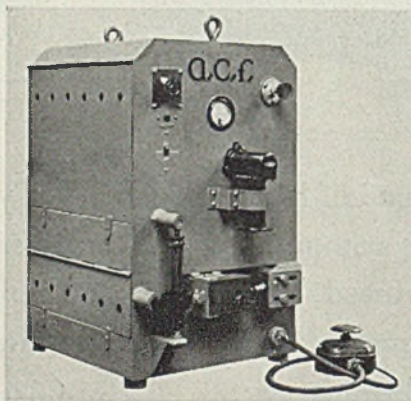


*Monarch direct reading dial*

to the left-hand or right-hand carriage wing, taking the place of the carriage gib. One inch of carriage travel effects one revolution of the outer dial which is graduated in sixty-fourths of an inch of carriage travel. These length reading dials obviate stopping the lathe and measuring the length of cut or cuts by means of a scale, thus conserving the operator's time.

## Horizontal Heater—

American Car & Foundry Co., 30 Church street, New York, is announcing a horizontal heater for obtaining heat on the end of any material ranging  $\frac{1}{4}$  to 1 inch or more in diameter. The work is placed between the electrodes and a heat one

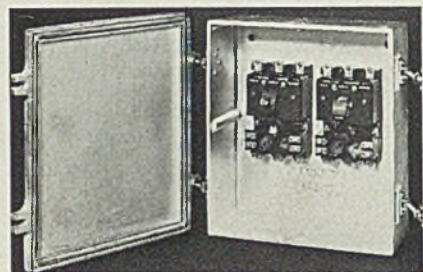


*A.C.F. Berwick horizontal heater*

and a half times the diameter of the piece can be obtained. Temperature is controlled by an electric eye. In addition, an electric time clock is provided to permit a soaking period if desired. The unit, shown herewith, is used principally for heating the ends of material for hardening or tempering purposes, as well as for certain kinds of upset work.

## Line Starter and Circuit Breaker Enclosures—

Bonnell Electric Mfg. Co., 192-4 Chambers street, New York, has developed a new enclosure to accommodate across-the-line starters and circuit breakers for overload and

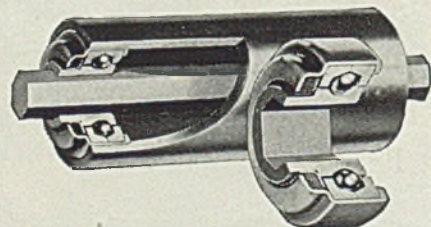


*Bonnell enclosure houses line starters and circuit breakers*

short circuit protection of motors employed on steel rolling mill tables. These units, one of which is shown herewith, are constructed of cast iron, with an adjustable brass hinged cover provided with a rubber gasket to resist water. Special gaskets can be obtained to resist oil and heat. The enclosures also are available in any alloy and also with screw covers instead of the hinged type.

## Conveyor Rollers Embody Hexagon-Shaped Axles—

Mathews Conveyor Co., Ellwood City, Pa., announces an addition to its knurled-keylock line of roller conveyors in the form of rollers incorporating hexagon-shaped axles. In introducing the feature of locking the inner ball race to the roller axle to prevent wear between these two parts several years ago, the company proposed that the locking could be accomplished by using hexagonal or



*Mathews ball bearing roller*

other shapes having flat sides for the axles, as well as by knurled round axles. However, only the knurled keylock type was placed in manufacture.

Addition of the hexagonal axle



**THE CUDDY-GARDNER Co.**  
 SUCCEEDING THE  
**TAFT MACHINE Co.**  
 ESTABLISHED 1870  
 MANUFACTURERS OF

SPECIAL  
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TAFT CARPET  
 SEWING MACHINES

**DISPLAY RACKS**  
 PROVIDENCE, RHODE ISLAND, U.S.A.

June 20, 1935

ATTENTION C. O. HEDNER  
 The Yale & Towne Mfg. Co.  
 Philadelphia, Pa.

Gentlemen;

Upon receipt of your favor of the 18th we looked up the record of the ONE TON YALE & TOWNE HOIST, for which we received some repair parts the other day, and find that the purchase was made on May 2, 1916. Therefore, this hoist has been in constant use for nineteen years and the parts just furnished are the only ones with the exception of one other ratchet and pawl that were replaced about ten years ago, after some of our employes had overloaded the hoist.

We believe it would be almost impossible to make extravagant claims for the durability of this device.

Very truly yours,

The Cuddy-Gardner Company

*H. T. Gardner*  
 TREASURER

TRADE **YALE** MARK PERFORMANCE A FACT-

## NOT just a claim!

The closing paragraph of Mr. Gardner's letter needs no amplification . . . it states the opinions of users of YALE Materials Handling Equipment who know from experience how well and economically YALE products serve.

Fine quality materials, precision-like finish of parts and rigid inspections during manufacturing processes insure years of continuous service in YALE Chain Hoists and Allied Equipment.

Buy Yale from your Mill Supplies Distributors

Above: The Spur-Gear Hoist 300 lbs. to 40 tons capacities.

Right: The "Pul-Lift"  $\frac{3}{4}$ , 1  $\frac{1}{2}$ , 3 and 6 tons capacities.

**THE YALE & TOWNE MANUFACTURING COMPANY**  
 Philadelphia Division, Philadelphia, Pa., U.S.A.



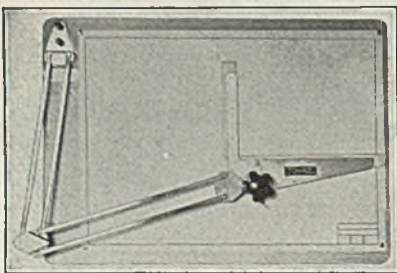
type will embrace practically all the present sizes now available plus several intermediate sizes not heretofore available. The new line will appear in form similar to the illustration on page 58. Seamless steel tubing, hardened steel bearing parts, solid steel inner and outer ball races predominate.

Ball bearing rollers in lengths to suit are available in the following diameters: 1, 1 $\frac{5}{8}$ , 1.9, 2 $\frac{1}{8}$ , 2 $\frac{1}{4}$ , 2 $\frac{1}{2}$ , 2 $\frac{9}{16}$ , 2 $\frac{3}{4}$ , 3 $\frac{1}{8}$ , 3 $\frac{1}{2}$ , 3 $\frac{3}{4}$ , 4, 4 $\frac{1}{4}$ , 4 $\frac{1}{2}$ , 5, 5 $\frac{9}{16}$ , and 7 $\frac{5}{8}$  inches, with capacities ranging from 50 pounds continuous load rating for the 1-inch roller to 8000 pounds for the 7 $\frac{5}{8}$ -inch roller.

Sizes in the hexagon axle line which were not available in the knurled keylock series are: Tapered steel roller 2 $\frac{1}{2}$  to 1 $\frac{5}{8}$ -inch diameter, capacity 150 pounds; 2 $\frac{1}{2}$ -inch roller for heavy service, capacity 300 pounds; 3 $\frac{3}{8}$ -inch roller, 750 pounds capacity; 3 $\frac{1}{2}$ -inch roller, 1200 pounds capacity; 4-inch roller, 3000 pounds capacity; and 4 $\frac{1}{2}$ -inch roller, 4000 pounds capacity. This line permits a choice of size and capacity for practically all types of handling where ball bearings are required.

### Drafting Machine—

L. G. Wright Inc., 5713-24 Euclid avenue, Cleveland, has brought out a new model E-272 drafting machine,

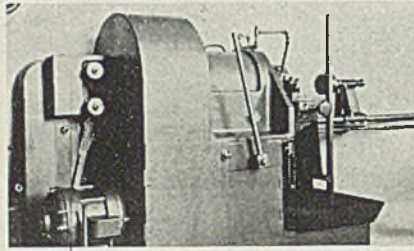


*Wrigraph drafting machine*

shown herewith. It is a streamlined unit mounted on a 22 by 30-inch cleated white pine board. Parallel mechanism is hand-assembled with all steel nickel plated parts and phosphor bronze bearings. It is equipped with a vernier indicating protractor reading to degrees, with a chuck plate to hold the drawing attachments in alignment. The graduated L-square blade is made of pyroxylin and riveted to an aluminum stiffener which has been given a satin finish to eliminate glare. Drawing edges of the blade are transparent. The machine also may be obtained with a special base plate which can be easily fastened to any flat wood surface without screws or clamps.

### Cutting-Off Machine—

Modern Machine Tool Co., Jackson, Mich., is bringing out a new 4 $\frac{1}{2}$ -inch cutting-off machine equipped with a double live-roller feed,



*Modern cutting-off machine*

operated from the collet control lever, for pushing the stock through the spindle. Due to cam action, only slight pressure is required to feed any length of stock through the machine until it strikes the stop. Reversing the lever throws the feed rolls clear of the work and closes the collet. The unit, shown herewith, is equipped with double, cam-actuated tool slides, each of which has an independent screw adjustment. By operating both slides by identical cams, both front and rear tools may be used for cutting off. When a special cam is employed on the back tool slide any type of chamfering or turning tool may be used in the back slide and fed into any predetermined position. The feed is designed to feed stock through the spindle at approximately 60 feet per minute.

### Lubrication Guns—

Alemite, division of Stewart-Warner Corp., Chicago, is introducing electric and air-operated twin lubrication guns. Shown in the accompanying illustration, the new design is compact and has a capacity of 40 pounds. Both guns are portable and easily handle all types of the heaviest and most fibrous lubricants. Simple construction permits quick access to all moving parts. The air-operated

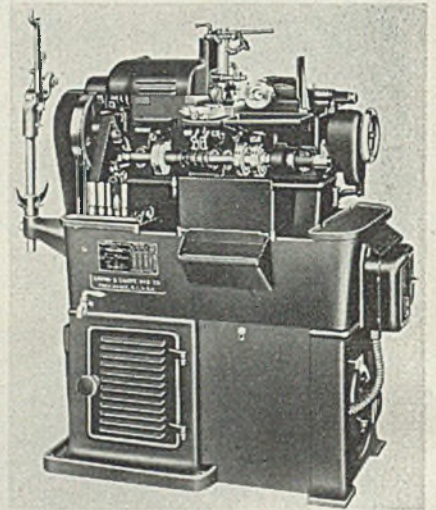


*Alemite lubrication gun*

type delivers 11 to 18 ounces of lubricant per minute at 150 to 200 pounds air pressure, while the electric model powered with a universal motor for alternating or direct current develops approximately 5000 pounds of pressure, delivering 9 ounces of lubricant per minute.

### Automatic Screw Machine—

Brown & Sharpe Mfg. Co., Providence, R. I., announces that it has made several major changes in design, as well as numerous minor structural changes in its No. OOG high-speed automatic screw machine, shown herewith. Maximum spindle speed has been increased by 20 per cent. Thirty-six changes in spindle speed now are available, the range extending from the new low speed of 200 revolutions per minute to the



*Brown & Sharpe automatic screw machine embodies design changes*

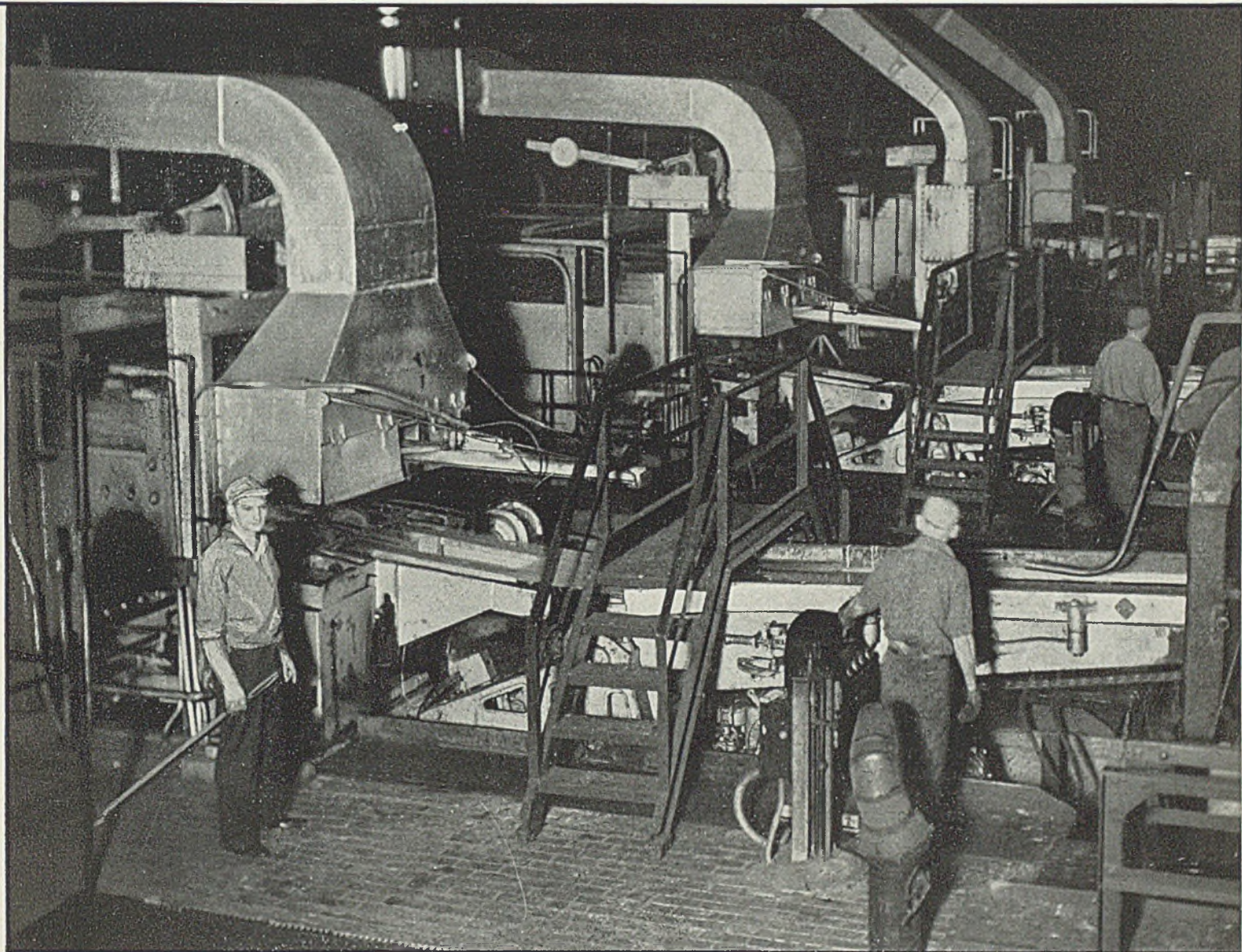
new maximum of 6000. To assist the operator in making changes in both speeds and feeds metal plates with diagrams and charts of the spindle speed change and feed change mechanisms as well as the gear combinations which are obtainable, are mounted adjacent to the respective mechanisms. Of equal importance is the increase in capacity of the work spindle which now is capable of handling regular work up to  $\frac{3}{8}$ -inch diameter. Structural changes include thorough guarding of the sides and inside ends of the cross slides, improvements in the guards which protect the turret indexing and locking mechanism, substitution of stopping plungers in the turret indexing mechanism and in the chuck and feeding mechanisms, etc.

### Pipeline Insulation—

American District Steam Co., North Tonawanda, N. Y., is bringing out a new insulation known as Adsc



# Efficient Heating with Low Maintenance Costs



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**COMPANY**  
CHICAGO, ILLINOIS.

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Warren, Ohio

This installation of Flinn & Drefflein continuous pair and pack heating furnaces in one of the largest steel mills of the country is daily proving to the plant management that real savings can be made by these furnaces.

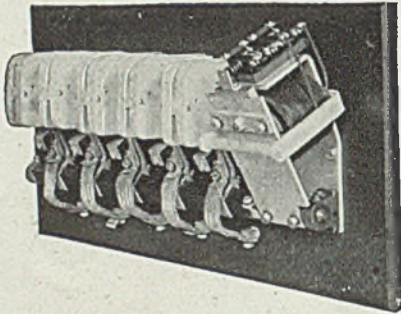
Let us prove that we can save you money, too.



cell-concrete for underground steam and hot water pipelines. The material, according to the manufacturer, possesses low heat conductivity and ability to retain its physical strength and shape as well as completely regain its insulating value after repeated submergence in water. It is made entirely from cement mixed with a foam, producing a light weight cellular concrete of a specific gravity of approximately 0.3.

#### Low Voltage A-C Contactor—

General Electric Co., Schenectady, N. Y., is marketing a new low voltage alternating current contactor



*G-E low voltage a-c contactor*

which will remain closed through voltage disturbances or failure. The mechanism, shown herewith, is closed by a direct-current magnet energized through a copper oxide rectifier and is held closed by the attraction of a permanently magnetized core and the movable armature. A reversal of the coil exciting current by means of a pushbutton or other pilot control device, causes the contactor to open by momentarily "bucking down" the flux of the permanent magnet.

#### Belt Conveyor—

Curbelt Co. Ltd., Suite 810, 231 St. James street, Montreal, Que., is marketing a conveyor that makes use of continuous hollow rubber curbs which are vulcanized to the sides of any standard conveying belt. Function of these curbs is to prevent materials from falling off the belt while being loaded and conveyed. Being hollow and elastic, the curbs bend freely around all pulleys.

#### Drilling, Tapping Machine—

Langelier Mfg. Co., Providence, R. I., recently designed a machine for drilling and tapping door knob spindles. It is constructed with two standard No. 21 automatic drilling units mounted on a vertical column and driven by individual motors. The

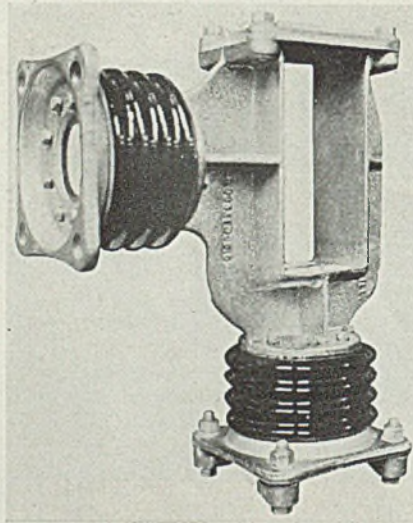
fixture is adjustable so that spindles having four, five or six holes can be drilled and tapped. Work is loaded into a vertical magazine and fed progressively through the drilling and tapping stations. Cycle of the machine is controlled by the drilling unit which is equipped with a cam for indexing the pieces.

#### Steel Mill Type Bus Support—

Delta-Star Electric Co., 2400 Block, Fulton street, Chicago, recently developed a heavy duty 7500 volt bus support to carry eight 8 by 1/4-inch copper bars, constituting the main bus of a large steel mill. A lower insulator mounts on a steel I-beam and a side supporting insulator mounts on a concrete wall.

#### Adjustable Tool Holders—

O.K. Tool Co., Shelton, Conn., is offering adjustable tool holders embodying the serrated principle. By means of a locking clamp the tool bit is locked rearwardly against a

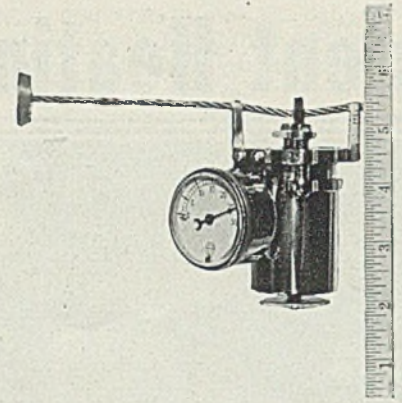


*Steel mill type bus support developed by Delta-Star Electric Co.*

slanting shoulder or angular mating surface, and downwardly into the bottom angular serrated mating surface in the holder. This design eliminates any sidewise or lengthwise tipping of the tool bit that might be induced by action of cutting and does not throw the strain on the locking clamp. By loosening the clamp the bit may be adjusted laterally.

#### Cable Tension Indicator—

Martin-Decker Corp., Long Beach, Calif., recently brought out a small instrument by which accurate measurement and equalization of tension on small cables now can be obtained.

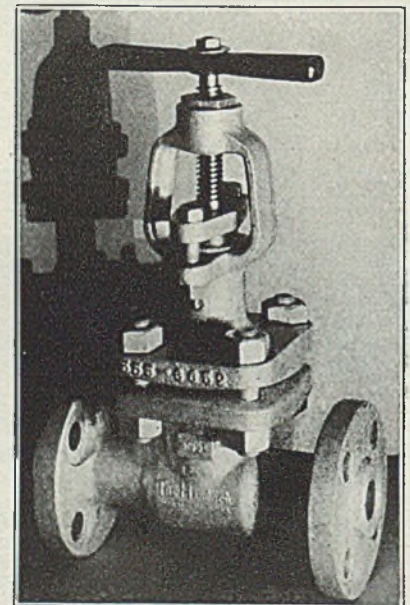


*Martin-Decker shunt type cable tension indicator*

The device, shown herewith, weighs only 17 ounces and its overall height is 3 1/2 inches. Operating on the deflection principle, actual tension is obtained simply by clamping it on the cable. Loads from 10 to 200 pounds on cables up to 3/16 inch diameter can be measured accurately and quickly. The unit is self-contained, is automatically adjusted for temperature changes and requires no special bushings for cables of different sizes.

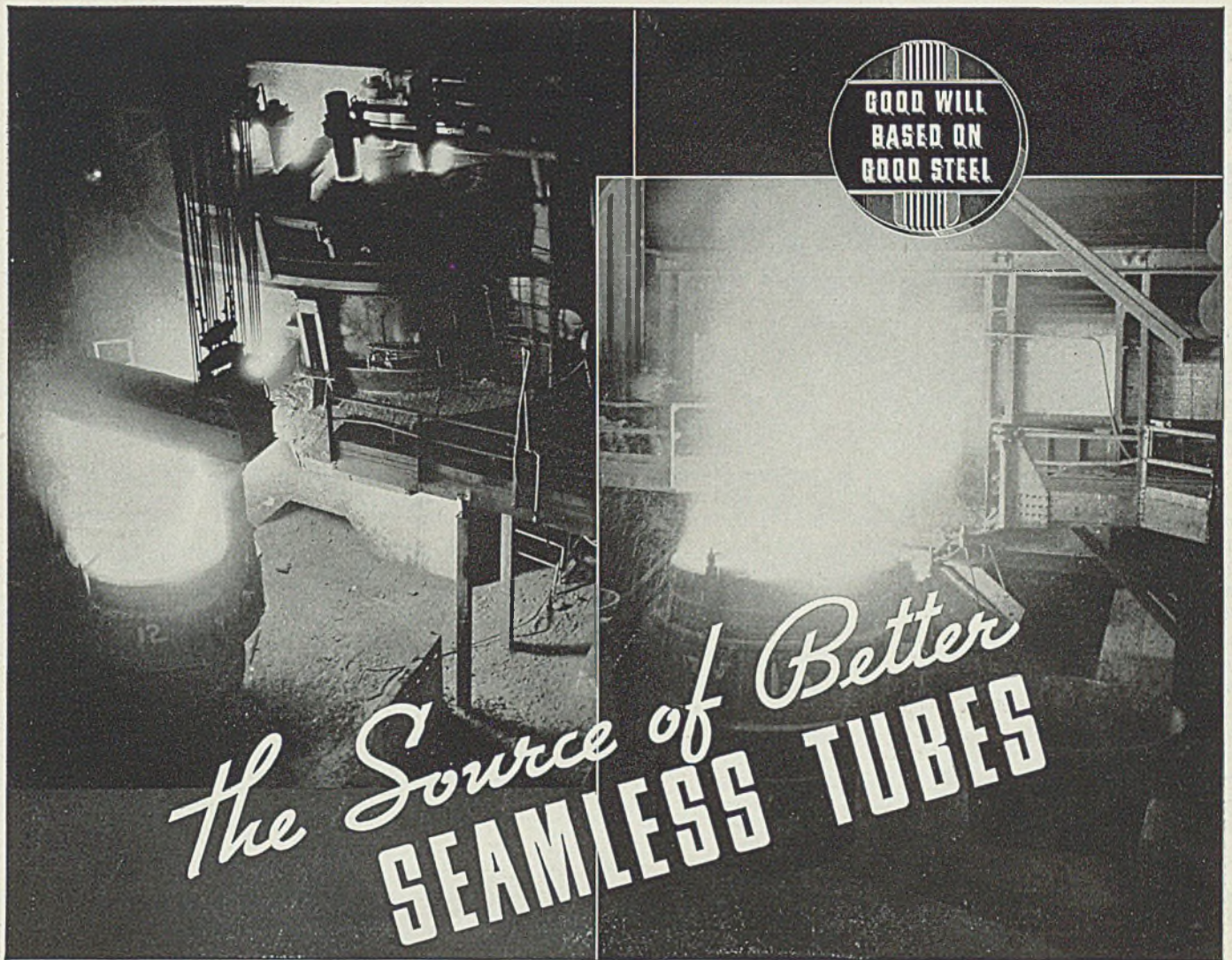
#### Forged Steel Valve—

Hancock Valve Div., Consolidated Ashcroft Hancock Co. Inc., Bridgeport, Conn., is announcing an improved line of forged steel globe valves made for pressure ratings up to 1500 pounds. They are designed with a tongue-and-groove bolted bonnet for high temperature service. Either cone or plug type is available. Valve seat ring and disk are heat treated stainless steel, all wearing parts are renewable, and repacking is easily accomplished in service.



*Hancock forged steel valve*





A Timken Electric Furnace

A Timken Open Hearth Furnace

The quality of Timken Tubes is controlled from the raw material to the finished product, which of course would be impossible if we had to depend on outside sources for our steel.

Next to the steel itself, the factors responsible for the superiority of Timken Tubes are slow, careful rolling and accurate piercing. The former prevents internal and surface defects such as pipes and seams. The latter assures tubes that are highly concentric and uniform in wall thickness.

Timken Tubes are manufactured in carbon and alloy grades (any analysis) for all purposes. Tell us your requirements and we will recommend tubes that will give you maximum satisfaction in service and economy.

THE TIMKEN STEEL & TUBE COMPANY, CANTON, OHIO  
*District Offices or Representation in the following cities:* Detroit Chicago New York Los Angeles Boston  
 Philadelphia Houston Buffalo Rochester Syracuse Tulsa Cleveland Erie Dallas  
 Kansas City St. Louis Cincinnati Huntington Pittsburgh *World's Largest Producer of Electric Furnace Steel*

# TIMKEN STEEL TUBES

ELECTRIC FURNACE AND OPEN HEARTH • ALL STANDARD AND SPECIAL ANALYSES



# Activities of Steel Users and Makers

FORD MOTOR CO. has awarded to Stacey Bros. Gas Construction Co., Cincinnati, contract for a welded steel gas holder at its Rouge plant, Dearborn, Mich., said to be the largest of its kind.

The gas holder, costing \$1,000,000, will have a capacity of 10,000,000 cubic feet, be 220 feet in diameter, and 344 feet high. It will require 3000 tons of structural steel plates and shapes, 25 tons of welding rod, and 200 tons of miscellaneous equipment.

In construction, this gas holder is unusual as it is of the interior piston dry seal type. The piston will weigh 700 tons. The piston seal will be made up of six layers of special packing, kept gas tight by a series of counter-weights equally spaced around the outer ring of the piston and lubricated by a special grease. A gas tight connection between the piston and the ring holding the packing will be maintained by a continuous special canvas-covered corrugated lead. Elevators will be provided both on the exterior and interior.

The huge gas holder, located west of the boat slip at the Rouge plant, will be used to store gas for use in the Ford industries, produced by the coke ovens now being constructed on the east side of the plant. Gas will be transported from these new coke ovens through an all-welded main, 4 feet in diameter, which will be carried under the slip through a concrete tunnel 13 feet in diameter. In the same tunnel, water, steam and electrical lines to supply the new Ford steel mills, are placed.

Roots-Connersville Blower Corp., Connersville, Ind., has moved its Chicago branch office to 140 South Dearborn street. William Townsend is district manager.

Hutton H. Haley & Associates, 2832 East Grand boulevard, Detroit, have been appointed exclusive agents in the Detroit territory for the sale of Kling heavy duty grinders, by Bryant Machinery & Engineering Co., Chicago, national distributors for this line. Kling grinders are manufactured by Kling Bros. Engineering Works, Chicago, for use in snagging operations in foundries, and for other operations.

Century Specialty Co., Johnstown, Pa., recently organized, has taken over the factory buildings owned by the Century Stove & Mfg.

Co. and will continue to manufacture the line of Century gas ranges and other products. The Century Specialty Co. has absorbed most of the former personnel of the Century Stove company.

American Management association has moved its headquarters from 20 Vesey street to the McGraw-Hill building, 330 West Forty-second street, New York. Alvin E. Dodd is executive vice president.

Bettinger Enamel Corp., Waltham, Mass., has purchased an oil-fired, full muffle, porcelain enameling furnace from the Ferro Enamel Corp., Cleveland, to replace an old intermittent type porcelain enameling furnace. The Bettinger corporation has recently made several building alterations and additions, in order to enlarge floor space, as well as porcelain enameling facilities.

Decker-Reichert Steel Co., Cleveland, is moving from its present location, 7201 Wentworth avenue, to 4500 Train avenue, about May 1. This move is necessitated by an increase in its business, and the new building will approximately double the floor space of its warehouse facilities.

Koebel Diamond Tool Co., Detroit, manufacturer of Koebel diamond wheel-dressing tools, has completed installation of machinery in an additional plant building, adjacent to its building on Oakman boulevard. The original plant space will be devoted to executive offices and the manufacture of special diamond boring tools. The new building will house the experimental department and production of Koebel multi-point, multi-set and multi-edge tools. The change involves a considerable addition in personnel.

Briggs Mfg. Co., Detroit, has appointed F. L. Argue Co. Ltd., Toronto, Ont., distributor in Canada for the plumbing ware division.

Detroit Gray Iron Foundry Co., Detroit, of which Hugh Martin is president, staged a formal opening March 14 of its new electric furnace for the production of Lektrokast.

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has issued a souvenir booklet—"Westinghouse, Past, Present and Future"—in commemoration of its fiftieth anniversary. The booklet is illustrated with photographs of early installations, contrasted with modern ones. Westinghouse equipment for every use from home to largest industrial requirements is depicted.

## Testimony Taken at Basing Point Hearing

(Concluded from Page 16)

get them, in many instances are punished by having to meet conditions which are in no way fair or reasonable and sit back because of a reluctance to speak out and make known their position.

In the Wheeler basing point bill there are some good, sound, sensible features. We fully agree with you that such measures should be approached with utmost consideration. Above all means there should be no thought given to starting unprofitable competition because when anything is produced or sold without a profit for the capital invested and effort expended the public interest has not been properly served nor the problem solved.

The most disappointing condition is that too often management of industry cannot meet on common ground and consider and settle problems before the weight of public opinion forces the conditions to be corrected by laws. These laws are mostly written by the people's representatives who are not in any manner, or ought not to be, as capable of correcting such conditions as those who are part of the affected industry.

### Concrete Case Cited

We may be wrong but by what we consider an unfair and unjust basing point our competitors enjoy undue advantages which affects to a very large extent our profits. For example, a number of our competitors are located in the Pittsburgh district which is a basing point. We are located in what is or ought to be known as the Youngstown district. Practically all of our steel is rolled and shipped from Youngstown district with a much less freight rate than the Pittsburgh freight rate. We could also have our own trucks deliver the steel to our shop at a considerably less rate than the Youngstown freight rate. We are, however, unable to obtain any of these benefits. Our Pittsburgh competitors obtain considerable of their steel from the Youngstown district and yet get the benefit of the Pittsburgh basing point.

If Pittsburgh is to remain the basing point on bars to the exclusion of Youngstown, our only hope in order to successfully compete is to locate our plant in the Pittsburgh basing point. In other words Youngstown, Wheeling and Johnstown mills pay the freight to deliver steel to Pittsburgh manufacturers to help put out of business the manufacturers in their own districts. Under such conditions the mills in Youngstown, Wheeling and Johnstown can scarcely hope to ever see building in their districts a large number of manufacturers who will consume their products. It is evident under the present arrangement that either the mills or manufacturers who are consumers of steel or both of them have made a mistake in locating other than in the Pittsburgh district.

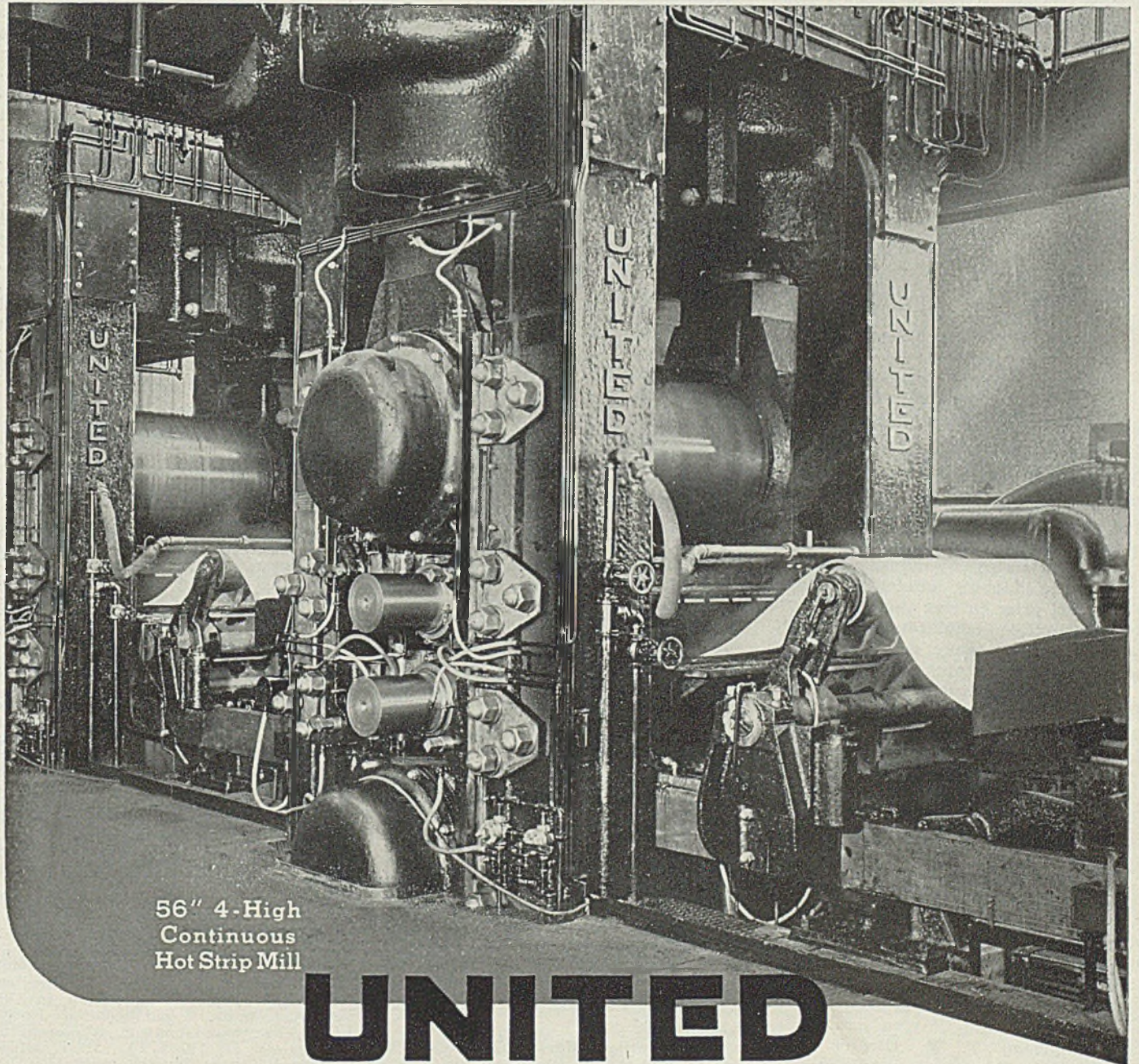
The constantly increasing quantity differentials as time goes on are making it ever more difficult for the beginner to start and succeed in business. This method of progress, the opportunity of which we Americans boast so much, is gradually passing away.

How much better it would be if those of industry upon whose shoulders rests so much of the future of our nation would forget individual companies and make plans keeping in mind the large and small manufacturer, the consumer, the man who toils and those who invest their capital. Then, when they part forget price cutting and make their slogan: For Success—Service. There would then be no excuse for government interference or government in business.



# 4 HIGH

## CONTINUOUS HOT STRIP MILLS



56" 4-High  
Continuous  
Hot Strip Mill

# UNITED

ENGINEERING *and* FOUNDRY COMPANY  
PITTSBURGH — PENNSYLVANIA



# Open-Price Plan in Effect; New Quantity Differentials

**F**OLLOWING several weeks of the sharpest competition in steel products since the steel code was abandoned in May, 1935, leading producers have adopted an open-price plan whereby they hope to steady the market.

They have publicly announced that they will quote no other base prices or extras, except those which they publish and make available to all.

At the same time, they have extended base prices on plates, shapes, bars, sheets, strip and various other products, and have withdrawn confidential quotations.

They have issued tables of quantity extras and deductions for bars, sheets and strip, none for plates and shapes. Hereafter, according to the plan, no discounts will be granted, other than those in published schedules of deductions for tonnage. And no extras for less than the base tonnages are to be waived.

The plan is somewhat like that in effect under the code, although, no rigid supervision by the American Iron and Steel institute or penalties for non-compliance are proposed.

It is an honor-system—all prices to be uniformly available to all classes of consumers; all price changes to be announced immediately they are made. Current prices are not binding on sellers for the full second quarter.

## Clayton Act Involved

When the steel code went out, it was intimated by some producers that the industry could protect itself against price cutting through federal fair-practice regulations. However, no threat is made or implied concerning what steps may be taken in the event any producer fails to conform. His name simply will be known to consumers and producers.

In this connection, however, it is pointed out that the courts have upheld the open-price plan.

First to make an announcement last week was Republic Steel Corp. It said:

"The officially published statement that no change in price will be made without announcement binds the company to adhere to open-price practices, and it is assumed that any deviation from such practices would make the company liable under the Clayton act."

Chairman T. M. Girdler was quoted in Republic's announcement, as follows:

"The new method of issuing

prices has been adopted by Republic in expectation that it will lead to elimination of unfair trade practices which have grown up in the steel industry.

"These unfair practices have included secret concessions, discriminatory prices as between customers, rebates and other methods harmful alike to producer and consumer.

"The steel industry has become notorious for such practices and for its inability to earn a fair profit. By eliminating these practices and adopting for the first time in its history a sound merchandising policy the steel industry could make a great contribution to general recovery. I regard this as an obligation to the 450,000 employees dependent upon the industry and to the industry's stockholders, as well as to the country at large."

## Preparing Strip Schedule

Republic published a four-page letter giving base prices on sheets, accompanied by a 74-page booklet "Standard Classification of Extras." The same day, Jones & Laughlin Steel Corp. announced prices on plates, shapes and bars. Other companies came along immediately with their prices. The week preceding, it will be recalled, Youngstown Sheet & Tube Co. and National Tube Co. issued new cards on pipe reducing butt-weld and lap-weld up to 5 per cent.

The quantity extras and deductions on hot-rolled, hot-rolled annealed and cold-rolled sheets are as follows:

Quantity	Per 100 lbs.
150 net tons and over .....	deduct 15c
Under 100 to 50 net tons .....	deduct 7½c
Under 150 to 100 net tons .....	deduct 10c
Under 50 to 25 tons .....	deduct 05c
Under 25 to 1 ton .....	base
Under 1 net ton to 1000 pounds .....	add 50c
Under 1000 pounds .....	add \$1.00

The foregoing differentials do not apply on galvanized sheets. The latter have been sold according to a quantity extra and deduction schedule, and this remains in effect. It applies to various kinds of galvanized sheets, and is published in full in the Iron and Steel institute's book of uniform extras, sections 21 and 22.

The new schedule of extras for hot and cold rolled strip steel had not been issued up to a late hour last week.

A quantity differential system has been in effect on bars for the past year, but the new schedule specifies that 3 to 25 tons shall be base, in-

stead of 5 to 25 tons, as formerly.

The list follows:

Quantity	per 100 lbs.
150 tons and over .....	deduct 15c
Under 150 to 100 tons .....	deduct 10c
Under 100 to 50 tons .....	deduct 7½c
Under 50 to 25 tons .....	deduct 5c
Under 25 to 3 tons .....	base
Under 3 to 2 tons .....	add 10c
Under 2 to 1 ton .....	add 25c
Under 1 ton to 1000 pounds .....	add \$1
Under 1000 pounds .....	add \$1.50

The schedule heretofore applied on bars has been applicable in all districts, but a separate list has now been set up for the Birmingham and mid-western districts, as follows:

Quantity	per 100 lbs.
100 tons or over .....	deduct 10c
Under 100 to 50 tons .....	deduct 07½c
Under 50 to 25 tons .....	deduct 05c
Under 25 to 1 ton .....	base
Under 1 ton to 1000 pounds .....	add 25c
Under 1000 pounds .....	add 50c

The Birmingham schedule applies to "sales for delivery where the Birmingham base prices, plus all-rail carload published tariff rate, will determine the lowest all-rail delivered price." Midwest territory includes "sales based on Gulf port prices, as well as sales for shipment in Arkansas, Colorado, Montana, Oklahoma, Utah, Arizona, Idaho, New Mexico, Texas and Wyoming."

No effort has been made to put in effect the nominal advance of \$2 a ton in the price of sheet bars, and \$1 a ton on billets and slabs, first announced last November, and postponed from time to time. Sheet bars, billets and blooms, 4 x 4-inch, therefore, remain \$28.

## A.S.T.M. Committees Set New Standards and Tests

(Concluded from Page 50)

method for measuring thickness were outlined and a few preliminary results of the quantitative measurement of adhesion of electroplated coatings were presented to the committee. Arrangements are under consideration for the periodic inspection of the specimens.

### Committee on Test Methods—Section on Effect of Speed of Testing

Committee accepted a definition of speed of testing as being the rate of strain measured in inches per inch per minute for stresses within and above the elastic range. That the values may be measured conveniently, it was indicated that the rate of application of stress in pounds per square inch per minute may be substituted within the elastic range and speed of crosshead at higher stresses.

### Committee on Test Methods—Section on Indentation Hardness Testing

This section has finished preparation of a more complete series of Rockwell hardness scales which will cover all combinations of penetrators and test loads for inclusion in the A.S.T.M. tentative methods of Rockwell hardness testing of metallic materials (E 18-33 T). With addition of these improvements to the methods they will be recommended to the Society for adoption as standard.



# Prices Strengthened; Rate Tops 20 Months

Steelworks at 57½%;

Consumption Increases;

Automotive Heavier

**S**TRONGER prices on light finished steel products and increasing steel consumption combined last week to lift steelworks operations 2 points to 57½ per cent, breaking through last year's high of 57 per cent, in December.

The steel rate is the peak since the third week of June, 1934, at 59 per cent, when an impending price advance also stimulated shipments.

Many sheet mills last week withdrew from the market for the remainder of March, unable to book any more tonnage for delivery before second quarter, as a result of the heavy releases on prior orders and consumers taking advantage of outstanding quotations.

This flurry was the clearest evidence of buyers' reaction to the steel industry's new open-price plan, and the anticipated effect of new quantity differentials.

The majority of steel producers have now pledged themselves to announce publicly all price changes whenever made, and believe this may prove even more effective in stabilizing the market than did the steel code. Base prices and quantity differentials uniformly applied to all classes of consumers are now operative.

Producers abandoned their efforts to advance semifinished steel. They reaffirmed the official first quarter base prices on bars, plates, shapes, sheets and strip. They issued quantity price extras and deductions for bars, sheets and strip. No differentials have been adopted for plates or shapes.

An easy price and delivery situation recently made for small-lot, piece-meal buying, and this is expected to be corrected, while many minor purchases will be forced to warehouses. Consumers' stocks are likely to be increased.

Steel demand appears to have more substance, independent of price considerations. Automobile production is acquiring momentum, all leading makers having stepped up to a five-day week,

## MARKET IN TABLOID

DEMAND . . . Stronger.

PRICES . . . Firmer, and some products higher. Open-price plan, and quantity differentials in effect.

PRODUCTION . . . Steelworks operations up 2 points to 57½ per cent.

SHIPMENTS . . . Increasing.

and output last week again rising sharply, 7000 units to 90,000. The industry has consumed considerably more than 1,000,000 tons of finished steel so far this year.

Structural shape awards snapped back to 27,762 tons from 8738 tons in the preceding week, including 3000 tons of shapes and plates for a gas holder—largest of its type—for the Ford Motor Co. at Detroit.

While rail mills are busy on recent orders, new purchases by railroads have subsided. Kansas, Oklahoma & Gulf has placed 5700 tons of rails. Norfolk & Western is inquiring for 11,000 tons of plates for car repairs, and is to buy 20,000 tons of rails and 7500 tons of fastenings. Chesapeake & Ohio may enter the market shortly for 5000 to 7000 freight cars, while Erie is inquiring for 800. Northern Pacific has awarded 12 freight locomotives.

Pig iron shipments are increasing, as an advance of \$1 a ton, first announced last November, finally will become generally applicable April 1. Scrap maintains a strong tone, but prices are leveling off, STEEL'S scrap composite, after rising nine consecutive weeks, last week declined 4 cents to \$14.46.

Due to the recent reduction in pipe prices, the finished steel composite has dropped \$1.10 to \$52. This is the lowest since April, 1934, at \$51.10. The iron and steel composite also has been affected by the pipe reduction, and adjustments in semifinished steel, being 56 cents lower at \$33.04.

Pittsburgh district steelworks operations last week advanced 5 points to 43 per cent; Cleveland 11 to 75; Youngstown 3 to 71; Birmingham 3 to 69. New England was off 17 to 51, and others unchanged.



# COMPOSITE MARKET AVERAGES

	March 14	March 7	Feb. 29	One Month Ago Feb., 1936	Three Months Ago Dec., 1935	One Year Ago March, 1935	Five Years Ago March, 1931
Iron and Steel .....	\$33.04	\$33.60	\$33.59	\$33.48	\$33.31	\$32.36	\$31.65
Finished Steel .....	52.00	53.10	53.70	53.70	53.70	54.00	49.42
Steelworks Scrap....	14.46	14.50	14.46	13.83	13.17	10.75	10.38

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

	March 14, 1936	Feb. 1936	Dec. 1935	March 1935		March 14, 1936	Feb. 1936	Dec. 1935	March 1935
<b>Finished Material</b>					<b>Pig Iron</b>				
Steel bars, Pittsburgh .....	1.85c	1.85	1.85	1.80	Bessemer, del. Pittsburgh.....	\$20.8132	20.8132	20.8132	19.76
Steel bars, Chicago .....	1.90	1.90	1.90	1.85	Basic, Valley .....	19.00	19.00	19.00	18.00
Steel bars, Philadelphia .....	2.16	2.16	2.16	2.09	Basic, eastern del. East. Pa.....	20.8132	20.8132	20.8132	19.76
Iron bars, Terre Haute, Ind. ....	1.75	1.75	1.75	1.75	No. 2 fdry., del. Pittsburgh.....	20.3132	20.3132	20.3132	19.26
Shapes, Pittsburgh .....	1.80	1.80	1.80	1.80	No. 2 fdry., Chicago .....	19.50	19.50	19.50	18.50
Shapes, Philadelphia .....	2.01½	2.01½	2.01½	2.00½	Southern No. 2, Birmingham.....	15.50	15.50	15.50	14.50
Shapes, Chicago .....	1.85	1.85	1.85	1.85	Southern No. 2, del. Cincinnati....	20.2007	20.2007	20.2007	19.13
Tank plates, Pittsburgh .....	1.80	1.80	1.80	1.80	No. 2X eastern, del. Phila.....	21.6882	21.6882	21.6882	20.63
Tank plates, Philadelphia .....	2.00	1.99	1.99	1.98½	Malleable Valley .....	19.50	19.50	19.50	18.56
Tank plates, Chicago .....	1.85	1.85	1.85	1.85	Malleable, Chicago .....	19.50	19.50	19.50	18.50
Sheets, No. 10, hot rolled, Pitts...	1.85	1.85	1.85	1.85	Lake Sup. charcoal, del. Chi.....	25.2528	25.2528	25.2528	24.04
Sheets, No. 24, hot ann., Pitts....	2.40	2.40	2.40	2.40	Ferromanganese, del. Pitts. ....	80.13	80.13	90.13	89.79
Sheets, No. 24, galv., Pitts.....	3.10	3.10	3.10	3.10	Gray forge, del. Pittsburgh.....	19.6741	19.6741	19.6741	18.63
Sheets, No. 10, hot rolled, Gary....	1.95	1.95	1.95	1.95	<b>Scrap</b>				
Sheets, No. 24, hot anneal., Gary	2.50	2.50	2.50	2.55	Heavy melting steel, Pittsburgh..	\$15.75	14.80	14.05	12.40
Sheets, No. 24, galvan., Gary.....	3.20	3.20	3.20	3.20	Heavy melt. steel, No. 2, east. Pa.	12.50	12.00	11.25	9.15
Plain wire, Pittsburgh .....	2.30	2.30	2.30	2.30	Heavy melting steel, Chicago.....	14.75	14.30	13.35	10.45
Tin plate, per base box, Pitts.....	5.25	5.25	5.25	5.25	Rails for rolling, Chicago .....	15.75	15.50	14.50	11.55
Wire nails, Pitts. ....	2.10	2.40	2.40	2.60	Railroad steel specialties, Chicago	16.25	15.75	14.25	11.55

### Semifinished Material

Sheet bars, open-hearth, Youngs.	\$28.00	30.00	30.00	28.00
Sheet bars, open-hearth, Pitts....	28.00	30.00	30.00	28.00
Billets, open-hearth, Pittsburgh....	28.00	29.00	29.00	27.00
Wire rods, Pittsburgh .....	40.00	40.00	38.00	38.00

# Steel, Iron, Raw Material, Fuel and Metals Prices

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

Sheet Steel		Tin Mill Black No. 28		Corrosion and Heat-Resistant Alloys		Structural Shapes	
Prices Subject to Quantity Extras and Deductions		Pittsburgh .....	2.75c	Pittsburgh base, cents per lb.		Pittsburgh .....	1.80c
Hot Rolled No. 10, 24-48 in.		Gary .....	2.85c	Chrome-Nickel		Philadelphia, del. ....	2.01½c
Pittsburgh .....	1.85c	St. Louis, delivered	3.08c	No. 302 No. 304		New York, del. ....	2.06½c
Gary .....	1.95c			Bars .....		Boston, delivered....	2.20½c
Chicago, delivered..	1.98c	Cold Rolled No. 10		Plates .....		Bethlehem .....	1.90c
*Detroit, del. ....	2.05c	Pittsburgh .....	2.50c	Sheets .....		Chicago .....	1.85c
New York, del. ....	2.20c	Gary .....	2.60c	Hot strip .....		Cleveland, del. ....	2.00c
Philadelphia, del....	2.16c	*Detroit, delivered..	2.70c	Cold strip .....		Buffalo .....	1.90c
Birmingham .....	2.00c	Philadelphia, del....	2.81c	Straight Chromes		Gulf Ports .....	2.20c
St. Louis, del. ....	2.18c	New York, del. ....	2.85c	No. 410 No. 430 No. 442 No. 446		Birmingham .....	1.95c
Pacific ports, f.o.b. cars, dock .....	2.18c	Pacific ports, f.o.b. cars, dock .....	3.10c	Bars .....		Cleveland .....	1.90c
Hot Rolled Annealed No. 24				Plates .....		Buffalo .....	1.95c
Pittsburgh .....	2.40c	Cold Rolled No. 20		Sheets .....		Detroit, delivered...	2.00c
Gary .....	2.50c	Pittsburgh .....	2.95c	Hot strip 15.75 16.75 21.75 26.75		Pacific ports, f.o.b. cars, dock .....	2.35c
Chicago, delivered...	2.53c	Gary .....	3.05c	Cold stp 20.50 22.00 27.00 35.00		<b>Bars</b>	
*Detroit, delivered..	2.60c	*Detroit, delivered..	3.15c			Soft Steel	
New York, del. ....	2.75c	Philadelphia, del....	3.26c			(Base, 3 to 25 tons)	
Philadelphia, del. ....	2.71c	New York, del. ....	3.30c			Pittsburgh .....	1.85c
Birmingham .....	2.55c	Enameling Sheets				Chicago or Gary....	1.90c
St. Louis, del. ....	2.72c	Pittsburgh, No. 10..	2.50c			Duluth .....	2.00c
Pacific ports, f.o.b. cars, dock .....	3.05c	Pittsburgh, No. 20..	3.10c			Birmingham .....	2.00c
Galvanized No. 24		Gary, No. 10 .....	2.60c			Cleveland .....	1.90c
Pittsburgh .....	3.10c	Gary, No. 20 .....	3.20c			Buffalo .....	1.95c
Gary .....	3.20c	<b>Tin and Terne Plate</b>				Detroit, delivered...	2.00c
Chicago, delivered..	3.23c	Gary base, 10 cents higher.				Pacific ports, f.o.b. cars, dock .....	2.40c
Philadelphia, del. ....	3.41c	Tin plate, coke base				Philadelphia, del....	2.16c
New York, del. ....	3.45c	(box) Pittsburgh				Boston, delivered....	2.27c
Birmingham .....	3.25c	Do., waste-waste..				New York, del. ....	2.20c
St. Louis, del. ....	3.43c	Do., strips .....				Pitts., forg. qual....	2.10c
Pacific ports, f.o.b. cars, dock .....	3.70c	Long ternes, No. 24 unassorted, Pitts.				<b>Rail Steel</b>	
		Do., Gary .....				To Manufacturing Trade	
						Pittsburgh .....	1.70c
						Chicago or Gary .....	1.75c
						Moline, Ill. ....	1.75c
						Cleveland .....	1.75c
						Buffalo .....	1.80c



**Iron**

Troy, N. Y. ....	1.70c
Terre Haute, Ind....	1.75c
Chicago .....	1.80c
Philadelphia .....	2.06c
Pittsburgh, refined..	2.75-7.50c

**Reinforcing**

New billet, straight lengths, quoted by distributors.	
Pittsburgh .....	1.95c-2.05c
Chicago, Gary, Buffalo, Cleve., Birm., Young. ..	2.10c
Gulf ports .....	2.45c
Pacific coast ports f.o.b. car docks .....	
Philadelphia, del.....	2.11c-2.16c
Rail steel, straight lengths, quoted by distributors	
Pittsburgh .....	1.90c
Chicago, Buffalo, Cleveland, Birm., Young. ....	1.95c
Gulf ports .....	2.30c

**Wire Products**

(Base, 3 to 25 tons)	
(Prices apply to straight or mixed carloads; less carloads \$4 higher; less carloads fencing \$5 over base column.)	
Base Pitts.-Cleve. 100 lb. keg.	
Stand. wire nails....	2.10c
Cement c'd nails....	2.10c
Galv. nails, 15 gage and coarser .....	4.10c
do. finer than 15 ga.	4.60c
(Per pound)	
Polished staples.....	2.80c
Galv. fence staples	3.05c
Barbed wire, galv...	2.60c
Annealed fence wire	2.65c
Galv. fence wire.....	3.00c
Woven wire fencing (base column, c.l.)	\$58.00
To Manufacturing Trade	
Plain wire, 6-9 ga....	2.30c-2.40c
Anderson, Ind. (merchant products only) and Chicago up \$1; Duluth up \$2; Birmingham up \$3.	
Spring wire, Pitts. or Cleveland .....	2.90c-3.05c
Do., Chicago up \$1, Worc. \$2.	

**Cold-Finished Carbon Bars and Shafting**

Base, Pitts., one size, shape, grade, shipment at one time to one destination	
10,000 to 19,999 lbs. ....	2.10c
20,000 to 59,999 lbs. ....	2.05c
60,000 to 99,999 lbs. ....	2.00c
100,000 lbs. and over.....	1.97½c
Gary, Ind., Cleve., Chi., up 5c	
Buffalo, up 10c; Detroit, up 20c; eastern Michigan, up 25c	

**Alloy Steel Bars (Hot)**

(Base, 3 to 25 tons.)			
Pittsburgh, Buffalo, Chicago, Massillon, Canton, Bethlehem .....			
2.45c			
Alloy			
S.A.E.	Diff.	S.A.E.	Diff.
2000.....	0.25	3100.....	0.55
2100.....	0.55	3200.....	1.35
2300.....	1.50	3300.....	3.80
2500.....	2.25	3400.....	3.20
4100 0.15 to 0.25 Mo. ....	0.50		
4600 0.20 to 0.30 Mo. 1.25-1.75 Ni.....	1.05		
5100 0.80-1.10 Cr.....	0.45		
5100 Cr. spring .....	base		
6100 bars .....	1.20		
6100 spring .....	0.70		
Cr., Ni., Van. ....	1.50		
Carbon Van. ....	0.95		
9250.....carbon base plus extras			

**Piling**

Pittsburgh .....	2.15c
Chicago, Buffalo .....	2.25c

**Strip and Hoops**

(Base, hot rolled, 25-1 ton)	
(Base, cold-rolled, 25-3 tons)	
Hot strip to 23½-in.	
*Pittsburgh .....	1.85c
Chicago or Gary..	1.95c
Birmingham base	2.00c
*Detroit, del. ....	2.05c
Philadelphia, del..	2.01c-2.16c
New York, del....	2.20c
Cooperage hoop,	
Pittsburgh .....	1.95c
Chicago .....	2.05c
Cold strip, Pitts.	
*Cleveland .....	2.60c
*Detroit, del. ....	2.80c
Worcester, Mass....	2.65c

**Rails, Track Material**

(Gross Tons)	
Standard rails, mill	\$36.37½
Relay rails, Pitts.	\$25.00
20-45 lbs. ....	\$28.00
45-50 lbs. ....	\$25.00
50-60 lbs. ....	\$26.00
70-75 lbs. ....	\$24.50
80-90 lbs. ....	\$26.00
100 lbs. ....	\$27.00
Light rails, billet qual. Pitts., Chi....	
Do., reroll, qual....	34.00
Angle bars, billet, Gary, Ind., So. Chi.	2.55c
Do., axle steel....	2.10c
Spikes, R. R. base	2.60c
Track bolts, base....	3.60c
Tie plates, base .....	1.90c
Base, light rails 25 to 40 lbs.; 50 to 60 lbs. inclusive up \$2; 16 and 20 lbs., up \$1; 12 lbs. up \$2; 8 and 10 lbs., up \$5. Base railroad spikes 200 kegs or more; base tie plates 20 tons.	

**Bolts and Nuts**

Pittsburgh, Cleveland, Birmingham, Chicago. Discounts to legitimate trade for all case lots, Dec. 1, 1932, lists, 10% extra for less full containers.	
Carriage and Machine	
½ x 6 and smaller....	70-10-5 off
Do. larger .....	70-10 off
Tire bolts .....	55 off
Plow Bolts	
All sizes .....	70-10 off

Stove Bolts	
In packages with nuts attached 72½-10 off; in packages with nuts separate 72½-10-5 off; in bulk 82½ off on 15,000 of 3-inch and shorter, or 5000 over 3-inch.	
Step bolts .....	65-5 off
Elevator bolts .....	65-5 off
Nuts	
S. A. E. semifinished hex.; ½ to ⅞-inch .....	60-20-15 off
Do., ½ to 1-inch .....	60-20-15 off
Do., over 1-inch .....	60-20-15 off
Hexagon Cap Screws	
Milled .....	80-10-10 off
Upset, 1-in., smaller.....	85 off
Square Head Set Screws	
Upset, 1-in., smaller....	75-10 off
Headless set screws .....	75 off

**Rivets, Wrought Washers**

Struc., c. l., Pitts-	2.90c
burgh, Cleveland	
Struc., c. l., Chicago	3.00c
¾-in. and smaller,	
Pitts., Chi., Cleve. 70 and 5 off	
Wrought washers,	
Pitts., Chi., Phila.	
to jobbers & large	
nut, bolt mfrs....	\$6.25 off

**Cut Nails**

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

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

**Pipe and Tubing**

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

**Welded Iron, Steel Pipe**

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

Butt Weld Steel			
In.		Blk.	Galv.
¼ and ⅜.....	60	44½	
½.....	64½	55	
¾.....	67½	59	
1-3.....	69½	61½	
Iron			
½.....	31½	15	
¾.....	36½	20½	
1-1¼.....	39½	25½	
2.....	41½	26	
Lap Weld Steel			
2.....	62	53½	
2½-3.....	65	56½	
3½-6.....	67	58½	
7 and 8.....	66	56½	
9 and 10.....	65½	56	
Iron			
2.....	37	22½	
2½-3½.....	38	25	
4-8.....	40	28½	
Line Pipe Steel			
½, butt weld.....	56		
¾ and ⅜, butt weld.....	59		
½, butt weld.....	63½		
¾, butt weld.....	66½		
1 to 3, butt weld.....	68½		
2, lap weld.....	61		
2½ to 3, lap weld.....	64		
3½ to 6, lap weld.....	66		
7 and 8, lap weld.....	65		
Iron			
½-1½ inch, black and galv. take 4 pts. over; 2½-6 inch 2 pts. over discounts for same sizes, standard pipe lists, 8-12-inch, no extra.			

Boiler Tubes			
C. L. Discounts, f.o.b. Pitts.			
Lap Weld Charcoal Steel Iron			
2-2¼.....	33	1¾	8
2½-2¾.....	40	2-2¼.....	13
3.....	47	2½-2¾.....	16
3¼-3½.....	50	3.....	17
4.....	52	3¼-3½.....	18
4½-5.....	42	4.....	20
		4½.....	21

In lots of a carload or more, above discounts subject to preferential of two 5% and one 7½% discount on steel and 10% on charcoal iron. Lapwelded steel: 200 to 9999 pounds, ten points under base, one 5% and one 7½%. Under 2000 pounds 15 points under base, one 5% and one 7½%. Charcoal iron: 10,000 pounds to carloads, base less 5%; under 10,000 lbs., 2 points under base.

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

revised as of July 1, 1935, card. Hot-finished carbon steel boiler tube prices also under date of May 15 range from 1 through 7 inches outside diameter, inclusive, and embrace 47 size classifications in 22 decimal wall thicknesses ranging from 0.109 to 1.000, prices also being on a lb. and 100 ft. basis.

**Seamless Tubing**

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

**Cast Iron Water Pipe**

Class B Pipe—Per Net Ton	
6-in. & over, Birm....	\$39.00-40.00
4-in., Birmingham..	42.00-43.00
4-in., Chicago.....	50.40-51.40
6 to 24-in. Chicago..	47.40-48.40
6-in. & over, east. fdy.	43.00
Do., 4 in. ....	46.00
Class A pipe \$3 over Class B	
Std. ftgs., Birm. base..	\$100.00

**Semifinished Steel**

Billets and Blooms	
4 x 4-inch base; gross ton	
*Pitts., Chi., Cleve., Buffalo & Youngs-town .....	\$28.00
Philadelphia .....	34.67
Duluth .....	30.00
Forging Billets	
6 x 6 to 9 x 9-in., base	
Pitts., Chi., Buff....	35.00
Forging, Duluth .....	37.00
Sheet Bars	
*Pitts., Cleve., Young., Chi., Buff., Canton, Sparrows Pt.	28.00
Slabs	
*Pitts., Chi., Cleve., Young. ....	28.00
Wire Rods	
(According to size and grade.)	
*Pitts., Cleveland ....	38.00-42.00
*Chicago .....	39.00-43.00
Worcester, Mass. ....	42.00
Skelp	
Pitts., Chi., Young., Buff., Coatesville, Sparrows Point....	1.80c

**Coke**

Price Per Net Ton	
Beehive Ovens	
Connellsville, fur....	\$3.50-3.65
Connellsville, fdry....	4.00-4.25
Connell, prem. fdry....	5.35-5.50
New River fdry.....	6.00
Wise county fdry....	4.45-5.00
Wise county fur....	4.00-4.50
By-Product Foundry	
Newark, N. J., del.	9.70-10.15
Chi., ov., outside del.	9.00
Chicago, del. ....	9.75
New England, del....	11.50
St. Louis, del. ....	10.00-10.50
Birmingham, ovens	6.50
Indianapolis, del. ....	9.40
Cincinnati, del. ....	9.50
Cleveland, del. ....	9.75
Buffalo, ovens .....	7.50-8.00
Detroit, ov., out. del.	9.00
Philadelphia, del. ....	9.38

**Coke By-Products**

Per gallon, producers' plants.	
Tank lots	
Pure and 90% benzol....	18.00c
Toluol .....	30.00c
Solvent naphtha .....	30.00c
Industrial xylol .....	30.00c
Per lb. f.o.b. New York.	
Phenol (200 lb. drums)..	16.30c
Do. (100 lbs.) .....	17.30c
Eastern Plants, per lb.	
Naphthalene flakes and balls, in bbls., to jobbers	6.75c
Per 100 lb. Atlantic seaboard	
Sulphate of ammonia....	\$1.25
†Western prices, ½-cent up.	



## Pig Iron

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

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

### Delivered from Basing Points:

Akron, O., from Cleveland	20.76	20.76	26.26	21.26
Baltimore from Birmingham	21.08		19.96	
Boston from Birmingham	20.62		20.50	
Boston from Everett, Mass.	21.00	21.50	20.50	22.00
Boston from Buffalo	21.00	21.50	20.50	22.00
Brooklyn, N. Y., from Bethlehem	22.93	23.43		
Brooklyn, N. Y., from Bmghm.	22.50			
Canton, O., from Cleveland	20.76	20.76	20.26	21.26
Chicago from Birmingham	19.72		19.60	
Cincinnati from Hamilton, O.	20.58	20.58	20.08	
Cincinnati from Birmingham	20.20		19.20	
Cleveland from Birmingham	19.62		19.12	
Indianapolis from Hamilton, O.	21.93	21.93	21.43	22.43
Mansfield, O., from Toledo, O.	21.26	21.26	20.76	21.76
Milwaukee from Chicago	20.57	20.57	20.07	21.07
Muskegon, Mich., from Chicago				
Toledo or Detroit	22.60	22.60	22.10	23.10
Newark, N. J., from Birmingham	21.61			
Newark, N. J., from Bethlehem	21.99	22.49		
Philadelphia from Birmingham	20.93		20.81	
Philadelphia from Swedeland, Pa.	21.31	21.31	20.81	
Pittsburgh district from Neville base plus 67c, 81c and 1.21 switching charges				
ville Island				
Saginaw, Mich., from Detroit	21.75	21.75	21.25	21.25

Delivered from Basing Points:	No. 2 Fdry	Malleable	Basic	Bessemer
St. Louis, northern	20.00	20.00		19.50
St. Louis from Birmingham	19.62			19.50
St. Paul from Duluth	21.94	21.94		22.44

†Over 0.70 phos.

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

Gray Forge	Charcoal
Valley furnace	19.00 Lake Superior fur.
Pitts. dist. fur.	19.00 Do., del. Chicago
	Lylees, Tenn.

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

**Bessemer Ferrosilicon†**  
Jackson county, O., base: Prices are the same as for silveries, plus \$1 a ton.  
†The lower all-rail delivered price from Jackson, O., or Buffalo is quoted with freight allowed.  
Manganese differentials in silvery iron and ferrosilicon. 2 to 3%, \$1 per ton add. Each unit over 3%, add \$1 per ton.

### Refractories

Per 1000 f.o.b. Works	timore bases (bags)....	40.00
Fire Clay Brick	Domestic dead-burned gr. net ton f.o.b. Chelwelah, Wash. (bulk)...	22.00
Super Quality	Basic Brick	
Pa., Mo., Ky.	Net ton, f.o.b. Baltimore, Plymouth Meeting, Chester, Pa.	
Pa., Ill., Md., Mo., Ky.	Chrome brick	\$45.00
Alabama, Ga.	Chemically bonded chrome brick	45.00
Pa., Ill., Ky., Md., Mo.	Magnesite brick	65.00
Ga., Ala.	Chemically bonded magnesite brick	55.00
Ohio		
First quality		\$40.00
Intermediary		37.00
Second quality		28.00
Malleable Bung Brick		
All bases		50.00
Silica Brick		
Pennsylvania		\$45.00
Joliet, E. Chicago		54.00
Birmingham, Ala.		48.00
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 Bal-		

### Fluorspar, 85-5

*Washed gravel, duty paid, tide, net ton	\$20.50
Washed gravel, f.o.b. Ill., Ky., net ton, carloads, all-rail	\$18.00
Do., for barge	\$19.00

### Ferroalloys

*Dollars, except Ferrochrome*

Ferromanganese, 78-82% tidewater, duty paid	75.00
Do., Balti., base	75.00
Do., del. Pittsb'gh	80.13
Spiegeleisen, 19-20% dom. Palmer-ton, Pa., spot†	26.00
Do., New Orleans	26.00
Ferrosilicon, 50% freight all, cl.	77.50
Do., less carload.	85.00
Do., 75 per cent.	126-130.00
Spot, \$5 a ton higher.	
Silicomane, 2½ carb.	85.00
2% carbon, 90.00; 1%, 100.00	
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb. del.	10.00
Ferrotungsten, stand., lb. con. del.	1.30- 1.35
Ferrovandium, 35 to 40% lb., cont.	2.70- 2.90
Ferrotitanium, c. l., prod. plant, frt. allow., net ton	137.50
Spot, 1 ton, frt. allow., lb.	7.00
Do., under 1 ton	7.50
Ferrophosphorus, per ton, c. l., 17-19% Rockdale, Tenn., basis, 18%, \$3 unitage	58.50
Ferrophosphorus, electrolytic, per ton c. l., 23-26% f.o.b. Anniston, Ala., 24% \$3 unitage	75.00
Ferromolybdenum, stand. 55-65%, lb.	0.95
Molybdate, lb. cont.	0.80
†Carloads, Quan. diff. apply.	

## Nonferrous

### METAL PRICES OF THE WEEK

Spot unless otherwise specified. Cents per pound

Copper			Straits Tin		Lead		Zinc		Alumi- Antimony		Nickel	
Electro. del.	Lake del.	Casting, Conn. Midwest refinery	Spot	New York Futures	Lead N. Y.	East St. L.	St. L.	99%	num Chinese	Spot, N. Y.	Cathodes	
Mar. 7	9.25	9.37½	8.95	48.50	46.62½	4.60	4.45	4.90	*19.00	13.25	35.00	
Mar. 9	9.25	9.37½	8.95	48.30	46.55	4.60	4.45	4.90	*19.00	13.25	35.00	
Mar. 10	9.25	9.37½	8.95	48.25	46.70	4.60	4.45	4.90	*19.00	13.50	35.00	
Mar. 11	9.25	9.37½	8.95	48.10	46.60	4.60	4.45	4.90	*19.00	13.50	35.00	
Mar. 12	9.25	9.37½	8.95	48.35	46.75	4.60	4.45	4.90	*19.00	13.50	35.00	
Mar. 13	9.25	9.37½	8.95	48.20	46.70	4.60	4.45	4.90	*19.00	13.50	35.00	

\*Nominal range 19.00 to 21.00c.

MILL PRODUCTS			OLD METALS	
F.o.b. mill base, cents per lb. except as specified. Copper brass products based on 9.00c Conn. copper.			Deal. buying prices, cents lb.	
			No. 1 Composition Red Brass	
Yellow brass (high)	14.62½		*New York	6.00- 6.25
Copper hot rolled	16.50		Cleveland	6.50- 6.75
Lead cut to jobbers	8.25		Chicago	6.12½- 6.37½
Zinc, 100-lb. base	9.50		St. Louis	6.00- 6.50
Sheets			Heavy Copper and Wire	
High yellow brass	16.87½		*New York, No. 1	7.50- 7.62½
Seamless copper	17.00		Chicago, No. 1	7.12½- 7.62½
Tubes			Cleveland	7.00- 7.25
High yellow brass	13.12½		St. Louis, No. 1	7.25- 7.75
Copper, hot rolled	13.50		Composition Brass Borings	
Anodes			*New York	5.25- 5.75
Copper untrimmed	14.00		Light Copper	
Wire			*New York	6.25- 6.50
Yellow brass (high)	15.12½		Chicago	5.62½- 6.12½
			Cleveland	6.00- 6.25
			St. Louis	5.75- 6.25

Light Brass		Lead		Zinc	
Chicago	3.62½-3.87½	New York	3.50- 3.75	St. L.	3.25- 3.50
Cleveland	3.25- 3.50	Cleveland	3.50- 3.75	St. Louis	3.50- 4.00
St. Louis	3.50- 4.00	Chicago	3.37½- 3.62½		
		St. Louis	3.50- 4.00		
		Heavy Copper and Wire			
		*New York	2.25- 2.50		
		Cleveland	2.50- 2.75		
		St. Louis	2.50- 3.00		
		Aluminum			
		Borings, Cleveland	9.00- 9.50		
		Mixed, cast, Cleve.	13.00-13.25		
		Mixed, cast, St. L.	12.75-13.25		
		Clips, soft, Cleve.	15.00-15.25		
		SECONDARY METALS			
		Brass ingot, 85-5-5-5	9.50		
		Stand. No. 12 alum.	16.75-17.25		



# Iron and Steel Scrap Prices

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated

<b>HEAVY MELTING STEEL</b>	<b>COUPLERS, SPRINGS</b>	Buffalo .....	8.25- 8.75	Chicago, iron .....	14.50-15.00
Birmingham .....	Buffalo .....	Cincinnati, dealers..	6.50- 7.00	Chicago, rolled steel	16.00-16.50
Boston, dock, expt.	Chicago, springs ...	Cleveland .....	9.00- 9.50	Cincinnati, iron .....	12.00-12.50
Boston, domestic ...	Eastern Pa. ....	Detroit .....	7.75- 8.25	Eastern Pa., iron ...	14.50-15.00
Buffalo, No. 1 .....	Pittsburgh .....	Eastern Pa. ....	6.50	Eastern Pa., steel...	17.00-17.50
Buffalo, No. 2 .....	St. Louis .....	New York, dealers..	3.25- 3.75	Pittsburgh, iron .....	15.00-15.50
Chicago, No. 1.....	14.00-14.50	Pittsburgh .....	8.75- 9.25	Pittsburgh, steel .....	17.25-17.75
Cleveland, No. 1.....	15.00-15.50	Toronto, dealers ...	4.00	St. Louis, iron .....	11.50-12.00
Cleveland, No. 2.....	14.00-14.50			St. Louis, steel .....	14.75-15.25
Detroit, No. 1 .....	12.00-12.50	<b>CAST IRON BORINGS</b>		Toronto, net .....	8.50
Detroit, No. 2 .....	11.00-11.50	Birmingham, plain..	5.00- 6.00	<b>NO. 1 CAST SCRAP</b>	
Eastern Pa., No. 1..	13.00-13.50	Boston, chemical.....	7.25- 7.75	Birmingham .....	11.00-12.00
Eastern Pa., No. 2..	12.50	Boston, dealers .....	3.50- 4.00	Boston, No. 1 mach.	9.00- 9.25
Federal, Ill. ....	11.50-12.00	Buffalo .....	8.50- 8.75	Boston, No. 2 .....	9.25- 9.75
Granite City, R. R..	12.50-13.00	Chicago .....	7.50- 8.00	Boston, tex. con. ....	8.50- 9.00
Granite City, No. 2..	10.75-11.25	Cincinnati, dealers..	6.50- 7.00	Buffalo, cupola .....	13.00-13.50
N. Y., deal. No. 2....	8.50- 9.00	Cleveland .....	9.00- 9.50	Buffalo, mach. ....	13.75-14.25
N. Y., deal. barge		Detroit .....	7.75- 8.25	Chicago, agri. net....	10.50-11.00
(No. 1 for export)	9.50	E. Pa., chemical.....	11.00-13.00	Chicago, auto .....	12.00-12.50
Pitts., No. 1 (R. R.)	16.50-17.00	New York, dealers..	4.50- 5.00	Chicago, mach. net..	13.50-14.00
Pitts., No. 1 (dlr.)..	15.50-16.00	St. Louis .....	4.50- 5.00	Chicago, rail'd net..	12.00-12.50
Pittsburgh, No. 2....	14.50-15.00	Toronto, dealers ...	5.00	Cinci., mach. cup....	11.50-12.00
St. Louis .....	11.50-12.00	<b>PIPE AND FLUES</b>		Cleveland, mach.....	16.00-16.50
Toronto, dealers .....	7.50	Cincinnati, dealers..	8.50- 9.00	Detroit, auto, net....	12.50-13.00
Valleys, No. 1 .....	16.00-16.50	Chicago, net .....	8.50- 9.00	Eastern Pa., cupola	13.50-14.00
<b>COMPRESSED SHEETS</b>		<b>RAILROAD GRATE BARS</b>		E. Pa., mixed yard..	12.00-12.50
Buffalo, dealers .....	12.25-12.75	Buffalo .....	10.50-11.00	Pittsburgh, cupola..	15.00-15.50
Chicago, factory .....	13.75-14.25	Chicago, net .....	9.00- 9.50	San Francisco, del..	13.50-14.00
Chicago, dealer .....	12.75-13.25	Cincinnati .....	7.50- 8.00	Seattle .....	7.50- 9.00
Cleveland .....	14.75-15.25	Eastern Pa. ....	11.00-11.50	St. Louis, No. 1.....	11.50-12.00
Detroit .....	12.50-13.00	New York, dealers..	6.50- 7.00	St. L., No. 1 mach.	13.00-13.50
E. Pa., new mat.....	13.00-13.50	St. Louis .....	7.50- 8.00	Toronto, No. 1,	
Pittsburgh .....	15.50-16.00	<b>FORGE FLASHINGS</b>		mach., net .....	9.00
St. Louis.....	9.50-10.00	Boston, dealers .....	7.75- 8.00	<b>HEAVY CAST</b>	
Valleys .....	15.25-15.75	Buffalo .....	11.75-12.25	Boston, del. ....	8.25- 8.50
<b>BUNDLED SHEETS</b>		Cleveland .....	13.50-14.00	Buffalo, break .....	11.25-11.75
Buffalo .....	11.00-11.50	Detroit .....	11.00-11.50	Cleveland, break ...	12.50-13.00
Cincinnati, del. ....	9.00- 9.50	Pittsburgh .....	14.50-15.00	Detroit, No. 1 mach.	
Cleveland .....	11.90-11.50	<b>FORGE SCRAP</b>		net .....	12.50-13.00
Pittsburgh .....	14.50-15.00	Boston, dealers .....	6.00- 7.00	Detroit, break .....	11.00-11.50
St. Louis .....	7.75- 8.25	Chicago, heavy .....	16.00-16.50	Detroit, auto net....	12.50-13.00
Toronto, dealers .....	4.50	Eastern Pa. ....	12.00-12.50	Eastern Pa. ....	13.00-13.50
<b>SHEET CLIPPINGS, LOOSE</b>		<b>ARCH BARS, TRANSOMS</b>		N. Y., break. deal....	9.25- 9.50
Chicago .....	10.00-10.50	St. Louis .....	13.00-13.50	Pittsburgh .....	13.25-13.75
Cincinnati .....	8.50- 9.00	<b>AXLE TURNINGS</b>		<b>MALLEABLE</b>	
Detroit .....	9.00- 9.50	Boston, dealers .....	5.75- 6.00	Birmingham, R. R..	11.50-12.50
St. Louis .....	7.00- 7.50	Buffalo .....	10.50-11.00	Boston, consum. ....	15.00-16.00
<b>STEEL RAILS, SHORT</b>		Chicago, elec. fur....	14.00-14.50	Buffalo .....	15.75-16.25
Birmingham .....	12.50-13.00	Eastern Pa. ....	11.50	Chicago, R. R. ....	18.00-18.50
Buffalo .....	15.25-15.75	St. Louis .....	9.00- 9.50	Cincinnati, agrl. del.	13.50-14.00
Chicago (3 ft.).....	16.00-16.50	Toronto .....	4.50	Cleveland, rail .....	17.75-18.00
Chicago (2 ft.).....	17.00-17.50	<b>STEEL CAR AXLES</b>		Detroit, auto, net....	14.50-15.00
Cincinnati, del. ....	15.00-15.50	Birmingham .....	12.00-12.50	Eastern Pa., R. R..	17.00-17.50
Detroit .....	15.00-15.50	Boston, ship. point..	11.00-11.25	Pittsburgh, rail.....	18.50-19.00
Pitts., open-hearth,		Buffalo .....	15.25-15.75	St. Louis, R. R.....	15.25-15.75
3 ft. and less .....	17.25-17.75	Chicago, net .....	15.50-16.00	Toronto, net .....	7.00
St. Louis, 2 ft. & less	14.25-14.75	Eastern Pa. ....	17.00	<b>RAILS FOR ROLLING</b>	
<b>STEEL RAILS, SCRAP</b>		St. Louis .....	13.50-14.00	5 feet and over ..	
Boston .....	9.00- 9.50	Toronto .....	8.50	Birmingham .....	12.00-12.50
Chicago .....	14.50-15.00	<b>SHAFTING</b>		Boston, dealers .....	9.00- 9.50
Pittsburgh .....	16.25-16.75	Boston, ship. point..	13.25-13.50	Buffalo .....	13.25-13.75
St. Louis .....	13.25-13.75	Eastern Pa. ....	19.00	Chicago .....	15.50-16.00
Buffalo .....	13.25-13.75	New York, dealers..	14.25-14.75	Eastern Pa. ....	14.00-14.50
Toronto, dealers .....	8.50	St. Louis .....	13.50-14.00	New York, dealer....	9.75-10.25
<b>STOVE PLATE</b>		Toronto .....	8.50	St. Louis .....	14.25-14.75
Birmingham .....	7.00- 7.50	<b>CAR WHEELS</b>		<b>LOCOMOTIVE TIRES</b>	
Boston, dealers .....	6.25- 6.50	Birmingham .....	10.00-11.00	Chicago (cut) .....	16.00-16.50
Buffalo .....	11.00-11.50	Boston, iron deal. ....	8.75- 9.00	St. Louis, No. 1 .....	12.00-12.50
Chicago .....	8.50- 9.00	Buffalo, iron .....	13.50-14.00	<b>LOW PHOS. PUNCHINGS</b>	
Cincinnati, dealers..	8.50- 9.00	Buffalo, steel .....	15.25-15.75	Buffalo .....	15.00-15.50
Detroit, net .....	9.00- 9.50			Chicago .....	16.00-16.50
Eastern Pa. ....	11.00-11.50			Eastern Pa. ....	16.00-16.50
N. Y., deal. fdry. ....	7.00- 7.50			Pittsburgh (heavy)	17.25-17.75
St. Louis .....	7.50- 8.00			Pittsburgh (light)..	16.50-17.00
Toronto, dealers, net	5.50				

## Iron Ore

<b>Lake Superior Ore</b>	
Gross ton, 51½%	
<b>Lower Lake Ports</b>	
Old range bessemer .....	\$4.80
Mesabi nonbess. ....	4.50
High phosphorus .....	4.40
Mesabi bessemer .....	4.65
Old range nonbess. ....	4.85

<b>Eastern Local Ore</b>	
Cents, unit, del. E. Pa.	
Foundry and basic	
56-63% con. (nom.)	8.00- 9.00
Cop.-free low phos.	
58-60% (nom.)....	10.00-10.50
<b>Foreign Ore</b>	
Cents per unit, f.a.s. Atlantic	
ports (nominal)	
Foreign manganiferous	
ore, 45.55%	

iron, 6-10% man.	10.50
No. Afr. low phos.	10.50
Swedish basic, 65%	9.50
Swedish low phos..	10.50
Spanish No. Africa	
basic, 50 to 60%	10.50
Tungsten, spot sh.	
ton unit, duty pd.	\$15.85-16.00
N. F., fdy., 55%....	7.00
Chrome ore, 48%	
gross ton, c.i.f.....	19.25

## Manganese Ore

(Nominal)	
Prices not including duty,	
cents per unit cargo lots	
Caucasian, 52-55%	26.00
So. African, 52%....	26.50
So. Afr., 49-51%....	25.50
Indian, 58-60% .....	nominal
Indian, 48-50% .....	nominal



# Warehouse Iron and Steel Prices

Cents per pound for delivery within metropolitan districts of cities specified

<b>STEEL BARS</b>	Cincinnati ....	3.25c	Buffalo .....	3.37c	Pittsburgh(h)	2.95c	Seattle .....	5.60c
Baltimore*.....	Houston .....	3.25c	Chattanooga..	3.56c	San Francisco	3.35c	St. Louis .....	3.55c
Boston†† .....	Los Ang., cl..	2.45c	Chicago .....	3.20c	Seattle .....	3.70c	St. Paul .....	3.55c
Buffalo .....	New Orleans	3.50c	Cincinnati .....	3.42c	St. Louis .....	3.45c		
Chattanooga..	Pitts., plain (h)	3.05c	Cleveland, ¼-		St. Paul .....	3.30c		
Chicago (j)....	Pitts., twisted		in. and over	3.31c	Tulsa .....	3.70c		
Cincinnati .....	squares (h)	3.175c	Detroit .....	3.42c			<b>COLD FIN. STEEL</b>	
Cleveland .....	San Francisco	2.45c	Detroit, ½-in.	3.65c	<b>NO. 24 BLACK</b>		Baltimore (c)	3.73c
Detroit .....	Seattle .....	2.45c	Houston .....	3.00c	Baltimore*†....	3.60c	Boston .....	3.90c
Houston .....	St. Louis .....	3.25c	Los Angeles..	3.60c	Boston (g)....	3.95c	Buffalo (h)....	3.55c
Los Angeles..	Tulsa .....	3.25c	Milwaukee .....	3.31c	Buffalo .....	3.25c	Chattanooga*	4.13c
Milwaukee .....	Young .....	2.30c-2.60c	New Orleans	3.55c	Chattanooga..	4.16c	Chicago (h)...	3.50c
New Orleans..			New York†(d)	3.40c	Chicago .....	3.85c	Cincinnati .....	3.72c
New York†(d)	<b>SHAPES</b>		Philadelphia*	2.98c	Cincinnati .....	4.02c	Cleveland (h)	3.50c
Pitts. (h)....	Baltimore*....	3.00c	Phila. floor....	4.95c	Cleveland .....	3.91c	Detroit .....	3.79c
Philadelphia*	Boston†† .....	3.19c	Pittsburgh(h)	3.15c	Los Ang. (f) (d)	5.85c	Los Ang. (f) (d)	5.85c
Portland .....	Buffalo .....	3.25c	Portland .....	3.35c	Milwaukee ....	3.61c	Milwaukee ....	3.61c
San Francisco	Chattanooga..	3.56c	San Francisco	3.25c	New Orleans	4.30c	New Orleans	4.30c
Seattle .....	Chicago .....	3.20c	Seattle .....	3.55c	New York†(d)	3.81c	New York†(d)	3.81c
St. Louis .....	Cincinnati .....	3.42c	St. Louis .....	3.45c	Pittsburgh .....	3.50c	Philadelphia..	3.76c
St. Paul .....	Cleveland .....	3.31c	St. Paul .....	3.45c	New Orleans	4.50c	Portland (f) (d)	6.15c
Tulsa .....	Detroit .....	3.42c	Tulsa .....	3.50c	New York†(d)	3.89c	Portland (f) (d)	6.15c
	Houston .....	3.00c			Philadelphia*†	3.60c	San Fran.(f) (d)	5.95c
	Los Angeles..	3.60c	<b>NO. 10 BLUE</b>		Pitts.** (h)....	3.55c	Seattle (f) (d)	6.15c
	Milwaukee ....	3.31c	Baltimore*.....	3.10c	Portland .....	4.10c	St. Louis.....	3.75c
	New Orleans	3.55c	Boston†† .....	3.30c	San Francisco	4.00c	St. Paul .....	4.02c
	New York†(d)	3.37c	Buffalo .....	3.62c	Seattle .....	4.40c	Tulsa .....	4.65c
	Philadelphia*	2.98c	Chattanooga..	3.36c	St. Louis .....	4.10c		
	Pittsburgh (h)	3.15c	Chicago .....	3.05c	St. Paul .....	3.90c		
	Portland (l)...	3.50c	Cincinnati .....	3.22c	Tulsa .....	4.75c		
	San Francisco	3.25c	Cleveland .....	3.11c			<b>COLD ROLLED STRIP</b>	
	Seattle (l)....	3.70c	Det., 8-10 ga.	3.14c	<b>NO. 24 GALV. SHEETS</b>		Boston, 0.100-	
	St. Louis .....	3.45c	Houston .....	3.35c	Baltimore*†....	4.30c	in., 500 lb.	
	St. Paul .....	3.45c	Los Angeles..	3.75c	Buffalo .....	4.00c	lots .....	3.245c
	Tulsa .....	3.50c	Milwaukee ....	3.16c	Boston (g)....	4.65c	Buffalo .....	3.39c
			New Orleans	3.55c	Chattanooga..	4.86c	Chicago .....	3.27c
			New York†(d)	3.31c	Chicago (h)...	4.55c	Cincinnati (b)	3.22c
			Portland .....	3.35c	Cincinnati .....	4.72c	Cleveland (b)	2.85c
			Philadelphia*	3.08c	Cleveland .....	4.61c	Detroit .....	3.18c
					Detroit .....	4.72c	New York†(d)	3.36c
					Houston .....	4.40c	St. Louis .....	3.45c
					Los Angeles..	4.95c		
					Milwaukee ....	4.66c	<b>TOOL STEELS</b>	
					New Orleans	4.95c	(Applying on or east of	
					New York†(d)	4.30c	Mississippi river; west	
					Philadelphia*†	4.40c	of Mississippi 1c up)	
					Pitts.** (h)....	4.15-4.45c	Base	
					Portland .....	4.50c	High speed .....	57c
					San Francisco	4.50c	High carbon, high	
					Seattle .....	5.00c	chrome .....	37c
					St. Louis .....	4.65c	Oil hardening .....	22c
					St. Paul .....	4.50c	Special tool .....	20c
					Tulsa .....	5.10c	Extra tool .....	17c
							Regular tool .....	14c
							Uniform extras apply.	

## Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, Mar. 12

Export Prices f. o. b. 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
<b>PIG IRON</b>				
Foundry, 2.50-3.00 Silicon	\$15.56	3 2 6	\$14.14	1 15 0
Basic bessemer.....	15.56	3 2 6*	12.13	1 10 0
Hematite, Phos. .03-.05..	17.68	3 11 0	.....	.....
<b>SEMIFINISHED STEEL</b>				
Billets.....	\$28.26	5 17 6	\$18.99	2 7 0
Wire rods, No. 5 gage....	42.33	8 10 0	36.39	4 10 0
<b>FINISHED STEEL</b>				
Standard rails.....	\$41.09	8 5 0	\$44.17	5 10 0
Merchant bars.....	1.69c	7 15 0	1.13c to 1.18c	3 2 6 to 3 5 0
Structural shapes.....	1.64c	7 10 0	1.12c	3 1 6
Plates, ½ in. or 5 mm...	1.76c	8 1 3	1.55c	4 5 0
Sheets, black, 24 gage or 0.5 mm.....	2.13c	9 15 0	2.12c	5 16 0††
Sheets, gal., 24 gage, corr.	2.56c	11 15 0	2.29c	6 5 0
Bands and strips.....	1.91c	8 15 0	1.42c	4 0 0
Plain wire, base.....	2.02c	9 5 0	1.92c	5 5 0
Galvanized wire, base....	2.34c	10 15 0	2.15c	5 27 6
Wire nails, base.....	2.62c	12 0 0	1.74c	4 15 0
Tin plate, box 108 lbs....	\$ 4.67	0 18 9	.....	.....

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

Domestic Prices at Works or Furnace—Last Reported

	£	s d	French France	Belgian France	Reich Marks
Fdy. pig iron, Si. 2.5.....	\$17.43	3 10 0(a)	\$17.29	260	\$13.43
Basic bessemer pig iron...	17.43	3 10 0(a)	12.63	190	11.90
Furnace coke.....	4.98	1 0 0	6.32	95	4.15
Billets.....	29.26	5 17 6	28.60	430	18.87
Standard rails.....	1.80c	8 5 0	2.01c	671	1.65c
Merchant bars.....	1.97c	9 1 0	1.68c	560	.98c
Structural shapes.....	1.91c	8 15 0	1.65c	550	.98c
Plates, ½ in. or 5 mm...	1.98c	9 1 3	2.10c	700	1.20c
Sheets, black.....	2.51c	11 10 0‡	1.80c	600‡	1.31c
Sheets, galv., corr., 24 ga. or 0.5 mm.....	2.94c	13 10 0	2.85c	950	2.25c
Plain wire.....	2.02c	9 5 0	2.70c	900	1.73c
Bands and strips.....	2.14c	9 16 0	1.95c	650	1.20c

\*Basic. †British ship-plates. Continental, bridge plates. ‡24 ga. †1 to 3 mm. basic price, British quotations are for basic open-hearth steel. Continental usually for basic-bessemer steel. a del. Middlesbrough. b hematite. †Close annealed. \*\*Gold pound sterling carries a premium of 66.00 per cent over paper sterling.

<b>BANDS</b>	Baltimore*.....	3.20c
	Boston†† .....	3.30c
	Buffalo .....	3.42c
	Chattanooga..	3.61c
	Chicago .....	3.30c
	Cincinnati .....	3.47c
	Cleveland .....	3.36c
	Detroit, ½-in. and lighter	3.39c
	Houston .....	3.25c
	Los Angeles..	4.10c
	Milwaukee ....	3.41c
	New Orleans	3.95c
	New York†(d)	3.56c
	Philadelphia..	3.18c
	Pittsburgh (h)	3.20c
	Portland .....	4.25c
	San Francisco	4.10c
	Seattle .....	4.25c
	St. Louis .....	3.55c
	St. Paul .....	3.55c
	Tulsa .....	3.45c

<b>HOOPS</b>	Baltimore .....	2.30c
	Boston†† .....	4.30c
	Buffalo .....	3.42c
	Chicago .....	3.30c
	Cincinnati .....	3.47c
	Det., No. 14 and lighter	3.39c
	Los Angeles..	5.85c
	Milwaukee ....	3.41c
	New York†(d)	3.56c
	Philadelphia..	3.43c
	Pittsburgh (h)	3.70c
	Portland .....	5.60c
	San Francisco	6.15c

(a) Under 100 pounds, 65 off.  
 (b) Plus straightening, cutting and quantity differentials; (c) Plus mill, size and quantity extras; (d) Quantity base; (e) New mill classif. (f) Rounds only; (g) 50 bundles or over; (h) Outside delivery, 10c less; (i) Under 3 in.; (j) shapes other than rounds, flats, fillet angles, 3.15c.  
 †Domestic steel; \*Plus quan. extras; \*\*Under 25 bundles; †50 or more bundles; ‡New extras apply; ††Base 40,000 lbs., extras on less.  
 Prices on heavier lines are subject to new quantity differentials; 399 lbs. and less, up 50 cts.; 400 to 999 lbs., base; 10,000 to 19,999 lbs., 15 cts. under; 20,000 to 39,999 lbs., 25 cts. under; 40,000 lbs. and over, 35 cts. under base.



# Bars

Bar Prices, Page 68

**Pittsburgh**—Base price of 2.45c on hot-rolled alloy steel bars has been reaffirmed for second quarter, with the addition of quantity differentials as follows: 100 tons and over, 15 cents off per 100 pounds; under 100 to 50 tons, 10 cents off; under 50 to 25 tons, 5 cents off. Base on alloy bars will apply for 25 to 3-ton lots, with a 10-cent advance for under 3 to 2 tons; 25-cent advance for under 2 to 1 ton; and a \$1 per 100-lb. advance for 1 to ½ ton. In merchant carbon steel bars 1.85c, base, has been reaffirmed for second quarter, but this now applies for 25 to 3-ton shipments, as against a minimum 5-ton shipment formerly. In addition, the quantity differential plan on carbon bars, which was adopted last August, has been revised to include a 15-cent per 100 pound deduction for lots of 150 tons and over.

Tube rounds, formerly a semi-finished steel item and for the past six months sold on the bar card, will continue to be quoted on the bar basis plus extras. In spite of reports to the contrary, the price of silico-magnesium steel, S.A.E. 9200 series, is being quoted on the alloy bar card, not on the carbon base.

**Cleveland**—New orders and specifications for steel bars have increased substantially, with prompt shipments requested in nearly all instances, indicating the steel is required for immediate use. Leading producers report more than twice as much tonnage booked so far in March as was ordered in the comparable period in February.

Principal gains are shown in automotive tonnage, while agricultural implement, heavy equipment, and miscellaneous requirements have held up. The base price of 1.90c, Cleveland, has been extended for second quarter. Under the quantity differential system, as outlined on page 66, this issue, a deduction of \$3 a ton from the base is allowed on lots of 150 tons or more, at one time for one destination.

**Chicago**—Business is well maintained, with the tendency in automotive orders upward as a result of increased assemblies. Farm implement manufacturers continue their previous brisk operations, and no slackening is evident among miscellaneous consumers.

**New York**—Users of bars are specifying heavily for March delivery, in view of variations in quantity extras and deductions on second quarter tonnage. This has tended to sustain the buying rate.



**PI.W.**  
STEEL PLATE CONSTRUCTION

- ACID TANKS
- STANDPIPES
- ALLOY COVERS
- ANNEALING BOXES
- ANNEALING COVERS
- ANNEALING BOTTOMS
- AIR RECEIVERS AND TANKS
- CONDENSER PANS AND BOXES
- SELF SUPPORTING STACKS
- STORAGE TANKS, ALL SIZES
- ACCUMULATOR PRESSURE TANKS
- WELDED PIPE (30" dia. and over)
- RIVETED PIPE (20" dia. and over)
- Rotary Kilns, Coolers and Dryers
- Steel Plate Construction, welded and riveted
- Barrels—Carbon Steel, Galvanized, Stainless Steel, Aluminum, Nickel Clad

Welded Pressure Vessels fabricated to the API-ASME Code or to ASME Unfired Pressure Vessel Code, Stress Relieved, X-Rayed. We have a background of many years' experience in this class of work; in fact we were the FIRST to be approved by the Hartford Steam Boiler Inspection and Insurance Company for electric arc welded pressure vessels. Wire, write or 'phone, we will gladly cooperate in any design or construction problems which you may have.

## THE PETROLEUM IRON WORKS CO.

Established 1892

SHARON, PA.

Cable - Petiron

New York: 30 Rockefeller Plaza



# Plates

Plate Prices, Page 68

**Pittsburgh**—As generally expected, the market on steel plates has been reaffirmed on the basis of 1.80c, Pittsburgh, for the second quarter and without any quantity differentials. As inquiry for 11,000 tons of plates, shapes and bars is now being circulated by the Norfolk & Western for early closing in connection with a car repair program. About 100 tons of wrought iron plates will be

specified for a blast plate ceiling to be built over the railroad tracks at the Pittsburgh postoffice.

**Cleveland**—Leading producers have extended plate prices for second quarter at 1.80c, base, Pittsburgh, or 1.99 1/2c, delivered, Cleveland. However an outside mill continues to quote \$2 a ton under this market on light gages in Ohio, sales at this concession including 100 tons at Cincinnati last week. It is hoped the open-price plan, now adopted by the majority of sellers, will eliminate this practice. When quantity extras and deductions were inaugurated on

steel bars in the fall of 1934, a similar schedule was set up for plates, but there were so many protests against it because of the multiplicity of sizes and gages that the idea was dropped. No price differentials have been issued so far for second quarter. There is more activity in the market, tank and boiler fabricators placing larger tonnages.

**Chicago**—Plates are being extended into second quarter at 1.85c, base, without the application of quantity differentials and extras which have been adopted on some other products. Fair plate demand continues for car repair material, with better business in prospect for new car building. Business from structural fabricators is moderately heavier.

**New York**—Plate makers expect some immediate buying for second quarter in view of settlement of the price situation. Tonnage is spotty although several fairly important oil company jobs have been let to general contractors, plate awards being expected shortly.

**Philadelphia**—Eastern platemakers have reaffirmed 1.90c, Coatesville, Pa., for second quarter. Following a general improvement a week ago, business now appears to lag.

**Birmingham, Ala.**—Mills producing plate are not only keeping a steady pace but Tennessee Coal, Iron & Railroad Co., Fairfield, Tenn., has started a third shift. This is the first time in long time that three shifts have been employed on plates.

## Contracts Placed

- 2000 tons, water storage tanks, Long Beach, Calif., to Western Pipe & Steel Co. of California, San Francisco.
- 1175 tons, tanks, Humble Oil & Refining Co., Baytown, Tex., to Chicago Bridge & Iron Works, Chicago.
- 235 tons, 17 tanks, Pittsburgh Plate Glass Co., Barberton, O., to Chicago Bridge & Iron Works, Chicago.
- 175 tons, hull plates, schedule 7217, Mare Island, Calif., to unnamed interest.
- 100 tons, 49 batch cars, metropolitan water district, Los Angeles, specification 147, to unnamed interest.

## Contracts Pending

- 700 tons, Eagle Mountain pumping plant, metropolitan water district, Los Angeles; bids opened.
- 600 tons, construction of federal dredge JEWETT, for Louisville, Ky., engineers; Dravo Contracting Co., Pittsburgh, low at \$578,450.
- 100 tons, or more, hanging ceiling, 110 feet wide x 350 feet long, for Pittsburgh postoffice and federal building; Sentauro Construction Co., New York, contractor. Wrought iron plates likely to be specified.

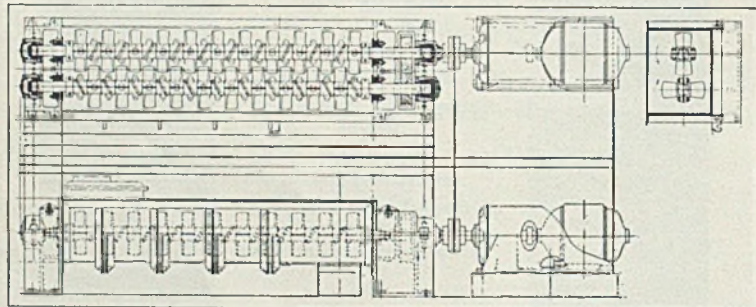
## Quicksilver

**New York**—Quicksilver prices are steady, and demand continues light. Small lots are quotably unchanged from \$78 to \$79 a virgin flask of 76 pounds each.

# Bailey... WMB Co. EQUIPMENT

## The VREELAND Pug Mill Equipment

*Built Under Method Patent No. 1,557,123*



The practical, safe, and economical practice of handling flue dust from blast furnace dust catchers by means of a pug mill has proved successful in every one of over fifty installations.

The loss of flue dust, the deterioration of adjacent equipment, and the increase of accidents in handling the hot dust led to the development of this equipment for properly handling this material.

The results obtained from the large number of installations now in operation prove conclusively that this is the best method yet devised for handling the dust at the catcher and at the same time prepare it for re-charging in the blast furnace, or for sintering.

Write for details concerning improvements and refinements we have made.

# WILLIAM M. BAILEY COMPANY

## Engineers

MAGEE BLDG.

PITTSBURGH, PA.

European Agents—Ashmore, Benson, Pease & Co. Ltd., Stockton-on-Tees, England



# Pipe

Pipe Prices, Page 69

**Pittsburgh**—As of March 6, producers of steel line pipe, steam gas and water pipe, merchant casing and large o.d. wrought steel pipe issued revised cards on extras, generally incorporating lower discounts.

**Chicago**—Cast pipe laying is progressing more rapidly, but new business is developing slowly. Some releases are appearing for government-financed projects. Prices are fairly steady, with no indications of early revision. Chicago is inquiring for 45,000 feet of 2 and 2½-inch steel pipe.

**New York**—The procurement division, treasury department, New York, is the principal buyer of cast pipe in this district. It placed 815 tons last week, and opened bids on 136 tons, not including a considerable lot of fittings. Prices are unchanged.

**Buffalo**—There is a good demand in prospect for pipe in this district. Construction on a large scale is planned in many nearby cities and villages, and sellers look for early closing of numerous large tonnages.

**San Francisco**—Cast pipe market has shown little improvement of late, and pending and prospective business aggregates less than 1600 tons. The largest pending inquiry calls for 717 tons of high pressure pipe for San Francisco, on which United States Pipe & Foundry Co. is low.

**Seattle**—Inquiry is lacking, and no important tonnages are pending. Several municipal projects, for which bids were opened two months ago, still are undecided. Florence, Oreg., awarded a contract for a water system, but adopted wood pipe.

## Cast Pipe Placed

- 475 tons, 6, 8 and 12-inch, procurement division, treasury department, New York, to Warren Foundry & Pipe Corp., Phillipsburg, N. J.
- 340 tons, 6 and 8-inch, procurement division, treasury department, New York, to Warren Foundry & Pipe Corp., Phillipsburg, N. J.
- 213 tons, 4 to 8-inch, Fresno county waterworks district, No. 2, Fresno, Calif., to United States Pipe & Foundry Co., Burlington, N. J.

## Cast Pipe Pending

- 944 tons, various sizes, Pasadena, Calif.; city purchased reinforced concrete pipe.
- 136 tons, 36-inch, class B, for work in Buffalo; bids March 12 by procurement division, treasury department, New York.
- Unstated tonnage, new waterworks and sewerage system, Random Lake, Wis.; bond issue of \$120,000 adopted.

## Steel Pipe Pending

Unstated tonnage, 20,000 feet of 2-inch.

25,000 feet of 2½-inch, city of Chicago; bids March 18.

# Wire

Wire Prices, Page 69

**Pittsburgh**—Since announcement of second-quarter prices on merchant wire products, no unusual amount of buying demand has been evidenced. On merchant wire items there continues to be fairly heavy volume of shipments and some new specifications being entered against the \$2 per ton increase in the base price of plain bright wire and spring wire.

**Cleveland**—The market is firmer since new prices were announced a week ago (STEEL, March 9, page 96.) Considerable tonnage was driven in on quotations that were outstanding. Improved demand for manufacturer's wire is noted. For the Great Lakes Exposition, Cleveland, about 160 tons of fencing has been divided between the Chain Link Corp., Chicago, and the Betz-Pierce Co., Cleveland, the latter representing the Paige Steel & Wire Co. The tonnage going to the Chain Link Corp. is corrugated sheets, while that for Betz-Pierce is chain link.

**Chicago**—Little change has appeared in wire volume as a result of recent announcement of new prices, though in some cases the latter represent advances. Second quarter contracting is in only moderate volume, but prospective demand for both manufacturers' wire and merchant wire products during the next 60 days is seen as favorable. Automotive consumption is increasing, with still better demand looked for shortly. Wire nails now are \$2.15, with plain wire 2.45c, Chicago.

# Strip Steel

Strip Prices, Page 69

**Pittsburgh**—Base prices on hot-rolled strip steel were announced last week at 1.85c, f.o.b. Pittsburgh, for 25 to 1-ton lots, and cold-rolled strip steel was announced at 2.60c, base, Pittsburgh or Cleveland, for 25 to 3-ton lots. In hot-rolled, deductions of \$1 to \$3 a ton are being allowed for quantity brackets beginning at 25 tons and up to 150 tons and over. In cold-rolled strip, deductions of \$1 to \$3 a ton are being allowed for 25-ton to 100-ton lots and over. These price moves will help considerably in settling an irregular market that had prevailed for the past two to three months. A base size classification of 25 to 1 ton has been established for com-

modity strip steel. A price of 2.90c, Pittsburgh, has been adopted for second quarter on No. 14 gage commodity cold-rolled strip, a base of 3.30c on No. 20 gage commodity and 3.40c for No. 20 gage lump stock.

**Cleveland**—Quantity extras and deductions for hot and cold rolled strip were in preparation late last week, and will be available early this week. For some time there have been extras in effect for small quantities, but no deductions for amounts above the base lots. The market is stronger, and demand has increased moderately.

**Chicago**—Hot-rolled strip is being continued at 1.95c, Chicago or Gary, with concessions to large tonnage buyers through quantity differentials similar to those applied to sheets. Business is more active, this applying to specifications for March delivery and reflecting the closing on orders on which shaded prices previously had been named.

**New York**—Consumers of narrow strip, expecting higher prices for second quarter, have specified substantially for delivery through March, at the expense of second quarter. New quantity extras are received well as a stabilizing influence.

# Ferroalloys

Ferroalloy Prices, Page 70

**New York**—March 16 is the deadline for announcing any price advances in ferroalloys for second quarter. So far there have been no indications of any changes. Reductions, according to market practice, may be made at any time.

# Coke By-Products

Coke By-Product Prices, Page 69

**New York**—Further improvement is noted in demand for principal coal tar distillates. One reason is the trend toward greater activity in the automobile industry. Xylol, solvent naphtha, naphthalene and phenol continue scarce. Heavy seasonal buying features sulphate of ammonia. Prices are firm.

# Cold Finished

Cold Finished Prices, Page 69

**Pittsburgh**—The cold-drawn carbon steel market of 2.10c, base, Pittsburgh, has been extended unchanged for second quarter. At the same time cold-drawn alloy steel bars have been reaffirmed at 2.95c, all five basing points. Specifications for cold-drawn bar material are improving slightly, but shipments have not yet reflected any material change.



# Sheets

Sheet Prices, Page 68

Cleveland—Some sheet producers last week withdrew from the market for the remainder of the first quarter. This resulted from the fact that many small quantities had been placed with mills for delivery early in April, contingent upon a continuation of recent prices. This was prior to the announcement of quantity extras and deductions for the sec-

ond quarter, as shown on page 66 of this issue. As the extras mean a higher price for small lots the buyers urged shipment this month, filling up mill schedules. Sellers report that the new extras and deductions generally are being received favorably by consumers. A stronger demand is noted from automobile manufacturers and some of the makers of household equipment.

Pittsburgh—Sheet users appear to be receiving the new quantity differential setup with a fairly favorable attitude, and obviously no adequate test has yet been given. The mar-

ket is now quoted 2.40c, Pittsburgh, for black sheets, 1.85c for heavy hot rolled, 3.10c on galvanized, with 2.50c and 2.95c on the No. 10 and 20 gage bases, respectively, for cold rolled.

Chicago—Sheet demand has increased rather substantially as a result of the announcement of second quarter prices and the adoption of quantity differentials and extras. Current business is for March delivery and reflects consumers' desire to close on business on which lower quotations were made. New quantity differentials and extras will apply on most grades of sheets, galvanized and vitreous enameled material being exceptions.

New York—Sheet consumers are endeavoring to obtain as much tonnage as possible at recent concessions before April 1. Several leading sellers have withdrawn all special prices.

Philadelphia—Specifications have increased. Some of the larger mills recently withdrew concessions, quoting only at official levels for the remainder of the quarter, but others have been willing to take on some tonnage, where deliveries can be made before April 1. Relatively few consumers in this district, it is believed, will be in a position to take advantage of the maximum differentials for quantity under the new schedules.

Buffalo—Further gains are noted in production of sheets at Bethlehem Steel Corp.'s Seneca works here. Output now is estimated at 75 per cent. Orders are coming in briskly, and further gains in output are possible later this month.

Cincinnati—Sheet producers in this district delayed announcement last week of second quarter quotations and are not ready to open books for forward needs, while awaiting clarification of the market situation. Bookings for the remainder of this quarter represent near capacity operation.

St. Louis—Producers and distributors report improvement in releases, stimulated by anticipated strengthening of prices. Demand for enameling stock is brisk, particularly from the stove industry.

Birmingham, Ala.—Sheet mill operations are unchanged and shipments equal output. Spring requirements appear to be a little more active.

Ampco Metal Inc., Milwaukee, has booked an order for 6000 pounds of alloy bronze segments to be used as bearings in the universal joints in the roll drive mechanism in the new steel mill of the Ford Motor Co., at Dearborn, Mich. The segments weigh about 300 pounds each.



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# Transportation

## Track Material Prices, Page 69

Railroad buying continues to contribute to activity of the steel industry but not in as large tonnages as in preceding weeks. Present buying is in smaller and irregular lots. Northern Pacific has placed 12 locomotives, Great Lakes Steel Corp. one fireless locomotive and New York New Haven & Hartford is in the market for 10 steam locomotives.

Weyerhaeuser Timber Co., Tacoma, has placed 75 logging cars, Chesapeake & Ohio is in the market for 5000 cars, Erie for 800 and New York, New Haven & Hartford for 50 coaches.

Kansas City, Oklahoma & Gulf has awarded 5700 tons of rails to Carnegie-Illinois Steel Corp., Pittsburgh. Light rail demand is heavier than for some time, to fill depleted stocks.

Mills are also receiving inquiries for steel axles and wheels for various carbuilding programs. Miscellaneous steel demand for repairs is also bringing in some tonnage. Norfolk & Western is expected to place about 11,000 tons of plates, shapes and bars soon.

Third avenue system, 2396 Third avenue, New York, has awarded 100 street cars for which it inquired recently, to its own shops. It also has awarded 60 additional cars to its shops for a subsidiary line.

## Car Orders Placed

Weyerhaeuser Timber Co., Tacoma, 75 logging cars, 50-ton capacity, to Pacific Car & Foundry Co., Seattle.

## Locomotives Placed

Great Lakes Steel Corp., Detroit, one 73-ton 6-wheel fireless locomotive, to H. K. Porter Co., Pittsburgh. Northern Pacific, 12 Mallet-type freight locomotives, to American Locomotive Co., New York.

## Rail Orders Placed

Kansas, Oklahoma & Gulf, 5700 tons to Carnegie-Illinois Steel Corp., Pittsburgh.

## Car Orders Pending

Chesapeake & Ohio, directors meet shortly to consider purchase of 5000 to 7000 cars, chiefly box. Erie, 500 box and 300 automobile cars; inquiry issued on permission to finance by equipment certificates. New York, New Haven & Hartford, 50 light weight coaches; court permission asked.

## Locomotives Pending

New York, New Haven & Hartford, ten steam passenger locomotives; court permission asked.

## Semifinished

### Semifinished Prices, Page 69

Pittsburgh producers of semifinished steel have announced the following base prices, f.o.b. Pittsburgh, for immediate effect, and the second quarter: Carbon rerolling billets, blooms and slabs, \$28; forging quality billets (6 x 6 to 9 x 9-inch base) \$35; sheet bars, \$28; alloy billets, blooms and slabs, \$49, and skelp, 1.80c per pound. These base prices on various semifinished commodities are all unchanged from the present

market, as will be noticed, with the exception of rerolling billets, blooms and slabs which are quoted down \$1 from the first quarter asking price, and sheet bars which are off \$2 a ton.

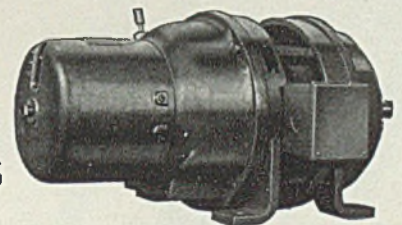
No system of quantity deductions has been put into effect for carbon billets, blooms, slabs, sheet bars or forging billets, but makers of alloy billets, blooms and slabs have announced the following, on a gross ton basis: 100 tons or more, \$3 deduction; under 100 to 50 tons, \$2 deduction; under 50 to 25 tons, \$1 deduction; 25 to 3 tons, base; under

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3 to 2 tons, \$2 up; under 2 to 1 ton, \$5 up, and 1 to ½ ton, \$20 up.

A number of users of carbon billets and sheet bars had expected that since finished sheets and strip are now on a quantity differential basis that semifinished steel, from which they are made, would also be priced with an incentive for large purchases. However, producers take the stand that the semifinished price is on a gross ton basis and that finished steel prices are on a net ton basis, plus the fact that a quantity application for both is by no means comparable.

## Bolts, Nuts, Rivets

Bolt, Nut, Rivet Prices, Page 69

Second quarter contracts have been issued but general return has not been made. Some business is being booked at the new prices, which, however, are not fully established. Specifications are steady. At Chicago farm implement manufacturers are specifying at the best rate since 1929. Railroad demand is spotty and jobbers are taking material at a steady rate.

At Cleveland, orders from automo-

bile manufacturers have not come through as expected and the general volume of business in the first 12 days of March was 20 per cent less than in the comparable period in February. Demand from railroads, jobbers and other sources is light.

## Shapes

Structural Shape Prices, Page 68

New York—Awards lack volume, but tonnage in new inquiries shows a tendency to increase. An interesting feature is that reinforcing bar tonnage has been expanding more rapidly than volume of structural steel. Market continues at 1.90c base, Bethlehem, Pa. One Pittsburgh and one eastern producer is quoting this price for second quarter, with likelihood of similar action by others. Fabricated steel prices are easy.

Pittsburgh—Fort Pitt Bridge Works has closed on 1200 tons in five public schools in Philadelphia, as well as 1000 tons for the new Aluminum Co. of America plant building at New Kensington, Pa. Bethlehem Steel Corp. was low on the 9000-ton state bridge at Middletown, Conn., over the Connecticut river, followed by Phoenix Bridge Co. Structural shapes have been reaffirmed for the second quarter at 1.80c, Pittsburgh, but without any application of quantity differentials.

Cleveland—Awards are light and little new tonnage has come up for figures. Fort Pitt Bridge Works, Pittsburgh, booked 400 tons for the Ohio Bell Telephone Co.'s building, Cleveland. About 583 tons were placed for the Great Lakes Exposition structures. Packard Motor Car Co. is expected to award 360 tons for a foundry extension at Detroit.

Chicago—Structural awards total about 5500 tons, the largest orders being 2250 tons for a Nashville, Tenn., court house and 1750 tons for a state bridge at Havana, Ill. Sales of plain material recently have been heavier. Orders from railroads for

## Shape Awards Compared

	Tons
Week ended March 14 .....	27,762
Week ended March 7 .....	8,738
Week ended Feb. 29 .....	33,125
This week, 1935 .....	10,179
Weekly average, 1935 .....	17,081
Weekly average, 1936 .....	22,778
Weekly average, February..	23,355
Total to date, 1935 .....	138,839
Total to date, 1936 .....	250,562



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car building and repairs involve moderate tonnages.

**Philadelphia**—With the placing of 3570 tons for the Viscose plant at Meadville, Pa., and 1600 tons of school work here, district structural awards are the heaviest in some time. Several other contracts also are reported, including one in the South, involving 2000 tons for the Champion Fiber Co., Canton, N. C. Prices have been extended for the second quarter at 1.90c, Bethlehem, Pa.

**San Francisco**—The market was active, 4294 tons being booked, bringing the total for the year to 32,708 tons compared with only 13,292 tons for the same period last year. Bethlehem Steel Corp. secured 750 tons for an addition to the plant of the Douglas Aircraft Co., Santa Monica, Calif., and 530 tons for the first apartment house to be erected in San Francisco for several years.

**Seattle**—Small tonnages, mainly for school and other buildings financed by federal funds predominate. New bids for a stadium at Washington state college, Pullman, requiring 425 tons, will be opened March 20. The weeks awards approximated 750 tons.

### Shape Contracts Placed

3570 tons, factory buildings, Viscose Corp., Meadville, Pa., to Bethlehem Steel Corp., Bethlehem, Pa.; 600 tons of reinforcing bars to Concrete Steel Co., New York.

3000 tons, including 2000 tons of structural plates, 10,000,000 cubic feet gas holder for Ford Motor Co., Detroit, to Stacey Bros. Gas Construction Co. Inc., Cincinnati. Holder to be 334 feet high, 220 feet diameter.

2250 tons, courthouse and city hall, Nashville, Tenn., to Bethlehem Steel Corp., Bethlehem, Pa.

2000 tons, factory, Houston, Tex., for Champion Fiber Co., Canton, N. C., to Ingalls Iron Works Co., Birmingham, Ala.

1750 tons, state bridge, Havana, Ill., to Duffin Iron Co., Chicago.

1567 tons, shafts for Fort Peck dam, Montana, to unnamed interest.

1600 tons, six school projects, Philadelphia, to American Steel Engineering Co., Philadelphia.

1300 tons, Ninety-fifth street state grade elimination, Chicago, to Bethlehem Steel Corp., Bethlehem, Pa.

700 tons, plant addition, Douglas Aircraft Co., Santa Monica, Calif., to Bethlehem Steel Corp., Bethlehem, Pa.

583 tons, structures for Great Lakes Exposition, Cleveland, including 313 tons for horticultural building to Fort Pitt Bridge Works, Pittsburgh, and 270 tons for bridge, to Ingalls Iron Works Co., Verona, Pa.

560 tons, school, Merrick, N. Y., to Lehigh Structural Steel Co., Allentown, Pa., through William Kennedy Construction Co., Brooklyn, N. Y.

530 tons, apartment, Broadway and Laguna, San Francisco, to Bethlehem Steel Corp., Bethlehem, Pa.

500 tons, state highway bridge, Santa Clara, Calif., to Consolidated Steel Corp., Los Angeles.

500 tons, Brooklyn College library, Brooklyn, N. Y., to Lehigh Structural Steel Co., Allentown, Pa., through William Kennedy Construction Co., Brooklyn.

465 tons, I-beam bridge, Weld county, Colorado, to E. Burkhardt & Sons Steel & Iron Works Co., Denver.

460 tons, apartment house, Eighth avenue and Carroll streets, Brooklyn, N. Y., to Belmont Iron Works, Philadelphia.

450 tons, grade crossings, Pueblo county, Colorado, to American Bridge Co., Pittsburgh.

450 tons, Idaho state bridge, to Virginia Bridge & Iron Works, Richmond, Va.

420 tons, four bridges, Denver, Rio Grande & Western railroad, to

American Bridge Co., Pittsburgh. 380 tons, state highway bridge, Evanston, Ill., to Bethlehem Steel Corp., Bethlehem, Pa.

340 tons, store building, Tenth and Market streets, Philadelphia, to American Fabricated Steel Co., Philadelphia.

320 tons, two state highway bridges, Hasbrouck Heights, N. J., and Lodi, N. J., to American Bridge Co., Pittsburgh.

315 tons, highway bridge, Seattle, to Wallace Bridge & Structural Steel Co., Seattle.

295 tons, Central fire headquarters, Rochester, N. Y., to F. L. Hughes & Co. Inc., Rochester.

290 tons, state hospital building, Bangor, Me., to Lyons Iron Works, Tampa, Fla.

**PAGE**  
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280 tons, factory addition, Campbell Soup Co., Camden, N. J., to unnamed fabricator.

265 tons, 26 lookout towers, United States Department of Agriculture in Michigan, Minnesota, Wisconsin and Illinois, to Aeromotor Co., Chicago.

265 tons, highway bridge, Portland, Mich., to American Bridge Co., Pittsburgh.

225 tons, church school alteration, Noxontown, Del., to Lehigh Structural Steel Co., Allentown, Pa.

225 tons, Standard Ultramarine building, Huntington, W. Va., to Jas. J. Weller & Sons Inc., Huntington.

220 tons, addition to public school 136, St. Albans, N. Y., to Weatherly Steel Co., Weatherly, Pa.

210 tons, state highway bridge, Mel-

bourne, Iowa, to Bethlehem Steel Corp., Bethlehem, Pa.

205 tons, overhead work, Gary, Ind., to American Bridge Co., Pittsburgh.

190 tons, state highway bridge, Delaware county, New York, to Lackawanna Steel Construction Co., Buffalo.

185 tons, brewery tanks, Louisville, Ky., to Drummond Mfg. Co., Louisville.

180 tons, F. & M. Schaefer brewery addition, Brooklyn, N. Y., to Norton Steel Co., New York.

170 tons, bridge, Fremont county, Colorado, to Midwest Steel & Iron Works Co., Denver, Colo.

155 tons, Condit street subway, Decatur, Ill., to Mississippi Valley Structural Steel Co., Decatur.

150 tons, two factories for Federated

Metals Corp., Los Angeles, to Pacific Iron & Steel Co., Los Angeles.

150 tons, addition to plant of Consolidated Steel Corp., Los Angeles, to Consolidated Steel Corp., Los Angeles.

140 tons, Montgomery Ward & Co. building, Hagerstown, Md., to Jones & Laughlin Steel Corp., Pittsburgh.

125 tons, Commercial brewery addition, Charlestown, Mass., to A. O. Wilson Structural Co., Cambridge, Mass.

120 tons, bridge, Macoupin county, Illinois, to St. Louis Structural Steel Co., East St. Louis, Ill.

120 tons, ammunition building, bureau of yards and docks, Washington, for Panama canal zone, to Belmont Iron Works, Eddystone, Pa.

100 tons, angles and channels, schedule 7119, Mare Island, Calif., to unnamed interest.

100 tons, miscellaneous building projects, Pacific Car & Foundry Co., Seattle.

## Behind the Scenes with STEEL

### Got a Rod Groover?

ONE of our 50,000 readers writes that he is in urgent need of a "rod grooving machine for cutting longitudinal grooves in the sides of round welding rods. The grooves must be deep at one end and taper to practically zero at the other end. Three or four grooves, as needed, are required in each rod."

We don't seem to have such a machine around here, but no doubt among our enthusiastic *Behind the Scenes* family there is someone who can help out this reader-in-need. If he will contact STEEL's Readers Service Department the word will be passed along.

### Shawnee Sage Speaks

A FEW paragraphs are excerpted herewith from a lengthy letter recently received from a friend and subscriber out in the badlands of Shawnee, Okla. Handy with the typewriter, he says:

"You may continue to send me STEEL after my present subscription has expired. You may have to dun me for payment, but we meet all obligations, along with all belligerent clients, with neatness and dispatch.

"I find your publication of considerable assistance in specifying alloy materials for machines which I am called upon to design. I have a rather large practice, and 100 per cent of my own clients have come to me from their own investigating. I feel that (ahem) the dignity of my calling precludes the rustling of business. There isn't any use anyway, since I camp on the back doorstep of one of the largest oil fields in the world. One is frequently run over



by addle-pated inventors seeking a friendly shoulder upon which to spill the tears of unrewarded genius. Being an inventor myself, I take them as they come, say a few solacing and cheerful things, indicate the dotted line and extend the old checkbook and the family fountain pen. Under

the stress of emotion an inventor may do any old thing. . . .

"The highball, Watson. . . .  
"Personally, I am 33, despise railroading, like to read Omar Khayyam, defective fiction and technical magazines. I drink more than I should, eat too much, weigh 135 pounds and don't give a damn for anything. I know many operatic stars, a smattering of several languages, have studied law, some medicine and have finished nine engineering courses. I crave excitement, good music, new friends and high-priced laboratory equipment. I also think a great deal of the wife and two small sons, although the wife thinks I am married to inventors. . . ."

Might be a good man for the Republican presidential nomination.

### Don't Miss It

TAKE a tip from this unworthy person and do not miss the first installment of a new series on *Finishes for Metal* which begins in this issue on Page 32. We have been privileged to look over the remaining articles in this series, and we agree with editors that it is great stuff.

Possibly you don't realize what an important part finishing plays in design, production and merchandising. If not, it will pay you to read this series carefully. It was written by experts in the field of finishing who know the subject in both a practical and laboratory way.

### Neck and Neck

AS WE promised last month, our editors in charge of calculating the weekly steelworks operating rate really took the bit in their teeth in February. Actual operating rate announced at the conclusion of last month was 54.09 per cent. Averaging and weighting STEEL's weekly reports gives a figure for the month of 54.05 per cent.

This is still 0.04 of a point away from being on the nose, but still is plenty close when you're talking about open-hearth furnaces.

### Last Call

REQUESTS are still coming in for copies of the new 16-page booklet on Control of Electroplating. We can send you any quantity for a measly 25 cents each. Address Readers Service Department, Penton building, Cleveland.

—SHRDLU

## Shape Contracts Pending

7000 tons, state highway bridge, stationary, Middletown Conn.; low bidder on superstructure, Bethlehem Steel Corp., Bethlehem, Pa.; low bidder on substructure Merritt-Chapman & Scott Corp., New York.

6000 tons, west side highway extension, Ninety-second to 100th street, New York.

3000 tons, plant for Illinois-Pacific Glass Co., Oakland, Calif.; bids soon.

2400 tons, Missouri state highway bridges, including 1670 tons for Jackson county, 210 tons for St. Louis, and 520 tons for lesser projects; bids March 13.

1900 tons, Bronx Industrial School for Girls, New York.

1550 tons, Northeast high school and public school at B street and Allegheny avenue, Philadelphia; new bids may again be asked as Ralph Herzog, this city, low bidder, wishes to withdraw due to a reported error in calculations; approximately 800 tons of reinforcing bars also required.

1400 tons, six state highway bridges, Ohio.

550 tons, state bridge, Ridley Park, Pa.; Kaufman Construction Co., Philadelphia, low on general contract.

546 tons, plate girder overpass, Delaware county, Pennsylvania; Kaufmann Construction Co., Philadelphia, low.

500 tons, tunnel shaft material, Dearborn, Mich., for Ford Motor Co., Detroit.

400 tons, building No. 73, for Celanese Corp., Ansell, Md.

400 tons, building, Camden, N. J., for Campbell Soup Co.

400 tons, New York Central Railway Express building, Syracuse, N. Y.; Duffy Construction Co., New York, low.

375 tons, two state bridges for grade crossing elimination in Tloga county, Pennsylvania; Graham Construction Co., Lancaster, Pa., low on general contract.

340 tons, state highway bridge RC 3747, Nassau county, New York; bids March 31.

320 tons, Eagle Mountain pumping plant, metropolitan water district, Los Angeles; bids opened.

235 tons, New Jersey state highway bridge, route 6, section 7; bids March 16.

200 tons, state bridge, Gary, Ind.; American Bridge Co., Pittsburgh, low.



200 tons, foundry extension, Packard Motor Car Co., Detroit.  
 200 tons, store building, Grand Rapids, Mich., for S. S. Kresge Co.  
 175 tons, high school building, Washington.  
 150 tons, chemical laboratory building, for University of Delaware, Newark, Dela.  
 150 tons, alterations to building at 60 Laight street, New York.  
 125 tons, New Jersey state highway grade crossing elimination, Wharton, N. J.; bids March 30.  
 125 tons, extension to pier No. 2, Oakland, Calif.; Herrick Iron Works, Oakland, low.  
 110 tons, New Jersey state highway grade crossing elimination, Berkeley Heights, N. J.; bids March 30.  
 100 tons approximately, Pennsylvania state bridge, Lackawanna county, bids March 20; this was previously reported as involving 800 tons of shapes.  
 Unstated tonnage, 60,000-gallon tank on 100-foot steel tower, Tigerton, Wis.; bids close March 24.  
 Unstated, second section, Sixth avenue subway, New York; bids April 14.

Lorain, O., on which bids will be opened March 17.

**Chicago**—While awards and new inquiries are less active than was true earlier in the quarter, a substantial tonnage is involved in pending and prospective work, particularly road, bridge building and sewer construction. Awards include 700 tons for a Milwaukee grain elevator. About 1500 tons remain to be placed for Chicago sanitary district work on which bids recently were taken. Reinforcing bar prices show a stronger tone than formerly, though a thorough test of the current market has

yet to be provided. Quotations nominally are 1.95c, base, for rail steel bars and 2.10c for billet bars.

**Philadelphia**—Outstanding among awards are 600 tons for the Viscose plant at Meadville, Pa., and eight hundred tons for two local schools, on which Ralph Herzog is low, but for which new bids may be asked. Several public highway jobs are active, but in general this work has not developed as rapidly to date as expected. Prices are fairly steady.

**San Francisco**—Awards so far this year are over double what they were for the same period in 1935. Book-

## Reinforcing

Reinforcing Bar Prices, Page 60

**New York**—New lettings in the metropolitan area during the past week aggregate about 1000 tons. At the same time a large amount of new work has come up for bids. Altogether about 5000 tons of bars are involved in work now actively under negotiations. Prices are unchanged at 1.85c to 2.05c base, Pittsburgh, equivalent to 2.20c to 2.40c base, delivered, New York, on new billet bars of domestic production.

**Pittsburgh**—Owing chiefly to jobber replenishment of stocks, specifications have been at a high point for the year. With the new billet steel bar market ranging from 1.95c to 2.05c, it appears likely that second-quarter prices will be applied at around this level. The State of Pennsylvania highway department has an inquiry out for March 27 on 30,360 pounds of plain steel bars for Cambria county.

**Cleveland**—Sales are numerous but in small lots. The largest item pending is 230 tons for foundations for a bridge over Black river, near

## Concrete Awards Compared

	Tons
Week ended March 14 .....	6,385
Week ended March 7 .....	12,168
Week ended Feb. 29 .....	5,080
This week, 1935 .....	6,245
Weekly average, 1935 .....	6,862
Weekly average, 1936 .....	9,249
Weekly average, February..	8,992
Total to date, 1935 .....	56,083
Total to date, 1936 .....	101,739

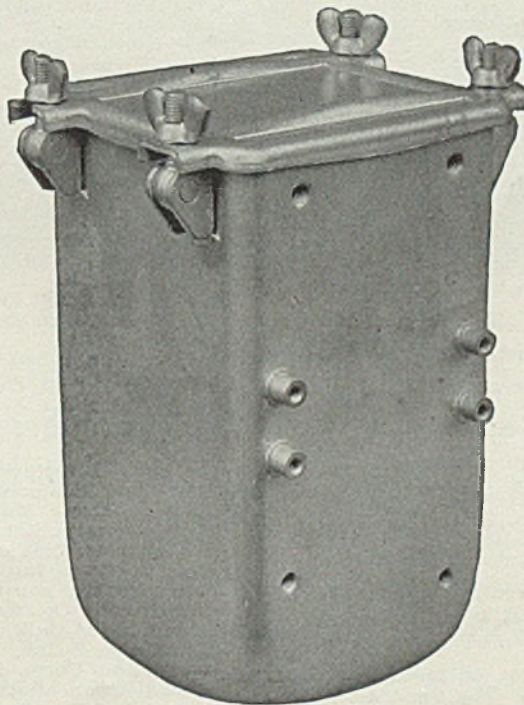
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ETC.**

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## The Case of Wardwell

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Pyrometer control for temperature indicates the time at which the metals should be poured to get a sound casting. The rejections had been entirely due to lack of pyrometer control in the production of the defective castings. Temperature and its control is important to a doctor. It's just as important to us.

The difficulties of Wardwell & Co. disappeared when Wellman's suggestions were followed. Our experience and care have helped many companies for years. If you have a situation which confuses you, write, or call ENdicott 2240.

- Castings
- Plated Parts
- Machined Parts
- Bent Tubes

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ings during the week aggregated 3052 tons and brought the total to 59,630 tons as compared with only 26,878 tons for the corresponding period last year. The first large order in many months for foreign made bars was placed with a Belgian mill and called for 400 tons for a plant for Spencer Kellogg Co. at Long Beach, Calif.

Seattle — New projects requiring reinforcing materials are developing slowly. Seattle plans a \$1,300,000 bond issue to finance approaches to the Ballard bridge calling for a large quantity of steel.

### Reinforcing Steel Awards

- 3000 tons, various reclamation bureau projects in Idaho, Wyoming and Washington, to unnamed interests.
- 700 tons, Froedert Co. grain elevator, Milwaukee, to W. H. Pipkorn Co., Milwaukee.
- 615 tons, Triboro bridge contract 60, New York, to Carroll-McCreary & Co. Inc., Brooklyn, N. Y., through Albert A. Volk Inc., New York.
- 600 tons, factory buildings for Viscose Corp., Meadville, Pa., to Concrete Steel Co., New York.
- 400 tons, plant for Spencer Kellogg Co., Long Beach, Calif., to unstated fabricator, for Belgian steel.
- 200 tons, senior high school auditorium, University City, Mo., to Laclede Steel Co., St. Louis.
- 155 tons junior high school, University City, Mo., to Missouri Rolling Mill Corp., St. Louis.
- 150 tons, additional, warehouse for California Hardware Co., Los Angeles, to unnamed interest.
- 125 tons, placing, Kachess dam, Yakima project, Wash., to unnamed interest.
- 125 tons, high school addition, West Milwaukee, Wis., to Bethlehem Steel Corp., Bethlehem, Pa.
- 115 tons, Washington state paving job near Puyallup, to Bethlehem Steel Corp., Seattle.
- 100 tons, Trumbull Park housing project, Chicago, to Calumet Steel Co., Chicago.
- 100 tons, Illinois road work, to Calumet Steel Co., Chicago.

### Reinforcing Steel Pending

- 1417 tons, Livestock building, San Francisco; bids opened.
- 1400 tons, Eagle Mountain pumping plant, metropolitan water district, Los Angeles; bids opened.
- 797 tons, two tanks, Sacramento, Calif.; general contract to Campbell Construction Co., Sacramento, Calif.
- 750 tons, board walk and comfort station, Long Beach, N. Y.; National Excavation Corp., New York, low.
- 600 tons, Connecticut state highway bridge substructure, Middletown, Conn.; Merritt-Chapman & Scott Corp., New York, low.
- 550 tons, paving, New Jersey state highway, route 25, section 24; bids March 16.
- 400 tons, upper Des Plaines sewer, Chicago sanitary district; Michael Pontarelli, Chicago, low on general contract.
- 400 tons, additional, plant for Spencer Kellogg Co., Long Beach, Calif.
- 400 tons, armory, Amsterdam, N. Y.; W. F. Hendrich Co., Cleveland, low.
- 350 tons, Connecticut state highway bridge superstructure, Middletown,

- Conn.; Bethlehem Steel Corp., Bethlehem, Pa., low.
- 300 tons, DeReimer avenue sewer, Bronx, New York.
- 237 tons, Springfield, Ill., arsenal; United States Fire Proofing Co., Springfield, general contractor.
- 225 tons, New Jersey state highway grade crossing elimination, Berkeley Heights, N. J.; bids March 30.
- 200 tons, paving, New Jersey state highway, route 44, section 2A, 4A and 7; bids March 16.
- 143 tons, New Jersey state highway grade crossing, elimination, Lincoln Park, N. J.; bids March 30.
- 110 tons, New Jersey state highway grade crossing elimination, Westfield, N. J.; bids March 16.
- 106 tons, New Jersey state highway bridge, route 6, section 7; bids March 16.
- 101 tons, New Jersey state highway grade crossing elimination, Wharton, N. J.; bids March 30.

## Pig Iron

Pig Iron Prices, Page 70

Pittsburgh—Little likelihood exists for the application of quantity differentials on pig iron similar to those now adopted by the steel industry for effect with the second quarter on rolled steel products. This is due to the fact that most requirements run consistently to an approximate size. The market is steady. In some cases shipments are still proceeding against the former fourth-quarter price, which was \$1 a ton less.

Cleveland — Merchant pig iron sales so far in March are five times the quantity in the comparable period in February, and shipments are 20 per cent heavier. Demand from automobile foundries is improving, and general equipment manufacturers are more active in the market. Agricultural implement manufacturers and railroads provide a steady outlet for substantial tonnages. New commitments for second quarter are more numerous. Prices are strong, aided by high prices of scrap.

Chicago — Sales and shipments continue to improve. While recent price weakness in finished steel products has tended to cause consumers to defer placing second quarter contracts, in anticipation of a possible spreading of these lower prices, the introduction of a more stable basis of quotations is expected to correct this situation. Larger foundries are in no hurry to make forward commitments, since fair size stocks still are on hand. Foundry operations are steady, while producers of automotive castings are increasing their production, and farm implement plants continue exceptionally active. Prices are firm.

New York—Demand remains spotty, but with little more than two



weeks to go, consumers should soon be reflecting greater interest in next quarter requirements. A. P. Smith Mfg. Co., Orange, N. J., has already bought 600 tons for shipment over next quarter.

**Philadelphia**—Specifications are coming out more freely, due in part to better melt and the desire of some consumers to get in tonnage before the end of the month against old contracts. Recently 4500 tons of foreign iron, including 3500 tons of Royal Dutch, arrived for delivery to various points in the district.

**Buffalo**—Pig iron is improving in sales and shipments, and March deliveries are running considerably ahead of those of February. Little second quarter iron has been booked thus far. Seven blast furnaces continue in production.

**Cincinnati**—Some moderate second quarter orders are being booked, chiefly from regular customers assuring delivery positions. There is an increase in spot buying, and continued upward trend in shipments. Foundry operations also tend upward.

**St. Louis**—A fair volume of orders are being booked for shipment this month. Large commitments are lacking, current sales being mainly in small lots. Demand is well diversified, and instructions accompanying recent orders indicate actual need of iron.

**Birmingham, Ala.**—Market continues strong, and shipments are a little more active. Not much iron has been ordered as yet for second quarter, but all indications point to a firm market.

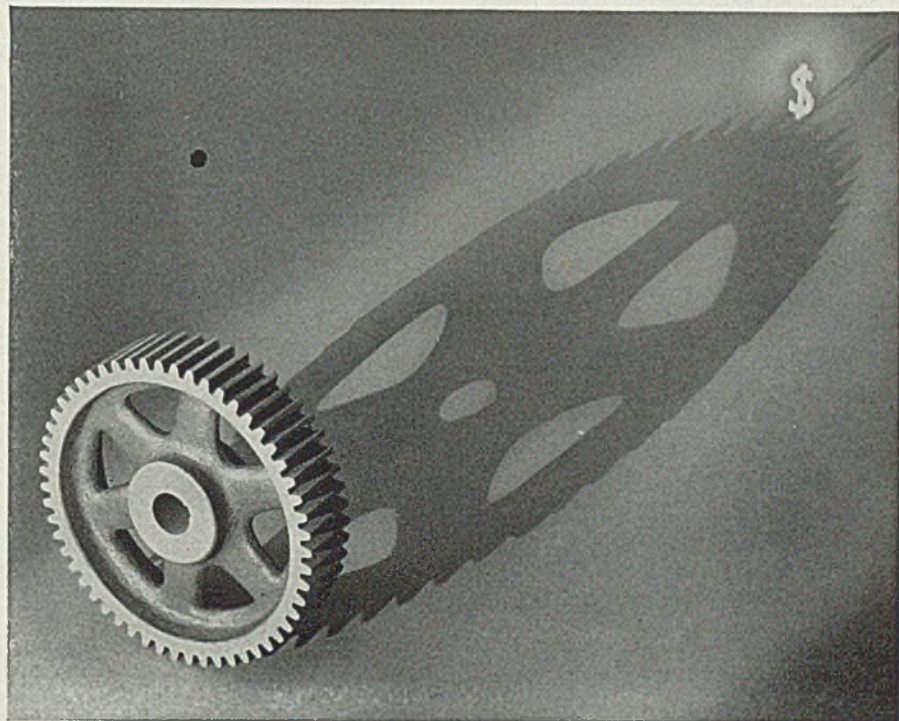
**Seattle**—Foundry operations are more active, and sales are increasing. Prices for the second quarter of Columbia iron have not been announced, but no change from present quotations of \$17.50 base, Provo, Utah, 1.75 to 2.25 per cent silicon, is expected. Small lots of Indian iron are being received.

are holding back, not desiring to make commitments in the present state of the market. A Valley steel-maker is understood to have covered a small tonnage of heavy melting steel on which delivery has not yet been made. Prices show no change.

**Chicago**—Scrap prices continue strong. A local mill has bought No. 1 heavy melting steel at \$15, but sellers are bidding \$14.75 and \$15 for this grade without being able to obtain all of the supplies they desire. Scrap is coming out slowly, both from railroads and from miscel-

laneous sources. The weather still is a factor in restricting movement from northwestern states.

**Buffalo**—Opinions differ as to the quantity of No. 1 heavy melting steel Bethlehem has purchased on its new offer of \$13.50. Some dealers think as much as 10,000 tons have been contracted while others halve this total in their estimates. Large holders have not participated in the selling, asking \$14 or more for tonnage, according to reports. Heavy movement to Valley and Pittsburgh mills continues in spite of Bethlehem's



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## Scrap

Scrap Prices, Page 71

**Pittsburgh**—Still maintaining a strong undertone, the steel scrap market appears to have leveled off. There is a willingness for consumers to buy No. 1 steel at \$16 in this district, but no important new sales have been closed. For one thing, brokers are now able to cover their short orders with more ease and with the break in weather have been able to lower buying prices in some cases by 25 cents a ton.

**Cleveland**—Buying of steel and iron scrap has tapered and dealers



offer, which represents an increase of \$1.50 over this consumer's former bid.

**New York**—Dealers' buying prices on iron and steel scrap are firm. Business of the past week has been accompanied by an advance of 50 cents in two grades. Dealers now are paying \$9.50 to \$10 for new compressed sheets and \$14.25 to \$14.75 for steel shafting. Despite the rise in prices orders continue to come from exporters. One new sale of No. 1 heavy melting steel for shipment abroad is reported at \$12, f.a.s., New York.

**Philadelphia**—No. 1 steel is down to a range of \$13 to \$13.50, delivered consuming point. The leading Claymont, Del., melter has recently closed on a round tonnage at \$13.50, and the Coatesville, Pa., consumer on some relatively small tonnages at the same figure, while the Bethlehem, Pa., buyer is paying \$13 on tonnage from outside districts.

Barge scrap is now, with milder weather conditions prevailing, moving into the district.

**Detroit**—Evidences of weakness appeared in steel scrap here last week as supplies gained. As a result, some brokers dropped buying prices. Though No. 1 steel, f.o.b. local consuming point, remains quotably unchanged at \$12 to \$12.50, this week likely will see a slight downward revision. An oversupply has forced blast furnace scrap lower to \$7.75 to \$8.25.

**Cincinnati**—Quotations on iron and steel scrap are unchanged. Little of the material on recent railroad

lists came into this district. Indeed, some shipments into the Valley as a sequel to the recent price bulge there, are now being made.

**St. Louis**—Purchasing of iron and steel scrap continues on a moderate scale, but the market is firm, due mainly to scant offerings and active bidding by dealers to cover contracts. The Missouri Pacific list this week was absorbed direct by local mills, which are reported to have paid prices above those currently quoted.

**Birmingham, Ala.**—Dealers are giving every service with scrap iron and steel and prices remain firm. Heavy melting steel is quoted at \$10 and upward. Small lot purchases are reported but the aggregate is good.

**Seattle**—Japanese importers are again showing interest in steel scrap but their ideas of price are out of line with those of shippers. Some exporting houses refuse to make commitments until pending shipments are filled. The market is firm in view of scarcity of stocks at tide-water and continued buying by local mills.

## Metallurgical Coke

Coke Prices, Page 60

Demand for metallurgical coke is steady, and if anything, shows a slightly upward trend. On the other hand, in view of decline in domestic coal and coke price beehive metallurgical coke prices show no strength from the quotations of \$3.50 to \$3.75, f.o.b. Connellsville, Pa., ovens, for standard furnace, \$4 for common

foundry and \$5.35 to \$5.50 on premium foundry.

Foundry coke producers have caught up with demand and shipments are about 20 per cent larger than in February. Prices are unchanged for March. Birmingham, Ala., suppliers are keeping production steady and shipments show no decline.

## Warehouse

Warehouse Prices, Page 72

**Pittsburgh**—Jobbers have reduced nails to \$2.35 per keg for Pittsburgh shipment, and \$2.30 for country delivery. At the same time, soft annealed black wire has been advanced to 2.90c, and galvanized to 3.25c. In the latter two items, 5 cents per 100 pounds is deductible for shipments outside of Pittsburgh. All other prices on warehouse steel are unchanged.

**Cleveland**—Orders are small but have increased in number, resulting in a moderate gain so far in March over the comparable February period. As the mill quantity extras on small lots of bars have been raised and now are in effect, warehouses expect this to be reflected in their business shortly.

**Chicago**—Warehouses have reduced nails from \$2.80 to a range of \$2.40 to \$2.65. The lower price applies on lots of 50 kegs and over, with 15 to 49 kegs now \$2.45, and 1 to 14 kegs \$2.65. Quotations on other products are unchanged, though some revisions in sheets may result from the new quantity differentials introduced by mills. Business is well maintained.

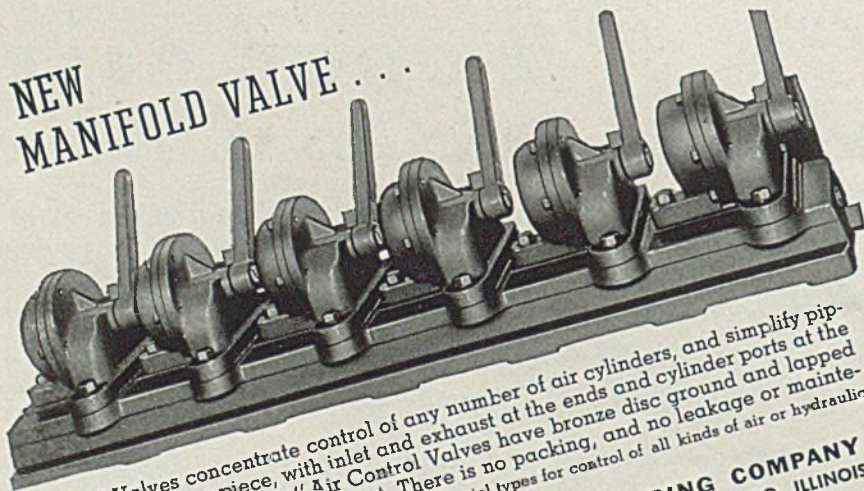
**New York**—Iron and steel jobbers here are much pleased with the new mill pricing method, which involves differentials for quantities, and believe the new system will put an end to certain deviations, which had a disturbing effect in the market. Prices reflect no change.

**Philadelphia**—Tonnage continues to drag, with the daily rate showing little change over the past several weeks. Jobbers are still hopeful that the remainder of the month will show improvement, as a seasonal gain is due. Prices are unchanged.

**Detroit**—Jobbers have reduced the price of nails 10 cents per keg to \$2.60, delivered metropolitan district. This reduction follows a similar 10-cent cut made Feb. 18. In connection with the further nail reduction last week, the jobbing market on nails at Toledo was similarly reduced. Shipments in this district are improving.

**Cincinnati**—Increased sales from warehouses are noted. Buying of building materials for remodeling

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and residential jobs is beginning to appear. Prices are firm.

**St. Louis**—Warehouses report an upward trend in business. Volume the first half of March is larger than in the like period of February. As an adjustment to concessions already made, the mill price of barbed wire has been cut \$4 per ton, and wire nails \$3 per ton, while woven wire has been advanced \$2 per ton.

**Seattle**—Business has improved, with milder weather. Plates, sheets and bars, mainly for repair and replacement jobs, lead the list. Buying is in small lots. Prices are steady.

## Iron Ore

### Iron Ore Prices, Page 71

**Cleveland**—Ford Motor Co. has issued an inquiry for 490,000 tons of Lake Superior iron ore, comprising 200,000 tons of manganiferous, 150,000 tons basic, 120,000 tons high-phosphorus and 20,000 tons silicious. Its inquiry at this time last year was for 180,000 tons, but it finally took close to 400,000 tons, a large amount from the Blueberry mine, which it formerly owned and operated.

Dock balances of iron ore at lower lake ports March 1 were little changed in the aggregate from March 1, 1935. The following statement of receipts and shipments for the season and stocks is from the Lake Superior Iron Ore association:

	Receipts	Ship- ments	Dock bal. Mar. 1, '36
Buffalo .....	2,127,812	4,216	2,981
Erie .....	1,035,642	1,081,845	58,245
Conneaut.....	3,437,860	3,498,226	1,649,736
Ashtabula.....	2,936,836	2,534,070	1,693,934
Fairport .....	772,260	778,813	387,085
Cleveland.....	5,455,295	4,064,528	725,225
Lorain .....	2,097,114	1,097,679	12,527
Huron .....	748,178	718,137	350,886
Toledo .....	1,296,231	665,002	24,049

Total.....19,907,228 14,442,516 4,904,168

Year ago....15,572,523 11,484,897 4,867,583

## Steel in Europe

### Foreign Steel Prices, Page 72

**London**—(By Cable)—Production of steel ingots and castings and of pig iron in Great Britain in February was at a heavier rate than in January, although the shorter month brought a smaller total output of pig iron.

With 109 furnace stacks in blast at the end of both months, February output of pig iron was 584,700 gross tons, at the daily rate of 20,162 tons, compared with total output of 545,500 tons and a daily rate of 19,339 tons in January. Steel ingots and castings in February totaled 938,500

gross tons, at the daily rate of 37,540 tons, compared with total output of 912,500 tons and a daily rate of 36,500 tons in January.

Shortage of foundry pig iron is becoming acute but supplies of steel-making iron are improving. Higher prices on pig iron are expected soon. Purchases of Dutch coke have relieved the coke situation. Imports of iron ore are increasing. All departments of steelmaking plants are occupied fully.

The Continent reports larger exports of merchant steel, especially to India and the Far East.

## Tin Plate

### Tin Plate Prices, Page 68

**Pittsburgh**—With most canmakers' operations at present on production of general-line cans, few tin plate producers have the backlogs of tin plate for rolling which packers' cans generally afford. Unassorted long ternes announced at 3.40c, Pittsburgh, for the second quarter, have been placed under the quantity differential system of quoting. No change has occurred in the price of tin mill black sheets at 2.75c, Pittsburgh, or standard tin plate at \$5.25 per base box. The average of tin

mill producers' operations was unchanged at 75 per cent last week.

## Nonferrous Metals

### Nonferrous Metal Prices, Page 70

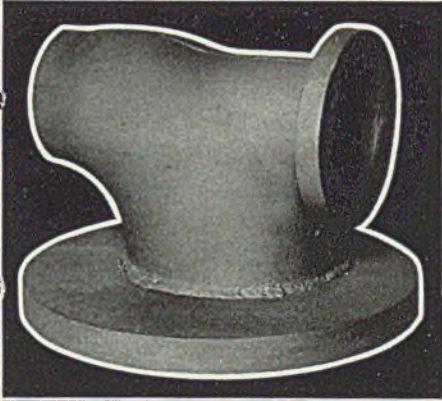
**New York**—Lead demand furnished the principal activity in major nonferrous metal markets last week. Political developments in Europe caused uneasiness in most foreign metal markets which, in the case of tin and copper, was indirectly reflected in the domestic markets.

**Copper**—Interest centered in export copper with the going level dropping from 9.12½c to 9.05c, c.i.f. The upward price movement of the previous week was checked and buying volume receded. Sales in the domestic market were light to moderate at 9.25c, Connecticut, for electrolytic. Several sellers held firm at the 9.50-cent asking level.

**Lead**—Buying improved from day to day and was well diversified among leading classes of consumers. Substantial buying is expected over the balance of the month. Prices were strong at 4.45c, East St. Louis, and 4.60c, New York, with St. Joseph Lead still asking \$1 premium per ton on the latter market.

**Zinc**—Despite light demand for

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zinc, prices held firm at 4.90c. East St. Louis, for prime western, reflecting the strong statistical position of the industry.

**Tin**—Straits tin prices showed fair strength and are likely to continue to do so while the European situation remains as a potential disturbing factor on the movement of metal from producing centers to world markets. Supplies were still limited. Straits spot closed around 48.25c.

**Antimony**—Prices advanced sharply Tuesday due to higher levels in China but buying continued light. Spot closed at 13.50c, New York.

## Imported Fluorspar Up

Fluorspar Prices, Page 70

New York—Imported fluorspar has been advanced 50 cents a ton to \$20.50, duty paid, tidewater. This follows a similar rise recently announced in the price of domestic fluorspar.

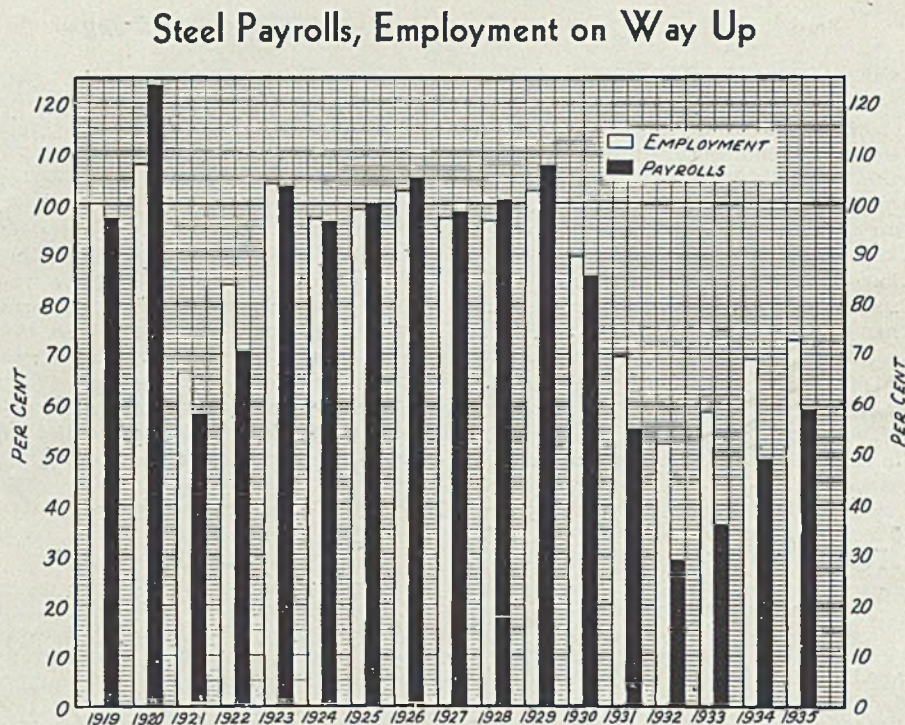
## Financial

(See also page 27)

**A**LLEGHENY STEEL CO., Brack- enridge, Pa., reports net income of \$1,151,453 after all charges in 1935, equal to \$1.50 a common share, compared with \$835,927, or 98 cents a share in 1934. Dollar volume of sales increased from \$17,258,657 to \$22,130,343, a gain of 28 per cent, although alloy products' tonnage gained 36 per cent over 1934.

### SUPERIOR HAS GOOD YEAR

Superior Steel Corp., Pittsburgh, reports net income of \$46,691, or 41



The progressive increase in the iron and steel industry's payrolls and employment since 1932 is graphically shown in this chart prepared under the direction of Major Berry by the office of the co-ordinator for industrial co-operation, Washington. With the three-year averages, 1923-1925, representing 100, payrolls in 1935 amounted to 59 per cent, and employment to 73 per cent, compared with 49 per cent for payrolls and 69 per cent for employment in 1934; and 107.5 for payrolls, 102.5 for employment in 1929

cents a share in 1935, compared with net loss of \$264,865 in 1934. Profits were shown in the first and fourth quarters, while there were deficits in every quarter in 1934. The 1935 net was the first profitable year for Superior Steel since 1929. Gross 1935 sales increased 45 per cent, while

those in the stainless division gained 80 per cent. Fourth quarter profit was \$79,215.95 against loss of \$95,745.80 in fourth quarter, 1934.

### EASTERN GAS & FUEL TO BECOME OPERATING COMPANY

Koppers Gas & Coke Co., Pittsburgh, is receiving \$7,933,750 as a result of an agreement to relinquish securities in subsidiary companies of the Eastern Gas & Fuel Associates so that the latter concern will become an operating company. The latter has filed a registration statement covering \$75,000,000 in bonds with the securities and exchange commission.

It was also disclosed that the Eastern Gas & Fuel Associates had acquired from Youngstown Sheet & Tube Co. 8569 shares of the Class B preferred stock of the Koppers Coal Co.

### MESTA PROFIT SETS RECORD; CAPACITY 1936 IS SEEN

Mesta Machine Co., West Homestead, Pa., in reporting its greatest net profit in history for 1935, further states that its uncompleted business on the books on Jan. 1 amounted to \$8,164,878, compared with \$2,347,007 carried over a year earlier and thus bespeaking of a prediction of capacity output for 1936. Net profit for 1935 of \$3,114,527 was equal to



# Whitey Sez:

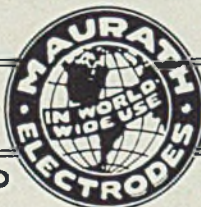
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\$3.11 a share, compared with net profit of \$1,517,250, or \$1.45 a share in 1934.

Total payroll for the year was \$4,511,919, operating income was \$5,174,295, and current assets Dec. 31 were \$8,500,484, against current liabilities of \$4,425,384. A sum of \$864,120 was spent for capital improvements, mainly for additional machine tools and related equipment. The company's machine shop and other departments operated greatly in excess of normal hours, with the result that the depreciation provision was increased from \$228,698 to \$350,042.

#### PEW WARNS OF TAX BURDEN ON LUBRICANTS AND GASOLINE

J. Howard Pew, president, Sun Oil Co., Philadelphia, in issuing the company's annual report emphasizing the tremendous volume of taxation imposed upon gasoline and lubricants, also sounds a warning against various legislative proposals which would make the petroleum industry a public utility, divorce pipe lines from oil companies, and place tank ships and tank trucks under government control.

In the past 14 years, the Sun company has collected and paid into public treasuries \$118,013,531 in gasoline and lubricant taxes, while in the same period the company's total net income has been only \$63,788,774. The Sun company's net income for 1935, after charges, was \$7,100,238, against \$6,650,464 in 1934.

#### EMPIRE PAYS BACK INTEREST

Empire Sheet & Tin Plate Co., Mansfield, O., has called its annual meeting for March 17, accompanying it by a statement from C. H. Henkel, president-treasurer, explaining the company's installation of tin and terne plate manufacturing equipment. On April 1 Empire will pay special coupons of its 6 per cent bonds dated April 1 and Oct. 1, 1934.

#### WHEELING NETS \$3,497,626

Wheeling Steel Corp., Wheeling, W. Va., reports net profit of \$3,497,626 in 1935, equal to \$3.11 a common share after current allowance for 6 per cent cumulative preferred dividends. This compares with 1934 earnings of \$529,202, or \$1.38 a preferred share. As of Dec. 31, 1935, there are dividend arrears of \$23.50 a share of preferred stock.

#### GRANITE CITY EARNINGS UP

Granite City Steel Co., Granite City, Ill., reports for 1935 net income of \$618,358, compared with \$258,761 in 1934.

#### VIRGINIA LOSES MORE

Virginia Iron, Coal & Coke Co., Roanoke, Va., reports net loss of \$84,124 in 1935, after depreciation,

depletion, interest, etc., compared with loss of \$34,532 in 1934.

#### TRUSCON WHITTLES LOSS

Truscon Steel Co., Youngstown, O., subsidiary of Republic Steel Corp., reports net loss of \$271,591, after taxes, depreciation, interest, etc., in the 11 months ended Nov. 30. For all 1934 the net loss was \$358,235.

#### DIVIDENDS DECLARED:

Bucyrus-Erie Co., Milwaukee, \$1 on the arrearage on the 7 per cent preferred, April 1 to record of March 20, leaving balance of \$16.

Cutler-Hammer Inc., 25 cents on

the common, March 16 to record of March 5.

Perfection Stove Co., Cleveland, increased quarterly of 37½ cents, March 31 to March 20 record. Previous rate 30 cents.

Gulf States Steel Co., Birmingham, Ala., \$3.50 on the preferred, April 1 to record of March 16, reducing the arrearage to \$28.

Babcock & Wilcox Co., New York, 25 cents April to record of March 20. Previous disbursement was 10 cents.

Koppers Gas & Coke Co., Pittsburgh, regular \$1.50 preferred, payable April 1 to March 12 record.

Crucible Steel Co. of America,

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An "efficiency" product.

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*Send for the chart of decimal equivalents. It's yours for the asking.*

## KIDD DRAWN STEEL CO.

Aliquippa, Pa.

(Pittsburgh District)

Phone: Aliquippa, 196



New York, \$1 on the preferred, March 31 to record of March 16, lowering the arrearage to \$25.50.

Pressed Metals of America Inc., Marysville, Mich., extra of 12½ cents and regular of 25 cents April 1 to record of March 16.

Hoskins Mfg. Co., Detroit, extra of \$1 and regular of 50 cents on the common, March 26 to record of March 11.

Bliss & Laughlin Inc., Harvey, Ill., 25 cents, March 31 to record of March 10. This is the first payment on the new capital stock, placing it on a \$1 basis.

Clark Equipment Co., Buchanan, Mich., \$1.75 on the preferred and 20 cents on the common, both March 14 to Feb. 26 record.

Electric Controller & Mfg. Co., Cleveland, 50 cents on the common, April 1 to record of March 20.

Ferro Enamel Corp., Cleveland, 20 cents on the common, March 20 to record of March 10.

Wheeling Steel Corp., Wheeling, W. Va., 50 cents on the preferred, April 1 to March 12 record.

Westinghouse Air Brake Co., Wilmerding, Pa., 25 cents, April 30 to record of March 31.

McKeesport Tin Plate Co., McKeesport, Pa., dividend of \$1 and the usual extra of 25 cents, both April 1 to March 17 record.

## Buffalo Gains in Steel

In the first 11 months of 1935, employes of steel and iron companies in the Buffalo district were paid more than \$14,690,000 or 21 per cent over the like period of 1934. The Buffalo district, sixth largest in the country in ingot capacity, and fifth

in pig iron, has a capacity of 3,111,000 gross tons of ingots, 3,262,000 gross tons of pig iron in 18 plants employing 13,000 persons.

## 1935 Tin Consumption up; America Uses Nearly Half

World apparent consumption of tin in 1935, at 141,524 gross tons, increased 20.3 per cent from the 117,681 tons consumed in 1934, according to figures of the International Tin Research and Development council, New York. The United States consumed 44 per cent of the world's tin in 1935, compared with 37 per cent in 1934. Consumption by the United States in 1935 was 42.9 per cent greater than in 1934. Italy increased its use 47.9 per cent over 1934. All countries showed an increase except France, where a decline of 12.2 per cent was registered.

World production of tin was 139,053 gross tons, compared with 108,637 tons in 1934, an increase of 30,416 tons. Apparent world consumption in manufacture was 139,000 gross tons, compared with 130,000 tons in 1934.

## REPORTS ON 5-DAY WEEK

National Industrial Conference board, New York, recently made a check on the adoption of the 5-day week in business establishments. It canvassed 2452 establishments in manufacturing, mining, transportation, finance, wholesale and retail trade and public utilities. These companies employ over 4,500,000 people, and the board learned that wage earners in 1404 of these com-

panies with 2,767,000 employes are on the 5-day week.

## JOBLESS GAIN IN JANUARY

National Industrial Conference board, New York, estimates unemployment in January at 9,715,000 persons, an increase of 724,000, or 8 per cent over December, but a decrease of 625,000, or 6 per cent from January, 1935.

## Equipment

Chicago—Business in machine tools and miscellaneous plant equipment continues to make a favorable comparison with conditions a year ago. Machine tool inquiries are in fair volume though sales are not up to the active January rate. The Santa Fe railroad has issued inquiries for several more tools in addition to its previous list which still is open. American Sheet & Tin Plate Co. has started work on its new tandem cold reduction mills at Gary, following completion of its new hot mill. The new work involves expenditure of \$12,500,000.

Pittsburgh—Great Lakes Steel Corp., Detroit, will commence operations on its 96-inch continuous sheet mill and hot-rolling division next week, although operations in the cold mills will be delayed until May. Republic Steel Corp, last week began repair work on its No. 4 blast furnace at Youngstown, O., idle since 1930. In connection with the American Sheet & Tin Plate Co. prospective installation of a wide strip mill in the Pittsburgh district, it is believed that the sheet and tin mills will be located at Clairton, Pa., and the new slab mill will be built at the Edgar Thomson works, Braddock, Pa.

Seattle—More favorable weather has stimulated the market for machinery and equipment. Canning, logging and mining are active and dealers report a satisfactory volume. Opening of the Alaska season is evidenced by placing of spring orders.

New York—The machine tool market here continues active, with a large number of attractive orders and many new inquiries. Included in recent substantial buying is an assortment of fabricating equipment placed by a New Jersey manufacturer of steel building members. It is understood that Mexican railway authorities who recently took bids on a list of 192 items have placed some 50 to 60 machine tools with American builders.

National Industrial Conference board, New York, reports the cost of living of wage earners in January unchanged from December at 117.9, based upon 1923 equaling 100.

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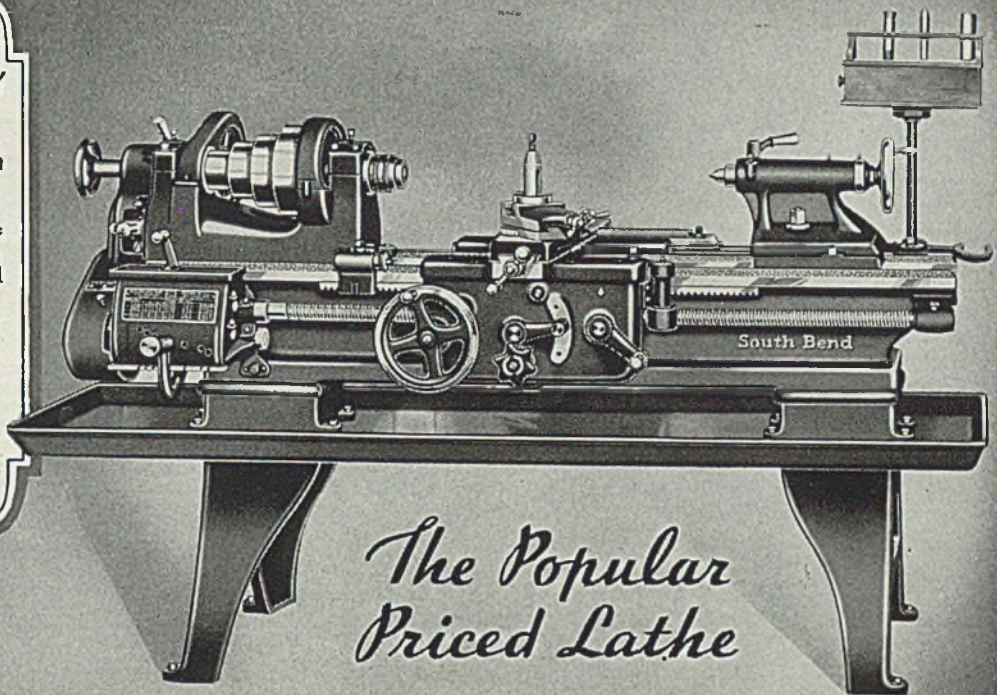
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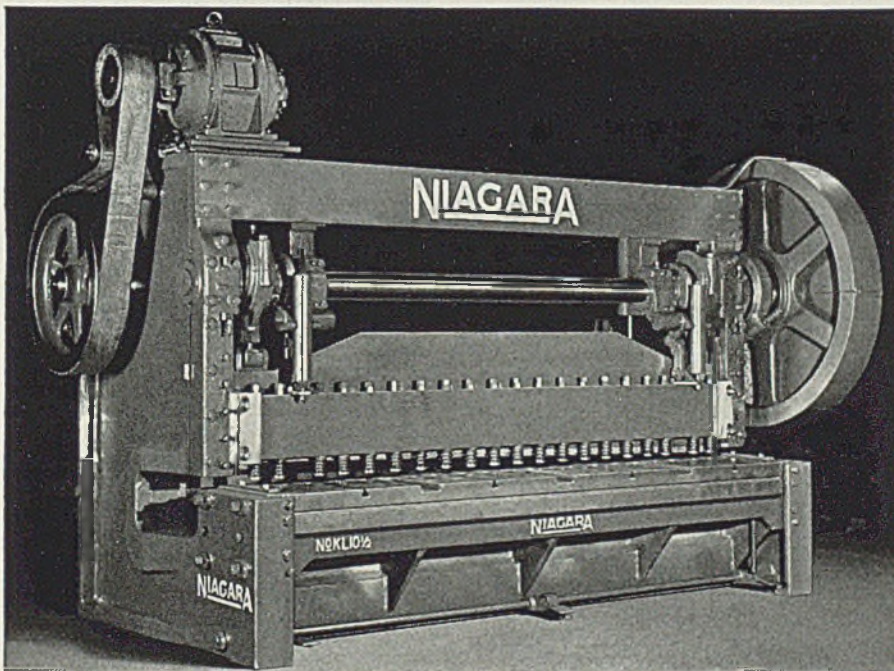
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# Construction and Enterprise

## Ohio

ASHLAND, O. — W. Art Mason, mayor, has received a report showing that a proposed power and light plant will cost approximately \$1,020,859. Survey was made by Barstow & Lefebvre Inc., 31 North Jackson street, Akron, O.

CINCINNATI — City, Charles E. Lex purchasing agent, room 143, city hall, will ask bids until March 17 for steel blanks for the department of public works, division of highway maintenance.

CLEVELAND — Lees-Bradner Co., 6210 Carnegie avenue, maker of gear-cutting machine tools, has purchased three acres at East 131st street and

Taft avenue, for future improvement. H. T. Gardner is president.

CLEVELAND—Birnbaum Stoker Co., 10420 Quincy avenue, has been incorporated. A. C. Corrigan and A. B. Birnbaum are the incorporators.

CLEVELAND—City, department of light and power, room 105, city hall, will take bids until noon, March 20, for a truck winch and power takeoff, and one pipe threading machine.

CLEVELAND — Carpenter Metal Products Co., 13001 Taft avenue, maker of metal specialties, has acquired a manufacturing and office building opposite its present site. The new building contains 15,000 square feet of space.

COLUMBUS, O.—City is giving consideration to a proposition to vote \$300,000 bonds to carry out an expansion program in the municipal electric plant, including installation of two boiler units. Robert Tucker, electrical superintendent, is in charge of the local plant.

DAYTON, O. — United States air corps, contracting officer, materiel division, will receive bids until March 27 for 12 motor-driven milling machines, circular 623; until March 26 for 17 motor-driven precision lathes, and 17 motor-driven engine lathes, circular 618; and until March 27 for 10 motor-driven honing and lapping machines, and other equipment, circular 621.

LEESBURG, O. — Village is taking new bids due March 27 for construction of a \$11,400 water treatment plant and furnishing approximately \$4200 worth of water mains. Bids received May 22, 1935, were rejected. Charles H. Teter is clerk of board of public affairs. Jennings & Lawrence, 538 Rowland building, Columbus, O., engineer.

MINERVA, O. — City has authorized Ralph Hadlow, 5005 Euclid avenue, Cleveland, to make a survey, prior to the purchase of a new generator unit and accessories to replace present unit. Cost is \$35,000. Harry E. George is mayor. (Noted in STEEL, Feb. 10.)

NEWARK, O.—Florence-Wehrle Co., a combination of the Florence Stove Co., Gardner, Mass., and the Wehrle Co., has resumed operations here after being closed for two weeks while the merger was being completed. Production is to be increased.

STUEBENVILLE, O. — City is considering expenditure of \$1250 to \$2300 for a chlorinator unit for the filtration plant. Maj. J. B. McConnell is service director.

TOLEDO, O. — City is considering the purchase of a 750-horsepower diesel engine.

UTICA, O.—Village board of trustees will ask bids until noon March 21 for furnishing and installing a motor-driven turbine type deep well pump. W. D. Cheadle is interested in the project.

VANDALIA, O. — R. H. Cotterman, mayor, will submit to the WPA an application for construction of a \$30,000 sewage disposal plant and water system. City and civic bodies will try to raise \$10,000. H. J. Derivan is head of WPA district No. 13, in Dayton, O.

WAPAKONETA, O.—City is financing a municipal electric plant, estimated to cost \$175,000. Burns & McDonnell Engineering Co., 107 West Linwood boulevard, Kansas City, Mo., is consulting engineer.

WEST MILTON, O. — Board of public affairs, C. E. Vore clerk, will take bids April 8 for a 60-horsepower gaso-

line motor. The motor must have a high tension magneto with impulses, and a 10-inch clutch. A trade-in is included in the proposal.

YOUNGSTOWN, O.—Ohio Edison Co., 25 East Boardman street, plans expenditure of \$250,000 for a building on South avenue.

## Michigan

ALMA, MICH. — Leonard Refineries Inc. has acquired a plant formerly owned by the Acme Refining Co. A Dubbs cracking unit and a reformation unit are to be installed in a \$400,000 improvement program announced by John F. Martin, secretary-treasurer and general manager.

ALMA, MICH. — Alma Motor Co. has been incorporated to buy and operate the properties and business of the Alma Mfg. Co. The company will manufacture four-wheel drive units for conversion of new and used Ford and Chevrolet trucks. William W. Schenck, secretary-treasurer of the manufacturing company, is the head of the new concern.

DETROIT — Mueller Brass Co., 428 Curtis building, has received permission from the directors for the expenditure of \$66,800 for new machinery and equipment, including two chucking machines, a thread grinding machine, seven automatic screw machines, an annealing furnace for the copper tubing mill, etc. O. B. Mueller is president.

DOWAGIAC, MICH.—City has arranged for federal aid in carrying out an expansion program in the municipal light system. Cost is estimated at \$200,000.

GRAND HAVEN, MICH. — Petroleum Chemicals Co. has acquired approximately nine acres along the local waterfront and plans the construction of a \$300,000 refinery. W. J. McCartney will become general manager. G. J. Wagner & Co., Grand Rapids, Mich., engineer, will supervise construction.

HIGHLAND PARK, MICH.—Advance Weld Fabricators Inc. has been incorporated to manufacture fabricated metals. V. P. Maloney, 15120 Woodward avenue, is an incorporator.

WATERFORD, MICH.—Sloat Mfg. Co. has been incorporated by Carleton V. Sloat, box 116, Waterford.

## New York

BROOKLYN, N. Y.—City, department of hospitals, room 519, at 125 Worth street, Manhattan, will receive bids until March 26 for construction of boiler plant, and the proposed purchase of mechanical equipment designated in contract 3. This is a WPA project. Dr. S. S. Goldwater is commissioner.

BOLIVAR, N. Y. — Runyan & Reynolds Oil Co. is interested in purchasing material and equipment for power plants, including gas engines, well pumping equipment, drills and small tools.

BUFFALO — City has under consideration plans for construction of a sewage disposal plant on a 20-acre site at Bird island pier. This, together with other contemplated PWA projects in the city, will cost approximately \$15,000,000. Greeley & Hansen, 6 North Michigan avenue, Chicago, is engineer.

BUFFALO—Kelch Motor Car Heater Co., 5946 Cass street, Detroit, has been purchased by the Houdaille-Hershey Corp., 2188 National Bank building, Detroit. Manufacture of heaters will be transferred to the Buffalo plant of the Houde Engineering Corp., 537 East Delaware street, a subsidiary of the Houdaille-Hershey firm. Additional

(Please turn to Page 92)

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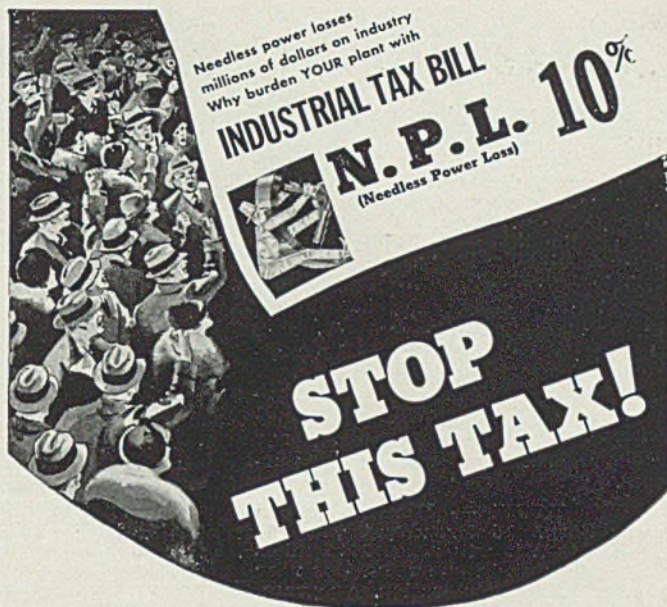
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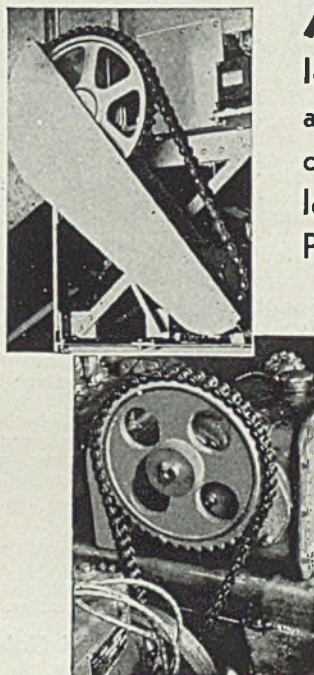
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(Continued from Page 90)

construction at Buffalo may be necessary.

**GLEN FALLS, N. Y.**—City is considering construction of a large electric pumping plant estimated to cost \$150,000. Whitman, Requardt & Smith, Charles and Biddle streets, Baltimore, is consulting engineer.

**ITHACA, N. Y.**—City is considering construction of a \$250,000 municipal power plant, including distributing lines and other facilities. City engineering department is in charge.

**NEW YORK**—Crucible Steel Co. of America, 405 Lexington avenue, has leased ground floor space at 537 Broom street, for warehouse purposes.

**NEW YORK** — Niagara-Hudson Power Corp., 15 Broadway, has announced that it will place 2000 miles of electric lines in operation this year in a rural electrification program. Alfred H. Schoellkopf is president.

**NIAGARA FALLS, N. Y.** — City is sponsoring special legislation granting it permission to sell water to Youngstown and Lewiston, N. Y. Approval of the legislation will mark the start of extensive waterworks expansion.

**ROME, N. Y.**—Rome Cable Co. has been formed to engage in the manufacture of copper wire, cable and other equipment. The company has options on land and buildings for manufacturing purposes and is planning to locate a plant here. Should the plans mature, considerable remodeling will be necessary and new equipment will be purchased.

**SYRACUSE, N. Y.**—A. J. Brandt and associates, 7300 Woodward street, Detroit, exercised an option to buy the plant of Franklin Motor Inc. The new owners are considering a manufacturing program.

### Indiana

**DECATUR, IND.**—City has rejected bids received recently for a turbine generator for the municipal electric plant. New bids are to be asked soon. Cost of unit, together with a new building, is estimated at \$110,000. Bevington-Williams Inc., Indiana Pythian building, Indianapolis, is consulting engineer.

**DUBLIN, IND.**—Village board of trustees will take bids until 2 p. m., March 20 for furnishing one deep well, turbine type pump and motor, auxiliary gas engine, electrical and pressure control equipment and water meters. George Adrian is clerk of the board, and R. C. Lennox and J. C. Matthews, 537 Architects building, Indianapolis, are engineers.

**INDIANAPOLIS** — American Can Co., 1610 Merchants Bank building, has obtained an option on land opposite its present plant at 1936 South East street.

**PORTLAND, IND.**—City has arranged \$179,000 for extension of municipal electric plant. Bevington-Williams Inc., Indiana Pythian building, Indianapolis, is consulting engineer.

### Illinois

**CHICAGO** — Stewart-Warner Corp., 1828 Diversey parkway, has authorized E. E. Brooks, 1892 West Madison street, engineer, to let a contract soon for the construction of a boiler plant and installation of ash handling equipment.

**NORTH CHICAGO, ILL.** — Veterans bureau, Arlington building, Washington,

will give consideration to bids received by March 24 for a water softening system to be installed in the United States veterans facilities here.

### Connecticut

**DANBURY, CONN.**—City is offering for sale \$315,000 worth of water bonds. Bids will be received until March 20.

**NEW HAVEN, CONN.** — New Haven Gas Light Co., 80 Crown street, is considering an expenditure of \$108,500 for pipe, meters and other equipment in a plant improvement program. H. L. Sterrell is active in the project.

**STEVENSON, CONN.** — Connecticut Light & Power Co., 155 High street, Hartford, Conn., has appropriated funds for the purchase of an 8200-kilowatt turbine for installation at the Stevenson power plant. A 25,000 kilowatt turbo-generator also is included in purchases of material and supplies in a program calling for the expenditure of \$3,300,000.

### Pennsylvania

**CHARLEROI, PA.** — West Side Electric Street Railway Co. will be sold at public auction March 30. Approximately 1300 tons of rails, 100 tons of girders, a 150-ton electric locomotive and three street cars will be sold.

**ERIE, PA.** — Commissioner of waterworks will receive bids until March 20 for construction of a storage building and an addition to the repair shop, including all appurtenances. J. S. Dunwoody is superintendent, and B. J. Lechner is secretary.

### Alabama

**BIRMINGHAM, ALA.** — Tennessee Coal, Iron & Railroad Co., Brown-Marx building, Birmingham, is considering installation of a small annealing furnace and purchase of other equipment. Work is underway overhauling two blast furnaces and installing rotary shears at Fairfield sheet mill.

**MONTGOMERY, ALA.** — Lee County Electric Membership Corp. plans to build electric transmission lines in Lee, Chambers and Russell counties, and later extending them into Bullock and Tallpoosa counties.

### District of Columbia

**WASHINGTON**—Veterans administration, 764 Arlington building, will receive bids until April 14 for boilers, stokers and miscellaneous equipment on project 1111, Dayton, O.

**WASHINGTON** — Treasury department has under consideration plans for construction of a power plant in a federal building on Fifth street, Cincinnati, at a cost of \$3,100,000. Bids will be asked early in April. Funds have been appropriated by the PWA.

**WASHINGTON** — Navy department, bureau of supplies and accounts, will receive bids until March 17 for miscellaneous portable electric pumps delivered at Sewall's Point, Va., schedule 7367; and for miscellaneous double drum winches delivered at Norfolk, Va., schedule 7395. Bids will be taken until March 20 on a toolmaker's lathe, schedule 7373; on two roller pipe cutting machines, schedule 7369, on a portable spot welder, schedule 7363, all delivered at Puget Sound, Wash.; and until March 24 on a motor-driven bench lathe delivered at Kansas City, Kans., schedule 7401; on a motor-driven pedestal grinder, schedule 7393, and two motor-driven ram type, turret lathes, schedule 7391.

both schedules delivered at Puget Sound, Wash.

### North Carolina

**GREENSBORO, N. C.** — Spoon & Lewis, engineer, box 261, Greensboro, is in the market for a deep well turbine pump.

**HATTERAS, N. C.** — Hatteras Development Co. has made application for permission to erect a power plant.

**MORVEN, N. C.** — Town has set March 18 as the date for receiving bids for constructing a waterworks, including well drilling, erection of a 100,000 gallon tank on a 90-foot tower, laying of nearly 10,000 feet of mains, and other necessary equipment. Paul M. Van Camp, Southern Pines, N. C., is consulting engineer.

**MT. AIRY, N. C.** — Pitt Laundry Machinery Co. has been incorporated by L. Z. Hutchens and O. R. Marritt.

**WILMINGTON, N. C.** — Tide Water Power Co. has secured a loan of \$142,000 and will construct electric light lines in a number of rural districts in eastern North Carolina counties.

### Tennessee

**DICKSON, TENN.** — Voters have authorized city to accept a loan of \$110,000 from PWA for construction of a filtration plant, standpipe, and formation of a lake.

**WHITEHAVEN, TENN.** — Shelby county school board has under consideration plans for rebuilding the workshops in the Whitehaven school recently damaged by fire. W. P. McDonald is chairman of the board.

### West Virginia

**CABIN CREEK, W. VA.** — Pure Oil Co., 35 East Wacker drive, Chicago, has under consideration plans for enlarging the refinery here.

**CLARKSBURG, W. VA.** — National Can Co., 110 East Forty-second street, New York, is planning an improvement program in the local plant. Approximately \$40,000 is to be spent.

**WHEELING, W. VA.**—Louise Coal Co. has under consideration plans for rebuilding a coal tippie which was damaged by fire recently. The conveyor gallery and other machines at the Brooke county mine will be repaired and replaced.

### Virginia

**NORFOLK, VA.** — Royal Mfg. Co.'s plant at Twenty-second street was damaged recently by fire. Oscar L. Bilbert is president.

**OCOQUAN, VA.** — Arlington county board, Arlington Courthouse, is considering selection of a water dam site for a hydroelectric plant. Wiley & Wilson, Lynchburg, engineer, is making a survey to determine the feasibility of the plan.

**RICHMOND, VA.** — Electrical Equipment Co., 324 South Fifth street, is in the market for various type motors, including slip ring motors and also starting compensators.

### Missouri

**JEFFERSON CITY, MO.** — Missouri state building commission has under consideration plans for the construction of a power plant at the state sanitarium, here. Cost, with equipment, is estimated at \$200,000. Bids will be asked soon. Baumes-McDevitt

(Please turn to Page 94)



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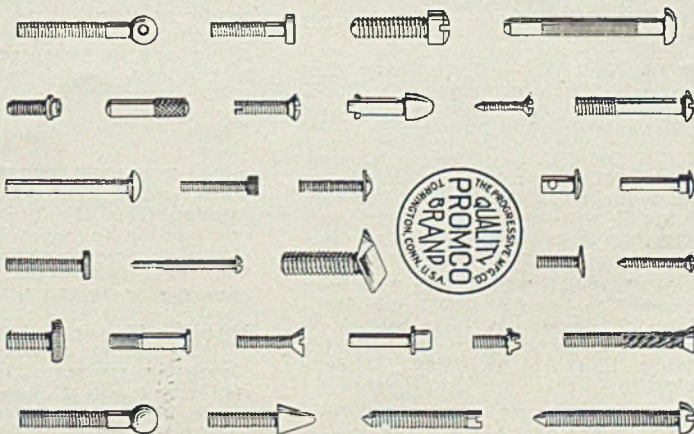
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(Concluded from Page 92)

Co., Railway Exchange building, St. Louis, is consulting engineer. Charles A. Haskins, Finance building, Kansas City, Mo., is supervising engineer.

**MOUNTAIN GROVE, MO.**—City has authorized C. N. Garrison, Springfield, Mo., engineer, to prepare plans for erection of a power plant. City may vote on bonds for the contemplated project.

### Arkansas

**CROSSETT, ARK.**—Crossett Lumber Co. has plans for construction of a large pumping plant for the pulp and paper mill here. The \$4,000,000 project is being financed through the R.F.C. Ferguson & Co., 200 Fifth avenue, New York, is consulting engineer.

### Oklahoma

**CLAREMONT, OKLA.**—Oklahoma Military academy has under consideration plans for a power house and other building projects. Total cost is estimated at \$450,000. John D. Forsythe, Tulsa, Okla., is architect.

**HOKKER, OKLA.**—City has under consideration plans for expending \$60,000 for improvements in the municipal electric plant.

**OKEENE, OKLA.**—Voters have authorized issuance of \$50,000 bonds to finance a proposed waterworks system. W. W. Hughes, Commercial Exchange building, Oklahoma City, Okla., is engineer. (Noted STEEL, Sept. 23, 1935.)

**WARNER, OKLA.**—State board of agriculture, Oklahoma City, Okla., has applied to PWA for funds to rebuild the Industrial Arts building recently damaged by fire at Connors' state agricultural college. The state's share of the project is estimated at \$16,200.

### Texas

**AUSTIN, TEX.**—Bureau of reclamation will receive bids until March 31 for erection of power plants and the construction of Arnold dam. Bids include installation of power penstocks, cranes and crane rails, metal pier noses and other metal work.

**BELLS, TEX.**—Balfalls Light & Power Co. will extend rural distribution lines into Bell, Falls and Milan counties, at an estimated cost of \$452,000.

**BROWNSVILLE, TEX.**—Magnolia Oil Co. will purchase materials and construct its own bulk supply plant. The plant, including some machinery, will cost approximately \$80,000.

**EL PASO, TEX.**—Quartermaster William Beaumont, General hospital, will ask bids until March 19 for transformer vaults, and extensions to the electric distribution and street lighting system.

**DALLAS, TEX.**—East Texas Pipe Line Co. has been incorporated by F. W. Burford and John J. Thomas, both in the Tower Petroleum building.

**HOUSTON, TEX.**—Houston Machinery Co., 321 Kress building, is in the market for a 125-horsepower marine, and one 50 and one 100 horsepower stationary diesel engines, in addition to 2 dry press mixers and a hammer mill.

**KINGSVILLE, TEX.**—City has been authorized to issue \$10,000 bonds for a waterworks system. Chamberlain & Strain, National Bank of Commerce building, San Antonio, Tex., is contractor.

**LEONARD, TEX.**—City has approved a \$50,000 bond issue for a

municipal power plant.

**MCALLEN, TEX.**—Riona Products Co. will erect a canning plant in the West McAllen section. Cost is estimated at \$40,000. Lee Akins is president.

### Wisconsin

**MILWAUKEE**—City has called a special election for April 7 to pass on \$40,000,000 worth of bonds for the proposed purchase and expansion of the Milwaukee Electric Railway & Light Co., 231 West Michigan street.

**ECONOMOC, WIS.**—City has rejected bids received Feb. 8 for construction of a sewage treatment plant. Present indications are that plant will be built with WPA labor. J. Donohue Engineering Co., Sheboygan, Wis., is in charge.

### Minnesota

**PRINCETON, MINN.**—Commercial club is active in forwarding plans for erection of a municipal power plant. Estimates of the cost of the proposed project will be asked soon.

**KEEWATER, MINN.**—City has under consideration plans for extension of the municipal power plant. Special election has been called to decide on issuance of bonds to finance the proposed project. Estimates are being drawn by Foster & Wahlberg, Medical Arts building, Duluth, consulting engineer.

### Kansas

**COFFEYVILLE, KANS.**—City will take bids soon for an electrically-operated pumping plant for a sewage treatment plant to be erected at a total cost of \$130,000. Charles A. Haskins, Finance building, Kansas City, Mo., is consulting engineer.

**TOPEKA, KANS.**—State highway department, Ira E. Taylor engineer of maintenance, Masonic building, Topeka, will receive bids until 10 a. m. March 20 for a lathe, quotation 3570.

**TOPEKA, KANS.**—State highway department, Ira E. Taylor engineer of maintenance, Masonic building, will receive bids until March 19 for one 1-wheel type tractor, and two 4-wheel motor-type graders quotation 3566; March 23, for two crawler-type tractors delivered at Norton, Kans., quotation 3573.

### Iowa

**NEW MARKET, IOWA**—Voters have authorized the city to issue \$55,000 bonds to construct a municipal electric plant.

**SHENANDOAH, IOWA**—Harley Bartles is heading a group which has made application to the city for a franchise to build a diesel-power electric plant to serve part of the lines in the city. Cost is estimated at \$80,000.

### Utah

**SALT LAKE CITY, UTAH**—Utah Power & Light Co. has received permission from the Utah public service commission to construct a \$1,600,000 steam-electric plant near Provo, Utah. The proposed plant would have a capacity of 18,850 kilowatts.

### Pacific Coast

**LOS ANGELES**—Board of education, 1151 South Broadway, plans expenditure of \$22,532,000 for a school rehabilitation program. Part of this money

is available for new shops. The Wiggins trade school is located at 216 Venice boulevard, the manual arts school of the public education system at 4131 South Belmont street, and the Polytechnic school at 400 West Washington street.

**LOS ANGELES**—Foothill Citrus association, Duarte, Calif., will construct a \$55,000 packing house. The building will replace a plant destroyed by fire several weeks ago.

**LOS ANGELES**—Department of water and power, 2075 Broadway street, will ask bids March 18 for one 300-kilowatt, 555 volts direct current, motor generator set, designed for operation on a 5000-volt, 60 cycle, 3-phase source. Various other equipment is included in the estimated cost of \$2500. D. P. Nicklin is purchasing agent.

**PASADENA, CALIF.**—City clerk, department of power and light, city hall, will take bids until March 18 for two transformers, one rated at 9000 kilowatt-amperes, the other a 12,000 kilowatt-amperes self-cooled unit with auxiliary air blast, to operate on a 3-phase, 60-cycle, 33,500-volt line. Cost is estimated at \$30,000. F. DeLanty is power superintendent.

**VERNON, CALIF.**—Union Die Casting Co., 2269 East Fifty-first street, has plans for a new factory building 72 x 86 feet. Plans were drawn by Hugo Eckart, 3345 San Gabriel boulevard, San Gabriel, Calif.

**FREEWATER, OREG.**—Utah Canning Co. announces construction will begin soon on a plant and building estimated to cost \$100,000. Modern equipment is to be installed. Plans call for completion of work by June 1.

**ELLENSBURG, WASH.**—City council is considering plans for a proposed \$132,000 sewage disposal plant. WPA has approved the plans, and \$91,600 in federal funds have been pledged. L. R. Stockman, Baker, Oreg., sanitary engineer, will supervise the improvement.

**SEATTLE**—Aircraft Plywood Co., 4000 Fifteenth avenue, west, plans construction of a \$15,000 boiler house addition, following construction of additional warehouse space.

**SEATTLE**—Olympic Electro Smelters Inc., 700 Insurance building, has been incorporated with \$50,000 capital. V. C. Ross and associates are the incorporators.

**SEATTLE**—Kenworth Motor Truck Corp., Yale and Mercer streets, manufacturer of custom-made gas and diesel trucks, is expected to prepare plans for expansion of its plant. Philip G. Johnson recently was named vice president in charge of manufacture.

**YAKIMA, WASH.**—City has authorized survey and estimate of cost of construction of municipal electric plant. Henry J. Gray, Henry building, Seattle, is consulting-engineer.

### Alaska

**SEWARD, ALASKA**—Don C. Brownell, mayor, has authorized Hubbard & Waller Engineering Corp., Alaska building, Seattle, to prepare plans for erection of a municipal light plant, here.

### Canada

**LONDON, ONT.**—Hygrade Products Co., 6640 William street, is making inquiries on prices of machinery and equipment for a 1-story steel factory building, 150 x 475 feet. C. Munce is manager.